DEPARTMENT OF GENERAL PLANNING
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET
HONOLULU, HAWAII 96813

FRANK F. FASI
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CHIEF PLANNING OFFICER

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DEPUTY CHIEF PLANNING OFFICER

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September 7, 1990

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

Attn: Mr. Brian J. J. Choy

Dear Dr. Anderson:

Acceptance Notice for the Proposed
Kaahumanu Parking Structure Redevelopment
Final Environmental Impact Statement (Final EIS)

We hereby notify you of our acceptance of the Final EIS for the proposed Kaahumanu Parking Structure Redevelopment, as satisfactory fulfillment of the requirements of Chapter 343, Hawaii Revised Statutes.

Pursuant to Section 11-200-23(c), Chapter 200, Title 11 ("Environmental Impact Statement Rules") of the Administrative Rules, this acceptance notice should be published in the September 23, 1990 OEQC Bulletin by your office.

We have attached our Acceptance Report for the Kaahumanu Parking Structure Redevelopment Final EIS and the OEQC Form for Publication of EIS Documents. Should you have any questions, please contact Ronald Kodama at 527-6070.

Sincerely,

BENJAMIN B. LEE
Chief Planning Officer

BBL:js

Attachments

cc: Michael N. Scarfone, Department of Housing
and Community Development
Colette Sakoda, R.M. Towill Corp.

1990 - Oahu - FEIS -
Kaahumanu

FILE COPY

Final Environmental Impact Statement

for the

KAAHUMANU PARKING STRUCTURE REDEVELOPMENT

Honolulu, Hawaii

AUGUST 1990

FILE COPY

FINAL ENVIRONMENTAL IMPACT STATEMENT
FOR THE
KAAHUMANU PARKING STRUCTURE REDEVELOPMENT
Honolulu, Hawaii

Responsible Official:

Gail Kaito
for Michael N. Scarfone, Director
Department of Housing & Community Dev.
City and County of Honolulu

8/14/90
Date

PREPARED FOR:

Harbor Court Developers

And The

City and County of Honolulu
Department of Housing and Community Development

PREPARED BY:

R. M. Towill Corporation
420 Waiakamilo Road, Suite 411
Honolulu, Hawaii 96817

AUGUST 1990

FINAL ENVIRONMENTAL IMPACT STATEMENT
CHAPTER 343, HAWAII REVISED STATUTES (HRS)

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF FIGURES (CONTINUED)

LIST OF TABLES

Kaahumanu Parking Structure Redevelopment

SUMMARY

Project:	Kaahumanu Parking Structure Redevelopment
Proposing Agency:	City and County of Honolulu Department of Housing and Community Development
Accepting Authority:	City and County of Honolulu Department of General Planning
Tax Map Keys:	2-1-02: 16, 20, 26 and 56
Area:	80,884 square feet, or 1.85 acres
Location:	4 parcels bounded by Nuuanu Avenue, Nimitz Highway, Bethel Street, Merchant Street, and Queen Street, Honolulu, Hawaii
Owners:	City and County of Honolulu State of Hawaii
Existing Land Uses:	A municipal parking facility known as the Kaahumanu Parking Structure and an at-grade parking lot
State Land Use Map Designation:	Urban District
Development Plan Land Use Designation:	Commercial Use District
Development Plan Public Facilities Designation:	GB/M (Government Building/Modification)
Zoning:	BMX-4 Central Business Mixed Use District
Special Districts:	All parcels are in the Merchant Street Historic District. In addition, Parcel 26 and part of Parcel 20 (where the Melcher's Building is located) are in the Chinatown Special District.
Historic Sites:	There are a number of historic structures within the project vicinity: Melcher's Building (Located on the project site), the Old Bishop Bank and Bishop Estate Buildings, the Old Police Station and District Court Building, the Yokohama Specie Bank Building, and the Kamehameha V Post Office Building.

SUMMARY

The City and County of Honolulu, Department of Housing and Community Development (DHCD) is proposing to redevelop the existing Kaahumanu Parking Structure, Tax Map Key (TMK) 2-1-2:16, :20, and :56, and the at-grade parking lot behind the existing Old Police Station, TMK 2-1-2:26, into a high quality mixed-use complex. Located within the Central Business District (CBD) in Downtown Honolulu, the parcels are bounded by Nuuanu Avenue to the west, Merchant Street to the north, Fort Street Mall to the east, and Nimitz Highway/Queen Street to the south. This project represents one example of the City's overall objective to revitalize the downtown CBD by expanding business and employment opportunities and by enhancing the visual and social atmosphere of downtown.

The Kaahumanu Parking Structure Redevelopment project will cover 80,884 square feet (s.f.) or 1.85 acres of land, which will be developed into a project with a total floor area of about 492,000 s.f. The project will contain both commercial and residential uses. Included in these land uses will be: a.) 120 apartment condominium units on 28 floors totalling 216,500 s.f.; b.) 200,000 s.f. of exclusive office space on 19 floors; c.) 41,200 s.f. for office condominiums; d.) 34,240 s.f. of retail commercial use. In addition to these uses, significant parking provisions have been incorporated into the project. There will be a total of 1,055 parking spaces divided as follows: 462 stalls will be owned by the City and made available to the public at municipal rates; 1 stall will be owned by each of the apartment/condominium units (120 total); 443 spaces will be reserved for office/retail/commercial occupants of the complex; 30 stalls located below-grade in the District Court lot will be used by the occupants of the office condominium building located above this basement parking garage.

It has been determined by DHCD that an environmental impact statement (EIS) shall be prepared. Pursuant to Chapter 200 of Title 11, Administrative Rules, Subchapter 5(b), the

project is subject to the provisions set forth by Chapter 343, Hawaii Revised Statutes (HRS) because of the use of City and County land for the proposed action.

This Final EIS (FEIS) will provide information on the proposed action, and existing environmental conditions, and an assessment of probable impacts and mitigation measures associated with the project. Impacts on traffic, air quality, noise levels, historic structures, utilities, and socio-economic conditions are expected from this redevelopment project. This document will focus on the evaluation of these impacts within the vicinity of the project site and within the regional context of Downtown Honolulu.

This FEIS is based on conceptual designs, which are subject to change. Sketches, numbers and figures included in this document will be further refined as the project advances through the design development phase, however, such refinements are not expected to affect the integrity of this FEIS.

The redevelopment of the project site is expected to result in a number of short- and long-term impacts to the physical and socio-economic environments, and infrastructure systems. First, impacts on the physical environment will typically occur during the short-term demolition and construction periods. Secondly, negative short-range, and positive long-range impacts on the socio-economic environment are expected. Short-term negative effects will result from demolition, construction related activities, and the temporary loss of parking. Long-term impacts will be positive, however, as this area of old downtown Honolulu will be upgraded in terms of a new office complex, additional residential units and jobs. Finally, infrastructure systems and services will be impacted throughout both the short- and long-term periods. The following is a summary of the probable impacts and appropriate mitigation measures related to the project.

SUMMARY

1. VIEW CORRIDORS

The developer and architect are working in close coordination to minimize adverse impacts to view corridors surrounding the project. This coordinated effort will pay particular attention to minimize the impact on mauka-makai views as a result of the pedestrian bridge/overpass which is proposed to span Bethel Street. Creative ideas and innovative designs will be implemented to preserve view planes in keeping with the governing State and City regulations regarding the preservation of view planes and height clearances for the area. Such complementary, resourceful design strategies will enhance the overall project aesthetics as well as the surrounding view quality.

2. INTERIM PARKING

There will be a temporary loss of 462 parking spaces from the project site - 411 from the Kaahumanu parking facility and 51 from the at-grade District Court parking area. Thus, the availability of parking during the short-term construction phase will be a major concern for employees, clients and visitors who park in and around the Downtown area. To offset this inconvenience, the City is planning to implement various interim parking plans and alternatives. Once the project is completed, however, 593 stalls will be made available in addition to the 462 spaces previously available to the public, businesses, and workers.

3. AIR QUALITY

Increased urban development within the area will inevitably result in impacts to the existing air quality. Project adherence to Federal and State regulations governing air quality and street improvements will help to mitigate these impacts. The contribution of air pollutants is expected to impact the area and its vicinity. Appropriate mitigative measures have been explored to minimize any of these potentially adverse impacts. An Air Quality Impact Assessment has been conducted by Barry Neal and Associates, and the findings have been summarized in the text discussions. The report in its entirety is included in Appendix B of this document.

It should be noted that findings from the Air and Noise Impact reports included in the DEIS were based on calculations from the Traffic Assessment Report as prepared in June 1989. The Traffic Report assumed a project build-out date of 1992. However, as of June, the build-out date had been extended to late 1993, thus, all three reports have been updated for this document to reflect calculations for the new year. The updates have been included as addendums to the respective appendices.

4. NOISE AND VIBRATION

Increased urban activity may also adversely impact existing noise levels within the project vicinity, particularly during demolition and construction periods. Government controls regarding noise levels will help mitigate the potential impacts from these activities. Y. Ebisu and Associates has prepared a Noise Vibration Impact Assessment for the project area, and the results have been summarized in Section 3. The full report can be found in Appendix C.

5. HISTORIC BUILDINGS

The potential adverse impacts to adjacent historic buildings include those related to demolition and construction. Damage to the buildings may occur if vibration forces from heavy construction equipment during demolition are not controlled. In addition, the excavation activities may create unstable conditions in the surrounding areas, further jeopardizing the structures. Spencer Mason Architects has submitted a Historic Resources Assessment which inventories the existing historic buildings potentially at risk from the development, evaluates potential impacts to these buildings, and recommends possible mitigative actions toward protecting these structures. Findings from the study have been incorporated into the Historic Resources discussion in Section 3. The full report can be found in Appendix D.

6. ARCHAEOLOGY

An Archaeological Impact Study and update was conducted by the Bishop Museum's Applied Research Group. Findings indicate that a strong potential exists for archaeological resources being encountered during redevelopment of the project site. Primarily foundations of historic business structures, sheds, basements, and associated privies are expected to be uncovered. Typically, these findings would be associated with the post-contact period of the 1790's through the development and decline of Honolulu's early business district in the 1800's. Early artifacts dating back to the pre-contact period may be discovered during subsurface testing. These probable impacts as well as recommended mitigative methods are elaborated on in Section 3. The entire report is enclosed as Appendix E. Results from 8 core borings have been included as an addendum to the report.

7. SOCIAL IMPACTS

Construction activities will have short-term impacts on the surrounding uses and activities. Businesses adjacent to the site will be inconvenienced by the temporary removal of parking spaces which will divert users to other available parking garages in Downtown. Offsetting this in the long-run, however, will be the increase in the percentage of walk-in customers for businesses located within the area. The redevelopment proposes to enhance pedestrian circulation within the area and as a result, should directly or indirectly encourage pedestrian movement toward shops and eateries within the vicinity.

Safety during the construction phase will also be a major concern. Barricades and other safety precautions will be utilized to minimize the hazards to pedestrians and motorists.

Potential social impacts of the project are in Section 3 as well as in Appendix G, Social Impacts Assessment, conducted by the Planning Department of R. M. Towill Corporation for the DEIS in February 1990.

8. OFFICE, RESIDENTIAL AND COMMERCIAL SPACE

The proposed project will have long-term impacts on the office and residential inventory within the project vicinity as well as the downtown area. Findings from a 1989 Market Assessment Report and 1990 update (Appendix H) conducted by John Child & Company, Inc., suggest these impacts will, for the most part, be positive, as the redevelopment of the site will help meet the demand for upscale office and residential space in the Honolulu area.

9. TRAFFIC

Results of the Traffic Impact Assessment Report and revised 1990 report (Appendix I) conducted by Pacific Planning and Engineering, Inc. indicate that the proposed action will not significantly change the traffic flow by project build-out. The replacement of the 462 parking stalls from the existing parking facilities is expected to continue to generate the same level of traffic, while the proposed commercial and office spaces will generate approximately 450 additional trips during the morning and afternoon peak hours. The results also indicate a slight decrease in efficiency for the signalized intersections around the Diamond Head parcel of the project site, during the morning and afternoon peak hours due to an increase in traffic volumes. A summary of these impacts and recommended mitigation measures is included in the discussion on Traffic.

10. EXISTING UTILITIES

The plan requires that the future infrastructure systems be sized to meet the demands of the surrounding areas. Water, wastewater, and storm drainage utility systems will be upgraded as needed to City and County standards. A Civil Engineering report conducted in 1989 by the Engineering Department of R. M. Towill Corporation addresses these utility systems. The findings, in summation, can be found in Section 3; and the report, in its entirety has been included as Appendix J.

SECTION 1

INTRODUCTION

1.1 PURPOSE AND NEED FOR EIS

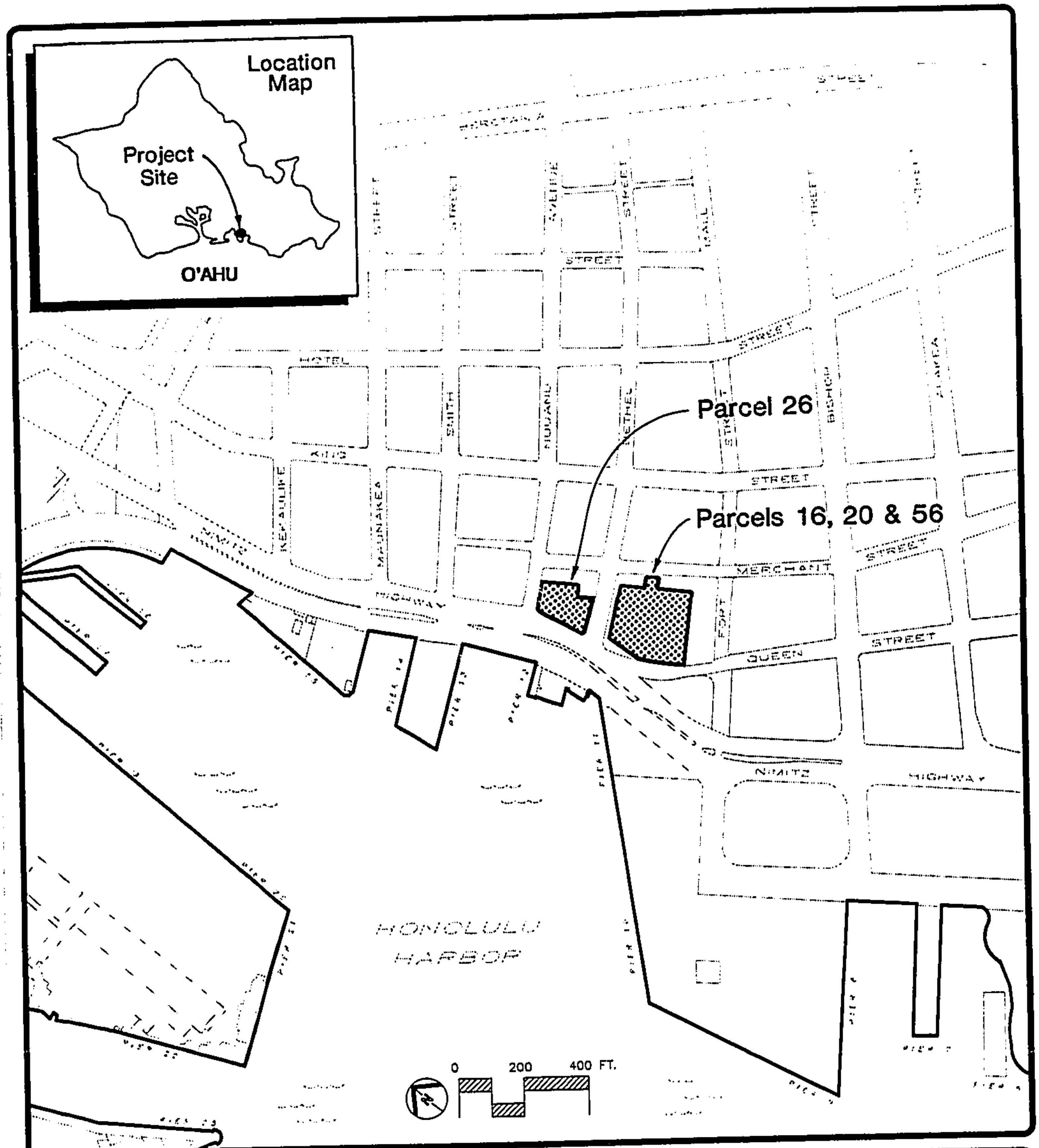
The City and County of Honolulu, DHCD, has determined that an Environmental Impact Statement (EIS) is required for the Kaahumanu Parking Structure Redevelopment. DHCD's determination was made pursuant to Chapter 200 of Title 11, Administrative Rules, Subchapter 5(b).

1.2 BACKGROUND

Redevelopment planning of the Kaahumanu Parking Structure project began in 1988 with the initiation of a feasibility study that explored options for development. The DHCD then issued a request for proposals to redevelop the Kaahumanu Parking Structure Site. BEAM Harbor Court Partners, a Hawaii general partnership with Michael T. McCormack and Richard Bradley as general partners, and C. Itoh and Company Ltd., as limited partner, was selected as project developer in July, 1989. A draft site plan has been completed and is currently under review. The scope and design of the project were set and approved by the City Council and City Administration in mid-November 1989. In April 1990, a development limited partnership, "Harbor Court Developers" was formed, with "The Beam Harbor Venture" as General Partner, comprised of entities owned and/or controlled by Michael T. McCormack and Richard Bradley, and ten (10) limited partners. In May 1990, the development rights were assigned to this new partnership.

1.3 PROJECT LOCATION AND OWNERSHIP

The proposed project site is located in the central business district (CBD) of downtown Honolulu on the Island of Oahu (See Figures 1-1 and 1-2). The site consists of four parcels of land at the corner of Nimitz Highway, Queen Street, Nuuanu Avenue, and Merchant Street. Parcel 26 lies on the western portion of the project site, and Parcels 16, 20 and 56 lie on the eastern portion. Parcel 26 has been minimally improved with an



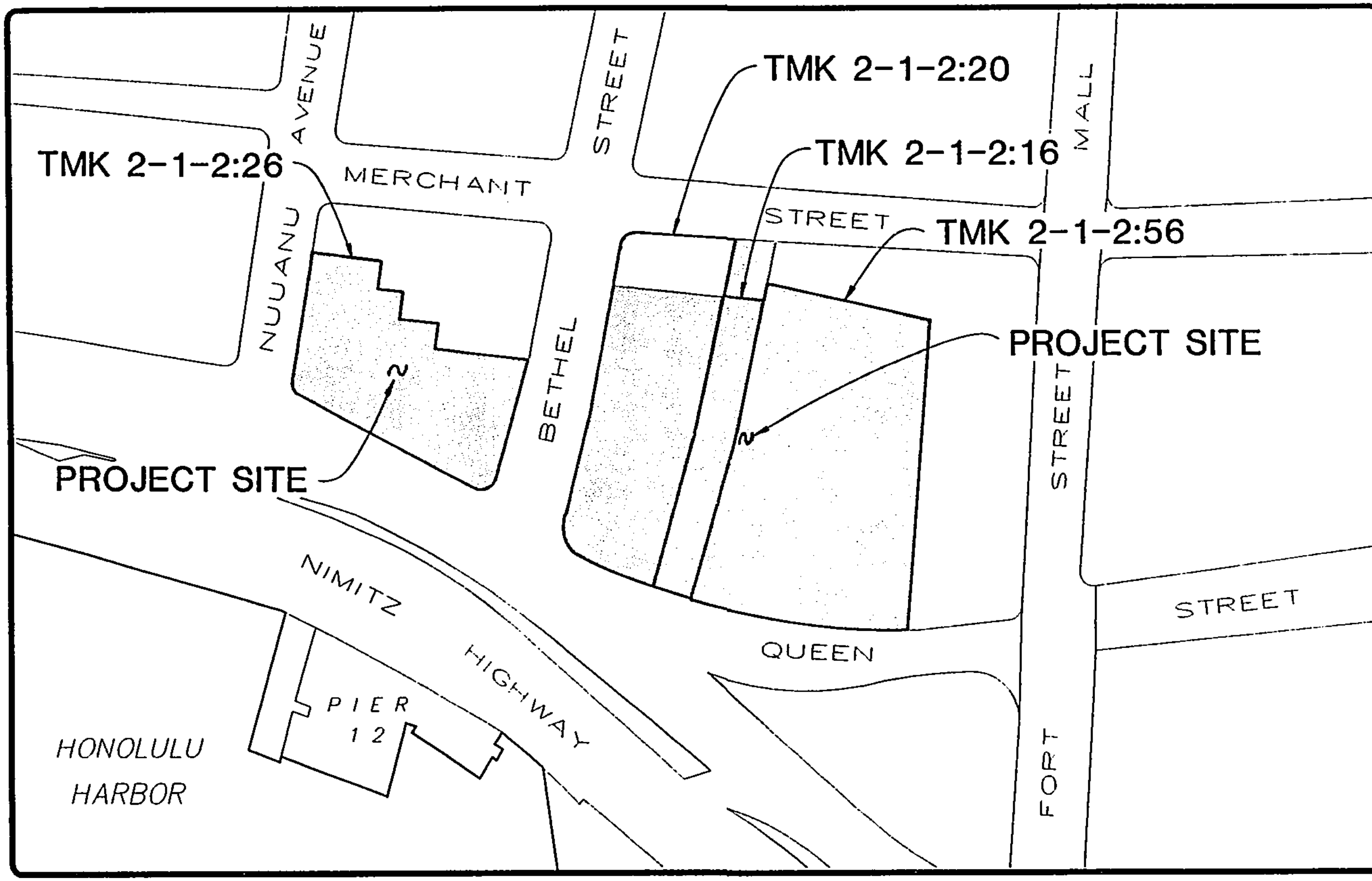
KAAHUMANU PARKING STRUCTURE REDEVELOPMENT

City & County of Honolulu
Department of Housing & Community Development
- and -
BEAM Venture

Project Site

Figure 1-1
LOCATION AND VICINITY MAP

R. M. TOWILL CORPORATION, AUGUST 1990



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0 50 100 FT.

Figure 1-2
TAX MAP KEY (TMK) LOCATIONS

R. M. TOWILL CORPORATION, AUGUST 1990

at-grade, open-air parking lot which accommodates 51 cars for City offices in the adjacent District Court Building. Parcels 16, 56, and part of 20 have been improved with the 3-level Kaahumanu Parking Garage, which houses 411 City-owned parking stalls. The garage is generally used to its full capacity by serving many of the downtown businesses during peak hours on weekdays. The portion of Parcel 20 on which the Melcher's Building is located is not intended to be incorporated into the project except for allowable floor area calculation purposes. Once construction has begun, the Melcher's Building site will be detached from the project.

The project is partially situated within the Chinatown Special District and entirely within the Merchant Street Historic District, which are under the joint purview of the City and County of Honolulu and State of Hawaii (See Figure 1-3). Prior to 1987, only a portion of Parcel 26, the District Court Parking Lot, was included within the Chinatown Historic District boundary. *Since then, however, the City has expanded the boundary under the 1988* Ordinance #89-53 to include the entire Parcel 26, as well as part of Parcel 20 (where the Melcher's Building is situated) and Parcel 19 (the Bouslog Building), in addition to other parcels located mauka of Merchant Street. The special district boundary partially overlaps with that of the Merchant Street Historic District which is bounded by King Street to the north, Fort Street Mall to the east, Queen Street/Nimitz Highway to the south, and Nuuanu·Avenue to the west. All four parcels of the project site fall completely within this boundary. Both districts possess significant historic value, thus, special controls exist for each regarding the design and construction of projects within their boundaries. These controls have been recognized in the appropriate sections of this document.

Three of the four parcels (16, 20, and 26) are owned by the City. Parcel 56 and a small unnumbered parcel (see pg. 3-30, parcel listings) are owned by the State. The City has negotiated a land exchange with the State including these parcels. The transaction is pending before the Honolulu City Council.

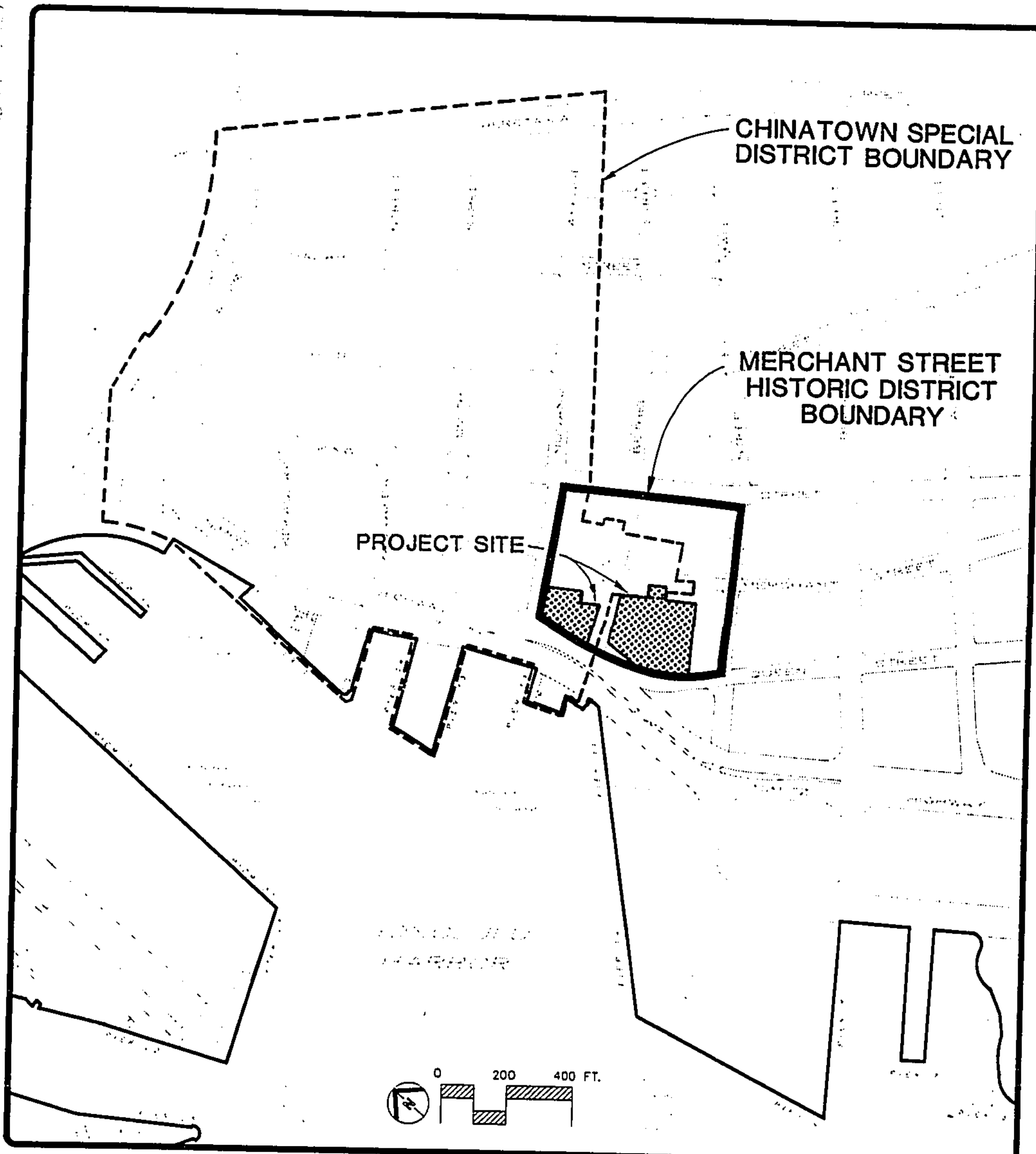

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Figure 1-3
CHINATOWN SPECIAL DISTRICT AND MERCHANT STREET HISTORIC DISTRICT
R. M. TOWILL CORPORATION, AUGUST 1990

SECTION 2

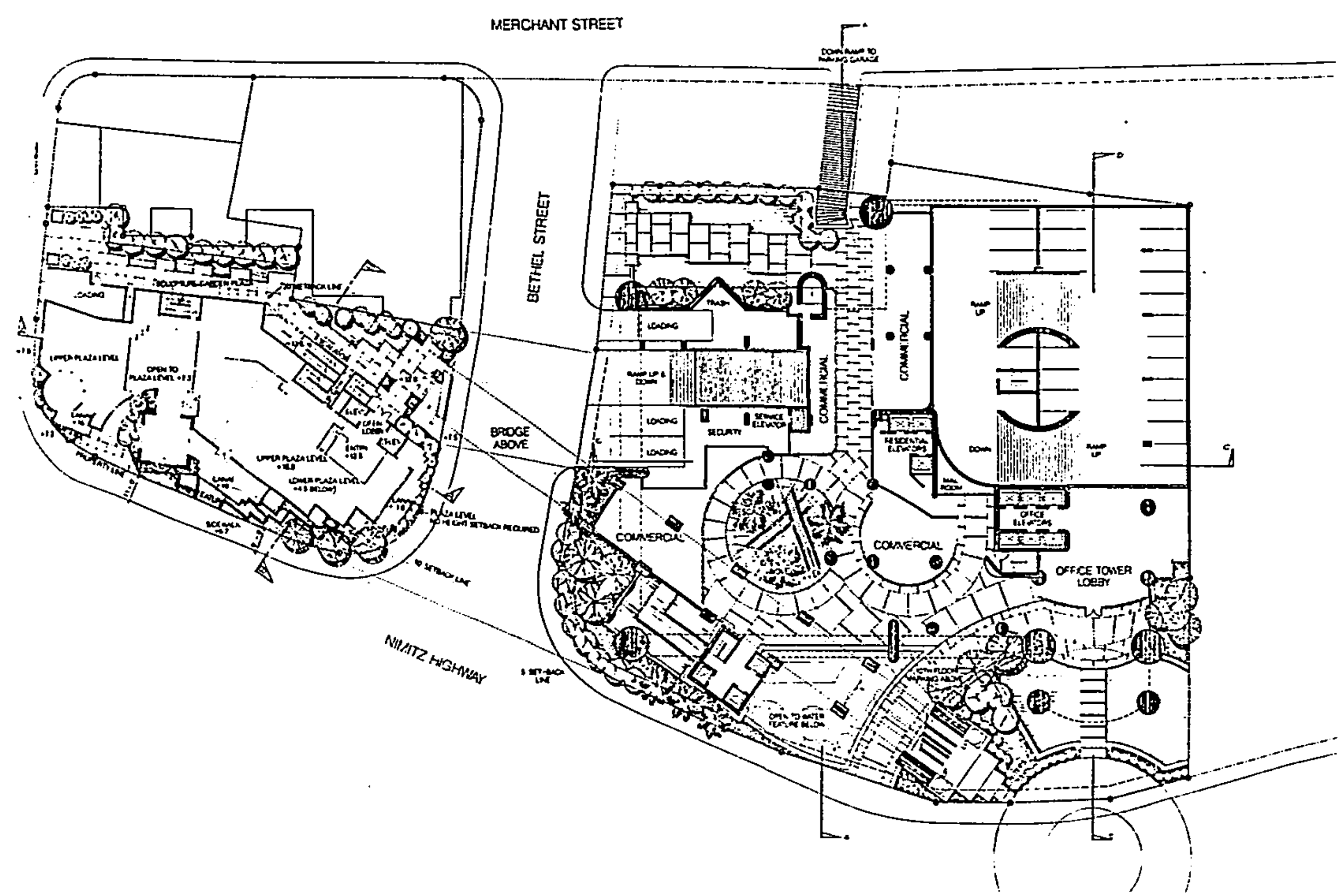
DESCRIPTION OF PROPOSED ACTION

2.1 OVERVIEW

The project area is influenced by the Chinatown Special District, and the Merchant Street Historic District. Both districts lie on the south side of the Primary Urban Center of Honolulu on the Island of Oahu. The project will utilize four parcels which total approximately 80,884 square feet (s.f.) in land area, and is proposed to contain a project with a total floor area of about 492,000 s.f. Figure 2-1 illustrates the general design concept of the ground floor entry or Plaza level of the complex. Envisioned as a mixed-use, multi-tower development, the project will combine a downtown hotel/condominium, a first-class office tower and a commercial plaza with retail shops and restaurants. The buildings will be connected by a bridge over Bethel Street at the second level for pedestrian movement. The project will enhance pedestrian and community activities by providing pedestrian links to Fort Street Mall, Amfac Triangle Park and Merchant Square, and open spaces which will encourage pedestrian movement on the site.

2.2 DEVELOPMENT CONCEPT

The Kaahumanu site in its current condition is underutilized. Although it is one of the busiest parking facilities in the Downtown area, the City and County of Honolulu foresees a greater economic potential and viability in redeveloping such prime real estate for other uses. The overall development concept for the Kaahumanu Parking Structure redevelopment is a high quality urban complex combining residential, office, and commercial uses which will further the economic revitalization of downtown Honolulu. Figures 2-2 through 2-5 provide views of Harbor Court from four directions which will lie on the larger, eastern portion of the project site. Elevation A shows the complex as viewed from Nimitz Highway, Elevation B from Bethel Street, Elevation C from Merchant Street, and Elevation D from Fort Street Mall. The "stairstepped" or tiered levels of the elevations relate to the "Water Tower" or residential component of the project as described in the following section.



Source: Lacayo Architects, 1990

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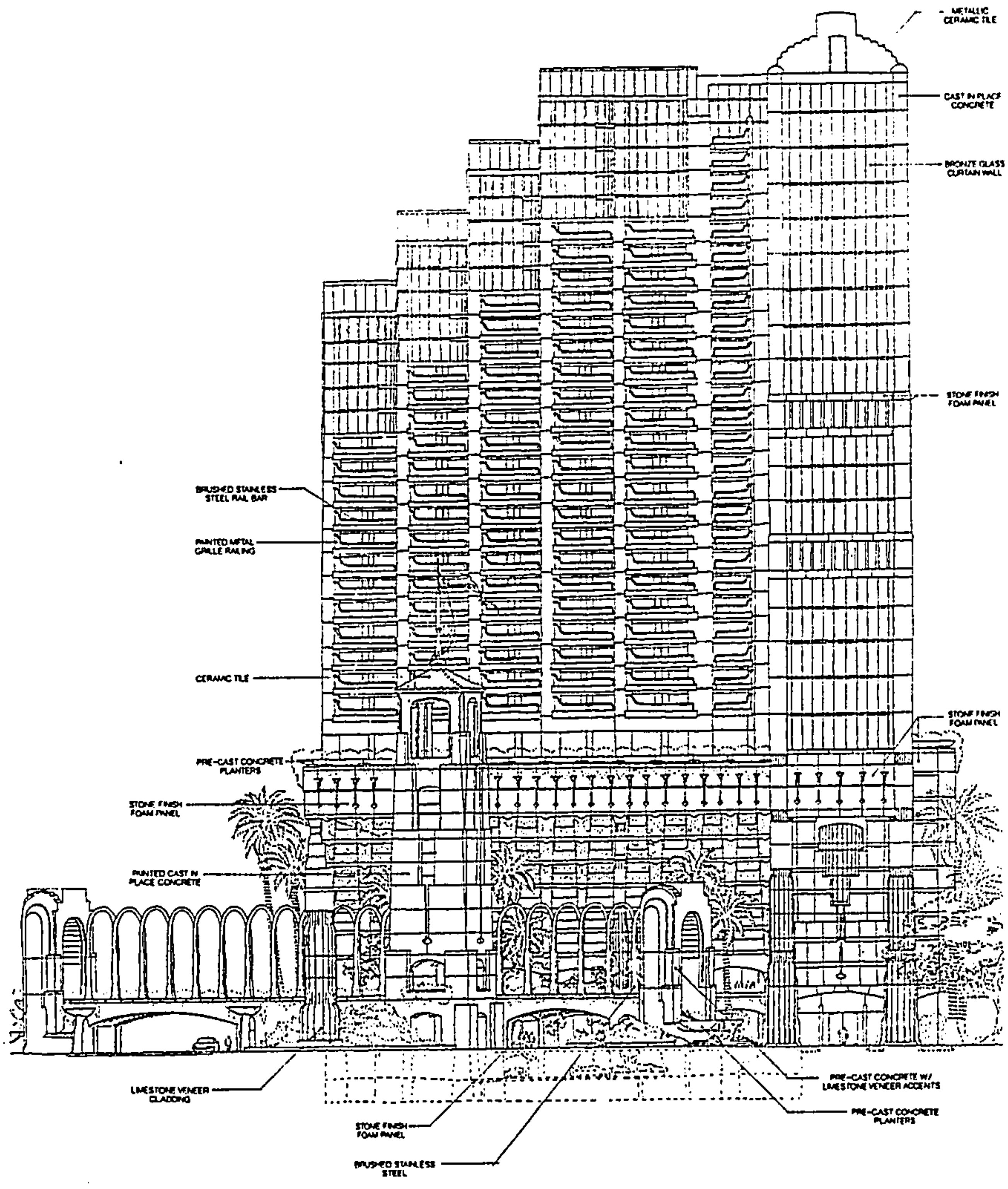
Not to Scale

Figure 2-1
PLAZA LEVEL SITE PLAN

R. M. TOWILL CORPORATION, MARCH 1990



Source: Lacayo Architects, 1990

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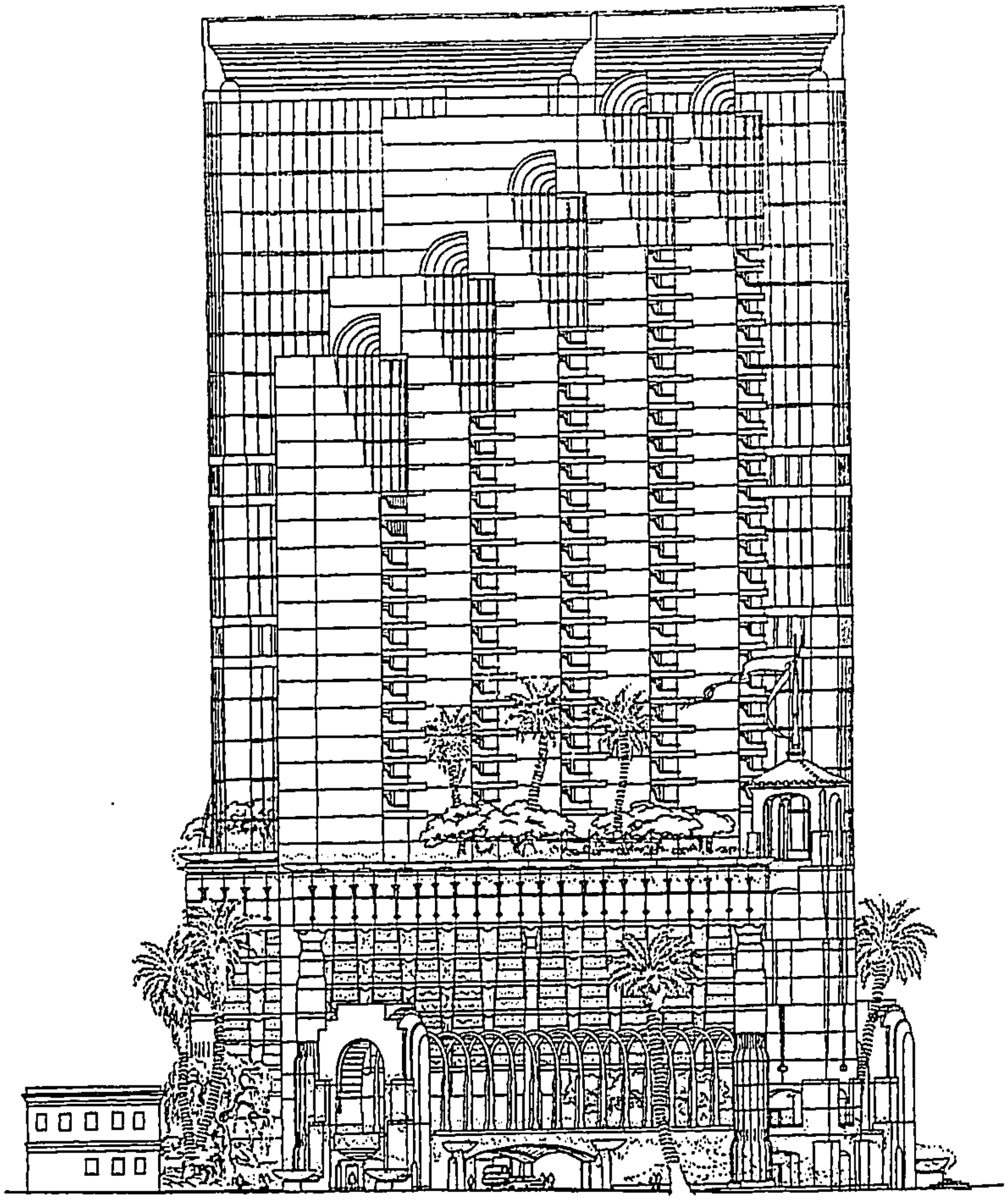
Figure 2-2

HARBOR COURT - ELEVATION A
(As seen from Nimitz Highway)

R. M. TOWILL CORPORATION, AUGUST 1990



Source: Lacayo Architects, 1990

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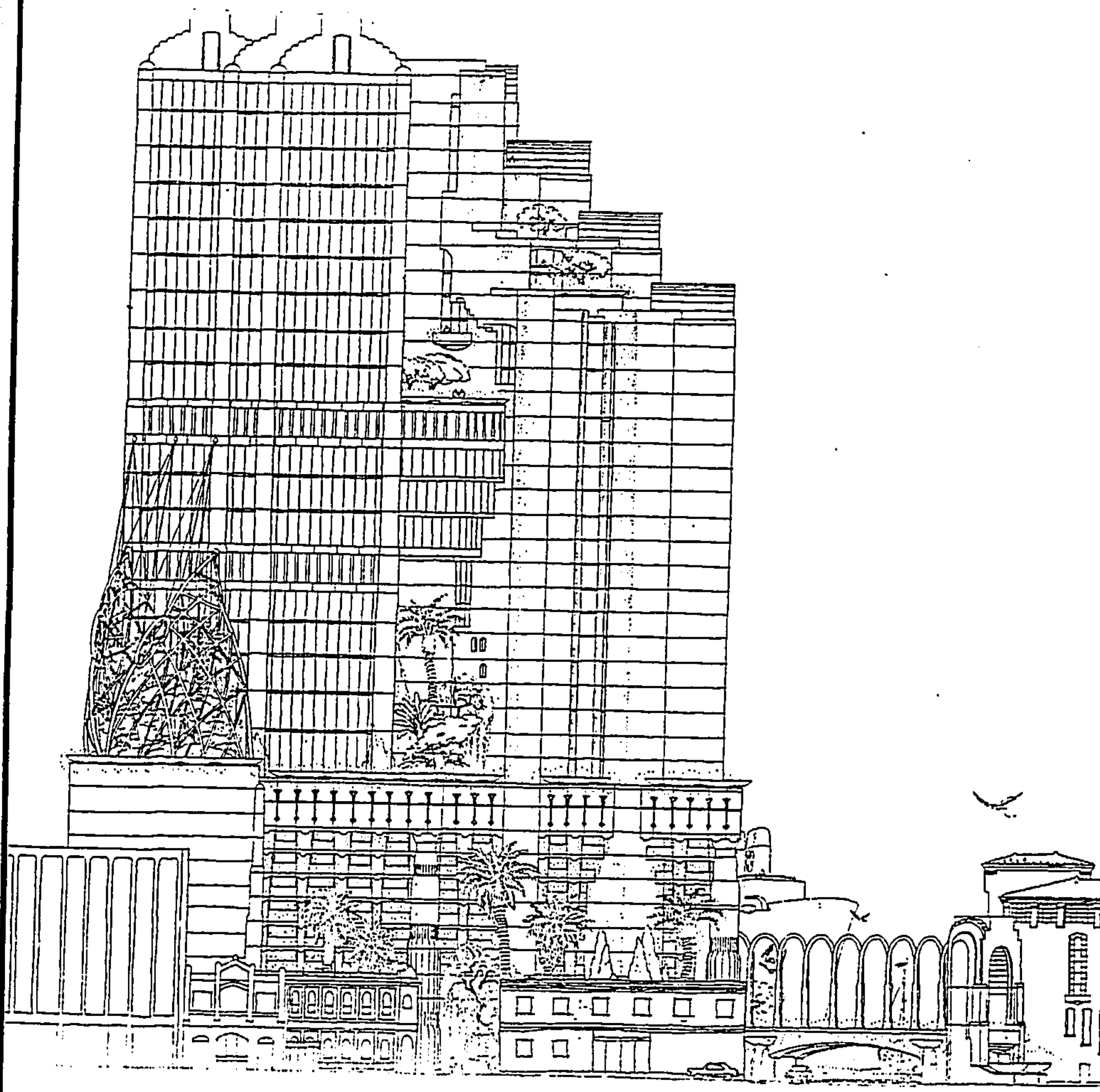
Figure 2-3
HARBOR COURT - ELEVATION B
(As seen from Bethel Street)

R. M. TOWILL CORPORATION, AUGUST 1990



Source: Lacayo Architects, 1990

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Figure 2-4
HARBOR COURT - ELEVATION C
(As seen from Merchant Street)

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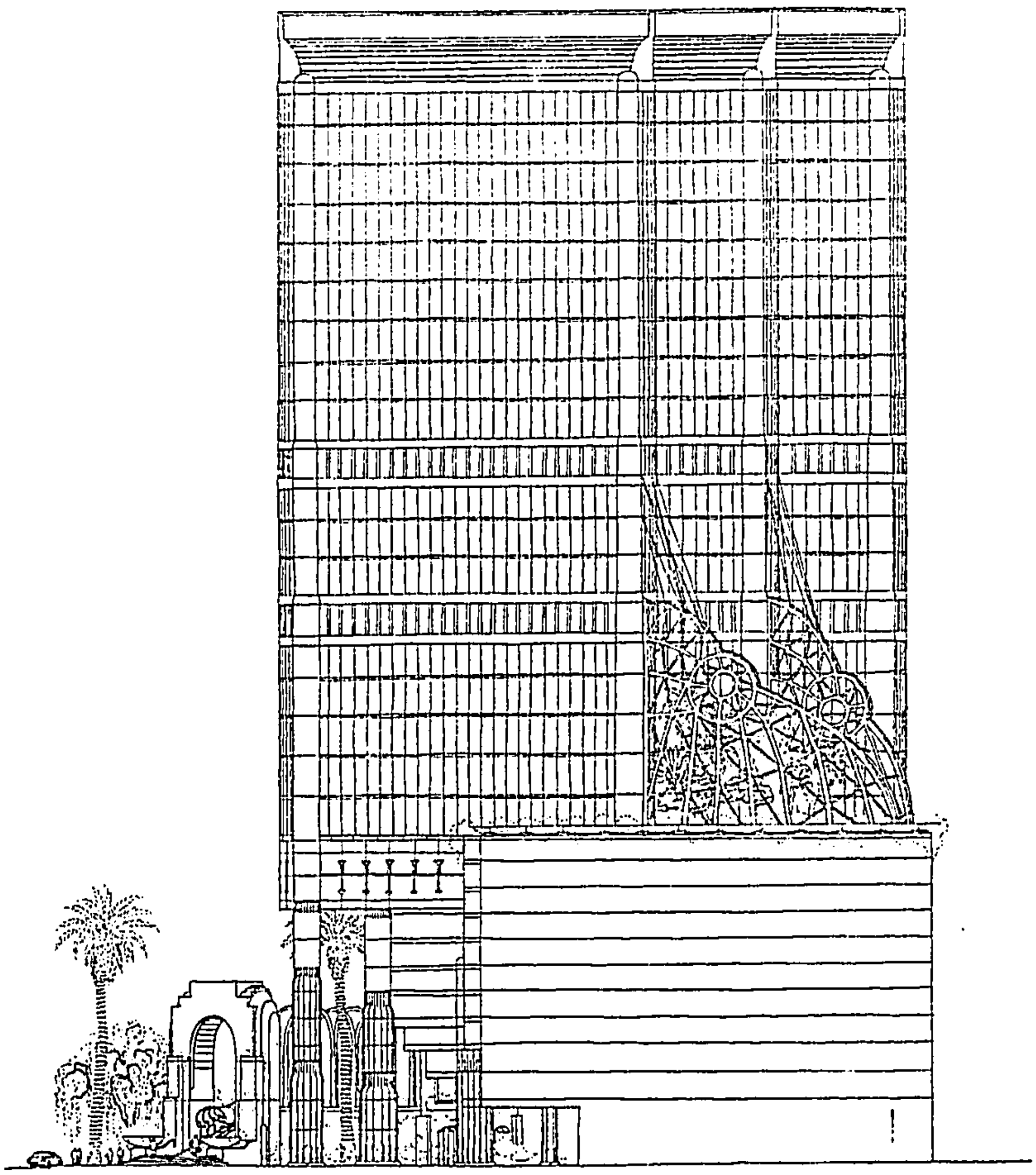

Source: Lacayo Architects, 1990

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Figure 2–5
HARBOR COURT - ELEVATION D
(As seen from Fort Street Mall)

R. M. TOWILL CORPORATION, AUGUST 1990

Facing Nimitz Highway, the site is located within the historic Merchant Square area and is part of the Downtown Financial District. The project site has commanding views of Honolulu Harbor, the Aloha Tower complex, and Piers 10 and 11, the preferred berths for large passenger ships. Figure 2-6 provides an artist's rendering of the proposed development, facing Mauka-Ewa, as it relates to the existing environment. In the foreground are Nimitz Highway from Fort Street Mall, and part of Honolulu Harbor, and in the background are portions of the existing downtown skyline.

2.3 PROPOSED USES AND ACTIVITIES

The development has been planned as a mixed use project, combining retail commercial operations with a 19-story office tower, 28-story condominium apartment tower, and a 6-story office/commercial mixed use building. The following sections include descriptions of the four major components in the complex. The components have been designed to function independently, while benefiting from the others' presence. A consistent architectural scheme will ensure sensitivity to details and finishes in keeping with the design of surrounding structures, historic and contemporary alike.

2.3.1 The Promenade at Harbor Court

The "Promenade" is planned as a two-level shopping galleria providing convenient shopping, specialty retail, and restaurant services for office occupants and casual visitors. The "Promenade" was conceived of as a refreshing, attractive place to gather, with landscaping, water features and shaded seating areas. Activity will be encouraged by special events, dramatic night lighting, and by sheltered sidewalk cafe-style dining. In all, 32,000 s.f. of leasable space will be created for the convenience of the tower occupants and visitors.

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Source: Lacayo Architects, 1990

Figure 2-6
PROPOSED
MAUKA-EWA PERSPECTIVE
FROM NIMITZ HIGHWAY

R. M. TOWILL CORPORATION, AUGUST 1990

2.3.2 Water Tower at Harbor Court

Investor owners of the condominium apartments in the "Water Tower" will have the opportunity to dedicate their apartment to the hotel operation, which will be known as "The Honolulu Hotel at Harbor Court". The apartments will be "divisible", allowing for use as a one bedroom apartment and a hotel room, virtually doubling the potential number of hotel rooms and suites. The "Water Tower" will provide 120 luxury two-bedroom, two bath, hotel-condominium apartments on 28 floors. The tower will have about 216,500 s.f. of space. Typically, there will be four two-bedroom/two-bath apartments on each floor. Sizes for the units will vary from 1,257 s.f. to 1,665 s.f. of living area, with an average of approximately 1,356 s.f. of living area per unit. Table 2-1 summarizes the 10 types of design layouts which will be offered to prospective owners. Apartment prices will average about $690 per s.f., which is competitive in the current market.

TABLE 2-1

HARBOR COURT - APARTMENT TYPES AND SIZES

Designation	Type	No.	Living Area	Balcony	Total
A	2BR, 2B	23	1,345 sf	311 sf	1,656 sf
B	2BR, 2B	23	1,257 sf	183 sf	1,440 sf
C	2BR, 2B	19	1,257 sf	183 sf	1,440 sf
D	2BR, 2B	16	1,257 sf	183 sf	1,440 sf
E	2BR, 2B	14	1,474 sf	183 sf	1,440 sf
PH-A	2BR, 2B	5	1,665 sf	0	1,665 sf
PH-B	2BR, 2B	5	1,440 sf	0	1,440 sf
PH-C	2BR, 2B	5	1,440 sf	0	1,440 sf
PH-D	2BR, 2B	5	1,440 sf	0	1,440 sf
PH-E	2BR, 2B	5	1,657 sf	0	1,657 sf
TOTAL # OF UNITS		120			

2.3.3 Pier Tower at Harbor Court

The "Pier Tower" will add approximately 200,000 s.f. of first-class office space to the downtown office inventory. Each of the 19 floors will typically consist of approximately 10,500 gross s.f. of space. Hawaiiana Management Company will operate the "Pier Tower" by providing the janitorial and maintenance services to the building, and Coldwell Banker Commercial will handle the sale of office and retail space as the developer's leasing agent. Rents will be $2.65 per s.f., which represents the expected market rates at the time of completion in September 1993.

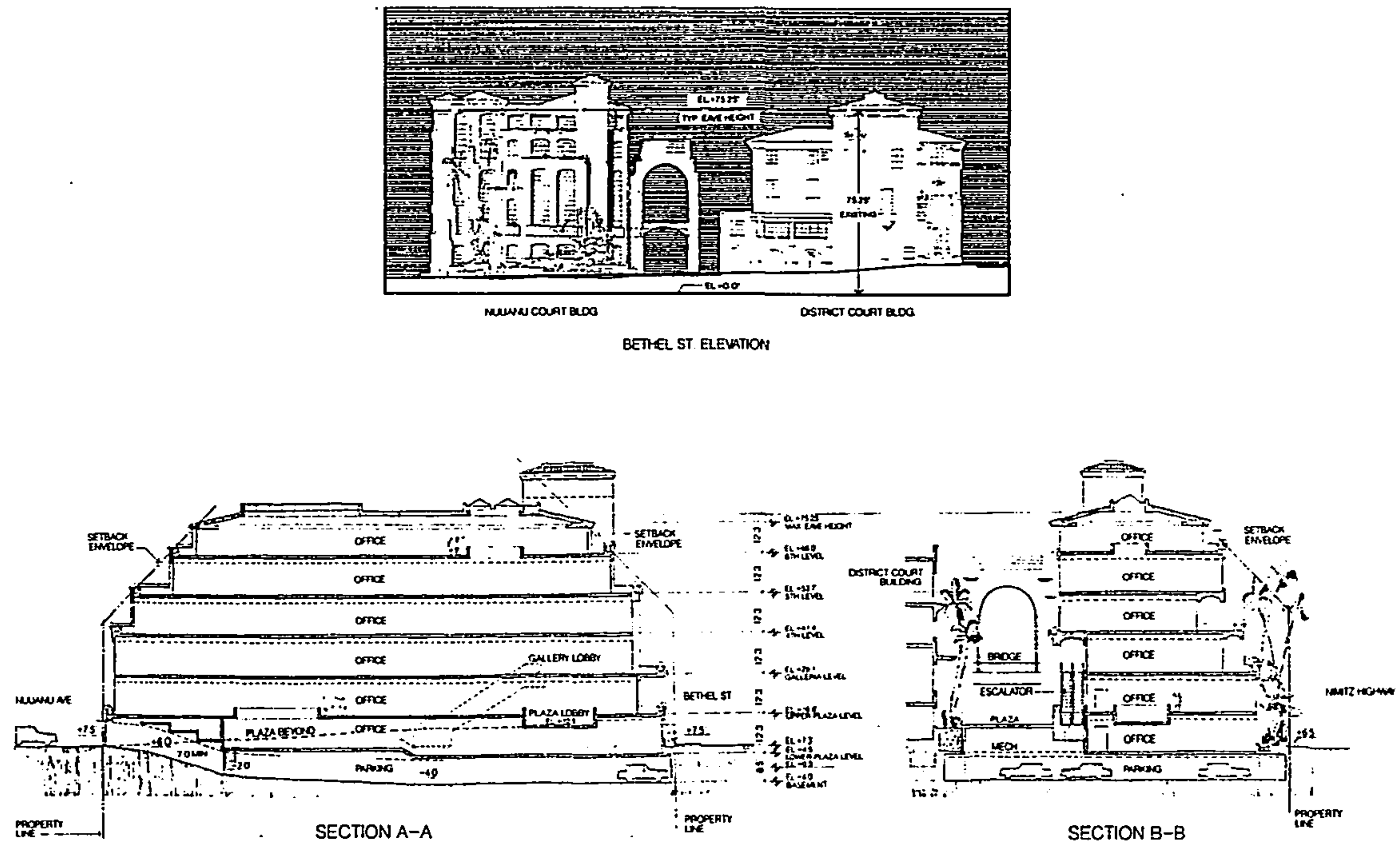
2.3.4 Nuuanu Court

Located on the District Court Parking Lot portion of the site, this six-story building will be occupied by office commercial activities. In addition, 30 parking stalls will be provided below street level. The building will have a total of 41,240 s.f. and will be sold or leased to business operators in a "loft" condition to allow for finishing as offices, residential apartments or a combination thereof. With commanding views of the harbor and the convenience of shops and restaurants in a small, exclusive building, this will be considered prime space. Figure 2-7 provides four elevations of the Nuuanu Court Building. The architectural design of the building will appear similar to that of the existing District Court Building, ensuring that a unified architectural theme will be achieved.

2.4 DESIGN GUIDELINES

2.4.1 Building Densities and Heights

The project will be in conformance with the maximum building height limitation of 350 feet for BMX-4 zoning. The Base Floor Area Ratio (FAR) for BMX-4 is 4:1, which would result



Source: Lacayo Architects, 1990

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Figure 2-7
NUUANU COURT ELEVATIONS

R. M. TOWILL CORPORATION, AUGUST 1990

in 244,556 s.f. (61,139 X 4 = 244,556 s.f.) for the Kaahumanu Garage portion of the project. The Maximum allowable FAR of 7.5:1, resulting in 458,542 s.f. will be utilized by the project. This 7.5:1 ratio includes open space bonuses.

2.4.2 Building Envelope Guidelines

Of the contiguous street frontage, 50% is required to fall within a 65 degree angle measured from the center line of the street. The developer will provide for 56% of the street frontage to be within the 65 degree angle.

2.4.3 Parking

Four hundred sixty-two (462) parking spaces are required to be dedicated to the City and County of Honolulu. A total of 1,055 spaces will be provided. The City will control 462 spaces, the Residential component will own 120 spaces (one per unit), and the Commercial components will be provided the balance of 473 spaces. In addition, 30 spaces will be located below grade at the Nuuanu Court Building.

2.4.4 Park Dedication Guidelines

For residential use, 110 s.f. per unit or 13,200 total s.f. is required. The developer will provide 10,000 s.f. of ground level passive park, in addition to improvements equivalent to 3,200 s.f. An active landscaped recreation deck will be provided atop the parking structure.

2.5 PROJECT SCHEDULE

Demolition is expected to begin about February 1991. Construction activities will continue through project completion in March 1993.

2.6 PROJECT/DEVELOPMENT COST

Table 2-2 summarizes the breakdown of development costs, which total about $196.4 million to date. The total costs for Development Rights Acquisition are approximately

$29.2 million. Costs for Professional Fees are about $7.5 million, and Construction costs are about $117 million. Management, Marketing and Sales costs total about $23.3 million, while Financing costs are approximately $19.3 million.

TABLE 2-2

PROJECT DEVELOPMENT BUDGET

ACCOUNT NAME	PROJECT TOTAL
DEVELOPMENT RIGHTS AND LAND RELATED COSTS	$ 29,170,300
PROFESSIONAL FEES	$ 7,418,000
CONSTRUCTION	117,053,700
MANAGEMENT, MARKETING AND SALES	23,374,200
FINANCING COSTS	19,335,000
TOTAL DEVELOPMENT COSTS	$196,351,200

SECTION 3

DESCRIPTION OF THE ENVIRONMENT, IMPACTS & MITIGATION MEASURES

3.1 OVERVIEW

Demolition and construction of the project is anticipated to begin about February 1991 and continue through about March 1993. The redevelopment of the project area is expected to create a number of short- and/or long-term impacts to the physical and socio-economic environments, and infrastructure systems. First, the project is not expected to result in any significant adverse long-range impacts on the physical environment. Impacts will generally occur during the short-range demolition and construction periods. Secondly, elements within the socio-economic environment can expect to encounter both negative short-term, and positive long-term effects. Adverse effects will be felt during short-term demolition and construction. Positive effects will result from the long-term operational phases. Finally, infrastructure systems and services will probably be impacted in both the short- and long-term. The following sections provide further discussion on the probable impacts and appropriate mitigation measures related to the project.

3.2 PHYSICAL ENVIRONMENT

3.2.1 Climate

The climate of the project area is similar to that of other coastal areas in urban Honolulu. Annual rainfall averages 24 inches in the downtown area. The wet season is usually November to March, while the dry season is usually May to September. The prevailing winds throughout the year are the cooling northeasterly trade winds, although their average frequency may vary from more than 90 percent during the summer to 50 percent during the winter. On a year-round average, Honolulu's relative humidity remains between 60 and 80 percent (University of Hawaii, 1984). At the Honolulu International Airport, average annual minimum and maximum temperatures are 70 degrees Fahrenheit (°F) and 84°F, respectively. The extreme minimum temperature was 53°F in February

1983, and the extreme maximum temperature was 94°F in September 1988. Temperatures in the Downtown area may be slightly higher than those at the airport due to urban effects. (Neal, 1990)

A. Impacts and Mitigation Measures

It is possible that the larger, denser components of the project may obstruct the existing free-flow of cool tradewind breezes from reaching naturally ventilated buildings in the area. Those structures that do not have an enclosed air conditioning system may experience such a decrease in cool air flow. Generally, however, these periods of discomfort will occur only during the warmer, summer months, or during intervals of southwesterly "Kona" winds.

3.2.2 Flora and Fauna

There is no evidence of endangered flora or fauna on or near the project site as the site has been completely urbanized.

A. Impact and Mitigation Measures

No negative impact to flora or fauna is expected to occur with implementation of the project, as there is no evidence of endangered species of either category. Positive improvements, however, are anticipated as a result of landscaping which will be sensitive to the existing environment, and in conformance with the City's park dedication requirements.

3.2.3 Topography, Soils and Geology

Surface elevations shown on City and County of Honolulu contour maps indicate site elevations of about 10 feet or less from the Merchant Street side of the site to its seaward boundary. Thus, the project site is relatively flat, and it is not subject to hazardous landslides, falling rocks or other unstable conditions.

The soil type of the project site is generally of the Ewa series. This type of soil is found in nearly level to moderately sloping areas, as characterized by the existing topography (see Figure 3-1). The rate of runoff is slow, and the risk of erosion is minimal. Directly below the project's makai boundary is Fill Land soil type, which consists of dredged or excavated material. Fill Land is used for urban development such as airports, residential areas, and industrial facilities (Source: U.S. Department of Agriculture Soil Survey, 1972).

Ernest K. Hirata and Associates, Inc., conducted exploratory test borings in February and March 1990. (See Figure 3-2 for boring locations.)

The subsurface soil conditions were found to be relatively uniform for all six borings located throughout the site. The surface soil generally consisted of dark brown silty sand and sandy silt with gravel and coral fragments. The surface soil was in a dense to medium dense condition, and extended to depths ranging from 2.5 to 9.5 feet.

Underlying the surface soils was medium hard coral. The coral stratum was encountered at elevations ranging from +8 at boring B4 to -3 at boring B6. The coral gradually graded to tan silty sand below depths of 31 to 40 feet. The silty sand was in a medium dense condition, and extended to depths ranging from 68 to 78 feet.

Alluvium, consisting of brown silty gravel, as well as clayey and sandy silt, was encountered beneath the tan silty sand. The alluvial deposits were stiff to medium stiff, and extended to the maximum depths drilled.

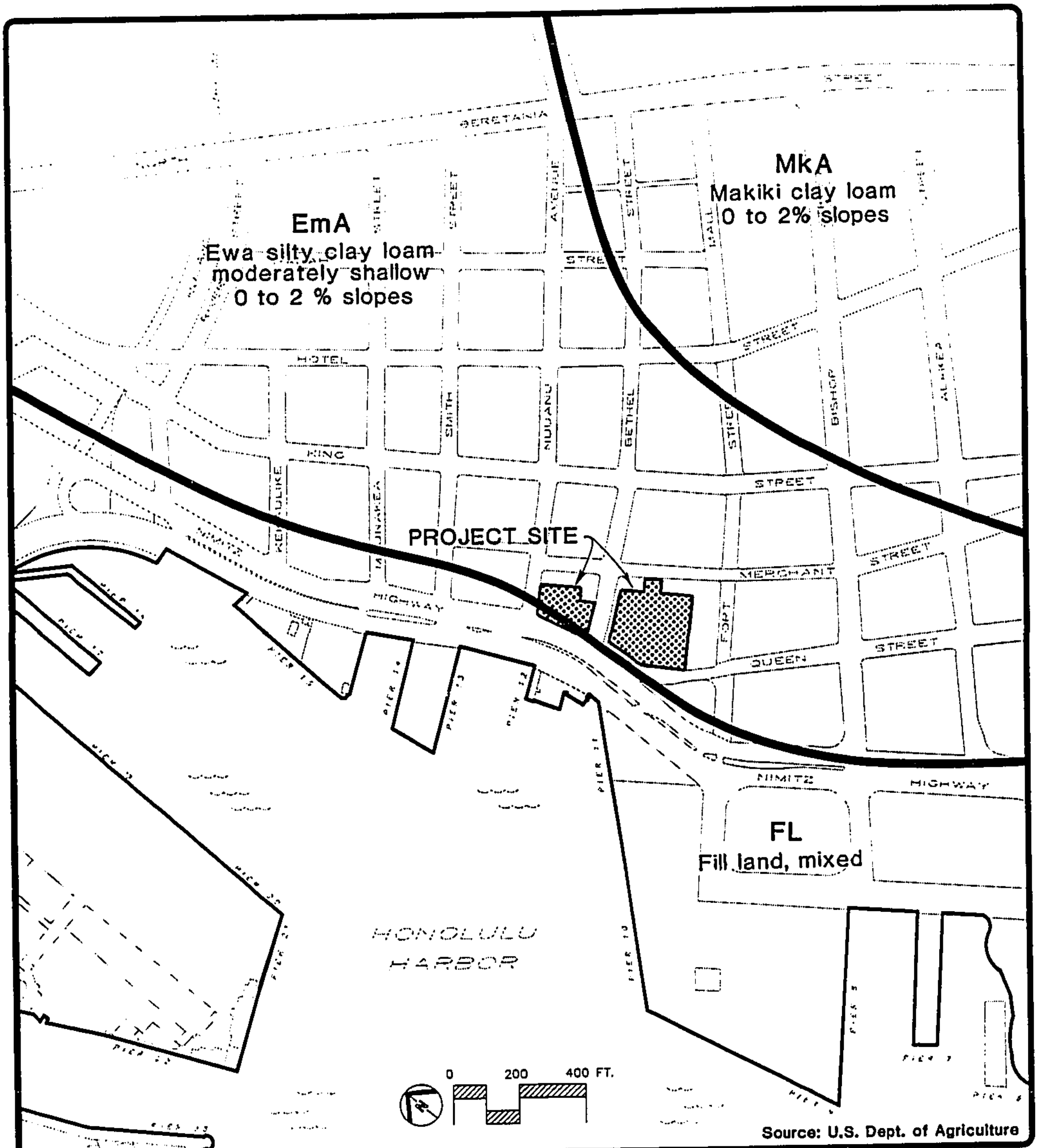

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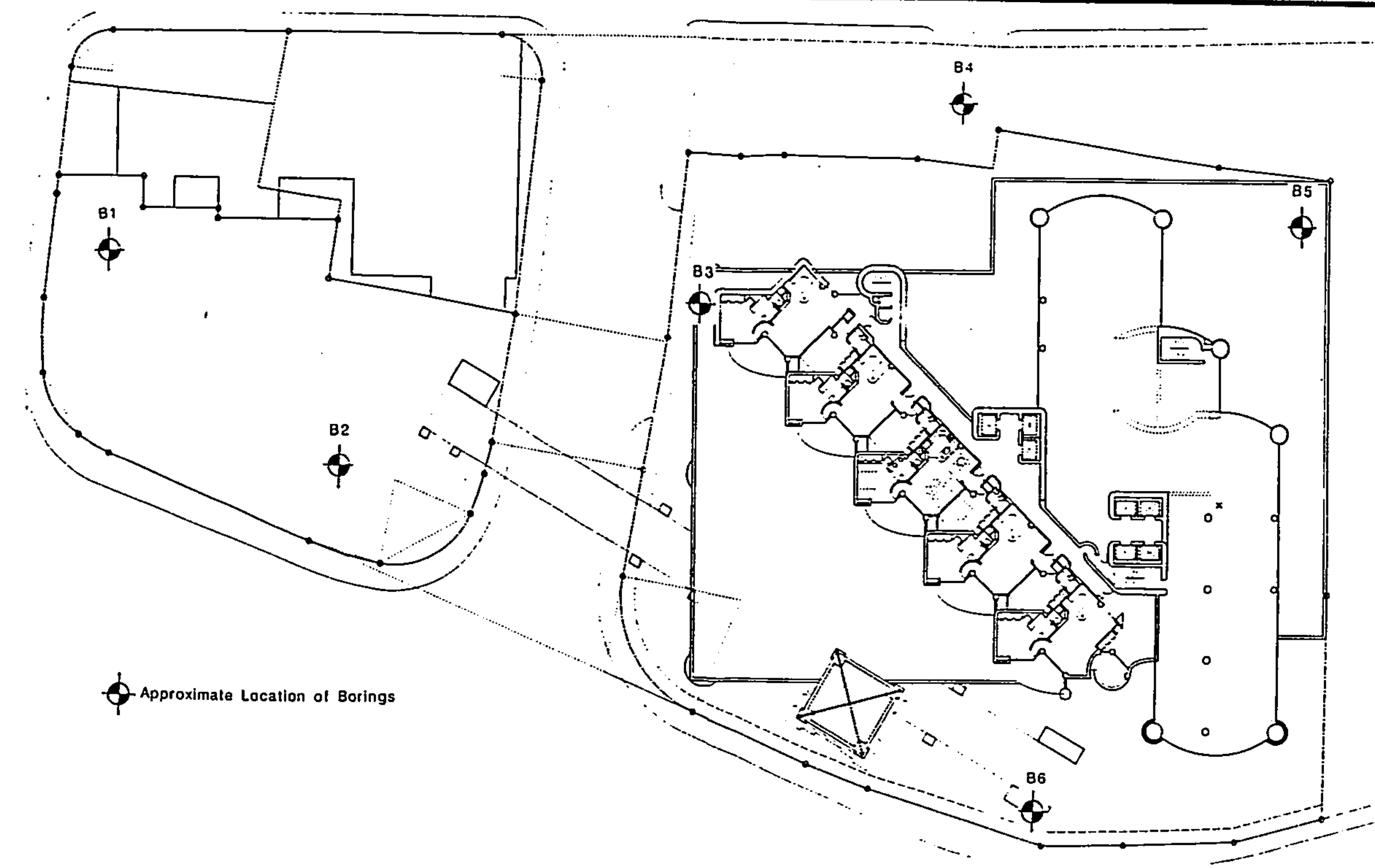
Figure 3-1
SOILS MAP

R. M. TOWILL CORPORATION, AUGUST 1990



Source: Ernest K. Hirata and Associates, Inc., 1990

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Figure 3-2
LOCATIONS OF 1990 BORINGS

R. M. TOWILL CORPORATION, AUGUST 1990

Groundwater was encountered in all our borings at elevations ranging from -3.6 to -6.2. A summary of our groundwater readings is presented on Plate A24.

Based on these borings, as well as previous work done by Ernest K. Hirata and Associates in the project area, it is suggested that mat foundations are feasible for support of the proposed structures, thus, pile foundations are not anticipated.

Geologically, the site is located on the Honolulu coastal plain, a broad sedimentary plain, in places overlain by tuff cones and ash deposits. The plain contains numerous artificially filled marshes. At the shore, earthy and calcareous (calcium or lime) sediments, collectively termed caprock, are at least 1,000 feet thick. This caprock lies over the Koolau aquifer (Takasaki, 1977). Deposits in the caprock consist of terrestrial alluvium, marine sediments, calcareous reef deposits, pyroclastic rocks of the Honolulu volcanic series, and weathered basalt, with the first three predominant. The deposits in the caprock vary in their permeability, but the net collective permeability of the layer is low in comparison to the water-bearing basalt below the caprock (Visher and Mink, 1964).

A. Impacts and Mitigation Measures

Adverse impacts to the topography, soil and geology are not expected as a result of the project. Water samples obtained from the soil boring along Nimitz Highway were forwarded to Chemteck Analytical Laboratories for hydrocarbon contamination testing. Analyses were conducted for Total Petroleum Hydrocarbon (TPH) which involves gasoline, kerosene, diesel and fuel oil, and for BTEX which includes the harmful petroleum additives, Benzene, Toluene, Ethylbenzene and Xylene. Results from both tests did not detect contamination.

3.2.4 Hydrology and Drainage

There are no surface water bodies within the project site. The closest water features are the Nuuanu Stream and Honolulu Harbor. Beneath Honolulu, however, are significant groundwater resources. An extensive basal aquifer containing large supplies of fresh water underlies all of southern Oahu. The coastal caprock retards the seaward flow of groundwater and results in a higher water table in comparison with more permeable water-bearing lava flows closer to the Koolau Range.

The downtown area has drainage systems on Nuuanu Avenue, and Richards, Alakea, Bishop, Fort, Queen, Bethel, Smith, Maunakea and Kekaulike Streets, which drain into the Nuuanu Stream. Some of the drainage systems in the planning area have not been designed to the current City and County standards, and would not provide adequate drainage protection during heavy flooding. However, the analysis of the existing drainage system conducted by R. M. Towill Corporation indicates that it is adequate for the project. A follow-up study will be conducted to assess the drainage conditions once the project design plans are finalized.

A. Impacts and Mitigation Measures

During the short-term construction period, storm runoff may carry increased amounts of sediment into the storm drain system as a result of erosion from newly exposed land. This runoff could potentially impact the water quality of nearshore waters in the area. Adherence to the requirements of the Grading Ordinance should adequately mitigate this impact.

Once construction is completed, there would be no significant increase in storm runoff from the newly developed site. New landscaping would aid in preventing soil erosion and sediment runoff, while enhancing the aesthetic qualities of the complex.

3.2.5 Natural Hazards

3.2.5.1 Tsunami Hazard

According to the Civil Defense "Tsunami Inundation Maps", the project site is not located within the vulnerable inundation area. The inundation zone includes the area which is makai of Ala Moana Boulevard/Nimitz Highway. (Hawaiian Telephone Company, 1990).

A. Impacts and Mitigation Measures

The site is not expected to encounter significant risk from tsunami activity.

3.2.5.2 Flood Hazard

According to the Flood Insurance Rate Maps (FIRM) for the City and County of Honolulu, the project site is located in Zone X, or "Other Areas" determined to be outside of the 500-year flood zone as designated by the Federal Emergency Management Agency (FEMA) in September 1987.

A. Impacts and Mitigation Measures

The project location is not expected to be susceptible to flood hazards.

3.2.5.3 Earthquake Hazard

All of the Island of Oahu is rated as seismic Zone 1, according to standards established in the 1985 Uniform Building Code (UBC). There are four zones (1 though 4) in this range, with Zone 1 as the rating given to areas least prone and Zone 4 as the most prone to earthquake hazards. It has been proposed to redesignate Oahu as Zone 2a. This proposal has been in the UBC, and will be officially impiemented in October 1990. As such, the project will be designed to structural standards established for buildings in Zone 2a areas.

3.2.6 Nearshore Activities

The project site overlooks a number of piers within Honolulu's working harbor. Situated directly makai of Nimitz Highway, Pier 12 is closest in proximity to the site. Piers 8 through 11 are just Diamond Head of Pier 12. It is here that the State plans to create what will be known as the Aloha Tower Festival Marketplace, which will be the newest component of downtown's retail space inventory. It will be a key feature of the State's Waterfront Redevelopment Master Plan, attracting many Honolulu residents and visitors to its numerous eateries, amusement facilities, museums and shops. Scheduled to open in 1993, the Festival Marketplace will be part of a 2 million s.f. waterfront complex.

Cruise ships operate from Piers 8 through 11 within the Aloha Tower complex. Two vessels, the S.S. Independence and S.S. Constitution, have been operating weekly throughout the islands for several years. Both ships currently accommodate approximately 80,000 passengers per year. Other maritime commercial activities include dinner cruises and commercial fishing. Two dinner cruise ships, the Alii Kai and Rella Mae, operating out of the harbor, are berthed further Diamond Head from Pier 12. The Alii Kai is berthed at Pier 5, while the Rella Mae is berthed alongside the Hawaii Maritime Museum at Pier 7. The combined number of passengers for these operations is estimated to exceed 500,000 annually.

Piers 13 and 14 comprise various maritime industrial land uses. These activities include tug and barge berthing, a maritime oil spill response facility, auto parking and a newly constructed ice plant for servicing the commercial fishing industry.

There are also a number of existing public facilities located within the nearshore area. The Hawaiian Electric Company (HECO) power plant is on Nimitz Highway, about 2-1/2 blocks Diamond Head from the project site. Irwin Park, which contains public metered parking, is located on the neighboring parcel of the power plant. Public parking is also available at Piers 5 and 6 and at the Aloha Tower Complex. The Hawaii Maritime Museum, located at Pier 7, offers a variety of exhibits which highlight the State's maritime history. It is also the permanent home for the Falls of Clyde and the Ho'kulea.

A. Impacts and Mitigation Measures

The project will be developed during the same period as the Festival Marketplace (between 1991 and 1993). Both development programs offer the opportunity to complement one another in terms of design, market and commercial uses. The Kaahumanu redevelopment will provide about 225 (based on the 1.85 downtown residential household factor, as determined by City and County of Honolulu, Department of General Planning) new downtown residents who would enjoy the Marketplace as an after 5 p.m. activity.

3.2.7 Air Quality

An Air Quality Impact Study was prepared by Barry Neal & Associates in February 1990 to describe the existing air quality in the project area and to assess the potential short-term and long-term direct and indirect air quality impacts that could potentially result from the redevelopment project. The report also recommends appropriate mitigative measures for these impacts where possible. It should be noted that the study was prepared under the assumption that project construction would be completed by 1992. An updated report which reflects 1993 projections has been conducted and indications from the consultant are that the new calculations do not significantly differ from the 1992 completion assumption. Thus, for the purposes of discussion, 1992 values are being used heretofor. Excerpts from the report are contained in the following sections.

3.2.7.1 Regional and Local Environment

Although large urban areas, such as Honolulu, tend to create their own microclimates, long-term weather data available from Honolulu International Airport located about 4 miles to the northwest is considered at least semi-representative of the project site. The surface winds in Downtown are similar to those recorded at the airport but are deviated and channeled in some areas by the many high-rise buildings.

3.2.7.2 Ambient Air Quality Standards

Ambient concentrations of air pollution are regulated by both state and national ambient air quality standards (AAQS). State AAQS are defined by the Department of Health (DOH) in Chapter 11-59 of the Hawaii Administrative Rules, whereas National AAQS are defined by the Environmental Protection Agency (EPA) in Section 40, Part 50 of the Code of Federal Regulations (CFR). The National AAQS are stated in terms of primary and secondary standards. The primary standards are designed to protect the public health with an "adequate margin of safety". Secondary standards define levels of air quality necessary to protect the public welfare from "any known or anticipated adverse effects of a pollutant". These secondary public welfare impacts may include effects such as decreased visibility, reduced comfort levels, or other potential damage to the natural or man-made environment. Hawaii State AAQS, on the other hand, are stated in terms of a single standard that is designed "to protect public health and welfare and to prevent the significant deterioration of air quality".

3.2.7.3 Existing Air Quality

The present air quality in the project area is mostly affected by air pollutants from natural, industrial, and/or vehicular sources. The State Department of Health (DOH) operates a network of air quality monitoring stations at various locations on Oahu. Air quality measurements was taken in closest proximity to the project site for each of the regulated air pollutants were reviewed for the period 1985 to 1988. Based on these measurements, it appears that the State AAQS for particulates, sulfur dioxide, nitrogen dioxide and lead are currently being met at the project site. The ozone AAQS has not been exceeded in the vicinity since 1985.

Sulfur Dioxide - Measured by DOH at the Campbell Industrial Park (Barbers Point) monitoring station. The measurement showed no exceedances of the state or national 24-hour AAQS for sulfur dioxide during the 4-year period.

Particulate Concentrations - Monitored at the DOH Building in Downtown, approximately 1/2 mile northeast of the project site. No exceedances of the State AAQS were recorded.

PM-10 - (Particulate matter less than 10 microns.) Monitored at the nearest station located at Liliha Street, about 1-1/2 miles north of the project. All of the values were within the national AAQS.

Carbon Monoxide - Monitored by the DOH Building in Downtown, no exceedances of the State 8-hour AAQS were recorded, however, exceedances were recorded for the State 1-hour AAQS during 1985-1987.

Ozone - Measured by the nearest station located at Sand Island, about 1/2 mile southwest of the project site. During 1986 and 1987, there were no exceedances of the State AAQS. Whereas, three exceedances of the State AAQS were recorded in 1985.

Lead - Monitored by the Downtown station, from 1985-1987, the lead concentrations experienced a downward trend, most probably the result of use of unleaded gasoline.

The average quarterly concentrations were near or below the detection limit. No exceedances of the State AAQS have been recorded to date.

A. Impacts

The major short-term air quality impact will be due to project construction and the potential emission of significant amounts of fugitive dust. During construction phases, carbon monoxide and nitrogen oxide emissions from engine exhausts will occur both from on-site construction equipment and from construction workers and equipment traveling to and from the worksite. Uncontrolled fugitive dust emissions from construction activities are estimated to amount to about 1.2 tons per acre per month.

The primary long-term air pollution impact from the project is expected to be due to increased vehicular traffic associated with the project. Redevelopment of the existing parking facility will more than double its present parking capacity. In addition, commercial/retail activities on the site will generate more traffic to and from the parking area and on adjacent streets. The primary concern will be the potential increase in carbon monoxide concentrations along roadways leading to and from the proposed development, and within the parking structure itself.

Table 3-1 represents the estimated worst case 1-hour concentrations of carbon monoxide for three scenarios: 1990, 1992 with project, and 1992 without project.

TABLE 3-1

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

	YEAR/SCENARIO					
	1990/ Present		1992/ Without Project		1992/ With Project	
Roadway Intersection	AM	PM	AM	PM	AM	PM
Bishop at Queen	13.5	17.5	12.2	14.2	14.8	15.8
Bishop at Merchant	17.4	10.0	15.8	9.7	16.6	14.8
Merchant at Bethel	11.4	18.8	11.2	16.4	15.1	19.2
Nimitz at Bethel	20.1	28.4	18.1	24.8	18.5	25.0

Hawaii State AAQS: 10 National AAQS: 40

It is predicted that carbon monoxide concentrations will unavoidably increase at some locations within the project vicinity, but these levels should remain within the national 1-hour AAQS. However, the State AAQS of 10 milligrams per cubic meter (10 mg/m^3) will probably be exceeded at nearby intersections during the current year and either with or without the project during the year 1992.

The predictions for this project are generally about 10 percent to 20 percent higher than without project predictions, except during the afternoon at Bishop and Merchant Streets, where an increase of about 50 percent is predicted due to traffic leaving the proposed parking structure. The afternoon "With Project" predictions at Nimitz Highway and Bethel Street are slightly higher than for "Without Project" predictions although these levels will be slightly lower than the existing levels. Such a decrease would be due to the proposed improvements at this intersection and the replacement of older vehicles with newer models equipped with more efficient exhaust systems.

The estimated worst-case 8-hour concentrations are indicated in Table 3-2. For the 1990 scenario, the estimated worst-case 8-hour carbon monoxide concentration was 14.2 mg/m^3 at the intersection of Nimitz Highway and Bethel Street. Other locations ranged from 8.7 mg/m^3 near Bishop and Merchant Streets to 9.4 mg/m^3 near Merchant and Bethel Streets. The predicted maximum values for the year 1992 without and with project scenarios were 12.4 and 12.4 mg/m^3, respectively; both occurred at the Nimitz Highway/Bethel Street intersection. Other locations were generally in the 7 to 9 mg/m^3 range. Either with or without the project, 1992 concentrations should be about the same or lower than existing concentrations. Comparing the predicted values for the existing case to the AAQS, it appears that the State 8-hour standard may be exceeded at several locations in the project vicinity and that the national 8-hour standard could be exceeded near the Nimitz Highway/Bethel Street intersection. This applies also either without or with the project in 1992.

TABLE 3-2

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

Roadway Intersection		YEAR/SCENARIO 1990/ Present	1992/ w/o Project	1992/ w/Project
Bishop at Queen		8.8	7.1	7.9
Bishop at Merchant		8.7	7.9	8.3
Merchant at Bethel		9.4	8.2	9.6
Nimitz at Bethel		14.2	12.4	12.5
Hawaii State AAQS:	5			
National AAQS:	10			

Some long-term impacts could potentially occur as a result of emissions from power generating facilities supplying the project with electricity and from the burning of waste materials generated by the project. Although quantitative estimates of these impacts were not made, it appears likely that any impacts would be relatively small since such emissions would be less than 1 percent of current Oahu emissions.

B. Mitigation Measures

To effectively mitigate fugitive dust emissions during construction activities, strict compliance with State Air Pollution Control Regulations regarding the establishment of a regular dust-watering program and covering of dirt-hauling trucks will be required. Watering the area twice a day is estimated to reduce dust emissions by up to 50 percent. Paving of the parking areas and establishment of landscaping early in the construction schedule will also help to control dust. Increased vehicular emissions due to disruption of traffic by construction equipment and/or commuting construction workers can be alleviated by moving the equipment and personnel to the site during off-peak traffic hours.

Options available to mitigate traffic related air pollution are to improve roadways, reduce traffic or reduce individual vehicular emissions. Long-term projections of carbon monoxide emissions from vehicular traffic associated with the completed development are based on the traffic impact study findings. It has been assumed that the roadway improvements recommended in the traffic study will be implemented to move traffic efficiently through the project area and adjacent locations. Aside from improving roadways, air pollution impacts from vehicular emissions can be mitigated by reducing traffic through the use of mass transit and car pooling and/or by adjusting local school and business hours to begin and end during off peak times. Although it is conceivable that the efficiency of motor vehicle engines and/or emission control equipment will be improved or that vehicles will be developed which burn cleaner fuels at some point in the future, it is not likely that these developments will occur before project completion in 1992. With regard to cleaner burning fuels, vehicles burning methanol or compressed natural gas or powered by electrical motors are some of the possibilities for technological development that are currently being contemplated. Lastly, even without technological breakthroughs, it is also possible that at some point in the future, the State may decide to adopt a motor vehicle inspection and maintenance program which would ensure that emission control devices are properly maintained, and thereby reduce emissions.

Carbon monoxide concentrations within the above ground levels of the parking structure will be maintained at acceptable levels via natural and mechanical ventilation. Maximum natural ventilation will be achieved by opening as much of the structure as is practical, especially those sides which face the tradewind direction. Air pollution control within the basement parking level will be accomplished by providing an adequate mechanical ventilation system. Exhaust will be vented away from pedestrian areas so as to avoid recirculation within the garage. The use of contaminant sensors to monitor air pollution concentrations and to control ventilation equipment will also lessen the potential for air quality problems.

Also helpful in mitigating air pollution impacts both within and adjacent to the facility, is to provide sufficient ingress/egress capacity to permit easy entry and exit with minimal delays. As an added measure, emergency procedures and equipment will be provided to counter potential problems arising from power outages and/or ventilation failure.

Indirect emissions from electrical demand will be reduced by substituting solar energy design features to the extent possible. In addition, landscaping will be incorporated to provide cooling shade, thus reducing the consumption of electrical power for air conditioning.

3.2.8 Noise and Vibration

A Noise Study was conducted by Y. Ebisu and Associates in February 1990 to analyze the existing noise levels of the vicinity and to evaluate the potential noise impacts from the project. It should be noted that the preliminary analysis assumed pile driving would be included in the construction activities as a "worst-case" scenario. However, the aforementioned Soils Engineer report recommends a mat foundation for the project, thus, precluding the need for piles and pile driving. It should also be noted, as with the Air Quality Impact Study, that this analysis was based on 1992 as the project build-out date. An updated report incorporating 1993 calculations has been conducted for this FEIS document. The indications from the consultant are that the revised 1993 projections will not significantly differ from those calculated for 1992. As such, the calculations for 1992 have been retained for discussion purposes.

The current report concentrates on noise impacts produced by traffic noise level increases associated with project and non-project traffic, as well as on noise and vibration impacts caused by short-term construction activities, particularly those contributing to the potential risk of structural damage to adjacent historic buildings. In addition, the relationship of these impacts to noise standards set by the Federal Housing Administration (FHA) and the Department of Housing and Urban Development (HUD) has been incorporated. Sections from the report are included in the following noise discussions.

The noise indicator currently used to assess environmental noise is the Day-Night Average Sound Level (Ldn), which incorporates the average sound level over an averaging period of 24 hours. Table 3-3 indicates current federal noise standards and acceptability criteria for residential land uses. According to the table, Minimal Noise

TABLE 3-3

EXTERIOR NOISE EXPOSURE CLASSIFICATION
(Residential Land Use)

Noise Exposure Class	Day-Night Sound Level	Equivalent Sound Level	Federal(1) Standard
Minimal Exposure	Not Exceeding 55 Ldn	Not Exceeding 55 Leq Acceptable	Unconditionally
Moderate Exposure	Above 55 Ldn But Not Above 65 Ldn	Above 55 Leq But Not Above 65 Leq	Acceptable(2)
Significant Exposure	Above 65 Ldn But Not Above 75 Ldn	Above 65 Leq But Not Above 75 Leq	Normally Unacceptable
Severe Exposure	Above 75 Ldn	Above 75 Leq	Unacceptable

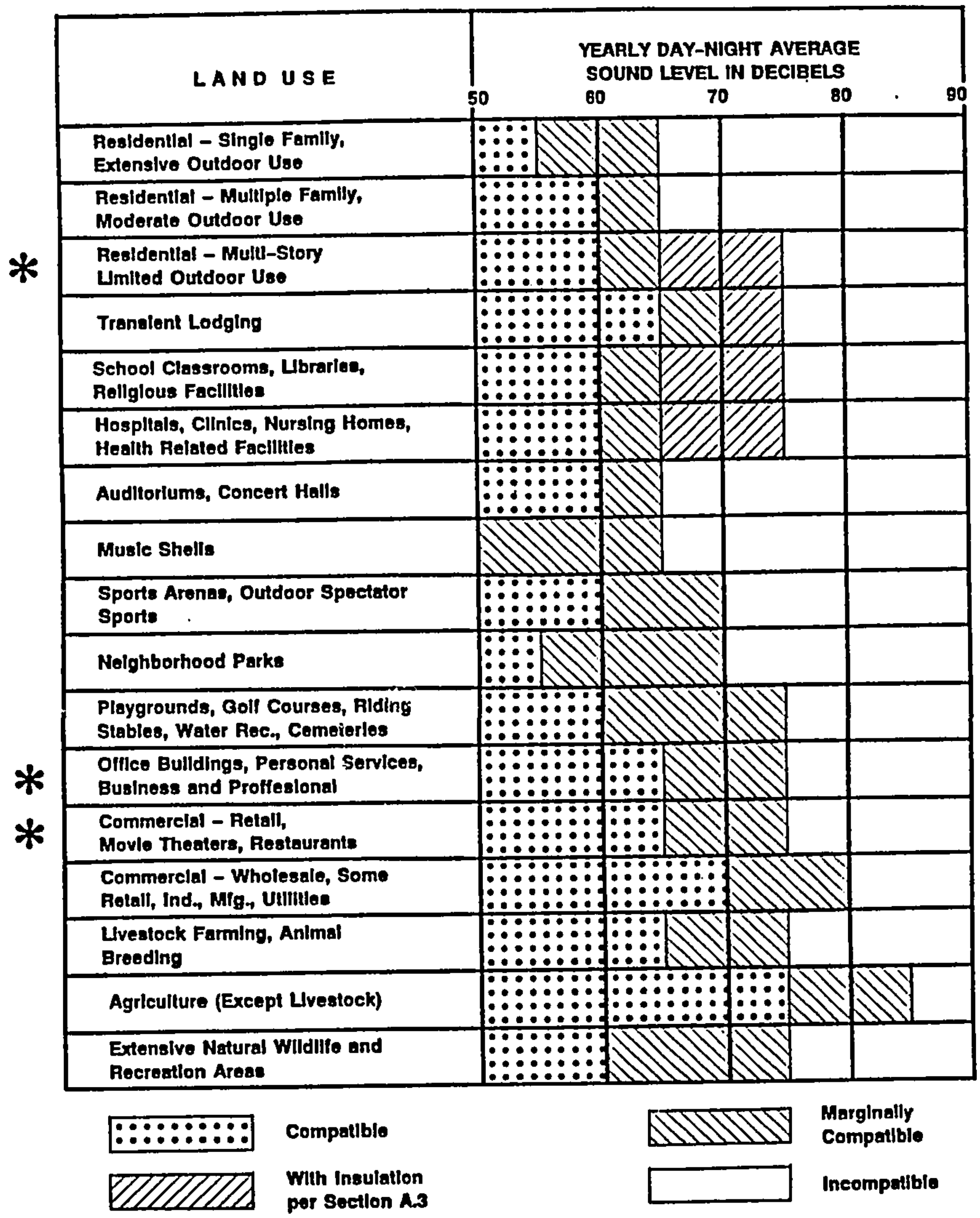
NOTES:
(1) Federal Housing Administration, Veterans Administration, Department of Defense, and Department of Transportation.
(2) FHWA uses the Leq instead of the Ldn descriptor. For planning purposes, both are equivalent if: (a) heavy trucks do not exceed 10 percent of total traffic flow in vehicles per 24 hours, and (b) traffic between 10:00 p.m. and 7:00 a.m. does not exceed 15 percent of average daily traffic flow in vehicles per 24 hours. The noise mitigation threshold used by FHWA for residences is 67 Leq.

Exposure not greater than 55 Ldn would, by Federal standard, be Unconditionally Acceptable; Moderate Noise Exposure between 55 and 65 Ldn would be Acceptable; Significant Noise Exposure between 65 and 75 Ldn would be Normally Unacceptable; and Severe noise exposure above 75 Ldn would be Unacceptable. Land use compatibility guidelines for various levels of environmental noise are shown in Figure 3-3. The land uses relevant to the project have been indicated by the asterisk (*). The table indicates sound levels within the 60 Ldn level for Residential use, and 65 Ldn level for Office and Commercial uses would be compatible with the American National Standards Institute (ANSI). Those exceeding 75 Ldn for all three uses would be incompatible.

3.2.8.1 <u>Existing and Predicted Noise Conditions</u>

The existing traffic noise levels were measured during January 1990, at four locations within the project vicinity. (See Figure 3-4). Site A was located on the top deck of the existing 3-level parking structure, whereas, Sites B, C, and D were located at street level. The results of these traffic noise measurements were compared with calculations of existing traffic noise levels in order to validate the use of the Federal Highway Administration (FHWA) Noise Prediction computer model. The comparison of existing 1990 and predicted traffic noise measurements is summarized in Table 3-4. The noise measurement results, and their comparative computer-generated predictions appear to correspond at all monitoring locations except Site C. Here, the Bethel Street noise data apparently became skewed by the traffic noise emanating from Nimitz Highway.

According to federal standards as established in the aforementioned Table 3-3, the existing traffic noise levels in the project vicinity along Nimitz Highway and Bethel Street are in the "Significant Exposure, Normally Unacceptable" category. Whereas, the existing noise levels along Merchant Street are in the "Moderate Exposure, Acceptable" category.



Source: Y. Ebisu and Associates Inc., 1990

KAAHUMANU PARKING STRUCTURE REDEVELOPMENT
City & County of Honolulu
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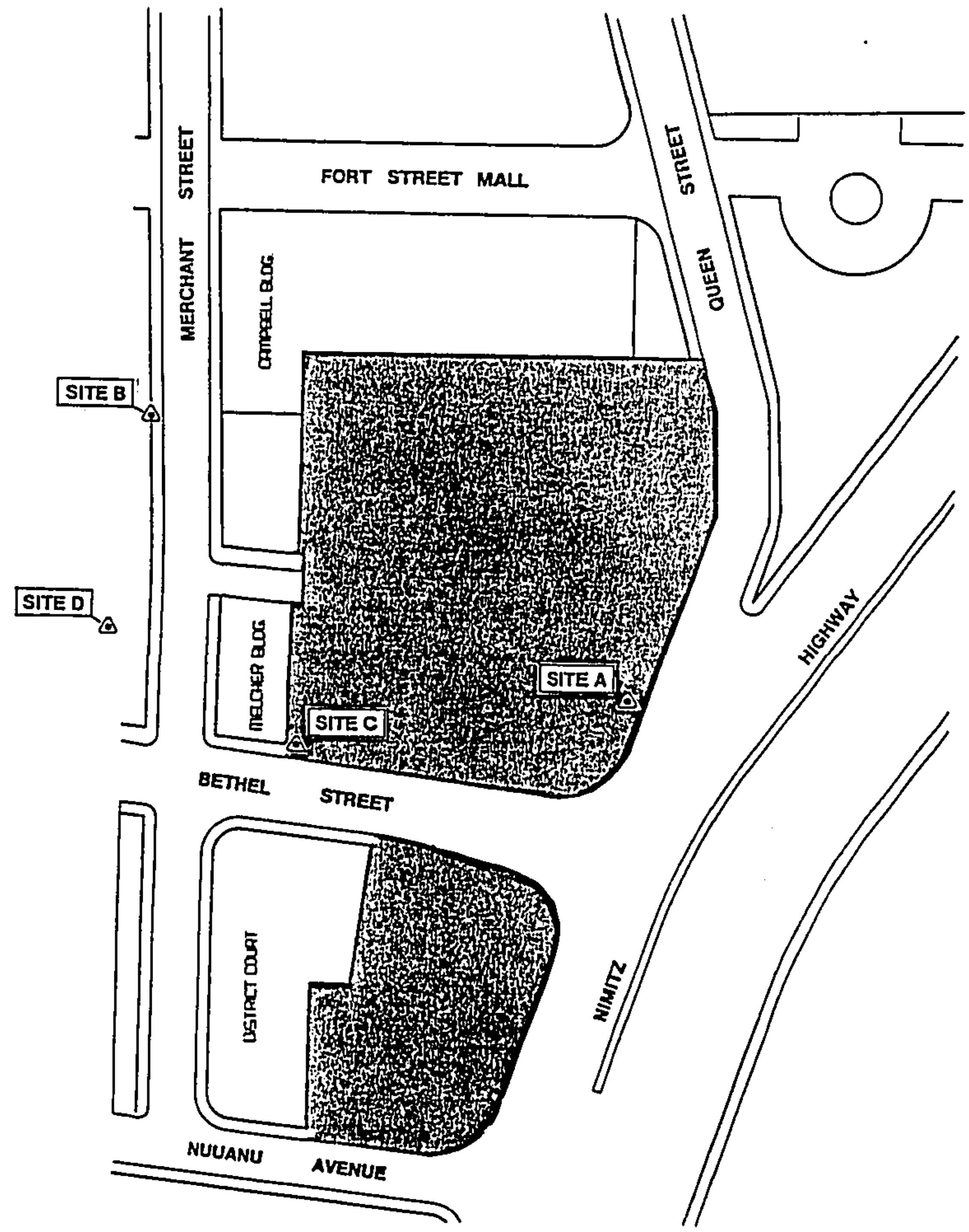
Figure 3-3
LAND USE COMPATIBILITY WITH YEARLY DAY-NIGHT SOUND LEVEL AVERAGE

R. M. TOWILL CORPORATION, AUGUST 1990



Source: Y. Ebisu and Associates Inc., 1990

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Figure 3-4
NOISE MEASUREMENT SITE LOCATIONS

R. M. TOWILL CORPORATION, AUGUST 1990

Based on existing 1989 information, the 1992 calculations for five points within the project vicinity were predicted, assuming the project exists. The predictions are made assuming traffic mixes of autos, medium truck, and heavy vehicles, and speed limits remain constant. As indicated by Table 3-5, the noise levels predicted for 1992 (with project) are expected to experience marginal increases relative to 1989 noise levels. Traffic levels are expected to increase by 0.2 to 1.4 dB during the PM peak hour, with the largest increase expected along the section of Merchant Street which is between Bethel Street and the project entrance driveway. In addition, the table shows Nimitz Highway should continue to be the greatest contributor of noise in the area in 1992. The 0.2 dB increase in the noise level from Nimitz is not considered to be significant.

TABLE 3-4
TRAFFIC NOISE MEASUREMENT RESULTS

Location	Time of Day (hrs)	Ave. Speed (mph)	Hourly Traffic Volume Auto	Med. Truck	Heavy Truck	Measured Leq (dB)	Predicted Leq (dB)
A. 80 ft from the centerline of Nimitz Highway (1/18/90)	1450 - 1619	45	6,362	170	98	73.1	73.1
B. 21 ft from the centerline of Merchant Street (1/23/90)	1514 - 1613	25	483	26	5	66.2	66.1
C. 27 ft from the centerline of Bethel Street (1/23/90)	1618 - 1717	25	1,218	14	17	70.9	68.4
D. 27 ft from the centerline of Bethel Street (1/18/90	1710 - 1740	25	1,118	13	19	71.7	68.5
E. 45 ft from the centerline of Merchant Street (1/18/90)	1643 - 1707	25	699	19	3	63.2	62.5

Note: Traffic noise contributions from Nimitz Highway caused higher than predicted noise levels.

TABLE 3-5

COMPARISONS OF EXISTING AND CY 1992 TRAFFIC NOISE LEVELS
ALONG ACCESS ROADS TO PROJECT SITE
(PM PEAK HOUR AND 50 FOOT FROM ROADWAY CENTERLINES)

Location	Speed (mph)	VPH	Hourly Leq in dB			
			Auto	MT	HT	All Veh
EXISTING (CY 1989) PM PEAK HOUR TRAFFIC						
Nimitz Highway at Project	45	6,459	72.1	67.5	72.3	75.9
Merchant Street at Bethel St.	25	611	58.7	57.1	58.3	62.8
Bethel Street at Nimitz Hwy.	25	1,255	61.9	56.0	63.2	66.0
Nuuanu Avenue at Nimitz Hwy.	25	344	56.2	51.6	55.8	59.8
Queen Street at Nimitz Hwy.	25	825	60.0	58.4	59.6	64.1
CY 1992 PM PEAK HOUR TRAFFIC WITH THE PROJECT						
Nimitz Highway at Project	45	6,753	72.3	67.7	72.5	74.1
Merchant Street at Bethel St.	25	829	60.0	58.4	59.6	64.2
Bethel Street at Nimitz Hwy.	25	1,556	62.8	56.9	64.1	67.0
Nuuanu Avenue at Nimitz Hwy.	25	365	56.5	51.9	56.0	60.0
Queen Street at Nimitz Hwy.	25	933	60.5	59.0	60.1	64.7

VPH: Vehicles Per Hour

Notes:

The following assumed traffic mixes of autos, medium trucks (MT), and heavy vehicles (HT) were used for existing and future conditions:

(a) Nimitz Highway at Project: 95.0 percent autos, 2.5 percent medium trucks, and 2.5 percent heavy trucks or buses.

(b) Merchant and Queen Streets: 95.0 percent autos, 4.0 percent medium trucks, and 1.0 percent heavy trucks or buses.

(c) Bethel Street: 97.0 percent autos, 1.5 percent medium trucks, and 1.5 percent heavy trucks or buses.

(d) Nuuanu Avenue: 97.0 percent autos, 2.0 percent medium trucks, and 1.0 percent heavy trucks or buses.

The calculated setback distances from roadways to the existing and 1992, 65, 70, and 75 Ldn contours are shown in Table 3-6. Relatively large setback distances to all three Ldn contours from the centerline of Nimitz Highway are predicted to continue to exist in 1992. In addition, the setback distances from all roadways are expected to increase to some degree in 1992. Graphic representations which supplement this relationship are contained in Appendix B as Figures 6 through 9 (showing Existing contours), and Figures 10 through 13 (showing predicted 1992 contours).

TABLE 3-6

EXISTING AND CY 1992 DISTANCES TO 65, 70 AND 75 LDN CONTOURS

Street Section	65 Ldn Setback (ft) Existing	65 Ldn Setback (ft) CY 1992	70 Ldn Setback (ft) Existing	70 Ldn Setback (ft) CY 1992	75 Ldn Setback (ft) Existing	75 Ldn Setback (ft) CY 1992
Nimitz Highway at Project	686	717	217	227	69	72
Merchant Street at Bethel Street	19	26	6	8	2	3
Bethel Street at Nimitz Highway	40	50	13	16	4	5
Nuuanu Avenue at Nimitz Highway	9	10	3	3	1	1
Queen Street at Nimitz Highway	26	29	8	9	3	3

Notes

(1) All setback distances are from the roadways' centerlines.
(2) See Table "Comparisons of Existing and CY (Calendar Year) 1992 Traffic Noise Level Along Access Roads to Project Site" in Section 3, for traffic volume, speed, and mix assumptions.
(3) Ldn assumed to be equal to PM Peak Hour Leq plus 0.5 dB along Nimitz Highway.
(4) Ldn assumed to be equal to PM Peak Hour Leq less 2.0 dB along other roadways.
(5) Setback distances are for unobstructed line-of-sight conditions.
(6) Hard ground conditions assumed along all roadways.

A. Impacts and Mitigation Measures

Unavoidable, but temporary impacts will occur during the construction of the project, particularly during the demolition and excavation activities. Noise levels are expected to exceed acceptable DOH noise standards during some construction activities. Mitigation measures to reduce construction noise to inaudible levels will not be practical in all cases, but the use of quiet equipment is recommended as a standard mitigation measure. In addition, a noise variance from the normal construction curfew periods as required under the DOH noise regulations is recommended. Although variance would not eliminate noise problems, it would reduce construction noise impacts on adjoining properties associated with business and commercial operations during normal working hours.

If the pile driving foundation were used, the Historic Building located adjacent to the proposed project would have been at risk of damage from the vibration associated with such activity. However, as recommended in the Soils Report, a mat foundation will be used in place of piles, thereby minimizing the potential for damage to these buildings. To mitigate any potential impacts to the buildings, the report recommends monitoring by the Soils Engineer of the preparation of all footing excavations for placement of reinforcing steel and concrete. The Soils Engineer(s) should also monitor and test all structural fill placement.

Table 3-7 illustrates the comparison between noise level increases as a result of project versus non-project traffic.

TABLE 3-7

CALCULATIONS OF PROJECT AND NON-PROJECT
TRAFFIC NOISE CONTRIBUTIONS (CY 1992)

Street Section	Noise Level Increases (Ldn) Due to Non-Project Traffic	Noise Level Increases (Ldn) Due to Project Traffic
Nimitz Hwy at Project	0.2	0.0
Merchant St at Bethel St	0.2	1.1
Bethel St at Nimitz Hwy	0.3	0.7
Nuuanu Avenue at Nimitz Hwy	0.3	0.0
Queen St at Nimitz Hwy	0.3	0.3

Along Nimitz Highway, traffic noise levels are expected to increase by 0.2 Ldn, primarily as a result of non-project traffic. Along Nuuanu Avenue, Bethel, Merchant, and Queen Streets, traffic noise levels are expected to increase by approximately 0.2 to 0.3 Ldn by 1992 as a result of Non-project traffic. Project traffic will add approximately 0.3 to 1.1 Ldn of noise along Merchant, Bethel, and Queen Streets in the immediate vicinity of the project. These levels of traffic noise increases resulting from project generated traffic are not considered to be significant. Additionally, the business/commercial nature of the project is compatible with its surrounding uses. Thus, the predicted moderate increases in traffic noise levels along Merchant, Bethel and Queen Streets are not expected to generate adverse noise impacts.

It will not be possible to obtain adequate setback of the project's Residential Tower from the centerline of Nimitz Highway, to meet FHA/HUD noise standards. As such, impacts from traffic noise are possible, particularly on those units which will face Nimitz Highway. Methods to counter such impacts which include suitable noise attenuation closures and air conditioning systems will be considered in the design process.

A minimum exterior-to-interior noise reduction of about 25 dB will be required to achieve an interior noise level of 45 dB, which is the maximum recommended level of interior noise necessary to minimize the risks of adverse health and welfare effects. This level of reduction will not be difficult to achieve with standard construction materials and methods, and could be surpassed via higher quality means identified with luxury developments of similar caliber. Because of the upscale quality of the proposed units and the relatively high levels of exterior noise associated with Nimitz Highway, the use of glazing and exterior wall components with a minimum sound reduction of 35 dB will be used. These measures will help to minimize the risk of occupant dissatisfaction.

3.3 SOCIO-ECONOMIC ENVIRONMENT

Over the long-term, there will be significant positive impacts in terms of economic development and employment, which are expected to offset the short-term adverse socio-economic impacts experienced during the demolition and construction phases. The "condominiumization" offered by the project would satisfy a portion of the demand for downtown office and residential space, as well as for parking. The City would gain revenues from lease rents and property taxes, in addition to recovering the original 462 stalls presently housed in the Kaahumanu garage. In addition, the developer will give the City a $15-million development premium, which will be used toward development of affordable housing units in the Maunakea-Smith project located two blocks away from the project. In turn, the State would gain revenues from the lease rents or sale of Parcel 56 by the City, in addition to long-term economic contributions to the Gross State Product (GSP) via office and retail revenues.

3.3.1 Land Uses and Encumbrances

This, and the following section, "Economic and Fiscal Impacts," have been excerpted from Appendix G, "Social Impact Assessment," which was prepared by R. M. Towill Corporation in February 1990.

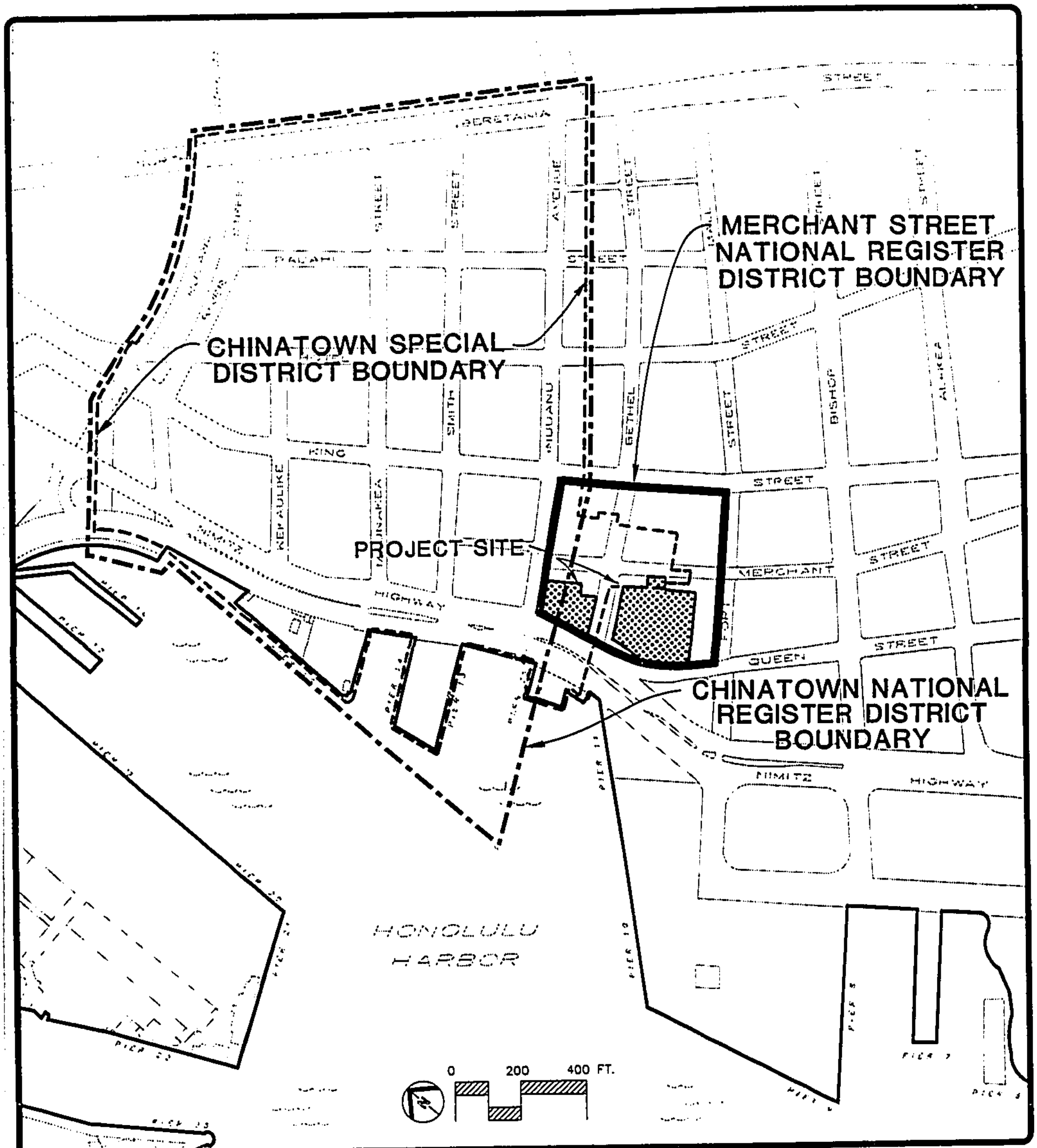
At present, the general mix of land uses in the project area consists of a three-story municipal public parking structure, and a number of historic buildings in which businesses and government offices, and restaurants operate. The project site is located in the Merchant Street National Register District, and is at the eastern or Diamond Head edge of the Chinatown National Register District. The Chinatown district is a grouping of buildings with two sets of boundaries, one related to the National Register of Historic Places, and one defined by the City and County of Honolulu, officially termed a "Special District." The Merchant Street Historic District and the two Chinatown boundaries are shown in Figure 3-5. One boundary of the National district of Chinatown encompasses a strip along the Diamond Head side of Nuuanu Avenue, and thus includes a small portion of the western part of the Harbor Court project site.

Within the last few years, the City and County expanded the Chinatown Special District to incorporate most of the historic buildings in the Merchant Street National Register Historic District. Thus, the block encompassing the western part of the project lies within the Chinatown Special District, as does the strip of land between the Bishop Estate and Bank of Bishop & Co. buildings, the remnant of the former Kaahumanu Street which is an entrance to the main eastern portion of the project site. The Melcher's Building is located in a corner of the main project site and is also included in the Chinatown Special District.

The project will be constructed on two properties on opposite sides of Bethel Street at Nimitz Highway and Queen Street. Parcels 16, 20, 56 and the unnumbered parcel (*), presently improved with a parking structure, are described as items 1 through 4 below. Parcel No. 26 (item 5) currently functions as an at-grade parking lot.

1. TMK No. 2-1-02: 16	34,343 s.f.,	owner: City and County
2. TMK No. 2-1-02: 20	19,745 s.f.,	owner: City and County
3. TMK No. 2-1-02: 56	5,849 s.f.,	owner: State of Hawaii
4. TMK No. 2-1-02: *	1,202 s.f.,	owner: State of Hawaii
5. TMK No. 2-1-02: 26	19,805 s.f.,	owner: City and County
Total Land Area:	**80,944 s.f.**	

* This parcel currently serves as the vehicular entry to the parking garage on Merchant Street. It has no official parcel number.



KAAHUMANU PARKING STRUCTURE REDEVELOPMENT
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Figure 3-5
MERCHANT STREET NAT'L. REGISTER, CHINATOWN NAT'L. REGISTER, AND CHINATOWN SPECIAL DISTRICTS

R. M. TOWILL CORPORATION, AUGUST 1990

The Melcher's Building is located on a portion of Parcel 20. The building footprint is approximately 3,470 square feet (s.f.). The total floor area of the two-story structure is approximately 6,940 s.f. It is occupied by the City and County, DHCD's Rehabilitation Loans and Inspections Branch. Plans for the project include retention of this building.

The City and County is presently negotiating with the State to complete a land exchange to acquire the two State-owned parcels (identified as items 3 and 4 above).

The Old Bishop Trust Building on Merchant Street adjoins the project site. The land is owned by Ted James, Inc., and the building is owned by the Law Corporation of Harriet Bouslog. It is presently occupied by several law practices.

The Campbell Building and property (TMK No. 2-1-02: 15) are owned by American Land Corporation. The building is occupied by various businesses including the James Campbell Estate, some State offices, and several commercial operations on the ground level fronting the Fort Street Mall.

The smaller parcel located on the ewa side of Bethel Street, is presently utilized as a 51-stall parking lot with minimal improvements. Abutting this parcel is the former Honolulu Police Station, which is situated on an 11,081 s.f. State-owned parcel and is currently occupied by City and County offices: Housing and Community Development Department Rental Assistance Branch and the Real Property Tax Assessment Office. Additions to the District Court Building encroach upon the parcel.

Other surrounding properties are:

* Kamehameha V Post Office Building and Park which is the site of the first Customs Office (TMK No. 2-1-02: 12): The site is owned and controlled by the State of Hawaii. The Kamehameha V Building is currently occupied by the Department of Human Services' Adult and Family Services Division. This office is scheduled to be relocated to a Waiakamilo site in mid-1990 as part of a consolidation program of this division. Other State offices are expected to move into the Kamehameha V Building once the current tenants move out.

* Merchant Square (TMK No. 2-1-02: 31, 32, 33, 34, 35), owned by L & W Associates. Tenants fronting Merchant Street include Honolulu Publishing Co. in the Yokohama Specie Building (Parcel 33), and Murphy's Bar and Grill in the Royal Saloon Building (Parcel 35). The J.T. Waterhouse Building, located on Parcel 34 is currently unoccupied.

3.3.1.1 Impacts and Mitigation Measures

When the transfer is completed, the City and County will consolidate the two parcels (TMK No. 2-1-02: 56 and adjoining 1,202 s.f. driveway) into a single lot prior to issuance of the Master Lease to the developer. It is the present intention of the developer not to include the Melcher's Building in the project except for allowable floor area calculation purposes. The building site will be legally separated from the project after construction begins and it will remain intact.

Negotiations are underway to include some or all of the Old Bishop Bank Building in the project for the purpose of floor area calculations. At this time, however, no commitments have been made.

The six-story Nuuanu Court building will be built in accordance with BMX-4 Development Standards.

The State Department of Accounting and General Services is, at present, seeking funds during the 1990 State Legislative session to do some restoration and renovation of the Kamehameha V Post Office Building.

During construction, the contractor will be required to take precautionary measures to minimize any danger to the structural integrity of the adjacent historic buildings.

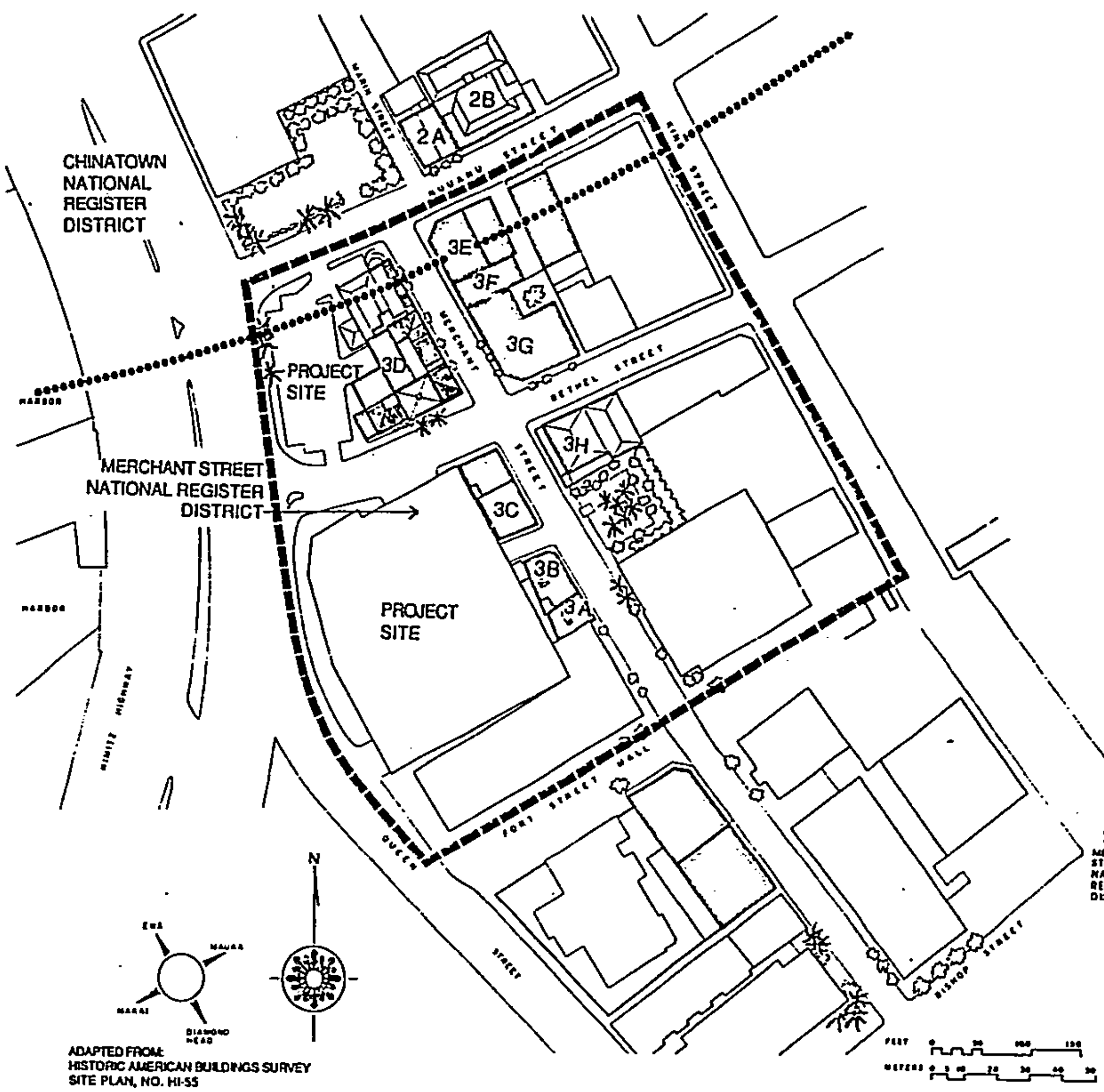
3.3.2 Historic Resources

In accordance with development guidelines set by the City in the Request for Proposals, the design of the project will complement the architectural appearance and scale of the historic buildings in the Merchant Square Historic District. As such, the proposed design has been planned as a modern adaptation of the architectural styles existing in the neighborhood.

3.3.2.1 Existing Conditions

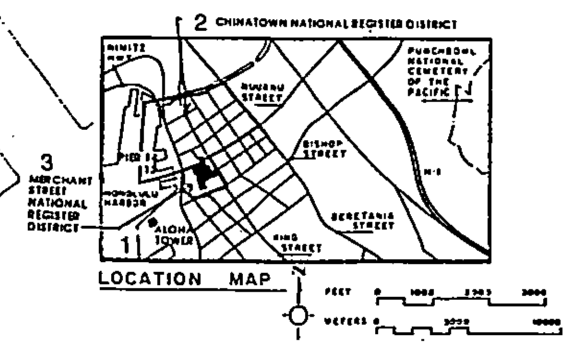
The following is a summation of the Historic Districts and Buildings Assessment Report prepared by Spencer Mason Architects for the project. The complete text of the final report (March 23, 1990) is included as Appendix D of this EIS.

There are no historic buildings on the project site. However, because the site is located in two historic districts, a number of historic buildings are located within the vicinity. Their location is shown on Figure 3-6, with a key to the individual building names. The historic buildings and districts which may be affected by the project are described below. Possible impacts and appropriate mitigation measures are also discussed in this section.



HISTORIC BUILDINGS AND DISTRICTS
IN THE VICINITY OF THE PROJECT SITE

Building/District Name	Date
1. Aloha Tower	1926
2. Chinatown Historic District	
2A. T.R. Foster Building	1891
2B. The Nippu Jiji Building	1899
3. Merchant Street Historic District	
3A. Bishop Estate Building	1896
3B. Bank of Bishop & Co.	1878
3C. Melcher's Building	1853
3D. Honolulu Police Station	1930
3E. Royal Saloon	1890
3F. J.T. Waterhouse Building	1870s
3G. Yokohama Specie Bank	1908
3H. Kamehameha V Post Office	1870



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Source: Spencer Mason Architects

Figure 3-6
HISTORIC BUILDINGS MAP

R. M. TOWILL CORPORATION, AUGUST 1990

3.3.2.2 Merchant Street Historic District

The Merchant Street Historic District, which is listed on the National Register of Historic Places, includes the four blocks bounded by Nuuanu Street, King Street, Fort Street Mall, and Queen Street. The entire project site lies within this National Register district. This district encompasses an important section of the early historic commercial area of Honolulu. From the mid-nineteenth century into the early decades of the twentieth century, this area adjacent to the harbor was the location of warehouses, stores, banks, government buildings, accommodations, and saloons that served the visiting businessmen and ships' crews, as well as residents.

The Merchant Street Historic District comprises a representative sample of commercial buildings in Honolulu from the 1850s through 1930. The Melcher's Building, erected in 1853, held retail stores where imported goods were sold. The Waterhouse building built in the 1870's was a warehouse, while the Royal Saloon, built in 1890, was another used to serve the waterfront. Extant government buildings built in the area which are still remaining are the Kamehameha V Post Office (1870) and the former Police Station (1930). A customs office was located on the land adjacent to the Post Office.

The uses, periods and styles of the buildings in this district are much more varied compared to the Chinatown Historic District buildings, which are discussed in a following section.

A. Impacts and Mitigation Measures

Federal, State and County laws, regulations, and policies regarding the protection of historic buildings and districts must be recognized. The pertinent federal regulations for this area are 36 CFR 800, which implement the provisions of the 1966 National Historic Preservation Act, as amended, and of Executive Order 11593 ("Protection and Enhancement of the Cultural Environment"). These apply to federal agency actions and to private projects if federal funds or permits are required. No federal funds or permits are required for this project.

State and County regulations are similar to the Federal process, but have less formal procedures. The State has recognized the value of protecting historic properties in the State Constitution and further promoted preservation by enacting the Historic Preservation law, Chapter 6E, HRS, and by adopting the Hawaii State Plan and State Historic Preservation Functional Plan. The State Department of Land and Natural Resources, Historic Sites Section (DLNR-HSS) is currently in the process of publishing administrative rules to implement the laws and policies relating to historic preservation.

No change to the Merchant Street Historic District boundaries or structures identified to be of historic significance are proposed by the project. However, the project will alter the setting of the low-rise historic district by introducing a high-rise structure. The setting will also be changed by the bridge between the two sections of the project. To minimize these impacts the project will incorporate design elements that are compatible with the historic buildings.

Also, the changes proposed to the project site may have potentially adverse construction-related impacts on historic resources in the vicinity. These potential impacts and mitigation measures are discussed in the following sections where applicable.

3.3.2.3 Chinatown Historic District

The Chinatown district is a grouping of buildings with two sets of boundaries, one related to the National Register of Historic Places, and one defined by the City and County of Honolulu, officially termed a "Special District."

One boundary of the National Register district of Chinatown includes a 50-foot strip along the Diamond Head side of Nuuanu Avenue, and thus includes a small portion of the western part of the Harbor Court project site. Within the last few years, the City and County expanded the Chinatown Special District to incorporate most of the historic buildings in the Merchant Street National Register Historic District. Thus, the block encompassing the western part of the project lies within the Chinatown Special District, as does a strip along Merchant Street which includes the Melcher's building and the remnant of Kaahumanu Street between the Bishop Estate and Bank of Bishop & Co. buildings, which are part of the main portion of the project site.

Chinatown is important in the history of Honolulu, as the location where immigrants, first the Chinese, and later other ethnic groups, made the break from plantation work and opened small shops and businesses. The proximity of this area to the harbor and the downtown commercial core made it a logical place for immigrant settlement. As early as 1860, the area between Nuuanu Avenue and Nuuanu Stream was known as Chinatown. Two major fires -- in 1886 and 1900 -- destroyed most of Chinatown's original wooden structures. Subsequently, Chinatown was largely rebuilt with brick and stone buildings.

This reconstruction resulted in a harmonious architectural grouping. The district is significant for its architecture as well as for its historical and continuing role as a settlement and business area for many ethnic groups in Hawaii.

A. Impacts and Mitigation Measures

No changes are proposed to either the Chinatown Special District and National Register District boundaries, or to structures identified to have historic significance. The impacts and mitigation measures discussed in Section 3.3.2.2.A are applicable here, too, since the district boundaries overlap. Construction-related impacts and appropriate mitigation measures are discussed below.

While the makai and Aloha Tower views from Marin Street and down Nuuanu Avenue will be altered by the Nuuanu Court Building, the rounded corner of the new building will soften the makai view and carry the view beyond the building toward the water and the Pier 7 area. The architectural design of the Nuuanu Court Building complements the period style and detailing of its neighboring District Court Building. Tenants' makai views from the District Court Building will be replaced by views onto a new landscaped promenade which will separate the existing building from the new.

3.3.2.4 Potential Construction Period Impacts

The two buildings that comprise the project are discussed separately as their different size and scale will have different impacts on adjacent historic resources.

A. Harbor Court Tower Building

This building is 350 feet tall, consisting of a combination office-residential tower with a podium approximately 100 feet tall. Fourteen (14) levels of parking are planned. The first two levels will be below grade. The potential impacts of concern during construction are specific to two adjacent buildings:

* Bishop Estate Building and the Bank of Bishop & Co. Building, also known as the Bouslog Building, since the project is sited within a few feet of these structures; and

* Melcher's Building as the basement parking level abuts the rear building property line of the structure.

In the worst-case scenario, these historic buildings could face potential damage during the excavation and foundation phase. If pile drivers for sheet piles or soldier piles were used, excessive ground-borne vibration could be transmitted to nearby structures. However, a mat foundation will most probably be implemented. In this scenario, impacts would be minimized.

Use of large backhoes to break hard coralline materials with excessive pounding could cause ground-borne vibration to be transmitted to nearby structures. Excavation could result in the lateral movement of shoring and bracing. Pumping to dewater the excavated area could result in the lowering of the watertable, and cause ground settlement and cracking in nearby buildings.

The construction will also create dust which will settle on the nearby buildings. The dust particles could damage building materials and obscure details on historic buildings.

Indirect impacts on surrounding historic buildings located within a 150-foot radius of the 2 building sites may result from construction noise, truck traffic, and loss of parking during constructon. These may affect business and thereby result in deterioration of historic buildings by neglect and lack of maintenance. These impacts are short-term, and the use of properly muffled construction equipment will minimize noise, and frequent watering of the project site will minimize the release of fugitive dust.

B. Nuuanu Court Building

A six-story building makai of the former Honolulu Police Station is planned. The foundation work for this building could be less disruptive than for the tower building on the Diamond Head block, because of the lesser height. Also, the impacts will be less if the basement level parking follows the 20-foot wide separation between the new Nuuanu Court and old District Court buildings.

The volume of construction dust from this part of the project will be less, but its impact on the nearby historic buildings will be similar. Also, because of the less extensive foundation work and smaller building to be erected here, the potential for indirect impacts on the business activities of historic buildings from construction period noise, traffic, and parking problems is less.

C. Mitigation Measures to Potential Construction-Related Impacts

Potential impacts from excavation and foundation work on the tower building can be mitigated by the use of alternative construction equipment and foundation designs. Specific methods will be worked out for each historic building affected, depending on the investigation of their foundations, the analyses of the soils in the area, and other factors. Generally, the mitigation for each of the possible adverse impacts are as follows:

* If piles are required, drilled pile holes or vibratory pile drivers should be used, rather than impact drivers.
* Backhoe pounding should be limited and/or the material should be pre-drilled before pounding.
* Excavation shoring and bracing should be checked to ensure adequacy, and the ground nearby monitored before, during and after construction for settlement.
* Possible ground settlement from excavation dewatering should also be monitored before, during, and after construction.

Monitoring should include photo documentation of the buildings adjacent to the project site, prior to construction, to establish a base for assessing any cracking or other damage to the building.

Soils engineers have finalized their analyses to confirm that a mat foundation will most likely be used instead of piles. This method will have the least potential for impacts to surrounding areas, and will also be faster and less costly to implement than piles.

All construction equipment and methods will be used in accordance with State Department of Health, Department of Occupational Safety and Health (DOSH), and City and County of Honolulu rules and regulations.

If construction equipment parking or standing on the public streets around the project site is controlled, and if provisions are made for a shuttle to an outlying parking area for workers' vehicles, the effect on the businesses in the historic district, and the likelihood of the indirect impact of neglected and deteriorated historic buildings, will be minimized.

3.3.3 Archaeological Resources

The Kaahumanu structure is presently situated over the site of Honolulu's oldest downtown section first developed in the early 1790's. Many developments have taken place since that period, and although the area is covered with asphalt, no archaeological survey has been conducted. The extent of these development impacts on surface and subsurface archaeological features is unknown, thus caution should be maintained during the pre-construction period toward preserving any potentially significant historic findings.

A pre-field, historical data survey was conducted in February 1990 by the Public Archaeology Section of the Bishop Museum Applied Research Group. There were two objectives for the data search: (a) To acquire a chronological overview of the historical period occupation of the project area, and (b) To determine the archaeological sensitivity within the project area in order to assist in the upcoming subsurface testing phase. Subsurface testing would occur during the pre-construction period which would involve demolition and excavation activities.

3.3.3.1 Background

By 1865, the area was fully developed with major arterial streets and business structures associated with shipping and sugar. From 1865 to 1930, the boundary of the then existing structures and streets remained virtually undisturbed. Figures 3-7 to 3-9 provide a historic glimpse of the Queen Street and Nuuanu Avenue vicinity during 1865 to 1879. In 1930, Bethel Street was extended from Merchant Street to Nimitz Highway. This initiated the first redevelopment phase for the projected area. Two decades later, the second redevelopment phase occurred. In 1950, the Kaahumanu Parking Structure was constructed and Kaahumanu Street, which existed prior to 1842, and for which the facility was named, was covered. Although historic buildings along Fort and Merchant Streets were preserved for the Honolulu Historic District, other buildings were destroyed to allow for the parking structure.

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KAAHUMANU PARKING
STRUCTURE REDEVELOPMENT
City & County of Honolulu
Department of Housing &
Community Development
- and -
BEAM Venture

Source: Hawaii State Archives

Figure 3-7
1865
QUEEN STREET FACING NORTH
FROM KAAHUMANU STREET

R. M. TOWILL CORPORATION, AUGUST 1990

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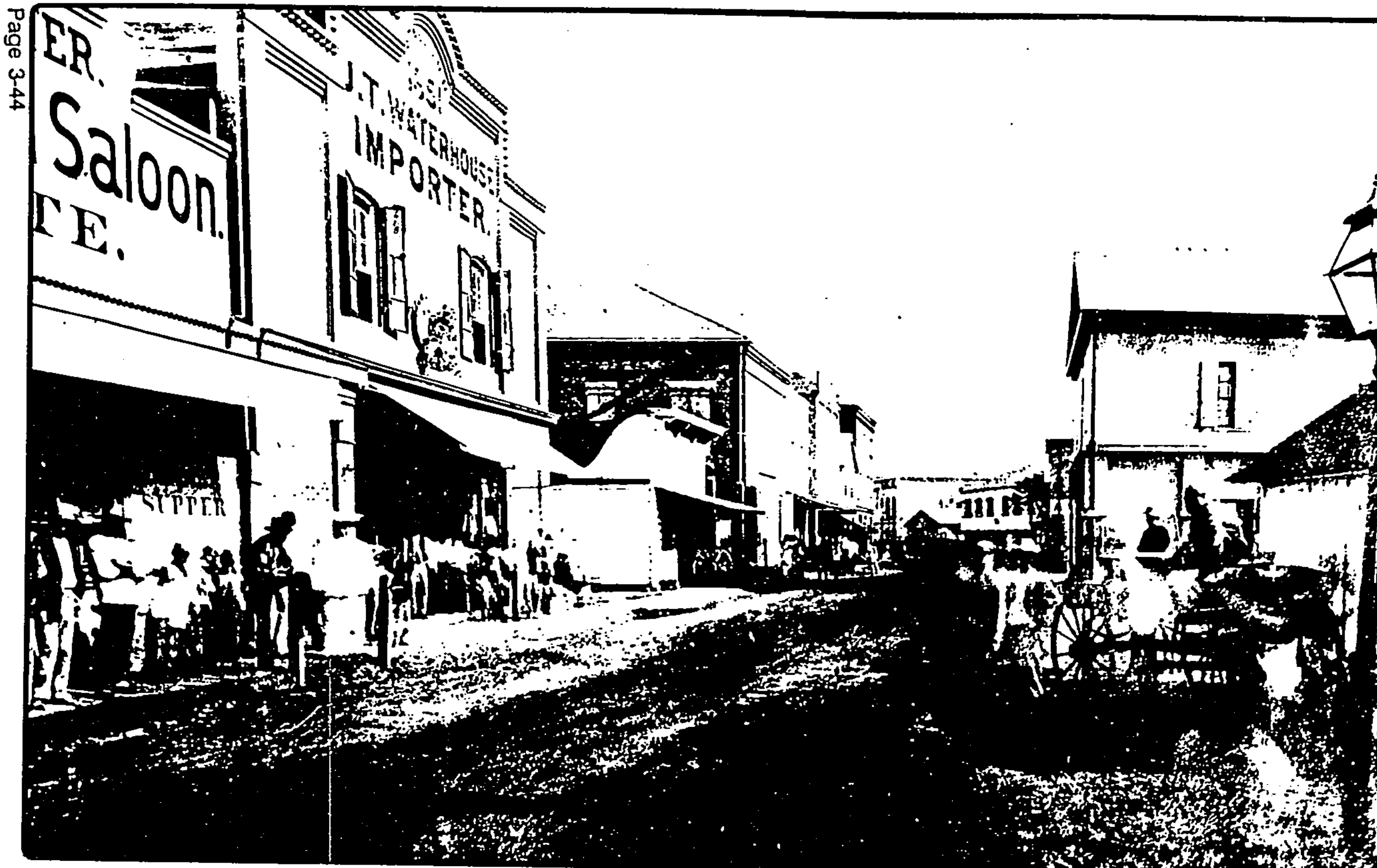

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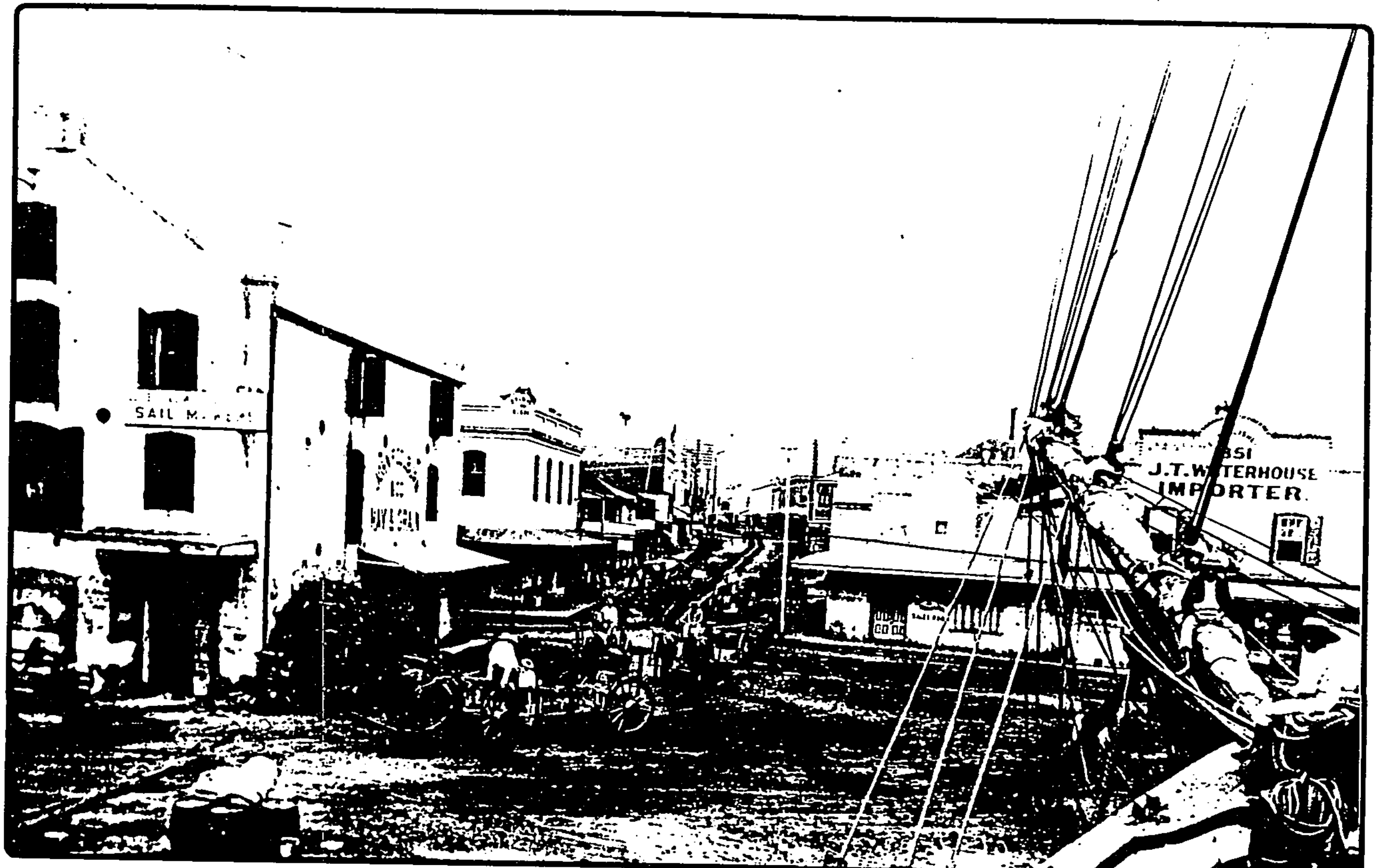
Source: Hawaii State Archives

Figure 3-8
1871
QUEEN STREET FROM
CORNER OF NUUANU AVENUE

R. M. TOWILL CORPORATION, AUGUST 1990



KAAHUMANU PARKING
STRUCTURE REDEVELOPMENT
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BEAM Venture

Source: Hawaii State Archives

Figure 3-9
1877 - 1879
NUUANU AVENUE
FROM WATERFRONT

R. M. TOWILL CORPORATION, AUGUST 1990

The construction of the parking structure essentially covered the remains of 14 business structures that were built prior to 1865. Although these structures were periodically remodeled over the years, their foundations were relatively unchanged until the first two redevelopment landmarks occurred in 1930 and 1950.

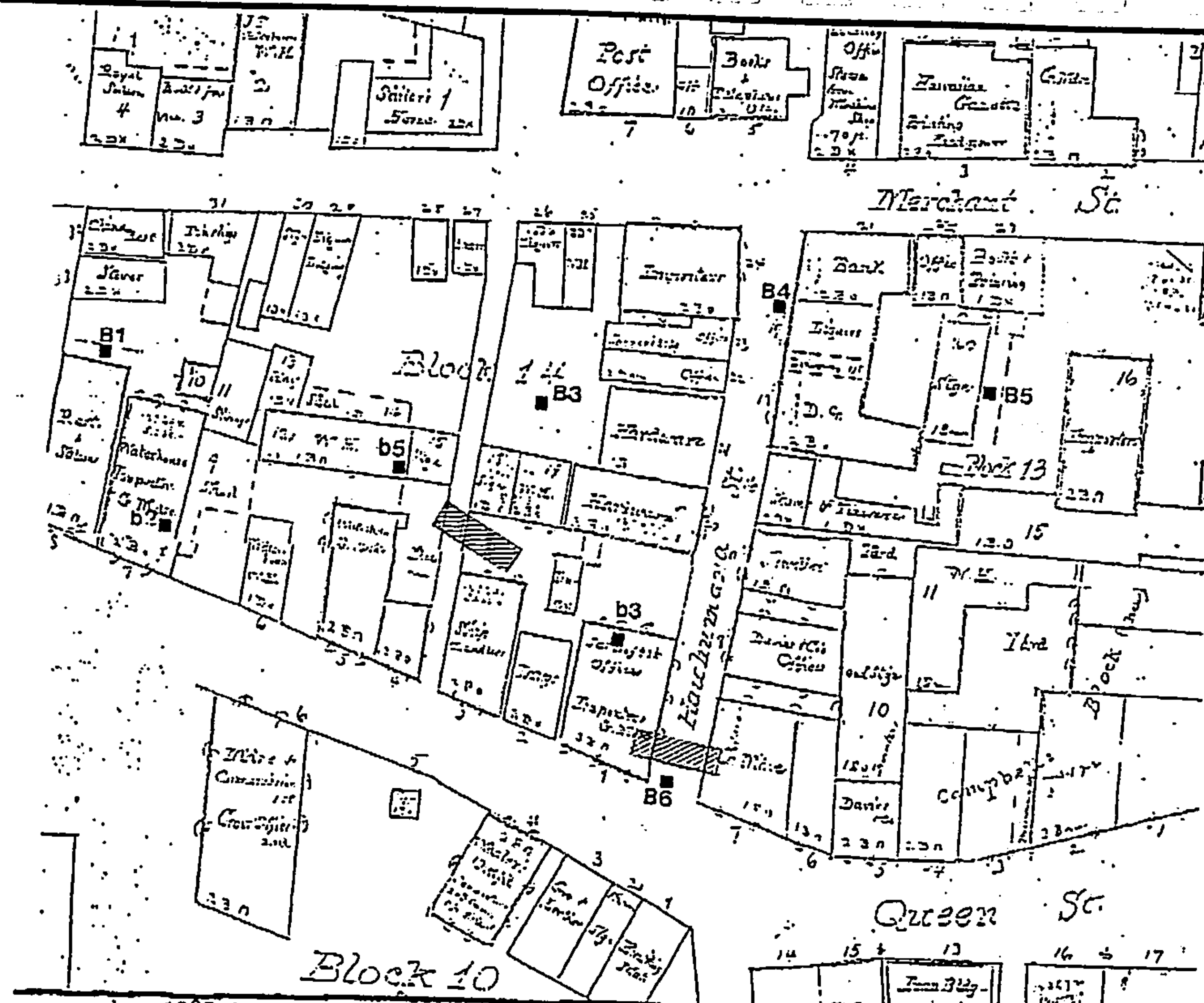
The following update to the Archaeological Report was prepared for the FEIS and has been included as an addendum to Appendix E.

Initial coring of the Kaahumanu parking lot was undertaken by Ernest K. Hirata and Associates in 1985. A boring log of the 1985 corings was submitted to the Applied Research Group of Bishop Museum. Four core borings were done in 1985, three of which are within the proposed redevelopment area. Additional coring of both the open parking lot and the parking structure was again conducted by consultants during February and March 1990. (See Figure 3-10 for locations of 1985 and 1990 borings.) Of the six core borings, five were monitored and fill samples recovered. Fill material deposition, and brief descriptions of their contents are abstracted below:

1985:b2 6.5' fill material. 4" concrete slab contacted at about 12" below surface. Location in the former Waterhouse Building area.

1985:b3 7' fill material. Decomposed wood at 2' below surface. In McKee-Anton Block.

1985:b5 6.5' fill material. Concrete fragments recovered from about 1.5 to 3' below surface. Located in warehouse behind Waterhouse Buildings.



b = 1985 Core Borings B = 1990 Core Borings ///// = Proposed Test Trenches

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Source: Bishop Museum, 1990

Figure 3-10
LOCATIONS OF 1985 & 1990 BORINGS

R. M. TOWILL CORPORATION, AUGUST 1990

1990:B1 3.5' fill material. Brick fragments at 0.5-0.12' below surface. Solid red fired brick over concrete from 0.12-0.30' below surface. Location is in area of Noltes Old Corner Saloon back wall.

1990:B3 2.0' fill material. In former courtyard/back area of McKee-Anton Block. Cultural materials recovered were 2d common copper brass nail, sheet and window pane glass shards, bottle glass shards, concrete and cement fragments. One canine tooth recovered at 12" below surface in well preserved condition.

1990:B4 5.0' fill material. No cultural materials. Former Kaahumanu Street near Merchant.

1990:B5 4.5' fill material. Cultural materials taken from base at 4.5' below surface were unmodified wood fragments (well preserved), charcoal, small rounded red fired brick fragments. Area behind Campbell's Block.

1990:B6 3.3' fill material. Cultural materials from former area of Kaahumanu Street near Queen Street intersection included red fired brick shards, concrete and slate fragments, bottle glass shards and milled wood.

The results of the borings show variation in depths of fill material ranging from two feet to six feet generally on a slope towards Queen Street and the Honolulu Harbor. The borings indicate good preservation of faunal and botanical remains from 12 inches to 4.5 feet below surface in moist surrounding matrix. Consistency in the depths at which concrete was contacted (presumably foundations and floor features).

Improvements and widening of Queen Street towards the harbor occurred in 1882. Maps of the structures in the project area prior to, and following Queen Street improvements show no changes in building positions. As such, the locations and lateral measurements of these structures are therefore considered in situ. Core B1 (1990) indicates an in situ feature which is possibly the back wall of Noltes Old Corner Saloon built in 1858, first as a one-story wood frame, and then brick building. The coring encountered solid red fired brick at 12 inches below surface overlying solid concrete to 30 inches below surface. Preliminary testing to expose this feature and the possible foundation extent is necessary to determine the integrity of the remains. Shovel tests placed along Queen and Kaahumanu Street in structural foundation locations are an alternative to coring. Possible features contacted during shovel testing need to be further exposed. A complete data recovery plan will be formulated contingent upon the results of this initial testing phase and will be submitted to the Department of Land and Natural Resources, Historic Sites Division, for review.

A. Impacts and Mitigation Measures

Because the area underlying the parking facility has remained virtually untouched, there is a strong potential for subsurface features being discovered during the excavation and site work. Although there is some chance of uncovering remnants dating from the period before western contact, researchers mainly expect to find materials such as structural foundations, sheds, basements, and privies. Additionally, because Kaahumanu Street existed for more than 100 years, there is potential for documenting the street's development.

To minimize the potential impacts to archaeological remains, subsurface materials and structures, such as garage foundation piers and water service pipes must be left in place during demolition. In addition, monitoring during the removal of surface materials is recommended.

Previously, there has been concern whether King Kamehameha I's residential compound may be located within the project site. Testing of the project area has not, as yet, confirmed the existence or non-existence of the ancient site. Therefore, subsurface testing during the excavation phase is required for further clarification.

In the event that early artifacts and features are discovered, the treatment and disposition of these rare materials and features will take priority. At such time the Department of Land and Natural Resources, Historic Sites Section must be notified. Prehistoric materials as well as early historic sheds and structures may have been preserved through water saturation, as indicated by the project's close proximity to the waterfront. The salinity of the groundwater aids in preventing decay and erosion to objects.

Finally, since the location of the project site is highly visible to the public, high fencing, alarm systems and/or manned patrol during evening hours and weekends is strongly recommended to deter unauthorized artifact collectors from undertaking illegal excavations.

3.3.4 Visual Resources

Continuity of a view corridor is established by the rhythm of pattern elements and maintenance of visual relationships. Along Bethel Street makai of the King Street intersection, historic buildings which line both sides of the corridor establish a visual transition from the working Merchant Street district to a busy commercial working Honolulu Harbor.

3.3.4.1 Pedestrian Bridge Impacts on the Makai View Corridor on Bethel Street

All historic buildings in the project vicinity will be retained as a part of this development.

However, under review is the primary view impact by the pedestrian bridge over Bethel Street. See Figure 3-11 for the existing makai view on Bethel Street.

The establishment of the Chinatown and Merchant Street Historic Districts recognizes the historic significance of the synergy which existed between the working harbor and these downtown commercial districts. The interrelationship between the merchants of Chinatown, Merchant Street and the harbor was active and vital in the early years of the century. However, as Honolulu grew and expanded, the mauka communities became increasingly isolated from the waters of Honolulu Harbor. Nimitz Highway and the increasing dependence on vehicles further facilitated the separation of the aging Chinatown and Merchant Street communities from the harbor. Thus, the linkage between the downtown district with the harbor weakened over the past several decades. The establishment of the Special Districts recognizes the need to retain the linkage between the harbor and the landside communities of Chinatown and Merchant Street.

A pedestrian bridge approximately 15 feet high spanning Bethel Street and connecting the project parcels is a feature of the conceptual site plan of the project, which was approved by the City and County (see Figure 3-12). The practical function of the bridge is to provide occupants and visitors of either court a safe means by which to cross Bethel Street, and as an uninterrupted pedestrian link from Fort Street Mall to Nuuanu Avenue.

Based on field observations by R. M. Towill Corporation (March 1990) the proposed pedestrian bridge will interrupt some makai views of the harbor at second floor building

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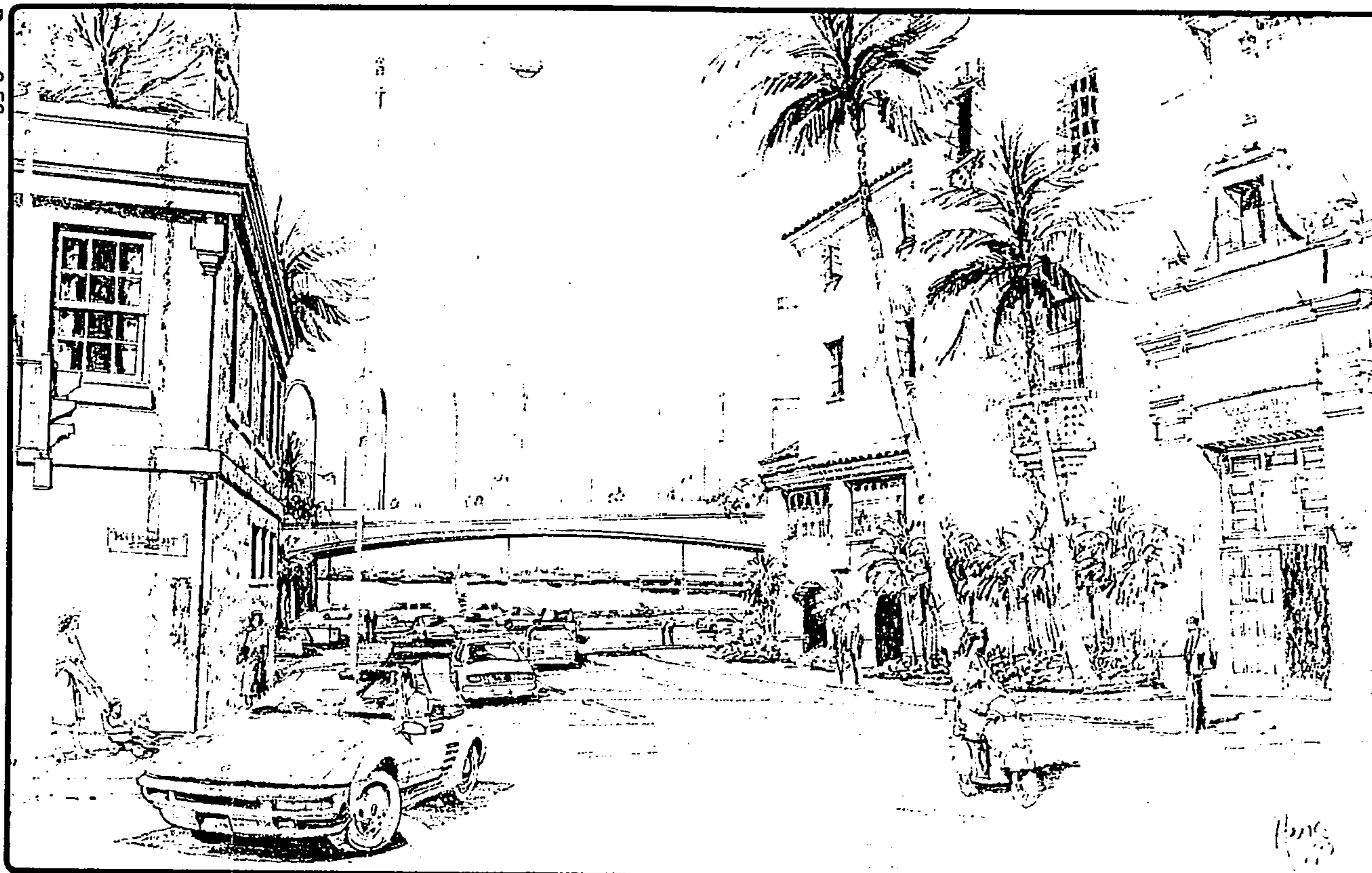
Figure 3-11
EXISTING MAKAI VIEW FROM BETHEL STREET

R. M. TOWILL CORPORATION, AUGUST 1990



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Source: Lacayo Architects, 1990

Figure 3-12
PROPOSED MAKAI VIEW FROM BETHEL STREET

R. M. TOWILL CORPORATION, AUGUST 1990

elevations and above, from some buildings located mauka of Harbor Court, along Merchant Street. However, at pedestrian/eye level, the bridge will provide a framed view of the working harbor from the intersections at King and Bethel Streets and Merchant and Bethel Streets. The bridge simultaneously re-establishes the historic relationship between the Chinatown and Merchant Street Special Districts and the harbor. The design of the bridge is proposed to be an open-air span to allow minimal disruption of the view of the harbor and Aloha Tower.

Persons crossing the bridge will be provided the opportunity to enjoy makai views of the harbor and the Aloha Tower, as well as mauka views of historic building frontages in the Merchant Street and Merchant Square areas. The new six-story Nuuanu Court office condominium structure will be an addition to the mauka view corridor as its design will be in concert with its neighboring former Police Station building.

3.3.4.2 <u>Impacts on the Makai View Corridor on Nuuanu Avenue</u>

Nuuanu Avenue is identified in the Land Use Ordinanance (Sec. 7.60-3A) as a prominent makai view corridor. The existing pedestrian view from Marin Street is that of the harbor and the Aloha Tower through the open parking lot makai of the former Police Station. The Nuuanu Court Building will enhance the character of the streetscape makai of Marin Street and draw more pedestrians toward the harbor. While the new structure will impede some mauka building dwellers' views of Aloha Tower, the six-story Nuuanu Court Building's curvilinear facade near the Nuuanu Avenue-Nimitz Highway intersection will, at the street level, invite the viewer's attention to Aloha Tower.

3.3.4.3 New Merchant Street Makai View Between Melcher's and Bouslog (Old Bishop Bank Building) Buildings

The existing view is of a utilitarian, unattractive municipal parking garage driveway entrance (see Figure 3-13). This entrance is a portion of the former Kaahumanu Street which provided access to and from the harbor until 1950, when the Kaahumanu Parking Structure was built. The Harbor Court Tower will reinstate access and upgrade the pedestrian-level experience by incorporating a landscaped courtyard at the street level beginning at Merchant Street and continuing pass shops and restaurant spaces to the Queen Street frontage. (See Figure 3-14 Note: Although not graphically indicated this proposed view of the project has been modified to exclude the concrete arch located between the Bouslog and Melcher's Buildings. By so doing the transition between the historic Merchant Street District and the harbor will be reinstated to make for a more pleasant, human-scale connection between Honolulu's past and present.)

3.3.4.4 Mauka Diamond Head View from Nimitz Highway

The existing mauka Diamond Head view of the project site from Nimitz Highway is of the three-story municipal parking structure against the backdrop of the financial district skyline (see Figure 3-15). The new view that will be provided by the Nuuanu and Harbor Court complex will be a mix of both historic and contemporary Honolulu (see Figure 3-16). Beginning at the Ewa end will be a six-story renaissance office building joined across Bethel Street by an open pedestrian bridge connecting to the modern Harbor Court complex. These towers will be an added statement to the Honolulu central business district skyline, and will will be the first impression of the CBD on the approach to downtown Honolulu.

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Figure 3-13
EXISTING MAKAI VIEW FROM MERCHANT STREET FACING PARKING ENTRANCE

R. M. TOWILL CORPORATION, AUGUST 1990

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Figure 3-14
**PROPOSED MAKAI VIEW
FROM MERCHANT STREET
FACING NEW PARKING ENTRANCE**

R. M. TOWILL CORPORATION, AUGUST 1990

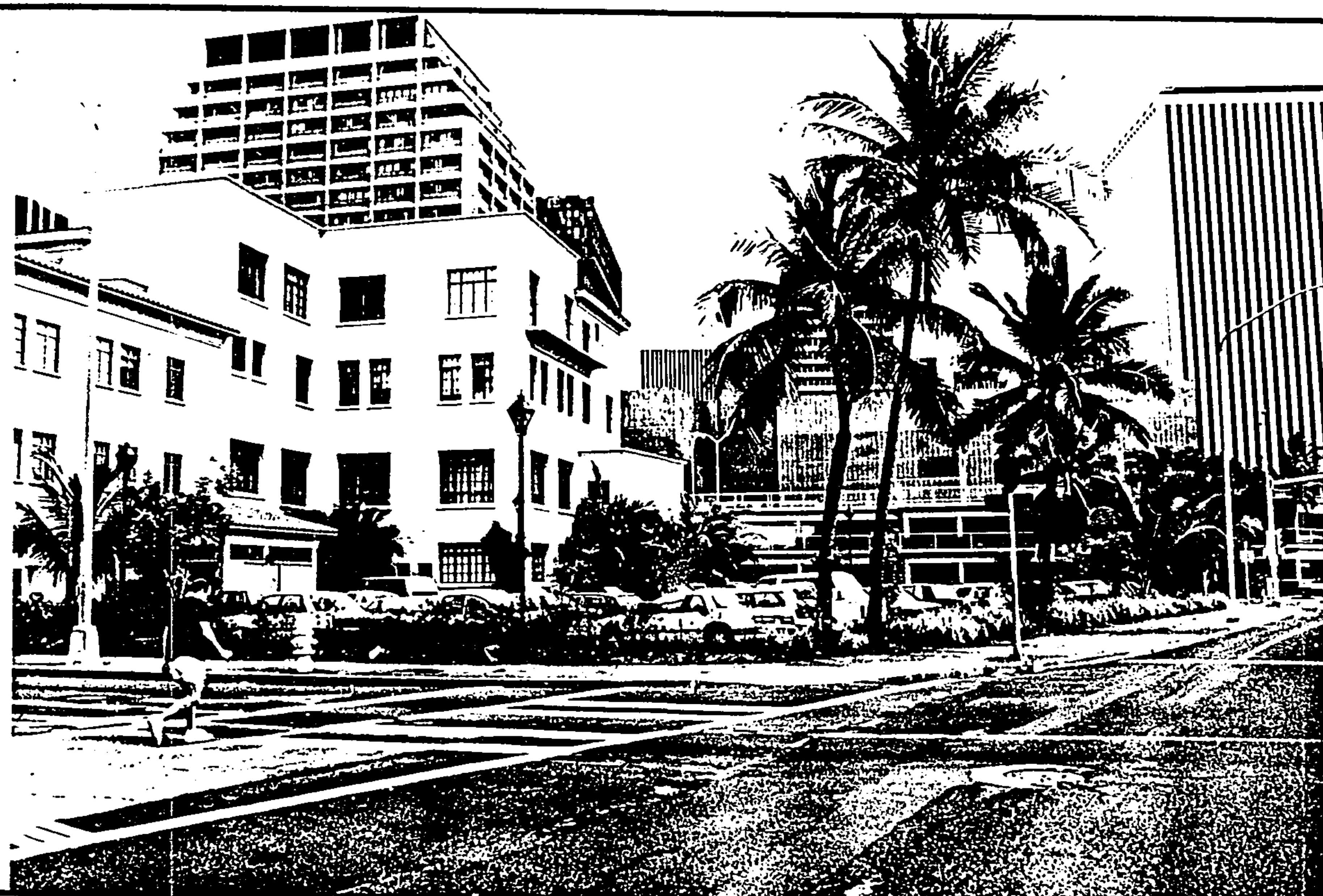

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Figure 3-15
EXISTING
MAUKA-DIAMOND HEAD VIEW
FROM NIMITZ HIGHWAY

R. M. TOWILL CORPORATION, AUGUST 1990

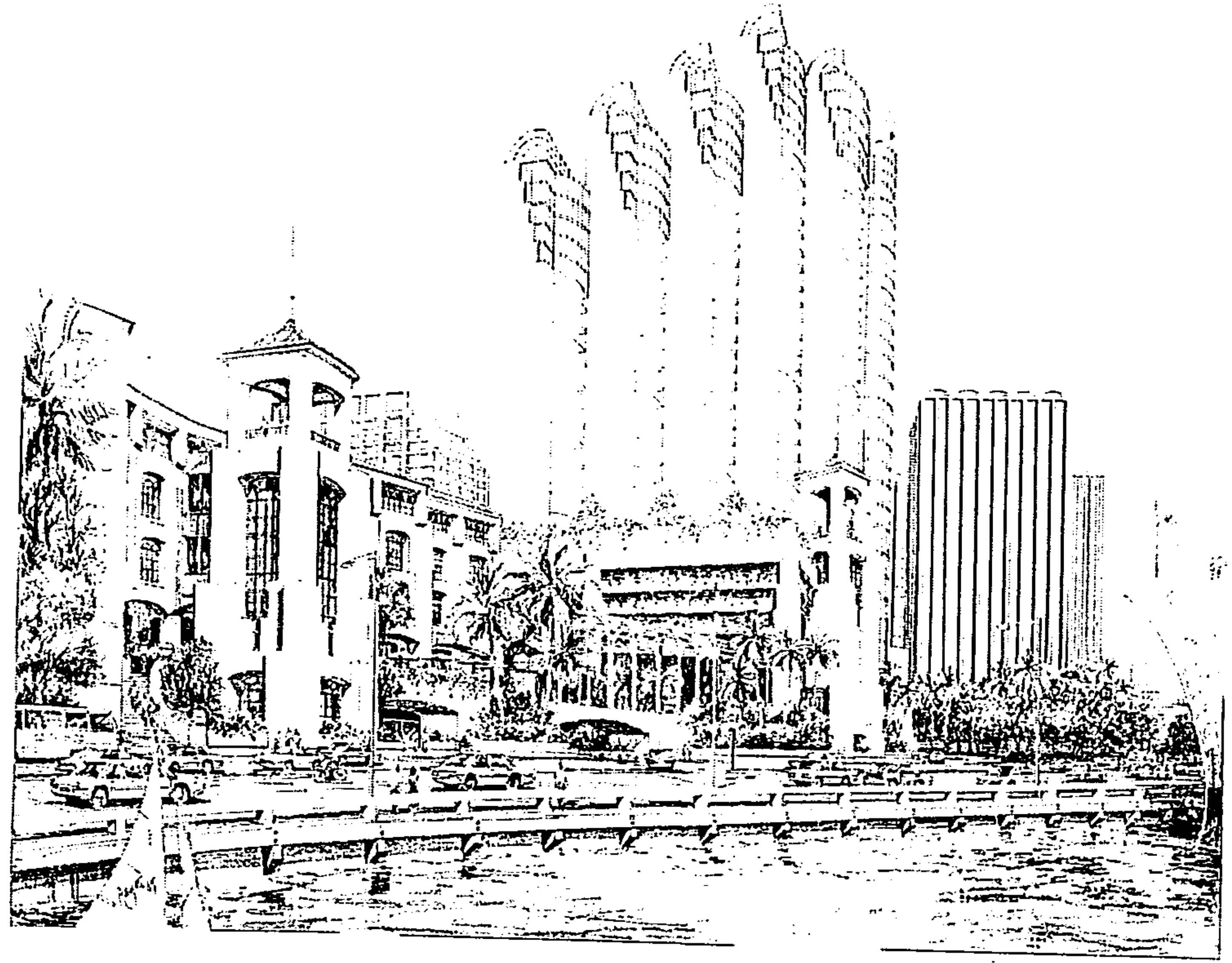

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Figure 3-16
PROPOSED MAUKA-DIAMOND HEAD VIEW FROM HONOLULU HARBOR

R. M. TOWILL CORPORATION, AUGUST 1990

3.3.5 Light Resources

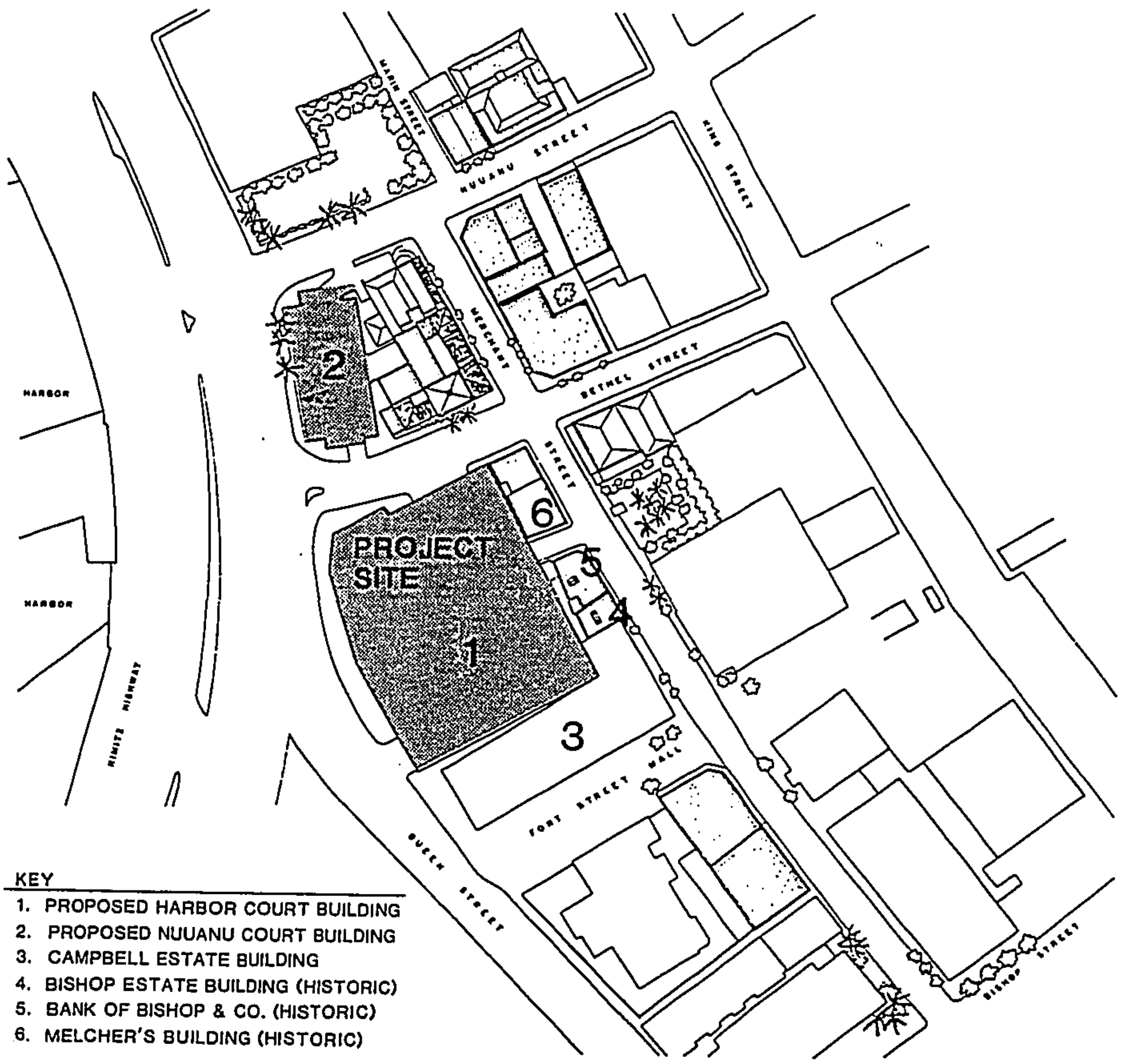
A study was conducted by TRB Architects Ltd. in July 1990 to determine the potential impacts of shadows cast by the proposed Kaahumanu Parking Structure Redevelopment on four existing buildings located along Merchant Street (see Figure 3-17). The study found that shadows would be cast by the project on the Campbell Estate, Bishop Estate, Bank of Bishop & Co., and the Melcher's Buildings for much of the afternoon throughout the year and evaluated the effects of this shading on the basis of reduced light, heat and solar energy. The following involves excerpts from the study for discussing purposes. The report, in its entirety can be found in Appendix F.

The study concluded that the impacts on the buildings due to these shadows would be minimal as:

* Light levels for the skylight in the Bishop Estate Building shaded by the project will be similar to those experienced under cloudy skies and would remain adequate.
* Solar energy for water heating is not currently being used nor likely will be, in light of the buildings' uses.
* Shading the roof, skylights, and west walls of buildings from the hot afternoon sun is desirable year round in Hawaii's climate and will likely result in more comfortable building interiors, and reduced air conditioning loads for the buildings studied.

3.3.5.1 Procedure

A review was conducted of the drawings for the proposed project and the surrounding neighborhood for possible impacts. The buildings under consideration were visited and photographed. The location of windows, skylights and other features that would be impacted were noted.



KEY
1. PROPOSED HARBOR COURT BUILDING
2. PROPOSED NUUANU COURT BUILDING
3. CAMPBELL ESTATE BUILDING
4. BISHOP ESTATE BUILDING (HISTORIC)
5. BANK OF BISHOP & CO. (HISTORIC)
6. MELCHER'S BUILDING (HISTORIC)

Source: TRB Architects, Ltd., 1990

KAAHUMANU PARKING STRUCTURE REDEVELOPMENT
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Figure 3-17
LOCATIONS OF MERCHANT STREET BUILDINGS AFFECTED BY PROJECT SHADOWS

R. M. TOWILL CORPORATION, AUGUST 1990

A photographic study was conducted of shadows cast by the project at four representative times of the year; the summer solstice (June 21), the fall and spring equinoxes (September 21/March 21) and the winter solstice (December 21). Photographs were taken of shadows cast by a scale model of the project and surrounding buildings at two-hour increments from 6 AM to 6 PM. The photographs were then reviewed to determine the existing and proposed lighting conditions for the four buildings studied.

Finally, an assessment was made of the impact of the proposed lighting conditions, and possible mitigation measures recommended.

3.3.5.2 Adjacent Buildings

The Campbell Estate Building is an L-shaped, 6-story, concrete structure to the south and east of the project. No building openings face the project. All floors for this building are currently used as offices.

The Bishop Estate Building is a 2-story stone building built in 1896. The building has four windows facing the projects site on the makai side. These windows are constructed on the existing property line and do not meet the current building code. A large ventilating skylight, approximately 4'x20' is on the building's roof. This skylight illuminates the building's stair and hall. At one time this skylight provided light for the adjacent offices. However, the majority of the interior windows have been painted over, thus reducing the building's use of daylight. The building currently has one second-story office facing Merchant Street in use as a lawyer's office. The remainder of the second floor appears to be storage and toilet facilities.

The Bank of Bishop and Co. Building is a 2-story stucco structure connected to the interior of the Bishop Estate Building on both floors. The building has one large window on the second floor facing the site. This window also appears to be constructed on the property line. Three large second-story windows face the Melcher's Building to the north. The building has a roof top ventilator but no skylight.

The Melcher's Building is a 2-story, stucco building constructed in 1853 with an addition dating from the 1930's. Windows are located on both the upper and lower levels of the Diamond Head side, the Merchant Street side and the Bethel Street side. The building has a large air conditioning system on the roof, and no skylights.

A. Impacts and Mitigation

The proposed project's shadows will benefit the buildings studied by reducing heat gain and glare through windows and a skylight. Shadows from the proposed project will also reduce the afternoon heat gain through the roof and walls of the buildings studies, thereby increasing the thermal comfort and reducing the cost of air-conditioning where used.

The Bank of Bishop Co. Building and the Bishop Estate Building will experience decreased light levels for five windows directly facing the proposed parking garage. Usually, windows such as these, which do not conform to the building code, cannot be replaced or repaired, and must be closed if major work is done on the building. However, a section in the Uniform Building Code may allow such existing conditions to remain in historic buildings provided any work performed does not make the building more unsafe than the existing building.

The design of the project has mitigated the impact of the project by its alignment to the rear wall of the proposed parking structure with the rear wall of the existing garage. The impact on these windows would have been much greater had the parking garage been built on the property line.

Campbell Estate Building - The project will primarily shade the leg of the "L" shaped building extending along Merchant Street.

1. Light

No impact from reduced light levels is expected as the building has no openings facing the site or on the roof.

2. Heat

Currently, solar energy is not being utilized by this building. If the use of solar energy was desired, much of the rooftop is unaffected by shadows from this project and could be utilized for this purpose. The Campbell Estate Building may experience a very slight decrease in heat gain and air conditioning load due to the shading of the west and north facing walls and partial shading of the roof.

Bishop Estate Building will be shaded during the afternoons throughout the year.

1. Light

   a. Light conditions for the ventilating skylight will be similar to those currently experienced on cloudy days. From a conversation with the current occupant, this lighting condition provides adequate illumination for the hallway. Shading this skylight will likely reduce the heat and glare, increasing the visual and thermal comfort of the space.

Mitigation Measures: No mitigation measures are deemed necessary for the Kaahumanu Redevelopment. However if the owners of the Bishop Estate Building wish to use the available daylight more effectively, the following may be considered:

(1) Stripping the paint off the interior windows and glass doors separating the adjacent offices from the skylit hallway.

(2) Providing an open railing or a low wall at the stairway instead of the 8'-0" partition, which has been added and which obstructs light penetration to the stairwell.

b. The three second-floor windows facing the project site on the makai site will not receive direct afternoon sunlight as they currently have. The light coming in through these windows will be indirect, as it will reflect off the wall of the project's parking structure. The current indirect light level will also be decreased for the first-floor window, as afternoon sunlight will no longer shine on the upper wall of the Bishop Estate Building and be reflected down the space between the Bishop Estate Building and the existing parking garage.

Mitigation Measures would include: 1) painting the parking structure wall a highly reflective color (white or off-white); and 2) painting the Bishop Estate Building wall facing the project, white as well.

2. <u>Heat</u>

Currently, solar energy is not being utilized by this building for water heating nor would this be likely as the water demand is low. The afternoon shading of the Bishop Building's roof, west wall and skylight, by the project will be beneficial from a thermal comfort standpoint. Less heat would enter the building's envelope which, in turn, would require less natural ventilation or air conditioning (where used).

Bank of Bishop & Co. Building will be shaded by the project after 12:00 noon in the winter and after mid-afternoon in the spring, summer and fall.

1. Light

   a. One second-story window facing the project will have reduced light levels as described in paragraph "Bishop Estate Building " shown above. However, the current light level at this window is already somewhat reduced by a shade tree growing outside of this window.

      Mitigation Measures - Paint parking structure wall as noted under paragraph "Bishop Estate Building" shown above.

   b. The second-story windows on the northwest side facing the entry drive will be shaded by the project after 12:00 noon throughout the year. This should reduce the heat and glare through their windows, especially in the summer.

2. Heat

   Currently, solar energy is not being utilized by this building. Shading for the proposed project should decrease heat gain through the uninsulated roof and walls of the building, resulting in a more comfortable thermal environment.

Melcher's Building will be partially shaded by the proposed project after 2 PM in the summer and fully or partially shaded after noon spring, fall and winter.

1. Light

   The first and second-story windows on the south side facing the entry drive will be shaded by the project in the early afternoons spring, fall and winter. This should reduce the glare and heat gain through these windows.

2. Heat

   Currently, solar energy is not being utilized by this building. The Melcher's Building may experience a slight reduction in the building's air-conditioning load due to the reduction of heat gain through the windows, roof and north and west walls due to the proposed project's shadows.

3.3.6 Recreational Facilities

Recreational facilities such as Ala Moana Beach Park, the Richards Street Y.W.C.A., and the Nuuanu Y.M.C.A. are conveniently located relative to the project site.

The recreational needs and park dedication requirement of the project have been discussed with the City and County of Honolulu, Department of Parks and Recreation (DPR). Recreational facilities are being planned on the upper deck of the project to serve the hotel users and condominium residents. A ground level area has been established as credit for the project to comply with the City's Park Dedication Ordinance No. 4261.

However, credit for the ground-level park area, will be subject to approval of the plan for the upper recreation deck by DPR.

3.3.7 Parking Displacement

The 462 existing parking stalls, 411 from the Kaahumanu parking garage and 51 from the District Court Building parking lot, will be displaced during construction, but will be replaced upon completion of the project. In turn, a total of 1,055 stalls is planned for the new project. Of this total, 462 stalls on the lower parking levels will be owned by the City and made available to the public, 120 spaces will be assigned to the condominium apartments (one per unit), and the remaining 473 spaces will be reserved for use by the office/retail/commercial occupants of the "Pier Tower" and "Nuuanu Court". Also, contingent upon analysis of the soil conditions,. 30 on-site parking stalls may be added under the District Court site. All of the above parking provisions will help meet the demand for day-time parking in Downtown Honolulu.

A. Impacts and Mitigation

During the construction period, scheduled from February 1991 to March 1993, use of the 462 existing stalls (411 in the Kaahumanu structure and 51 in the District Court lot) will not be possible. The major impacts typically associated with such a decrease in the number of available public parking spaces are those associated with inconvenience to those who would normally use this garage, and temporary loss in parking revenues from this garage to the City.

The City and County has developed an interim parking plan to minimize the inconvenience caused by the closing of the Kaahumanu and other municipal lots during redevelopment. Downtowners will be encouraged to use other municipal lots including the Kekaulike, Bishop-Kukui, Kukui Plaza, and Hale Pauahi lots as well as the Neal Blaisdell Center. The City's new facilities, currently under construction, at Bethel and Hotel Streets (Chinatown Gateway Plaza), and at River Street and Nimitz Highway (River-Nimitz) are scheduled to open in mid-1990, reconfiguring some of the existing lots could gain additional spaces, and valet parking may be a possibility for some. In the longer term, increasing the number of new public parking spaces at the proposed Pacific Nations Center at Pali Highway and Beretania Street may be possible. The developer may place priority on completing the project's parking structure so that the period during which parking will be unavailable on-site will be shortened.

3.3.8 Economic and Population Characteristics

The population of the City and County of Honolulu has been increasing steadily since 1950, although the rate of increase has been decelerating. Of the more than 811,000 residents on Oahu in 1985, nearly 50% or more than 382,000 reside in the primary urban center of Honolulu. This shows an average annual rate of increase of about 0.9% between 1980 and 1985.

As projected by the State Department of Business and Economic Development (DBED), Oahu's population is expected to increase at about 1.1% annually between 1985 and 1995, reaching about 910,000 by the end of the ten year period. Throughout this time, it is anticipated that urban Honolulu's resident population will maintain 45% to 50% of Oahu's total, and by 1995 will have increased to 432,400 people.

3.3.8.1 Statewide Characteristics

The State's resident population, which includes all residents and military personnel stationed in Hawaii, is projected to increase from 1,137,200 in 1990 to 1,225,200 in 1995.

This will be an overall increase of eight percent or an average growth rate of 1.5 percent per year. Hawaii's de facto population, which includes visitors present but excludes residents temporarily out-of-state, is projected to increase from 1,269,100 in 1990 to 1,382,300 in 1995, or an overall increase of nine percent, or an average of 1.8 percent per year. The faster growth rate of the de facto population, as compared to the resident population, is due to the growth rate of visitors over the next five years. (Department of Business and Economic Development, DBED, 1988.)

Economic projections prepared by DBED indicate continued growth for the State over the next five years, although at a slower rate when compared with the rapid increases of the 1960's and 1970's.

The Gross State Product (GSP) for Hawaii, which is the total value of all goods and services produced within the State, is projected to increase from $13.7 billion in 1980 to $21.7 billion in 1995 (in 1982 dollars). This represents an average growth in GSP of 3.8 percent per year, compared with an average growth of 5.3 percent per year for the period 1960 to 1980.

DBED has projected total jobs by industry sector for Oahu and the State through the year 2010. These projections are considered reasonable and have been adopted by the State and County for long-range planning. The demand analysis focuses on those employment sectors that generate the majority of jobs requiring office space, including: banking, finance, real estate and insurance; services (excluding hotels); and government.

For purposes of the Kaahumanu Parking Structure redevelopment project, projections to the year 1995 indicate that between 1990 and 1995, jobs in selected categories on Oahu will increase from 169,000 in 1990 to 178,800 in 1995, or at an overall rate of eight percent, which will be at an average annual rate of 1.6 percent. Assuming that each new job in the selected employment sectors results in a demand for about 65 square feet of office space (Source: City & County of Honolulu, Department of General Planning, D.G.P., 1987), the demand for new office space could be expected to be a total of approximately 637,000 square feet for the period 1990 to 1995.

3.3.8.2 Oahu and Honolulu Characteristics

The resident population of Oahu, as projected by DBED is expected to increase from about 861,600 in 1990 to 910,400 in 1995. The de facto population is expected to increase from 928,000 in 1990 to 983,100 in 1995. The projected population of the Primary Urban Center is expected to increase from 457,700 in 1990 to 467,500 in 1995.

The average household sizes on Oahu and in Honolulu have been declining since 1970, and were reported to be 3.13 and 2.87 persons per household, respectively in 1985. This trend is anticipated to continue through the projection period. However, for the downtown Honolulu area, the same study shows that for 1985, the number of persons per unit was 1.85 (City and County's Department of General Planning, 1987). As of 1985, there were 4,313 housing units in downtown Honolulu.

The City's DGP also estimates the population capacity of different areas, based on information regarding land zoned for residential use. The most recent review of the data shows 550 acres of land in the primary urban center (extends from Pearl City to Aina Haina) to be available for development, which could support 22,236 new housing units and a population of 166,317 in addition to the existing population (Parsons Hawaii, 1989).

The average annual household income in Honolulu has increased from about $10,346 in 1970 to an estimated $40,270 in 1988. Assuming income and expenditures expand at a rate consistent with inflation, the total additional household income in Honolulu's primary urban center is projected to be $1.2 billion by 1995 (based on the assumption that average annual household income will be $52,990 in 1995, and the PUC will have up to 22,236 new housing units).

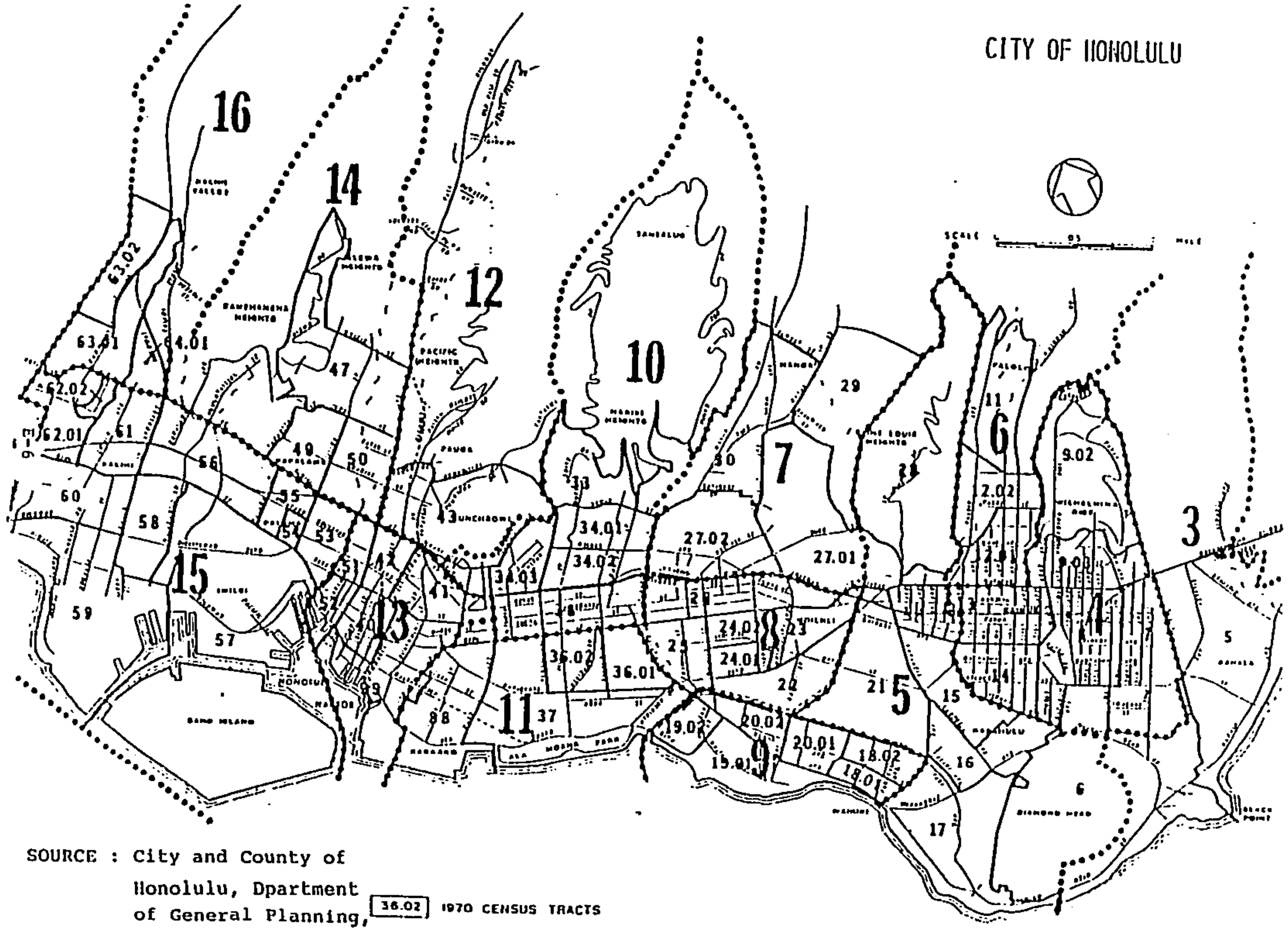
Based on a study prepared by the U.S. Bureau of Labor Statistics, retail expenditures in Honolulu are estimated to represent about 38 percent of total household income. Assuming this relationship continues, retail expenditures will be about $450 million by 1995.

3.3.8.3 Neighborhood Characteristics

Far more people visit and work in the project area and vicinity than reside there. The daytime population of workers, customers, clients, and visitors in the downtown area alone is estimated at more than 53,000 people (Downtown Improvement Association, 1989). Historic sites in the downtown area on the State and/or National Registers of Historic Sites attract visitors as well. Many people transfer from one bus line to another in downtown Honolulu, and hence are counted in the above estimate.

The users of the project site and adjoining areas are mainly non-residents:

* The Project Site. The population of the project vicinity in 1985 was approximately 8,000 people. It is located in the southwestern corner of Census Tract 40 (see Figure 3-18), the Central Business District (CBD). The project site's parking structure is used at times by customers or clients of the adjacent offices, and customers of nearby Downtown businesses. The parking area is used some evenings and weekends by people who visit Chinatown and downtown shops to



SOURCE : City and County of Honolulu, Dpartment of General Planning,

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Figure 3-18
CENSUS TRACT AND NEIGHBORHOOD BOARD DISTRICTS

R. M. TOWILL CORPORATION, AUGUST 1990

browse or shop. The smaller site's parking lot is used by City and County employees during the weekdays. Bethel Street which bisects the project site, is a major access road from Nimitz Highway to downtown.

* The rest of Census Tract 40, the Central Business District. Office workers are the major users of this area. They are joined by a variety of others, including customers of downtown businesses, students at Hawaii Pacific College, people changing busses, older people who use parts of Fort Street Mall as a meeting place, and street people, some of whom use the project site as refuge during the night.

The district has few after-hours attractions at present. The major source of entertainment in the area, Hawaii Theater, is only open for special events. However, the recent opening of a police sub-station at the edge of the district may make downtown seem safer to CBD residents than before.

3.3.8.4 Housing Characteristics

The number of housing units in the downtown Honolulu area nearly doubled in the 1970's, but has increased little since then. The total of year-round housing units for the study area (Central Business District) in 1980 was 4,570. The total vacancy rate was 6.7 percent, thus the total year-round occupied units was 4,262 (Source: DGP, 1987).

The majority of the housing units in the project vicinity were rented, rather than owner-occupied, in both 1970 and 1980. Over the decade of the 1970's, the proportion of owner-occupants in downtown Honolulu increased.

In the downtown area, which includes Chinatown, Kukui and the financial districts, two different types of new housing units have recently been built -- more expensive condominium projects, and rental apartment buildings.

Honolulu Tower, built in 1982, added relatively large condominium units to the inner city housing stock. More recently, upscale condominium projects in Kakaako (Royal Capitol Plaza and Waterfront Plaza) have sold well. Honolulu Park Place, adjacent to Honolulu Tower is currently under construction.

The City and County of Honolulu has completed a rental project in Chinatown, Hale Pauahi, with 396 units. A portion of the units (51 percent) is earmarked for low-income residents, while the balance are market-rate. Other projects under construction are Chinatown Gateway Plaza and River-Nimitz, portions of which will be reserved for low- and moderate-income renters.

3.3.8.5 Issues and Concerns

Interviews, done in conjunction with the study, with members of the community brought out both issues of general concern with regard to the project and the viewpoints prevalent in specific groups. The most widely shared concerns had to do with parking and impacts during construction. A segment of the resident population expressed concern about the need for active recreational space in the downtown area.

Some expressed concern about the possible mauka-makai view impacts the pedestrian bridge over Bethel Street may have. Some also expressed concern about the construction impacts on the old historic buildings next to the project site. Sensitivity to design of the new buildings in relation to the nearby structures of historic significance was also stressed. Use of reflective glass as exterior finishes on the buildings was also of concern.

Persons interviewed for the social impact assessment included members of four groups:

* Area Residents reacted positively to the residential component of the project as the increase in the number of downtown residents will eventually lead to 24-hour activities in a CBD that currently empties out at the end of every workday.

* Representatives of the downtown business community were generally supportive of the project as contributing to the CBD's need for additional office space.

* Persons affiliated with adjacent non-residential land use largely viewed the project as an asset to the area, so long as certain potential problems were controlled. Their major concerns were that (1) interim parking lots be conveniently available to the public; and (2) noise and vibration from construction equipment might affect nearby significant historic structures.

* Owners and tenants of neighboring properties reacted somewhat positively as they foresaw increased clientele, customers and property values as a result of the project.

3.3.9 Economic and Fiscal Impacts

This section examines economic impacts of the project by estimating employment effects attributable to the project as well as effects the project will have on downtown development.

The estimates provided here indicate the order of magnitude of the impacts in question.

3.3.9.1 Employment Impacts

The project will generate both short-term employment, during construction, and long-term employment during the operational phase. Employment impacts include:

* Direct Employment - jobs created on-site and as a result of direct construction and long-term on-site employment.

* Indirect Employment - jobs created as establishments receive direct income purchase goods and services; and

* Induced Employment - jobs created as employees spend their wages in the local economy or support government jobs through the payment of taxes.

3.3.9.2 Construction Phase

During construction, the project will create direct construction jobs, both on-site and off-site. Construction further contributes to the State economy, generating indirect and induced employment.

Construction jobs are estimated in Table 3-8. Construction of the project will generate an estimated 1,153 direct employment positions. Based on accepted ratios, the on-site direct employment is estimated as 922 person-years.

TABLE 3-8

CONSTRUCTION PHASE EMPLOYMENT AND INCOMES

Construction Costs:	$110,000,000	(1)
Average Cost Per Worker:	$ 95,410	(2)
Direct Construction Jobs (Construction Costs divided by average construction spending per job)	1,153 jobs	
On-Site Direct Construction Jobs	922 jobs	(3)
Industry Employment Multiplier	1.4	(4)
Indirect and Induced Jobs	1,614	
Direct Construction Jobs	1,153	
Avg Construction Wage, 1987	$ 30,645	
Direct Income	$35,333,700	
Industry Income Multiplier	0.8	(5)
TOTAL INCOME	$28,266,900	

NOTES:

(1) Based on original estimates by Ralph Cornuelle and Associates, Inc. Assumption is labor costs are about 64 percent of development costs; remaining 36 percent consists of cost of materials, etc. (R. M. Towill Corporation, December 1989).
(2) Hawaii State Department of Business and Economic Development (DBED), 1987, DATABOOK, pp 351-52, 562.
(3) Based on estimate that 80 percent of construction jobs will be on site.
(4) Employment based Model Communication w/DBED (John Child & Company), Dec 1989.
(5) Income Model Communication with DBED (John Child & Company), Dec., 1989.

Some phases of construction are more labor-intensive than others, so the demand for construction workers on the project will not be constant throughout the construction phase.

Indirect and induced employment attributable to the project's construction will amount to approximately 1,614 jobs.

3.3.9.3 Operational Phase

The long-term impacts of the project can be estimated in the following order of magnitude range (see Table 3-9):

TABLE 3-9

EMPLOYMENT AND INCOME EFFECTS OF OPERATIONAL PHASE

		No. of Employees	
New Office Space	245,000 s.f.	1,227	(1)
New Retail Space	37,600 s.f.	1,253	(2)
New Restaurant Space	11,000 s.f.	44	(3)
Direct Employment		2,524	
Multiplier	0.8 (4)		
Total Employment (Direct, Indirect, and Induced Jobs)		2,019	
Direct Jobs		2,524	
Median Income Honolulu, 1989	$27,400 (5)		
Direct Income	$69,157,600		

NOTES:

(1) Assumption: 1 employee per 200 s.f. (BOMA, 1988)
(2) Assumption: 1 employee per 30 s.f. (AIA)
(3) Assumption: 1 employee per 250 s.f. (AIA)
(4) State DBED Input/Output Model, Databook, 1988, Table 222.
(5) Source: State Housing Finance and Development Corporation (1989).

The preliminary development program for the project estimates that total office space of 245,500 s.f. will be added to the downtown office inventory. Assuming that an employee density is one worker per 200 s.f. (Source: BOMA Experience Exchange Report, 1988) allotted to the new office space in the project, an additional 1,227 employees can be estimated for this project. Another 1,253 retail employees can be estimated as a result of this project, based on the assumption of one employee per 30 s.f., for a total of 48,600 s.f. of retail/restaurant space. The total restaurant space of 11,000 s.f. would generate the need for 44 employees based on the ratio of one employee per 250 s.f. Thus, the total estimated number of direct jobs that can be accommodated by the project is 2,524 while the number of indirect or induced jobs will be 2,019. Based on the 1989 Honolulu median income of $27,400, direct annual wages of $69,157,600 would be earned by employees occupying this project in the operational phase.

3.3.10 Impact on Downtown Development

3.3.10.1 Office Space

The demand for office space in downtown Honolulu is expected to be sufficient to absorb the project's 245,000 square feet. A market assessment was conducted by John Child and Company for the project in June 1989 and updated in February, 1990. The existing Class A office space in Honolulu extends from the Chinatown district of downtown Honolulu to Waikiki. The primary market area includes three segments of the Honolulu office market: financial district, including expansion into Chinatown; Kapiolani district; and Waikiki (see Figure 3-19).

Similar to other major cities across the United States, office development in Honolulu began in its financial district. A location in the financial district offered tenants convenient proximity to major financial, legal and other professional businesses as well as the various State and County government agencies.

As land prices and rents increased, office development began to extend eastward outside the financial district to the Kapiolani district.

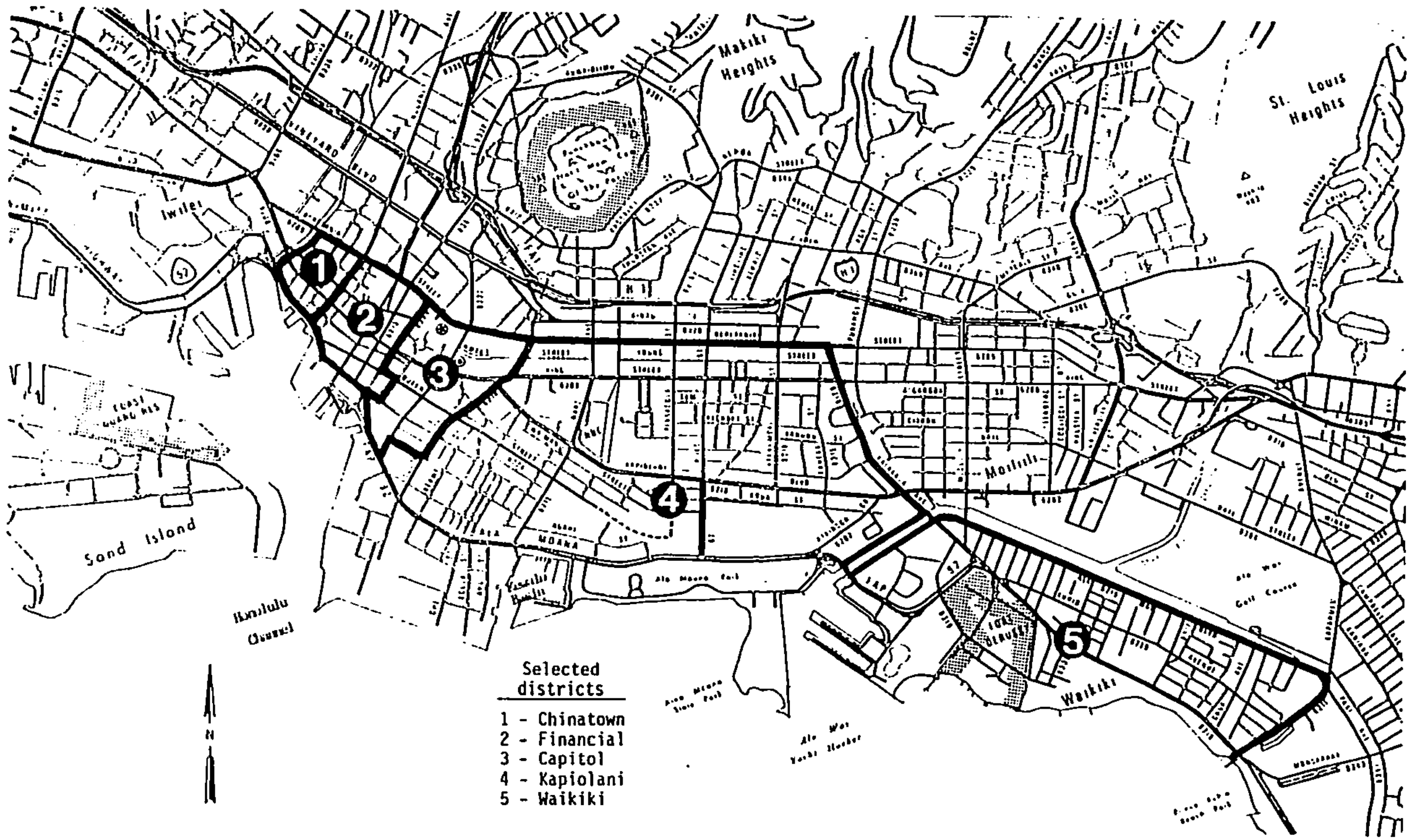

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Figure 3-19
SELECTED HONOLULU DISTRICTS

R. M. TOWILL CORPORATION, AUGUST 1990

Developments in the Kapiolani district initially appealed to tenants who did not need to be in the financial district and those who preferred a convenient location to a variety of wholesalers and retailers, particularly those servicing stores in the regional Ala Moana Shopping Center and Waikiki.

Today, the financial and Kapiolani districts are no longer insulated from one another. Land prices and rent levels are relatively comparable as the two districts compete for the same market segments.

Preliminarily, the study concluded that this 245,000 square feet of office space will occupy a prominent location with views across the Honolulu waterfront. By contrast, the three competing office developments -- One Alii Place, Pacific Nations Center, and Pan Pacific Plaza -- will occupy less desirable sites away from the center of the financial district. However, views from these developments may also be less impressive.

The project marketing could overlap with that of the Harbor Center Office Complex, proposed for development on a portion of the Aloha Tower redevelopment site. As a result, Harbor Center could be a competing project. Office development on the Merchandise Mart site, currently under construction, could also represent an additional source of competition.

The project is expected to be comparable or superior to the leading first-class office buildings in downtown Honolulu. The development amenities and finishes would be comparable to Bishop Square.

The project could be expected to attract tenants seeking high-quality office space in downtown Honolulu. Tenants might include businesses that would benefit from prime locations in Class A office buildings near the financial center. Tenants could be expected to be:

* Executive corporate offices of major local companies
* Companies with professional sales staff such as real estate brokers, insurance, financial advisors and stock brokers
* Financial institutions
* Attorneys and professional services
* Branch offices of international and national companies.

3.3.10.2 Residential Units

The addition of 120 upscale condominium-apartment residential units will increase the downtown Honolulu housing market inventory, thus attracting professionals who are seeking the conveniences of living and working in downtown.

Between 1980 and 1985, about 14,100 new housing units were added on Oahu. Of this number, almost 8,400 units were in urban Honolulu. As of 1988, the island's residential inventory was estimated at about 272,000, of which urban Honolulu had approximately 151,700 units.

Based on the difference between the existing and projected households, the residential requirements on Oahu are forecasted to increase from about 24,000 units in 1989 to 45,100 additional units by 1995. Similarly, urban Honolulu's residential requirements are expected to increase from about 3,200 units in 1989 to a cumulative total of about 14,100 additional units by 1995.

At present, about 950 two-bedroom units in five high-quality residential condominiums are under construction in urban Honolulu. A majority of the units in each of these projects has been reserved. The projects include:

* Honolulu Park Place
* Nauru Tower
* Imperial Plaza
* 1015 Wilder
* Uraku Tower

All five projects are expected to be sold out by the time the proposed project is completed and enters the market in 1993. Thus, they are not considered to create direct competition to the proposed project. However, five other projects are expected to provide some competition for the residential component of the project. They are:

* Waterfront Towers	1990
* Waialae Residence	1990
* Victoria Group Condominium	1991
* Universe Plaza	1992
* Waterpark Tower	1992

It is anticipated that the project's residential component will have a significant advantage over most of the above projects entering the market between 1990 and 1992 because of its unique design characteristics, and convenient, accessible location, and thus are expected to be absorbed.

3.3.10.3 Downtown Hotels

It should be noted that the support for the project's hotel rooms will depend significantly on the market demand at the time of project completion. The project's 120 residential units will be designed in such a way that they can be converted into hotel units, should the market demand for a downtown hotel be low, thus creating a potential for 240 total units.

A market assessment conducted for the State's Honolulu Waterfront Master Plan in 1989 by John Child and Company, Inc. concluded that the ultimate success of a business hotel in downtown Honolulu would depend on its ability to compete with existing and proposed facilities. The major advantages of a business hotel in the Honolulu Waterfront study area include:

* Emerging reputation of Hawaii, especially downtown Honolulu, as an international business center.
* Convenient location to the business, financial and government centers of Honolulu.
* Limited availability of alternative sites as desirable for hotel development in urban Honolulu.
* Attractiveness of the hotel site adjacent to and integrated with the Aloha Tower complex.

The major competitive disadvantage of a downtown business hotel would be its distance from evening activities and amenities found in Waikiki. However, this disadvantage can be mitigated by incorporating sufficient support retail and entertainment facilities and activities convenient to the hotel site. The creation of such facilities and activities would contribute to the City's overall Downtown economic revitalization effort.

A hotel for business travelers in downtown Honolulu could enhance Honolulu's image as a place to do business. At an occupancy rate of 75 percent, this market segment could support a hotel with 400 to 500 rooms by the year 2010 (the demand is projected as 130 to 170 currently to 380 to 460 rooms by year 2010).

To enhance its attractiveness and competitive advantage over other hotels relying on this market segment, the hotel could be integrated with other uses such as a retail complex which could provide dining, shopping and entertainment alternatives currently not available in downtown Honolulu.

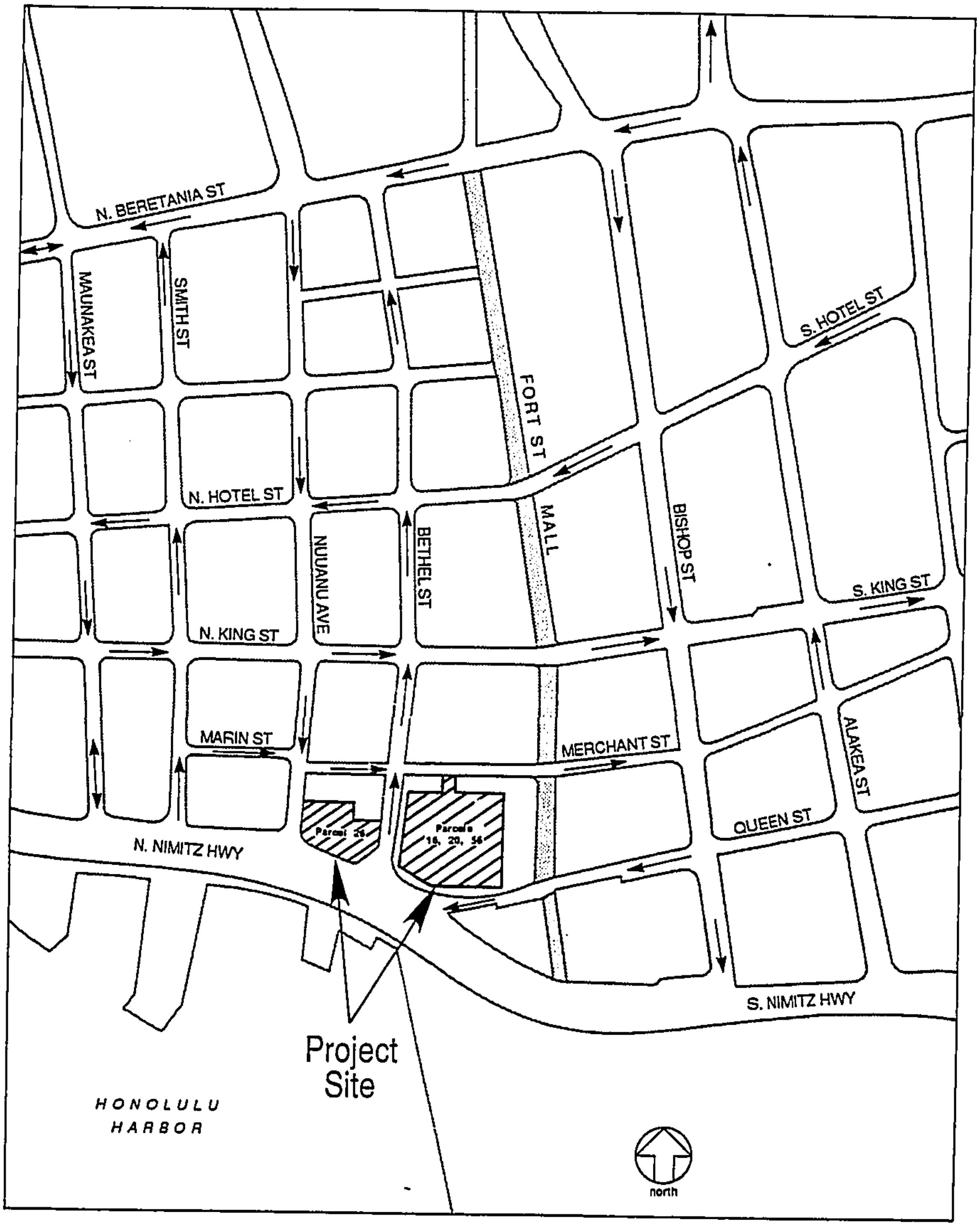
Based on the size of the proposed hotel (110± rooms) approved by the State's Aloha Tower Development Corporation, and the hotel proposed for the Kaahumanu Parking Structure redevelopment (120 rooms), the potential number of hotel rooms total approximately 230. Thus, it appears that the market will be able to support these hotel rooms in downtown Honolulu within the next 10 years.

3.4 INFRASTRUCTURE SYSTEMS AND SERVICES

3.4.1 Transportation Systems

3.4.1.1 Existing Network

All the streets immediately surrounding the site are one-way corridors. (See Figure 3-20). The roadways provide circulation which travels in a north, east, south, west pattern around the site. The speed limit on the one-way streets is 25 miles per hour. Lane widths are generally 8- to 10-feet with the exception of the outer or curbside lanes which are wider for vehicles using these lanes to drop off and pick up passengers. The major roadway facilities providing access to the project site are Nimitz Highway and Bishop Street. Minor roadways include Nuuanu Avenue, Bethel Street, Merchant Street and Queen Street.



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Source: Pacific Planning
and Engineering,
1989

Figure 3-20
ROADWAY NETWORK

R. M. TOWILL CORPORATION, AUGUST 1990

3.4.1.2 Mass Transportation

The City presently contracts with Mass Transit Line (MTL) for the operation and maintenance of The BUS transportation system, which runs extensively throughout the Downtown area mainly via Hotel, King and Beretania Streets. Presently Route 4 passes around the project site, traveling in the Ewa direction on Queen Street, then turning right onto Bethel Street. There is one bus stop on the corner of Queen and Bethel Streets, and another located two block mauka near King Street. There are no current plans to change or expand the public bus service in the near future.

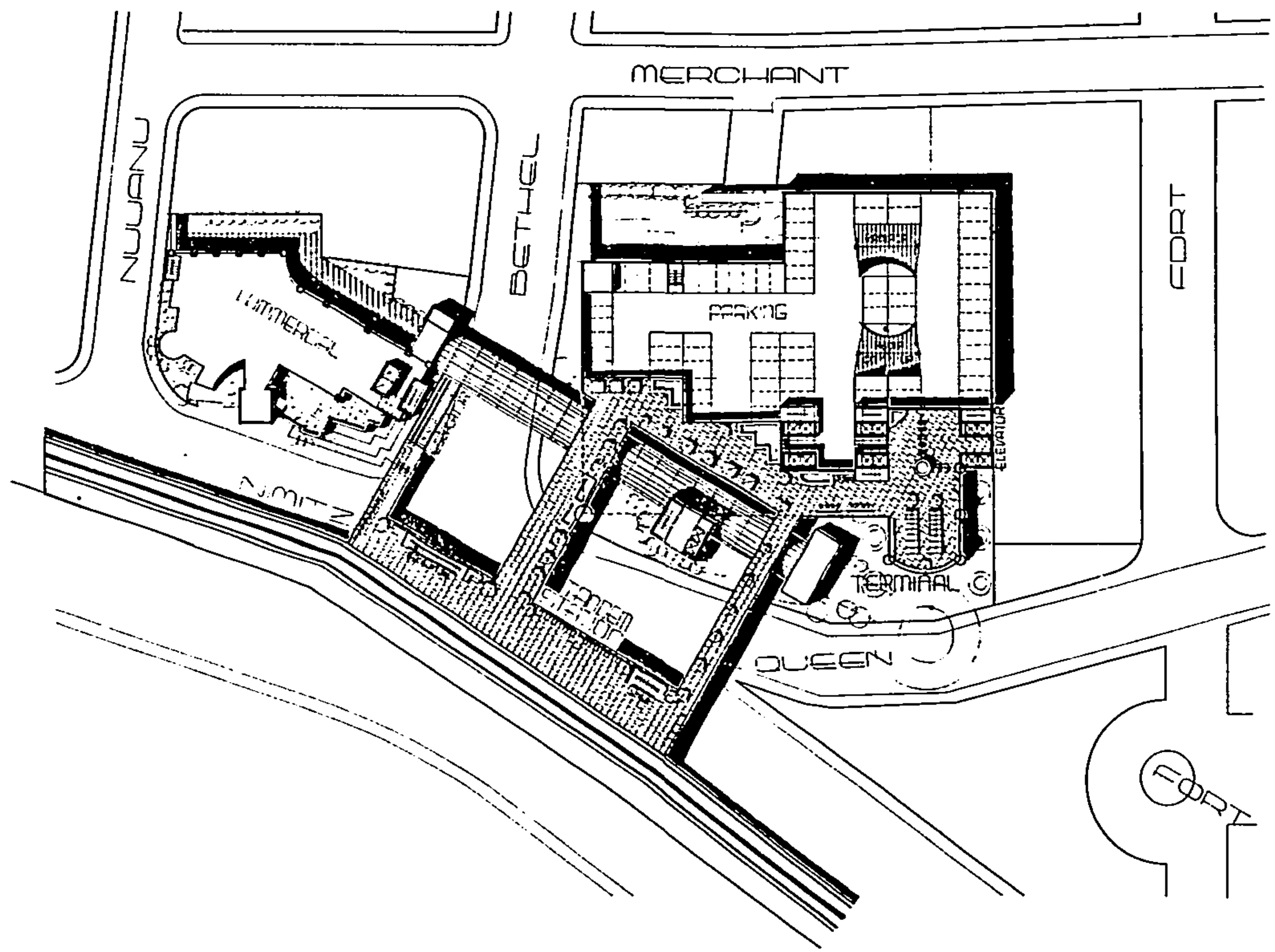
3.4.1.3 Rapid Transit

With the possibility of a rapid transit system being implemented in Honolulu, plans have been made to incorporate a rail transit station within the project location. During the schematic design and through design development, plans will continue to allow for the station option unless advised by the City that the station option will not be required.

Figure 3-21 shows the possible station placement relative to the project. The stacked, or tandem, tracks near the center of Nimitz Highway would be linked to the transit terminal by three bridgeways along a 216-foot expanse, at a height of about 38 feet, joining the building at the 6th and 7th parking levels. Escalators at the Ewa end of the station would serve passengers from and between the two track levels, while two pairs of elevators would serve passengers at the Diamond head end of the station.

3.4.2 Traffic

Pacific Planning & Engineering, Inc. (PP&E) conducted a traffic impact study to identify and assess future traffic impacts caused by the proposed action in the year 1992, when the project is expected to be completed. (Note: Since the completion of this traffic study, the expected project build-out year has been changed to 1993. A revised analysis has



Source: Lacayo Architects, 1989

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Not to Scale

Figure 3-21
OPTIONAL RAPID TRANSIT TERMINAL

R. M. TOWILL CORPORATION, AUGUST 1990

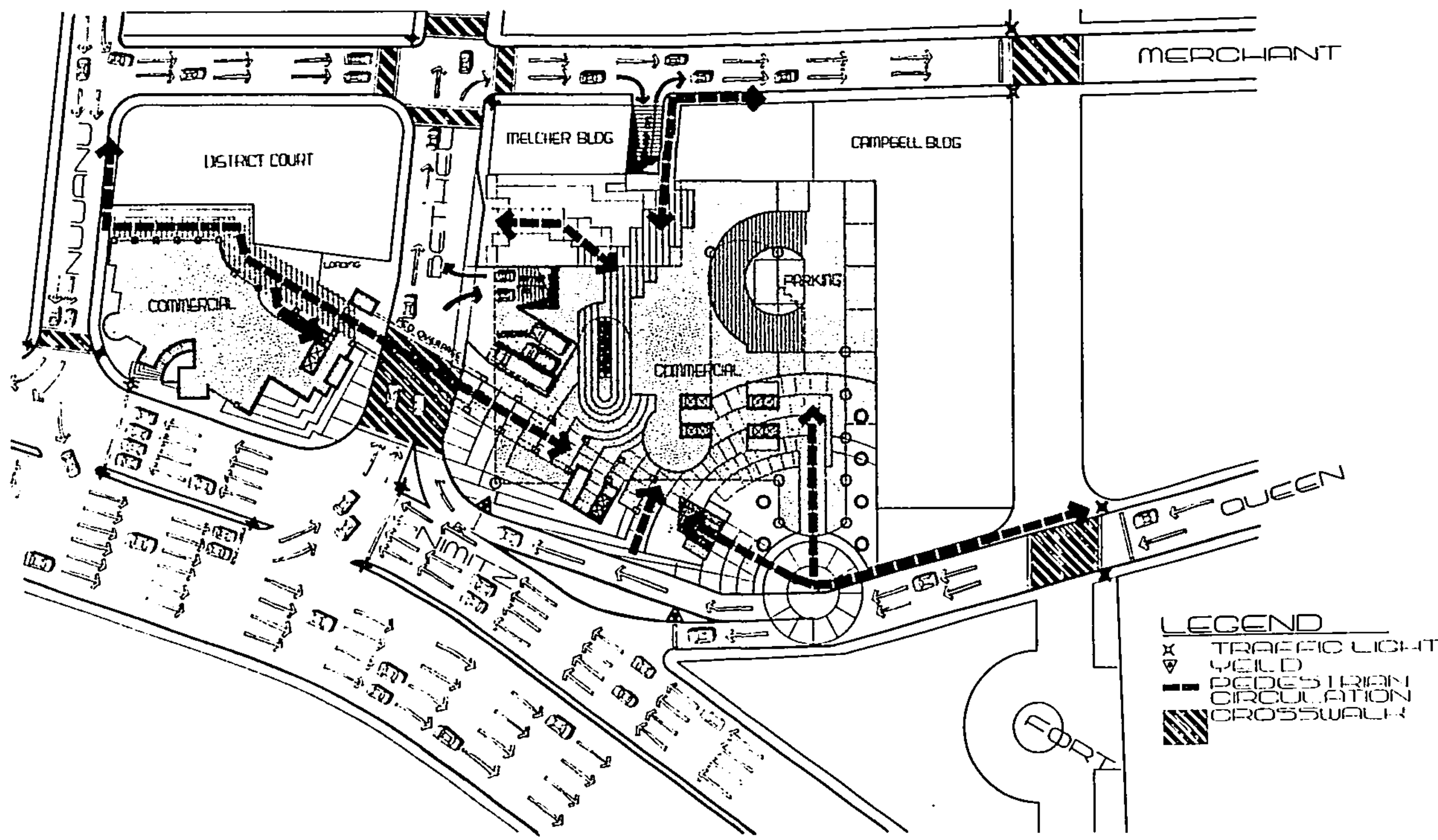
been prepared which will reflect changes in traffic for that year, and has been incorporated into the FEIS). Impacts were analyzed during the morning and afternoon peak hours, with and without the proposed action. The analysis focused primarily on four nearby intersections: Bethel Street at Merchant Street, Bethel Street at Nimitz Highway, Merchant Street at Bishop Street, and Bishop Street at Queen Street.

Visitors and residents of Harbor Court will enter and exit the parking garage directly from Merchant and Bethel Streets (see Figure 3-22). An elevator from the parking garage will bring visitors arriving by car to the "Promenade" and the residential and office towers above. Direct access from adjacent parking levels to the "Promenade" will be provided. Pedestrians arriving from Fort Street Mall along Merchant or Queen Street will enter the property through the Plaza Courtyards. It should be noted that meetings between the City and County of Honolulu, Department of Transportation Services (DTS) and the architects have been held regarding the proposed access to and within the project site. These coordination meetings will continue, as the design of the project progresses, to develop a traffic control and access plan that is acceptable to the City.

3.4.2.1 Impacts and Mitigation Measures

The 1993 increase in traffic generated by the project is not expected to significantly affect the existing traffic conditions. The number of trips generated by the public stalls will remain the same, as there will be no net increase in the number of existing stalls. The same condition will hold true for Nuuanu Court Building parking lot.

Traffic impacts are measured by the change in Level-of-Service (LOS) or capacity level for a given intersection. LOS for a given intersection is sorted into six categories ranging from LOS A (Free Flow) to LOS F (Congested Flow). The LOS was determined by the use of the "Operational Analysis" calculation procedures contained in the Highway Capacity Manual (HCM), Special Report 209, 1985.



Source: Lacayo Architects, 1989

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Figure 3-22
PROPOSED ACCESS TO PROJECT SITE

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Traffic impacts resulting from the project area measured by the change in the level-of-service (LOS) or the capacity level for a given intersection. The concept of LOS is defined as a qualitative measure describing operational conditions within a traffic stream, and their perception by motorists and/or passengers. LOS definition generally describes these conditions in terms of such factors as speed and travel time, freedom to maneuver, traffic interruptions, comfort and convenience, and safety. Six levels of service are defined for each type of facility for which analysis procedures are available. They are given letter designations, from A to F, with LOS A representing the best operating conditions and LOS F the worst.

LOS for signalized intersections is defined in terms of delay. Delay is a measure of driver discomfort, frustration, fuel consumption, and lost travel time. Specifically, level-of-service criteria are stated in terms of the average stopped delay per vehicle for a 15-minute analysis period.

The results of the operational analysis are reflected in Table 3-10. The existing morning peak hours show mainly LOS C and LOS D, with delay (measure of driver discomfort) in the range of 15.1 to 25.0 seconds per vehicle, and 25.1 to 40.0 seconds per vehicle respectively. Existing afternoon peak hours show LOS B (delay in the range of 5.1 to 15.0 seconds per vehicle) through LOS D.

TABLE 3-10

LEVEL OF SERVICE SIGNALIZED INTERSECTIONS

Intersection	1989	1993 w/o Project	1993 w/Project
Merchant Street at Bethel Street			
Morning Peak Hour	C	C	D
After Peak Hour	B	B	C
Merchant Street at Bishop Street			
Morning Peak Hour	C	C	C
After Peak Hour	C	C	C
Bishop Street at Queen Street			
Morning Peak Hour	D	E	F
After Peak Hour	C	C	C
Nimitz Highway at Bethel Street			
Morning Peak Hour	C	C	C
After Peak Hour	D	E	F

Planning analysis uses an intersection's critical volume to determine whether an intersection will be under, near, or over capacity. The critical volume measures intersection capacity using the volume of traffic movements. A volume of less than 1200 vehicles indicates that an intersection is under capacity, between 1200 and 1400 vehicles indicates near capacity, and greater than 1400 vehicles indicates over capacity. As illustrated by Table 3-11, results show overall under capacity levels for existing and proposed traffic during morning and afternoon peak hours. In addition, a comparison between "With Project" and "Without Project" scenarios shows marginal differences in critical volumes.

TABLE 3-11

CRITICAL VOLUMES AND CAPACITY LEVEL
PLANNING ANALYSIS--SIGNALIZED INTERSECTION

Intersection	1989 Existing		1993 w/o Project		1993 w/Project	
	Critical Volume	Capacity Level	Critical Volume	Capacity Level	Critical Volume	Capacity Level
MORNING PEAK HOUR						
Bethel at Merchant	404	Under	489	Under	562	Under
Bishop at Merchant	500	Under	658	Under	621	Under
Bishop at Queen	929	Under	1,014	Under	1,005	Under
Bethel at Nimitz	1,024	Under	1,112	Under	1,145	Under
AFTERNOON PEAK HOUR						
Bethel at Merchant	536	Under	603	Under	671	Under
Bishop at Merchant	492	Under	532	Under	620	Under
Bishop at Queen	778	Under	840	Under	885	Under
Bethel at Nimitz	1,146	Under	1,314	Under	1,332	Under

Source: Pacific Planning & Engineering

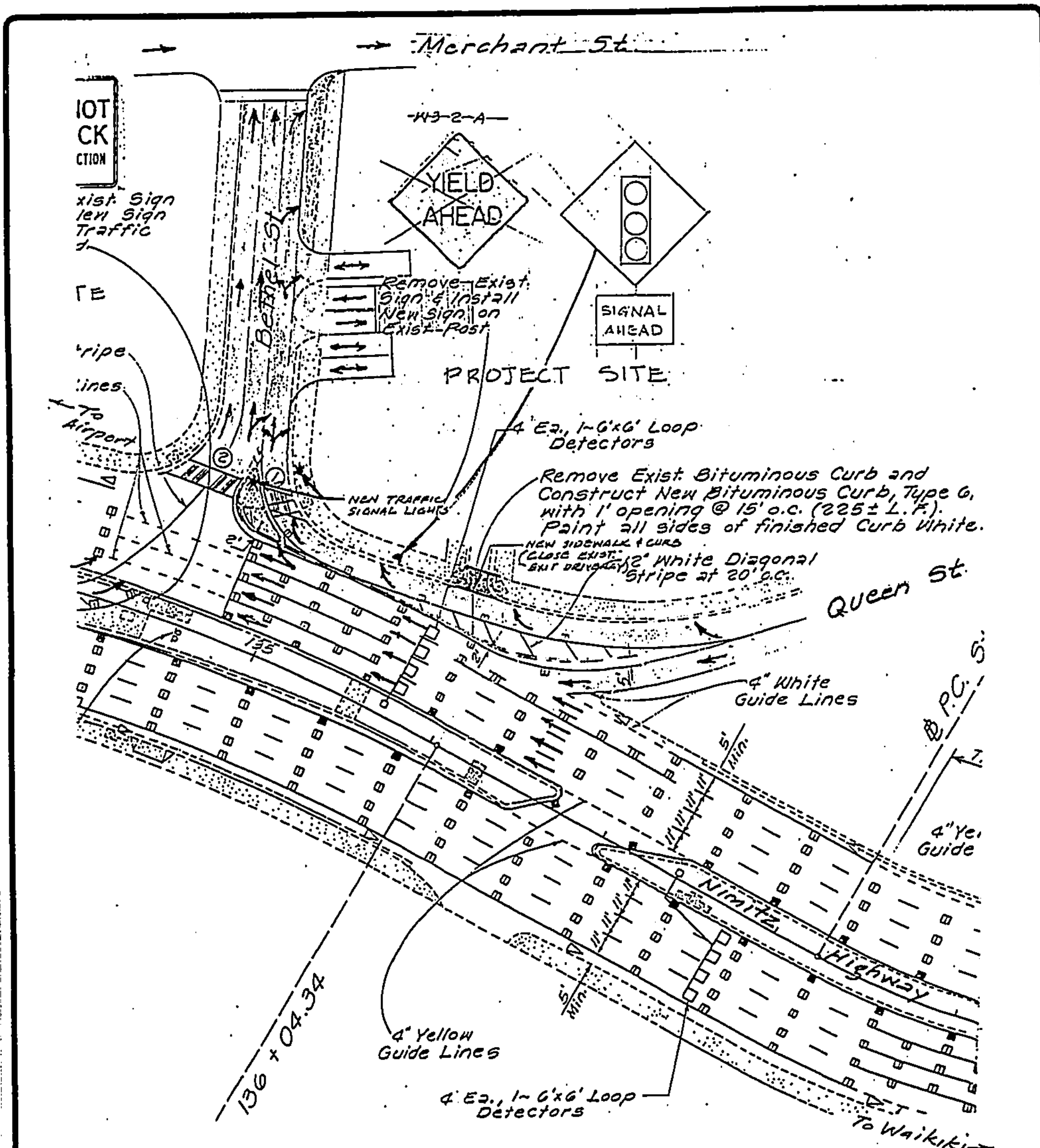
Recommendations were made in the report to improve the existing congested conditions as follows:

* The entrance to the project parking structure will provide for a deceleration lane to permit through traffic to proceed forward and also to improve sight distance for drivers exiting from the parking structure.
* The turning radius at the intersection of Bethel and Merchant Streets will be lengthened to preclude vehicles turning right from Bethel Street onto Merchant Street from having to encroach into the middle lane to safely negotiate the right turn movement.

* The intersection of Queen and Bethel Streets and Nimitz Highway should be improved as shown in Figure 3-23. The flow of vehicles merging onto Nimitz Highway and Bethel Street from Queen Street would be smoother and better controlled. This recommended improvement is currently under review and will be resolved during the design phases of the project.
* The City Department of Transportation Services (DTS) should expedite plans to install a centralized computer controlled traffic signal network.
* The existing eight (8) parking stalls along Bethel Street between Merchant Street and King Street should be eliminated. Also, parking along Merchant Street between Nuuanu and Bishop Street should be restricted during the morning and afternoon peak hours.
* Eliminate the transit bus stop on Bishop Street fronting the Amfac Building because buses stopping to pick up and drop off passengers during the peak hour is causing congestion and traffic backup. The bus stop at the corner of Bishop Street and King Street is only one and a half (1.5) blocks or about 200 steps mauka and within reasonable walking distance from the bus stop to be eliminated.
* Install additional traffic signals a the Nimitz/Queen/Bethel Street intersection to provide smooth traffic flow for motorists entering Bethel Street from Nimitz Highway and Queen Street. The additional traffic signal lights will eliminate the present unsafe "weaving" condition along Bethel Street between Nimitz Highway and the proposed access driveway to the project.

3.4.3 Support Infrastructure

An evaluation based on inventory of the existing sewer, water, and drainage systems, was conducted by R. M. Towill Corporation in June 1989. These findings are preliminary, and an in-depth follow-up study will be conducted once the design plans have been finalized. The following infrastructure analyses were provided by the report:



Source: Pacific Planning and Engineering, 1990

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Figure 3-23
RECOMMENDED IMPROVEMENT AT THE INTERSECTION OF QUEEN STREET, BETHEL STREET AND NIMITZ HIGHWAY
R. M. TOWILL CORPORATION, AUGUST 1990

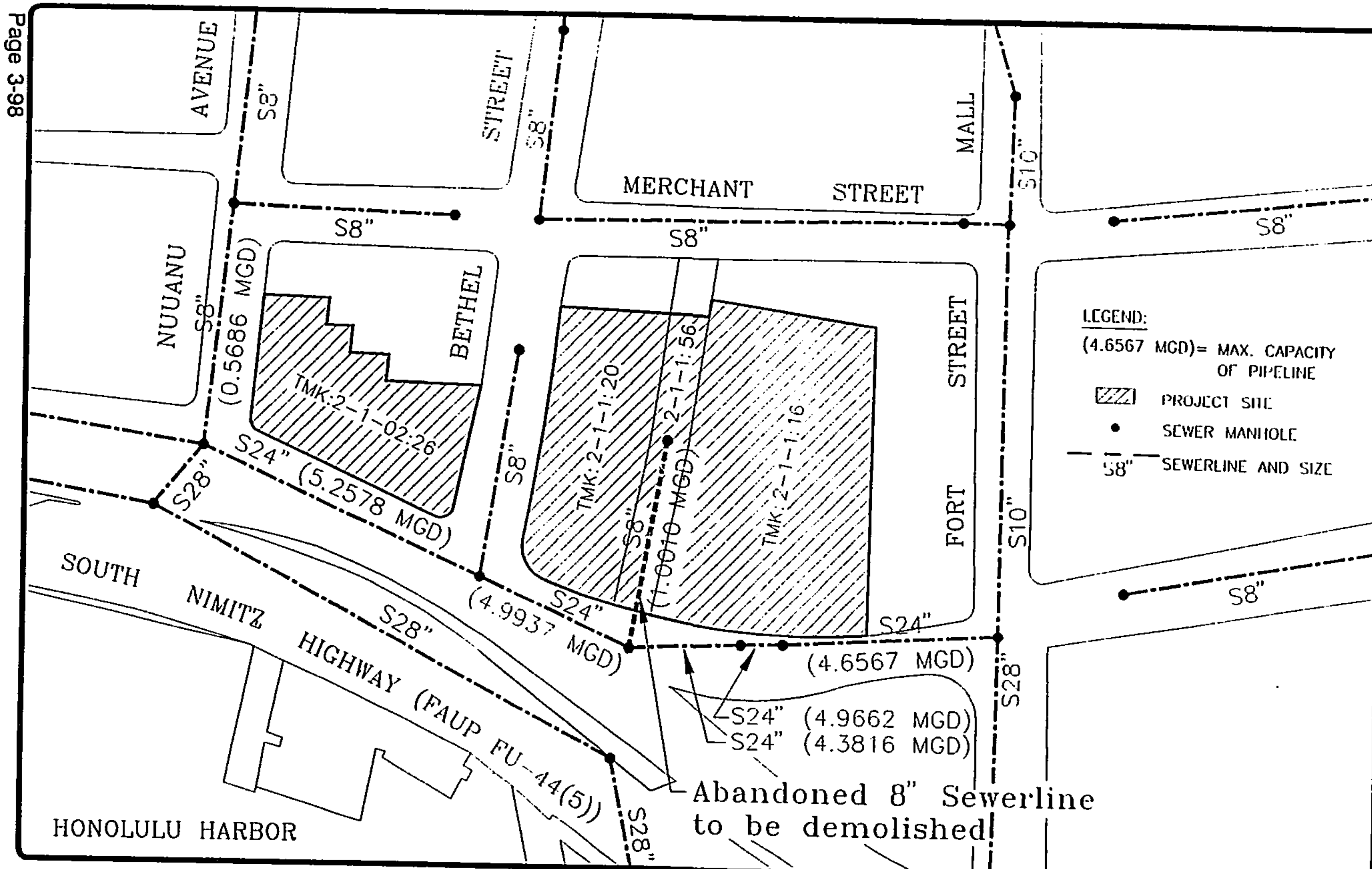
3.4.3.1 Wastewater System

The existing municipal sewer system serving the project area consists of an 8-inch sewer line along Bethel Street, an 8-inch sewer line along Merchant Street, a 24-inch sewer line along Nimitz Highway, and an 8-inch sewer line under the existing parking structure. (See Figure 3-24). Records at the Division of Wastewater Management indicate that this line under the parking structure once served Melcher's Building and the Old Bishop Bank Building, and appears to be abandoned. The 8-inch line along Bethel Street currently serves only the District Court Building.

According to the Design Standards of the City and County's Division of Wastewater Management, Volume 1 (February 1984), the estimated wastewater flow for the project will be 163,000 gallons per day. Indications are that the existing sewer system capacity is adequate to manage this flow. The Division of Wastewater Management recommends that the building sewer laterals be connected to the 8-inch line in Bethel Street. It is uncertain whether the 8-inch line under the parking structure is abandoned. Therefore, the status of this line will be resolved during construction; if determined to be active, the line will be demolished and an alternative sewer line will be provided for the buildings presently being served by this line.

3.4.3.2 Water System

The existing water system consists of a 12-inch water main along Bethel Street, a 6-inch main along Merchant Street, an 8-inch main along Fort Street Mall and Queen Street, and an 8- and 12-inch main along Nimitz Highway. (See Figure 3-25). Using the Honolulu Board of Water Supply's (BWS) criteria in Water System Standards, Volume 1 (1985), the proposed project's estimated water demand will be 79,200 gallons per day. Based on this projection, the BWS confirms that the current water system serving the Kaahumanu area will need to be upgraded from a 6-inch main to an 8-inch main along Merchant Street to accommodate the proposed development.



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0 50 100 FT.

Figure 3-24
EXISTING SANITARY SEWER SYSTEM

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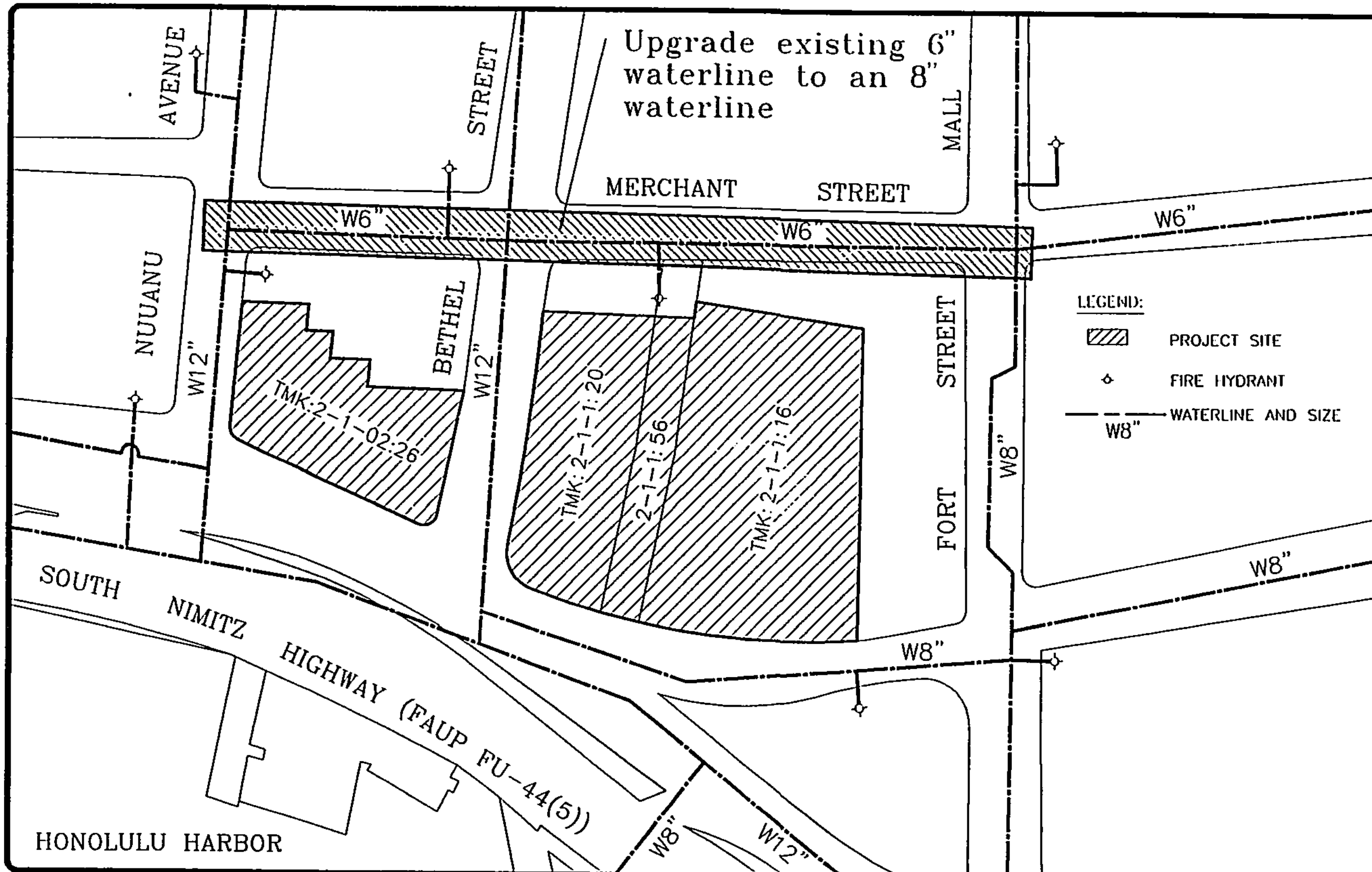

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0 50 100 FT.

Figure 3-25
EXISTING WATER SYSTEM

R. M. TOWILL CORPORATION, AUGUST 1990

3.4.3.5 Storm Drainage System

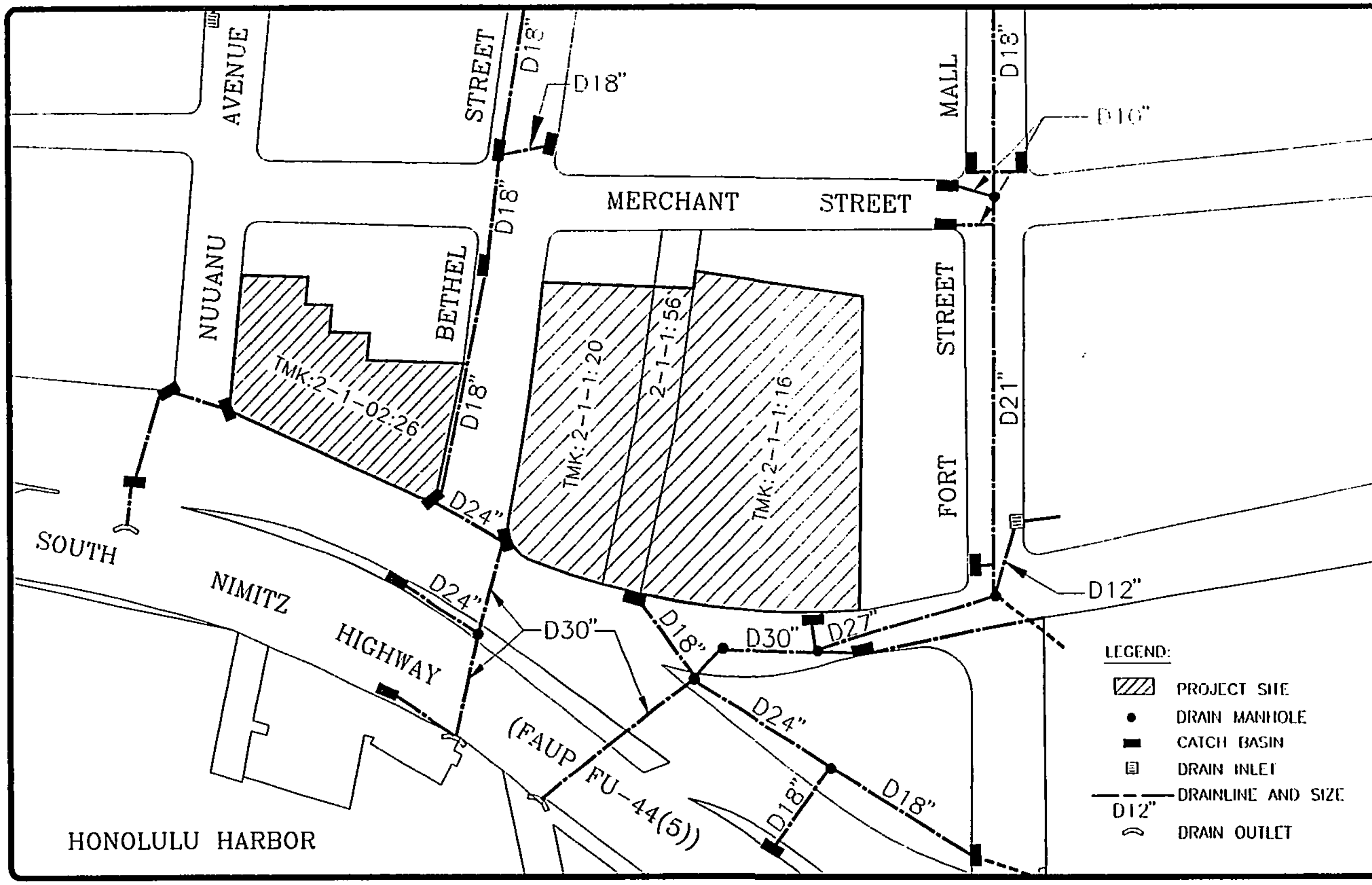
The existing drainage system consists of an 18-inch drain line along Bethel Street, a 30-inch drain line along Queen Street, and a 21-inch line along Fort Street Mall. (See Figure 3-26). Three drainage lines cross Nimitz Highway with outlets along the seaward edge of Nimitz Highway. These are from Nuuanu Avenue (24-inch line), Bethel Street (30-inch line) and Queen Street (30-inch line).

According to the criteria in the Storm Drainage Standards of the Department of Public Works (May 1988), the storm runoff generated by the project is estimated at 6.2 cubic feet per second (c.f.s.) for the Kaahumanu Parking Structure, and 2.2 c.f.s. for the District Court parking area. The drainage system in the vicinity of the project was found to be adequate for this project. As such, preliminary indications are that no additional improvements are necessary.

3.4.4 Solid Waste Collection and Disposal

The solid waste generated from the project once it is fully completed is expected to amount to about 2 tons of refuse per day. Most, if not all of this will likely be trucked away by private refuse collection service and either landfilled or disposed of at the H-Power Plant at Campbell Industrial Park.

A central trash room located at street level of the residential tower trash chute will be provided. Future expectations involve regulations which will require trash sorting and recycling procedures. Provisions should be made under this assumption.



KAAHUMANU PARKING STRUCTURE REDEVELOPMENT

City & County of Honolulu
Department of Housing & Community Development
- and -
BEAM Venture

0 50 100 FT.

Figure 3-26
EXISTING DRAINAGE SYSTEM

R. M. TOWILL CORPORATION, AUGUST 1990

3.4.5 Electric Power and Communications Systems

Hawaiian Electric Company and Hawaiian Telephone Company will be consulted to determine the adequacy of existing capacity of services to the site and for their recommendations on any necessary improvements. All electrical, communications, and mechanical systems will conform with the minimum standards provided by applicable codes. Studies of alternative systems will be made during the schematic design phase, if necessary to select the appropriate systems.

3.4.6 Fire, Police, School and Medical Services

Fire and ambulance services will be provided by the Central Fire Station which is located on the intersection of Beretania and Fort Streets.

The project area is located within the Honolulu Metropolitan Police District I which extends from Hawaii Kai to Pearl City. District I headquarters is currently located in Pawaa, but will be relocating to a facility on Alapai Street between Beretania and Hotel Streets where the bus depot is presently located. This would place the station closer to the project site, once the relocation occurs in early 1991. In addition, the downtown substation has recently been established at Nuuanu and Hotel Streets, near the project site. During demolition and constructin, potential crime impacts will be mitigated through the construction of fencing and/or screening around the project site, in addition to the hiring of a private security company(s). This would serve to secure the project site from pilferage and vandalism of construction materials and equipment, as well as potential archaeological findings. Once the project is completed, private security services will continue. The Police Department has submitted a comment letter indicating that, although some increase in the need for police services is expected as a result of the project, the increase should not be significant.

There are a number of medical service facilities located within the Honolulu area. The two largest facilities are Queen's Medical Center located on the corner of Beretania and Punchbowl Streets, and Straub Clinic and Hospital Inc. located on King Street and Ward Avenue.

Primary and Secondary public schools are located in or near the downtown vicinity. Royal Elementary School is located on Queen Emma Street, just makai of the H-1 freeway. Central Intermediate School is located on the block bounded by Pali Highway, Kukui Street, Queen Emma Street, and Vineyard Boulevard. McKinley High School is on the corner of King and Pensacola Streets, adjacent to the Neal Blaisdell Center.

SECTION 4

RELATIONSHIP TO LAND USE PLANS AND POLICIES

4.1 OVERVIEW

This section will describe the proposed action in relation to the applicable policies and controls of the Federal, State, and City and County agencies.

4.2 STATE PLANS, POLICIES, AND CONTROLS

A number of State plans, policies and controls provide guidelines for development within the State of Hawaii. These guidelines include the Hawaii State Plan, State Functional Plans, and the State Land Use Plan.

4.2.1 The Hawaii State Plan, Chapter 226, HRS, as amended

The Hawaii State Plan was developed to serve as a guide for future development of the areas of population growth, economic benefits, enhancement and preservation of the physical environment, facility systems maintenance and development, and socio-cultural advancement. The Plan identifies, in general, the goals, objectives, policies and priorities for the long-range development of the State. It is a tool for dealing positively with change. Several objectives and policies would be supported and furthered with the implementation of this project. They are as follows:

> "Encourage urban growth primarily to existing urban areas where adequate public facilities are already available or can be provided with reasonable public expenditures and away from areas where other important benefits are present, such as protection of important agricultural land or preservation of lifestyles."

> "Encourage design and construction practices that enhance the physical qualities of Hawaii's communities."

> "Increased and diversified employment opportunities to achieve full employment, increased income and job choice, and improved living standards for Hawaii's people."

The following sections describe the relationship and compatibility of the proposed project with the overall objectives of the State Plan, as amended:

* Population (Chapter 226-5, HRS, as amended):
  The proposed project will achieve the population objectives by increasing and encouraging the physical, social and economic opportunities for the State of Hawaii. Increased physical, social and economic opportunities will result with the development of new office, residential, commercial and retail spaces. Job opportunities will be created by the proposed mixed-use nature of the complex. The area and its amenities will appeal to people because of its proximity to the historic Honolulu waterfront and Chinatown.
* Economy (Chapter 226-6, HRS, as amended):
  The project will create numerous short-term and long-term employment opportunities. Short-term employment will be available during the construction period, between late 1991 and 1993. Long-term employment provisions will be created by the incoming commercial and retail uses.
* Energy (Chapter 226-18, HRS, as amended):
  The proposed project will incorporate the following energy-saving measures in order to minimize the cost of energy to the commercial and residential occupants:

  1. The majority of the lighting in this project will utilize fluorescent lamps, with the exception of some incandescent lamps in the residential apartments. Part of the lighting in the residential areas will be designed with compact, or PL type, fluorescent lamps. Where PL lamps are used, there will be a 75% savings in energy consumed per lamp as compared to a 60 watt incandescent.

2. All standard 4-foot fluorescent fixtures will be specified with energy saving lamps and ballasts.
3. Electrically, each apartment will be metered separately to encourage efficient energy consumption. Restaurants will also be metered separately.
4. The project will have central hot water and air conditioning systems, which is the most efficient method of providing these necessities. A metering system will be implemented to measure the chilled water consumption for each apartment and for the office areas that are operated after normal working hours. Again, this design holds the users accountable for air conditioning consumption, and thus, will tend to encourage energy conservation.
5. The heat from the central chilled water system will be used by the heat pump to heat the building's hot water.

The following measures are also being considered for future implementation:

1. The use of electronic ballasts in place of the energy saving ballasts will reduce the energy required to operate a fluorescent light fixture. In addition, this replacement will also reduce the heat load which, in turn, reduces the air conditioning consumption.
2. As part of an overall energy management control and building automation system, when the complex is partially occupied, the major mechanical systems would be staged and controlled to reduce energy consumption.

* <u>Housing (Chapter 226-19, HRS, as amended):</u>

"Promote design and location of housing developments taking into account the physical setting, accessibility to public facilities and services, and other concerns of existing communities and surrounding areas."

The 120 residential condominium apartment units in this project will be adding to the CBD housing inventory. The units will be designed and marketed to persons who might be attracted to the conveniences of living and working in downtown Honolulu. In addition, a $15-million development premium (aforementioned) will be used by the City toward affordable housing units in the Maunakea-Smith project.

* State Historic Preservation Functional Plan

Several buildings located in the vicinity of the project site are on the State and National Historic Registers. The use of these structures will remain the same, and in accordance with the City and County of Honolulu's provisions of the Request for Proposals, the 6-story building (Nuuanu Court) proposed for the ewa parcel located makai of the former Police Station building will be designed to reflect the architectural style of the adjacent historic building. Preservation of the significant historic resources in the project vicinity will facilitate an understanding of the ethnic and cultural heritage of Hawaii.

4.2.2 State Land Use District

The State Land Use designation for the project site and the surrounding area is Urban. The project is thus compatible with this land use designation.

4.2.3 State Environmental Policy

As required by Chapter 343, HRS, for projects using state or county lands or funds, early assessment of the project was made, and it was determined that preparation of an EIS would be necessary. This ensures that environmental concerns are given appropriate consideration in the planning process for the project. Identifying environmental concerns, obtaining various pertinent data, conducting necessary studies, receiving public and agency input, evaluating alternatives, and proposing measures for minimizing adverse impacts are all tasks to be accomplished prior to implementation of the project. By so doing, compliance with environmental policy will have been accomplished.

4.3 CITY AND COUNTY OF HONOLULU /GENERAL PLAN

The objectives and policies of the General Plan identify actions and directives for City and County government to take in order to benefit the people of Oahu as growth and development occur on the island. The proposed facility will conform with the General Plan, particularly in the following areas of concern:

> "Facilitate the full development of the primary urban center."
>
> "Encourage the establishment of mixed use districts with appropriate design and development controls to insure an attractive living environment and compatibility with surrounding land uses."
>
> "Protect Oahu's scenic views, especially those seen from highly developed and heavily travelled areas."
>
> "Maintain and improve downtown as the financial and office center of the island and as a major retail center."
>
> "Provide for more compact development and intensive use of urban lands where compatible with the physical and social character of existing communities."
>
> "Encourage distinctive community identities for both new and existing districts and neighborhoods."

4.3.1 City and County Development Plans

The Development Plans help to implement the General Plan by providing relatively detailed schemes for implementing and accomplishing the objectives and policies of the General Plan for geographical regions of the island. The Development Plan Maps depict land use patterns which are consistent with the objectives and policies of the General Plan (See Figures 4-1 and 4-2).

The project site is located within the Primary Urban Center (PUC) Development Plan area. The PUC's Land Use Map and Public Facilities Map designate the project site as commercial and Government Building/Modification (GB/M), respectively. Thus, the proposed project is consistent with the Development Plan designations of this site.

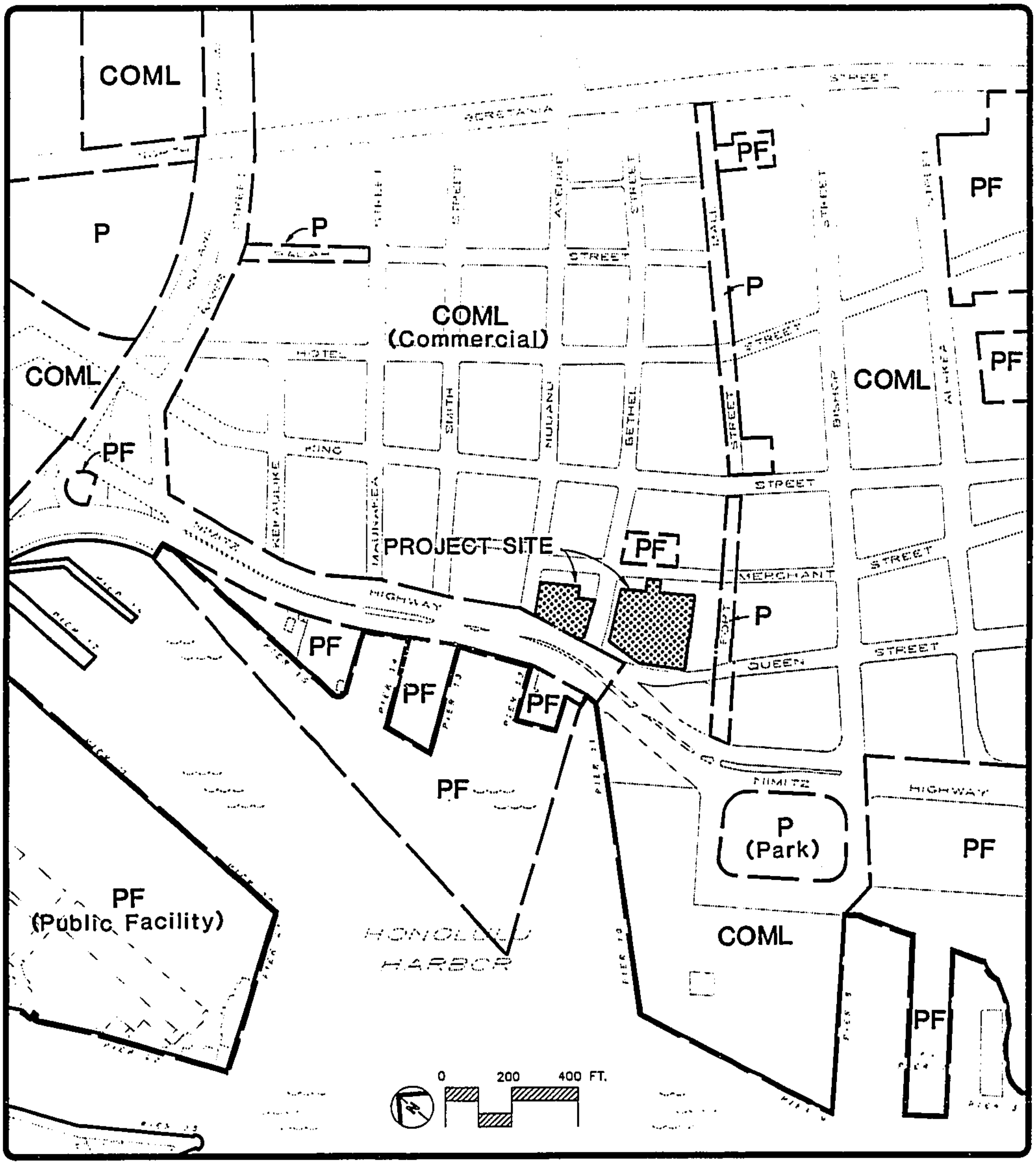
4.3.2 City and County Land Use Ordinance (LUO)

In 1986, a new Land Use Ordinance (Chapter 21, Revised Ordinances of Honolulu) replaced the Comprehensive Zoning Code. The purpose of the Land Use Ordinance (LUO) is to regulate land use in a manner that will encourage orderly development in accordance with adopted land use policies.

The project area is in the BMX-4 Central Business Mixed Use zoning district, as shown in Figure 4-3. The objective of BMX-4 Central Business Mixed Use district is to set apart that portion of Honolulu which forms the City's center for financial, office, and government activities and housing. It is intended for the downtown area and not for general application. It provides the highest land use intensity for commerce, business and housing. The project will be compatible with existing commercial and residential uses in the area. The height limit of 350 feet will be complied with.

4.3.2.1 Special Districts

The Land Use Ordinance also regulates Special Districts within the City and County of Honolulu. The purpose of a Special District is to provide a means by which certain areas in the community in need of restoration, preservation, redevelopment or rejuvenation may



KAAHUMANU PARKING STRUCTURE REDEVELOPMENT

City & County of Honolulu
Department of Housing &
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- and -
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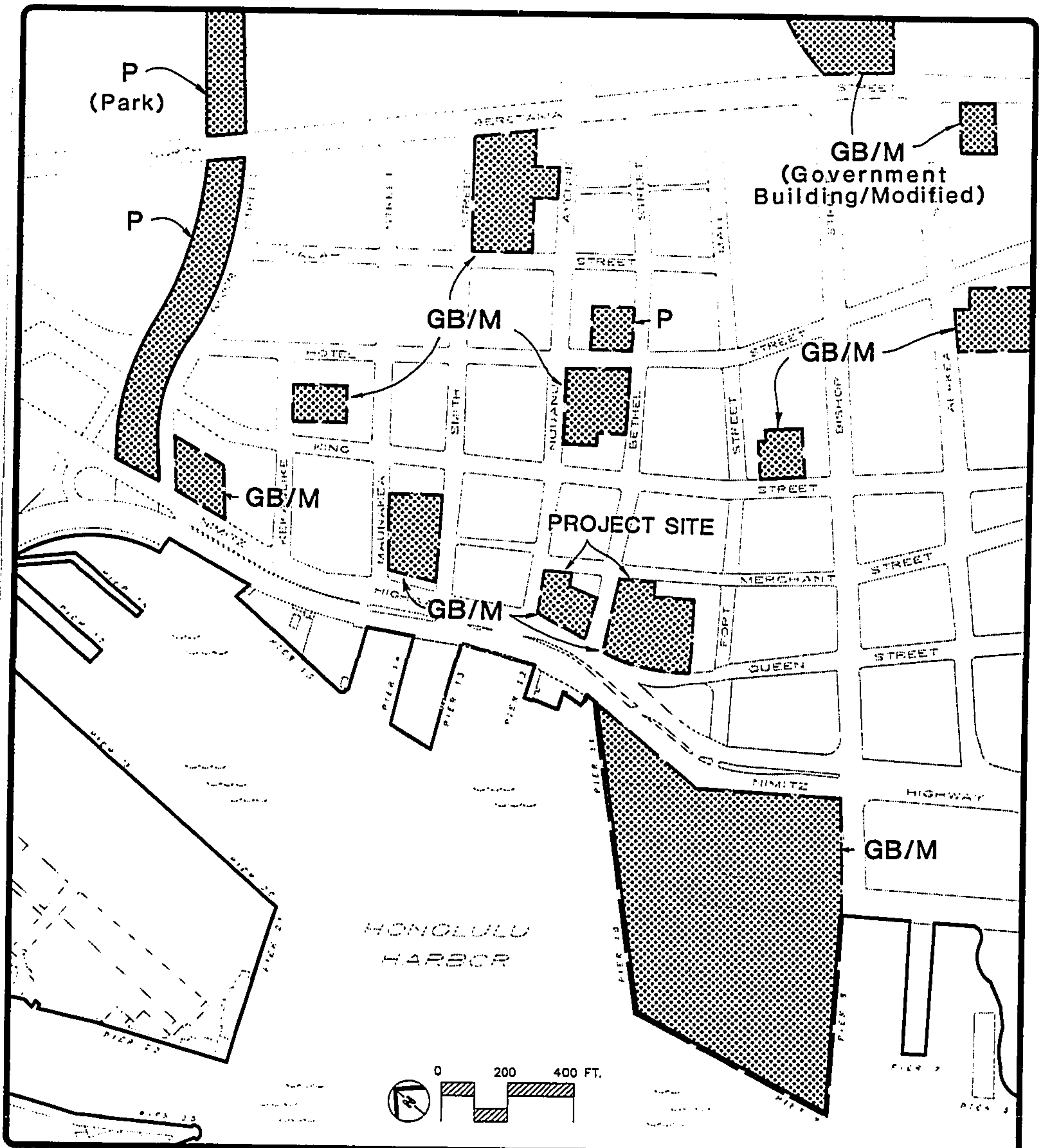
Figure 4-1
DEVELOPMENT PLAN LAND USE MAP

R. M. TOWILL CORPORATION, AUGUST 1990



KAAHUMANU PARKING
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Community Development
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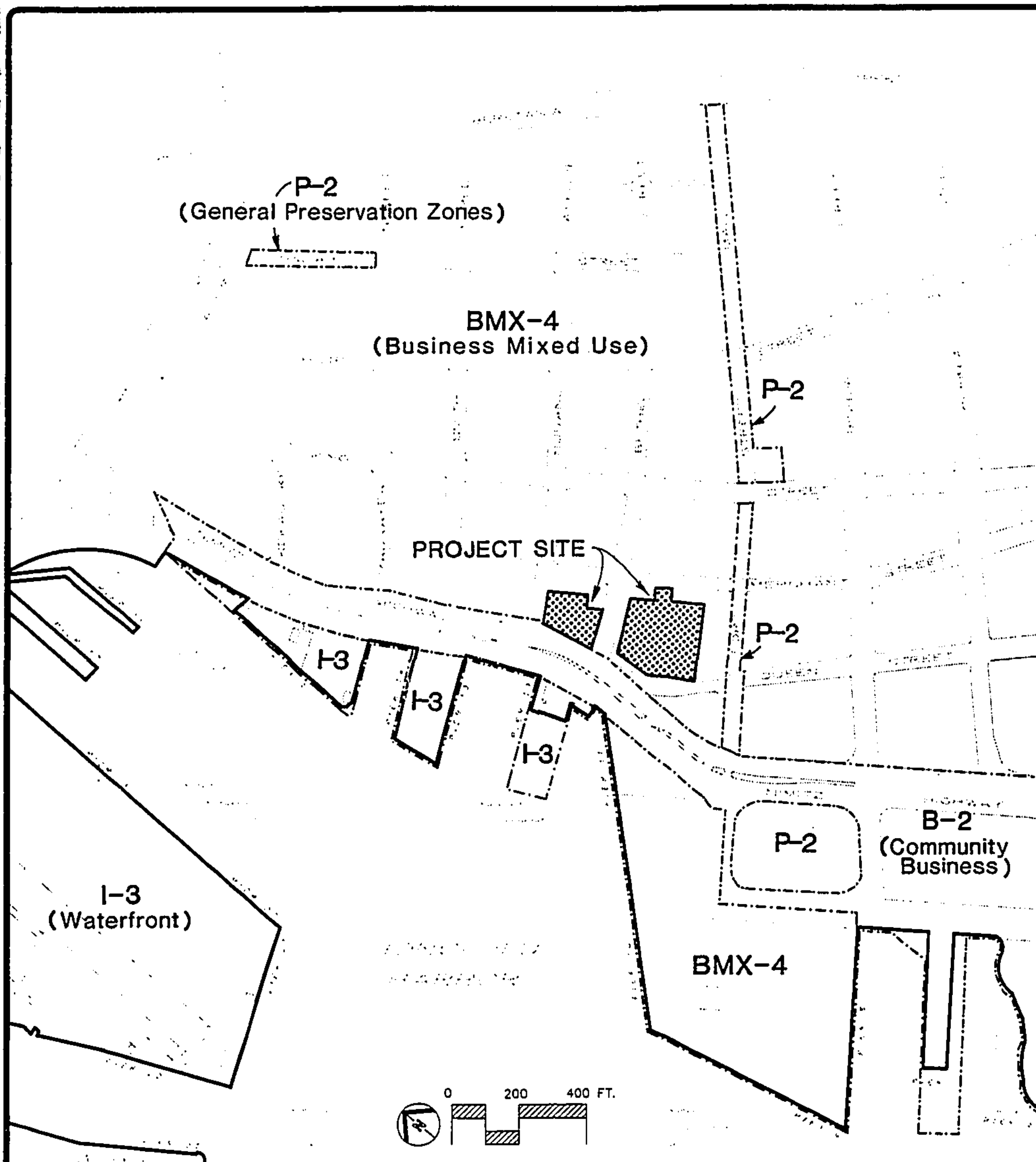
Figure 4-2
DEVELOPMENT PLAN
PUBLIC FACILITIES MAP

R. M. TOWILL CORPORATION, AUGUST 1990



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Department of Housing &
Community Development
- and -
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Figure 4-3
ZONING MAP

R. M. TOWILL CORPORATION, AUGUST 1990

be designated as Special Districts to guide development to protect and/or enhance the physical and visual aspects of an area for the benefit of the community as a whole. Within the last few years, the City and County expanded the Chinatown Special District to incorporate most of the historic buildings in the Merchant Street National Register Historic District.

The project area is also located in the Chinatown National Register District, and the Merchant Street National Register District. While the latter is regulated by the Historic Sites Section of the State Department of Land and Natural Resources, guidelines and criteria currently utilized to review projects are the same as those used in the review of projects in the Chinatown Historic District.

4.3.2.2 Historic Preservation

The specific regulations for the City's Chinatown Special District were recently established by Resolution #89-489 (adopted Nov. 22, 1989) as a "Comprehensive Historic Preservation Review Policy to Help Preserve the City's Historic and Archaeological Properties." These are listed in a six-step review process as follows:

* Identify any historic and archaeological properties likely to be affected by a development project;
* Evaluate the significance of the historic and archaeological properties involved;
* Assess the impact of the development project on significant historic and archaeological properties;
* Submit the assessment to the Historic Sites Section of DLNR for review and concurrence, and DLNR staff is to consult with the Office of Hawaiian Affairs when Native Hawaiian properties are involved;

CORRECTION

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

be designated as Special Districts to guide development to protect and/or enhance the physical and visual aspects of an area for the benefit of the community as a whole. Within the last few years, the City and County expanded the Chinatown Special District to incorporate most of the historic buildings in the Merchant Street National Register Historic District.

The project area is also located in the Chinatown National Register District, and the Merchant Street National Register District. While the latter is regulated by the Historic Sites Section of the State Department of Land and Natural Resources, guidelines and criteria currently utilized to review projects are the same as those used in the review of projects in the Chinatown Historic District.

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* Identify any historic and archaeological properties likely to be affected by a development project;
* Evaluate the significance of the historic and archaeological properties involved;
* Assess the impact of the development project on significant historic and archaeological properties;
* Submit the assessment to the Historic Sites Section of DLNR for review and concurrence, and DLNR staff is to consult with the Office of Hawaiian Affairs when Native Hawaiian properties are involved;

* Prepare a plan, in consultation with Historic Sites Section, and staff is to consult with the Office of Hawaiian Affairs when Native Hawaiian properties are involved, to mitigate the impact of the development project on any significant historic and archaeological properties, and

* Implement the mitigation plan.

The project review process applies to any project altering the land of any historic property, which is undertaken by a City and County agency, or requires a City permit. This project and most development projects fall under the historic preservation review process.

A separate Archaeological Review and Assessment Report has been prepared by the Bishop Museum (February 1990) for this environmental impact statement, and review and consultation will be conducted with the DLNR staff regarding findings of archaeological relevance.

The regulations in the LUO relating to the Chinatown Special District also contain several policies that address historic preservation:

* Preserve and restore, to the extent possible, buildings and sites of historic, cultural, and/or architectural significance, and encourage new development which is compatible with and complements these buildings and sites, primarily through building materials and finishes, architectural detailing, and provisions for pedestrian amenities, such as storefront windows and historic signage details.

* Retain makai view corridors as a visual means of maintaining the historic link between Chinatown and the harbor.

The project is proposed to complement and carry through the historical and cultural features of the Chinatown District's character. The five-story Nuuanu Court building will have the appearance and ambiance of its neighboring historic structure-- the former Honolulu Police Station.

Consultation and coordination with the Department of Land and Natural Resources Historic Sites Section staff and City Department of Land Utilization Special Districts staff will be made throughout the planning and design process to assure compliance with the rules and regulations of the Special Districts programs.

The criteria and guidelines listed above will be used in the project's review by the City and County of Honolulu Special District review process and the State's DLNR Historic Sites Section.

4.3.2.3 Park Dedication Requirement

Law(s): Chapter 46, Hawaii Revised Statutes, Revised Ordinances of Honolulu, Chapter 22, City Ordinance No. 4621(76) as amended.

Responsible Agencies: Department of Land Utilization and
Department of Parks and Recreation

The residential component of the project is subject to the requirements the City/County Park Dedication Ordinance. A park area equal to 110 sq. ft. of land area for each residential apartment will be provided on-site. The Harbor Court park requirement is 13,200 sq. ft., to be provided on site. An area has been delineated by the Parks

Department as a satisfactory configuration to meet their size and use requirement. As the design is finalized, this area must be preserved and any changes cleared with the Parks Department and DLU.

4.4 REQUIRED PERMITS AND APPROVALS

Various permits and approvals will be required prior to project construction as follows:

FEDERAL

Federal Aviation Administration (FAA)

- For the construction of structures or work in areas of air navigation. The FAA must determine whether proposed buildings in excess of 200 feet will not pose a potential hazard or obstruction to air navigation.

STATE

Department of Land and Natural Resources (DLNR)

- Concurrence of this Department regarding historic sites
- Right of Entry approval for planning and construction work on State-owned lands

Department of Transportation (DOT)

- Written permit for any project involving permanent or temporary construction
- Approval for utilities and traffic rerouting
- Street Usage Permit

Department of Health

- Noise Variance Permit
- Variance for 24-Hour Construction
- Permit for Air Emissions
- Notification of work on sewer lines

Board of Water Supply (BWS)

- Water and Water System Requirements for Developments

CITY & COUNTY

Department of Land Utilization (DLU)

- Special District Permit

Department of Public Works (DPW)

- Grubbing Permit
- Grading Permit
- Demolition Permit
- Construction Dewatering Permit
- Excavation Permit
- Permit to Excavate Public Right-of-Way
- Sewer Connection Permits
- Sewer Extension, Oversizing and Relief Sewer Requirements

Building Department

- Building Permit
- Electrical Permit
- Plumbing Permit
- Sidewalk/Driveway Work Permit
- Demolition Permit
- Sign Permit (to be reviewed by DLU)
- Certificate of Occupancy

OTHER

Hawaiian Telephone Company

- Permit or concurrence regarding work on utility lines

Hawaiian Electric Company

- Permit or concurrence regarding work on utility lines

Gas Company

- Permit or concurrence regarding work on utility lines

Cable TV

- Permit or concurrence regarding work on utility lines

Board of Water Supply

- Notification of drilling project area

SECTIONS 5 - 9

ALTERNATIVES TO THE PROPOSED ACTION (5)

IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS (6)

SUMMARY OF UNRESOLVED ISSUES (7)

PARTIES CONSULTED FOR PREPARATION OF THE DRAFT EIS (8)

LIST OF PREPARERS (9)

5.1 ALTERNATIVES TO THE PROPOSED ACTION

In Spring 1989, the City and County issued a Request for Proposals (RFP) for redevelopment of the Kaahumanu Parking Garage Structure. The RFP specified that certain requirements be adhered to in all responding development proposals. These requirements include:

* Conformance to the existing BMX-4 zoning;
* Provision for the later addition of a rapid transit station adjacent to the makai edge of the site or inside the new building;
* Replacement of all existing parking stalls (462) on the project site;
* Inclusion of street level retail and pedestrian connections to Fort Street Mall and Merchant Street Square in the design;
* Provision of a first-class office building with commercial/retail spaces and required parking;
* Advance to the 350-foot height limit.

From a field of seven competing proposals, the design for the proposed project by BEAM Harbor Court Partners (Lacayo Architects providing architectual design services) was selected. This section provides a discussion of the alternative proposals that were considered by the City and County; and alternatives to the proposed action for the purposes of this assessment.

5.2 NO ACTION

Redevelopment planning for the Kaahumanu Parking Structure began in 1988 with the initiation of a feasibility study that explored options for development. The City's study concluded that the development of a Class A development on the site would facilitate the City's program of economic revitalization of downtown Honolulu.

The "no action" alternative would mean that the parking structure would continue to serve public vehicle parking needs by remaining in a status quo condition. Construction-related impacts would be avoided. However, positive impacts such as increasing the inventory of much needed office space in the CBD, and residential condominium inventories to meet growing demand, would not be achieved. The "no action" alternative will allow a deteriorating, unattractive structure to remain on a valuable, highly visible parcel in downtown Honolulu. The significant concern if the "no action" alternative were taken would be the loss of economic benefits to citizens and government of the City and County of Honolulu.

5.3 ALTERNATIVE DEVELOPMENT PROPOSALS

Six other proposals were submitted to the City and County besides the selected proposal. While all competitors were working with the same list of requirements contained in the RFP, each proposal offered different concepts, design, scales and uses for the historic structures which surround the project site. The major components of these proposals were summarized in Table 5-1 below:

TABLE 5-1

SUMMARY OF DEVELOPMENT PROPOSALS

	Proposed Uses:					Melcher's Bldg.			
	Ofc.	Res.	Retail	Other	Prkg.	Stays	Goes	Reuse	Rapid Transit Station
Selected Design	X	X	X	commer'l	X	X			Yes
Alt. A	X	--	X	--	X	--	--	X	Yes
Alt. B	X	--	X	daycare	X				Yes
Alt. C	X	X	--	--	--	--	X		Yes
Alt. D	X	--	X	X	--				Yes
Alt. E	X	--	X	daycare	X	--	relocate		Yes
Alt. F	Exceedence of height limit -- proposes 1 large parking lot to bridge Nimitz Highway: for 3,500 vehicles; recommend relocation of historic buildings.								

This proposal was ranked highest overall in meeting the City and County of Honolulu's criteria.

5.4 PEDESTRIAN BRIDGE VERSUS NO PEDESTRIAN BRIDGE

The design solution to connecting the two major development parcels is to provide the pedestrian the opportunity to move from the Nuuanu Court office building to the Harbor Court complex's upper floors. This bridge provides an uninterrupted pedestrian link from Queen Street to Nuuanu Avenue.

Exclusion of the Bethel Street pedestrian span would eliminate the "obstruction" of the existing mauka-makai view corridor. However, with the elevation drop on this corridor looking makai, the pedestrian would be looking at the harbor through the open-air portion of the proposed bridge from the Bethel-King Street intersection. Exclusion of the pedestrian bridge would limit a person's means of getting from the new complex's parking structure to the Nuuanu Court office building. By inclusion of the span, persons who live in the Harbor Court's residential tower and work in the Nuuanu Court office building will be able to remain within the complex without needing to exit down to the street level to cross Bethel Street. Visitors to the new complex will in the long-term be able to experience the views, shopping and entertainment features that both the proposed project and Aloha Tower developments will offer with ease of access from one complex to the other.

5.5 LOWER INTENSITY USE OF THE PROJECT SITE

The City and County of Honolulu's General Plan, Development Plan and Land Use Ordinance call and provide for downtown Honolulu to be the financial and business center of the island. Historically, it is estimated that annual demand for new office space and residential units are about 250,000 square feet and 4,700 units, respectively. In an effort to fulfill the intent of the City's land use plans and policies, the City has undertaken a program to revitalize the CBD by expanding business, employment, and residential opportunities. Redevelopment of the site without providing for additional office space and residential units would not help attain City and County objectives nor meet the high demand for downtown office space.

A full discussion of the relationship of the action to land use plans, policies and controls is presented in Section 4. A recurrent theme among all these plans and controls is to provide for the highest intensity of development in downtown Honolulu in order to encourage urban growth in existing urban areas and to utilize existing resources efficiently. Redevelopment of the site by choosing another development alternative would probably represent a lower intensity use of the site, whereas, State and City and County of Honolulu plans for downtown Honolulu call for development of the primary urban core to the fullest extent practicable. However, achieving redevelopment of the site at a lower intensity than the existing use would not be possible due to the City and County's commitment to at least replace the existing parking stalls on site.

The proposed development will require an irretrievable and irreversible commitment of a number of resources for its completion. These resources will include capital, materials, manpower, and energy. Financial, material, and manpower resources will be irretrievably committed to the planning, design and construction of the improvements. Energy and water are other valuable resources which will be required for the completion and operation of the project.

7.1 CITY COUNCIL APPROVAL

The land acquisition of Parcel 56 and the small unnumbered parcel has been negotiated. This transaction has been deferred subject to the review of approval of the City Council of the City and County of Honolulu.

7.2 ACCESS AND CIRCULATION

The proposed access and interior circulation of the project is contingent upon the review and approval of DTS. Meetings between DTS and the architect have been and will continue to be held to resolve this issue.

FEDERAL

U. S. Army Corps of Engineers

Mr. Ernest Kosaka
U. S. Department of the Interior

Mr. Richard N. Duncan, State Conservationist
U. S. Department of Agriculture

Mr. Gordan Y. Furutani, Area Manager
Department of Housing and Urban Development

STATE

Dr. John C. Lewin, Director
Department of Health

Mr. William W. Paty, Jr., Chair
Department of Land and Natural Resources

Mr. Roger A. Ulveling, Director
Department of Business and Economic Development

Mr. Harold S. Masumoto, Director
Office of State Planning

Mr. Edward Y. Hirata, Director
Department of Transportation

Dr. John Harrison, Environmental Coordinator
Environmental Center

Director
Office of Environmental Quality Control

Mr. Yukio Kitagawa, Chair
Department of Agriculture

Mr. Charles T. Toguchi, Superintendent
Department of Education

Mr. Renton Nip, Chairman
Land Use Commission

CITY AND COUNTY OF HONOLULU

Mr. Kazu Hayashida, Manager and Chief Engineer
Board of Water Supply

Mr. Benjamin Lee, Chief Planning Officer
Department of General Planning

Mr. Donald A. Clegg, Director
Department of Land Utilization

Mr. Sam Callejo, Director and Chief Engineer
Department of Public Works

Mr. Alfred J. Thiede, Director
Department of Transportation Services

Mr. Herbert K. Muraoka, Director and Building Superintendent
Building Department

Mr. Walter M. Ozawa, Director
Department of Parks and Recreation

Mr. Lionel Camara, Fire Chief
Honolulu Fire Department

Mr. Michael Nakamura, Police Chief
Honolulu Police Department

Mr. Theodore G. Jung, Director
Department of Finance

OTHERS

Hawaiian Electric Company

GTE Hawaiian Telephone Company

The Gas Company

American Lung Association

Ms. Lynne Matusow, Chairperson
Downtown Neighborhood Board No. 13

Mr. William A. Grant, AIA, Executive Director
Downtown Improvement Association

Chinese Chamber of Commerce of Hawaii

Mr. Robert Crone, AIA
Design Advisory Committee

Downtown Business Council

American Institute of Architects, Hawaii Society

Ms. Phyllis Fox, President
Historic Hawai'i Foundation Mainstreet

Mr. Sun Hung Wong, Executive Secretary
Chinatown Merchants Association

Mr. Kendall S. Wong, President
United Chinese Societies

PRINCIPAL CONSULTANT:	
R. M. Towill Corporation	Bruce T. Tsuchida, Principal-in-Charge Colette Sakoda, Project Planner Laura Fujioka, Staff Planner Kenneth T. Sakai, P.E. Gary Takahashi, Engineer Richard Rhodes, Graphic Designer Susan Furuya, Word Processor Joanne Fujioka, Word Processor
PROJECT COORDINATOR:	
Ralph Cornuelle & Associates	Ralph Cornuelle
ARCHITECT:	
Lacayo Architects	Norman Lacayo, AIA Nancy Goessling, AIA
SUBCONSULTANTS:	
James Adams Incorporated	James A. Adams John S. Allison
Barry D. Neal and Associates	Barry D. Neal
Bishop Museum Applied Research Group, Public Archaeology Section	Aki Sinoto Gwen Hurst
John Child & Company, Inc.	Paul D. Cool
Y. Ebisu & Associates	Yoichi Ebisu
Ernest K. Hirata & Associates	Paul Morimoto, P.E.
Pacific Planning & Engineering, Inc.	Conrad Higashionna, P.E. Howard Abe, P.E.
Spencer Mason Architects	Spencer Leineweber, AIA Ann Yoklavich
Syntech, Ltd.	Tom Pressler, M.E. Rick Moss, M.E.

Toft Moss Farrow & Associates	Mark Cappadonna, M.E.
TRB Architects, Ltd.	Cliff Terry, AIA Kent Royale

ARTIST:
James Hayes

SECTION 10

COMMENTS & RESPONSES TO THE EIS PREPARATION NOTICE

United States Department of the Interior
FISH AND WILDLIFE SERVICE
PACIFIC ISLANDS OFFICE
P O BOX 50167
HONOLULU, HAWAII 96850

FWE
Room 6307
December 6, 1989

Department of Housing & Community Development
City and County of Honolulu
650 South King Street, 5th Floor
Honolulu, Hawaii 96813

Re: Environmental Impact Statement Preparation Notice, Kaahumanu Parking Structure Redevelopment

Dear Ms. Kaito:

We have reviewed the referenced material dated November 27, 1989 and find that due to its nature, the proposed project will have no significant deleterious impact on fish and wildlife resources within our jurisdiction. Please do not hesitate to call on us if we may be of further assistance.

We appreciate this opportunity to comment.

Sincerely yours,

Ernest Kosaka
Field Office Supervisor
Fish & Wildlife Enhancement

cc: NMFS - WPPO
DLNR
EPA, San Francisco

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET 5TH FLOOR
HONOLULU HAWAII 96813
PHONE 523-4427 • FAX 527-5498

FRANK F. FASI
MAYOR

MICHAEL N. SCARFONE
DIRECTOR

RONALD D. MUN
DEPUTY DIRECTOR

January 25, 1990

Mr. Ernest Kosaka
U.S. Department of the Interior
Fish and Wildlife Service
Pacific Islands Office
P. O. Box 50167
Honolulu, HI 96850

Dear Mr. Kosaka:

Subject: Environmental Impact Statement Preparation Notice (EISPN) for the Kaahumanu Parking Structure Redevelopment

Thank you for your letter of December 6, 1989 responding to the EISPN for the proposed Kaahumanu Parking Structure Redevelopment project. The Draft EIS will include your statement that the proposed project will have no significant impact on fish and wildlife resources within your jurisdiction. We appreciate your participation in the planning stages of this project.

Sincerely,

Michael N. Scarfone
Director

cc: OEQC (Marvin Miura, Ph. D., Director)

UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
P. O. BOX 50004
HONOLULU, HAWAII
96850

December 18, 1989

Ms. Laura Fujioka
R.M. Towill Corporation
420 Waiakamilo Rd., Ste. 411
Honolulu, HI 96817-4941

Dear Ms. Fujioka:

Subject: Environmental Impact Statement Preparation Notice (EISPN) - Kaahumanu Redevelopment Parking, Honolulu, HI

We appreciated the opportunity to review the above Preparation Notice. We have no comments to offer at this time; however, we would appreciate the opportunity to review the draft EIS.

Sincerely,

WARREN M. LEE
State Conservationist

cc:
Ms. Gail Kaito, Dept. of Housing & Community Development, C&C of Honolulu, 650 S. King Street, 5th Floor, Honolulu, HI 96813

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET 5TH FLOOR
HONOLULU HAWAII 96813
PHONE 523-4427 • FAX 527-5498

FRANK F. FASI
MAYOR

MICHAEL N. SCARFONE
DIRECTOR

RONALD S. LIM
DEPUTY DIRECTOR

January 25, 1990

Mr. Warren M. Lee
State Conservationist
U. S. Department of Agriculture
Soil Conservation Service
P. O. Box 50004
Honolulu, HI 96850

Dear Mr. Lee:

Subject: Environmental Impact Statement Preparation Notice (EISPN) for the Kaahumanu Parking Structure Redevelopment

Thank you for responding to the EISPN for the proposed Kaahumanu Parking Structure Redevelopment project. Per your request, you will be provided a copy of the Draft Environmental Impact Statement (DEIS). We appreciate your participation in the planning stages of this project.

Sincerely,

Michael N. Scarfone
Director

cc: OEQC (Marvin Miura, Ph. D., Director)

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

REPLY TO ATTENTION OF

December 28, 1989

Planning Branch

Mr. Michael N. Scarfone, Director
Department of Housing and
Community Development
650 South King Street, 5th Floor
Honolulu, Hawaii 96813

Dear Mr. Scarfone:

Thank you for the opportunity to review the Environmental Impact Statement (EIS) Preparation Notice for the Kaahumanu Parking Structure Redevelopment, Honolulu, Hawaii. The following comments are offered:

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

b. According to the Flood Insurance Study for the City and County of Honolulu, the project site is located in Zone X, "Other Areas" determined to be outside of the 500-year flood as designated by the Federal Emergency Management Agency in September 1987.

Sincerely,

Kisuk Cheung
Chief, Engineering Division

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET 5TH FLOOR
HONOLULU HAWAII 96813
PHONE 523-4427 • FAX 527-5498

FRANK F. FASI
MAYOR

MICHAEL N. SCARFONE
DIRECTOR

RONALD B. MUN
DEPUTY DIRECTOR

January 25, 1990

Mr. Kisuk Cheung, Chief
Engineering Division
Department of the Army
Fort Shafter, Building 230
Honolulu, HI 96858-5440

Dear Mr. Cheung:

Subject: Environmental Impact Statement Preparation Notice (EISPN) for the Kaahumanu Parking Structure Redevelopment

We have received your letter of December 28, 1989 responding to the EISPN for the proposed Kaahumanu Parking Structure Redevelopment project. The information you provided regarding the Flood designation for the project area, as well as your statement that no Department of the Army permit will be required, will be included in the Draft Environmental Impact Statement (DEIS). Your participation in the planning stages of this project is appreciated.

Sincerely,

Michael N. Scarfone
Director

cc: OEQC (Marvin Miura, Ph. D., Director)

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

90-13

January 10, 1990

Mr. Michael Scarfone
Director
Dept. of Housing & Community Development
Attention: Gail Kaito
City and County of Honolulu
650 South King Street
Honolulu, HI. 96813

Dear Mr. Scarfone:

SUBJECT: Kaahumanu Parking Redevelopment
Environmental Impact Statement Preparation Notice (EISPN)

This responds to your request for comments on the proposed action to develop a hotel/condominium, an office tower and a commercial plaza with retail shops and restaurants on 1.78 acres of land on four parcels of land at Bethel Street and Nimitz Highway. Our comments follow:

1. The preparation of an Environmental Impact Statement would not be required under HUD's environmental review requirements.

2. We find that the EISPN addresses most significant issues that should be addressed in the EIS.

3. The difference in off-street parking requirements with or without a rapid transit system should be discussed.

We appreciate the opportunity to comment on the EISPN, but do not see the need for further consultation unless HUD assistance is anticipated through the Community Development Block Grant program or one of the FHA mortgage insurance programs. In that case compliance with HUD environmental review requirements will apply.

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

Very sincerely yours,

Calvin Lew
Director
Community Planning
and Development Division

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET 5TH FLOOR
HONOLULU HAWAII 96813
PHONE 523-4427 • FAX 527-5498

FRANK F. FASI
MAYOR

MICHAEL N. SCARFONE
DIRECTOR

RONALD B. MUN
DEPUTY DIRECTOR

January 25, 1990

Mr. Calvin Lew, Director
Community Planning and Development Division
U. S. Department of Housing and Urban Development (HUD)
300 Ala Moana Boulevard, Room 3316, Box 50007
Honolulu, HI 96850-4991

Dear Mr. Lew:

Subject: Environmental Impact Statement Preparation Notice (EISPN) for the Kaahumanu Parking Structure Redevelopment

We have received your letter of January 10, 1990 responding to the EISPN for the proposed Kaahumanu Parking Structure Redevelopment project.

That an EIS will not be required under HUD's environmental review requirements has been noted.

The DEIS will include discussion of transportation alternatives, including any future rail transit system in relation to the project. The discussion will address the issue of off-street parking requirements with or without such a system.

Thank you for your interest and participation in the planning stages of this project.

Sincerely,

Michael N. Scarfone
Director

cc: OEQC (Marvin Miura, Ph. D., Director)

STATE OF HAWAII
DEPARTMENT OF BUSINESS AND ECONOMIC DEVELOPMENT

LAND USE COMMISSION

Room 104, Old Federal Building, 335 Merchant Street
Honolulu, Hawaii 96813 Telephone: 548-4611

JOHN WAIHEE
Governor

RENTON L.K. NIP
Chairman

LAWRENCE F. CHUN
Vice Chairman

COMMISSION MEMBERS:
Sharon R. Himeno
Allen K. Hoe
Allen Y. Kajioka
Eusebio Lapenia, Jr.
James M. Shinno
Elton Wada
Frederick P. Whittemore

ESTHER UEDA
Executive Officer

December 8, 1989

Ms. Gail Kaito
Department of Housing
and Community Development
City and County of Honolulu
650 South King Street, 5th Floor
Honolulu, Hawaii 96813

Dear Ms. Kaito:

Subject: EISPN for the Kaahumanu Parking Structure Redevelopment

We have no comments to offer except that the subject project site is designated within the State Land Use Urban District.

Thank you for the opportunity to comment.

Sincerely,

ESTHER UEDA
Executive Officer

EU:to

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET 5TH FLOOR
HONOLULU HAWAII 96813
PHONE 523-4427 • FAX 527-5498

FRANK F. FASI
MAYOR

MICHAEL N. SCARFONE
DIRECTOR

RONALD B. MUN
DEPUTY DIRECTOR

January 25, 1990

Ms. Esther Ueda
Executive Officer
Land Use Commission
Old Federal Building, Room 104
335 Merchant Street
Honolulu, HI 96813

Dear Ms. Ueda:

Subject: Environmental Impact Statement Preparation Notice (EISPN) for the Kaahumanu Parking Structure Redevelopment

We have received your letter of December 8, 1989 responding to the EISPN for the proposed Kaahumanu Parking Structure Redevelopment project. The Draft Environmental Impact Statement (DEIS) will note that the proposed project is designated within the State Land Use Urban District. Thank you for your interest and participation in the planning stages of this project.

Sincerely,

Michael N. Scarfone
Director

cc: OEQC (Marvin Miura, Ph. D., Director)

JOHN WAIHEE
GOVERNOR

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

CHARLES T. TOGUCHI
SUPERINTENDENT

OFFICE OF THE SUPERINTENDENT

December 20, 1989

Mr. Michael N. Scarfone, Director
Department of Housing & Community Development
City and County of Honolulu
650 S. King Street
Honolulu, Hawaii 96813

ATTN: Ms. Gail Kaito

Dear Mr. Scarfone:

SUBJECT: Kaahumanu Parking Redevelopment

We have no comments to offer on the Environmental Impact Statement Prep Notice to the subject project.

Thank you for the opportunity to comment.

Sincerely,

Charles T. Toguchi

Charles T. Toguchi
Superintendent

CTT:jl

cc: Mr. E. Imai
Dr. H. Oda

AN AFFIRMATIVE ACTION AND EQUAL OPPORTUNITY EMPLOYER

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET 5TH FLOOR
HONOLULU HAWAII 96813
PHONE 523-4427 • FAX 527-5498

FRANK F. FASI
MAYOR

MICHAEL N. SCARFONE
DIRECTOR

RONALD D. MUN
DEPUTY DIRECTOR

January 25, 1990

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

Dear Mr. Toguchi:

Subject: Environmental Impact Statement Preparation Notice (EISPN) for the Kaahumanu Parking Structure Redevelopment

We have received your letter of December 20, 1989 indicating that you have no comments on the EISPN for the proposed Kaahumanu Parking Structure Redevelopment project. Your participation in the planning stages of this project is appreciated.

Sincerely,

Ronald D. Mun

for Michael N. Scarfone
Director

cc: OEQC (Marvin Miura, Ph. D., Director)

DEPARTMENT OF BUSINESS AND ECONOMIC DEVELOPMENT

KAMAMALU BUILDING, 250 SOUTH KING ST., HONOLULU, HAWAII
MAILING ADDRESS: P.O. BOX 2359, HONOLULU, HAWAII 96804 TELEX 7430250 HIDPED FAX (808) 523-8637

JOHN WAIHEE, GOVERNOR
ROGER A. ULVELING, DIRECTOR
BARBARA KIM STANTON, DEPUTY DIRECTOR
LESLIE S. MATSUBARA, DEPUTY DIRECTOR

December 28, 1989

Ms. Gail Kaito
Department of Housing & Community Development
City & County of Honolulu
650 South King Street, 5th Floor
Honolulu, Hawaii 96813

Re: Kaahumanu Parking Structure Redevelopment EIS Preparation Notice

Dear Ms. Kaito:

The Department of Business and Economic Development has no comments to the preparation notice, Environmental Impact Statement dated December 1989.

Returned is our copy of the Kaahumanu Parking Structure Redevelopment EIS.

Sincerely,

Roger A. Ulveling

RAU:dqn
Enclosure

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET 5TH FLOOR
HONOLULU HAWAII 96813
PHONE 523-4427 • FAX 527-5498

FRANK F. FASI, MAYOR

MICHAEL N. SCARFONE, DIRECTOR
DONALD S. MUN, DEPUTY DIRECTOR

January 25, 1990

Mr. Roger A. Ulveling
Director
Department of Business and Economic Development
Kamamalu Building
250 South King Street
Honolulu, HI 96813

Dear Mr. Ulveling:

Subject: Environmental Impact Statement Preparation Notice (EISPN) for the Kaahumanu Parking Structure Redevelopment

We have received your letter of December 28, 1989 indicating that you have no comments on the EISPN for the proposed Kaahumanu Parking Structure Redevelopment project. Thank you for your participation in the planning stages of this project.

Sincerely,

Michael N. Scarfone
Director

cc: OEQC (Marvin Miura, Ph. D., Director)

JOHN WAIHEE
GOVERNOR

State of Hawaii
DEPARTMENT OF AGRICULTURE
1428 So. King Street
Honolulu, Hawaii 96814-2512

YUKIO KITAGAWA
CHAIRPERSON, BOARD OF AGRICULTURE

SUZANNE D. PETERSON
DEPUTY TO THE CHAIRPERSON

FAX: 548-6100

Mailing Address:
P. O. Box 22159
Honolulu, Hawaii 96822-0159

January 16, 1990

Department of Housing and Community Development
City and County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

Attention: Ms. Gail Kaito

Dear Ms. Kaito:

Subject: Environmental Impact Statement Preparation Notice (EISPN) for Kaahumanu Parking Structure Redevelopment
TMK: 2-1-02: 16, 20, 26, 56 Honolulu, Oahu
Area: 1.83 acres

The Department of Agriculture has reviewed the subject document and has no comments to offer.

Thank you for the opportunity to comment.

Sincerely,

Yukio Kitagawa
YUKIO KITAGAWA
Chairperson, Board of Agriculture

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET 5TH FLOOR
HONOLULU HAWAII 96813
PHONE 523 4427 • FAX 527 5498

FRANK F. FASI
MAYOR

MICHAEL N. SCARFONE
DIRECTOR

RONALD S. MUN
DEPUTY DIRECTOR

March 30, 1990

Mr. Yukio Kitagawa, Chairperson
Department of Agriculture
1428 South King Street
Honolulu, Hawaii 96814

Dear Mr. Kitagawa:

Subject: Environmental Impact Statement Preparation Notice (EISPN) for the Kaahumanu Parking Structure Redevelopment

Thank you for your letter of January 16, 1990 in response to the EISPN for the proposed Kaahumanu Parking Structure Redevelopment project. Your interest and participation in the planning stages of this project are appreciated.

Sincerely,

Ronald S. Mun
MICHAEL N. SCARFONE
Director

cc: OEQC (Marvin Miura, Ph.D., Director)

JOHN WAIHEE
GOVERNOR

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

EDWARD Y. HIRATA
DIRECTOR

DEPUTY DIRECTORS
JOHN K. UCHIMA
RONALD N. HIRANO
DAN T. KOCHI
JEANNE K. SCHULTZ

IN REPLY REFER TO
HWY-PS
2.0203

February 1, 1990

Mr. Michael Scarfone
Director
Department of Housing & Community
Development
City and County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

Dear Mr. Scarfone:

EISPN for the Kaahumanu Parking Structure Redevelopment

Thank you for your transmittal of November 27, 1989, requesting our review of the subject EISPN.

Our comments are as follows:

1. The traffic impact analysis report which is being prepared should discuss the impacts of the generated vehicle trips on Nimitz Highway from River Street to Punchbowl Street.

2. Adequate storage space between the roadway and parking attendant's booth should be provided to avoid vehicle back-ups onto Nimitz Highway.

3. For better traffic operation at the access points, a separate ingress/egress for condo/hotel occupants or residents with assigned parking stalls shall be considered.

4. This project should be coordinated with the Honolulu Waterfront Study.

5. Construction plans for work done within Nimitz Highway should be submitted for our review and approval.

6. Revisions to traffic signal systems should be coordinated with the City.

Very truly yours,

Dan T. Kochi
for Edward Y. Hirata
Director of Transportation

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET 5TH FLOOR
HONOLULU HAWAII 96813
PHONE 523-4427 • FAX 527-5498

FRANK F. FASI
MAYOR

MICHAEL N. SCARFONE
DIRECTOR

RONALD S. LIM
DEPUTY DIRECTOR

March 30, 1990

Mr. Edward Y. Hirata, Director
State Department of Transportation
869 Punchbowl Street
Honolulu, Hawaii 96813-5097

Dear Mr. Hirata:

Subject: Environmental Impact Statement Preparation Notice (EISPN) for the Kaahumanu Parking Structure Redevelopment

We have received your letter of February 1, 1990 regarding the Kaahumanu Parking Structure Redevelopment Environmental Impact Statement Preparation Notice.

The following has been prepared in response to your comments and concerns:

1. Traffic Impact Analysis on Nimitz from River to Punchbowl Streets

As summarized in the Preparation Notice, the traffic study conducted for the project was based on the impacts of the generated vehicle trips on intersections immediately adjacent to the project. Impacts on existing local streets and intersections will be analyzed and appropriate improvements and upgrades discussed in the Draft EIS. Intersections outside of these, which include Nimitz Highway and River Street and Nimitz Highway and Punchbowl, are potentially affected arteries. However, these intersections service other projects which are either under construction or are scheduled for development, and are thus part of a regional transportation network.

Impacts on and evaluation of the adequacy of regional transportation systems are the responsibility of the Oahu Metropolitan Transportation Organization (OMPO). OMPO coordinates the integrated transportation planning for Oahu, combining the planning resources of the City and County of Honolulu Departments of General Planning and Transportation Services, and the State Departments of Business of Economic Development and Transportation. These

agencies are responsible for facility needs and programming of local, state and federal funds for Oahu's transportation needs.

OMPO is presently completing long-range forecasts and plans based on the official 2005 horizon year. Preliminary findings were not available at the time the traffic study for the project was being conducted.

2. &
3. Storage Space Between Roadway and Parking Attendant's Booth; and Separate Ingress/Egress for Occupants with Assigned Parking Stalls

These recommendations will be seriously considered during the design phases of the project.

4. Coordination with the Honolulu Waterfront Study

This project will be developed in coordination with the State's Honolulu Waterfront Study, as appropriate.

5 &
6. DOT and DTS Reviews/Coordination

Construction plans for work done within Nimitz Highway will be submitted to your Department for appropriate review and approval. Further, any revisions to traffic signal systems will be coordinated with the City and County of Honolulu Department of Transportation Services.

We appreciate your comments and recommendations at this stage in the planning process of this project.

Sincerely,

Ronald S. Lim
for MICHAEL N. SCARFONE
Director

cc: OEQC (Marvin Miura, Ph.D., Director)

JOHN WAIHEE
GOVERNOR OF HAWAII

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

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

DEPUTIES
Keith W. Ahue
MANABU TAGOMORI
RUSSELL N. FUKUMOTO

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

REF:OCEA-VIN

FEB 6 1990

File: 90-337
Doc.: 7374E

Honorable Michael Scarfone, Director
Department of Housing and Community Development
City and County of Honolulu
650 South King St., 5th Floor
Honolulu, Hawaii 96813

Attention: Gail Kaito

Dear Ms. Kaito:

Subject: EISPN for the Kaahumanu Parking Structure Redevelopment

Per Laura Fujioka of R.M. Towill Corporation's request enclosed are comments from our Department regarding the EISPN for the Kaahumanu Parking Structure Redevelopment.

No adverse impacts on aquatic resource values is expected. The project site has been developed previously. We are concerned primarily with possible effects from construction that may affect adversely the water quality and aquatic resources in Honolulu Harbor. The EIS should address the impact of potential contaminants from construction activity that could affect the harbor resources and suggest mitigative measures.

If you have any questions, please feel free to call me or Cathy Tilton at our Office of Conservation and Environmental Affairs at 548-7837.

Very truly yours,

WILLIAM W. PATY

cc: DAR

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET 5TH FLOOR
HONOLULU HAWAII 96813
PHONE 523-4427 • FAX 527-5498

FRANK F. FASI
MAYOR

MICHAEL N. SCARFONE
DIRECTOR

RONALD S. LIM
DEPUTY DIRECTOR

March 30, 1990

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

Dear Mr. Paty:

Subject: Environmental Impact Statement Preparation Notice (EISPN) for the Kaahumanu Parking Structure Redevelopment

We have received your letter of February 6, 1990 in response to the EISPN for the proposed Kaahumanu Parking Structure Redevelopment project.

Your concerns regarding the possible adverse impacts to the water quality and aquatic resources in Honolulu Harbor as a result of construction activities have been noted.

Thank you for your interest and participation in the planning stages of this project.

Sincerely,

Ronald S. Lim

MICHAEL N. SCARFONE
Director

cc: OEQC (Marvin Miura, Ph.D., Director)

JOHN WAIHEE
GOVERNOR OF HAWAII

STATE OF HAWAII
DEPARTMENT OF HEALTH
P. O. BOX 3378
HONOLULU, HAWAII 96801

JOHN C. LEWIN, M.D.
DIRECTOR OF HEALTH

In reply, please refer to:
EPHSO

February 21, 1990

MEMORANDUM

To: Department of Housing & Community Development
Attention: Gail Kaito

From: Deputy Director for Health

Subject: Comments to Environmental Impact Statement Preparation Notice (EISPN) for the Kaahumanu Parking Structure Redevelopment (TMK: 2-1-02: 16, 20, 26 & 56)

Thank you for allowing us to review and comment on the subject EISPN. We provide the following comments relating to noise:

1. In addition to discussion of potential noise impacts from vehicular traffic and construction activities, the following concerns must be addressed in the Environmental Impact Statement:

   a. Noise impacts resulting from the integration of commercial facilities with residential units, including heavy vehicles utilized for delivery and services. In addition, noise from stationary equipment, such as air conditioning units, exhaust units, pumps and generators may have adverse impacts on residents. Through facility design, sound levels emanating from such equipment must be attenuated to meet the allowable levels of Title 11, Administrative Rules, Chapter 43, Community Noise Control for Oahu.

   b. Vehicular noise emissions from parking structures, particularly noise resulting from tire squeals, may have negative impacts.

2. Mitigative measures should be incorporated into the development design in order to minimize the potential noise impacts indicated above.

BRUCE S. ANDERSON, PH.D.

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET 5TH FLOOR
HONOLULU, HAWAII 96813
PHONE 523-4427 • FAX 527-5498

FRANK F. FASI
MAYOR

MICHAEL N. SCARFONE
DIRECTOR

RONALD D. HUN
DEPUTY DIRECTOR

March 30, 1990

Bruce S. Anderson, Ph.D.
Deputy Director for Health
Department of Health
P. O. Box 3378
Honolulu, Hawaii 96801

Dear Dr. Anderson:

Subject: Environmental Impact Statement Preparation Notice (EISPN) for the Kaahumanu Parking Structure Redevelopment

Thank you for your letter of February 21, 1990 in response to the EISPN for the proposed Kaahumanu Parking Structure Redevelopment project.

Your concerns regarding the noise impacts from vehicular traffic, construction activities, and the proposed parking structure are acknowledged. The appropriate mitigative measures will be considered to minimize these potential noise impacts.

Your participation in the planning stages of this project is appreciated.

Sincerely,

MICHAEL N. SCARFONE
Director

cc: OEQC (Marvin Miura, Ph.D., Director)

DEPARTMENT OF PUBLIC WORKS
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET
HONOLULU, HAWAII 96813

FRANK F. FASI
MAYOR

SAM CALLEJO
DIRECTOR AND CHIEF ENGINEER

In reply refer to:
ENV 89-238(449)

December 14, 1989

MEMORANDUM

TO: MICHAEL N. SCARFONE, DIRECTOR
DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT

FROM: SAM CALLEJO, DIRECTOR AND CHIEF ENGINEER

SUBJECT: ENVIRONMENTAL IMPACT STATEMENT PREPARATION NOTICE (EISPN) - KAAHUMANU PARKING REDEVELOPMENT (TAX MAP KEY: 2-1-02: 16, 20, 26 AND 56)

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

Sam
SAM CALLEJO
Director and Chief Engineer

Mike

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET 5TH FLOOR
HONOLULU, HAWAII 96813
PHONE 523-4427

FRANK F. FASI
MAYOR

MIKE N. SCARFONE
DIRECTOR

Ronald B. Mun
DEPUTY DIRECTOR

January 25, 1990

Mr. Sam Callejo
Director and Chief Engineer
Honolulu Department of Public Works
650 South King Street
Honolulu, HI 96813

Dear Mr. Callejo:

Subject: Environmental Impact Statement Preparation Notice (EISPN) for the Kaahumanu Parking Structure Redevelopment

We have received your letter of December 14, 1989 indicating that you have no comments on the EISPN at this time. Your participation in the planning stages of this project is appreciated.

Sincerely,

Ronald B Mun
Michael N. Scarfone
Director

cc: OEQC (Marvin Miura, Ph. D., Director)

DEPARTMENT OF PUBLIC WORKS

CITY AND COUNTY OF HONOLULU

In reply refer to:
ENV 89-238(449)

December 14, 1989

MEMORANDUM

TO: MICHAEL N. SCARFONE, DIRECTOR
DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT

FROM: SAM CALLEJO, DIRECTOR AND CHIEF ENGINEER

SUBJECT: ENVIRONMENTAL IMPACT STATEMENT PREPARATION NOTICE (EISPN) - KAAHUMANU PARKING REDEVELOPMENT (TAX MAP KEY: 2-1-02: 16, 20, 26 AND 56)

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

SAM CALLEJO
Director and Chief Engineer

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT

CITY AND COUNTY OF HONOLULU

Ronald B. Mun

January 25, 1990

Mr. Sam Callejo
Director and Chief Engineer
Honolulu Department of Public Works
650 South King Street
Honolulu, HI 96813

Dear Mr. Callejo:

Subject: Environmental Impact Statement Preparation Notice (EISPN) for the Kaahumanu Parking Structure Redevelopment

We have received your letter of December 14, 1989 indicating that you have no comments on the EISPN at this time. Your participation in the planning stages of this project is appreciated.

Sincerely,

Michael N. Scarfone
Director

cc: OEQC (Marvin Miura, Ph. D., Director)

DEPARTMENT OF GENERAL PLANNING
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET
HONOLULU HAWAII 96813

FRANK F. FASI
MAYOR

DONALD A. CLEGG
CHIEF PLANNING OFFICER

December 21, 1989

MEMORANDUM

TO: MICHAEL N. SCARFONE, DIRECTOR
DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT

FROM: DONALD A. CLEGG, CHIEF PLANNING OFFICER
DEPARTMENT OF GENERAL PLANNING

SUBJECT: ENVIRONMENTAL IMPACT STATEMENT PREPARATION NOTICE (EISPN) FOR THE PROPOSED KAAHUMANU PARKING STRUCTURE REDEVELOPMENT

Thank you for the opportunity to review and comment on the subject EISPN. We have the following comments to offer for your consideration.

1. The words "Development Plan", page 1, should be clarified as the Development Plan Land Use Map. On the same page, the words "Public Facilities", should read as Development Plan Public Facilities Map.

2. With respect to Section 8 RELATIONSHIP TO LAND USE PLANS AND POLICIES, page 19, the Draft EIS should discuss the relationship and consistency of the proposed Kaahumanu Parking Structure Redevelopment plan to the following land use policies:

   A. General Plan;
   B. Development Plan (DP) Land Use Map and DP Public Facilities Map;
   C. Chinatown Special District; and
   D. Land Use Ordinance (LUO)

3. According to Section 6.5 HISTORICAL/ARCHAEOLOGICAL, page 18, "Historic structures and sites will be inventoried, and impacts and mitigation measures will be addressed in a study commissioned for this EIS."

This study should be coordinated in accordance with the provisions set forth in RESOLUTION 89-489 FD-1 entitled "ESTABLISHING A COMPREHENSIVE HISTORIC PRESERVATION REVIEW POLICY TO HELP PRESERVE THE CITY'S HISTORIC AND ARCHAEOLOGICAL PROPERTIES", which was adopted by the City Council of the City and County of Honolulu on November 22, 1989.

We hope these comments are helpful in preparing the Draft EIS. If you have any questions regarding our comments, please contact Matthew Higashida at 527-6056.

Donald Clegg
DONALD A. CLEGG
Chief Planning Officer

DAC:js

cc: Colette Sakoda, R.M. Towill Corporation

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET 5TH FLOOR
HONOLULU HAWAII 96813
PHONE 523-4427 • FAX 527-5498

FRANK F. FASI
MAYOR

MICHAEL N. SCARFONE
DIRECTOR

RONALD B. MUN
DEPUTY DIRECTOR

January 25, 1990

Honorable Benjamin Lee
Chief Planning Officer
Department of General Planning
650 South King Street
Honolulu, Hawaii 96813

Dear Mr. Lee:

Subject: Environmental Impact Statement Preparation Notice (EISPN) for the Kaahumanu Parking Structure Redevelopment

We are in receipt of your letter of December 21, 1989 regarding the Preparation Notice for the Kaahumanu Parking Structure Redevelopment EIS.

The revisions regarding the references to the Development Plan Public Facilities Map and the Development Plan Land Use Map will be incorporated in the Draft EIS. The Draft EIS will include discussions regarding the relationship between the proposed project and the City's various policies and plans, which include the General Plan, Development Plans, Chinatown Special District, and the Land Use Ordinance.

As you recommended, the historic/archaeological assessment will include the application of Council Resolution 89-489 FD-1 to the site's features.

We appreciate your participation in the planning process of the Kaahumanu Parking Structure Redevelopment project.

Sincerely,

Ronald B Mun

for MICHAEL N. SCARFONE
Director

cc: OEQC (Marvin Miura, Ph.D., Director)

DEPARTMENT OF PARKS AND RECREATION
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET
HONOLULU, HAWAII 96813

FRANK F. FASI
MAYOR

WALTER M. OZAWA
DIRECTOR

HIROAKI MORITA
DEPUTY DIRECTOR

December 22, 1989

TO: MIKE N. SCARFONE, DIRECTOR
DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT

FROM: WALTER M. OZAWA, DIRECTOR

SUBJECT: ENVIRONMENTAL IMPACT STATEMENT PREPARATION NOTICE (EISPN)
KAAHUMANU PARKING REDEVELOPMENT
TAX MAP KEY: 2-1-02: 16, 20, 26 & 56

We have reviewed the EISPN for the Kaahumanu Parking Mixed-Use Project and make the following comments.

The recreational needs for the proposed mixed-use project have not been adequately addressed in the EISPN. There are no major public parks in the downtown area to serve the project's recreational needs. It is, therefore, important that adequate recreational areas and facilities be provided in the design of the project to serve both the hotel and condominium residents.

The project will be subject to compliance with the City Park Dedication Ordinance No. 4621. Procedures and requirements to comply with the Ordinance are specified in Rule 10 of the City's Park Dedication Rules and Regulation.

Walter M. Ozawa
WALTER M. OZAWA, Director

WMO:js

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET 5TH FLOOR
HONOLULU, HAWAII 96813
PHONE 523-4427

FRANK F. FASI
MAYOR

MIKE N. SCARFONE
DIRECTOR

Ronald B. Mun
DEPUTY DIRECTOR

January 25, 1990

Mr. Walter M. Ozawa
Director
Honolulu Department of Parks and Recreation
650 South King Street
Honolulu, HI 96813

Dear Mr. Ozawa:

Subject: Environmental Impact Statement Preparation Notice (EISPN) for the Kaahumanu Parking Structure Redevelopment

We have received your letter of December 22, 1989 in response to the EISPN for the proposed Kaahumanu Parking Structure Redevelopment project.

Your concerns regarding the provision of adequate recreational areas and the project's conformance with the City Park Dedication Ordinance No. 4621 will be addressed in the Draft EIS and considered during the design of the project.

Your interest and participation in the planning stages of this project is appreciated.

Sincerely,

Ronald B. Mun
for Michael N. Scarfone
Director

cc: OEQC (Marvin Miura, Ph. D., Director)

BOARD OF WATER SUPPLY
CITY AND COUNTY OF HONOLULU
630 SOUTH BERETANIA STREET
HONOLULU HAWAII 96843

December 27, 1989

TO: MICHAEL N. SCARFONE, DIRECTOR
DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT

FROM: FOR KAZU HAYASHIDA, MANAGER AND CHIEF ENGINEER
BOARD OF WATER SUPPLY

SUBJECT: YOUR MEMORANDUM OF NOVEMBER 27, 1989 ON THE ENVIRONMENTAL IMPACT STATEMENT PREPARATION NOTICE (EISPN) FOR THE PROPOSED KAAHUMANU PARKING STRUCTURE REDEVELOPMENT, TMK: 2-1-02: 16, 20, 26, AND 56

Thank you for the opportunity to review and comment on the EISPN for the proposed parking lot redevelopment project.

We have the following comments to offer:

1. The phrase, "The current water system serving the Kaahumanu area has adequate capacity to accommodate the proposed development," stated at the bottom of page 8 of the report, is erroneous and should be revised. The existing 6-inch main on Merchant Street is undersized and should be upgraded to an 8-inch main extending from Nuuanu Avenue to Richards Street. The Board of Water Supply (BWS) plans to undertake a study to determine the water system improvement requirement of the entire downtown area and to develop a method to assess proposed developments for the costs of the improvements. The 6-inch main along Merchant Street will be included in that study.

   If the BWS approves the study, your proposed redevelopment project will be assessed its proportionate share for the improvements of the water system in the downtown area. Otherwise, the developer will be required to upgrade the pipeline along Merchant Street. A determination will be made when the developer is ready to proceed with the project.

2. The project will also be assessed our Water System Facilities Charges with credit given for the active service which presently services the site.

3. The construction drawings for the installation of three-inch or larger water meters and for any off-site water main improvements should be submitted for our review and approval.

4. An approved reduced pressure backflow prevention device should be installed immediately after each domestic water meter and after any meter for a fire system using chemicals.

If you have any questions, please contact Lawrence Whang at 527-6138.

cc: Office of Environmental Quality Control
Department of General Planning

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT
CITY AND COUNTY OF HONOLULU

Ronald B. Mun

January 25, 1990

Mr. Kazu Hayashida
Manager and Chief Engineer
Honolulu Board of Water Supply
630 South Beretania Street
Honolulu, HI 96843

Dear Mr. Hayashida:

Subject: Environmental Impact Statement Preparation Notice (EISPN) for the Kaahumanu Parking Structure Redevelopment

We have received your letter of December 14, 1989 responding to the EISPN for the proposed Kaahumanu Parking Structure Redevelopment project. The following responds to your comments and concerns:

The Draft Environmental Impact Statement (DEIS) will incorporate your suggested revision regarding the necessary upgrades to the 6-inch main on Merchant Street and BWS plans to assess developers for water system improvements for the downtown area.

As required, the developer will pay the appropriate Water System Facilities Charges. In addition, the construction drawings for the installation of water meters and for any off-site water main improvements will be submitted for your review and approval.

The installation of an approved reduced pressure backflow prevention device will be contingent upon final design specifications.

Thank you for your participation in the planning stages of this project.

Sincerely,

Ronald B. Mun

for Michael N. Scarfone
Director

cc: OEQC (Marvin Miura, Ph. D., Director)

BUILDING DEPARTMENT

CITY AND COUNTY OF HONOLULU

HONOLULU MUNICIPAL BUILDING

FRANK F. FASI, MAYOR

HERBERT K. MURAOKA, DIRECTOR AND BUILDING SUPERINTENDENT

PB 89-1187

December 27, 1989

MEMO TO: MICHAEL SCARFONE, DIRECTOR
DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT

ATTN: GAIL KAITO

FROM: HERBERT K. MURAOKA
DIRECTOR AND BUILDING SUPERINTENDENT

SUBJECT: KAAHUMANU PARKING REDEVELOPMENT

We have reviewed the subject EISPN and our comments are as follows:

1. The loss of parking and impact on public services during demolition and construction should be addressed.
2. The ingress and egress to the basement parking and the location of the City and County employees parking lot should be clarified.
3. Recommend that the Office of Human Resources be contacted regarding the need for a child care facility.
4. Provisions should be made to mitigate the impact of demolition.

Should there be any questions, please have your staff contact Douglas Collinson at local 6375.

FOR HERBERT K. MURAOKA
Director and Building Superintendent

cc: J. Harada

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT

CITY AND COUNTY OF HONOLULU

650 SOUTH KING STREET 5TH FLOOR
HONOLULU, HAWAII 96813
PHONE 523-4427 • FAX 527-5498

FRANK F. FASI, MAYOR

MICHAEL N. SCARFONE, DIRECTOR

RONALD S. LIM, DEPUTY DIRECTOR

January 25, 1990

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

Dear Mr. Muraoka:

Subject: Environmental Impact Statement Preparation Notice (EISPN) for the Kaahumanu Parking Structure Redevelopment

We have received your letter of December 27, 1989 in response to the EISPN for the proposed Kaahumanu Parking Structure Redevelopment project. The following responds to your comments:

The loss of parking and impact on public services during the construction and demolition period of the project has been recognized as a major concern and will be addressed in a Social Impact Assessment appended to the Draft Environmental Impact Statement (DEIS).

The issues of ingress and egress to the basement parking and the location of the City and County employees parking area will be resolved during the project's design phases. The Traffic Impact Assessment and Civil Engineering Report appended to the DEIS will provide clarity on these concerns.

The determination of the need for a child care facility will be taken under advisement during the preparation of the EIS.

Provisions will be made to mitigate the impacts of demolition.

Your interest and participation in the planning stages of this project is appreciated.

Sincerely,

Ronald S. Lim
for MICHAEL N. SCARFONE
Director

cc: OEQC (Marvin Miura, Ph.D., Director)

FIRE DEPARTMENT

CITY AND COUNTY OF HONOLULU

1455 S BERETANIA STREET ROOM 305
HONOLULU HAWAII 96814

FRANK F. FASI
MAYOR

LIONEL E. CAMARA
FIRE CHIEF

DONALD S.M. CHANG
DEPUTY FIRE CHIEF

January 8, 1990

TO: MICHAEL N. SCARFONE, DIRECTOR
DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT

ATTN: GAIL KAITO

FROM: LIONEL E. CAMARA, FIRE CHIEF

SUBJECT: KAAHUMANU PARKING REDEVELOPMENT

We have reviewed the subject material provided and have no comments.

Should you have any questions, please contact Battalion Chief Michael Zablan of our Administrative Services Bureau at local 3838.

LIONEL E. CAMARA
Fire Chief

LEC/MZ:lm

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT

CITY AND COUNTY OF HONOLULU

650 SOUTH KING STREET, 5TH FLOOR
HONOLULU HAWAII 96813
PHONE 523-4427

FRANK F. FASI
MAYOR

MICHAEL N. SCARFONE
DIRECTOR

Ronald B. Mun
DEPUTY DIRECTOR

January 25, 1990

Mr. Lionel E. Camara
Fire Chief
Honolulu Fire Department
1455 South Beretania Street, Room 305
Honolulu, HI 96814

Dear Mr. Camara:

Subject: Environmental Impact Statement Preparation Notice (EISPN) for the Kaahumanu Parking Structure Redevelopment

Thank you for your letter of January 8, 1990 responding to the EISPN for the proposed Kaahumanu Parking Structure Redevelopment project. Per your referral, we will contact Battalion Chief Michael Zablan in the future, should the need arise. We appreciate your participation in the planning stages of this project.

Sincerely,

Ronald B Mun
f Michael N. Scarfone
Director

cc: OEQC (Marvin Miura, Ph. D., Director)

PRI Gasco, Inc.

515 Kamakee Street
PO Box 3379 Honolulu, Hawaii 96842
Telephone 808 547-3333 Telex (ITT) 7430292

December 7, 1989

Department of Housing & Community Development
City and County of Honolulu
650 South King Street, 5th Floor
Honolulu, Hawaii 96813

Attention: Ms. Gail Kaito

Gentlemen:

Subject: Kaahumanu Parking Redevelopment
Environmental Impact Statement (EIS) Prep Notice

This is in response to R. M. Towill Corporation's letter of transmittal dated November 27, 1989, informing us of the Kaahumanu Parking Redevelopment.

The proposed project calls for the inclusion of commercial development, and we anticipate the demand for gas service in this area. Consequently, we request the consideration of your planners and designers during the development process to provide for the needs of the potential gas consumers.

The Gas Company currently maintains an underground distribution system in the vicinity of the proposed redevelopment. Therefore, we are interested in the proposed improvements and the potential impact of the related construction on our system.

Should there be any questions, or if additional information is desired, please call me at 547-3574.

Very truly yours,

Edwin N. Sawa

Edwin N. Sawa
Manager, Engineering

ENS:nsd

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT
CITY AND COUNTY OF HONOLULU

650 SOUTH KING STREET 5TH FLOOR
HONOLULU HAWAII 96813
PHONE 523-4427 • FAX 527-5498

FRANK F. FASI
MAYOR

MICHAEL N. SCARFONE
DIRECTOR

RONALD B. MUN
DEPUTY DIRECTOR

January 25, 1990

Mr. Edwin N. Sawa, Manager
Engineering Department
Gasco Inc.
515 Kamakee Street
P. O. Box 3379
Honolulu, HI 96842

Dear Mr. Sawa:

Subject: Environmental Impact Statement Preparation Notice (EISPN) for the Kaahumanu Parking Structure Redevelopment

We have received your letter of December 7, 1989 responding to the EISPN for the proposed Kaahumanu Parking Structure Redevelopment project.

Your concern that provisions be allowed for the needs of potential gas consumers within the development will be communicated to the developer. The potential impact from the construction of the development on the existing underground gas system will be assessed in the Draft EIS.

Thank you for your interest and participation in the planning stages of this project.

Sincerely,

Ronald B. Mun

for Michael N. Scarfone
Director

cc: OEQC (Marvin Miura, Ph. D., Director)

Hawaiian Electric Company Inc. • PO Box 2750 • Honolulu, HI 96840-0001

William A. Bonnet
Manager
Environmental Department

ENV 2-1
JA/G

December 27, 1989

Ms. Gail Kaito
Dept. of Housing & Community Development
C & C of Honolulu
650 South King St., 5th Floor
Honolulu, Hawaii 96813

Dear Ms. Kaito:

Subject: Environmental Impact Statement Preparation Notice for Kaahumanu Parking Structure Redevelopment

We have reviewed the subject document and have determined that the development project will not impact our existing electrical distribution system in the area.

Sincerely,

An HEI Company

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET 5TH FLOOR
HONOLULU HAWAII 96813
PHONE 523-4427 • FAX 527-5498

FRANK F. FASI
MAYOR

MICHAEL N. SCARFONE
DIRECTOR

RONALD B. MUN
DEPUTY DIRECTOR

January 25, 1990

Mr. William A. Bonnet
Manager
Environmental Department
Hawaiian Electric Company Inc.
P. O. Box 2750
Honolulu, HI 96840-0001

Dear Mr. Bonnet:

Subject: Environmental Impact Statement Preparation Notice (EISPN) for the Kaahumanu Parking Structure Redevelopment

We have received your letter of December 27, 1989 indicating that the proposed project will not affect HECO's electrical distribution system in the area. Thank you for your participation in the planning stages of this project.

Sincerely,

Ronald B. Mun

Michael N. Scarfone
Director

cc: OEQC (Marvin Miura, Ph. D., Director)

DOWNTOWN IMPROVEMENT ASSOCIATION • 700 BISHOP STREET/SUITE 1005 • HONOLULU, HAWAII 96813 • PHONE (808) 531-3081

January 3, 1990

Ms. Gail Kaito
Department of Housing and
Community Development
City and County of Honolulu
650 South King Street, Fifth Floor
Honolulu, Hawaii 96813

Re: Kaahumanu Parking Structure Redevelopment
Environmental Impact Statement (EIS) Preparation Notice

Dear Ms. Kaito:

We have reviewed the EIS Preparation Notice for the Kaahumanu Parking Structure Redevelopment by R.M. Towill Corporation and enclose a list of comments.

If you or the consultant need any additional information about these comments, please don't hesitate to call us.

Very truly yours,

William A. Grant, AIA
Executive Director

WAG:kmd

COMMENTS ON THE
ENVIRONMENTAL IMPACT STATEMENT/PREPARATION NOTICE
FOR KAAHUMANU GARAGE SITE

Page 2 (second paragraph). The text should make clear that it is the site which is "underutilized," not the parking garage which is now there. There are long lines of cars seeking entry during peak periods every business day and the facility is one of the busiest in Downtown.

Page 2 (suggested addition Section 1.1). The site was acquired by the City in 1952 as part of the Downtown Parking Improvement District for the purpose of providing off-street parking for shoppers. The property owners within the District were assessed for the facility's cost.

Page 3. The Map Legend should read: 4. Bishop Square, 13. City Financial Tower and 14. City Center Building. Also it would be helpful if the following were identified: Walker Park, Irwin Park, Wilcox Park, Alan Davis Park, Kamehameha V Post Office and the HEI site.

Page 4. The Roadway Network map should identify allowable turning movements to and from Nimitz Highway and other major streets. These are very important for understanding access to and from the site.

Page 5. "Amfac Triangle Park" is actually "Walker Park." It occupies State land and is maintained by Amfac Center.

The proposed bridge over Bethel Street should be evaluated for its impact on views of the Harbor.

Page 9 (3.2 Hydrology). It should be noted that the excavation for the garage of the Campbell Building in the mid-1960's discovered considerable groundwater and resulted in some design changes for that structure.

Page 11 (3.7 Historic). "Melchers" should not have an apostrophe. Early records indicate a major Heiau to the God Ku, was in the neighborhood, perhaps in the vicinity of the old Police Station parking lot. Kaahumanu Garage is said to have been the general site of Queen Kaahumanu's camp (the King's was near the present

Amfac site). The old Fort entrance was at Queen and Fort Streets and the battlements stretched across Nimitz Highway to what is now Irwin Park. Many interesting artifacts may be found during excavation of the Kaahumanu site.

Page 12 (4.2 Market Assessment). The Downtown market for office space should not be combined with the Kapiolani market. The two are very different and not really competitive. Downtown absorbs about 250,000 sf (gross) of new office space annually and has done so for over the last 15 years. We have no concern about the absorption of the project's new space in 1993 or 94, provided the economy remains reasonably steady.

As to the demand for the luxury housing units, they too should be sold very easily and follow the strong sales pattern exhibited at Waterfront Plaza and Honolulu Park Place.

Page 13 (Existing Inventory). Reference is made of the office space inventory conducted periodically by BOMA. Be aware that the BOMA Survey is conducted only among BOMA members. It is intended as an inventory of "competitive" multi-tenant office buildings and is highly incomplete. That survey does not include almost 50 Downtown buildings which are non-BOMA members or are owner-occupied, such as the telephone and electric company buildings, Century Square, Hemmeter Plaza, etc. By including all buildings, we find 8 million square feet of office space in Downtown, not the 4.5 or 4.7 indicated in the report.

(Under Construction/Planned). The list should be revised as follows: City Financial Tower (187,000 sf) is finished and occupied as of June, 1989. Harvest Tower, Commerce Tower and Pacific Park Plaza are not in Downtown and should not be listed. Hawaii National Bank (100,000 sf) is finished and occupied as of November, 1989. Pan Pacific Plaza (495,000 sf) is the only office building under construction at present and will be ready late in 1991 or early 1992. Chinatown Gateway Plaza is a City residential project and has no office space. Alii Place (240,000 sf) is the name of BetaWest's project planned for the Alakea-Richards garage site. It is not under construction now but should get started in 1990. The total of office space under construction in Downtown should be 495,000 sf (gross) which is Pan Pacific Plaza alone.

Planned projects which may or may not proceed are: Merchandise Mart (175,000 sf), Pacific Nations Center is unlikely to have much office space because the City is pushing for development too soon. Results of the RFP are due on January 21, 1990 and office potential should be clearer then.

Pacific Nations Center will probably be predominately residential unless the City decides to wait for 6 to 10 years. Aloha Tower's winning proposal will contain 520,000 sf of new office space. Completion would be in 1995 at the earliest. No plans for the HEI site have been announced but the site has been studied for office use.

Page 14 (4.3.2 Residential Supply). These projects are really all over urban Honolulu and it is difficult to understand how they are considered competitors for Downtown. Missing from the list are two in Downtown: Pacific Nations Center and the Aloha Tower project (270 units).

As to who will buy the project's residential units, we expect a similar purchasers as Waterfront Plaza: many investors, both local, mainland and foreign nationals. Many of the units may rarely be occupied and few of the residents will work in Downtown, if they work at all.

Page 15. Again BOMA figures are subject to interpretation. BOMA only includes its members and the information should be used with great caution. The actual Downtown office space inventory increased by 2,579,000 sf (gross) between 1982 and 1987. This was higher than normal because of three large projects in 1983. Concerning jobs, the estimate of 22,500 new jobs in six years must be for all Oahu. We estimate that for Downtown in 1989 there were about 53,000 people present on a typical business day: 42,000 were office workers (8 million sf (gross) or 6.4 million (net) at 90% occupancy and about 130 sf per worker). The remaining 11,000 people were customers, visitors, shoppers, students, retail clerks, service workers, etc. We add about 250,000 sf (gross) each year and this results in about 1,000 people.

Page 15. There is no mention of the Bus service or future rail transit lines, one of which might have a station at the site.

Page 16. There is a new Downtown Police Substation at Nuuanu and Hotel Streets. A new 30-inch sewer line will be installed along Nimitz this year.

Page 17. Straub Hospital operates a clinic at Queen's Plaza. Public schools are hardly "convenient" to the site and Central Intermediate may soon be closed for lack of students. Recreational facilities should include mention the City's Parks, Mall and the State's Waterfront plan.

The impact of lost public parking during construction should be examined in detail. Most Downtown garages are all full at peak periods. Only one new facility, Chinatown Gateway Plaza, will be available.

Where is the evidence that Downtown residential units cut vehicular trips significantly? We did a survey several years ago and found that 55% of Downtown residents worked somewhere else.

Page 19. Zoning: The Chinatown Historic District Boundaries have recently been changed. All of 2-1-02-19, 20, and 24 are in the District now and most of 26 is included. Since the project is being built adjacent to the Chinatown Historic District there may be some special requirements concerning yards or setbacks. A variance may be needed.

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET 5TH FLOOR
HONOLULU HAWAII 96813
PHONE 523-4427 • FAX 527-5498

FRANK F. FASI
MAYOR

MICHAEL M. SCARFONE
DIRECTOR

RONALD D. HUM
DEPUTY DIRECTOR

January 25, 1990

Mr. William A. Grant, AIA
Executive Director
Downtown Improvement Association
700 Bishop Street, Suite 1005
Honolulu, Hawaii 96813

Dear Mr. Grant:

Subject: Environmental Impact Statement Preparation Notice (EISPN) for the Kaahumanu Parking Structure Redevelopment

We have received your letter of January 3, 1990 regarding the Kaahumanu Parking Structure Redevelopment Environmental Impact Statement Preparation Notice. The following responds to your comments and concerns.

Your recommended revisions to the discussion pertaining to utilization of the parking garage and historical account of the City and County of Honolulu's acquisition of the site in 1952 will be incorporated into the text of the Draft Environmental Impact Statement (DEIS). The revisions and additions to the maps and text on pages 3, 4 and 5 which you have suggested will also be incorporated in the DEIS.

An assessment of the potential visual impact of the proposed bridge over Bethel Street will be conducted as part of the EIS process. The results will be included in the DEIS document.

Further research will be conducted to disclose the possible design implications that the groundwater conditions may have on the new complex envisioned for the Kaahumanu Parking Structure site.

Your comments regarding the archaeological considerations of the site and extensive comments on the market assessment methods used as part of the developer's proposal to the City are noted.

The DEIS will include discussion of transportation alternatives, including existing Bus service and any future rail transit system relative to the project. Other issues which will be included for discussion are the impact of lost public parking during construction and mitigation measures as appropriate, and the impact downtown residential units have on vehicular trip generation.

The discussions with regard to public services, Chinatown Historic District boundaries, and downtown residential trip generation will be updated and revised per your suggestions.

Thank you for your participation in the planning process of the Kaahumanu Parking Structure Redevelopment project.

Sincerely,

Donald B Mu

MICHAEL M. SCARFONE
Director

cc: OEQC (Marvin Miura, Ph.D., Director)

HISTORIC HAWAI'I
FOUNDATION

January 8, 1990

Ms. Colette Sakoda
Project Manager
R. M. Towill Corporation
420 Waiakamilo Road, Suite 411
Honolulu, HI 96817

Dear Ms. Sakoda:

RE: EIS Preparation Notice for the Ka'ahumanu Parking Structure Development

Historic Hawai'i is the statewide nonprofit, historic preservation organization and is, therefore, concerned about the proposed Ka'ahumanu parking structure redevelopment as it affects the historic buildings and sites in the development area.

We would urge you to be sure that the new structures are designed in a way to relate to and complement the existing historic buildings.

We would like to be sure that construction plans include adequate monitoring and mitigation methods to protect the historic structures.

We would also like to be sure that adequate consideration is given to any archaeological investigation which needs to be done as part of the site preparation.

We would appreciate the opportunity to comment on the development and would be happy to be called upon as resource.

Sincerely yours,

Phyllis G. Fox
President

PGP:rn

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT
CITY AND COUNTY OF HONOLULU

January 25, 1990

Ms. Phyllis G. Fox
President
Historic Hawai'i Foundation
P. O. Box 1658
Honolulu, HI 96806

Dear Ms. Fox:

Subject: Environmental Impact Statement Preparation Notice (EISPN) for the Kaahumanu Parking Structure Redevelopment

We have received your letter of January 8, 1990 regarding the Kaahumanu Parking Structure Redevelopment project.

We share your concerns regarding the possible effects of the project on the area's existing historic buildings and sites. The design strategies for the project will be sensitive to the characteristics of historic resources currently in place. The new development will be planned to complement its surrounding environment. Further, precautionary measures aimed at protecting the historic structures during construction will be incorporated into the Draft EIS.

An archaeological assessment will be conducted to evaluate the existing inventory, and the potential impacts to the historic resources which may be caused by the proposed action.

We appreciate your interest and offer of assistance.

Sincerely,

Michael N. Scarfone,
Director

cc: OEQC (Marvin Miura, Ph. D., Director)

ROBERT CRONE A ITECT 4130 PALOMA PLACE ONOLULU HAWAII 96816

January 8, 1990

Mr. Michael N. Scarfone, Director
Department of Housing and Community Development
650 South King Street, Fifth Floor
Honolulu HI 96813

Re: Kaahumanu Parking Structure Redevelopment EIS Notice

Dear Mr. Scarfone,

We have reviewed the EIS Preparation Notice for the Kaahumanu Parking Structure Redevelopment and have the following concerns related to the urban design of the project which we hope will be addressed in the draft EIS.

First, the EIS needs to address the impact of the pedestrian bridge across Bethel Street on the makai and mauka view corridors along that street. In light of the long standing policy to preserve view corridors along the mauka to makai streets of downtown and Chinatown, the impact of this bridge from an urban design point of view is significant. The bridge is apparently relatively low in clearance and massive in form. These design elements combine to produce a bridge which interrupts the views from the Merchant Street Historic District more than necessary.

Second, the EIS needs to address the impact of the project on the historic structures in the Merchant Street Historic District - the Melcher, ex-Bishop Bank, and ex-District Court buildings in particular. In the EIS Notice, the floor plan is sketchy and the two elevations are not sufficient to show impact clearly. More needs to be shown and discussed in the draft EIS. Also, what is the nature of the arch between the Melcher and Bishop Bank buildings in 'Elevation A'? Is it along the street line or set back behind the buildings? Does it exceed 40 feet in height? Is it 'of compatible design' and 'characteristic'(LUO paragraph 7.60-6.B.)?

Also, what is the impact on historic structures during construction? Is there to be pile driving? As the site of a heiau and then King Kamehameha's original settlement, the site is highly important archaeologically. What precautions and measures are to be taken during excavation?

Third, there appear to be spaces on both Bethel Street and Nuuanu Avenue between the 'Ramparts Suites' and the District Court building. What is the impact of these? Are they characteristic of the district? How will they be treated? How will they be used?

Fourth, the EIS analysis needs to look at such LUO code items as front yard setback and landscaping at Nimitz, exterior materials and facade treatment, etc. in relation to the Chinatown Special District as well as front yard setback and landscaping, public open space calculations, FAR, height, 65 degree plane, etc. in relation to the BMX-4 district. Will the project, as designed, comply with all LUO requirements?

Thank you for the opportunity to be a part of the EIS process for this important site located in part in the Chinatown Special District.

Sincerely,

Robert M. Crone, AIA
Chair, Design Advisory Committee
City and County of Honolulu

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET, 8TH FLOOR
HONOLULU, HAWAII 96813
PHONE: 523-4427 • FAX 527-5498

FRANK F. FASI
MAYOR

MICHAEL M. SCARFONE
DIRECTOR

RONALD S. LIM
DEPUTY DIRECTOR

January 26, 1990

Mr. Robert M. Crone, AIA
Chair, Design Advisory Committee
City and County of Honolulu
4130 Paloma Place
Honolulu, Hawaii 96816

Dear Mr. Crone:

Subject: Environmental Impact Statement Preparation Notice (EISPN) for the Kaahumanu Parking Structure Redevelopment

We have received your letter of January 8, 1990 responding to the EISPN for the proposed Kaahumanu Parking Structure Redevelopment project. The following has been prepared in response to your comments and questions.

Impacts on View Corridors

A view impact study of the proposed pedestrian bridge will be conducted and included in the environmental impact statement.

Impacts on Historic Structures

Impacts of the project on the historic structures in the Merchant Street Historic District during construction and upon project completion will be discussed in the environmental impact statement.

Design and LUO Related Issues

Your comments have been noted. Lacayo Architects, the architectural design consultants for the project will be contacting you to arrange a meeting to discuss your concerns and recommendations.

We appreciate your interest and participation in the planning stages of this important project.

Sincerely,

Ronald S. Lim

MICHAEL M. SCARFONE, Director

cc: OEQC (Marvin Miura, Ph.D., Director)

Honolulu Chapter
THE AMERICAN
INSTITUTE
OF ARCHITECTS

January 8, 1990

Mr. Michael N. Scarfone, Director
Department of Housing and Community Development
650 South King Street, Fifth Floor
Honolulu HI 96813

Re: Kaahumanu Parking Structure Redevelopment EIS Notice

Dear Mr. Scarfone,

We have reviewed the EIS Preparation Notice for the Kaahumanu Parking Structure Redevelopment and have the following concerns related to the urban design of the project which we hope will be addressed in the draft EIS.

First, the EIS needs to address the impact of the pedestrian bridge across Bethel Street on the makai and mauka view corridors along that street. In light of the long standing policy to preserve view corridors along the mauka to makai streets of downtown and Chinatown, the impact of this bridge from an urban design point of view is significant. The bridge is apparently relatively low in clearance and massive in form. The design elements combine to produce a bridge which tends to interrupt the views more than necessary.

Second, the EIS needs to address the impact of the project on the historic structures in the Merchant Street Historic District - the Melcher, ex-Bishop Bank, and ex-District Court buildings in particular. In the EIS Notice, the floor plan is sketchy and the two elevations are not sufficient to show impact clearly. More needs to be shown and discussed in the draft EIS. Also, what is the nature of the arch between the Melcher and Bishop Bank buildings in 'Elevation A'? Is it along the street line or set back behind the buildings? Does it exceed 40 feet in height? Is it 'of compatible design' and 'characteristic'(LUO paragraph 7.60-8.B.)?

Also, what is the impact on historic structures during construction? Is there to be pile driving? As the site of a heiau and then King Kamehameha's original settlement, the site is highly important archaeologically. What precautions and measures are to be taken during excavation?

Third, there appear to be spaces on both Bethel Street and Nuuanu Avenue between the 'Ramparts Suites' and the District Court building. What is the impact of these? Are they characteristic of the district? How will they be treated? How will they be used?

Fourth, the EIS analysis needs to look at such LUO code items as front yard setback and landscaping at Nimitz, exterior materials and facade treatment, etc, in relation to the Chinatown Special District, and front yard setback and landscaping, public open space calculations, FAR, height, 65 degree plane, etc, in relation to the BMX-4 district. Will the project, as designed, comply with all LUO requirements?

Thank you for the opportunity to be a part of the EIS process for this important site in our urban core.

Sincerely,

Theodore E. Garduque

Theodore E. Garduque, AIA
President, Honolulu Chapter

SECTION 11

COMMENTS & RESPONSES TO THE DRAFT EIS

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT

CITY AND COUNTY OF HONOLULU

650 SOUTH KING STREET 8TH FLOOR
HONOLULU HAWAII 96813
PHONE 523-4427 • FAX 527-5498

FRANK F. FASI
MAYOR

MICHAEL N. SCARFONE
DIRECTOR

RONALD D. MUN
DEPUTY DIRECTOR

January 26, 1990

Mr. Theodore E. Garduque, AIA
President, Honolulu Chapter
The American Institute of Architects
1128 Nuuanu Avenue
Honolulu, Hawaii 96817

Dear Mr. Garduque:

Subject: Environmental Impact Statement Preparation Notice (EISPN) for the Kaahumanu Parking Structure Redevelopment

We have received your letter of January 8, 1990 responding to the EISPN for the proposed Kaahumanu Parking Structure Redevelopment project. The following has been prepared in response to your comments and questions.

Impacts on View Corridors

A view impact study of the proposed pedestrian bridge will be conducted and included in the environmental impact statement.

Impacts on Historic Structures

Impacts of the project on the historic structures in the Merchant Street Historic District during construction and upon project completion will be discussed in the environmental impact statement.

Design and LUO Related Issues

Your comments have been noted. Lacayo Architects, the architectural design consultants for the project, will be contacting you to arrange a meeting to discuss your concerns and recommendations.

We appreciate your interest and participation in the planning stages of this important project.

Sincerely,

Ronald D Mun

MICHAEL N. SCARFONE, Director

cc: OEQC (Marvin Miura, Ph.D., Director)

DEPARTMENT OF THE NAVY
COMMANDER
NAVAL BASE PEARL HARBOR
BOX 110
PEARL HARBOR HAWAII 96860-5020

IN REPLY REFER TO

5090
Ser 00F2/1165
9 Apr 1990

City and County of Honolulu
Department of General Planning
650 S. King Street
Honolulu, Hawaii 96813

Gentlemen:

KAAHUMANU PARKING STRUCTURE REDEVELOPMENT

The Draft Environmental Impact Statement (DEIS) for Kaahumanu Parking Structure Redevelopment, Honolulu, Hawaii, has been reviewed, and we have no comments to offer. Since we have no further use for the DEIS, it is being returned to the Office of Environmental Quality Control.

Thank you for the opportunity to review the draft.

Sincerely,

W. K. Liu

Copy to:
Dept of Housing & Community Dev
✓R.M. Towill Corp.
OEQC (w/DEIS)

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET 5TH FLOOR
HONOLULU HAWAII 96813
PHONE 523-4427 • FAX 527-5498

FRANK F. FASI
MAYOR

MICHAEL N. SCARFONE
DIRECTOR

Gail Kaito
DEPUTY DIRECTOR

July 23, 1990

Mr. W. K. Liu
Department of the Navy
Naval Base Pearl Harbor
Box 110
Pearl Harbor, HI 96860-5020

Dear Mr. Liu:

Subject: Draft Environmental Impact Statement (DEIS)
Kaahumanu Parking Structure Redevelopment

We have received your letter of April 9, 1990 indicating that you have no comments on the DEIS for the subject project. Your interest and participation in the planning stages of this project are appreciated.

Sincerely,

Gail Kaito
for Michael N. Scarfone
Director

cc: OEQC

UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
P. O. BOX 50004
HONOLULU, HAWAII
96850

April 13, 1990

Mr. Donald Clegg, Director
Department of General Planning
City and County of Honolulu
650 S. King Street
Honolulu, HI 96813

Dear Mr. Clegg:

Subject: Draft Environmental Impact Statement (DEIS) - Kaahumanu Parking Structure Redevelopment, Downtown, Honolulu, Hawaii

We have reviewed the Kaahumanu parking structure redevelopment DEIS and have no comments to offer at this time; however, we would appreciate the opportunity to review the final EIS.

Sincerely,

Warren M Lee

WARREN M. LEE
State Conservationist

cc:
Mr. Michael Scarfone, Department of Housing and Community Development, City and County of Honolulu, 650 S. King Street, 5th Floor, Honolulu, HI 96813
Ms. Colette Sakoda, R.M. Towill Corporation, 420 Waiakamilo Road, Suite 411, Honolulu, HI 96817
Dr. Marvin Miura, Director, Office of Environmental Quality Control, 465 S. King Street, Honolulu, HI 96813

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET 5TH FLOOR
HONOLULU HAWAII 96813
PHONE 523 4427 • FAX 527 5498

FRANK F. FASI
MAYOR

MICHAEL N. SCARFONE
DIRECTOR
Gail M. Kaito
DEPUTY DIRECTOR

July 23, 1990

Mr. Warren M. Lee
State Conservationist
U.S. Department of Agriculture
Soil Conservation Service
P. O. Box 50004
Honolulu, HI 96850

Dear Lee:

Subject: Draft Environmental Impact Statement (DEIS)
Kaahumanu Parking Structure Redevelopment

We have received your letter of April 13, 1990 indicating that you have no comments on the DEIS for the subject project. Your interest in reviewing the Final EIS has been noted. Thank you for your participation in the planning stages of this project.

Sincerely,

Gail Kaito
for Michael N. Scarfone
Director

cc: OEQC

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

May 16, 1990

REPLY TO ATTENTION OF
Planning Division

Mr. Benjamin B. Lee
Chief Planning Officer
Department of General Planning
City and County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

Dear Mr. Lee:

Thank you for the opportunity to review the Draft Environmental Impact Statement (DEIS) for the proposed Kaahumanu Parking Structure Redevelopment, Honolulu. Our previous comments in response to the Preparation Notice (letter dated December 28, 1989) have been included the DEIS. We have no additional comments.

Sincerely,

ORIGINAL SIGNED 18 MAY 1990

Kisuk Cheung
Director of Engineering

Copy Furnished:

Dept. of Housing and Community Development
City and County of Honolulu
650 S. King St., Room 104
Honolulu, HI 96813

R.M. Towill Corporation
420 Waiakamilo Rd.
Suite 411
Honolulu, HI 96817

Mr. Marvin T. Miura
Director
Office of Environmental Quality Control
465 S. King St., Room 104
Honolulu, HI 96813

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET 5TH FLOOR
HONOLULU HAWAII 96813
PHONE 523-4427 • FAX 527-5498

FRANK F. FASI
MAYOR

MICHAEL N. SCARFONE
DIRECTOR
Gail Kaito
DEPUTY DIRECTOR

July 23, 1990

Mr. Kisuk Cheung
Director of Engineering
U. S. Army Engineer District, Honolulu
Building 230
Ft. Shafter, HI 96858-5440

Dear Mr. Cheung:

Subject: Draft Environmental Impact Statement (DEIS)
Kaahumanu Parking Structure Redevelopment

We have received your letter of May 16, 1990 indicating that your comments have been included in the Draft EIS for this project. Your participation in the planning stages of this project is appreciated.

Sincerely,

Gail Kaito
for Michael N. Scarfone
Director

cc: OEQC

United States Department of the Interior
FISH AND WILDLIFE SERVICE
PACIFIC ISLANDS OFFICE
PO BOX 50167
HONOLULU, HAWAII 96850

May 31, 1990

Mr. Benjamin B. Lee
Chief Planning Officer
Department of General Planning
City and County of Honolulu
Honolulu Municipal Building
650 South King Street
Honolulu, Hawaii 96813

Re: Environmental Impact Statement
DEIS Kaahumanu Parking Structure Redevelopment
Downtown, Honolulu, Hawaii

Due to current staff limitations, the Pacific Islands Office, Fish and Wildlife Enhancement cannot devote the time to adequately evaluate potential impacts to important fish and wildlife resources from the proposed project. Please understand that this notification does not represent the U.S. Fish and Wildlife Service's approval of the proposed activity. We may review future actions related to this project should workload constraints be alleviated, or if significant adverse impacts to trustee fish and wildlife resources are identified.

Sincerely yours,

Ernest Kosaka
Ernest Kosaka
Field Supervisor
Fish and Wildlife Enhancement

cc: Department of Housing & Community Development
/R.M. Towill Corporation
Office of Environmental Quality Control

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET 5TH FLOOR
HONOLULU HAWAII 96813
PHONE 523-4427 • FAX 527-5498

FRANK F. FASI
MAYOR

MICHAEL N. SCARFONE
DIRECTOR

Gail Kaito
DEPUTY DIRECTOR

July 23, 1990

Mr. Ernest Kosaka, Field Supervisor
Fish and Wildlife Enhancement
United States Department of the Interior
Fish and Wildlife Service, Pacific Islands Office
P. O. Box 50167
Honolulu, HI 96850

Dear Mr. Kosaka:

Subject: Draft Environmental Impact Statement (DEIS)
Kaahumanu Parking Structure Redevelopment

Thank you for your letter of May 31, 1990 indicating that you have received your copy of the DEIS for the subject project. We acknowledge your difficulty in evaluating the project's potential impacts due to current staff limitations. If time and staff resources permit, we would appreciate your comments on the proposed project.

Your interest and participation in the planning stages of this project are appreciated.

Sincerely,

Gail Kaito
for Michael N. Scarfone
Director

cc: OEQC

JOHN WAIHEE
GOVERNOR

STATE OF HAWAII
DEPARTMENT OF DEFENSE
OFFICE OF THE ADJUTANT GENERAL
3949 DIAMOND HEAD ROAD, HONOLULU, HAWAII 96816-4495

April 9, 1990

Engineering Office

City and County of Honolulu
Department of General Planning
650 S. King Street
Honolulu, Hawaii 96813

Gentlemen:

DEIS Kaahumanu Parking Structure Redevelopment
Downtown, Honolulu, Hawaii

Thank you for providing us the opportunity to review the above subject project.

We have no comments to offer at this time regarding this project.

Sincerely,

Jerry M. Matsuda
Jerry M. Matsuda
Lieutenant Colonel
Hawaii Air National Guard
Contracting & Engineering Officer

cc: City and County of Honolulu
Dept of Housing & Comm Develop.
R.M. Towill Corporation
Marvin T. Miura, Ph.D

NATIONAL GUARD
Americans At Their Best.

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET 5TH FLOOR
HONOLULU, HAWAII 96813
PHONE 523-4427 • FAX 527-5498

FRANK F. FASI
MAYOR

MICHAEL N. SCARFONE
DIRECTOR
Gail Kaito
DEPUTY DIRECTOR

July 23, 1990

Jerry M. Matsuda, Lieutenant Colonel
Hawaii Air National Guard
Contracting & Engineering Officer
Hawaii State Department of Defense
Office of the Adjutant General
3949 Diamond Head Road
Honolulu, HI 96816-4495

Dear Lieutenant Colonel Matsuda:

Subject: Draft Environmental Impact Statement (DEIS)
Kaahumanu Parking Structure Redevelopment

We have received your letter of April 9, 1990 indicating that you have no comments on the DEIS for the subject project. Your participation in the planning stages of this project is appreciated.

Sincerely,

Gail Kaito
for Michael N. Scarfone
Director

cc: OEQC

JOHN WAIHEE
GOVERNOR

STATE OF HAWAII
DEPARTMENT OF ACCOUNTING AND GENERAL SERVICES
DIVISION OF PUBLIC WORKS
P. O. BOX 119, HONOLULU, HAWAII 96810

RUSSEL S. NAGATA
COMPTROLLER

JAMES H. YASUDA
DEPUTY COMPTROLLER

LETTER NO (P)1293.0

APR 17 1990

Mr. Benjamin B. Lee
Chief Planning Officer
Department of General Planning
City and County of Honolulu
650 S. King Street
Honolulu, Hawaii

Dear Mr. Lee:

Subject: Kaahumanu Parking Structure Redevelopment
Draft Environmental Impact Statement

Thank you for the opportunity to review the subject document. We have no comments to offer.

Should there be any questions, please contact Mr. Cedric Takamoto of the Planning Branch at 548-7192.

Very truly yours,

TEUANE TOMINAGA
State Public Works Engineer

CT:em
cc: Department of Housing and Community Development
R.M. Towill Corporation
Office of Environmental Quality Control

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET 5TH FLOOR
HONOLULU, HAWAII 96813
PHONE 523-4427 • FAX 527-5498

FRANK F. FASI
MAYOR

MICHAEL N. SCARFONE
DIRECTOR

Gail Kaito
DEPUTY DIRECTOR

July 23, 1990

Mr. Teuane Tominaga, State Public Works Engineer
Department of Accounting and General Services
Division of Public Works
P. O. Box 119
Honolulu, HI 96810

Dear Mr. Tominaga:

Subject: Draft Environmental Impact Statement (DEIS)
for the Kaahumanu Parking Structure Redevelopment

We have received your letter of April 17, 1990 indicating that you have no comments regarding the Draft EIS of this project. Thank you for your participation in the planning stages of this project.

Sincerely,

Gail Kaito
for Michael N. Scarfone
Director

cc: OEQC

OFFICE OF STATE PLANNING
Office of the Governor

May 10, 1990

The Honorable Benjamin B. Lee
Chief Planning Officer
Department of General Planning
City & County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

Dear Mr. Lee:

Subject: DEIS Kaahumanu Parking Structure Redevelopment
Downtown, Honolulu, Hawaii.

We have reviewed the Draft Environmental Impact Statement for the Kaahumanu Parking Structure Redevelopment located in the Honolulu Urban District and have no comments to offer at this time.

Thank you for the opportunity to comment.

Sincerely,

Harold S. Masumoto
Harold S. Masumoto
Director

cc: Michael Scarfone, DHCD
R.M. Towill Corp.
Dr. Marvin T. Miura, OEQC

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT
CITY AND COUNTY OF HONOLULU

FRANK F. FASI
MAYOR

MICHAEL N. SCARFONE
DIRECTOR
Gail Kaito
DEPUTY DIRECTOR

July 23, 1990

Mr. Harold S. Masumoto, Director
Office of State Planning
Office of the Governor
State Capitol
Honolulu, HI 96813

Dear Mr. Masumoto:

Subject: Draft Environmental Impact Statement (DEIS)
for the Kaahumanu Parking Structure Redevelopment

We have received your letter of May 10, 1990 indicating that you have no comments regarding the Draft EIS for this project. Your participation in the planning stages of this project is appreciated.

Sincerely,

Gail Kaito
for Michael N. Scarfone
Director

cc: OEQC

DEPARTMENT OF BUSINESS AND ECONOMIC DEVELOPMENT

ENERGY DIVISION 335 MERCHANT ST. RM. 110 HONOLULU, HAWAII 96813 FAX (808) 531-5243

90:815e

May 21, 1990

Mr. Benjamin B. Lee
Chief Planning Officer
Department of General Planning
City and County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

Dear Mr. Lee:

Subject: Draft Environmental Impact Statement for Kaahumanu Parking Structure Redevelopment

The Energy Division has received the subject Draft Environmental Impact Statement (DEIS) and has the following comments:

We note that the DEIS contains minimal discussion of how energy impacts that result from the proposed project will be addressed. While the DEIS contains an estimate of total electricity consumption within the project (Appendix A, p. 23), its authors do not discuss in detail energy conservation or renewable energy sources that might help meet the project's energy requirements. We are enclosing a copy of recent correspondence we received from DHM Inc., regarding our comments on a DEIS for the Waikiki Landmark. We recommend specific language similar to that in the DHM letter for inclusion in the final EIS on the Kaahumanu project.

We note also that in Section IV neither the State Plan's guidelines for energy use and development nor the State Energy Functional Plan were examined for their relationship to the proposed project. The requirement for such an examination is spelled out in the enclosed excerpt from the OEQC BULLETIN.

Thank you for the opportunity to comment on this DEIS. I hope these comments will be useful to you.

Sincerely,

Maurice H. Kaya
Energy Program Administrator

MHK/PE:do
Enclosures
cc: Marvin T. Miura, Ph.D.
Colette Sakoda
Michael Scarfone

DHM inc. land use and environmental planning

1188 Bishop Street
Suite 2405
Honolulu HI 96813
Ph (808) 521-9855
Fax (808) 538-3665

January 11, 1990

Mr. Maurice H. Kaya
Energy Program Administrator
Department of Business
and Economic Development
Energy Division
State of Hawaii
335 Merchant Street, Room 310
Honolulu, Hawaii 96813

Dear Mr. Kaya:

Subject: **Revised Draft Environmental Impact Statement for Waikiki Landmark**

Thank you for your letter commenting on the Revised Draft Environmental Impact Statement (Revised dEIS) for the Waikiki Landmark.

The proposed Waikiki Landmark Development has an estimated electrical energy consumption of 500,000 kwh/month or 1,428.6 kwh/day. The Waikiki Landmark development will incorporate the most recent energy saving technology so as to minimize the cost of energy to occupants of the commercial space and the residential units. The following features will be provided:

1) Each fan coil air conditioning unit in each unit will be separately controlled so that the occupant has the choice of cooling different areas in his/her unit at alternative times of the day.

2) A heat pump will be used to heat the building's hot water system. Studies have shown that this is the most efficient method of heating the hot water.

3) The condenser heat from the central chilled water system will be recovered by the heat pump to heat the building's hot water.

4) High efficiency motors will be used on most of the motor driven equipment.

5) High efficiency chillers will be used for the residential towers.

6) A variable speed secondary chilled water pumping system will be used for the residential fan coil units.

Electrical energy conservation measures which will be provided as part of the proposed development include:

1) Light sources to be used primarily are fluorescent and H.I.D. (High Pressure Sodium and Metal Halide). Compact fluorescent lamps will be used in place of incandescent lamps, with the exception of low-voltage accent lighting at water features, etc. A 13-watt compact fluorescent replaces a 60 watt incandescent with the same light output at a savings of 47 watts/lamp. This reduction in watts also lowers the air conditioning load.

2) Ballasts for all fluorescent lamps will be energy-saving type, or premium high power factor type for applications where energy-saving type are not manufactured. Energy-saving ballasts (ESB's) use 37 percent less energy than standard ballasts for the same light output. ESB's also run approximately 10 degrees cooler than standard ballasts, reducing the air conditioning load.

3) Reflectors for light fixtures are highly specular and contribute to overall fixture efficiency, enabling use of lower wattages and fewer fixtures to achieve desired lighting levels.

4) Secondary power factor correction is provided to bring the building power factor to 90 percent or greater.

Applicable sections of the State Plan's objectives, policies and guidelines for energy use and the State Energy Functional Plan will be examined and included in the Final EIS for the Waikiki Landmark.

Your comment letter is appreciated and will be included in the Final Environmental Impact Statement. If you should have any additional comments regarding these measures please feel free to contact me or Eric Parker of my staff.

Sincerely,

DHM inc.

Duk Hee Murabayashi (Mrs.)
President

cc: Dr. Marvin Miura, OEQC
Mr. Bennett Mark, DLU
Mr. Tony Tjan, Bel-Landmark, Inc.

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET 5TH FLOOR
HONOLULU HAWAII 96813
PHONE 523-4427 • FAX 527-5498

FRANK F. FASI
MAYOR

MICHAEL N. SCARFONE
DIRECTOR
Gail H. Kaito
DEPUTY DIRECTOR

July 23, 1990

Mr. Maurice H. Kaya
Energy Program Administrator
Department of Business and Economic Development
335 Merchant St., Rm. 110
Honolulu, HI 96813

Dear Mr. Kaya:

Subject: Draft Environmental Impact Statement (DEIS) for the Kaahumanu Parking Structure Redevelopment

We have received your letter of May 21, 1990 in response to the Draft EIS for this project.

The proposed project will incorporate the following energy-saving measures in order to minimize the cost of energy to the commercial and residential occupants:

1. The majority of the lighting in this project will utilize fluorescent lamps, with the exception of some incandescent lamps in the residential apartments. Part of the lighting in the residential areas will be designed with compact, or PL type, fluorescent lamps. Where PL lamps are used, there will be a 75% savings in energy consumed per lamp as compared to a 60 watt incandescent.

2. All standard 4-foot fluorescent fixtures will be specified with energy-saving lamps and ballasts.

3. Electrically, each apartment will be metered separately to encourage efficient energy consumption. Restaurants will also be metered separately.

4. The project will have central hot water and air conditioning systems, which is the most efficient method of providing these necessities. A metering system will be implemented to measure the chilled water consumption for each apartment and for

the office areas that are operated after normal working hours. Again, this design holds the users accountable for air conditioning consumption, and thus, will tend to encourage energy conservation.

5. The heat from the central chilled water system will be used by the heat pump to heat the building's hot water.

The following measures are also being considered for future implementation:

1. The use of electronic ballasts in place of the energy-saving ballasts will reduce the energy required to operate a fluorescent light fixture. In addition, this replacement will also reduce the heat load which, in turn, reduces the air conditioning consumption.

2. As part of an overall energy management control and building automation system, when the complex is partially occupied, the major mechanical systems would be staged and controlled to reduce energy consumption.

Applicable sections of the State Plan's objectives, policies and guidelines for energy use and the State Energy Functional Plan will be examined and included in the Final EIS. Thank you for your participation in the planning stages of this project.

Sincerely,

Keil Kaito

for Michael N. Scarfone
Director

cc: OEQC

JOHN WAIHEE
GOVERNOR

STATE OF HAWAII
DEPARTMENT OF BUDGET AND FINANCE
HOUSING FINANCE AND DEVELOPMENT CORPORATION
SEVEN WATERFRONT PLAZA, SUITE 300
500 ALA MOANA BOULEVARD
HONOLULU, HAWAII 96813
FAX (808) 543-2841

JOSEPH K. CONANT
EXECUTIVE DIRECTOR

REPLY REFER TO

90:PLNG/2204 jt

May 22, 1990

To: Mr. Benjamin Lee, Chief Planning Officer
Department of General Planning

From: Joseph K. Conant
Executive Director

SUBJECT: DRAFT ENVIRONMENTAL IMPACT STATEMENT (EIS) FOR THE PROPOSED KAAHUMANU PARKING STRUCTURE REDEVELOPMENT PROJECT

We have reviewed the subject draft EIS and offer the following comments.

One of the housing objectives of the Hawaii State Plan is to provide "greater opportunities for Hawaii's people to secure reasonably priced, safe, sanitary, livable homes located in suitable environments that satisfactorily accommodate the needs and desires of families and individuals." As a means of achieving this objective, Policy A(3) of the State Housing Functional Plan seeks to ensure that housing projects provide a fair share of affordable homeownership opportunities. This may be accomplished through the imposition of "realistic and fair housing conditions on projects seeking land use redesignations, general or development plan amendments, rezoning, SMA permits and building permits." (Implementing Action A(3)(a) of the housing plan)

In light of these housing guidelines, we believe that the proposed project should include an affordable housing component. Furthermore, as the City owns the subject property and given the great demand for affordable housing in the urban core, it would be in the public interest to provide a fair share of affordable housing units.

Thank you for the opportunity to comment.

c: City & County of Honolulu, H&CD
R.M. Towill Corporation
Dr. Marvin Miura, OEQC

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET 5TH FLOOR
HONOLULU HAWAII 96813
PHONE 523-4427 • FAX 527-5498

FRANK F. FASI
MAYOR

MICHAEL N. SCARFONE
DIRECTOR

Gail Kaito
DEPUTY DIRECTOR

July 23, 1990

Mr. Joseph K. Conant, Executive Director
Department of Budget and Finance
Housing Finance and Development Corporation
Seven Waterfront Plaza Suite 300
Honolulu, HI 96813

Dear Mr. Conant:

Subject: Draft Environmental Impact Statement (DEIS) for the Kaahumanu Parking Structure Redevelopment

We have received your letter of May 22, 1990 in response to the Draft EIS for this project. We agree that the need for affordable housing is a major concern for the urban core as well as the island of Oahu as a whole. This particular mixed use development on City land will not only continue the City's downtown revitalization efforts but also contribute to affordable housing. The developer of this project is providing a $15 million premium which the City will use in the development of affordable rental units in the Maunakea Smith project, located two blocks away from the Kaahumanu site. Other City and County projects in the downtown area that will provide affordable housing opportunities include:

Project / Completion Date	Location	Total Units / % Affordable Units*
Chinatown Gateway Plaza / Sept. 1990	Hotel Street between Nuuanu Avenue and Bethel Street	200 / 60%
River Nimitz / Oct. 1990	Municipal parking lot at the corner of River Street and Nimitz Highway	90 / 67%
Maunakea Smith / 1992	Parking structure bordered by Nimitz Highway, Maunakea and Smith Streets	262 / 60%

Kekaulike / 1992	Parking lot bordered by Maunakea and Kekaulike Streets between King and Hotel Streets	132 / 60%

* * "Affordable" to families with up to 120% of median income.

Your participation in the planning stages of this project is appreciated.

Sincerely,

Gail Kaito

for Michael N. Scarfone
Director

cc: OEQC

JOHN WAIHEE
GOVERNOR OF HAWAII

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

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

REF:OCEA-CZ

JUN 5 1990

File: 90-641
Doc.: 8210E

TO: Honorable Marvin T. Miura, Director
Office of Environmental Quality Control

FROM: William W. Paty, Chairperson
Board of Land and Natural Resources

SUBJECT: Draft Environmental Impact Statement Kaahumanu Parking Structure Redevelopment

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

We have reviewed both the Draft EIS and the Bishop Museum report (Appendix D) which presents the results of a historical document search and proposes archaeological mitigation measures for potential subsurface remains. We feel that the historical information was well researched and that the general intent of the mitigation measures is adequately represented in the text of the Draft EIS. We do, however, have some concerns about the proposed plan for dealing with the high potential of significant subsurface deposits.

We concur with the general outline and premise of the archaeological work to be undertaken. We agree that removal of debris after the demolition of existing structures should be monitored by archaeologists and, once the asphalt is removed from the surface, that all subsurface structures associated with the parking facility (piers, service pipes, etc.) should remain intact until archaeological testing is complete. What is not clear, both in the Bishop Museum report and the text of the EIS, is the strategy that underlies the archaeological testing and how this strategy would mitigate the adverse effects of the project on potentially significant deposits. We would like to know the extent to which the entire project area will be tested by core sampling and, if this is planned, why the two proposed excavations were recommended before any sampling had taken place.

We feel that the results of such sampling must be the basis for determining where the test excavations should be located, how many would be sufficient for mitigation purposes and the type of excavations that would be most appropriate (i.e., whether it be test pits or backhoe assisted trenches). The recommendation that excavations be protected against looting during the evenings and at night is fully supported.

Before we can determine that the proposed project will have "no adverse effect" on significant historic sites, we will need to review a more detailed data recovery plan. The plan should specify what strategies will be used to sample the project area through coring and the anticipated range of excavation work that might be needed. Once a more detailed plan is approved by our office, the final EIS should demonstrate a commitment to the more detailed plan.

With regards to historic buildings, our office has been in communication with the project architects. Certain design elements still need to be resolved through the federal/state preservation review process.

Additionally, several potential environmental concerns dealing with increased amounts of sediment carried by storm runoff and substandard drainage systems near the construction area are discussed and adequately addressed in this Draft EIS.

Finally, our Division of Land Management is in the process of working with the City on a land exchange for the portion of State-owned land within the project boundaries.

If you have any questions, please call me or Cathy Tilton at our Office of Conservation and Environmental Affairs at 548-7837.

WILLIAM W. PATY

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET 5TH FLOOR
HONOLULU HAWAII 96813
PHONE 523-4427 • FAX 527-5498

FRANK F. FASI
MAYOR

MICHAEL N. SCARFONE
DIRECTOR

Gail Kaito
DEPUTY DIRECTOR

July 23, 1990

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

Dear Mr. Paty:

Subject: **Draft Environmental Impact Statement (DEIS)**
Kaahumanu Parking Structure Redevelopment Project

We have received your letter of June 5, 1990 in response to the Draft EIS for this project.

The Bishop Museum plans to conduct a subsurface testing phase following demolition of the existing structures and prior to construction related excavation work. The results of the testing will provide data to formulate recommendations for further work such as monitoring of construction activities. A detailed plan will be submitted for your review and approval, and will be reflected in the final EIS as an addendum to the archaeological study.

Your interest and participation in the planning stages of this project are appreciated.

Sincerely,

Gail Kaito

Michael N. Scarfone
for Director

cc: OEQC

JOHN WAIHEE
GOVERNOR

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

EDWARD Y. HIRATA
DIRECTOR

DEPUTY DIRECTORS
DAN T. KOCHI (PRIMARY)
RONALD N. HIRANO
JEANNE K. SCHULTZ
CALVIN M. TSUDA

IN REPLY REFER TO
HWY-PS
2.2160

JUN 12 1990

MEMORANDUM

TO: Marvin Miura, Ph.D.
Director
Office of Environmental Quality Control

FROM: Edward Y. Hirata, Director
Department of Transportation

SUBJECT: DRAFT ENVIRONMENTAL IMPACT STATEMENT, KAAHUMANU PARKING STRUCTURE REDEVELOPMENT, HONOLULU, OAHU
TMK: 2-1-02: 16, 20, 26, 56

Thank you for your transmittal requesting our review of the subject Draft EIS.

We have the following comments:

1. The proposed intersection improvements suggested in Figure 3-20 of the DEIS will generate unacceptable weaving and merging traffic patterns at the Queen Street, Bethel Street, and Nimitz Highway intersection. This should be mitigated.

2. The traffic problems at the above intersection should be resolved prior to the submittal of construction plans for work done on Nimitz Highway.

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET 5TH FLOOR
HONOLULU, HAWAII 96813
PHONE 523-4427 • FAX 527-5498

FRANK F. FASI
MAYOR

MICHAEL N. SCARFONE
DIRECTOR
Gail Kaito
DEPUTY DIRECTOR

July 23, 1990

Mr. Edward Y. Hirata, Director
Department of Transportation
869 Punchbowl Street
Honolulu, HI 96813-5097

Dear Mr. Hirata:

Subject: Draft Environmental Impact Statement (DEIS)
for the Kaahumanu Parking Structure Redevelopment

We have received your letter of June 12, 1990 commenting on the subject Draft EIS. Your comment regarding the unacceptable weaving and merging traffic patterns at the Queen Street, Bethel Street and Nimitz Highway intersection has been noted. The recommended improvement at the above intersection has been revised to include a signalized traffic system. The proposed revision will be submitted for your review and approval during the design phase.

Thank you for your participation in the planning stages of this project.

Sincerely,

Gail Kaito

for Michael N. Scarfone
Director

cc: OEQC

JOHN WAIHEE
GOVERNOR

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

DIRECTOR

TELEPHONE NO.
548-6915

July 3, 1990

Mr. Benjamin Lee
Department of General Planning
City and County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

Dear Mr. Lee:

Subject: Draft Environmental Impact Statement (DEIS) for the Kaahumanu Parking Structure Redevelopment.

We have reviewed the above referenced Draft Environmental Impact Statement (DEIS) and offer the following comments.

TRAFFIC:

The DEIS contains a discussion of the traffic impact study. Table 3-11 summarizes the level of service (LOS) at the signalized intersections studied. The LOS assigned to these intersections for the morning and after peak hours, as shown in the table, is questionable. The correct LOS for these signalized intersections should be F for all the intersections studied. We also note that Table 3-12, which deals with the critical volumes and capacity level planning analysis at the signalized intersections, is also inaccurate. The capacity level furnished should have been "At Capacity" instead of "Under Capacity" as presented in the table. The projected peak traffic volume increase of 0.2 per cent for each year until 1992 is also doubtful.

The discussion of the observed traffic conditions on pages 18 and 19 of the appendix contradicts the claims made by the data presented on both Table 3-11 and 3-12. We are concerned that the proposed highway improvements recommended on page 36, Figure 11 of the appendix would elevate the number of accidents and congestion that occurs at the intersection of Queen, Bethel and Nimitz Highway. The traffic improvement suggested for Queen Street and Nimitz would exacerbate accidents between the slow moving traffic on Queen Street and traffic travelling at 35 MPH on Nimitz Highway.

AIR QUALITY:

The air quality analysis relies on the peak traffic volume increase of 0.2 percent per year. Even with such low, unrealistic projections for peak traffic volumes, the State ambient air quality standards for carbon monoxide emissions would be exceeded by a factor of three. A reasonable estimate of the peak traffic volumes would have fully exposed the air quality impacts.

ECONOMIC AND FISCAL IMPACTS:

This section needs a more meticulous and comprehensive analysis of the project impacts on the regional economy. A starting point for this analysis would be to identify how project benefits would be distributed. The fiscal impact to the City's and State's fiscal resources needs to be evaluated, showing the detailed dollar cost to the community.

Additionally, the project would impact the different city services such as police protection, sewer and other infrastructure requirements. The analysis the project's employment impacts fails to give a detailed explanation of the qualities and types of employment that would occur because of the project. The DEIS assumes that all the project benefits will remain in the local economy and as such no leakages were identified.

SOCIAL IMPACTS:

The DEIS fails to address the needs of small businesses that are abutting the project site. This upscale retail and condominium project is in conflict with the small scale businesses in proximity of the historic Chinatown district. The effect of the project's implementation on crime and juvenile delinquency also needs further clarification.

HOUSING:

We have additional concerns regarding the impact this project would have on the housing supply. We note that the project would contribute to the escalation of the average rents for both residential and business tenants in the downtown area. The demand for affordable housing in the central business area is extraordinary.

In spite of this extraordinary demand for affordable rental and residential housing, it is very imprudent to implement a housing program that primarily benefits the non-resident population, to the detriment of the resident population. The State's objective explicitly maintains that affordable housing for the residents of

Mr. Benjamin Lee
July 3, 1990
Page 3

the State be given priority consideration in the provision and implementation of housing programs. This policy is outlined in the 1989 State's Housing Functional Plan; policy A (3) and A (3) (a) contains the implementing action.

Thank you for the opportunity to review the Draft Environmental Impact Statement. If you should have any questions, please feel free to contact Abdul Salau of my staff at 548-6915.

Sincerely,

for Abdul Salau
Marvin T. Miura, Ph.D.
Director

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET, 9TH FLOOR
HONOLULU, HAWAII 96813
PHONE 523-4427 • FAX 527-5498

FRANK F. FASI
MAYOR

MICHAEL N. SCARFONE
DIRECTOR
Gail M. Kaito
DEPUTY DIRECTOR

July 23, 1990

Director
Office of Environmental Quality Control
465 South King Street, Rm. 104
Honolulu, HI 96813

Dear Sir:

Subject: Draft Environmental Impact Statement (DEIS)
for the Kaahumanu Parking Structure Redevelopment

We have received your letter of July 3, 1990 commenting on the subject Draft EIS. The following has been prepared in response to your comments on the impacts to traffic, air quality, economic and fiscal elements, social aspects, and housing:

Traffic
The issue of Level-of-Service (LOS) should be clarified here, as it has been in a Revised Traffic Assessment conducted in June 1990. The revised report distinguishes between observed LOS, versus operational LOS, which was used for analysis purposes in the DEIS. Although field observations indicate the existing traffic at the four study intersections are actually operating at LOS F during the morning and afternoon peak hours, the results of the operational analysis on Table 3-11 indicate the intersections are operating at LOS D or better in some cases. This condition occurs from downstream congestion, or motorists stopping in travelled lanes to drop-off or pick-up passengers, causing traffic to stall or come to a complete halt. Thus the rate at which cars pass through the intersections is decreased. In addition, the low critical volumes shown in Table 3-12 are also reflective of this delayed rate, and therefore, are not considered inaccurate from an operational analysis standpoint.

The recommended improvement at the Queen and Bethel Streets, and Nimitz Highway intersection has been revised to include a signalized traffic system. The additional traffic signal lights will eliminate the present unsafe "weaving" condition along Bethel Street between Nimitz Highway and the proposed access driveway to the project. The proposed signal lights will be synchronized with the existing signalized intersections at Bethel Street and Nimitz Highway, and Bethel and Merchant Streets, thereby providing more control, and consequently, mitigating the potential for accidents and congestion in the vicinity roadways. Additional revisions to the proposed project access and circulation are currently under discussion between the Department of Transportation Services and the project architects. These revisions will be submitted for review and approval by the City during the design phase.

Air Quality
The air quality analysis did rely on the peak traffic volume increase of 0.2 percent per year. This is not an unrealistic projection as it would be difficult, if not impossible, to add a significant number of cars to the existing traffic congestion which is already high. As such, the air quality impact estimates are reasonable. In addition, the DEIS has stated that exceedances were recorded for the State 1-hour ambient air quality standards (AAQS) for carbon monoxide, as expressed in your comment.

Economic and Fiscal Impacts
The City would receive lease rents of approximately $276.9 million over the 40-year lease term, as well as a $15-million development premium. Other revenues from the proposed development include City Property Taxes and State General Excise Taxes. To a lesser extent, the City would also receive municipal parking revenues. The distribution and use priority for these revenues will be decided by policy.

We agree that the project will impact municipal services such as police protection, and utility/infrastructure requirements, and the key agencies including the Police and Fire Departments, Department of Public Works, Board of Water Supply (BWS), Department of Transportation Services, Hawaiian Electric Company, Gasco, and GTE Hawaiian Tel, have commented on the proposed project. The agency comments, copies of which are attached to the DEIS, indicate that no significant impacts are anticipated, the exception being the BWS which expressed the need to improve the existing 6-inch waterline on Merchant Street. The need for this improvement is identified in the DEIS.

Sections 3.3.8.1 through 3.3.8.3 of the DEIS discussed impacts regarding employment. As noted in the DEIS, during the construction phase, the project is expected to generate 1,153 additional jobs. Once completed, the project may be expected to create 1,614 indirect and induced job opportunities in commercial, retail, and other service-oriented positions (ie. restaurant, security, parking, maintenance, etc).

The DEIS does not assume that all project benefits will remain in the local economy. Frequently, spill-over costs and benefits are a natural economic occurrence in a free market structure, and may not always be restricted to local economies.

Social Impacts
As discussed on page 3-64, the persons interviewed for the social impact assessment included four groups which were: (a.) area residents; (b.) representatives of the downtown business community; (c.) persons affiliated with adjacent non-residential land use; and (d.) owners and tenants of neighboring properties. Included in these groups were "small businesses", whose sentiments, as the DEIS indicated, were generally positive, since many of them would realize the benefits of increased and/or improved downtown activities, office space, property values, and walk-in patronage.

During demolition and construction, the crime and juvenile delinquency impacts will be mitigated through the construction of fencing and/or screening around the project site, in addition to the hiring of a private security company(s). This would serve to secure the project site from pilferage and vandalism of construction materials and equipment, as well as potential archaeological findings. Once the project is completed, private security services will continue. As noted earlier, the Police Department has submitted a comment letter indicating that, although some increase in the need for police services is expected as a result of the project, the increase should not be significant.

Housing
We agree that the average rents for downtown residential and business space will probably increase. However, there are many other factors that will influence the timing and degree in which future downtown rental rates may escalate. As such, the proposed project is neither considered the sole nor most important contributing factor for this expected rise.

The proposed project will contribute over 200,000 square feet of office area to the current downtown inventory, thereby satisfying a portion of the ever-increasing demand. While this project does not directly alleviate the demand for affordable housing, there will be indirect benefits which will further other affordable housing projects as discussed below.

The City has not suggested that this project would primarily benefit a non-resident population, nor do we anticipate detrimental impacts to the resident population. On the contrary, our residents will realize economic and fiscal benefits as a result of this project as discussed in the applicable section above. The residential target market for the apartments will be "professionals seeking the conveniences of living and working in downtown", as stated in Section 3.3.9.2. By no means does this assume non-resident ownership.

The need for affordable housing is a major concern for the urban core as well as the island of Oahu as a whole. This particular mixed use development on City land will not only continue the City's downtown revitalization efforts, but will also contribute to affordable housing. The developer of this project is providing a $15 million premium (as aforementioned) which the City will use in the development of affordable rental units in the Maunakea Smith project, located two blocks away from the Kaahumanu site. Other City and County projects in the downtown area that will provide affordable housing opportunities include:

Project / Completion Date	Location	Total Units / % Affordable Units*
Chinatown Gateway Plaza / Sept. 1990	Hotel Street between Nuuanu Avenue and Bethel Street	200 / 60%
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Maunakea Smith / 1992	Parking structure bordered by Nimitz Highway, Maunakea and Smith Streets	262 / 60%
Kekaulike / 1992	Parking lot bordered by Maunakea and Kekaulike Streets between King and Hotel Streets	132 / 60%

* = "Affordable" to families with up to 120% of median income.

Thank you for your participation in the planning stages of this project.

Sincerely,

Gail Kaito

for Michael N. Scarfone
Director

JOHN WAIHEE
GOVERNOR OF HAWAII

STATE OF HAWAII
DEPARTMENT OF HEALTH
P. O. BOX 3378
HONOLULU, HAWAII 96801

JOHN C. LEWIN, M.D.
DIRECTOR OF HEALTH

July 11, 1990

In reply, please refer to:
EPHSD
087

MEMORANDUM

To: Benjamin B. Lee
Chief Planning Officer
Department of General Planning
City & County of Honolulu

From: Deputy Director for Environmental Health

Subject: Draft Environmental Impact Statement (DEIS)
Kaahumanu Parking Structure Redevelopment
TMK: 2-1-02: 16, 20, 26 & 56

Thank you for allowing us to review and comment on the subject DEIS. We do not have any comments at this time.

BRUCE S. ANDERSON, PH.D.

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET 5TH FLOOR
HONOLULU HAWAII 96813
PHONE 523 4427 • FAX 527 5498

FRANK F. FASI
MAYOR

MICHAEL N. SCARFONE
DIRECTOR
Gail H. Kaito
DEPUTY DIRECTOR

July 23, 1990

Mr. Bruce S. Anderson, Ph.D.
Department of Health
P. O. Box 3378
Honolulu, HI 96801

Dear Mr. Anderson:

Subject: Draft Environmental Impact Statement (DEIS)
for the Kaahumanu Parking Structure Redevelopment

We have received your letter of July 11, 1990 indicating that you have no comments regarding the Draft EIS for this project. Your participation in the planning stages of this project is appreciated.

Sincerely,

Gail Kaito

for Michael N. Scarfone
Director

cc: OEQC

FIRE DEPARTMENT

CITY AND COUNTY OF HONOLULU

1455 SOUTH BERETANIA STREET ROOM 305
HONOLULU HAWAII 96814

FRANK F. FASI
MAYOR

LIONEL E. CAMARA
FIRE CHIEF

DONALD S M CHANG
DEPUTY FIRE CHIEF

April 23, 1990

TO: BENJAMIN B. LEE, CHIEF PLANNING OFFICER
DEPARTMENT OF GENERAL PLANNING

FROM: LIONEL E. CAMARA, FIRE CHIEF

SUBJECT: DRAFT ENVIRONMENTAL IMPACT STATEMENT FOR KAAHUMANU PARKING STRUCTURE DOWNTOWN, HONOLULU, HAWAII

We have reviewed the subject material provided and have no additional comments.

Should you have any questions, please contact Battalion Chief Michael Zablan of our Administrative Services Bureau at local 3838.

Lionel E. Camara

LIONEL E. CAMARA
Fire Chief

LEC/MZ:lm

cc: R. M. Towill Corporation
420 Waiakamilo Rd., Suite 411
Honolulu, Hawaii 96817
Attn: Colette Sakoda

Marvin T. Miura, Ph.D.
Director
Office of Environmental Quality Control
465 S. King Street, Room 104
Honolulu, Hawaii 96813

Department of Housing & Community Development
City & County of Honolulu
650 S. King St., 5th Floor
Honolulu, Hawaii
Attn: Michael Scarfone

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT

CITY AND COUNTY OF HONOLULU

650 SOUTH KING STREET 5TH FLOOR
HONOLULU HAWAII 96813
PHONE 523-4427 • FAX 527-5498

FRANK F. FASI
MAYOR

MICHAEL N SCARFONE
DIRECTOR

Gail Kaito
DEPUTY DIRECTOR

July 23, 1990

Mr. Lionel E. Camara, Fire Chief
City and County of Honolulu, Fire Department
1455 South Beretania Street, Room 305
Honolulu, HI 96814

Dear Mr. Camara:

Subject: Draft Environmental Impact Statement (DEIS) for the Kaahumanu Parking Structure Redevelopment

Thank you for your letter of April 23, 1990 responding to the DEIS for this project. Per your referral, Battalion Chief Michael Zablan will be contacted should further questions arise. Thank you for your participation in the planning stages of this project.

Sincerely,

Gail Kaito

for Michael N. Scarfone
Director

cc: OEQC

DEPARTMENT OF PARKS AND RECREATION

CITY AND COUNTY OF HONOLULU

650 SOUTH KING STREET
HONOLULU HAWAII 96813

FRANK F. FASI
MAYOR

April 24, 1990

TO: BENJAMIN B. LEE, CHIEF PLANNING OFFICER
DEPARTMENT OF GENERAL PLANNING

FROM: WALTER M. OZAWA, DIRECTOR

SUBJECT: DRAFT ENVIRONMENTAL IMPACT STATEMENT (DEIS)
KAAHUMANU PARKING STRUCTURE REDEVELOPMENT
TMK 2-1-02: 16, 20, 26 & 56

We have reviewed the DEIS for the Kaahumanu Parking Structure Redevelopment project and make the following comments.

The recreational plan for the proposed project is conceptually acceptable. The project's recreational needs and park dedication requirements have been discussed with my staff. Recreational facilities are being planned on the upper deck of the project to serve the hotel users and condominium residents. A ground-level area has been established as credit for the project to comply with the City's Park Dedication Ordinance No. 4621. Credit for the ground-level park area, however, will be subject to approval of the plan for the upper recreation deck by the Department of Parks and Recreation.

Thank you for the opportunity to review the DEIS.

Walter Ozawa

WALTER M. OZAWA, Director

WMO:11

cc: Housing and Community Development
R. M. Towill ✓
OEQC

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT

CITY AND COUNTY OF HONOLULU

650 SOUTH KING STREET 5TH FLOOR
HONOLULU HAWAII 96813
PHONE 523 4427 • FAX 527 5498

FRANK F. FASI
MAYOR

MICHAEL N. SCARFONE
DIRECTOR

Gail Kaito
DEPUTY DIRECTOR

July 23, 1990

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

Dear Mr. Ozawa:

Subject: Draft Environmental Impact Statement (DEIS)
for the Kaahumanu Parking Structure Redevelopment

We have received your letter of April 24, 1990 in response to the Draft EIS for this project. Your comments regarding the recreational plan for the proposed project have been noted. Thank you for your interest and participation in the planning stages of this project.

Sincerely,

Gail Kaito

for Michael N. Scarfone
Director

cc: OEQC

DEPARTMENT OF PUBLIC WORKS
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET
HONOLULU HAWAII 96813

FRANK F. FASI
MAYOR

SAM CALLEJO
DIRECTOR AND CHIEF ENGINEER

C. MICHAEL STREET
DEPUTY DIRECTOR

reply refer to:
ENV 90-89(449)

April 26, 1990

MEMORANDUM

TO: BENJAMIN B. LEE, CHIEF PLANNING OFFICER
DEPARTMENT OF GENERAL PLANNING

FROM: SAM CALLEJO, DIRECTOR AND CHIEF ENGINEER

SUBJECT: DRAFT ENVIRONMENTAL IMPACT STATEMENT (DEIS)
KAAHUMANU PARKING STRUCTURE REDEVELOPMENT
TAX MAP KEY: 2-1-2: 16, 20, 26 AND 56

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

1. We have no objection to the proposed redevelopment project.
2. Connection should be made to the 8-inch sewer line on Bethel Street.
3. Affected tenants should submit an Industrial Wastes Discharge Application prior to connection.

Sam Callejo

SAM CALLEJO
Director and Chief Engineer

cc: DHCD
R.M. Towill Corp (Attn: Colette Sakoda)
OEQC

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET, 5TH FLOOR
HONOLULU, HAWAII 96813
PHONE 523-4427 • FAX 527-5498

FRANK F. FASI
MAYOR

MICHAEL N. SCARFONE
DIRECTOR

Gail Kaito
DEPUTY DIRECTOR

July 23, 1990

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

Dear Mr. Callejo:

Subject: Draft Environmental Impact Statement (DEIS)
for the Kaahumanu Parking Structure Redevelopment

We have received your letter of April 26, 1990 responding to the DEIS for this project. The developer will comply with your recommendations regarding, a) the connection to the 8-inch sewer line on Bethel Street, and b) the submission of an Industrial Wastes Discharge Application by affected tenants. Thank you for your interest and participation in the planning stages of this project.

Sincerely,

Gail Kaito

for Michael N. Scarfone
Director

cc: OEQC

DC R-1 (FP)

BOARD OF WATER SUPPLY
CITY AND COUNTY OF HONOLULU
630 SOUTH BERETANIA STREET
HONOLULU HAWAII 96843

April 26, 1990

TO: BENJAMIN B. LEE, DIRECTOR
DEPARTMENT OF GENERAL PLANNING

FROM: KAZU HAYASHIDA, MANAGER AND CHIEF ENGINEER K.J.
BOARD OF WATER SUPPLY

SUBJECT: DRAFT ENVIRONMENTAL IMPACT STATEMENT (DEIS) FOR THE KAAHUMANU PARKING STRUCTURE REDEVELOPMENT, HONOLULU, HAWAII

We have no objections to the proposed project. The comments we made in our letter of December 27, 1989, which are included in Section 9 of the DEIS, are still valid and applicable to the project.

Item 1 in the letter, regarding the inadequacy of the 6-inch main on Merchant Street, has been addressed in the report (page 3-86).

If you have any questions, please contact Lawrence Whang at 527-6138.

...r Water man's greatest need - use it wisely

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET 5TH FLOOR
HONOLULU HAWAII 96813
PHONE 523-4427 • FAX 527-5498

July 23, 1990

Mr. Kazu Hayashida, Manager and Chief Engineer
City and County of Honolulu
Board of Water Supply
630 South Beretania Street
Honolulu, HI 96843

Dear Mr. Hayashida:

Subject: Draft Environmental Impact Statement (DEIS)
for the Kaahumanu Parking Structure Redevelopment

We have received your letter of April 26, 1990 responding to the subject project. We acknowledge your statement that your comments of December 27, 1989, made in response to the EIS Preparation Notice, are still valid. Your requirements will be adhered to during the course of the project.

Your participation in the planning stages of this project is appreciated.

Sincerely,

Gail Kaito

for Michael N. Scarfone
Director

cc: OEQC

BUILDING DEPARTMENT

CITY AND COUNTY OF HONOLULU

HONOLULU MUNICIPAL BUILDING
650 SOUTH KING STREET
HONOLULU HAWAII 96813

FRANK F. FASI
MAYOR

HERBERT K. MURAOKA
DIRECTOR AND BUILDING SUPERINTENDENT

PB 90-327

May 1, 1990

MEMO TO: BENJAMIN LEE, CHIEF PLANNING OFFICER
DEPARTMENT OF GENERAL PLANNING

FROM: HERBERT K. MURAOKA
DIRECTOR AND BUILDING SUPERINTENDENT

SUBJECT: DEIS KAAHUMANU PARKING STRUCTURE REDEVELOPMENT

We have reviewed the subject DEIS and would like to offer the following comments:

The impact that new projects is having on parking demand downtown has decreased availability and increased costs. The developer should be responsible for providing City and County employee parking during the interim demolition and construction period. This parking should be located conveniently and at no cost to the City until such time as the new parking facilities are operational.

We concur with the developer's suggestion that they may attempt to construct the parking facilities first and provide for parking earlier than project completion.

HERBERT K. MURAOKA
Director and Building Superintendent

cc: Housing & Comm. Develop. Dept.
Office of Environmental Quality Control
J. Harada

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT

CITY AND COUNTY OF HONOLULU

650 SOUTH KING STREET 5TH FLOOR
HONOLULU HAWAII 96813
PHONE 523-4427 • FAX 527-5498

FRANK F. FASI
MAYOR

MICHAEL N. SCARFONE
DIRECTOR

Gail Kaito
DEPUTY DIRECTOR

July 23, 1990

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

Dear Mr. Muraoka:

Subject: Draft Environmental Impact Statement (DEIS)
for the Kaahumanu Parking Structure Redevelopment

We have received your letter of May 1, 1990 in response to the Draft EIS for this project.

The loss of parking and impact on public services during the construction and demolition period of the project is recognized as a major concern. The City is presently developing an interim parking plan to mitigate potential impacts to users of the downtown parking areas. Although the developer is not required to replace the employee parking during the construction period, a priority may be placed on completing the project's parking structure. In this way, the period during which parking will be unavailable on-site, will be shortened.

Your interest and participation in the planning stages of this project are appreciated.

Sincerely,

Gail Kaito

for Michael N. Scarfone
Director

cc: OEQC

DEPARTMENT OF GENERAL PLANNING
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET
HONOLULU HAWAII 96813

MH/DGP 4/90-1140

May 11, 1990

MEMORANDUM

TO: MICHAEL N. SCARFONE, DIRECTOR
DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT

FROM: BENJAMIN B. LEE, CHIEF PLANNING OFFICER
DEPARTMENT OF GENERAL PLANNING

SUBJECT: DRAFT ENVIRONMENTAL IMPACT STATEMENT (DEIS) FOR THE PROPOSED KAAHUMANU PARKING STRUCTURE REDEVELOPMENT, HONOLULU, HAWAII

Thank you for the opportunity to review and comment on the subject DEIS. The DEIS provides adequate responses to our previous comments of December 21, 1989, on the Environmental Impact Statement Preparation Notice. We have no further comments.

BENJAMIN B. LEE
Chief Planning Officer

BBL:lh

cc: ✓Colette Sakoda, R.M. Towill Corporation
OEQC

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET 5TH FLOOR
HONOLULU HAWAII 96813

Gail Kaito

July 23, 1990

Mr. Benjamin B. Lee, Chief Planning Officer
City and County of Honolulu
Department of General Planning
650 South King Street
Honolulu, HI 96813

Dear Mr. Lee:

Subject: Draft Environmental Impact Statement (DEIS)
for the Kaahumanu Parking Structure Redevelopment

We have received your letter of May 11, 1990 indicating that you have no comments regarding the subject DEIS. Your participation in the planning stages of this project is appreciated.

Sincerely,

Gail Kaito
for Michael N. Scarfone
Director

cc: OEQC

POLICE DEPARTMENT
CITY AND COUNTY OF HONOLULU

OUR REFERENCE ES-LK

May 16, 1990

TO: BENJAMIN B. LEE, CHIEF PLANNING OFFICER
DEPARTMENT OF GENERAL PLANNING

FROM: HAROLD KAWASAKI, CHIEF OF POLICE
HONOLULU POLICE DEPARTMENT

SUBJECT: KAAHUMANU PARKING STRUCTURE REDEVELOPMENT

From our review of the draft environmental impact statement, we can assume that this project will result in some increase in calls for police service in the area. However, the increase should not be substantial.

We have no specific comments on the project proposal at this stage of its development. In general, we urge that planning for the project include the necessary measures for public safety and security in and around the site, both during and after construction. We also endorse the traffic flow/safety recommendations made by Pacific Planning and Engneering in its traffic impact assessment report for this project.

HAROLD KAWASAKI
Chief of Police

By
JOSEPH AVEIRO
Assistant Chief of Police
Support Services Bureau

cc: Mr. Michael Scarfone
R. M. Towill Corporation
Marvin T. Miura, Ph.D.

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT
CITY AND COUNTY OF HONOLULU

Gail H. Kaito

July 23, 1990

Mr. Harold Kawasaki, Chief of Police
City and County of Honolulu
Police Department
1455 South Beretania Street
Honolulu, HI 96814

Dear Mr. Kawasaki:

Subject: Draft Environmental Impact Statement (DEIS)
for the Kaahumanu Parking Structure Redevelopment

We have received your letter of May 16, 1990 responding to the Draft EIS for this project. Necessary measures will be taken to address your concerns for public safety and security in and around the site during and after construction. We acknowledge your endorsement of the traffic recommendations made in the impact assessment. Thank you for your participation in the planning stages of this project.

Sincerely,

Gail Kaito
for Michael N. Scarfone
Director

cc: OEQC

DEPARTMENT OF TRANSPORTATION SERVICES
CITY AND COUNTY OF HONOLULU
HONOLULU MUNICIPAL BUILDING
650 SOUTH KING STREET
HONOLULU HAWAII 96813

FRANK F. FASI
MAYOR

ALFRED J. THIEDE
DIRECTOR

JOSEPH M. MAGALDI, JR.
DEPUTY DIRECTOR

TE-1930
PL90.1.117

June 8, 1990

MEMORANDUM

TO: BENJAMIN B. LEE, CHIEF PLANNING OFFICER
DEPARTMENT OF GENERAL PLANNING

FROM: ALFRED J. THIEDE, DIRECTOR

SUBJECT: KAAHUMANU PARKING STRUCTURE REDEVELOPMENT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TMK: 2-1-02: 16, 20, 26 & 56

This is in response to a transmittal from the Office of Environmental Quality Control requesting our comments on the draft environmental impact statement for the subject project.

Based on our review, we have the following comments:

1. The need for an additional access point on Queen Street into the project should be assessed since the exiting gates often operate at capacity with the present number of parking stalls.

2. Provisions for separate turning lanes providing direct access into parking garages should be addressed.

3. The parking entry controls should be recessed as far into the project as practical and the type and method of collection should be established to minimize the potential for vehicular queuing onto public streets.

4. The preliminary design of the internal circulation pattern and physical operation of the City controlled parking area should be coordinated with our department's Parking Branch.

5. All public parking areas should be interconnected and designed such that vehicles can enter and exit from any access point to minimize unnecessary circulation around the surrounding street system.

6. The driveway grade should not exceed 5 percent for a minimum distance of 35 feet from the curb line and adequate site distance to pedestrians and other vehicles should be provided and maintained.

7. Loading zones should be located in areas where they are easily accessible to all project tenants and designed such that no maneuvering of vehicles occurs on any public street.

8. Provisions should be made to locate passenger loading zones within the project site.

9. Detailed schematic plans showing proposed improvements to streets under the jurisdiction of City should be submitted for review and should include the recommended improvements contained in the traffic impact study.

10. All vehicular access points shall be constructed as standard City dropped driveways.

11. The pedestrian overpass should have a minimum vertical clearance of 16 1/2 feet over the street.

12. The minimum vertical clearance in parking garages with loading areas should be 13 1/2 feet.

13. Continued coordination should be maintained with our Rapid Transit Development Division with regard to the possibility of locating transit structures along Nimitz Highway.

(for) ALFRED J. THIEDE

cc: Dept. of Housing & Comm. Development
R. M. Towill Corporation
Office of Environmental Quality Control

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET 5TH FLOOR
HONOLULU HAWAII 96813
PHONE 523-4427 • FAX 527-5498

FRANK F. FASI
MAYOR

MICHAEL N. SCARFONE
DIRECTOR
Gail Kaito
DEPUTY DIRECTOR

July 23, 1990

Mr. Alfred J. Thiede, Director
City and County of Honolulu
Dept. of Transporation Services
650 South King Street
Honolulu, HI 96813

Dear Mr. Thiede:

Subject: Draft Environmental Impact Statement (DEIS)
for the Kaahumanu Parking Structure Redevelopment

We have received your letter of June 8, 1990 in response to the Draft EIS for the subject project. The following has been prepared in response to your comments:

1. The design of the project dictates that the Bethel and Merchant Street accessways be used. Additionally, the proposed design had been accepted by the City during the Request for Proposals (RFP) process. Your suggestion, however, has been taken under advisement.

2. Provisions for separate turning lanes for direct access to the parking structures are being considered by the developer.

3. The parking entry controls will be recessed and the mode of collection established to minimize the potential for vehicular queuing onto public streets.

4. The plan for the internal circulation pattern and physical operation of the City-controlled parking area will be coordinated with your Parking Branch.

5. Public parking areas will be interconnected and designed to minimize unnecessary circulation around the surrounding street system.

6. The driveway grade will not exceed the prescribed measurements, and adequate site distance to pedestrians and other vehicles will be provided and maintained.

7. Provisions will be made for safe and easily accessible loading zones.

8. Passenger loading zones will located within the project site.

9. Detailed schematic plans for improvements to roads under City jurisdiction will be submitted for your review.

10. All vehicular access points will conform to City standards.

11/12 The pedestrian overpass and parking garages will meet the minimum vertical clearance.

13. Continued coordination will be maintained with the Rapid Transit Development Division with regard to possible transit structures along Nimitz Highway.

Your interest and participation in the planning stages of this project are appreciated.

Sincerely,

Gail Kaito
for Michael N. Scarfone
Director

cc: OEQC

John C. McLaren
3240 Manoa Road
Honolulu, Hawaii 96822

April 17, 1990

Department of General Planning
City and County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

Re: Draft Environmental Impact Statement for
Kaahumanu Parking Structure Redevelopment
TMK: 2-1-02:16, 20, 26 & 56

To whom it may concern:

I am an attorney in private practice and am a motorcycle rider who uses the existing parking structure daily to park my motorcycle. I am writing to express my concern that while the draft EIS states that existing parking in this facility will be replaced upon completion of the project and that arrangements will be made during project construction to accomodate current users of the structure at other facilities throughout the city, the draft EIS says nothing specifically about: 1) replacing existing motorcycle-moped and bicycle parking in the structure and 2) the interim plans to relocate this parking during project construction.

The motorcycle-moped parking under the ramp leading to the second floor is usually jammed with motorcycles and mopeds every day during regular business hours. In fact, many riders have had to park in the restricted, cross-hatched areas because of the congestion in the designated combined motorcycle-bicycle area. This parking congestion has been a daily event for more than two years and evidences the fact that many people, including myself, have chosen to leave their cars at home in favor of more convenient and economical motorized transportation to and from work.

At a minimum, the project developers should replace all existing motorcycle-moped parking on the first floor of the completed structure. Access and egress from the structure for motorcycles and mopeds should be located away from automobile access and egress to avoid congestion since the City currently does not charge for motorcycle and moped parking within the structure. However, in order to encourage increased use of motorcycles and mopeds in lieu of cars, the structure should provide additional motorcycle and moped parking in all spaces within the parking structure that are not useable by cars but which can be used safely by motorcycles and mopeds.

With respect to replacement of bicycle parking, the bicycle rack is unused and currently is wasted space because the rack is set into the ground thereby preventing motorcycle and moped riders from using the space in the absence of use by bicycle riders. Only one or two bicycle riders park in the existing structure every day and neither rider uses the rack to secure his bicycle.

I believe the reason for this lack of use by bicycle riders is due in large part to the lack of appropriate infrastructure, i.e., affordable showers and changing areas for bicycle riders to clean up and change into street clothes before reporting to work. I would certainly prefer to use my bicycle to commute to work but there are currently no affordable public or private showers in my office building or anywhere near this parking structure.

In order to encourage greater use of bicycles in the downtown area, the developer should: 1) replace the existing bicycle parking but locate it in a separate bicycle only area away from the motorcycle-moped parking, and 2) include shower and changing facilities adjacent to or as near as possible to the bicycle parking area for this project.

A set of lavatories with adjoining shower, locker and changing facilities similar to those found in the First Insurance Building on Ward Avenue should be sufficient for this purpose. The showers could be coin-operated or have some other form of restricted entry to help defray the cost of construction and maintenance. In any event, the use of such facilities should not be restricted to building tenants.

Improved motorcycle-moped and bicycle parking facilities in the completed project as discussed above will help support the use of economical and environmentally sound alternative methods of commuting to work in this heavily used area and will help to mitigate traffic congestion and other adverse impacts that will inevitably result from use of the additional automobile parking stalls that are required for this and other new buildings in the downtown area.

I hope that the foregoing requests are favorably received and implemented by the City and the developer.

Sincerely,

John C. McLaren

cc: Office of Environmental Quality Control
Dept. of Housing and Community Development
Honorable Neil Abercrombie
Honorable Gary Gill
Hawaii Bicycling League

DEPARTMENT OF GENERAL PLANNING

CITY AND COUNTY OF HONOLULU

650 SOUTH KING STREET
HONOLULU HAWAII 96813

MH/DGP 4/90-1272

April 27, 1990

Mr. John C. McLaren
3240 Manoa Road
Honolulu, Hawaii 96822

Dear Mr. McLaren:

Thank you for your comments of April 17, 1990, on the Draft Environmental Impact Statement for the proposed Kaahumanu Parking Structure Redevelopment.

Your suggestions will be brought to the attention of the project architect.

We have also forwarded a copy of your letter to the Department of Housing and Community Development (DHCD) and their consultant (R.M. Towill Corporation), who will respond to your concerns.

Once again, thank you for informing our department of motorcycle, moped and bicycle needs in the downtown area.

Sincerely,

BENJAMIN B. LEE
Chief Planning Officer

BBL:js

cc: DHCD w/Enclosure
R.M. Towill Corporation w/Enclosure

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET 5TH FLOOR
HONOLULU, HAWAII 96813
PHONE 523-4427 • FAX 527-5498

FRANK F. FASI
MAYOR

MICHAEL N. SCARFONE
DIRECTOR

Gail Kaito
DEPUTY DIRECTOR

July 23, 1990

Mr. John C. Mc Laren
3240 Manoa Road
Honolulu, HI 96822

Dear Mr. Mc Laren:

Subject: Draft Environmental Impact Statement (DEIS)
for the Kaahumanu Parking Structure Redevelopment

Thank you for your letter of April 17, 1990 responding to the DEIS for the subject project. The following has been prepared in response to your concerns:

a. Provisions will be made in the project design for adequate motorcycle-moped and bicycle parking areas. Spaces within the parking structure that are not useable by cars but which can be safely used by the above modes will be utilized to provide additional parking areas. Designated parking areas are currently being determined.

b. Precautions will be taken to provide safe ingress and egress to and from the parking structure.

c. Interim plans to relocate this parking during project demolition and construction are being considered at present.

d. Although we concur that shower and changing facilities would encourage greater use of economical and environmentally sound alternative modes of transportation, at present, such facilities have not been incorporated in the design of the project.

Your interest and participation in the planning stages of this project are appreciated.

Sincerely,

Gail Kaito

for Michael N. Scarfone
Director

cc: OEQC

Hawaiian Electric Company, Inc. • PO Box 2750 • Honolulu, HI 96840-0001

William A. Bonnet
Manager
Environmental Department

ENV 2-1
JA/G

City and County of Honolulu Dept.
of General Planning
650 South King Street
Honolulu, Hawaii 96813

Dear Sir:

Subject: Draft Environmental Impact Statement for Kaahumanu Parking Structure Redevelopment, Downtown, Honolulu, Hawaii

We have review the above subject document and have no comments.

Sincerely,

William A. Bonnet

cc: C&C Honolulu Dept. of Housing & Community Dev.
R.M. Towill Corporation
Marvin T. Miura, Ph.D.

An HEI Company

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET, 5TH FLOOR
HONOLULU, HAWAII 96813
PHONE 523-4427 • FAX 527-5498

FRANK F. FASI
MAYOR

MICHAEL N. SCARFONE
DIRECTOR
Gail M. Kaito
DEPUTY DIRECTOR

July 23, 1990

Mr. William A. Bonnet, Manager
Environmental Department
Hawaiian Electric Company, Inc.
P. O. Box 2750
Honolulu, HI 96840-0001

Dear Mr. Bonnet:

Subject: Draft Environmental Impact Statement (DEIS) for the Kaahumanu Parking Structure Redevelopment

We have received your letter of May 9, 1990 indicating that you have no comments on the DEIS for this project. Thank you for your participation in the planning stages of this project.

Sincerely,

Gail Kaito
for MICHAEL N. SCARFONE
Director

cc: OEQC

Honolulu Chapter
THE AMERICAN
INSTITUTE
OF ARCHITECTS

May 10, 1990

Mr. Michael N. Scarfone, Director
Department of Housing and Community Development
650 South King Street, Fifth Floor
Honolulu HI 96813

RE: KAAHUMANU PARKING STRUCTURE REDEVELOPMENT DRAFT EIS

Dear Mr. Scarfone,

We have reviewed the Draft EIS for the Kaahumanu Parking Structure Redevelopment.

In general, the Draft EIS adequately addresses our concerns as expressed in response to the EIS Preparation Notice as related (a) to the impact on historic structures during construction, (b) to potential archaeological findings, (c) to physical spaces between the Rampart Suites and the District Court building, and (d) with reference to provisions of the LUO and Chinatown Special District. If the project incorporates recommendations in the Draft EIS, such concerns should be mitigated.

Our principal remaining concerns relate to the pedestrian bridge across Bethel Street and to the impact on historic structures resulting from the parking garage podium, the arches and the garage ramp off Merchant Street. These concerns are very well expressed on pages 8 through 11 of the Historic Building Impact Assessment (Appendix C of the Draft EIS). We recommend that these concerns as expressed in Appendix C be fully addressed in the text of the Final EIS.

With regard to the pedestrian bridge, Appendix C states (page 8) some makai views at ground level will be "partially interrupt(ed)" whereas the Draft EIS states (page 3-49) only views "at second floor...and above" will be interrupted. We believe these statments are contrary to each other and that Appendix C is correct. We recommend the text of the Final EIS more accurately reflect concerns related to the pedestrian bridge as raised in Appendix C. The design needs to address this issue. The bridge over Bethel Street is our greatest concern.

With regard to the parking garage podium, arches and garage ramp, valid concerns and possible mitigating measures raised in Appendix C are not discussed in the text of the Draft EIS. They need to be in the Final EIS. We have spoken to the architect about these latter concerns and possible mitigating measures. He has indicated that it is his intention to incorporate such measures in the design as it develops.

1128 Nuuanu Avenue • Honolulu, Hawaii 96817 • Telephone (808) 545-4242 • FAX (808) 537-1463

Thank you for the opportunity to be a part of the EIS process for this important site in our urban core.

Sincerely,

Theodore E. Garduque

Theodore E. Garduque, AIA
President
Honolulu Chapter

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET 5TH FLOOR
HONOLULU, HAWAII 96813
PHONE 523-4427 • FAX 527-5498

FRANK F. FASI
MAYOR

MICHAEL N. SCARFONE
DIRECTOR
Gail Kaito
DEPUTY DIRECTOR

July 23, 1990

Mr. Theodore E. Garduque, AIA, President
The American Institute of Architects
Honolulu Chapter
1128 Nuuanu Avenue
Honolulu, HI 96817

Dear Mr. Garduque:

Subject: Draft Environmental Impact Statement (DEIS)
for the Kaahumanu Parking Structure Redevelopment

We have received your letter of May 10, 1990 commenting on the Draft EIS for this project.

As you have suggested:

1. Material addressed on pages 8 through 11 in Appendix C, the Historic Building Impact Assessment, will be incorporated into the the text of the Final EIS.

2. The statements on the visual impact of the pedestrian bridge on page 3-49 of the text, will be revised to be consistent with those expressed in Appendix C.

3. The Final EIS text will include the discussion contained in Appendix C, regarding concerns and mitigating measures relating to the parking garage podium, arches and garage ramp.

Your interest and participation in the planning stages of this project is appreciated.

Sincerely,

Gail Kaito

for Michael N. Scarfone
Director

cc: OEQC

DOWNTOWN NEIGHBORHOOD BOARD NO. 13
c/o NEIGHBORHOOD COMMISSION • CITY HALL, ROOM 400 • HONOLULU, HAWAII 96813

May 21, 1990

Mr. Ben Lee, Chief Planning Officer
Department of General Planning
City and County of Honolulu
650 South King Street
Honolulu, HI 96813

Re: Kaahumanu Parking Structure Redevelopment DEIS

Dear Ben:

The Downtown Neighborhood Board has reviewed the aboved referenced DEIS. We have the following comments:

1. Of the 11,420 square feet of parks required by the Parks Dedication Ordinance, 1,420 are on top of the parking structure. Rule 10 of the Parks Dedication Ordinance says the site "shall be on the ground level and not be covered." This is a violation.
2. There is no provision for child care facilities in the project.
3. The Board believes that all new office buildings should have shower facilities for employees. This would enable those walking, jogging, or biking to work to clean up before starting the work day. Such facilities could encourage people not to drive.
4. Mandatory recycling is coming to Oahu. Separate chutes or bins need to be incorporated in the project for newspapers, aluminum, glass, etc.
5. We are concerned that the buildings will be constructed using preform modules encased in styrofoam. This process is being used at Honolulu Park Place, and white styrofoam is flying all over, littering nearby streets.
6. Where does the pedestrian bridge end up in the low rise section? We need assurances people walking from one side of the street to the other side won't be forced to cross the intersection. Also, the bridge should be encased in glass or some other see through material.
7. We are concerned about vehicular access to the building. Allowing traffic to come in off Queen Street should be considered.

Sincerely,

Lynne Matusow for

Andrew Rothstein, Chairman

cc: Dr. Marvin Miura, OEQC
Colette Sakoda, R.H. Towill Corp.

Oahu's Neighborhood Board System-Established 1973

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET 5TH FLOOR
HONOLULU HAWAII 96813
PHONE 523-4427 • FAX 527-5498

FRANK F. FASI
MAYOR

MICHAEL N. SCARFONE
DIRECTOR

Gail Kaito
DEPUTY DIRECTOR

July 23, 1990

Ms. Lynne Matusow, Chairperson
Downtown Neighborhood Board No. 13
c/o Neighborhood Commission
City Hall, Rm 400
Honolulu, HI 96813

Dear Ms. Matusow:

Subject: Draft Environmental Impact Statement (DEIS)
for the Kaahumanu Parking Structure Redevelopment

We have received your letter of May 21, 1990 commenting on the Draft EIS for this project. The following has been prepared in response to your concerns:

#1: To date, the City and County of Honolulu, Department of Parks and Recreation has approved the provisions of the project's park plan. As such, the project is not in violation of the Parks Dedication Ordinance.

#2: Your statement that there is no provision for child care in the project is correct. However, at such time that a facility is deemed necessary, appropriate provisions may be considered by the developer.

#3: Your concern regarding employee shower facilities has been taken under advisement

#4: Provisions have been made for separate trash chutes in accordance with recycling strategies.

#5: Conditions will be made in the Construction Contract to contain potential sources of litter such as styrofoam or other materials used in construction.

#6: The pedestrian bridge is connected to the second floor of the Nuuanu Court

Building. Access to the bridge will be via an escalator or stairway within both buildings. The bridge will be designed as open-air to minimize the potential for view obstruction.

#7: The design of the project dictates that the Bethel Street and Merchant Street accessways be used. The proposed design had been accepted by the City during the Request For Proposals (RFP) process.

Thank you for your interest and participation in the planning stages of this project.

Sincerely,

Gail Kaito

for Michael N. Scarfone
Director

cc: OEQC

NANCY BANNICK

871 Kapiolani Boulevard, Room 3
Honolulu, Hawaii 96813 (808) 533-7168

May 22, 1990

Mr. Ben Lee ~~Donald Clegg~~, Director
Department of General Planning
City and County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

COMMENTS ON KAAHUMANU PARKING STRUCTURE REDEVELOPMENT PLAN

Dear Mr. Lee ~~Clegg~~:

I am very much against the City's Kaahumanu Parking Structure Redevelopment proposal because no matter how handsome the planned buildings may be, they will be extremely harmful to the nationally-registered Merchant Street Historic District, walling it off from Honolulu Harbor.

As a volunteer historic preservationist, I worked for years researching the history of the Merchant Street complex which includes our oldest remaining downtown business buildings, on getting the structures restored, and on getting the cluster on the historic registers, national and state, and under City Special Design District protection (it is now part of the Chinatown Special Design District).

I also helped defeat a high-rise court tower proposed for this site about 20 years ago and thought because of the arguments that carried the day, our government would not again come up with an inappropriate scheme.

The City even owns and has enhanced two of the buildings that will be the most diminished by the new structures and the unfortunate bridge across Bethel Street, the one small opening that would remain in the towering and dense urban complex. I refer to the 1854 Melchers Building, oldest of the lot, and the 1931 former Police Station, now our Tax Office (for property taxes). And what a terrible thing to do to the most important building of all, the State's restored 1871 Kamehameha V Post Office whose delightful second-floor balustraded lanai with jigsaw-carved canopy now has a view to the harbor.

I think our City government is being short-sighted in looking upon every downtown municipal parking lot as a site for a huge housing and commercial project. The lots along the waterfront ought to be developed in low-profile manner, if at all. The need for housing is great, we all know, but over the long haul it seems to me far more important to protect and enhance the most historical part of our city, to keep Honolulu Honolulu, to preserve its sense of place. That is why I strongly opposed the River-Nimitz housing tower at the waterfront and Nuuanu Stream entrance to Chinatown (right where the city had its beginnings) and also oppose the high-rise plan for the Smith-Maunakea lot.

This project simply ought to be abandoned.

Sincerely,

Nancy Bannick

CC: Marvin Miura, OEQC
✓ Colette Sakoda, Fowill Corp.

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET, 5TH FLOOR
HONOLULU, HAWAII 96813
PHONE 523-4427 • FAX 527-5498

FRANK F. FASI
MAYOR

MICHAEL N. SCARFONE
DIRECTOR

Gail Kaito
DEPUTY DIRECTOR

July 23, 1990

Ms. Nancy Bannick
871 Kapiolani Boulevard, Rm. 3
Honolulu, HI 96813

Dear Ms. Bannick:

Subject: Draft Environmental Impact Statement (DEIS) for the Kaahumanu Parking Structure Redevelopment

We have received your letter of May 22, 1990 stating your objection to this project.

We recognize the significance of the Merchant Street Historic District, and the potential impacts the proposed action may pose to the historic buildings within the District. The project was never intended to isolate the District from the Honolulu Harbor. Rather, the Developer and Architect have worked in coordination to achieve the original project design intent, which would reflect the styles of Old and New Downtown Honolulu, as well as provide a continuous pedestrian link from Fort Street Mall to Nuuanu Avenue. In addition, this project is one element in the City's overall economic revitalization strategy for Downtown Honolulu.

With regard to your concerns about the potential impacts to the historic structures such as the Melcher's Building, former Police Station, and Kamehameha V Post Office, mitigating measures contained in the DEIS will be implemented during the demolition and construction phases of the project. Some modifications to the design will be made as a result of concerns expressed during the earlier stages of this project.

We understand the sensitivity of this matter and would like to arrange a meeting with yourself, the Developer, and Architect. The open exchange between you and the key participants in the project should prove mutually beneficial and may resolve some of your concerns.

Thank you for your interest and participation in the planning stages of this project.

Sincerely,

Gail Kaito

for Michael N. Scarfone
Director

cc: OEQC

HISTORIC HAWAII
FOUNDATION

May 22, 1990

Department of General Planning
650 South King Street, 8th Floor
Honolulu, HI 96813

SUBJECT: Ka'ahumanu Parking Lot Redevelopment
Draft Environmental Impact Statement

We appreciated the opportunity to review and comment on the above draft EIS and are very pleased that the historic buildings in the area will be included in the development.

The recommendations for mitigation by the consultant concerning the impacts on historic buildings and the Chinatown and Merchant Street Historic Districts, as well as the archaeological considerations are comprehensive and should be followed.

We were pleased to learn that the matt foundation will be used thus reducing the impact of pile drivers causing ground-borne vibration which might effect the historic structures.

We concur that:

1) If piles should be required, drilled pile holes or vibratory pile drivers, rather than impact drivers, should be used to minimize vibrations.

2) Backhoe pounding should be limited to prevent ground-borne vibration to be transmitted to nearby historic buildings and/or pre-drilling of the hard coralline materials should be done.

3) To minimize potential negative impacts, excavation shoring and bracing should be checked to ensure adequacy, and the ground nearby monitored before, during, and after construction to avoid damage to the historic buildings by settlement.

4) Ground settlement should also be monitored before, during and after construction so that mitigation can be undertaken if impacts result from excavation dewatering.

We support the development of specific mitigation measures for each historic building effected by the construction to protect them.

P O Box 1658 Honolulu, HI 96806 • Telephone (808) 537-9564 • Fax (808) 526-3989 • The Ward Warehouse, Bldg. D, 2nd Floor • Honolulu, HI 96814

Documenting the buildings should occur prior to construction to establish a basis for assessing any possible damage which might occur due to construction. Monitoring should be included during the construction process to be sure that potential damage is spotted at the earliest stage and mitigation measures put in place as soon as possible.

During construction, watering should be done to reduce dust. After the construction is completed, the historic buildings in the area should be cleaned using brushes and a gentle water-pressure washing.

We urge the retention and reuse of the historic granite blocks on the sidewalk. These were used as ballast in the ships trading between China and Honolulu up til the early 1900s and are a trangible part of our shipping and trading traditions.

The planned pedestrian bridge will change the relationship of the Merchant Square Historic District to the harbor and waterfront. We suggest that additional thought be given to the design of, even the actual need for, the bridge since the relationship to the harbor is the major reason for the establishment and development of the historic Merchant Street District.

The archaeological consultant's report noted that it is extremely likely that subsurface features will be encountered during the redevelopment of the Ka'ahumanu parking area.

In light of this, we support the consultant's recommendations to include archaeological monitoring of the site during the removal of surface materials and during the excavation period. Core sampling and testing should also be done.

We also support the recommendation that high fencing, alarm systems and/or manned patrols should be in place during evening, weekend and night time hours when work is not in process and the incidence of artifact collecting is highest.

Thank you for considering our comments.

Sincerely yours,

Phyllis G. Fox

Phyllis G. Fox
President

PGF:rn

cc: Dr. Marvin Miura

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT
CITY AND COUNTY OF HONOLULU
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FRANK F. FASI
MAYOR

MICHAEL N. SCARFONE
DIRECTOR

Gail Kaito
DEPUTY DIRECTOR

July 23, 1990

Ms. Phyllis G. Fox, President
Historic Hawai'i Foundation
P. O. Box 1658
Honollulu, HI 96806

Dear Ms. Fox:

Subject: Draft Environmental Impact Statement (DEIS)
for the Kaahumanu Parking Structure Redevelopment

We have received your letter of May 22, 1990 responding to the Draft EIS for this project. Mitigative measures will be taken to protect the historic buildings affected by the proposed action.

a. As you have suggested, the buildings will be documented prior to construction, as well as monitored for damage.

b. The construction contractor will be responsible for reducing dust via watering and barricading the project site during project construction. Within reason, the historic buildings will be cleaned after construction using approriate methods so as not to disrupt the structures' integrity.

c. The historic granite blocks on the sidewalk will be held and reused within the project vicinity.

d. The proposed pedestrian bridge will, inevitably, change the relationship of the Merchant Square Historic District to the harbor and waterfront. However, careful consideration has gone into the design and character of the bridge in efforts to maximize the uninterupted pedestrian linkage from Fort Street Mall to Nuuanu Avenue, and minimize the impacts to the vicinity.

Thank you for your interest and participation in the planning stages of this project.

Sincerely,

Gail Kaito
for Michael N. Scarfone
Director

cc: OEQC

University of Hawaii at Manoa

Environmental Center
Crawford 317 • 2550 Campus Road
Honolulu, Hawaii 96822
Telephone (808) 948-7361

May 23, 1990
RE:0535

Department of General Planning
City and County of Honolulu
650 South King Street
Honolulu, Hawai'i 96813

Dear Sir/Madam:

Draft Environmental Impact Statement (EIS)
Ka'ahumanu Parking Structure Redevelopment
Downtown Honolulu, O'ahu

The subject Draft EIS describes impacts associated with development of a multi-use (office, hotel-condominium, commercial) high-rise project on parts of the two blocks in Honolulu which are roughly bordered by Nimitz Highway and Merchant Street and separated by Bethel Street. Our review was prepared with the assistance of Anders Daniels, Meteorology; George Taoka, Civil Engineering; Bertell Davis, Anthropology; and Robert Irwin, Environmental Center.

Air Quality

Because estimated carbon monoxide concentrations in the completed project area are projected to exceed State standards by a factor of three, it is recommended that project designs (amount of parking, for instance) be reevaluated and that the project not proceed until acceptable air quality can be insured.

Further problems with air quality modeling were noted. Our reviewers expect that a much higher background concentration than the assumed 1 ppm would result when air trajectories originate from the north. The Draft EIS does not make clear how the 1 ppm background was derived.

On page 20 of the air quality impact study it is reported that "a steady wind of one meter per second blowing from a single direction for an hour is not very likely, and it may occur only once a year or less." It should be noted that this speed occurs 5 percent of the time at Honolulu Airport which is purposefully located at a windy site. It is likely that in Honolulu such a low wind speed can occur substantially more often. Also, during such a low wind, a single wind direction in the downtown area is unlikely. Wind flow would become

channeled between buildings and down streets. In a downtown setting, wind speed at such times is even less than the diffusion expression estimates. Our reviewers ask why figures for wind speeds less than 1 meter per second have not been studied. The Draft EIS mentions windless nights, but keeps background wind for the reported "worst case scenario" at 1 meter per second. If a night had been windless, the land breeze would not have started in time to create higher winds during the morning rush hour.

The highest carbon monoxide concentrations in Honolulu have occurred during times when weak large scale pressure gradient patterns have moved over the islands. This allows a land-sea breeze circulation to develop. This pattern can persist for several days, resulting in pollutants being transported back into the source region rather than away from the source. This situation is not discussed in the Draft EIS.

Traffic

Figure 3-20 on page 3-83 of the document illustrates supposed "improvements" to the intersection of Queen and Bethel Streets and Nimitz Highway. Both Nimitz Highway and Queen Street traffic is to turn right into a single Bethel Street Lane. The concrete divider which presently divides the two lanes is to be partially removed to accommodate the proposed merge of Nimitz and Queen. Our reviewers question the safety of this new configuration. The proposed yield sign on Queen Street is inadequate and is expected to result in traffic collisions. A stop sign would partially mitigate the problem, but the configuration of the intersection itself should be improved.

Our reviewers have substantial reservations about the accuracy of some traffic figures presented. It was noted that Queen Street is substandard in width, and that the figures for traffic flow on this street were apparently for wider (12 feet) roads. Thus, it is unlikely that Queen Street could actually and safely accomodate the charted traffic volumes. Also, the projected peak hour traffic volume increase of 0.6 percent (or 0.2 percent for each of 3 years) by 1992 is considered far too low to be realistic.

Archaeology

The archival archaeological search was a strong point of this Draft EIS. Our reviewers particularly concurred with the recommendation, on page 30 of the appended report, that perimeter fencing, alarms, and a patrol be furnished during the early construction phase, and especially at night, to prevent illegal looting.

It was observed that the archival research focused on map documentation and historic buildings, but not on prehistoric indicators such as Land Commission Awards (LCAs). Four LCAs overlap the subject properties andprovide clues to pre-1840's land uses. Early claimants were William French (who maintained sandalwood warehouses in the area), Lunalilo, and Victoria Kamamalu.

It is strongly recommended that the entire property, rather than only two test pits, be tested. A three part archaeological recovery plan has been outlined:

1) The construction site should be monitored at all times.

2) A two goal subsurface testing plan, utilizing mechanical back hoe assisted excavations should be implemented:

a. Specific test sites for a selected number of primary structures should be cartographically located and probed.

b. The remainder of the project site should be tested across a sufficient area to insure that other major discoveries are not missed. Other features of interest include: the old shoreline and possible waterlogged objects behind this buried shore.

3) A complete archaeological survey should be prepared to include the following:

a. Complete documentation of findings.
b. Assessments of significance.
c. Recommendations for further work.

The simple archaeological monitoring presently recommended is considered inadequate in light of the potentially great significance of subsurface sites. Simple monitoring should not proceed until significance has been determined by steps similar to those outlined above.

In summary, our review has noted serious deficiencies with this project as presently researched and presented. Considerable revisions are necessary to meet concerns about air quality and traffic. We hope that the comments and recommendations about archaeological recovery presented herein will prove useful in the ongoing planning process. We thank you for this opportunity to have commented on this Draft EIS.

Yours truly,

John T. Harrison, Ph.D.
Environmental Coordinator

cc: OEQC
Dept of Housing & Community Dev.
R.M. Towill Corporation ✓
L. Stephen Lau
Anders Daniels
George Taoka
Bertell Davis
Robert Kai Irwin

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT
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FRANK F. FASI
MAYOR

MICHAEL N. SCARFONE
DIRECTOR
Gail H. Kaito
DEPUTY DIRECTOR

July 23, 1990

Mr. John T. Harrison, Ph.D.
Environmental Coordinator
University of Hawaii, Environmental Center
Crawford 317, 2550 Campus Road
Honolulu, HI 96822

Dear Mr. Harrison:

Subject: Draft Environmental Impact Statement (DEIS) for the Kaahumanu Parking Structure Redevelopment Project

We have received your letter of May 23, 1990 in response to the Draft EIS for the subject project. The following has been prepared in response to your concerns on Air Quality, Traffic, and Archaeology:

Air Quality

1. The air quality study prepared for the subject project showed that with or without the project the state ambient air quality standards for carbon monoxide may be exceeded occasionally during worst-case conditions in the project vicinity. This is also true at the present time. At the location of highest concentration (Nimitz at Bethel), the proposed project will have little impact during a worst-case event. The state ambient air quality standards for carbon monoxide, due to their very stringent limitations, are quite probably exceeded at many locations in the city where traffic volumes are moderate or higher.

2. Background concentration is defined at the concentration that is nearly always present due to distant sources that cannot be accounted for. As indicated in the DEIS, the Department of Health air quality monitoring station located at the DOH Headquarters on Punchbowl measures a range of about 0.2-11 ppm (0.2-12 mg/m^3) for the daily maximum 1-hour concentration of carbon monoxide (exceeding the state standard occasionally) and an average daily 1-hour maximum concentration of about 2 ppm (2 mg/m^3). The DOH monitoring station is located off street and above

ground level. Thus, while it does not measure maximum concentrations in the area, it cannot be considered to provide background concentrations because of the exhaust fumes from nearby traffic. In the air quality modeling analysis for the subject project, emissions from motor vehicles in the immediate vicinity were directly considered. The carbon monoxide from distant sources not directly included was estimated to amount to about one half on the average daily maximum 1-hour concentration measured at the DOH monitoring station (1 ppm).

3. Use of a minimum wind speed of 1 meter per second for worst-case analysis is recommended by the U.S. Environmental Protection Agency. Wind frequency data for Honolulu International Airport show a 5 percent frequency of occurrence for winds in the 1-1.5 meter per second range, but these are distributed at various directions around the compass. The maximum frequency of occurrence for these winds in a 22.5-degree sector is 0.5 percent. The air quality modeling analysis accounted for the geometry involved and considered winds from all directions down to one degree resolution. If it is assumed that winds within a 22.5-degree wind reporting sector are evenly distributed, a 0.5 percent sector frequency corresponds to less than 2 hours per year occurrence in the maximum sector for a wind of one degree resolution. If the wind causing the maximum concentration occurs in a wind sector having a lower frequency of occurrence, the expected number of occurrences per year would be less. Wind channeling was considered in the analyses through the use of the street canyon option of the CALINE4 model.

4. A simple, extreme case of recirculation could be hypothesized whereby during the morning peak traffic hour a weak land breeze occurs carrying pollutants out to sea and eight hours later a weak sea breeze carries these pollutants back to shore to the precise same origin in time for the peak afternoon traffic hour. If a light wind of 1 meter per second persisted throughout the day, a parcel of air would travel a round trip distance of about 29 km (18 miles). Thoughout the round trip travel, turbulence in the atmosphere would continue to disperse the pollutants. If it is assumed that the initial concentration of carbon monoxide was 25 mg/m^3, dispersion calculations show that when the parcel of air returns in the afternoon the concentration would be reduced to much less than 0.001 mg/m^3. Thus, insofar as carbon monoxide is concerned, recirculation should not be a problem even under extreme conditions.

5. Periods of stagnation can occur occasionally in the Honolulu area whereby little or no movement of wind may persist for several days causing the buildup of air pollution to occur over time and over a widespread area. Periods of air stagnation occur occasionally at many locations around the world. Practically speaking, most developments cannot be designed specifically to mitigate this exceptional case, and the only means available to guard against this problem is to curtail emissions until the episode has passed. DOH has promulgated regulations pertaining to air pollution stagnation episodes specifying that a three-stage process be invoked in the event of such an occurrence. To date, DOH has never found it necessary to declare a first state episode which consists of the proclamation of an "Alert" and the initiation of control action.

Traffic

1. The recommended improvement for the intersection of Queen and Bethel Streets and Nimitz Highway, as shown in Figure 3-20 (page 3-83) has been revised to include a signalized traffic system. Other revisions to the intersection are under consideration.

2. The number of vehicles entering and exiting the study intersections is low because traffic congestion downstream of the intersection causes traffic to backup. Based on field observations by the traffic consultant, this downstream congestion prevents motorists from entering along Bethel, Merchant, Bishop and Queen Streets during the morning and afternoon peak hours. Thus, the projected peak hour traffic volume increase of 0.2 percent for each year is accurate.

Archaeology

1. The archaeological consultants are aware of the Land Commission Awards (LCA), as stated in the report, and will need further research for clues to potential early historic period activities and impacts. However, some of the other documentation provided in the report, such as Rockwood's map of "Honolulu in 1810" based on Barrere's research, probably provide more accurate and earlier information than the LCA information. Additionally, the sandalwood activities cited in the comments, took place on the neighboring block between Smith and Mauna Kea Streets, rather than in the project site.

2. The response to the "three-part archaeological recovery plan" outline is as follows:

a.) "Monitoring site at all times"

Demolition of the parking tier would have no archaeological impacts therefore monitoring during this phase is unnecessary. Monitoring during removal of surface materials, and the disposition of subsurface materials and structures was included in the report recommendations. Additional monitoring during removal of subsurface piers and utility service pipes will be provided, although the subsurface structural components will be kept intact until excavations are completed.

b.) "Two-goal subsurface testing plan"

Some core sampling has been done prior to, and during preparation of the report. Additional coring was recommended in the report.

The report "Redevelopment Impacts" section details the projection of waterlogged features and artifacts and is stated as the priority of the recommendations for this project. Improvements and widening of Queen Street (Nimitz Highway) occurred during 1882 and the old shoreline is now under Nimitz Highway.

c.) Core sampling, monitoring, and testing recommended in the report were for preliminary archaeological assessment.

3. A revised initial testing plan has been prepared as an addendum to the Archaeological report. These procedures can be implemented when the parking structure is closed down and ideally following demolition of surface structures. A complete data recovery and monitoring plan will be formulated contingent upon the results of this initial testing phase. This recovery and monitoring plan will be submitted to the State Historic Preservation Office for review.

Thank you for your interest and participation in the planning stages of this project.

Sincerely,

Gail Kaito

for Michael N. Scarfone
Director

cc: OEQC

APPENDIX A

SOILS INVESTIGATION REPORT

Ernest K. Hirata and Associates, Inc.

FOUNDATION INVESTIGATION

HARBOR COURT PROJECT

QUEEN & BETHEL STREETS

HONOLULU, HAWAII

TMK: 2-1-02: 16, 20, 26 & 56

for

McCORMACK PROPERTIES

W.O. 89-1925
May 10, 1990

EH ERNEST K. HIRATA & ASSOCIATES, INC.

EH ERNEST K. HIRATA & ASSOCIATES, INC.
Soils and Foundation Engineering

Mailing Address P.O. Box 1028, Aiea, Hawaii 96701-1028
99-1433 Koaha Place, Aiea, Hawaii 96701 Phone (808) 486-0787 Fax (808) 486-0870

May 10, 1990
W.O. 89-1925

McCormack Properties
1580 Makaloa Street, Suite 500
Honolulu, Hawaii 96814

Attention: Mr. Michael McCormack

Gentlemen:

Our report, "Foundation Investigation, Harbor Court Project, Queen & Bethel Streets, Honolulu, Hawaii, TMK: 2-1-02: 16, 20, 26 & 56," dated May 10, 1990, our Work Order 89-1925 is enclosed. This investigation was conducted in general conformance with the scope of work presented in our proposal dated October 16, 1989.

The surface soils were classified as dark brown silty sand and sandy silt with gravel and coral fragments. Medium hard coral was encountered beneath the surface soils at depths ranging from 2.5 to 9.5 feet. The coral gradually graded to tan silty sand below depths of 31 to 40 feet. Underlying the silty sand were alluvial soils extending to the maximum depths drilled.

Groundwater was encountered at elevations ranging from -3.6 to -6.2. However, we believe that the water level may be influenced by nearby dewatering operations. We believe that the natural groundwater level should be on the order of +1.5. Continued monitoring of the water level is recommended.

A mat foundation may be used to support the proposed tower structure, and spread footings may be used for support of the six story building. All foundations should be founded on the medium hard coral. Additional geotechnical recommendations for development of the site are presented in this report.

We appreciate this opportunity to be of service. Should you have any questions concerning this report, please feel free to call on us.

Very truly yours,

Ernest K. Hirata & Associates, Inc.

Ernest K. Hirata

Ernest K. Hirata President

TABLE OF CONTENTS

APPENDIX

FOUNDATION INVESTIGATION
HARBOR COURT PROJECT
QUEEN & BETHEL STREETS
HONOLULU, HAWAII
TMK: 2-1-02: 16, 20, 26 & 56

INTRODUCTION

This report presents the results of our foundation investigation performed for the proposed Harbor Court project. The purpose of this investigation was to determine the nature of the soils underlying the site, to ascertain their engineering properties, and to provide geotechnical recommendations for the design of foundations, floor slabs, resistance to lateral pressures, and site grading.

This investigation included drilling six exploratory test borings, obtaining representative soil samples, selected laboratory testing and analysis, and the preparation of this report. The general location of the project site is shown on the enclosed Location Map, Plate 1. The approximate exploratory boring locations are shown on the Site Plan, Plate 2. Also attached is an Appendix which describes the laboratory testing procedures.

PROJECT CONSIDERATIONS

Information concerning the proposed project was furnished by personnel from Lacayo Architects, and JAI, Inc., Structural Engineers.

The project will consist of two separate structures, a 35 story tower and a 6 story commercial/office building. The tower structure will have plan dimensions of about 150 by 200 feet, and include either one or two basement levels, extending 8 to 16 feet below existing grade.

The 6 level commercial/office building will have plan dimensions of about 70 by 140 feet, and will include one basement level. The structures will be connected by a second level pedestrian bridge, spanning Bethel Street.

Structural loads were not available at the time of this report.

SITE CONDITIONS

The project site consists of two parcels of land, separated by Bethel Street. The larger parcel is located on the south side of Bethel Street, and is also bordered by Merchant Street on the east and Nimitz Highway/Queen Street on the west. The site is presently occupied by the Kaahumanu Parking structure. Ground elevations range from approximately +11 on the east, to +6.5 along the west property line.

The smaller parcel is bordered by Nimitz Highway on the west and Nuuanu Avenue on the north. The site is used for on-grade parking, and is entirely paved with asphaltic concrete pavement. Ground elevations generally range from about +8 to +6.5, with drainage flowing in a westerly direction.

FIELD EXPLORATION

The site was explored from February 22, through March 26, 1990, by drilling six exploratory test borings. Boring B5 was drilled in the existing parking structure, using a skid mounted drill rig. The remaining borings were drilled with a truck mounted drilling machine. The borings varied in depth from 60.5 to 125.5 feet. The soils were continuously logged by our field engineer and classified by visual examination in accordance with the Unified Soil Classification System. The approximate boring locations are shown on Plate 2, and the soils encountered are logged on Plates A1 through A23.

Undisturbed, bag, and core samples were recovered from the borings for selected laboratory testing and analyses. Undisturbed samples were obtained by driving a 3 inch O.D. thin-walled split tube sampler with a 140 pound hammer from a height of 30 inches. Core samples were obtained by drilling with either an NX (2.5 inch) or 4 inch diameter core barrel. The blow count required for twelve inches of penetration and recovery percentages for each core run are shown on the enclosed Boring Logs.

Rock quality designations (RQD) are also shown on the Boring Logs. This is a modified core recovery procedure which takes into account the number of fractures observed in the core samples. Only pieces 4 inches in length or longer are included in determining the core recovery. Breaks caused by handling are ignored.

Our fieldwork also included testing water samples for hydrocarbon contamination. One water sample was obtained from each boring for testing. Test results are presented on Plates E1 through E30.

SOIL CONDITIONS

The subsurface soil conditions were found to be relatively uniform throughout the site. The surface soil generally consisted of dark brown silty sand and sandy silt with gravel and coral fragments. The surface soil was in a dense to medium dense condition, and extended to depths ranging from 2.5 to 9.5 feet.

Underlying the surface soils was medium hard coral. The coral stratum was encountered at elevations ranging from +8 at boring B4 to -3 at boring B6. The coral gradually graded to tan silty sand below depths of 31 to 40 feet. The silty sand was in a medium dense condition, and extended to depths ranging from 68 to 78 feet.

Alluvium, consisting of brown silty gravel, as well as clayey and sandy silt, was encountered beneath the tan silty sand. The alluvial deposits were stiff to medium stiff, and extended to the maximum depths drilled.

Groundwater was encountered in all our borings at elevations ranging from -3.6 to -6.2. A summary of our groundwater readings is presented on Plate A24.

CONCLUSIONS AND RECOMMENDATIONS

Groundwater

Groundwater was recorded at elevations ranging from -3.6 to -6.2. Based on our past experience, these readings appear to be unusually low. Previous borings, drilled in the smaller parcel, north of Bethel Street, encountered groundwater at elevations ranging from -0.4 to -1.3. However, even these seem relatively low.

Further north, borings taken at the intersection of River Street and Nimitz Highway encountered groundwater at approximate elevation +1. At the intersection of Hotel Street and Nuuanu Avenue, groundwater was encountered at elevations as high +1.6. Construction at this site is ongoing. The construction includes dewatering operations which may be affecting the groundwater level. Ongoing construction along Fort Street Mall may also be affecting the groundwater table.

We believe that the natural groundwater level may be as high as approximate elevation +1.5. Due to the importance of the groundwater level with respect to the planned basement levels, we suggest that our borings be left open and that periodic groundwater measurements be recorded.

Foundations - Tower

A mat foundation founded on the medium hard coral may be used to support the tower structure. A net allowable bearing pressure of 8000 pounds per square foot, and a modulus of subgrade reaction of 600 pounds per cubic inch may be used in designing the mat foundation.

Settlement analysis will depend on the dimensions of the mat footing. The approximate plan dimensions of the mat foundation should be forwarded to our office when available. However, preliminary analyses were performed to provide an estimate of the total settlements expected. Settlements on the order of 2.5 to 3 inches were computed. We believe that considering mat rigidity, differential settlement between the edge and center of the mat foundation will be on the order of 1 inch.

Foundations - 6 Story Building

Conventional spread footings founded on the dense to medium hard coral may be used to support the proposed six story building. Footings may be designed for a bearing value of 6000 pounds per square foot, and should be a minimum of 16 inches in width, and embedded at least 12 inches into the coral stratum.

The bottom of all footing excavations should be cleaned of all loose material prior to placement of reinforcing steel and concrete.

Structural loads were not available at the time of this report. The final building loads should be forwarded to our office, when available, for review.

Lateral Design

The bearing values indicated above are for the total of dead and frequently applied live loads, and may be increased by one-third for short duration loading which includes the effect of wind and

seismic forces. Resistance to lateral loading may be provided by friction acting at the base of foundations and by passive earth pressure acting on the buried portions of foundations.

An allowable coefficient of friction of 0.5 may be used with the dead load forces. Passive earth pressure may be computed as an equivalent fluid having a density of 500 pounds per cubic foot with a maximum earth pressure of 5000 pounds per square foot. Unless covered by pavement or concrete slabs, the upper 12 inches of soil should not be considered in computing lateral resistance.

The following equivalent fluid pressures may be used for active earth pressure considerations.

Soil Type	Freestanding Condition	Restrained Condition	Below Water Level
Silty Sand/ Sandy Silt	.40 PCF	55 PCF	97 PCF
Coral	25 PCF	40 PCF	80 PCF

Floor Slabs

To provide uniform support and a capillary break, all slabs on grade should be underlain by a four inch cushion of clean gravel, such as #3 Fine (ASTM Size 67). All building slabs should also be protected by a plastic moisture barrier placed between the slab and cushion material. A thin layer of sand may also be placed between the slab and moisture barrier to aid the curing process.

Site Grading

The project site should be cleared of all concrete footings and slabs, asphaltic concrete pavement, vegetation and other deleterious material, and be wasted from the area. In areas requiring fill placement, the existing ground should be scarified to a depth of six inches and compacted to a minimum 95 percent compaction as determined by ASTM D 1557-78.

The onsite soils may be reused in compacted fills provided all rock and coral fragments larger than six inches in maximum dimension are removed.

Any imported structural fill shall be well-graded, non-expansive granular material. Specifications for imported structural fill should state that not more than 20 percent of soil by weight shall pass the #200 sieve. In addition, the P.I. of that portion of the soil passing the #40 sieve shall not be greater than 10. Yard fill necessary for landscaping need not adhere to these specifications.

All structural fill shall be placed in horizontal lifts restricted to eight inches in loose thickness and compacted to a minimum 95 percent compaction as determined by ASTM D 1557-78. Fill placed in areas which slope steeper than 5:1 (horizontal to vertical), should be continually benched as the fill is brought up in lifts.

Based on our borings, we believe that excavations into the medium hard to hard sections of the coral stratum may require pneumatic equipment.

Shoring of the excavation sidewalls will be necessary in areas exposing the surface soils. The underlying coral may stand unsupported at a near vertical face on a temporary basis. However,as the coral grades to a fragmented condition, with silty sands, shoring may be required. It should be the Contractor's responsibility to conform to the State OSHA safety standards for excavations.

Foundations for both structures will be founded below the water level and as a result, waterproofing will be necessary. A dewatering program will be needed during construction of the foundations.

Hydrocarbon Contamination Testing

Water samples were obtained from each boring for hydrocarbon contamination testing. Each sample was tested for Total Petroleum Hydrocarbons (TPH) and Benzene, Toulene, Ethylbenzene, and Xylenes (BTEX). The testing was performed by Chemtech Analytical Laboratories in California. Contamination was not detected in any of the tests. Results are presented on Plates E1 through E30.

Construction Monitoring

The preparation of all footing excavations for placement of reinforcing steel and concrete should be monitored by an engineer from our staff. All structural fill placement should also be monitored and tested by personnel from our office.

Limitations

The boring logs indicate the approximate subsurface soil conditions encountered only at those times and locations where our borings were made, and may not represent conditions at other times and locations.

During construction, should subsurface conditions differ from those encountered in our borings, we should be advised immediately in order to review and to revise our recommendations.

Our professional services were performed, findings obtained, and recommendations prepared in a manner consistent with that level of care and skill ordinarily exercised by members of the profession currently practicing under similar conditions. This warranty is in lieu of all other warranties expressed or implied.

PAUL S. M... PRO... HAWAII

Respectfully submitted,

Ernest K. Hirata & Associates, Inc.

Paul S. Morimoto, P.E.

APPENDIX OF LABORATORY TESTING

Classification

Field classification is verified in the laboratory, also in accordance with the Unified Soil Classification System. Laboratory classification was determined by visual examination and sieve analyses. The final classification is shown at the appropriate locations on the Boring Logs, Plates A1 through A23.

Moisture-Density

The field moisture content and dry unit weight are determined for each of the undisturbed samples. The information is useful in providing a gross picture of the soil consistency between borings and any local variations. The dry unit weight is determined in pounds per cubic foot while the moisture content is determined as a percentage of the dry unit weight. Samples are obtained from a 3 inch O.D. split tube sampler. Test results are shown at the appropriate depths on the Boring Logs, Plates A1 through A23.

Consolidation

Settlement predictions of the soil's behavior under load are made on the basis of consolidation test results. Loads are applied in several increments in a geometric progression, and the resulting deformations are recorded at selected time intervals. Porous stones are placed in contact with the top and bottom of each specimen, having an inside diameter of 2.40 inches and a height of 1 inch, to permit addition and release of pore fluid. Results of tests on undisturbed samples are plotted on the Consolidation Test Reports, Plates B1 through B4.

Shear Tests

Shear tests are performed in the Direct Shear Machine which is of the strain control type. The rate of deformation is approximately 0.02 inches per minute. Each sample is sheared under varying confining loads in order to determine the Coulomb shear strength parameters, cohesion and angle of internal friction. Eighty percent of the maximum value is taken to determine the shear strength parameters. Test results are presented on Plates C1 through C4.

Sieve Analysis

Sieve analysis tests are conducted on samples to determine the distribution of particle sizes in the soil. This test is used to classify granular soils and is conducted in general accordance with ASTM D 422. Test results are presented on Plates D1 and D2.

Unconfined Compression Test

Unconfined compression tests are conducted on undisturbed samples to determine the approximate strength of cohesive soils in terms of total stresses. The test utilizes strain controlled application of the axial load. Tests are conducted in general accordance with ASTM D 2166-85. The following is a summary of our test results.

Sample	Unconfined Compression Strength
B4 at 104'	3718 PSF
B6 at 84'	4590 PSF

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BORING LOG

W.O. 89-1925

BORING NO. B1 DRIVING WT. 140 lb DATE OF DRILLING 3-23-90
SURFACE ELEV. 7+ * DROP 30 in. WATER LEVEL @ 11.2 ft

DEPTH (FEET)	GRAPHIC SYMBOL	UNIFIED SOIL CLASSIFICATION	BLOWS/FT	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	RELATIVE COMPACTION (%)	DESCRIPTION
0		SM					FILL- Silty sand, brown, moist, dense, with coral fragments. Covered by 2 inches of asphaltic concrete and base course material.
			50/4"	93	30		
							CORAL- Tan, medium hard.
5							Begin 4 inch coring from 4 feet. 60% Recovery from 4 to 9 feet. RQD = 56%
10							70% Recovery from 9 to 14 feet. RQD = 48%
15							10% Recovery from 14 to 19 feet. RQD = 0%
							End 4 inch coring at 19 feet.
20			50/3"	No Recovery			Begin NX coring from 19.5 feet. 80% Recovery from 19.5 to 24.5 feet. RQD = 20%
25							40% Recovery from 24.5 to 29.5 feet. RQD = 10%
							End NX coring at 29.5 feet.
30			36	100	24		

Plate A1

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BORING LOG

W.O. 89-1925

BORING NO. B1 (Cont.) DRIVING WT. 140 lb. DATE OF DRILLING 3-24-90

SURFACE ELEV. 7± * DROP 30 in. WATER LEVEL @ 11.2 ft.

DEPTH (FEET)	GRAPH SYMBOL	UNIFIED SOIL CLASSIFICATION	BLOWS/FT	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	RELATIVE COMPACTION (%)	DESCRIPTION
30							
		SM					Silty SAND- Tan, dense to medium dense, with coral fragments.
			16	69	16		
35							
			41	No Recovery			
40							
			25	98	28		
45							
			18	88	27		
50							
			4	73	44		End boring at 60.5 feet.
55							• Elevations based on Topographic Map prepared by R.M. Towill Corporation.
			21	82	34		
60							

Plate A2

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BORING LOG

W.O. 89-1925

BORING NO. B2 DRIVING WT. 140 lb. DATE OF DRILLING 3-26-90

SURFACE ELEV. 6.5± DROP 30 in. WATER LEVEL @ 11.5 ft

DEPTH (FEET)	GRAPH SYMBOL	UNIFIED SOIL CLASSIFICATION	BLOWS/FT	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	RELATIVE COMPACTION (%)	DESCRIPTION
0		SM					FILL- Silty sand, dark brown, slightly moist, medium dense, with gravel. Covered by 2 inches of asphaltic concrete and base course material.
5			16	88	30		Grading with coral fragments from 4.5 feet.
10			18	88	32		CORAL- Tan, dense.
15			28	92	30		
20			46	88	30		
25			23	102	27		
30			18	91	34		

Plate A3

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BORING LOG

W.O. 89-1925

BORING NO. B2 (Cont.) DRIVING WT. 140 lb. DATE OF DRILLING 3-26-90

SURFACE ELEV. 6.5± DROP 30 in. WATER LEVEL @ 11.5 ft.

DEPTH (FEET)	GRAPH SYMBOL	UNIFIED SOIL CLASSIFICATION	BLOWS/FT	DRY DENSITY (PCF.)	MOISTURE CONTENT (%)	RELATIVE COMPACTION (%)	DESCRIPTION
30							
35			19	No Recovery			
40		SM	11	84	38		Silty SAND-Tan, medium dense, with few coral fragments.
45			13	80	45		
50			7	84	42		
55			14	80	41		
60			19	80	41		

Plate A4

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BORING LOG

W.O. 89-1925

BORING NO. B2 (Cont.) DRIVING WT. 140 lb. DATE OF DRILLING 3-26-90

SURFACE ELEV. 6.5± DROP 30 in. WATER LEVEL @ 11.5 ft.

DEPTH (FEET)	GRAPH SYMBOL	UNIFIED SOIL CLASSIFICATION	BLOWS/FT	DRY DENSITY (PCF.)	MOISTURE CONTENT (%)	RELATIVE COMPACTION (%)	DESCRIPTION
60							
65			29	87	38		
70			28	82	42		
75			54	78	44		Grading to brown color from 74 feet.
							End boring at 75.5 feet.
80							
85							
90							

Plate A5

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BORING LOG

W.O. 89-1925

BORING NO. B3 DRIVING WT. 140 lb. DATE OF DRILLING 2-28-90
SURFACE ELEV. 8± DROP 30 in. WATER LEVEL @ 11.8 ft.

DEPTH (FEET)	GRAPH SYMBOL	UNIFIED SOIL CLASSIFICATION	BLOWS/FT	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	RELATIVE COMPACTION (%)	DESCRIPTION
0		SM	55/2"	93	17		FILL- Silty sand, mottled tan, moist, medium dense, with coral fragments. Covered by 2 inches of asphaltic concrete and base course material.
							CORAL- Tan, hard.
5							Begin 4 inch coring from 4 feet. 100% Recovery from 4 to 9 feet. RQD = 100%
10							94% Recovery from 9 to 14 feet. RQD = 80%
15							37% Recovery from 14 to 18 feet. RQD = 16%
							End 4 inch coring at 18 feet.
20			98	98	23		
25			44	99	24		
30			50/2"	No Recovery			Begin NX coring from 29 feet.

Plate A6

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BORING LOG

W.O. 89-1925

BORING NO. B3 (Cont.) DRIVING WT. 140 lb. DATE OF DRILLING 3-18-90
SURFACE ELEV. 8± DROP 30 in. WATER LEVEL @ 11.8 ft.

DEPTH (FEET)	GRAPH SYMBOL	UNIFIED SOIL CLASSIFICATION	BLOWS/FT	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	RELATIVE COMPACTION (%)	DESCRIPTION
30							46% Recovery from 29 to 34 feet. RQD = 0%
35			38	102	24		End NX coring at 34 feet.
40			27		25		
		SM					Silty SAND- Mottled tan, medium dense, with shell and coral fragments.
45			30	98	29		
50			33	94	31		
55			31	93	30		
60			29	82	31		

Plate A7

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BORING LOG

W.O. 89-1925

BORING NO. B3 (Cont.) DRIVING WT. 140 lb. DATE OF DRILLING 3-2-90

SURFACE ELEV. 8± DROP 30 in. WATER LEVEL @ 11.8 ft.

DEPTH (FEET)	GRAPH SYMBOL	UNIFIED SOIL CLASSIFICATION	BLOWS/FT	DRY DENSITY (PCF.)	MOISTURE CONTENT (%)	RELATIVE COMPACTION (%)	DESCRIPTION
60							
65			41	84	37		
		ML					Clayey SILT-Mottled brown, stiff, with sand.
70			60	83	36		
75			31	87	38		Coral fragments at 75 feet.
80			75/11"	80	39		River wash gravel at 80 feet.
85		SM	24	87	22		Silty SAND-Tan, medium dense, with coral fragments.
90			29	93	30		

Plate A8

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BORING LOG

W.O. 89-1925

BORING NO. B3 (Cont.) DRIVING WT. 140 lb. DATE OF DRILLING 3-13-90

SURFACE ELEV. 8± DROP 30 in. WATER LEVEL @ 11.8 ft.

DEPTH (FEET)	GRAPH SYMBOL	UNIFIED SOIL CLASSIFICATION	BLOWS/FT	DRY DENSITY (PCF.)	MOISTURE CONTENT (%)	RELATIVE COMPACTION (%)	DESCRIPTION
90							
		SM					Sandy SILT- Mottled brown, stiff, with gravel.
95			41	No Recovery			
100			36	64	61		Clayey from 99 feet.
105			66/10"	70	48		
110			65	70	56		Grading sandy from 109 feet, with coral and shell fragments.
115			50/4"	No Recovery			Grading with cobbles from 114 feet.
120			50/5"	No Recovery			

Plate A9

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BORING LOG

W.O. 89-1925

BORING NO. B3 (Cont.) DRIVING WT. 140 lb. DATE OF DRILLING 3-13-90
SURFACE ELEV. 8± DROP 30 in. WATER LEVEL @ 11.8 ft.

DEPTH (FEET)	GRAPHIC SYMBOL	UNIFIED SOIL CLASSIFICATION	BLOWS/FT	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	RELATIVE COMPACTION (%)	DESCRIPTION
120							
			50/5"	No Recovery			
125							End boring at 124.5 feet.
130							
135							
140							
145							
150							

Plate A10

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BORING LOG

W.O. 89-1925

BORING NO. B4 DRIVING WT. 140 lb. DATE OF DRILLING 3-14-90
SURFACE ELEV. 10.5± DROP 30 in. WATER LEVEL @ 14.1 ft.

DEPTH (FEET)	GRAPHIC SYMBOL	UNIFIED SOIL CLASSIFICATION	BLOWS/FT	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	RELATIVE COMPACTION (%)	DESCRIPTION
0		SM	29	78	56		FILL- Silty sand, dark brown, moist, stiff, with gravel. Covered by 2 inches of asphaltic concrete and base course material.
			50/3"	No Recovery			CORAL- Mottled tan, hard.
5							Begin 4 inch coring from 5 feet. 96% Recovery from 5 to 10 feet. RQD = 90%
10							93% Recovery from 10 to 15 feet. RQD = 76%
15							100% Recovery from 15 to 20 feet. RQD = 76%
20							46% Recovery from 20 to 25 feet. RQD = 12%
25							End 4 inch coring at 25 feet.
30			64	100	24		

Plate A11

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BORING LOG

W.O. 89-1925

BORING NO. B4 (Cont.) DRIVING WT. 300 lb. DATE OF DRILLING 3-16-90

SURFACE ELEV. 10.5± DROP 30 in. WATER LEVEL @ 14.1 ft.

DEPTH (FEET)	GRAPH SYMBOL	UNIFIED SOIL CLASSIFICATION	BLOWS/FT	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	RELATIVE COMPACTION (%)	DESCRIPTION
30							
35			50/3"	98	28		
40		SM	27	84	31		Silty SAND- Tan, medium dense, with coral fragments.
45			11	84	39		
50			20	85	37		
55			23	86	35		
60			14	86	39		Shell fragments at 59 feet.

Plate A12

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BORING LOG

W.O. 89-1925

BORING NO. B4 (Cont.) DRIVING WT. 300 lb. DATE OF DRILLING 3-16-90

SURFACE ELEV. 10.5± DROP 30 in. WATER LEVEL @ 14.1 ft.

DEPTH (FEET)	GRAPH SYMBOL	UNIFIED SOIL CLASSIFICATION	BLOWS/FT	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	RELATIVE COMPACTION (%)	DESCRIPTION
60							
65			23	78	45		
70			13	89	32		
75		GM	42	110	27		Silty GRAVEL- Dark grayish brown, medium dense.
80			5	No Recovery			Cobbles from 79 feet.
85			6	Tip Recovery			
							Sandy SILT- Brown, medium stiff, with river wash gravel.
90		SM	30	94	31		

Plate A13

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BORING LOG

W.O. 89-1925

BORING NO. B4 (Cont.) DRIVING WT. 300 lb. DATE OF DRILLING 3-16-90

SURFACE ELEV. 10.5± DROP 30 in. WATER LEVEL @ 14.1 ft.

DEPTH (FEET)	GRAPHI SYMBOL	UNIFIED SOIL CLASSI-FICATION	BLOWS/FT	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	RELATIVE COMPAC-TION (%)	DESCRIPTION
90							
95			26	66	63		
100			37	79	38		
105			27	79	48		
							Gravelly from 107 feet, with few coral fragments.
110			50/4"	123	17		
115			50/3"	88	14		
120			47	101	26		

Plate A14

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BORING LOG

W.O. 89-1925

BORING NO. B4 (Cont.) DRIVING WT. 300 lb. DATE OF DRILLING 3-16-90

SURFACE ELEV. 10.5± DROP 30 in. WATER LEVEL @ 14.1 ft.

DEPTH (FEET)	GRAPHI SYMBOL	UNIFIED SOIL CLASSI-FICATION	BLOWS/FT	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	RELATIVE COMPAC-TION (%)	DESCRIPTION
120							
125			36	87	37		
							End boring at 125.5 feet.
130							
135							
140							
145							
150							

Plate A15

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BORING LOG

W.O. 89-1925

BORING NO. B5 — DRIVING WT. 140 lb. — DATE OF DRILLING 3-19-90

SURFACE ELEV. 9.4± — DROP 30 in. — WATER LEVEL @ 14 ft.

DEPTH (FEET)	GRAPH SYMBOL	UNIFIED SOIL CLASSIFICATION	BLOWS/FT	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	RELATIVE COMPACTION (%)	DESCRIPTION
0		ML					FILL- Clayey silt, brown, moist, medium dense, with sand and coral fragments. Covered by 1.5 inches of asphaltic concrete and base course material.
			16	90	21		
			7	89	22		
5							CORAL- Tan, hard to medium hard.
							Begin NX coring from 7 feet. 75% Recovery from 7 to 10 feet. RQD = 28%
10							94% Recovery from 10 to 14 feet. RQD = 83%
15							44% Recovery from 14 to 19 feet. RQD = 0%
20							53% Recovery from 19 to 24 feet. RQD = 0%
25							End 4 inch coring at 24 feet.
30			39	103	21		

Plate A16

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BORING LOG

W.O. 89-1925

BORING NO. B5 (Cont.) — DRIVING WT. 140 lb. — DATE OF DRILLING 3-20-90

SURFACE ELEV. 9.4± — DROP 30 in. — WATER LEVEL @ 14 ft.

DEPTH (FEET)	GRAPH SYMBOL	UNIFIED SOIL CLASSIFICATION	BLOWS/FT	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	RELATIVE COMPACTION (%)	DESCRIPTION
30							
35			21	87	35		
40			48	102	25		
45		SM	15	83	38		Silty SAND- Tan, medium dense, with shell and coral fragments.
50			17	82	42		
55			22	82	40		
60			14	83	40		

Plate A17

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BORING LOG

W.O. 89-1925

BORING NO. B5 (Cont.) DRIVING WT. 140 lb. DATE OF DRILLING 3-21-90
SURFACE ELEV. 9.4± DROP 30 in. WATER LEVEL @ 14 ft.

DEPTH (FEET)	GRAPHIC SYMBOL	UNIFIED SOIL CLASSIFICATION	BLOWS/FT	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	RELATIVE COMPACTION (%)	DESCRIPTION
60							
65			12	No Recovery			
							Grading loose from 67 feet.
70			7	87	24		
		SM					Sandy SILT-Mottled brown, stiff, with river wash gravel.
75			57	94	22		
80			44	94	24		
							End boring at 80.5 feet.
85							
90							

Plate A18

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BORING LOG

W.O. 89-1925

BORING NO. B6 DRIVING WT. 140 lb. DATE OF DRILLING 2-22-90
SURFACE ELEV. 6.5± DROP 30 in. WATER LEVEL @ 10.4 ft.

DEPTH (FEET)	GRAPHIC SYMBOL	UNIFIED SOIL CLASSIFICATION	BLOWS/FT	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	RELATIVE COMPACTION (%)	DESCRIPTION
0		SM					FILL- Silty sand, tan, moist, medium dense, with gravel and concrete fragments.
			18	99	17		
5			14	83	34		Grading with cinders from 5 feet.
			50/2"	No Recovery			
10							CORAL- Tan, hard to medium hard.
							Begin 4 inch coring from 9.5 feet. 80% Recovery from 9.5 to 14.5 feet. RQD = 57%
15							88% Recovery from 14.5 to 19.5 feet. RQD = 80%
20							91% Recovery from 19.5 to 24 feet. RQD = 75%
25							End 4 inch coring at 24 feet. Begin NX coring from 24 feet. 80% Recovery from 24 to 29 feet. RQD = 0%
30			70	103	27		End NX coring at 29 feet.

Plate A19

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BORING LOG

W.O. 89-1925

BORING NO. B6 (Cont.) DRIVING WT. 140 lb. DATE OF DRILLING 2-26-90

SURFACE ELEV. 6.5± DROP 30 in. WATER LEVEL @ 10.4 ft.

DEPTH (FEET)	UNIFIED SOIL CLASSIFICATION	BLOWS/FT	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	RELATIVE COMPACTION (%)	DESCRIPTION
30						
35		26	101	26		
40	SM	55	88	30		Silty SAND- Mottled tan, medium dense to dense, with shell fragments.
45		18	84	40		
50		21	No Recovery			
55		41	85	37		
60		27	88	36		

Plate A20

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BORING LOG

W.O. 89-1925

BORING NO. B6 (Cont.) DRIVING WT. 140 lb. DATE OF DRILLING 2-27-90

SURFACE ELEV. 6.5± DROP 30 in. WATER LEVEL @ 10.4 ft.

DEPTH (FEET)	UNIFIED SOIL CLASSIFICATION	BLOWS/FT	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	RELATIVE COMPACTION (%)	DESCRIPTION
60						
65		30	89	36		
70		25	80	45		
75		21	88	35		
80	ML	49	90	38		Clayey SILT-Mottled brown, stiff, with shell fragments.
85		57	72	56		
90		82/11"	84	41		Grading with river wash gravel from 89 feet.

Plate A21

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BORING LOG

W.O. 89-1925

BORING NO. B6 (Cont.) DRIVING WT. 140 lb. DATE OF DRILLING 2-28-90

SURFACE ELEV. 6.5± DROP 30 in. WATER LEVEL @ 10.4 ft.

DEPTH (FEET)	GRAPH SYMBOL	UNIFIED SOIL CLASSIFICATION	BLOWS/FT	DRY DENSITY (PCF.)	MOISTURE CONTENT (%)	RELATIVE COMPACTION (%)	DESCRIPTION
90							
95			42	71	54		
100			61	72	52		
105			54	80	42		
110			50	58	75		
115			20	49	93		Grading medium stiff at 114 feet.
120			100	86	38		

Plate A22

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BORING LOG

W.O. 89-1925

BORING NO. B6 (Cont.) DRIVING WT. 140 lb. DATE OF DRILLING 2-22-90

SURFACE ELEV. 6.5± DROP 30 in. WATER LEVEL @ 10.4 ft.

DEPTH (FEET)	GRAPH SYMBOL	UNIFIED SOIL CLASSIFICATION	BLOWS/FT	DRY DENSITY (PCF.)	MOISTURE CONTENT (%)	RELATIVE COMPACTION (%)	DESCRIPTION
120							
125			47	73	51		
							End boring at 125.5 feet.
130							
135							
140							
145							
150							

Plate A23

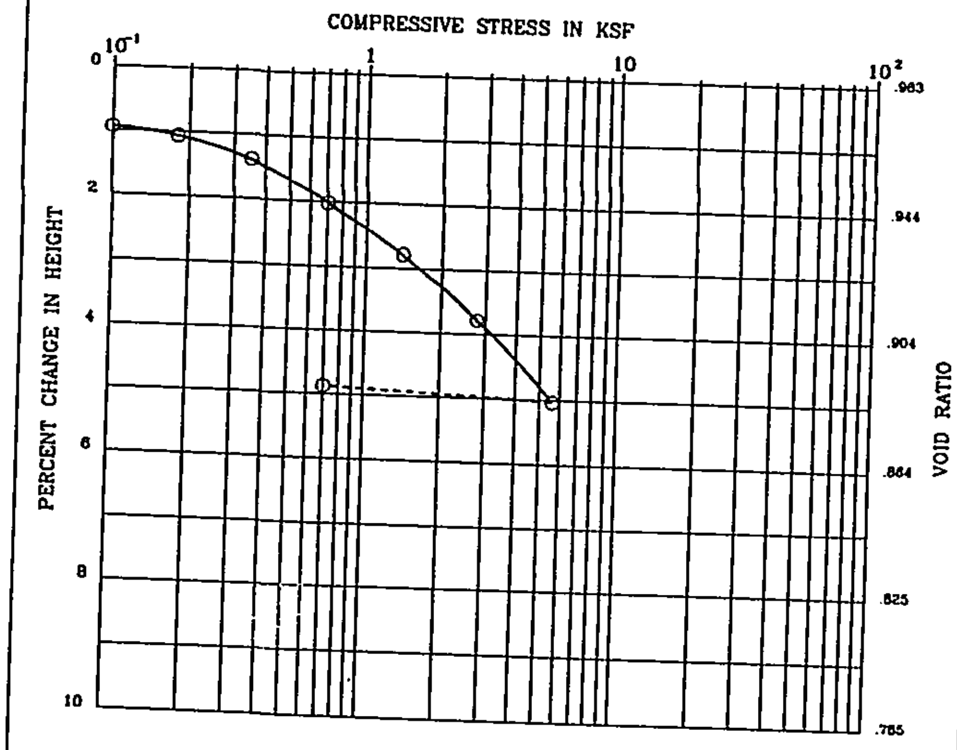
ERNEST K. HIRATA & ASSOCIATES INC.

W.O. 89-1925

SUMMARY OF WATER LEVEL READINGS

BORING #	ELEVATION	DATE	TIME	WATER ELEVATION
B1	7±	3-24-90	1:55 PM	-4.20
		3-26-90	8:05 AM	-6.01
		3-26-90	4:15 PM	-6.00
		4-18-90	11:26 AM	-5.20
		4-30-90	10:05 AM	-5.60
B2	6.5±	3-26-90	4:45 PM	-5.53
		4-18-90	11:24 AM	-5.00
		4-30-90	10:03 AM	-5.40
B3	8±	3-13-90	3:00 PM	-3.80
		3-14-90	10:20 AM	-4.20
		3-15-90	8:20 AM	-4.20
		4-18-90	11:29 AM	-5.60
		4-30-90	10:10 AM	-6.00
B4	10.5±	3-19-90	12:39 PM	-3.57
		3-21-90	7:45 AM	-3.60
		4-18-90	11:32 AM	-5.00
		4-30-90	10:13 AM	-5.45
B5	9.4±	3-19-90	8:30 AM	-4.60
		3-23-90	9:00 AM	-4.70
		4-18-90	11:15 AM	-5.90
		4-30-90	10:16 AM	-6.20
B6	6.5±	3-13-90	1:40 PM	-3.90
		3-14-90	10:30 AM	-3.90
		3-16-90	2:45 PM	-3.90
		4-18-90	11:20 AM	-5.00
		4-30-90	10:20 AM	-5.50

Plate A24



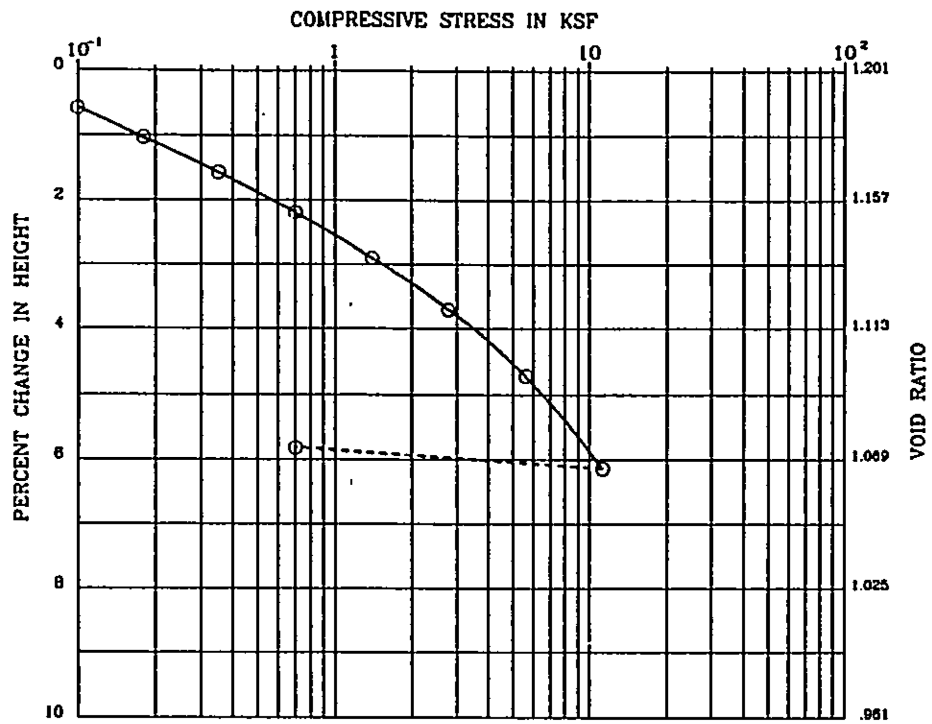
BORING : B2
DEPTH (ft) : 9'
SPEC. GRAVITY : 2.70

DESCRIPTION : Tan Coral
LIQUID LIMIT :
PLASTIC LIMIT :

	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	PERCENT SATURATION	VOID RATIO
INITIAL	36.3	85.1	100	.983
FINAL	29.4	89.4	90	.886

Remark : Date: 4/6/90

W.O. 1925	Harbor Court
Ernest K. Hirata & Associates, Inc.	CONSOLIDATION TEST Plate B1



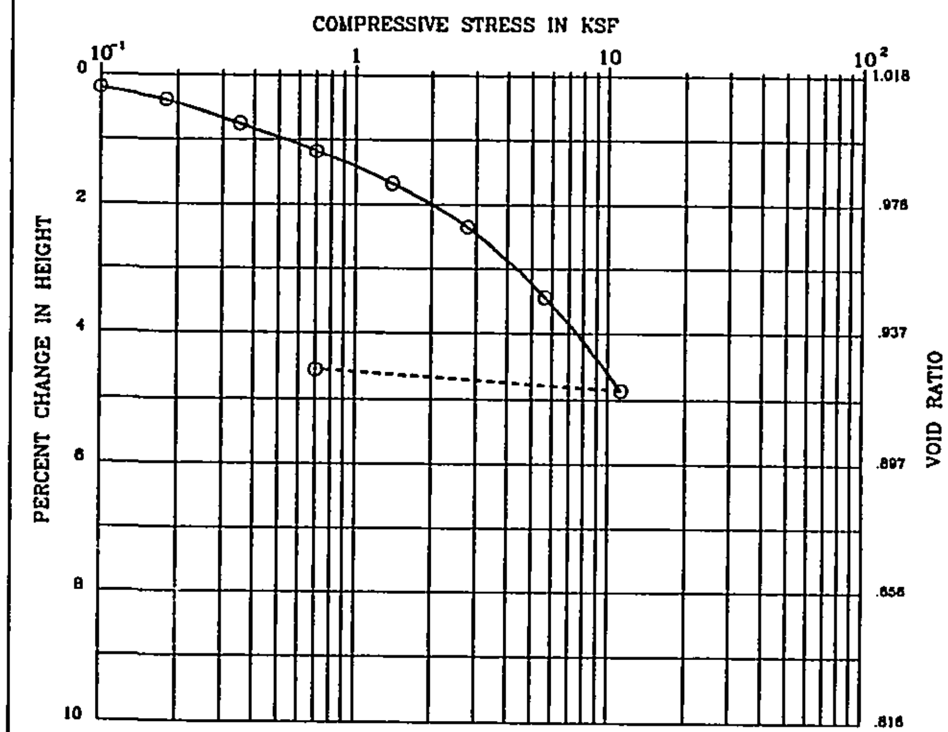
BORING : B4
DEPTH (ft) : 49'
SPEC. GRAVITY : 2.95

DESCRIPTION : Tan Silty Sand
LIQUID LIMIT :
PLASTIC LIMIT :

	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	PERCENT SATURATION	VOID RATIO
INITIAL	36.3	83.8	89	1.201
FINAL	36.3	88.9	100	1.074

Remark : Water added 700 PSF Date: 3/28/90

W.O. 1925	Harbor Court
Ernest K. Hirata & Associates, Inc.	CONSOLIDATION TEST Plate B2



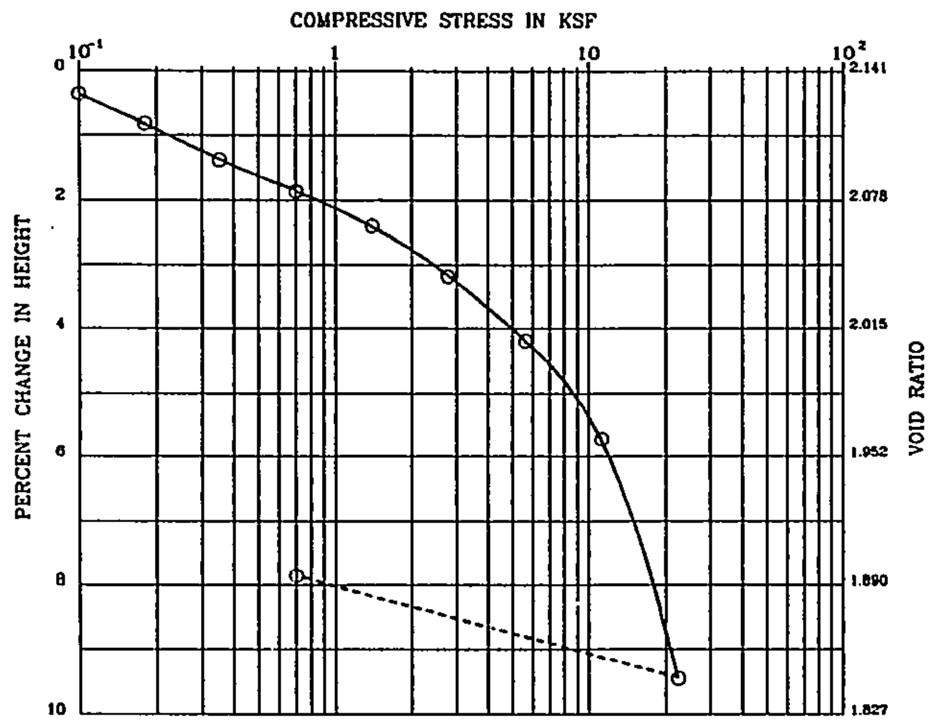
BORING : B4
DEPTH (ft) : 69'
SPEC. GRAVITY : 2.95

DESCRIPTION : Tan Silty Sand
LIQUID LIMIT :
PLASTIC LIMIT :

	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	PERCENT SATURATION	VOID RATIO
INITIAL	32.6	91.2	95	1.018
FINAL	31.4	95.5	100	.927

Remark : Water added 700 PSF Date: 4/18/90

W.O. 1925	Harbor Court
Ernest K. Hirata & Associates, Inc.	CONSOLIDATION TEST Plate B3



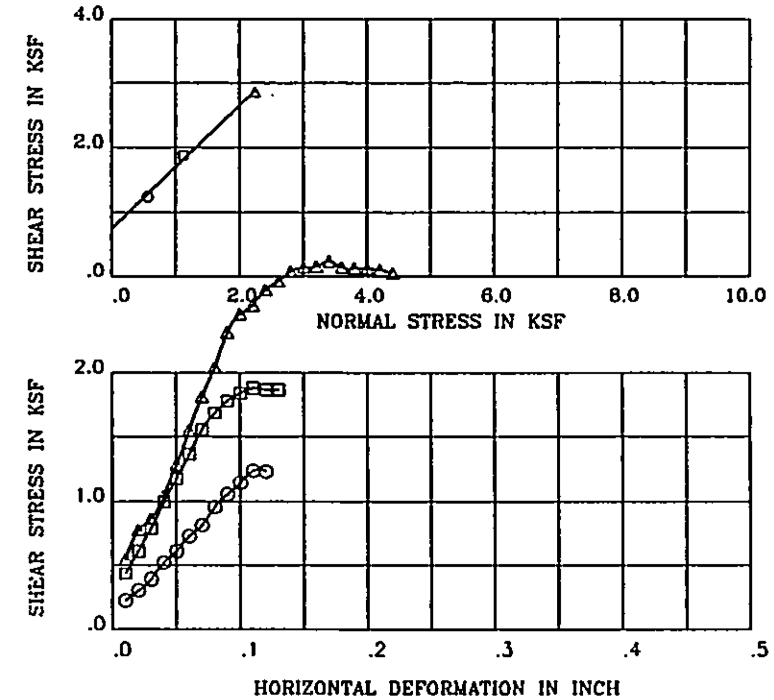
BORING : B6
DEPTH (ft) : 109'
SPEC. GRAVITY : 2.98

DESCRIPTION : Brown Clayey Silt
LIQUID LIMIT :
PLASTIC LIMIT :

	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	PERCENT SATURATION	VOID RATIO
INITIAL	68.6	59.3	96	2.141
FINAL	63.5	64.3	100	1.896

Remark : Water added 700 PSF Date: 3/26/90

W.O. 1925	Harbor Court
Ernest K. Hirata & Associates, Inc.	CONSOLIDATION TEST Plate B4

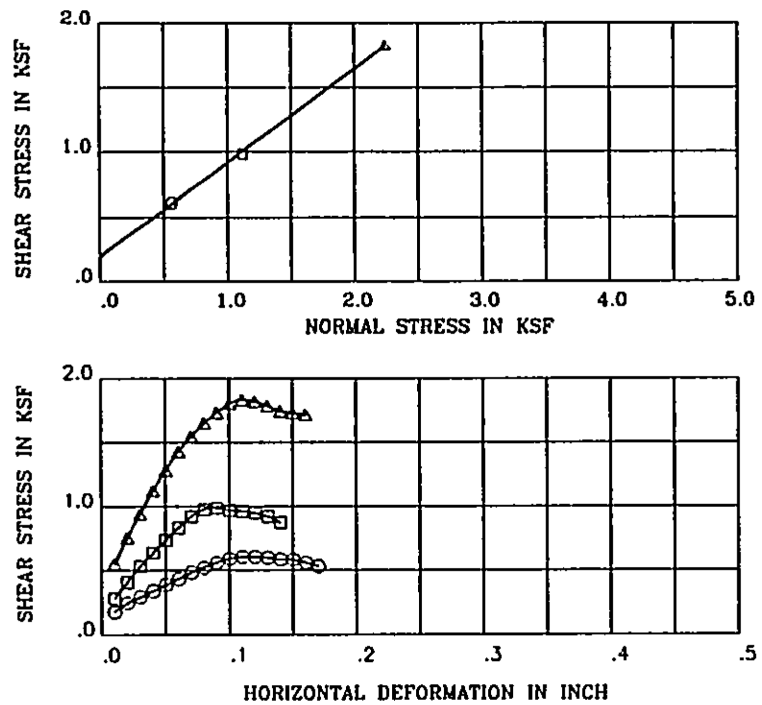


BORING/SAMPLE : B3 DEPTH (ft) : 24
DESCRIPTION : Tan Coral
STRENGTH INTERCEPT (C) : .752 KSF (PEAK STRENGTH)
FRICTION ANGLE (PHI) : 43.6 DEG (PEAK STRENGTH)

SYMBOL	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	VOID RATIO	NORMAL STRESS (ksf)	PEAK SHEAR (ksf)	RESIDUAL SHEAR (ksf)
o	24.0	99.6	.692	.56	1.24	1.23
□	24.0	99.6	.692	1.12	1.88	1.86
△	24.0	99.6	.692	2.24	2.87	2.77

Remark : Date: 3/8/90 Saturated

W.O. 1925	Harbor Court
Ernest K. Hirata & Associates, Inc.	DIRECT SHEAR TEST Plate C1

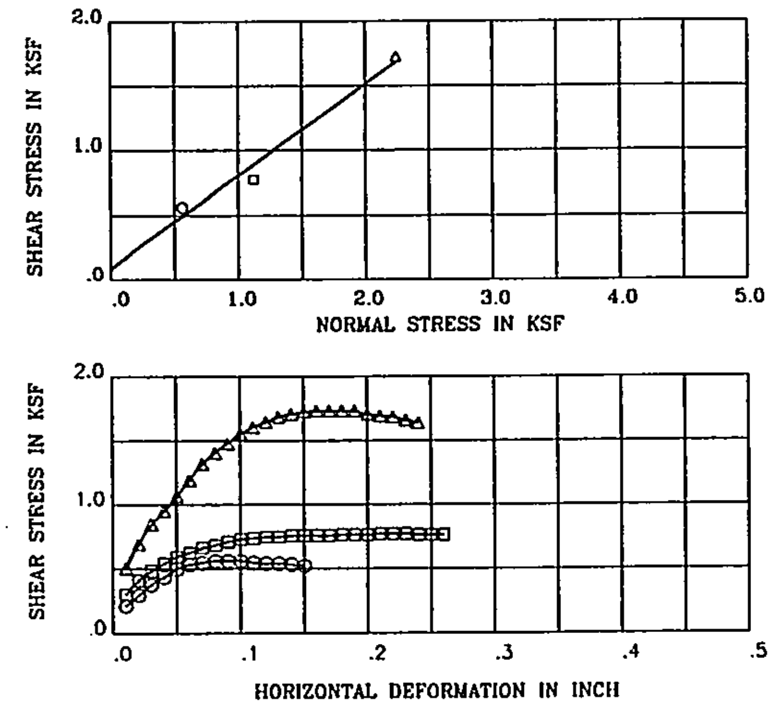


BORING/SAMPLE : B3 DEPTH (ft) : 64
DESCRIPTION : Tan Silty Sand
STRENGTH INTERCEPT (C) : .190 KSF (PEAK STRENGTH)
FRICTION ANGLE (PHI) : 36.1 DEG (PEAK STRENGTH)

SYMBOL	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	VOID RATIO	NORMAL STRESS (ksf)	PEAK SHEAR (ksf)	RESIDUAL SHEAR (ksf)
O	37.1	83.7	1.013	.56	.61	.53
□	37.1	83.7	1.013	1.12	.99	.87
Δ	37.1	83.7	1.013	2.24	1.83	1.71

Remark : Date: 3/8/90 Saturated

W.O. 1925	Harbor Court
Ernest K. Hirata & Associates, Inc.	DIRECT SHEAR TEST Plate C2

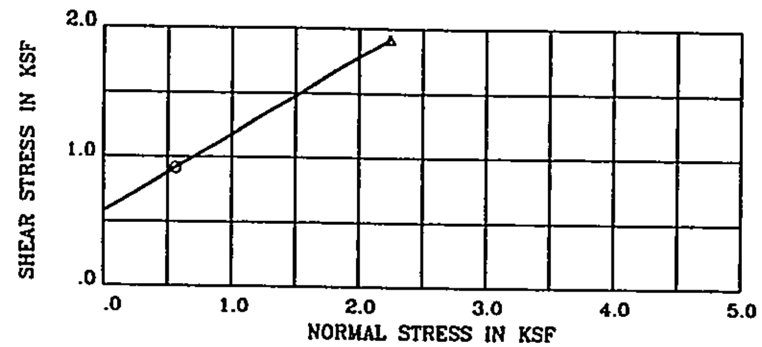


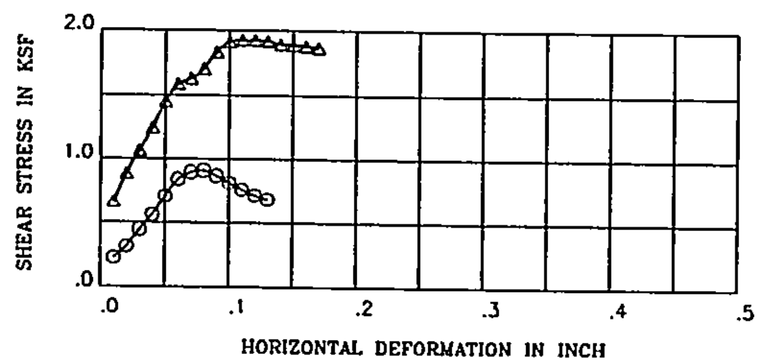
BORING/SAMPLE : B5 DEPTH (ft) : 4
DESCRIPTION : Brown Clayey Silt
STRENGTH INTERCEPT (C) : .086 KSF (PEAK STRENGTH)
FRICTION ANGLE (PHI) : 35.6 DEG (PEAK STRENGTH)

SYMBOL	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	VOID RATIO	NORMAL STRESS (ksf)	PEAK SHEAR (ksf)	RESIDUAL SHEAR (ksf)
O	22.5	89.5	.883	.56	.56	.52
□	22.5	89.5	.883	1.12	.77	.76
Δ	22.5	89.5	.883	2.24	1.73	1.63

Remark : Date: 3/26/90

W.O. 1925	Harbor Court
Ernest K. Hirata & Associates, Inc.	DIRECT SHEAR TEST Plate C3



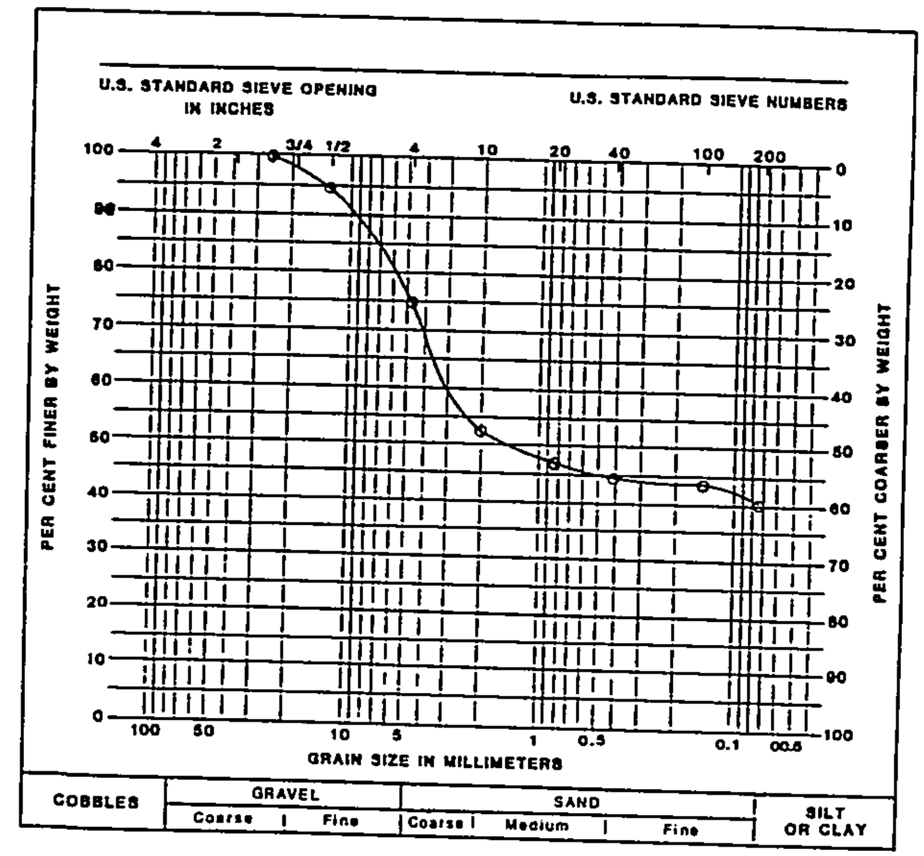


BORING/SAMPLE : B6 DEPTH (ft) : 5'
DESCRIPTION : Tan Silty Sand
STRENGTH INTERCEPT (C) : .579 KSF (PEAK STRENGTH)
FRICTION ANGLE (PHI) : 30.9 DEG (PEAK STRENGTH)

SYMBOL	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	VOID RATIO	NORMAL STRESS (ksf)	PEAK SHEAR (ksf)	RESIDUAL SHEAR (ksf)
O	33.8	82.6	1.040	.56	.91	.69
Δ	33.8	82.6	1.040	2.24	1.92	1.86

Remark : Date 4/12/90

W.O. 1925	Harbor Court
Ernest K. Hirata & Associates, Inc.	DIRECT SHEAR TEST Plate C4



O Sample #1	Location	Boring B3 at 89 feet
	Description	Tan Sandy Silt
X Sample #2	Location	
	Description	

W.O. 89-1925	Harbor Court
Ernest K. Hirata & Associates, Inc.	GRADATION CURVES Plate D1

W.O. 89-1925

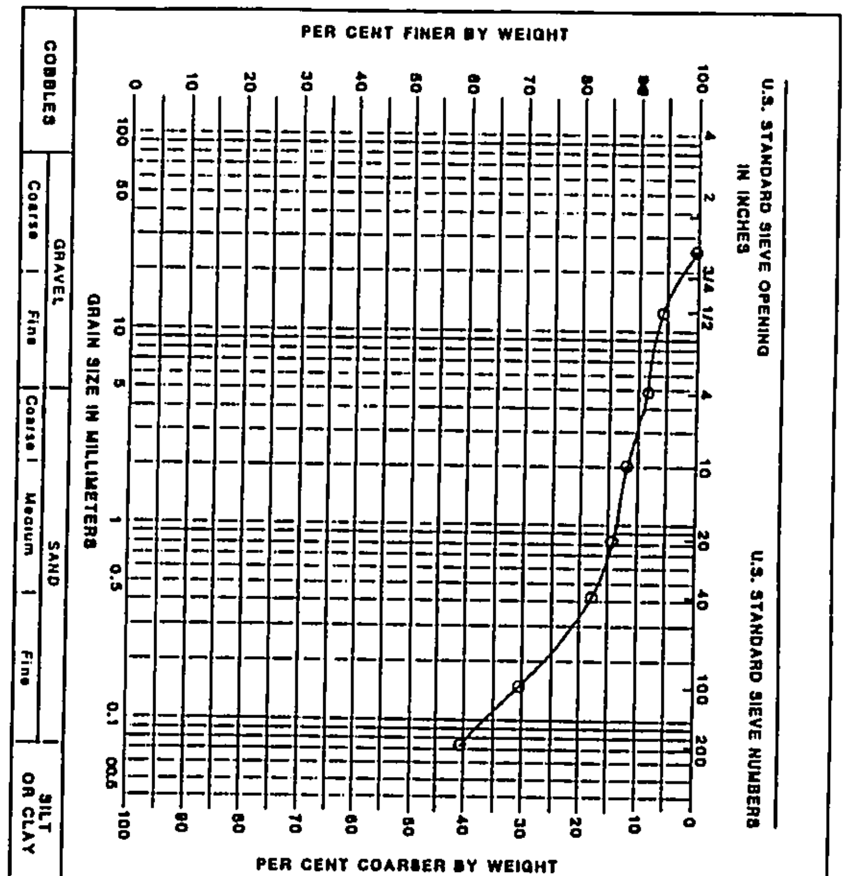
Harbor Court

Ernest K. Hirata & Associates, Inc.

GRADATION CURVES

Plate D2

O Sample #1	Location	Boring B5 at 44 feet.
	Description	Tan Sandy Silt
X Sample #2	Location	
	Description	



№ 001271CT

CHEMTECH ANALYTICAL LABORATORIES (916) 635-3962

W.O. 89-1925

CHAIN OF CUSTODY - LOG-IN

PROJECT NAME: HARBOR COURT

PAGE 1 OF 1

CLIENT CHAIN OF CUSTODY # 1925

CHEM TECH I.D. #	SAMPLE I.D.	DATE SAMPLED	TIME SAMPLED	MATRIX	NO OF CONTAINERS	ANALYSIS: BTEX	TPH
912807	HARBOR COURT → 872810	3/5		WATER	4	X	X

DISPOSAL: FEE DISPOSAL / NO FEE / RETURNED TO CLIENT / VERBALS

RESULTS VERBAL: Yes ☐ No ☐
DATE ____ BY ____
TO WHOM: ____
PHONE ____

COMMENTS:

REPORT TO: ____
ZIP: ____
ATTN: ____
PHONE ____

SAMPLED BY: ☐ CLIENT ☐ CHEMTECH ☐ OTHER

RECEIVED VIA: ☐ FED-EX ☐ U.P.S. ☐ CLIENT ☐ OTHER

INVOICE TO: ____
ZIP: ____
ATTN: ____ P.O. # ____

Relinquished by: (Signature)	Date/Time	Received by: (Signature)
	3/6 1230	Received for Laboratory by: (Signature) M. Lucchesi

FIELD SERVICES ☐ NO ☐ YES ☐ ATTACHED FIELD REPORT

DISPOSAL OF SAMPLES ☐ NO ☐ YES

NO. OF SAMPLES ____ @RATE ____ $ TOTAL ____

CLIENT (SIGNATURE): ____

Plate E1

NO 1271

CHEMTECH ANALYTICAL LABORATORIES (916) 635-3962

CHAIN OF CUSTODY LOG-IN

PROJECT NAME	Harbor Court
PAGE ___ OF ___	CLIENT CHAIN OF CUSTODY # 1925

CHEM TECH ID #	SAMPLE I.D.	DATE SAMPLED	TIME SAMPLED	MATRIX	NO OF CONTAINERS	ANALYSIS: BTEX	ANALYSIS: TPH
		3-5-90		Water	4	X	X

DISPOSAL: VERBALS / RETURNED TO CLIENT / NO FEE / FEE DISPOSAL

RESULTS VERBAL: Yes ☐ No ☐ DATE ___ BY ___ TO WHOM ___ PHONE ___

COMMENTS

Relinquished by: (Signature)	Date/Time	Received by: (Signature)
B. McLaughlin		K. [illegible]
K. [illegible]	3-5-90 5:20P	[illegible]
		Received for Laboratory by: (Signature)

Plate E2

W.O. 89-1925

CHEMTECH ANALYTICAL LABORATORIES
ANALYSIS REPORT

CLIENT: Hirata & Assocaties
Date Samples Received: 03-06-90
Date of Analysis: 03-06-90
Sample ID: Harbor Court
Lab ID: 892809
Matrix: Water

CONTACT: E. Hirata
P.O. #:
CT ID: 1271

ANALYSIS: BTEX 602

COMPOUND	ug/L (ppb)	REPORTING LIMIT ug/L (ppb)
BENZENE	ND	0.3
TOLUENE	ND	0.3
ETHYLBENZENE	ND	0.3
XYLENES	ND	0.6

SURROGATE RECOVERY 91%

ACCEPTABLE RANGE 70% TO 130%

NOTE: (ND) NOT DETECTED AT OR ABOVE THE REPORTING LIMITS.

Plate E3

CHEMTECH ANALYTICAL LABORATORIES
ANALYSIS REPORT
CLIENT: Hirata & Assocaties
Date Samples Received: 03-06-90
Date of Analysis: 03-06-90
Sample ID: Method Blank
Lab ID: LCS-1271
Matrix: Water

CONTACT: E. Hirata
P.O. #:
CT ID: 1271

ANALYSIS: BTEX 602

COMPOUND	ug/L (ppb)	REPORTING LIMIT ug/L (ppb)
BENZENE	ND	0.3
TOLUENE	ND	0.3
ETHYLBENZENE	ND	0.3
XYLENES	ND	0.6

SURROGATE RECOVERY 98% — ACCEPTABLE RANGE 70% TO 130%

NOTE: (ND) NOT DETECTED AT OR ABOVE THE REPORTING LIMITS.

912 KILGORE ROAD #110 • RANCHO CORDOVA, CA 95742 PHONE (916) 635 3962 • FAX (916) 635 9331

CHEMTECH ANALYTICAL LABORATORIES
ANALYSIS REPORT
CLIENT: Hirata & Assocaties
Date Samples Received: 03-06-90
Date of Analysis: 03-06-90
Sample ID:
Lab ID: 892839
Matrix: Water

CONTACT: E. Hirata
P.O. #:
CT ID: 1271

BTEX MATRIX SPIKE SUMMARY

RUN DATE: 03-06-90
CONC UNITS: mg/k
SAMPLE SPIKED: 892839

COMPOUND	CONC SPIKED	CONC MEASURED MS	CONC MEASURED MSD	PERCENT RECOVERY MS	PERCENT RECOVERY MSD	% RPD
BENZENE	25	22	23	88	92	4
TOLUENE	25	22	24	88	96	9
ETHYLBENZENE	25	22	23	88	92	4
o/m/p-XYLENES	75	65	69	87	92	6

MS = Matrix Spike

MSD = Matrix Spike Duplicate

RPD = Relative Percent Difference

CONC = Concentration

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CHEMTECH ANALYTICAL LABORATORIES
ANALYSIS REPORT
CLIENT: Hirata & Assocaties — CONTACT: E. Hirata
Date Samples Received: 03-06-90 — P.O. #:
Date of Analysis: 03-06-90 — CT ID: 1271
Sample ID: Harbor Court
Lab ID: 892807
Matrix: Water

ANALYSIS: TPH, EPA/MOD 8015

COMPOUND	mg/L (ppm)	REPORTING LIMIT mg/L (ppm)
GASOLINE	ND	.5
KEROSENE	ND	.5
DIESEL	ND	.5
FUEL OIL	ND	.5

NOTE: (ND) NOT DETECTED AT OR ABOVE THE REPORTING LIMITS.

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CHEMTECH ANALYTICAL LABORATORIES
ANALYSIS REPORT
CLIENT: Hirata & Assocaties — CONTACT: E. Hirata
Date Samples Received: 03-06-90 — P.O. #:
Date of Analysis: 03-06-90 — CT ID: 1271
Sample ID:
Lab ID: 892811
Matrix: Soil

TPH MATRIX SPIKE SUMMARY

RUN DATE: 03-06-90
CONC UNITS: mg/k
SAMPLE SPIKED: 892811

COMPOUND	CONC SPIKED	CONC MEASURED MS	CONC MEASURED MSD	PERCENT RECOVERY MS	PERCENT RECOVERY MSD	% RPD
GASOLINE	1500	1410	1420	94	95	1
KEROSENE						
DIESEL						

MS = Matrix Spike

MSD = Matrix Spike Duplicate

RPD = Relative Percent Difference

CONC = Concentration

... ROAD #110 • RANCHO CORDOVA, CA 95742 PHONE (916) 635-1962 • FAX (916) 635-9331

№ 001294CT

CHEMTECH ANALYTICAL LABORATORIES (916) 635-3962

CHAIN OF CUSTODY - LOG-IN

PROJECT NAME: HARBOR COURT, HONOLULU, HI

PAGE 1 OF 1

CLIENT CHAIN OF CUSTODY #: W.O. 89-1925

CHEM TECH ID #	SAMPLE I.D.	DATE SAMPLED	TIME SAMPLED	MATRIX	NO OF CONTAINERS	TPH	BTEX
903037	B3 - 903040	3/15	11:00	WATER	4	X	X

ANALYSIS / DISPOSAL: FEE DISPOSAL, NO FEE, RETURNED TO CLIENT, VERBALS

RESULTS VERBAL: Yes ☐ No ☐
DATE ____ BY ____
TO WHOM: ____
PHONE ____

COMMENTS:

REPORT TO: ____

ZIP: ____

ATTN: ____

PHONE ____

SAMPLED BY: ☐ CLIENT ☐ CHEMTECH ☐ OTHER

RECEIVED VIA: ☐ FED-EX ☐ U.P.S. ☐ CLIENT ☐ OTHER

INVOICE TO: ____

ZIP: ____

ATTN: ____ P.O. # ____

Relinquished by: (Signature)	Date/Time	Received by: (Signature)
	3/22 11:45	Received for Laboratory by: (Signature) Th. Juchsi

FIELD SERVICES ☐ NO ☐ YES ☐ ATTACHED FIELD REPORT

DISPOSAL OF SAMPLES ☐ NO ☐ YES

NO. OF SAMPLES ____ @RATE ____ $ TOTAL ____

CLIENT (SIGNATURE): ____

Plate E8

NO. 1294

CHEMTECH ANALYTICAL LABORATORIES (916) 635-3962

W.O. 89-1925

CHAIN OF CUSTODY - LOG-IN

PROJECT NAME: HARBOR COURT, HONOLULU, HI

PAGE 1 OF 1

CLIENT CHAIN OF CUSTODY #: W.O. 89-1925

CHEM TECH ID #	SAMPLE I.D.	DATE SAMPLED	TIME SAMPLED	MATRIX	NO OF CONTAINERS	BTEX	TPH
	B3	3-15-90	11:00	WATER	4	X	X

ANALYSIS / DISPOSAL: FEE DISPOSAL, NO FEE, RETURNED TO CLIENT, VERBALS

RESULTS VERBAL: Yes ☐ No ☐
DATE ____ BY ____
TO WHOM: ____
PHONE ____

COMMENTS:

Relinquished by: (Signature)	Date/Time	Received by: (Signature)
Donald F. Maccardo	3-15-90 4:25PM	Glen K. Moniliko
Glen K. Moniliko	3-20-90 4:30 AM	Wendy M. Uyehara
		Received for Laboratory by: (Signature)

Plate E9

CHEMTECH ANALYTICAL LABORATORIES
ANALYSIS REPORT
CLIENT:Hirata & Associates
Date Samples Received:03-22-90
Date of Analysis:03-22-90
Sample ID:B3-903040
Lab ID:903039
Matrix:Water

CONTACT: E. Hirata
P.O. #:
CT ID: 1294

ANALYSIS: BTEX, EPA 602

COMPOUND	ug/L (ppb)	REPORTING LIMIT ug/L (ppb)
BENZENE	ND	0.3
TOLUENE	ND	0.3
ETHYLBENZENE	ND	0.3
XYLENES	ND	0.9

SURROGATE RECOVERY
105%

ACCEPTABLE RANGE
70% TO 130%

NOTE: (ND) NOT DETECTED AT OR ABOVE THE REPORTING LIMITS.

Plate E10

W.O. 89-1925

CHEMTECH ANALYTICAL LABORATORIES
ANALYSIS REPORT
CLIENT:Hirata & Associates
Date Samples Received:03-22-90
Date of Analysis:03-22-90
Sample ID:Method Blank
Lab ID:LCS-1294
Matrix:Water

CONTACT: E. Hirata
P.O. #:
CT ID: 1294

ANALYSIS: BTEX, EPA 602

COMPOUND	ug/L (ppb)	REPORTING LIMIT ug/L (ppb)
BENZENE	0.4	0.3
TOLUENE	ND	0.3
ETHYLBENZENE	ND	0.3
XYLENES	ND	0.9

SURROGATE RECOVERY
106%

ACCEPTABLE RANGE
70% TO 130%

NOTE: (ND) NOT DETECTED AT OR ABOVE THE REPORTING LIMITS.

Plate E11

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CHEMTECH ANALYTICAL LABORATORIES
ANALYSIS REPORT
CLIENT:Hirata & Associates
Date Samples Received:03-22-90
Date of Analysis:03-22-90
Sample ID:
Lab ID:903039
Matrix:Water

CONTACT: E. Hirata
P.O. #:
CT ID: 1294

BTEX MATRIX SPIKE SUMMARY

RUN DATE:03-22-90
CONC UNITS:ug/L
SAMPLE SPIKED:903039

COMPOUND	CONC SPIKED	CONC MEASURED		PERCENT RECOVERY		% RPD
		MS	MSD	MS	MSD	
BENZENE	25	25	23	100	92	8
TOLUENE	25	25	24	100	96	4
ETHYLBENZENE	25	25	24	100	96	4
o/m/p-XYLENES	75	74	72	99	96	3

MS = Matrix Spike

MSD = Matrix Spike Duplicate

RPD = Relative Percent Difference

CONC = Concentration

Plate E12

W.O. 89-1925

CHEMTECH ANALYTICAL LABORATORIES
ANALYSIS REPORT
CLIENT:Hirata & Associates
Date Samples Received:03-22-90
Date of Analysis:03-22-90
Sample ID:B3-903040
Lab ID:903037
Matrix:Water

CONTACT: E. Hirata
P.O. #:
CT ID: 1294

ANALYSIS: TPH, EPA/MOD 8015

COMPOUND	mg/L (ppm)	REPORTING LIMIT mg/L (ppm)
GASOLINE	ND	.5
KEROSENE	ND	.5
DIESEL	ND	.5
FUEL OIL	ND	.5

NOTE: (ND) NOT DETECTED AT OR ABOVE THE REPORTING LIMITS.

Plate E13

CHEMTECH ANALYTICAL LABORATORIES
ANALYSIS REPORT
CLIENT:Hirata & Associates
Date Samples Received:03-22-90
Date of Analysis:03-22-90
Sample ID:B3-903040
Lab ID:903037
Matrix:Water

CONTACT: E. Hirata
P.O. #:
CT ID: 1294

TPH MATRIX SPIKE SUMMARY

RUN DATE:03-22-90
CONC UNITS:mg/L
SAMPLE SPIKED:903037

COMPOUND	CONC SPIKED	CONC MEASURED MS	CONC MEASURED MSD	PERCENT RECOVERY MS	PERCENT RECOVERY MSD	% RPD
GASOLINE	225	220	220	98	98	0
KEROSENE						
DIESEL						

MS = Matrix Spike

MSD = Matrix Spike Duplicate

RPD = Relative Percent Difference

CONC = Concentration

[illegible] ROAD #110 • RANCHO CORDOVA CA 95742 PHONE (916) 635 1962 • FAX (916) 635 9331

CHEMTECH ANALYTICAL LABORATORIES
ANALYSIS REPORT
CLIENT:Hirata & Associates
Date Samples Received:03-22-90
Date of Analysis:03-22-90
Sample ID:Method Balnk
Lab ID:LCS-1294
Matrix:Water

CONTACT: E. Hirata
P.O. #:
CT ID: 1294

ANALYSIS: TPH, EPA/MOD 8015

COMPOUND	mg/L (ppm)	REPORTING LIMIT mg/L (ppm)
GASOLINE	ND	.5
KEROSENE	ND	.5
DIESEL	ND	.5
FUEL OIL	ND	.5

NOTE: (ND) NOT DETECTED AT OR ABOVE THE REPORTING LIMITS.

[illegible] ROAD #110 • RANCHO CORDOVA CA 95742 PHONE (916) 635 1962 • FAX (916) 635 9331

	PROJECT NAME HIRATA & ASSOC.				NO OF CONTAINERS	ANALYSIS: BTEX	TPH	DISPOSAL: FEE DISPOSAL	NO FEE	RETURNED TO CLIENT	VERBALS	RESULTS VERBAL: Yes ☐ No ☐ DATE ___ BY ___ TO WHOM ___ PHONE ___
PAGE 1 OF 1	CLIENT CHAIN OF CUSTODY # 1925											
CHEM TECH I D #	SAMPLE I D.	DATE SAMPLED	TIME SAMPLED	MATRIX								COMMENTS:
903114	B1 - 903116	3/27	3:15P	WATER	3	X	X					
903117	B2 - 903119		3:05P		3	X	X					
903120	B4 - 903122		1:50P		3	X	X					
903123	B5 - 903125		2:15P		3	X	X					

REPORT TO: ______________________

____

______________________ ZIP: ______

ATTN: ______________________

PHONE ______________________

SAMPLED BY: ☐ CLIENT ☐ CHEMTECH ☐ OTHER

RECEIVED VIA: ☐ FED-EX ☐ U.P.S. ☐ CLIENT ☐ OTHER

INVOICE TO: ______________________

____

______________________ ZIP: ______

ATTN: ______________ P.O. # ______________

Relinquished by: (Signature)	Date/Time		Received by: (Signature)
Relinquished by: (Signature)	Date/Time		Received by: (Signature)
Relinquished by: (Signature)	Date/Time		Received for laboratory by: (Signature)
	3/29	11:30A	M. [illegible]

FIELD SERVICES ☐ NO ☐ YES ☐ ATTACHED FIELD REPORT

DISPOSAL OF SAMPLES ☐ NO ☐ YES

NO. OF SAMPLES ________ @RATE ________ $ TOTAL ________

CLIENT (SIGNATURE): ______________________

Plate E16

NO. 1925

CHEMTECH ANALYTICAL LABORATORIES (916) 635-3962

W.O. 89-1925

CHAIN OF CUSTODY - LOG-IN

	PROJECT NAME HARBOR COURT HONOLULU HI				NO OF CONTAINERS	ANALYSIS: BTEX	TPH	DISPOSAL: FEE DISPOSAL	NO FEE	RETURNED TO CLIENT	VERBALS	RESULTS VERBAL: Yes ☐ No ☐ DATE ___ BY ___ TO WHOM: ___ PHONE ___
PAGE ___ OF ___	CLIENT CHAIN OF CUSTODY #											
CHEM TECH I.D. #	SAMPLE I D.	DATE SAMPLED	TIME SAMPLED	MATRIX								COMMENTS:
	B1	3/27/90	3:15P	WATER	3	X	X					
	B2	3/27/90	3:05P	WATER	3	X	X					
	B4	3/27/90	1:50P	WATER	3	X	X					
	B5	3/27/90	2:15P	WATER	3	X	X					

Relinquished by: (Signature)	Date/Time		Received by: (Signature)
[illegible] K. Kaya	3/27/90	4:00P	[illegible]
Relinquished by: (Signature)	Date/Time		Received by: (Signature)
[illegible]	3-28-90	4:00PM	[illegible]
Relinquished by. (Signature)	Date/Time		Received for Laboratory by: (Signature)

Plate E17

CHEMTECH ANALYTICAL LABORATORIES
ANALYSIS REPORT
CLIENT:Hirata & Associates
Date Samples Received:03-29-90
Date of Analysis:03-29-90
Sample ID:Method Blank
Lab ID:LCS-1306
Matrix:Water

CONTACT: E. Hirata
P.O. #:
CT ID: 1306

ANALYSIS: BTEX, EPA 602

COMPOUND	ug/L (ppb)	REPORTING LIMIT ug/L (ppb)
BENZENE	ND	0.3
TOLUENE	ND	0.3
ETHYLBENZENE	ND	0.3
XYLENES	ND	0.9

SURROGATE RECOVERY
95%

ACCEPTABLE RANGE
70% TO 130%

NOTE: (ND) NOT DETECTED AT OR ABOVE THE REPORTING LIMITS.

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CHEMTECH ANALYTICAL LABORATORIES
ANALYSIS REPORT
CLIENT:Hirata & Associates
Date Samples Received:03-29-90
Date of Analysis:03-29-90
Sample ID:B1
Lab ID:903116
Matrix:Water

CONTACT: E. Hirata
P.O. #:
CT ID: 1306

ANALYSIS: BTEX, EPA 602

COMPOUND	ug/L (ppb)	REPORTING LIMIT ug/L (ppb)
BENZENE	ND	0.3
TOLUENE	ND	0.3
ETHYLBENZENE	ND	0.3
XYLENES	ND	0.9

SURROGATE RECOVERY
93%

ACCEPTABLE RANGE
70% TO 130%

NOTE: (ND) NOT DETECTED AT OR ABOVE THE REPORTING LIMITS.

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CHEMTECH ANALYTICAL LABORATORIES
ANALYSIS REPORT
CLIENT:Hirata & Associates
Date Samples Received:03-29-90
Date of Analysis:03-29-90
Sample ID:B2
Lab ID:903119
Matrix:Water

CONTACT: E. Hirata
P.O. #:
CT ID: 1306

ANALYSIS: BTEX, EPA 602

COMPOUND	ug/L (ppb)	REPORTING LIMIT ug/L (ppb)
BENZENE	ND	0.3
TOLUENE	ND	0.3
ETHYLBENZENE	ND	0.3
XYLENES	ND	0.9

SURROGATE RECOVERY 96% — ACCEPTABLE RANGE 70% TO 130%

NOTE: (ND) NOT DETECTED AT OR ABOVE THE REPORTING LIMITS.

Plate E20

W.O. 89-1925

CHEMTECH ANALYTICAL LABORATORIES
ANALYSIS REPORT
CLIENT:Hirata & Associates
Date Samples Received:03-29-90
Date of Analysis:03-29-90
Sample ID:B4
Lab ID:903122
Matrix:Water

CONTACT: E. Hirata
P.O. #:
CT ID: 1306

ANALYSIS: BTEX, EPA 602

COMPOUND	ug/L (ppb)	REPORTING LIMIT ug/L (ppb)
BENZENE	ND	0.3
TOLUENE	ND	0.3
ETHYLBENZENE	ND	0.3
XYLENES	ND	0.9

SURROGATE RECOVERY 34% — ACCEPTABLE RANGE 70% TO 130%

NOTE: (ND) NOT DETECTED AT OR ABOVE THE REPORTING LIMITS.

Plate E21

CHEMTECH ANALYTICAL LABORATORIES
ANALYSIS REPORT
CLIENT:Hirata & Associates
Date Samples Received:03-29-90
Date of Analysis:03-29-90
Sample ID:B5
Lab ID:903125
Matrix:Water

CONTACT: E. Hirata
P.O. #:
CT ID: 1306

ANALYSIS: BTEX, EPA 602

COMPOUND	ug/L (ppb)	REPORTING LIMIT ug/L (ppb)
BENZENE	ND	0.3
TOLUENE	ND	0.3
ETHYLBENZENE	ND	0.3
XYLENES	ND	0.9
SURROGATE RECOVERY 87%		ACCEPTABLE RANGE 70% TO 130%

NOTE: (ND) NOT DETECTED AT OR ABOVE THE REPORTING LIMITS.

17 KILGORE ROAD #110 • RANCHO CORDOVA, CA 95742 PHONE (916) 635 3962 • FAX (916) 635 9331

CHEMTECH ANALYTICAL LABORATORIES
ANALYSIS REPORT
CLIENT:Hirata & Associates
Date Samples Received:03-29-90
Date of Analysis:03-29-90
Sample ID:
Lab ID:903125
Matrix:Water

CONTACT: E. Hirata
P.O. #:
CT ID: 1306

BTEX MATRIX SPIKE SUMMARY

RUN DATE:03-29-90
CONC UNITS:mg/L
SAMPLE SPIKED:903125

COMPOUND	CONC SPIKED	CONC MEASURED		PERCENT RECOVERY		% RPD
		MS	MSD	MS	MSD	
BENZENE	25	22	22	88	88	0
TOLUENE	25	22	23	88	92	4
ETHYLBENZENE	25	23	24	92	96	4
o/m/p-XYLENES	75	70	71	95	94	1

MS = Matrix Spike

MSD = Matrix Spike Duplicate

RPD = Relative Percent Difference

CONC = Concentration

117 KILGORE ROAD #110 • RANCHO CORDOVA, CA 95742 PHONE (916) 635 3962 • FAX (916) 635 9331

CHEMTECH ANALYTICAL LABORATORIES
ANALYSIS REPORT
CLIENT:Hirata & Associates
Date Samples Received:03-29-90
Date of Analysis:03-29-90
Sample ID:B1
Lab ID:903114
Matrix:Water

CONTACT: E. Hirata
P.O. #:
CT ID: 1306

ANALYSIS: TPH, EPA/MOD 8015

COMPOUND	mg/L (ppm)	REPORTING LIMIT mg/L (ppm)
GASOLINE	ND	.5
KEROSENE	ND	.5
DIESEL	ND	.5
FUEL OIL	ND	ND

NOTE: (ND) NOT DETECTED AT OR ABOVE THE REPORTING LIMITS.

Plate E24

W.O. 89-1925

CHEMTECH ANALYTICAL LABORATORIES
ANALYSIS REPORT
CLIENT:Hirata & Associates
Date Samples Received:03-29-90
Date of Analysis:03-29-90
Sample ID:B2
Lab ID:903117
Matrix:Water

CONTACT: E. Hirata
P.O. #:
CT ID: 1306

ANALYSIS: TPH, EPA/MOD 8015

COMPOUND	mg/L (ppm)	REPORTING LIMIT mg/L (ppm)
GASOLINE	ND	.5
KEROSENE	ND	.5
DIESEL	ND	.5
FUEL OIL	ND	ND

NOTE: (ND) NOT DETECTED AT OR ABOVE THE REPORTING LIMITS.

Plate E25

CHEMTECH ANALYTICAL LABORATORIES
ANALYSIS REPORT
CLIENT:Hirata & Associates
Date Samples Received:03-29-90
Date of Analysis:03-29-90
Sample ID:B4
Lab ID:903120
Matrix:Water

CONTACT: E. Hirata
P.O. #:
CT ID: 1306

ANALYSIS: TPH, EPA/MOD 8015

COMPOUND	mg/L (ppm)	REPORTING LIMIT mg/L (ppm)
GASOLINE	ND	.5
KEROSENE	ND	.5
DIESEL	ND	.5
FUEL OIL	ND	ND

NOTE: (ND) NOT DETECTED AT OR ABOVE THE REPORTING LIMITS.

[illegible] KILGORE ROAD #110 • RANCHO CORDOVA, CA 95742 PHONE (916) 635 1962 • FAX (916) 635 9331

CHEMTECH ANALYTICAL LABORATORIES
ANALYSIS REPORT
CLIENT:Hirata & Associates
Date Samples Received:03-29-90
Date of Analysis:03-29-90
Sample ID:B5
Lab ID:903123
Matrix:Water

CONTACT: E. Hirata
P.O. #:
CT ID: 1306

ANALYSIS: TPH, EPA/MOD 8015

COMPOUND	mg/L (ppm)	REPORTING LIMIT mg/L (ppm)
GASOLINE	ND	.5
KEROSENE	ND	.5
DIESEL	ND	.5
FUEL OIL	ND	ND

NOTE: (ND) NOT DETECTED AT OR ABOVE THE REPORTING LIMITS.

[illegible] KILGORE ROAD #110 • RANCHO CORDOVA, CA 95742 PHONE (916) 635 1962 • FAX (916) 635 9331

CHEMTECH ANALYTICAL LABORATORIES
ANALYSIS REPORT
CLIENT:Hirata & Associates — CONTACT: E. Hirata
Date Samples Received:03-29-90 — P.O. #:
Date of Analysis:03-29-90 — CT ID: 1306
Sample ID:Method Blank
Lab ID:LCS-1306
Matrix:Water

ANALYSIS: TPH, EPA/MOD 8015

COMPOUND	mg/L (ppm)	REPORTING LIMIT mg/L (ppm)
GASOLINE	ND	.5
KEROSENE	ND	.5
DIESEL	ND	.5
FUEL OIL	ND	ND

NOTE: (ND) NOT DETECTED AT OR ABOVE THE REPORTING LIMITS.

Plate E28

W.O. 89-1925

CHEMTECH ANALYTICAL LABORATORIES
ANALYSIS REPORT
CLIENT:Hirata & Associates — CONTACT: E. Hirata
Date Samples Received:03-29-90 — P.O. #:
Date of Analysis:03-29-90 — CT ID: 1306
Sample ID:
Lab ID:903110
Matrix:Water

TPH MATRIX SPIKE SUMMARY

RUN DATE: 03-29-90
CONC UNITS: mg/kg
SAMPLE SPIKED: 903110

COMPOUND	CONC SPIKED	CONC MEASURED MS	CONC MEASURED MSD	PERCENT RECOVERY MS	PERCENT RECOVERY MSD	% RPD
GASOLINE	1500	1100	1070	74	72	3
KEROSENE						
DIESEL						

MS = Matrix Spike

MSD = Matrix Spike Duplicate

RPD = Relative Percent Difference

CONC = Concentration

Plate E29

W.O. 89-1925

CHEMTECH ANALYTICAL LABORATORIES
ANALYSIS REPORT
CLIENT:Hirata & Associates
Date Samples Received:03-29-90
Date of Analysis:03-29-90
Sample ID:
Lab ID:903105-3106
Matrix:Water

CONTACT: E. Hirata
P.O. #:
CT ID: 1306

TPH MATRIX SPIKE SUMMARY

RUN DATE: 03-29-90
CONC UNITS: mg/kg
SAMPLE SPIKED: 903105-3106

COMPOUND	CONC SPIKED	CONC MEASURED MS	CONC MEASURED MSD	PERCENT RECOVERY MS	PERCENT RECOVERY MSD	% RPD
GASOLINE						
KEROSENE						
DIESEL	1500	1170	1250	78	83	6

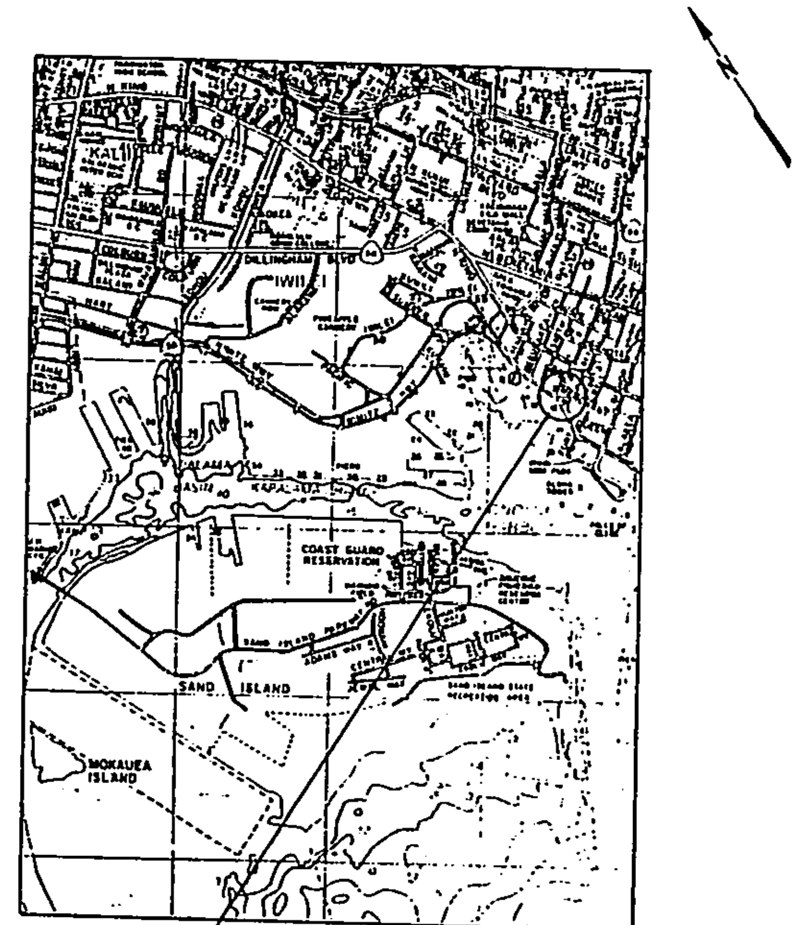
MS = Matrix Spike

MSD = Matrix Spike Duplicate

RPD = Relative Percent Difference

CONC = Concentration

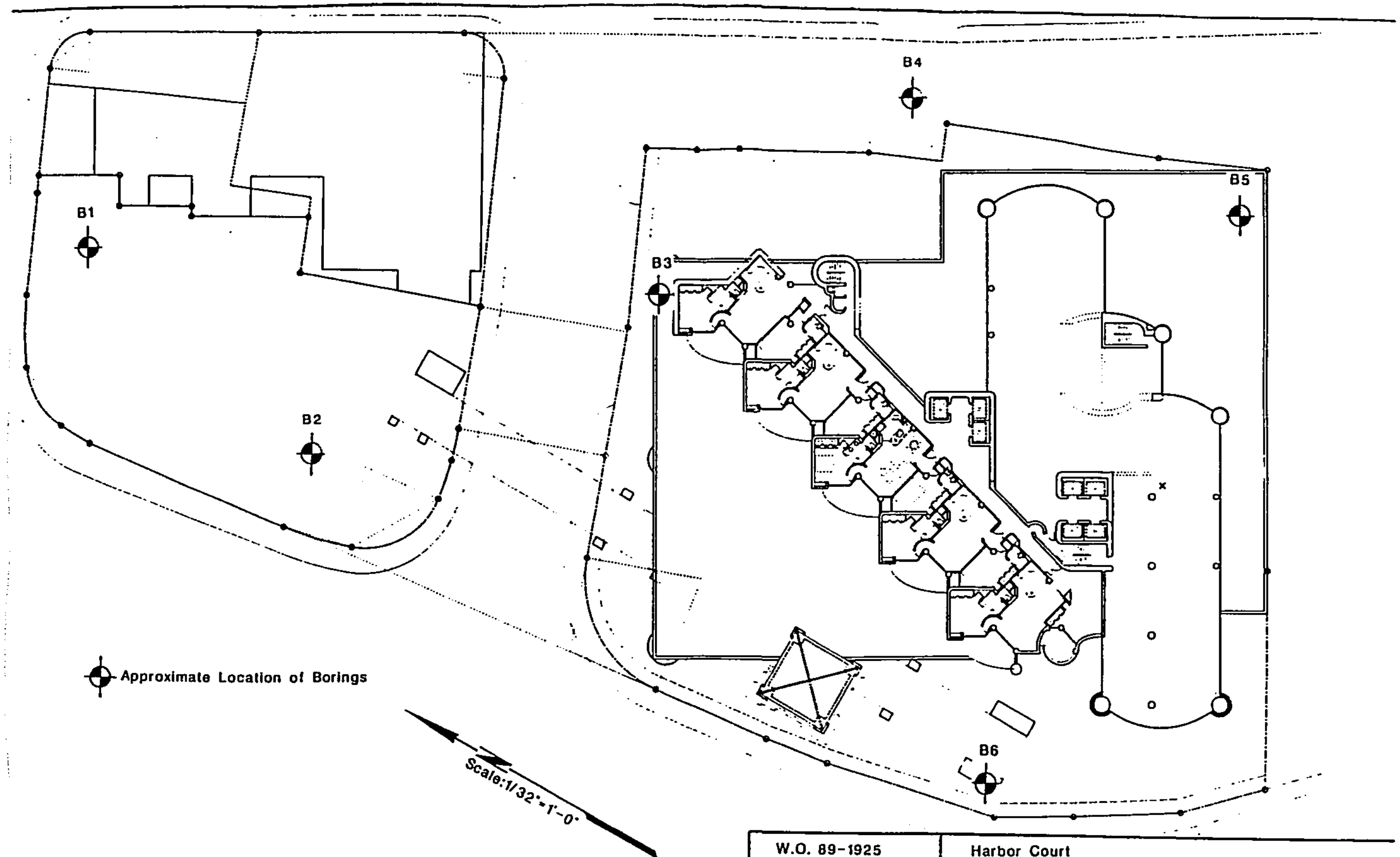
Plate, E30



PROJECT SITE

Reference: Bryan's Sectional Maps

W.O. 89-1925	Harbor Court	
ERNEST K. HIRATA & ASSOCIATES, INC.	LOCATION MAP	Plate 1



W.O. 89-1925	Harbor Court	
Ernest K. Hirata & Associates, Inc.	SITE PLAN	Plate 2

APPENDIX B

AIR QUALITY IMPACT ASSESSMENT

Barry D. Neal and Associates

AIR QUALITY STUDY

FOR THE PROPOSED

KAAHUMANU PARKING STRUCTURE REDEVELOPMENT PROJECT

HONOLULU, OAHU, HAWAII

Prepared for:

R.M. Towill Corporation

March 1990

BARRY D. NEAL & ASSOCIATES
Applied Meteorology • Air Quality • Computer Science
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TELEPHONE (808) 732-1995 • FAX (808) 739-5283

CONTENTS

FIGURES

TABLES

TABLES (cont.)

1.0 INTRODUCTION AND PROJECT DESCRIPTION

The City & County of Honolulu through the Department of Housing and Community Development is proposing to redevelop the Kaahumanu Parking Structure and adjacent District Court Parking Lot. As indicated in Figure 1, the site of the proposed redevelopment consists of two parcels of land located in the central business district of downtown Honolulu on the island of Oahu. The project vicinity and roadway network are shown in greater detail in Figure 2. The proposed project extends along Nimitz Highway from the corner of Nuuanu Avenue, crosses Bethel Street and adjoins to the Campbell Building located on Fort Street Mall. Redevelopment of the two parcels of land will result in the removal of the present Kaahumanu Parking Structure and the construction of a 30-story hotel condominium, a 20-story office tower and a 5-story retail/office building. The hotel condominium will include 122 units while the office tower will provide approximately 220,000 square feet of office space. Plans for a two-level shopping galleria on the lower levels of the two towers include about 21,700 square feet of retail/commerical space. Other elements of the proposed project consist of a 1035-stall parking garage, pedestrian links to Fort Street Mall, Amfac Triangle Park and the Merchant Street Historic District, open spaces for community activities, and a possible rapid transit station. Development of the proposed project will be completed during 1992.

The purpose of this study is to describe existing air quality in the project area and to assess the potential short-term and long-term direct and indirect air quality impacts that could result from the removal of the existing parking structure and the subsequent construction of the proposed mixed-use development. Measures to mitigate these impacts are suggested where possible and appropriate.

2.0 REGIONAL AND LOCAL CLIMATOLOGY

Regional and local climatology significantly affect the air quality of a given location. Wind, temperature, atmospheric turbulence, mixing height and rainfall can all influence air quality. In Hawaii, the climate is relatively moderate throughout the state and throughout the year. Trade winds blowing from the northeast dominate the regional climate providing good ventilation much of the time at many locations in the state, particularly areas on north and east coasts. The trade winds occur with such persistency that coastal areas of the state facing the northeast trade winds are termed "windward" regardless of the existing wind at any particular time. Nearly all of the islands in the state have mountainous areas, and the height, location and orientation of the high terrain areas with respect to the trade winds strongly influence local climate. Due to terrain effects, windward (north and east) coasts are typically relatively wet, cool and windy compared to "leeward" southern and western coastal locations that are often characterized by dry, warm and calm climates.

On the island of Oahu, the Koolau and Waianae Mountain Ranges are oriented more or less perpendicular to the trade winds, which accounts for much of the variation in local climatology of the island. Downtown Honolulu, the site of the proposed project, is located in a coastal area leeward of the Koolau Mountains. Although large urban areas tend to create their own microclimates to some extent, long-term weather data available from the Honolulu International Airport located about 4 miles to the northwest is considered at least semi-representative of the project site.

Wind frequency data given in Table 1 for Honolulu International Airport show that the annual prevailing wind direction for this area of Oahu is east northeast. On an annual basis, 34.7 percent of the time the wind is from this direction, and nearly 75 percent of the time the wind is in the northeast quadrant. Winds from the south are infrequent occurring only a few days during the year and mostly in winter in association with Kona storms. Surface winds in downtown Honolulu are similar to those recorded at the airport but are undoubtedly deviated and channeled at some locations by the many high-rise buildings.

Air pollution emissions from motor vehicles, the formation of photochemical smog and smoke plume rise all depend in part on atmospheric temperature. Colder temperatures tend to result in higher emissions of contaminants from automobiles but lower concentrations of photochemical smog and ground-level concentrations of air pollution from elevated plumes. In Hawaii, the annual and daily variation of temperature depends to a large degree on elevation above sea level, distance inland and exposure to the trade winds. Average temperatures at locations near sea level generally are warmer than those at higher elevations. Areas exposed to the trade wind tend to have the least temperature variation, while inland and leeward areas often have the most. Downtown Honolulu's coastal, leeward location results in a relatively moderate temperature profile compared to other locations around Oahu and the state. At the airport, average annual daily minimum and maximum temperatures are 70 F and 84 F, respectively. The extreme minimum temperature was 53 F during February 1983, and the extreme maximum was 94 F during September 1988. Temperatures in the downtown area may be slightly higher compared to the airport due to urban effects.

Small scale, random motions in the atmosphere (turbulence) cause air pollutants to be dispersed as a function of distance or time from the point of emission. Turbulence is caused by both mechanical and thermal forces in the atmosphere. It is oftentimes measured and described in terms of Pasquill-Gifford stability class. Stability class 1 is the most turbulent and class 6 the least. Thus, air pollution dissipates the best during stability class 1 conditions and the worst when stability class 6 prevails. In urbanized areas like downtown Honolulu, stability class 4 is generally the highest stability class that occurs, developing during the nighttime and/or during cloudy daytime conditions.

Mixing height is defined as the height above the surface through which relatively vigorous vertical mixing occurs. Low mixing heights can result in high ground-level air pollution concentrations by trapping contaminants emitted from or near the surface within the mixing layer. In Hawaii, minimum mixing heights tend to be high because of the moderating effect of the surrounding ocean. Low mixing heights may sometimes occur at inland locations and even at times along coastal areas early in the morning following a clear, windless night. Low mixing heights in the downtown Honolulu area will tend to be inhibited by urban effects.

Rainfall can have a beneficial effect on the air quality of an area in that it helps to suppress fugitive dust emissions, and it may also "washout" gaseous contaminants that are water soluble. Rainfall in Hawaii is highly variable depending on elevation and on location with respect to the trade wind. Downtown Honolulu being a leeward location and near sea level experiences a relatively dry climate. Average annual rainfall amounts to about 24 inches with summer months being the driest. Monthly rainfall has

been measured to vary from as little as a trace to more than 20 inches.

3.0 AMBIENT AIR QUALITY STANDARDS

Ambient concentrations of air pollution are regulated by both national and state ambient air quality standards (AAQS). National AAQS are specified in Section 40, Part 50 of the Code of Federal Regulations (CFR), while State of Hawaii AAQS are defined in Chapter 11-59 of the Hawaii Administrative Rules. Table 2 summarizes both the national and the state AAQS that are specified in the cited documents. As indicated in the table, AAQS have been established for six air pollutants. These regulated air pollutants include: particulate matter, sulfur dioxide, nitrogen dioxide, carbon monoxide, ozone and lead. National AAQS are stated in terms of primary and secondary standards. National primary standards are designed to protect the public health with an "adequate margin of safety". National secondary standards, on the other hand, define levels of air quality necessary to protect the public welfare from "any known or anticipated adverse effects of a pollutant". Secondary public welfare impacts may include such effects as decreased visibility, diminished comfort levels, or other potential injury to the natural or man-made environment, e.g., soiling of materials, damage to vegetation or other economic damage. In contrast to the national AAQS, Hawaii State AAQS are given in terms of a single standard that is designed "to protect public health and welfare and to prevent the significant deterioration of air quality".

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

State of Hawaii AAQS are in some cases considerably more stringent than comparable national AAQS. In particular, the State of Hawaii 1-hour AAQS for carbon monoxide is four times more stringent than the comparable national limit.

Under the provisions of the Federal Clean Air Act [1], the U.S. Environmental Protection Agency (EPA) is required to periodically review and re-evaluate national AAQS in light of research findings more recent than those which were available at the time the standards were originally set. Occasionally new standards are created as well. Most recently, the national standard for particulate matter has been revised to include specific limits for particulates 10 microns or less in diameter (PM-10) [2]. The State of Hawaii has not explicitly addressed the question of whether to set limits for this category of air pollutant, but national AAQS prevail where states have not set their own more stringent levels.

Hawaii AAQS for sulfur dioxide were relaxed in 1986 to make them essentially the same as national limits. It has been proposed in various forums that the state also relax its carbon monoxide standards to the national levels, but at present there are no indications that such a change is being considered.

4.0 PRESENT AIR QUALITY

Present air quality in the project area is mostly affected by air pollutants from natural, industrial, and/or vehicular sources, and perhaps to a lesser and occasional extent from distant agricultural sources. Table 3 presents an air pollutant emission summary for the City and County of Honolulu which was compiled in 1980. These are the latest data that are available. The mineral products industry was the most significant source category for emissions of particulate matter. Sulfur dioxide emissions originated mainly from power plants, while motor vehicles accounted for much of the emissions of nitrogen oxides, carbon monoxide and hydrocarbons.

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

The State Department of Health operates a network of air quality monitoring stations at various locations on Oahu. Each station, however, typically does not monitor the full compliment of air quality parameters. An annual summary of air quality measurements that were made nearest to the project site for each of the regulated air pollutants is presented in Table 4 for the period 1985 through 1988.

Sulfur dioxide is measured by the State Department of Health at an air quality monitoring station located in Campbell Industrial Park at Barbers Point several miles west of the project site. As indicated in the table, measurements of 24-hour average sulfur dioxide concentration were made at this location. There were no exceedances of the state/national 24-hour AAQS for sulfur dioxide during the 4-year period. Concentrations monitored during the last 3 years reported were consistently low with daily mean values at or below 5 ug/m^3.

Total particulate concentrations were monitored at the Department of Health Building in downtown Honolulu, approximately 1/2 mile northeast of the project site. During the 1985-88 reporting period, the highest 24-hour average total particulate concentration measured was 61 ug/m^3. Average daily concentrations for total particulate were about 25 ug/m^3. No exceedances of the state AAQS were recorded.

The nearest PM-10 monitoring station is located about 1.5 miles north of the project site at Liliha. Twenty-four hour average PM-10 concentrations monitored at the Liliha monitoring station ranged from 7 to 52 ug/m^3 between 1985 and 1988. Average daily concentrations were generally less than 20 ug/m^3. All values reported were within the national AAQS.

The nearest carbon monoxide measurements were made at the Department of Health building in downtown Honolulu. The average daily maximum 1-hour concentration measured at this location was about 2 mg/m^3. During the most recent year reported, 1988, the daily maximum 1-hour concentration ranged from 0.4 to 7.4 mg/m^3; no exceedances of the state 1-hour AAQS were recorded. During previous years (1985-87), maximum 1-hour concentrations were higher, and one to three exceedances of the state 1-hour AAQS were measured each year. Daily maximum 8-hour values for 1988 have not been reported at this writing, but concentrations for the 1985-87 period ranged from 0.1 to 4.7 mg/m^3. The average of the daily

maximum 8-hour values was about 1.3 mg/m^3. No exceedances of the state 8-hour AAQS were recorded. Present concentrations of carbon monoxide in the project area are estimated later in this study based on air quality modeling of vehicular emissions.

The nearest available ozone measurements were obtained at Sand Island (about 1/2 mile southwest of the project site) between 1985 and 1987. During 1987 the Sand Island daily maximum 1-hour concentration averaged 38 ug/m^3 and ranged from 4 to 84 ug/m^3, and there were no exceedances of the state AAQS. Concentrations during 1986 were similar to those recorded for 1987, while in 1985 maximum 1-hour concentrations were significantly higher. Three exceedances of the state AAQS were measured during the 1985 period.

The closest available measurements of ambient lead concentrations were made at the downtown Honolulu monitoring station. During the 1985-87 reporting period, lead concentrations at this location had a downward trend, most probably reflecting the increased use of unleaded gasoline. Average quarterly concentrations were near or below the detection limit. No exceedances of the state AAQS have ever been recorded.

Nitrogen dioxide is no longer monitored by the Department of Health anywhere in the state. Concentrations of this pollutant were measured from 1971 through 1976 at Barbers Point, and annual mean values were found to vary from 11 to 29 ug/m^3, safely inside the state and national AAQS.

Based on the data and discussion presented above, it appears likely that the State of Hawaii AAQS for particulates, sulfur dioxide, nitrogen dioxide and lead are currently being met at the project site. The ozone AAQS has not been exceeded during the past two years for which data are presently available (1986 and 1987) at the Sand Island monitoring station. Carbon monoxide readings from urban Honolulu indicate that the state AAQS for carbon monoxide may be exceeded at a rate of one to three times per year in traffic-congested areas.

5.0 SHORT-TERM IMPACTS OF PROJECT

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

Fugitive dust emissions may arise from the demolition and removal of existing structures on the site and from the grading and dirt-moving activities associated with site preparation once the area is cleared. The emission rate for fugitive dust emissions from construction activities is difficult to estimate accurately because of its elusive nature and because the potential for its generation varies greatly depending upon the type of soil at the construction site, the amount and type of dirt-disturbing activity taking place, the moisture content of exposed soil in work areas, and the wind speed. The EPA [3] has provided a rough estimate for uncontrolled

fugitive dust emissions from construction activity of 1.2 tons per acre per month under conditions of "medium" activity, moderate soil silt content (30%), and precipitation/evaporation (P/E) index of 50. Uncontrolled fugitive dust emissions in the project area would probably be somewhat higher because the PE index for the downtown Honolulu area is probably greater than 50 due to the relatively dry climate. In any case, State of Hawaii Air Pollution Control Regulations [4] prohibit visible emissions of fugitive dust from construction activities at the property line. Thus, an effective dust control plan for the project construction phase is essential.

Adequate fugitive dust control can usually be accomplished by establishment of a frequent watering program to keep demolition areas and bare-dirt surfaces in work areas from becoming significant dust generators. In some cases, limiting the area that can be disturbed at any given time may be necessary. Control regulations also require that open-bodied trucks be covered at all times when in motion if they are transporting materials likely to give rise to airborne dust. Paving of parking areas and/or establishment of landscaping as early in the construction process as possible can also lower the potential for fugitive dust emissions.

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

Indirectly, slow-moving construction vehicles on roadways leading to and from the project site could obstruct the normal flow of traffic to such an extent that overall vehicular emissions are increased, but this impact can be mitigated by moving heavy construction equipment during periods of low traffic volume. Likewise, the schedules of commuting construction workers can be adjusted to avoid peak hours in the project vicinity. Thus, most potential short-term air quality impacts from project construction can be mitigated.

6.0 LONG-TERM IMPACTS OF PROJECT

6.1 Roadway Traffic

By serving as an attraction for increased motor vehicle traffic on nearby roadways, the proposed project is considered to be an indirect air pollution source. Motor vehicles with gasoline-powered engines are significant sources of carbon monoxide. They also emit nitrogen oxides, and those burning leaded gasoline contribute lead to the atmosphere. The use of leaded gasoline in new automobiles is now prohibited. As older vehicles continue to disappear from the numbers of those currently operating on the state's roadways, lead emissions are approaching zero. Nationally, so few vehicles now require leaded gasoline that the EPA is proposing a total ban on leaded gasoline to take effect immediately. Even without such a ban, reported quarterly averages of lead in air samples collected in urban Honolulu have been near zero since early 1986. Thus, lead in the atmosphere is not considered to be a problem anywhere in the state.

Federal air pollution control regulations also call for increased efficiency in removing carbon monoxide and nitrogen oxides from the exhausts of new motor vehicles. By the year 1995 carbon monoxide emissions are expected to be about 30 percent less than the amounts now emitted due to the replacement of older vehicles with newer models. Further reductions in vehicular emissions have recently been proposed by the President for areas of the country which do not currently meet AAQS, mainly through the use of alternative fuels.

To evaluate the potential long-term indirect air quality impact of increased roadway traffic associated with a project such as this, computerized emission and atmospheric dispersion models can be used to estimate ambient carbon monoxide concentrations along roadways leading to and from the project. Carbon monoxide is selected for modeling because it is both the most stable and the most abundant of the pollutants generated by motor vehicles. Furthermore, carbon monoxide air pollution is generally considered to be a microscale problem, whereas nitrogen oxides air pollution most often is a regional issue. This is reflected in the fact that the AAQS for carbon monoxide are specified on a short-term basis (1-hour and 8-hour averaging times) while the AAQS for nitrogen dioxide is set on an annual basis.

For this project, three scenarios were selected for the carbon monoxide modeling study: year 1990 with present conditions, year 1992 without the project, and year 1992 assuming the project is built and complete. To begin the modeling study, critical receptor areas in the vicinity of the project were identified for analysis. Generally speaking, roadway intersections are the primary concern because of traffic congestion and because of the increase in vehicular emissions associated with traffic cycling: decelerating, stopping, queuing and accelerating. For this study, the four key intersections identified in the traffic study were also selected for air quality analysis. These include: Bishop Street at Queen Street, Bishop Street at Merchant Street, Merchant Street at Bethel Street and Nimitz Highway at Bethel Street. The traffic impact assessment report for the project [5] describes the present and future conditions and configurations of these intersections in detail.

The main objectives of the modeling study were to estimate both current and projected levels of maximum 1-hour average carbon monoxide concentrations which could then be directly compared to the national and state AAQS. The traffic impact assessment report indicates that traffic volumes generally are or will be higher during the morning peak hour than during the afternoon peak period. Worst-case emission and meteorological dispersion conditions typically occur during the morning hours at many locations. However, due to possible effects from the queuing of vehicles at intersections and to vehicle cold-start considerations, both morning and afternoon peak traffic hours were examined to ensure that worst-case concentrations were identified.

The EPA computer model MOBILE4 [6] was used to calculate vehicular carbon monoxide emissions for each of the years studied. One of the key inputs to MOBILE4 is vehicle mix. Based on recent vehicle registration figures, the present and projected vehicle mix in the project area is estimated to be 91.9% light-duty gasoline-powered vehicles, 4.2% light-duty gasoline-powered trucks and vans, 0.5% heavy-duty gasoline-powered vehicles, 1% diesel-powered trucks and buses, and 1% motorcycles.

Other key inputs to the MOBILE4 emission model are the cold/hot start fractions. Motor vehicles operating in a cold- or hot-start mode emit excess air pollution. Typically, motor vehicles reach stabilized operating temperatures after about 4 miles of driving. For traffic operating within the immediate project area, it was assumed that during the morning peak hour about 25 percent of all vehicles would be operating in the cold-start mode and that about 5 percent would be operating in the hot-start mode. During the afternoon peak hour, the cold/hot start percentages were assumed to be 50/10 percent. These operational mode values were estimated based on a report from the California Department of Transportation [7] and taking into consideration the likely different origins of morning/afternoon traffic in the project area. MOBILE4 idle emissions were adjusted to account for excess cold/hot-start emissions per a recent U.S. EPA memorandum [8].

Ambient temperatures of 59 and 68 degrees F were used for morning and afternoon peak-hour emission computations, respectively. These are conservative assumptions since morning/afternoon ambient temperatures will generally be warmer than this and emission estimates given by MOBILE4 are inversely proportional to the ambient temperature.

After computing vehicular carbon monoxide emissions through the use of MOBILE4, these data were then input to the latest version of the computer model CALINE4 [9]. CALINE4 was developed by the California Transportation Department to simulate vehicular movement and atmospheric dispersion of vehicular emissions. It is designed to predict 1-hour average pollutant concentrations along roadways based on input traffic and emission data, roadway/receptor geometry and meteorological conditions.

Input peak-hour traffic data were obtained from the traffic study cited previously. The traffic volumes given in the traffic study for the future scenario include project traffic as well as traffic from other growth that is expected to occur in the area by the year 1992. Traffic queuing estimates were made based on the project traffic study, Transportation Research Board procedures [10], U.S. EPA guidelines [11], and traffic observations at the subject intersections.

Model roadways were set up to reflect actual roadway geometry, physical dimensions and operating characteristics. Pedestrian walkways in the project area are located very close to the traveled roadways as is typical of central business district locations. Thus, model receptor sites were located approximately 1 to 2 meters from the edge of the roadways near the intersections studied. All receptor heights were placed at 1.5 meters above ground to simulate levels within the normal human breathing zone.

Downtown Hononlulu is a typical central business district location in that street canyons have been created by the construction of many high-rise buildings. This results in channeling of the wind and may reduce the dispersion of air pollutants emitted by motor vehicles traversing the area. To account for this, the street canyon option of the CALINE4 model was utilized at all of the intersections analyzed except at the intersection of Nimitz Highway and Bethel Street.

Input meteorological conditions for this study were defined to provide "worst-case" results. One of the key meteorological inputs

is atmospheric stability category. For these analyses, atmospheric stability category 4 was assumed for both morning and afternoon cases. This is the most conservative stability category that can be used for estimating pollutant dispersion in urban locations. A surface roughness length of 300 cm was assumed with a mixing height of 300 meters. Worst-case wind conditions were defined as a wind speed of 1 meter per second with a wind direction resulting in the highest predicted concentration.

Existing background concentrations of carbon monoxide in the project vicinity are believed to be at moderate levels. Hence, background contributions of carbon monoxide from sources or distant roadways not directly considered in the analysis were accounted for by adding a background concentration of 1 ppm to all predicted concentrations for both the 1990 and the 1992 scenarios.

Table 5 summarizes the final results of the modeling study in the form of the estimated worst-case 1-hour morning and afternoon ambient carbon monoxide concentrations. These results can be compared directly to the state and the national AAQS. Estimated worst-case carbon monoxide concentrations are presented in the table for three scenarios: year 1990 with existing traffic, year 1992 without project traffic and year 1992 with project traffic. The locations of these estimated worst-case 1-hour concentrations all occurred at or very near the indicated intersections.

All afternoon peak hour concentrations estimated for the existing case were higher than the morning peak values except at the Bishop/Queen intersection. As indicated in the table, the estimated present (1990) worst-case 1-hour carbon monoxide concentration in the project area, 28.4 mg/m^3, occurs during the afternoon peak hour near the intersection of Nimitz Highway and Bethel Street. This is due to the high volume of traffic on Nimitz Highway. Worst-case 1-hour values at other locations in the project vicinity were generally in the 10 to 20 mg/m^3 range.

In the year 1992 without the proposed project, a worst-case 1-hour concentration of 24.8 mg/m^3 was predicted to occur during the afternoon peak traffic hour near the intersection of Nimitz Highway and Bethel Street, the same location and time as the highest concentration for the existing case. Values at the other locations studied for this scenario ranged between about 11 and 18 mg/m^3 during the morning peak hour. Afternoon peak-hour concentrations were generally about 20 to 40 percent higher than the worst-case values occurring in the morning except at Bishop and Merchant where the afternoon peak concentration is predicted to be substantially lower.

Predicted 1-hour worst-case concentrations for the 1992 with project scenario range from 14.8 mg/m^3 during the morning at Bishop and Queen Streets to 25.0 mg/m^3 during the afternoon at Nimitz Highway and Bethel Street. Compared to the without project case, predicted concentrations are generally about 10 to 20 percent higher except during the afternoon at Bishop and Merchant Streets where an increase of about 50 percent is predicted due to traffic exiting the proposed parking structure. The afternoon concentration predicted at Nimitz Highway and Bethel Street, the highest for this scenario, is just slightly higher than the without project case and about 12 percent lower than the existing case (due to the attrition of older vehicles and to the proposed improvement at this intersection).

Thus, all estimated worst-case 1-hour carbon monoxide levels are within the national AAQS of 40 mg/m^3. It appears likely, however, that existing concentrations of carbon monoxide as well as future concentrations either without or with the project may exceed the State of Hawaii 1-hour AAQS of 10 mg/m^3 on occasion at several locations in the project area.

Worst-case 8-hour carbon monoxide concentrations were estimated by multiplying the worst-case 1-hour values by a persistence factor of 0.5. This accounts for two factors: (1) traffic volumes averaged over eight hours are lower than peak 1-hour values, and (2) meteorological dispersion conditions are more variable (and hence more favorable) over an 8-hour period than they are for a single hour. Based on monitoring data, 1-hour to 8-hour persistence factors for most locations generally vary from 0.4 to 0.8 with 0.6 being the most typical. One recent study based on modeling [12] concluded that 1-hour to 8-hour persistence factors could typically be expected to range from 0.4 to 0.5. EPA guidelines [11] recommend using a value of 0.6 to 0.7 unless a locally derived persistence factor is available. Recent monitoring data for Honolulu reported by the Department of Health [13] suggests that this factor may range between about 0.35 and 0.55 depending on location and traffic variability. Considering the location of the project and the traffic pattern for the area, a 1-hour to 8-hour persistence factor of 0.5 is probably most appropriate for this application.

The resulting estimated worst-case 8-hour concentrations are indicated in Table 6. For the 1990 scenario, the estimated worst-case 8-hour carbon monoxide concentration was 14.2 mg/m^3 at the intersection of Nimitz Highway and Bethel Street. Other locations ranged from 8.7 mg/m^3 near Bishop and Merchant Streets to 9.4 mg/m^3

near Merchant and Bethel Streets. The predicted maximum values for the year 1992 without and with project scenarios were 12.4 and 12.5 mg/m^3, respectively; both occurred at the Nimitz Highway/ Bethel Street intersection. Other locations were generally in the 7 to 9 mg/m^3 range. Either with or without the project, 1992 concentrations should be about the same or lower than existing concentrations. Comparing the predicted values for the existing case to the AAQS, it appears that the state 8-hour standard may be exceeded at several locations in the project vicinity and that the national 8-hour standard could be exceeded near the Nimitz Highway/ Bethel Street intersection. This applies also either without or with the project in 1992.

The results of this study reflect several assumptions that must be made concerning traffic movement and worst-case meteorological conditions. One such assumption concerning worst-case meteorological conditions is that a wind speed of 1 meter per second with a steady direction for 1 hour will occur. A steady wind of 1 meter per second blowing from a single direction for an hour is not very likely, and it may occur only once a year or less. With wind speeds of 2 meters per second, for example, computed carbon monoxide concentrations would be only about half the values given above.

6.2 Parking Structure

The existing three-level Kaahumanu Parking Structure currently located on the project site has a capacity of 462 stalls. Traffic ingress is via Merchant Street while the egress is onto Queen Street. All parking levels are above ground and are naturally ventilated to maintain acceptable air pollution levels within the structure.

The proposed redevelopment project provides for the replacement of the current 462 parking stalls while adding an additional 573 parking spaces for a total parking capacity of 1035 stalls. The proposed parking facility will have one level of basement parking and twelve levels of parking above ground. Traffic will both enter and exit the parking facility both from Bethel Street and from Merchant Street. Final details of the parking structure design are not yet available, but it is likely that the above ground parking areas will be naturally ventilated while the basement parking area will require mechanical ventilation.

Although there are no specific air pollution standards pertaining to parking structures, Threshold Limit Values (TLVs) set by the American Conference of Governmental Industrial Hygienists (ACGIH) for industrial workplaces are often used as guidelines for enclosed parking garages [14]. Insofar as parking structures are concerned, carbon monoxide emissions are the primary concern. The ACGIH TLV for carbon monoxide is stated in terms of a time-weighted average concentration of 55 mg/m^3 for an 8-hour period (40 hours per week). A TLV short-term exposure limit of 440 mg/m^3 is also specified for a 15-minute period. The ACGIH TLVs are typically set at levels that are about ten times higher than the corresponding AAQS.

The American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) recently issued ASHRAE Standard 62-1989 pertaining to ventilation for acceptable indoor air quality [15]. ASHRAE recommends that enclosed parking garages be designed to provide 1.50 cubic feet per minute (cfm) of outdoor air per square foot of space within the parking area. This standard is designed to provide an adequate margin of safety and accounts for health variations among people. It includes the presumptions that contaminant concentrations in outdoor air are sufficiently low and that the ACGIH TLV levels are applicable.

The above ground levels of the proposed parking facility will not be an enclosed parking garage in that three sides of the facility will be left at least partially open to provide natural ventilation. The lower floors of the above ground parking levels will each have a floor area of about 2500 square feet and provide about 20 parking stalls while the upper levels will each have a floor area of about 9000 square feet and will accommodate about 80 to 90 automobiles. Based on the ASHRAE outdoor air requirement of 1.50 cfm per square foot for enclosed parking garages, the lower levels will require about 3800 cfm ventilation each and the upper levels about 13,500 cfm each. The current parking structure design drawings suggest that maximum natural ventilation will occur with winds from the north while minimum ventilation will occur during periods of southerly winds due to the enclosure of the south side of the structure. Air flow from the east and west would result in intermediate natural ventilation rates. Based on vertical cross-sectional area considerations, even winds speeds of 1 mph or lower should provide adequate natural ventilation when the wind direction is from the north, east or west (the predominant wind directions). During periods of infrequent southerly winds, air flow directly into the structure will be blocked by the Campbell Building, but it is still likely that outside air will infiltrate the parking structure from the east and/or west sides in sufficient amounts to provide adequate although reduced natural ventilation.

Plans for basement level parking call for a floor space of about 11,500 square feet to provide 130 to 140 parking stalls. The basement parking level will likely require mechanical ventilation

to assure the safety of persons using the parking facility. Applying the ASHRAE 1.50 cfm per square foot criterion, a mechanical ventilation capacity of about 17,000 cfm will be required. Both fresh air intake fans and exhaust fans will probably be necessary to provide efficient ventilation. If fresh air intake fans are utilized, intake vents should be located as far away from roadway traffic fumes as is practicable. Exhaust vents should be located so as to avoid recirculation and to ensure that exhaust air is diluted by at least a factor of 10 by the time it reaches outside pedestrian areas. To ensure safety and to conserve energy, contaminant sensors may be used to control ventilation. Emergency procedures and equipment should be provided to guard against power outages or ventilation equipment failure.

6.3 Electrical Demand

The proposed project would also cause indirect emissions from power generating facilities as a consequence of electrical power usage. The annual electrical demand of the project when fully developed is not expected to exceed about 10 million kilowatt-hours. This power demand would most probably be provided mainly by oil-fired generating facilities located on Oahu. However, with H-Power now online and plans for a coal-fired power plant at Campbell Industrial Park in the near future, some of the project power could well come from sources burning other fuels. In order to meet the electrical power needs of the proposed project, power generating facilities will be required to burn more fuel and hence more air pollution will be emitted at these facilities. Given in Table 7 are estimates of the indirect air pollution emissions that would result from the project electrical demand assuming all power is provided by burning more fuel oil at Oahu's power plants. If power is supplied instead or in part by coal or solid waste burning facilities, emissions will likely be higher than the values given in the table.

6.4 Solid Waste Disposal

Solid waste generated by the project when fully completed is expected to amount to about 2 tons of refuse per day. Most if not all of this refuse will likely be trucked away and either landfilled or burned at another location. If all refuse is landfilled, the only air pollution emissions associated with solid waste disposal will be due to exhaust fumes and fugitive dust from the trucks and heavy equipment used to place the refuse in the landfill. If, on the other hand, all or part of the refuse is burned at a municipal incinerator or other facility (such as H-Power), disposal of solid waste from the project will also result in emissions of particulate, carbon monoxide and other contaminants from the incineration facility. Table 8 gives emission factors for municipal refuse incinerators (without controls) in terms of pounds of air pollution per ton of refuse material charged. Thus, uncontrolled air pollutant emission rates in terms of pounds per day, for example, can be estimated by multiplying the emission factors given in the table by the number of tons per day of refuse that is burned. Particulate emissions from the H-Power facility are much lower because emissions will be treated by a high-efficiency particulate control system. It should also be noted that if the project electrical demand derives all or in part from H-Power, this will help to offset emissions from burning oil or coal to produce power that might otherwise result.

7.0 SUMMARY OF IMPACTS AND MITIGATIVE CONSIDERATIONS

7.1 Impacts Summary

The major short-term air quality impact will be the potential emission of significant quantities of fugitive dust during project construction. Uncontrolled fugitive dust emissions from construction activities are estimated to amount to about 1.2 tons per acre per month. During construction phases, emissions from engine exhausts (primarily consisting of carbon monoxide and nitrogen oxides) will also occur both from on-site construction equipment and from vehicles used by construction workers traveling to and from the project.

The primary long-term air pollution impact from the project will arise from the increased motor vehicle traffic associated with the project. Redevelopment of the proposed parking structure will more than double the present parking capacity at the site, and commercial/retail activites on the site will generate more traffic entering/exiting the parking facility and on adjacent streets. Potential increased levels of carbon monoxide concentrations along roadways leading to and from the proposed development and from and within the parking structure itself will be the primary concern. Based on mathematical modeling of projected vehicular traffic and on atmospheric dispersion estimates of vehicular emissions, it is predicted that with the proposed project carbon monoxide concentrations will unavoidably increase at some locations in the project vicinity, but the predicted highest concentrations should remain within the national 1-hour ambient air quality standard set by the U.S. Environmental Protection Agency. The U.S. EPA 8-hour standard for carbon monoxide, however, may be exceeded occasionally near the intersection of Nimitz Highway and Bethel Street either with or without the project in the year 1992; current levels may also exceed this standard. The more stringent State of Hawaii ambient air quality standards for carbon monoxide may be exceeded at times during the current year and either with or without the project in the year 1992 at several locations in the study area. The state standard is set so low, however, it is probably exceeded at many intersections in the state that have even moderate traffic volumes. It is worth noting here that, although the national AAQS allow higher levels of carbon monoxide, the national standards were developed after extensive research with the objective of defining levels of air quality that would protect the public health with an adequate margin of safety.

Carbon monoxide concentrations within the above ground levels of the parking structure will be maintained at acceptable levels by means of natural ventilation. Three sides of the structure facing the predominant wind directions will be left open to facilitate natural air flow. The basement parking level will require mechanical ventilation to assure the safety of persons within the garage.

Some long-term impacts could also potentially occur due to indirect emissions from power generating facilities supplying the project with electricity and from the burning of waste materials generated by the project. Quantitative estimates of these impacts were not made, but it appears likely that any impacts would be relatively small since emissions from supplying the project with electrical power and solid waste disposal service would be less than 1 percent of current Oahu emissions.

7.2 Mitigative Considerations

Strict compliance with State of Hawaii Air Pollution Control Regulations regarding establishment of a regular dust-watering program and covering of dirt-hauling trucks will be required to effectively mitigate fugitive dust emissions from construction activities. Twice daily watering is estimated to reduce dust emissions by up to 50 percent. Paving of parking areas and establishment of landscaping early in the construction schedule will also help to control dust. Increased vehicular emissions due to disruption of traffic by construction equipment and/or commuting construction workers can be alleviated by moving equipment and personnel to the site during off-peak traffic hours.

Options available to mitigate traffic-related air pollution are to improve roadways, reduce traffic or reduce individual vehicular emissions. Long-term projections of carbon monoxide emissions from vehicular traffic associated with the completed development are based on the traffic impact study findings. It has been assumed that the roadway improvements recommended in the traffic study will be implemented to move traffic efficiently through the project area and adjacent locations. Aside from improving roadways, air pollution impacts from vehicular emissions can be mitigated by reducing traffic through the use of mass transit and car pooling and/or by adjusting local school and business hours to begin and end during off peak times. Although it is conceivable that the efficiency of motor vehicle engines and/or emission control equipment will be improved or that vehicles will be developed which burn cleaner fuels at some point in the future, it is not likely that these developments will occur before project completion in 1992. With regard to cleaner burning fuels, vehicles burning methanol or compressed natural gas or powered by electrical motors are some of the possibilities for technological development that are currently being contemplated. Lastly, even without technological breakthroughs, it is also possible that at some point in the future the State may decide to adopt a motor vehicle inspection and maintenance program which would ensure that emission control devices are properly maintained, and thereby reduce emissions.

Carbon monoxide concentrations within the parking structure can be minimized by maximizing natural ventilation on the above ground levels and by providing adequate mechanical ventilation for the basement level. Maximum natural ventilation can be achieved by opening as much of the structure as is practicable, especially sides facing the prevailing wind direction. Mechanical ventilation capacity conforming to ASHRAE standards will mitigate air pollution within the basement parking level. Exhaust air from the mechanical ventilation system should be vented away from pedestrian areas and so as to avoid recirculation within the garage. Use of contaminant sensors to monitor air pollution concentrations and to control ventilation equipment will also lessen the potential for air quality problems. Sufficient ingress/egress capacity to permit rapid entry and exit with minimal delays will also mitigate air pollution impacts both within and adjacent to the facility. As an extra mitigative measure, emergency procedures and equipment should be provided to counter potential problems arising from power outages and/or ventilation failure.

Indirect emissions from project electrical demand could be reduced somewhat by utilizing solar energy design features to the maximum extent possible. This might include installing solar water heaters, designing condominiums and office/retail space so that window positions maximize indoor light without unduly increasing indoor heat, and using landscaping where feasible to provide afternoon shade to cut down on the use of air conditioning. Use of wind power generating units and other alternative energy sources

by the utility instead of fuel-burning facilities would also lessen indirect emissions from project electrical demand. The present architectural plans call for a single-loaded corridor in the residential tower which will provide natural ventilation to most, if not all, of the residential apartments; this will cut down on the use of air conditioning and thereby reduce electrical demand.

Any air pollution impacts from burning solid waste from the project could be reduced substantially if the incinerator is fitted with pollution control equipment, i.e., electrostatic precipitators or fabric filters. Conservation and recycling programs could also reduce solid waste which would reduce any related air pollution emissions proportionately. Quite likely, solid waste from the project will processed by the H-Power garbage-to-energy facility which is fitted with fabric filters to control air pollution. Use of solid waste to generate power offsets emissions that would otherwise occur from fossil-fuel power plants.

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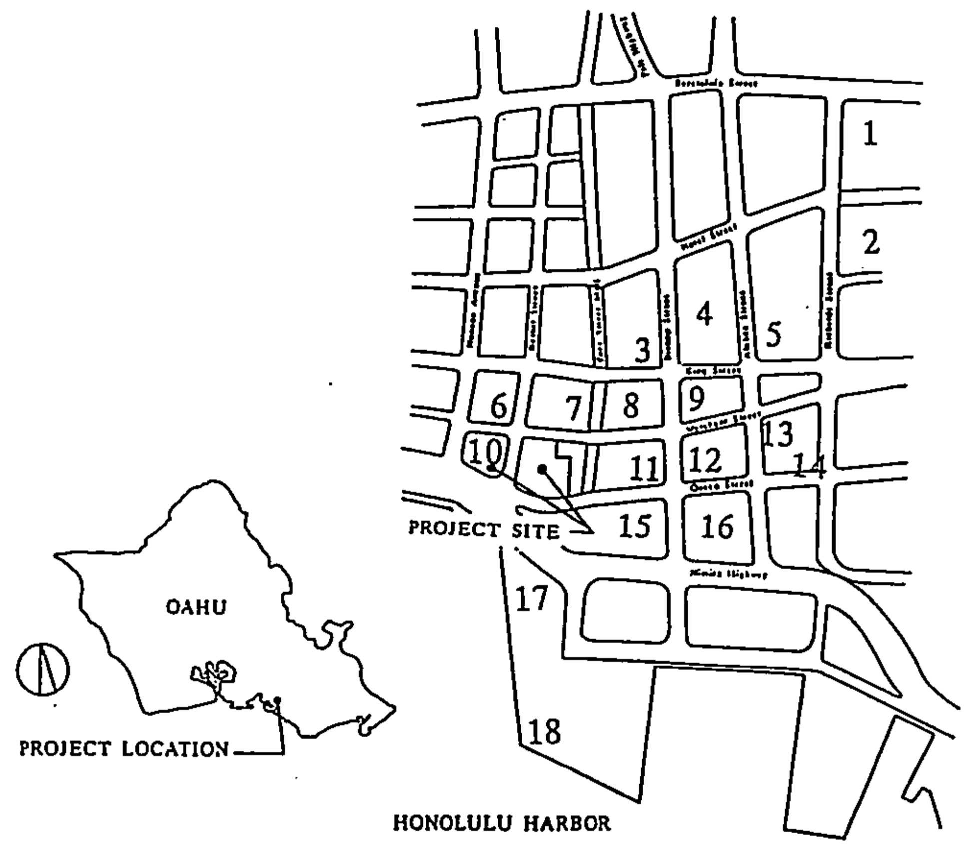

LEGEND

1. State Capitol
2. Iolani Palace
3. Bishop Trust
4. 1001 Bishop
5. Central Pacific Plaza
6. Yokohama Specie Bank
7. Pioneer Plaza
8. Financial Plaza
9. First Hawaiian Bank
10. Old Police Station
11. Alexander & Baldwin
12. Davies Pacific Center
13. City Center Building
14. City Bank Building
15. Amfac Center
16. Grosvenor Center
17. Pier Eleven
18. Aloha Tower

Figure 1. Project Location Map

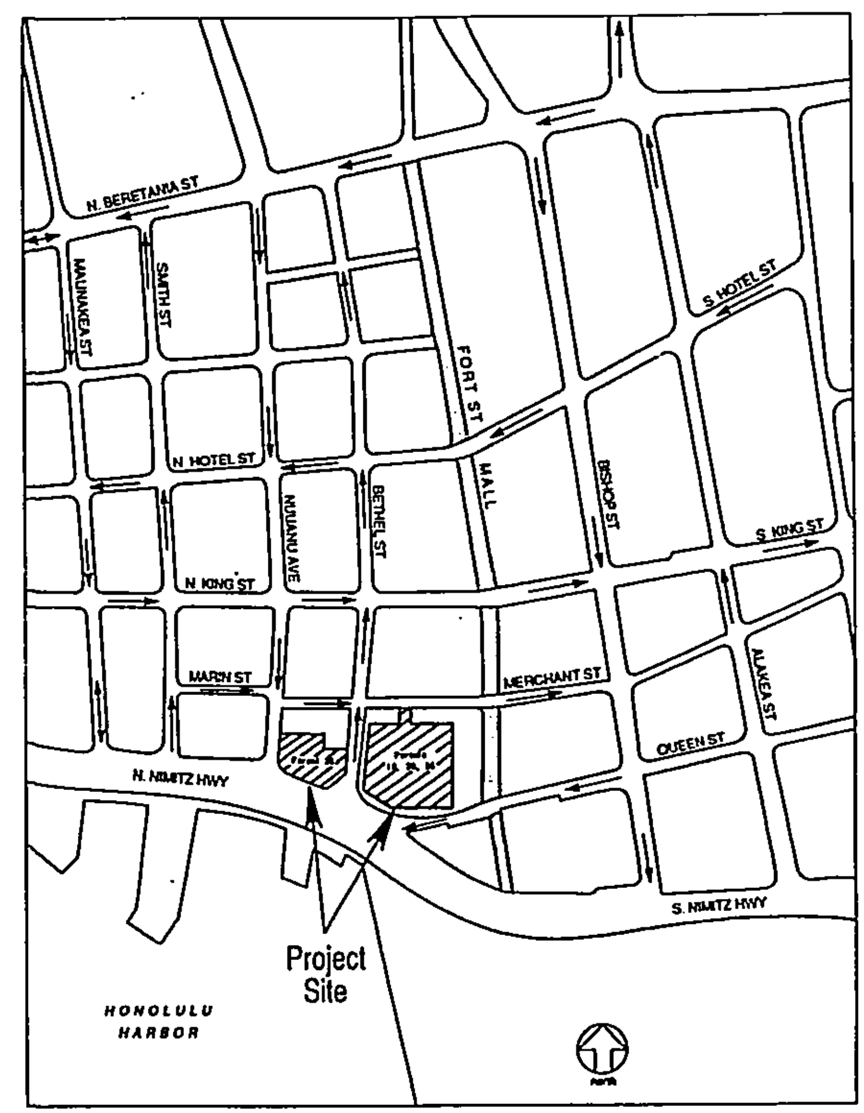

Figure 2. Project Vicinity and Roadway Network

Table 1

ANNUAL WIND FREQUENCY FOR HONOLULU INTERNATIONAL AIRPORT (%)

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

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

Table 2

SUMMARY OF STATE OF HAWAII AND NATIONAL AMBIENT AIR QUALITY STANDARDS

Pollutant	Units	Averaging Time	Maximum Allowable Concentration: National Primary	National Secondary	State of Hawaii
Suspended Particulate Matter	ug/m^3	Annual	-	-	60[a]
		24 Hours	-	-	150[b]
Particulate Matter[c]	ug/m^3	Annual	50	50	-
		24 Hours	150[b]	150[b]	-
Sulfur Dioxide	ug/m^3	Annual	80	-	80
		24 Hours	365[b]	-	365[b]
		3 Hours	-	1300[b]	1300[b]
Nitrogen Dioxide	ug/m^3	Annual	100	100	70
Carbon Monoxide	mg/m^3	8 Hours	10[b]	-	5[b]
		1 Hour	40[b]	-	10[b]
Ozone	ug/m^3	1 Hour	235[b]	235[b]	100[b]
Lead	ug/m^3	Calendar Quarter	1.5	1.5	1.5

[a]Geometric mean

[b]Not to be exceeded more than once per year

[c]Particles less than or equal to 10 microns aerodynamic diameter

Table 3

AIR POLLUTION EMISSIONS INVENTORY FOR
CITY AND COUNTY OF HONOLULU, 1980

Source Category	Emissions (tons/year) Partic-ulate	Sulfur Oxides	Nitrogen Oxides	Carbon Monoxide	Hydro-carbons
Steam Electric Power Plants	2,092	36,736	12,455	1,065	184
Gas Utilities	14	0	199	0	0
Fuel Combustion in Agricultural Industry	1,088	579	358	0	31
Refinery Industry	622	7,096	2,149	266	2,584
Petroleum Storage	0	0	0	0	1,261
Metallurgical Industries	28	96	40	0	0
Mineral Products Industry	6,884	1,883	597	0	31
Municipal Incineration	42	145	2,029	0	184
Motor Vehicles	1,413	1,014	17,270	239,198	22,853
Construction, Farm and Industrial Vehicles	184	193	2,507	3,729	338
Aircraft	382	145	1,751	5,594	1,476
Vessels	42	386	438	533	123
Agricultural Field Burning	1,399	0	0	15,982	1,692
Total:	14,190	48,273	39,793	266,367	30,757

Source: State of Hawaii, Department of Health

Table 4

ANNUAL SUMMARY OF AIR QUALITY MEASUREMENTS FOR
MONITORING STATIONS NEAREST KAAKAAKO REDEVELOPMENT PROJECT

Parameter / Location	1985	1986	1987	1988
Sulfur Dioxide / Barbers Point				
No. of 24-Hr Samples	59	57	53	59
Range of 24-Hr Values (ug/m3)	10-48	<5-10	<5-13	<5-19
Average Daily Value (ug/m3)	24	<5	5	<5
No. of State AAQS Exceedances	0	0	0	0
Particulate / Downtown Honolulu				
No. of 24-Hr Samples	59	57	53	59
Range of 24-Hr Values (ug/m3)	10-48	11-61	14-59	12-45
Average Daily Value (ug/m3)	24	25	25	26
No. of State AAQS Exceedances	0	0	0	0
PM-10 / Liliha				
No. of 24-Hr Samples	10	51	42	53
Range of 24-Hr Values (ug/m3)	13-52	7-35	10-33	9-25
Average Daily Value (ug/m3)	23	18	17	17
No. of State AAQS Exceedances	NA	NA	NA	NA
Carbon Monoxide / Downtown Honolulu				
No. of Days of 1-Hr Samples	342	348	345	-
Range of Daily Max. 1-Hr Values (mg/m3)	0.0-10.4	0.2-13.5	0.3-11.1	0.4-7.4
Avg. Daily Maximum 1-Hr Value (mg/m3)	1.5	2.2	1.7	2.6
No. of State 1-Hr AAQS Exceedances	1	3	1	0
No. of Days of 8-Hr Samples	246	213	228	-
Range of Daily Max. 8-Hr Values (mg/m3)	0.1-4.4	0.3-4.7	0.3-3.9	-
Avg. Daily Maximum 8-Hr Value (mg/m3)	1.3	1.4	1.2	-
No. of State 8-Hr AAQS Exceedances	0	0	0	-
Ozone / Sand Island				
No. of Days of 1-Hr Samples	341	346	342	-
Range of Daily Max. 1-Hr Values (ug/m3)	8-198	10-88	4-84	-
Avg. Daily Maximum 1-hr Value (ug/m3)	43	39	38	-
No. of State AAQS Exceedances	3	0	0	-
Lead / Downtown Honolulu				
No. of 24-Hr Samples	58	57	57	-
Range of 24-Hr Values (ug/m3)	0.0-0.3	0.0-0.2	0.0-0.2	-
Average Quarterly Value (ug/m3)	0.2	0.0	0.0	-
No. of State AAQS Exceedances	0	0	0	-

Source: State of Hawaii Department of Health

Table 5

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

Roadway Intersection	Year/Scenario					
	1990/ Present		1992/ Without Project		1992/ With Project	
	AM	PM	AM	PM	AM	PM
Bishop at Queen	13.5	17.5	12.2	14.2	14.8	15.8
Bishop at Merchant	17.4	10.0	15.8	9.7	16.6	14.8
Merchant at Bethel	11.4	18.8	11.2	16.4	15.1	19.2
Nimitz at Bethel	20.1	28.4	18.1	24.8	18.5	25.0

Hawaii State AAQS: 10
National AAQS: 40

Table 6

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

Roadway Intersection	Year/Scenario		
	1990/ Present	1992/ Without Project	1992/ With Project
Bishop at Queen	8.8	7.1	7.9
Bishop at Merchant	8.7	7.9	8.3
Merchant at Bethel	9.4	8.2	9.6
Nimitz at Bethel	14.2	12.4	12.5

Hawaii State AAQS: 5
National AAQS: 10

Table 7

ESTIMATED INDIRECT AIR POLLUTION EMISSIONS FROM KAAHUMANU REDEVELOPMENT PROJECT ELECTRICAL DEMAND[a]

Air Pollutant	Emission Rate (tons/year)
Particulate	<1
Sulfur Dioxide	25
Carbon Monoxide	2
Volatile Organics	<1
Nitrogen Oxides	7

[a]Based on U.S. EPA emission factors for industrial boilers [3]. Assumes net electrical demand of 10 million kw-hrs per year and low sulfur oil used to generate power.

Table 8

UNCONTROLLED AIR POLLUTION EMISSION FACTORS FOR MUNICIPAL REFUSE INCINERATORS (lb/ton)[a]

Air Pollutant	Emission Factor
Particulate	14[b]
Sulfur Oxides	2.5
Carbon Monoxide	35
Organics	1.5
Nitrogen Oxides	3

[a]Emission factors are given in terms of weight of material emitted per unit weight of refuse material charged.
[b]Assumes incinerator equipped with settling chamber and water spray.

Source: U.S. Environmental Protection Agency [3]

APPENDIX C

NOISE AND VIBRATION IMPACT ASSESSMENT

Y. Ebisu and Associates

NOISE STUDY FOR THE PROPOSED KAAHUMANU PARKING STRUCTURE DEVELOPMENT PROJECT

Prepared for:
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FEBRUARY 1990

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TABLE OF CONTENTS

DRAFT

LIST OF FIGURES

DRAFT

LIST OF TABLES

DRAFT

CHAPTER I. SUMMARY

The existing and future traffic noise levels in the vicinity of the proposed Kaahumanu Parking Structure Redevelopment Project in Downtown Honolulu were evaluated for their potential impacts and their relationship to current FHA/HUD noise standards. The traffic noise level increases along the 5 roadways bordering the project site were calculated. Following project build-out by CY 1992, increases in traffic noise of 0.2 to 1.3 Ldn units are predicted to occur as a result of project plus non-project traffic.

Along Nimitz Highway, traffic noise levels are expected to increase by 0.2 Ldn, primarily as a result of non-project traffic. Along Bethel, Merchant, and Queen Streets and along Nuuanu Avenue, traffic noise levels are expected to increase by approximately 0.2 to 0.3 Ldn by CY 1992 as a result of non-project traffic. Project traffic will add approximately 0.3 to 1.1 Ldn additional units of noise along Merchant, Bethel, and Queen Streets in the immediate vicinity of the project. These levels of traffic noise increases resulting from project generated traffic are not considered to be significant. In addition, because of the business/commercial character of the project area, the predicted moderate increases in traffic noise levels along Merchant, Bethel and Queen Streets are not expected to generate adverse noise impacts.

It will not be possible to obtain adequate setback of the project's Residential Tower from the centerline of Nimitz Highway so as to meet FHA/HUD noise standards along the south face of the Residential Tower. Because of this, impacts from traffic noise are possible at the proposed project dwelling units in the Residential Tower, and particularly those which face Nimitz Highway. Because these units are expected to be in the luxury category, mitigation of high traffic noise levels through the use of closure and air conditioning is recommended.

Unavoidable, but temporary, noise impacts will occur during the construction of the proposed project, particularly during the

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excavation and pile driving activities on the project site. Because construction activities are predicted to be audible within the project and at adjoining properties, the quality of the acoustic environment may be degraded to unacceptable levels during periods of construction. Mitigation measures to reduce construction noise to inaudible levels will not be practical in all cases, but the use of quiet equipment is recommended as a standard mitigation measure. The project site is adjacent to lands which are used for business/commercial purposes. For this reason, a variance from the normal construction curfew periods as required under the State Department of Health noise regulations is recommended to minimize construction noise impacts on adjoining properties during the normal working hours.

Because of the presence of historic buildings adjacent to the project site and the potential for damage to these buildings from vibration during pile driving operations, vibration monitoring is recommended during close-in pile driving operations where vibration levels are expected to exceed 0.2 inches/second at adjacent historic buildings. In addition, it is expected that the design of the supporting piles and construction methods for the project buildings will be optimized to minimize risks of damage to adjacent structures from settling or heaving. A vibration limit of 2.0 inches/second should not be exceeded at the adjacent historic buildings, and modifications to the project's foundation and pile driving plans prior to design and construction are recommended if these limits are expected to be exceeded.

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CHAPTER II. PURPOSE

The primary objective of this study was to describe the existing and future traffic noise environment in the environs of the proposed Kaahumanu Parking Structure Redevelopment Project in Downtown Honolulu on the island of Oahu. Traffic noise level increases and impacts associated with the proposed development were to be determined within the project site as well as along the public roadways expected to service the project traffic. A specific objective was to determine future traffic noise level increases associated with both project and non-project traffic, and the potential noise impacts associated with these increases. Assessments of possible future impacts from short term construction noise and vibration at the project site were also included as noise study objectives. Specifically, the potential risks of structural damage to adjacent historic buildings from pile driving operations on the project site were included in the noise and vibration impact assessment. Recommendations for minimizing identified noise and vibration impacts were also to be provided as required.

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CHAPTER III. NOISE DESCRIPTORS AND THEIR RELATIONSHIP TO LAND USE COMPATIBILITY

The noise descriptor currently used by federal agencies (such as FHA/HUD) to assess environmental noise is the Day-Night Average Sound Level (Ldn). This descriptor incorporates a 24-hour average of instantaneous A-Weighted Sound Levels as read on a standard Sound Level Meter. By definition, the minimum averaging period for the Ldn descriptor is 24 hours. Additionally, sound levels which occur during the nighttime hours of 10:00 PM to 7:00 AM are increased by 10 decibels (dB) prior to computing the 24-hour average by the Ldn descriptor. A more complete list of noise descriptors is provided in APPENDIX B to this report.

TABLE 1, derived from Reference 1, presents current federal noise standards and acceptability criteria for residential land uses. Land use compatibility guidelines for various levels of environmental noise as measured by the Ldn descriptor system are shown in FIGURE 1. As a general rule, noise levels of 55 Ldn or less occur in rural areas, or in areas which are removed from high volume roadways. In urbanized areas which are shielded from high volume streets, Ldn levels generally range from 55 to 65 Ldn, and are usually controlled by motor vehicle traffic noise. Residences which front major roadways are generally exposed to levels of 65 Ldn, and as high as 75 Ldn when the roadway is a high speed freeway. In the project area, traffic noise levels associated with Nimitz Highway are typically greater than 75 Ldn along the Right-of-Way due to the large volume of traffic on that major thoroughfare. The range of background ambient noise levels at other urbanized areas on Oahu are shown in FIGURE 2.

For the purposes of determining noise acceptability for funding assistance from federal agencies (FHA/HUD and VA), an exterior noise level of 65 Ldn or lower is considered acceptable. This standard is applied nationally (Reference 2), including Hawaii. Because of our open-living conditions, the predominant use of nat-

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TABLE 1

EXTERIOR NOISE EXPOSURE CLASSIFICATION (RESIDENTIAL LAND USE)

NOISE EXPOSURE CLASS	DAY-NIGHT SOUND LEVEL	EQUIVALENT SOUND LEVEL	FEDERAL(1) STANDARD
Minimal Exposure	Not Exceeding 55 L_{dn}	Not Exceeding 55 L_{eq}	Unconditionally Acceptable
Moderate Exposure	Above 55 L_{dn} But Not Above 65 L_{dn}	Above 55 L_{eq} But Not Above 65 L_{eq}	Acceptable(2)
Significant Exposure	Above 65 L_{dn} But Not Above 75 L_{dn}	Above 65 L_{eq} But Not Above 75 L_{eq}	Normally Unacceptable
Severe Exposure	Above 75 L_{dn}	Above 75 L_{eq}	Unacceptable

Notes: (1) Federal Housing Administration, Veterans Administration, Department of Defense, and Department of Transportation.

(2) FHWA uses the L_{eq} instead of the L_{dn} descriptor. For planning purposes, both are equivalent if: (a) heavy trucks do not exceed 10 percent of total traffic flow in vehicles per 24 hours, and (b) traffic between 10:00 PM and 7:00 AM does not exceed 15 percent of average daily traffic flow in vehicles per 24 hours. The noise mitigation threshold used by FHWA for residences is 67 L_{eq}.

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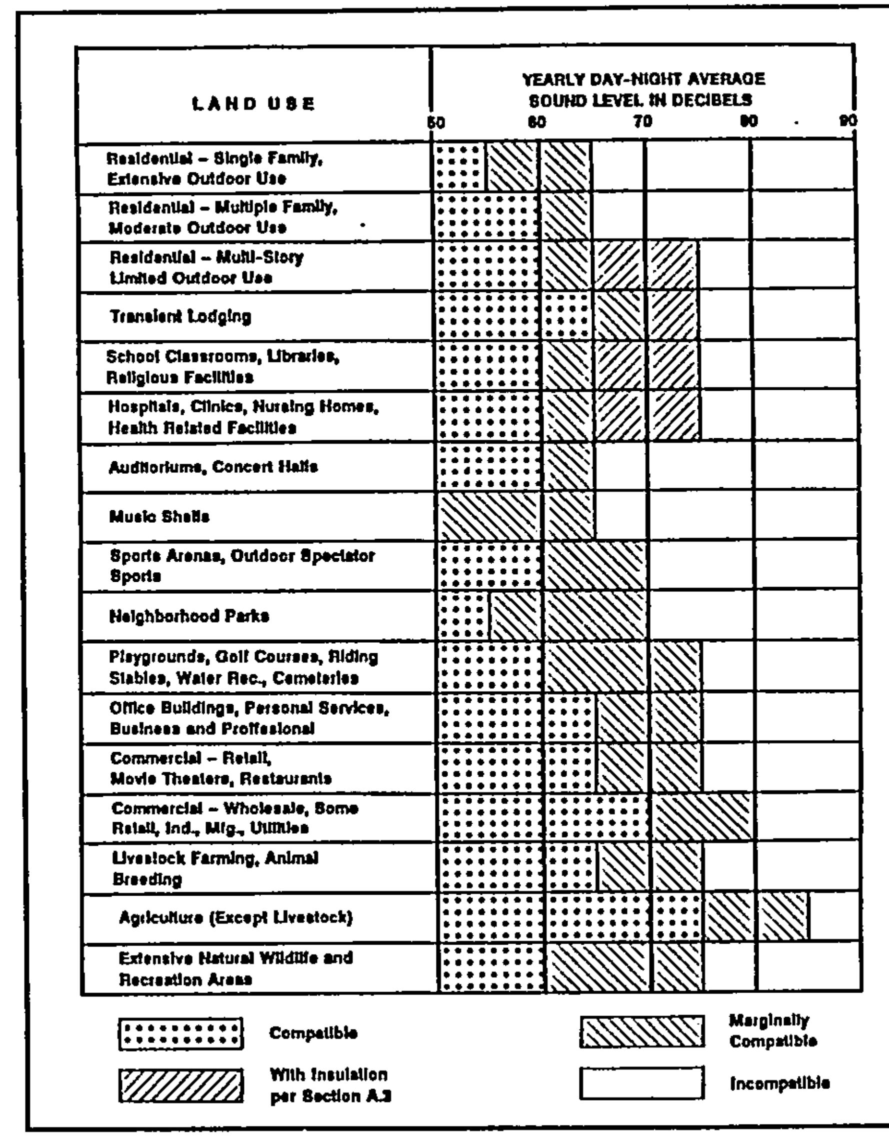

LAND USE COMPATIBILITY WITH YEARLY DAY-NIGHT AVERAGE SOUND LEVEL AT A SITE FOR BUILDINGS AS COMMONLY CONSTRUCTED (Source: American National Standards Institute)

FIGURE 1

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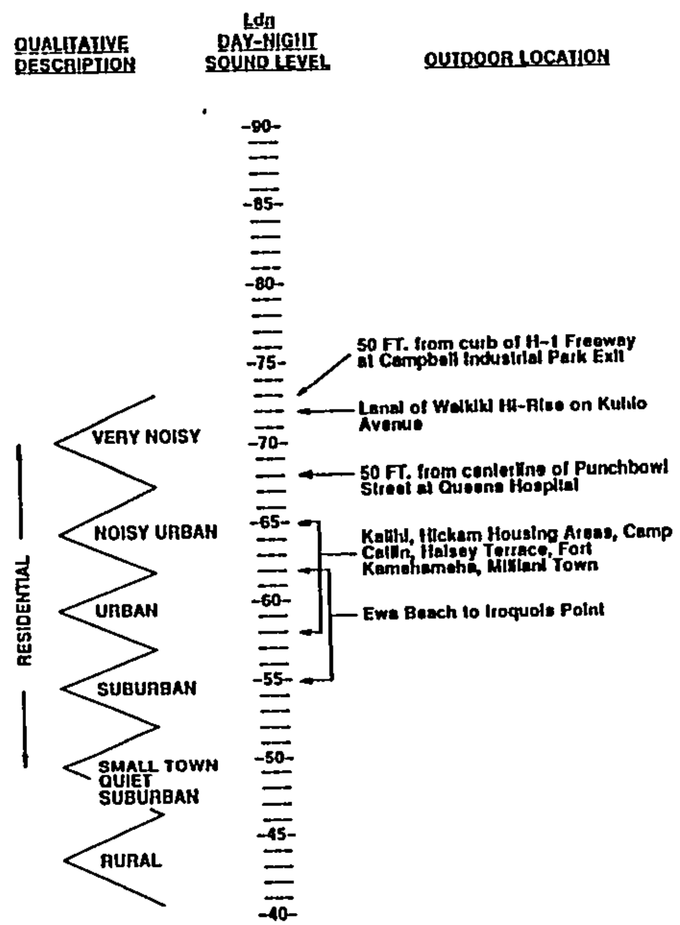
FIGURE 2

RANGE OF EXTERIOR BACKGROUND AMBIENT NOISE LEVELS



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urally ventilated dwellings, and the relatively low exterior-to-interior sound attenuation afforded by these naturally ventilated structures, an exterior noise level of 65 Ldn does not eliminate all risks of noise impacts. Because of these factors, and as recommended in **Reference 3**, a lower level of 55 Ldn is considered as the "Unconditionally Acceptable" (or "Near-Zero Risk") level of exterior noise. However, after considering the cost and feasibility of applying the lower level of 55 Ldn, government agencies such as FHA/HUD and VA have selected 65 Ldn as a more appropriate regulatory standard.

For commercial, industrial, and other non-noise sensitive land uses, exterior noise levels as high as 75 Ldn are generally considered acceptable. Exceptions to this occur when naturally ventilated office and other commercial establishments are exposed to exterior levels which exceed 65 Ldn.

On the island of Oahu, the State Department of Health (DOH) regulates noise from construction activities, through the issuance of permits for allowing excessive noise during limited time periods. State DOH noise regulations are expressed in maximum allowable property line noise limits rather than Ldn (see **Reference 4**). Although they are not directly comparable to noise criteria expressed in Ldn, State DOH noise limits for residential, commercial, and industrial lands equate to approximately 55, 60, and 76 Ldn, respectively.

It should be noted that the noise compatibility guidelines and relationships to the Ldn noise descriptor may not be applicable to impulsive noise sources such as pile drivers. The use of penalty factors (such as adding 10 dB to measured sound levels or the use of C-Weighting filters) have been proposed. However, the relationships between levels of impulsive noise sources and land use compatibility have not been as firmly established as have the relationships for non-impulsive sources. The State DOH limits for impulsive sounds which exceed 120 impulses in any 20 minute period are 10 dB above the limits for non-impulsive sounds. If impulsive

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sounds do not exceed 120 impulses in any 20 minute time period, there are no regulatory limits on their sound levels under the State DOH regulations.

CHAPTER IV. GENERAL STUDY METHODOLOGY

Existing traffic noise levels were measured at four locations in the project environs to provide a basis for developing the project's traffic noise contributions along the roadways which will service the proposed development. The locations of the measurement sites are shown in **FIGURE 3**. Noise measurements were performed during the month of January 1990. The results of the traffic noise measurements were compared with calculations of existing traffic noise levels to validate the computer model used. The traffic noise measurement results, and their comparisons with computer model predictions of existing traffic noise levels are summarized in **TABLE 2**.

Traffic noise calculations for the existing conditions as well as noise predictions for the Year 1992 were performed using the Federal Highway Administration (FHWA) Noise Prediction Model (**Reference 5**). Traffic data entered into the noise prediction model were: hourly traffic volumes, average vehicle speeds, estimates of traffic mix, and hard ground propagation loss factor. The traffic study for the project (**Reference 6**), Hawaii State Department of Transportation counts on Nimitz Highway (**Reference 7**), and Honolulu Department of Transportation Services counts at Bethel, Merchant, and Queen Streets (**Reference 8**) were the primary sources of data inputs to the model. For existing and future traffic on Nimitz Highway, it was assumed that the average noise levels, or Leq(h), during the PM peak hour were 0.5 dB less than the 24-hour Ldn along the highway. For the other roadways bordering the project, it was assumed the average noise levels during the PM peak hour were 2 Ldn greater than the 24-hour Ldn. These assumptions were based on computations of both the hourly Leq and the 24-hour Ldn of traffic noise on Nimitz Highway, and on Bethel, Merchant, and Queen Streets (see **FIGURES 4 and 5**).

Traffic noise calculations for both the existing and future conditions in the project environs were developed for ground level

FIGURE 3

LOCATIONS OF NOISE MEASUREMENT SITES

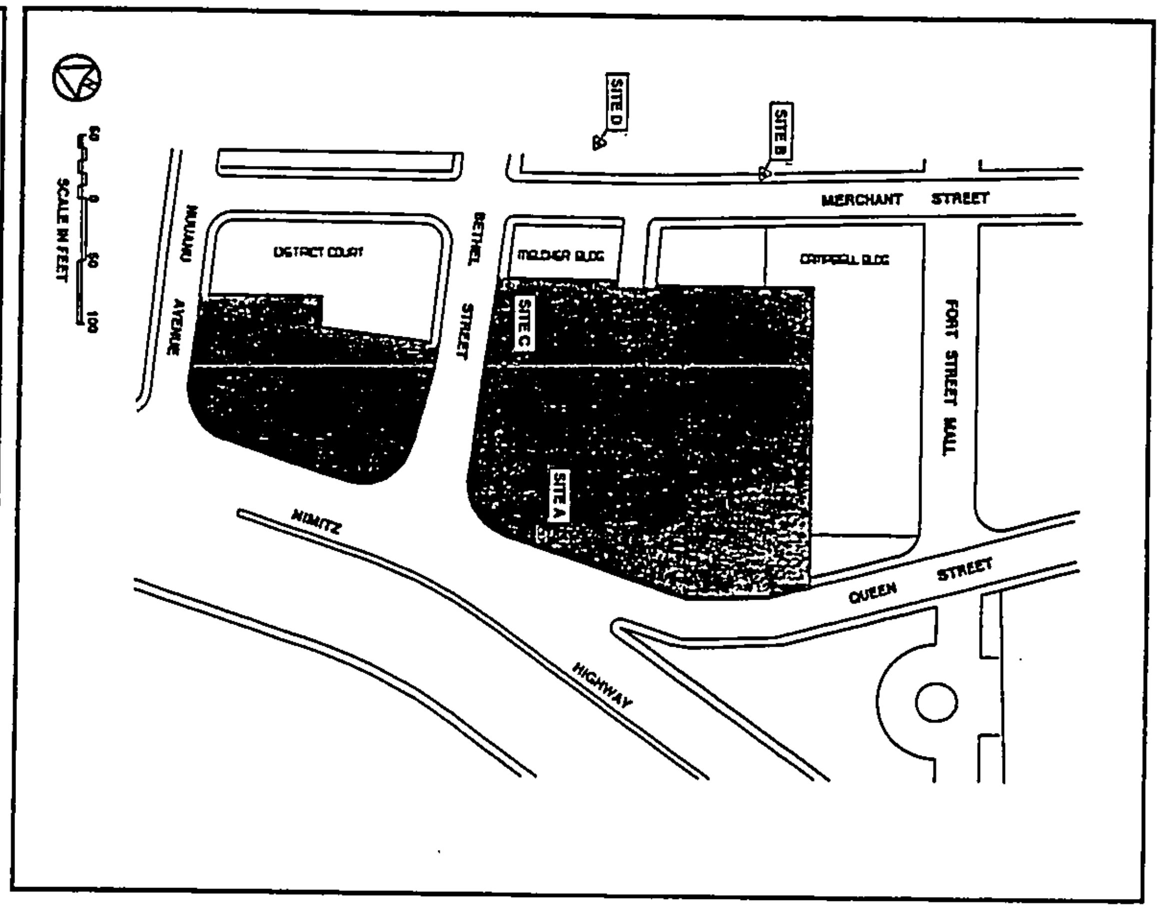

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TABLE 2

TRAFFIC NOISE MEASUREMENT RESULTS

Location	Time of Day (HRS)	Ave.Speed (MPH)	—Hourly Traffic Volume— Auto	Med.Truck	Heavy Truck	Measured Leq (dB)	Predicted Leq(dB)
A. 80 FT from the center-line of Nimitz Highway (1/18/90).	1450 TO 1619	45	6,362	170	98	73.1	73.1
B. 21 FT from the center-line of Merchant Street (1/23/90).	1514 TO 1613	25	483	26	5	66.2	66.1
C. 27 FT from the center-line of Bethel Street (1/23/90).	1618 TO 1717	25	1,218	14	17	70.9	68.4
C. 27 FT from the center-line of Bethel Street (1/18/90).	1710 TO 1740	25	1,118	13	19	71.7	68.5
D. 45 FT from the center-line of Merchant Street (1/18/90).	1643 TO 1707	25	699	19	3	63.2	62.5

Note:

Traffic noise contributions from Nimitz Highway caused higher than predicted noise levels at Site C.

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FIGURE 4

HOURLY VARIATIONS OF TRAFFIC NOISE AT 100 FT SETBACK DISTANCE FROM THE CENTERLINE OF NIMITZ HIGHWAY AT NUUANU STREAM BRIDGE

STATION SL-30 (10/05/88)

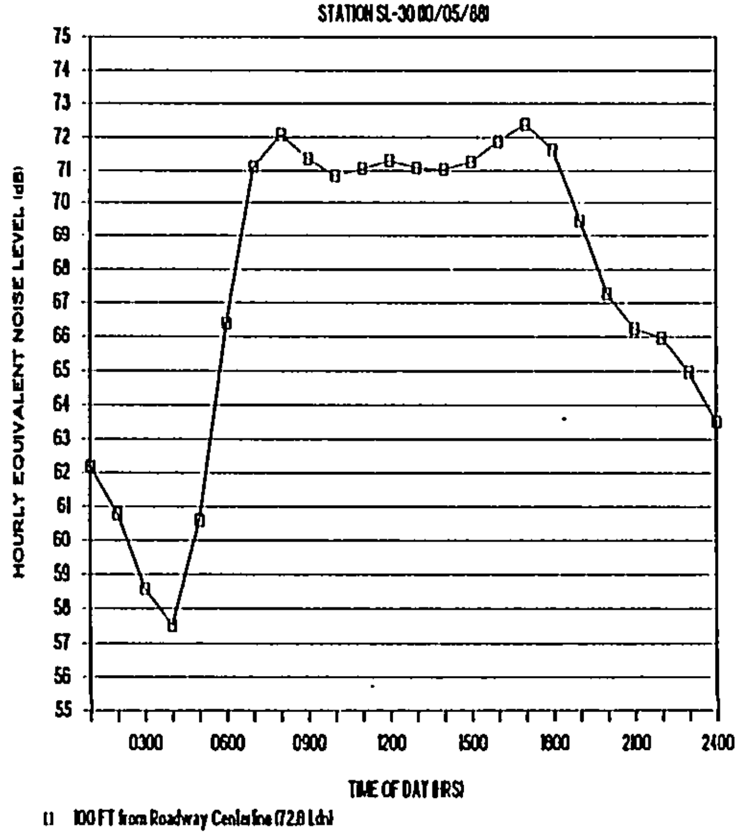

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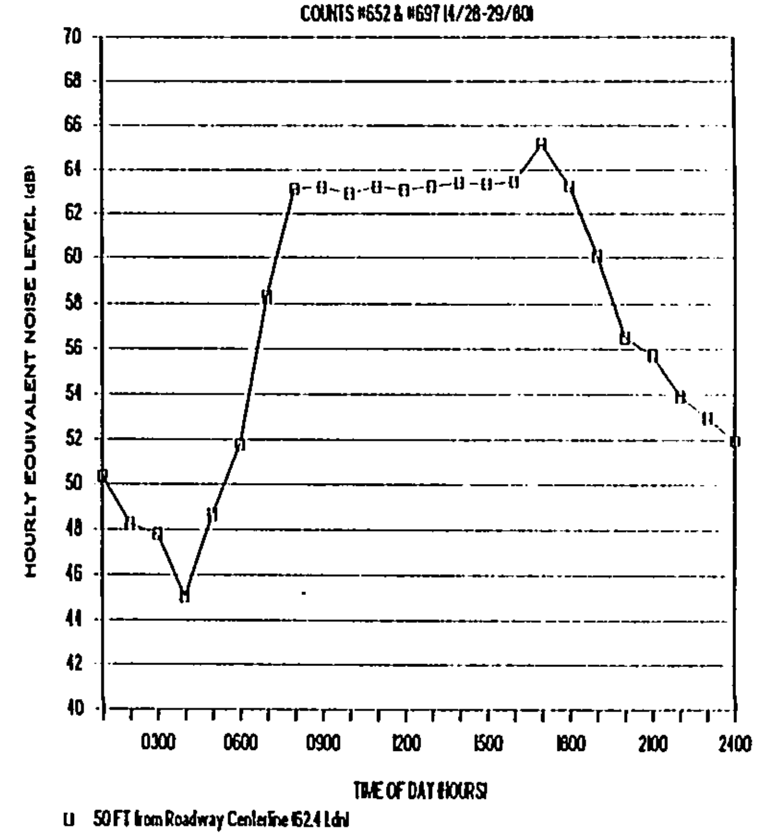
FIGURE 5

HOURLY VARIATIONS OF TRAFFIC NOISE AT 50 FT SETBACK DISTANCE FROM THE CENTERLINE OF BETHEL STREET MAUKA OF NIMITZ HIGHWAY

COUNTS #652 & #697 (4/28-29/80)



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and elevated receptors without the benefit of shielding effects. Traffic noise levels were calculated for future conditions with and without the proposed mixed use project. The forecasted changes in traffic noise levels over existing levels were calculated for both future scenarios, and noise impact risks evaluated. The relative contributions of non-project and project traffic to the total noise levels were also calculated, and an evaluation of possible traffic noise impacts was made.

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

CHAPTER V. EXISTING NOISE ENVIRONMENT

The existing traffic noise levels in the project environs along Nimitz Highway and Bethel Street are in the "Significant Exposure, Normally Unacceptable" category in the project environs. Along Merchant Street, existing traffic noise levels are in the "Moderate Exposure, Acceptable" category.

The results of the January 1990 traffic and background ambient noise measurements are summarized in **TABLE 2**, with measurement locations identified in **FIGURE 3**. Site A was located on the top deck (3rd level) of the existing municipal parking structure. The remaining Sites B thru D were located at street level. As shown in **TABLE 2**, correlation between measured and predicted traffic noise levels was good except at Site C, where traffic noise from Nimitz Highway contaminated the Bethel Street noise measurement data.

Results of calculations of existing (CY 1989) traffic noise levels during the PM peak hour period are shown in **TABLE 3**. The results of the calculations apply at 50 FT distances from the centerlines of the roadway sections in the project environs. Calculated setback distances from these roadways to the existing 65, 70, and 75 Ldn contours are shown in **TABLE 4**. Existing traffic noise contours over the project site for ground level and elevated receptors are shown in **FIGURES 6 thru 9**. As indicated in the figures, the existing noise levels over the project site are relatively high, and are dominated by traffic noise from Nimitz Highway. In these figures, only the applicable traffic noise contours which cross through the project site are shown. The traffic noise levels shown in the tables and figures only apply when unobstructed line-of-sight conditions exist to the roadways. These conditions would generally occur at short (50 to 100 FT) distances to a roadway, within any flat, open space along the roadway, and at distant, but elevated locations above the roadway. The existing traffic noise levels shown in the tables and figures should be re-

TABLE 3

COMPARISONS OF EXISTING AND CY 1992 TRAFFIC NOISE LEVELS
ALONG ACCESS ROADS TO PROJECT SITE
(PM PEAK HOUR AND 50 FT FROM ROADWAY CENTERLINES)

LOCATION	SPEED (MPH)	VPH	***** HOURLY LEQ IN dB **** AUTO	MT	HT	ALL VEH
EXISTING (CY 1989) PM PEAK HR. TRAFFIC:						
Nimitz Highway @ Project	45	6,459	72.1	67.5	72.3	75.9
Merchant Street @ Bethel St.	25	611	58.7	57.1	58.3	62.8
Bethel Street @ Nimitz Hwy.	25	1,255	61.9	56.0	63.2	66.0
Nuuanu Avenue @ Nimitz Hwy.	25	344	56.2	51.6	55.8	59.8
Queen Street @ Nimitz Hwy.	25	825	60.0	58.4	59.6	64.1
CY 1992 PM PEAK HR. TRAFFIC WITH THE PROJECT:						
Nimitz Highway @ Project	45	6,753	72.3	67.7	72.5	76.1
Merchant Street @ Bethel St.	25	829	60.0	58.4	59.6	64.2
Bethel Street @ Nimitz Hwy.	25	1,556	62.8	56.9	64.1	67.0
Nuuanu Avenue @ Nimitz Hwy.	25	365	56.5	51.9	56.0	60.0
Queen Street @ Nimitz Hwy.	25	933	60.5	59.0	60.1	64.7

Notes:

The following assumed traffic mixes of autos, medium trucks, and heavy vehicles were used for existing and future conditions:

(a) Nimitz Highway at Project: 95.0% autos, 2.5% medium trucks, and 2.5% heavy trucks or buses.

(b) Merchant and Queen Streets: 95.0% autos, 4.0% medium trucks, and 1.0% heavy trucks or buses.

(c) Bethel Street: 97.0% autos, 1.5% medium trucks, and 1.5% heavy trucks or buses.

(d) Nuuanu Avenue: 97.0% autos, 2.0% medium truck, and 1.0% heavy trucks or buses.

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TABLE 4

EXISTING AND CY 1992 DISTANCES TO 65, 70, AND 75 Ldn CONTOURS

STREET SECTION	65 Ldn SETBACK (FT) EXISTING	CY 1992	70 Ldn SETBACK (FT) EXISTING	CY 1992	75 Ldn SETBACK(FT) EXISTING	CY 1992
Nimitz Highway @ Project	686	717	217	227	69	72
Merchant Street @ Bethel St.	19	26	6	8	2	3
Bethel Street @ Nimitz Hwy.	40	50	13	16	4	5
Nuuanu Avenue @ Nimitz Hwy.	9	10	3	3	1	1
Queen Street @ Nimitz Hwy.	26	29	8	9	3	3

Notes:

(1) All setback distances are from the roadways' centerlines.
(2) See TABLE 3 for traffic volume, speed, and mix assumptions.
(3) Ldn assumed to be equal to PM Peak Hour Leq plus 0.5 dB along Nimitz Highway.
(4) Ldn assumed to be equal to PM Peak Hour Leq less 2.0 dB along other roadways.
(5) Setback distances are for unobstructed line-of-sight conditions.
(6) Hard ground conditions assumed along all roadways.

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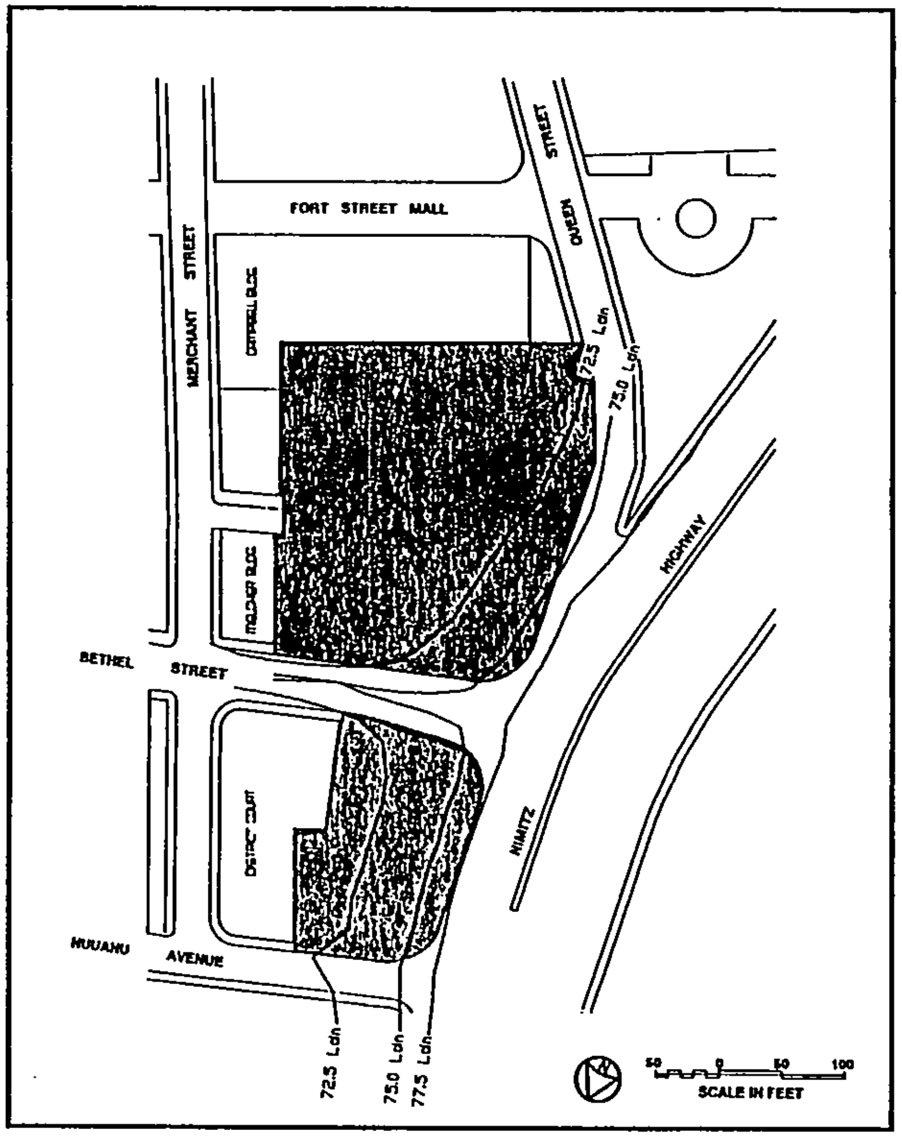

EXISTING TRAFFIC NOISE CONTOURS OVER PROJECT SITE (5 FT RECEPTOR ELEVATION)

FIGURE 6

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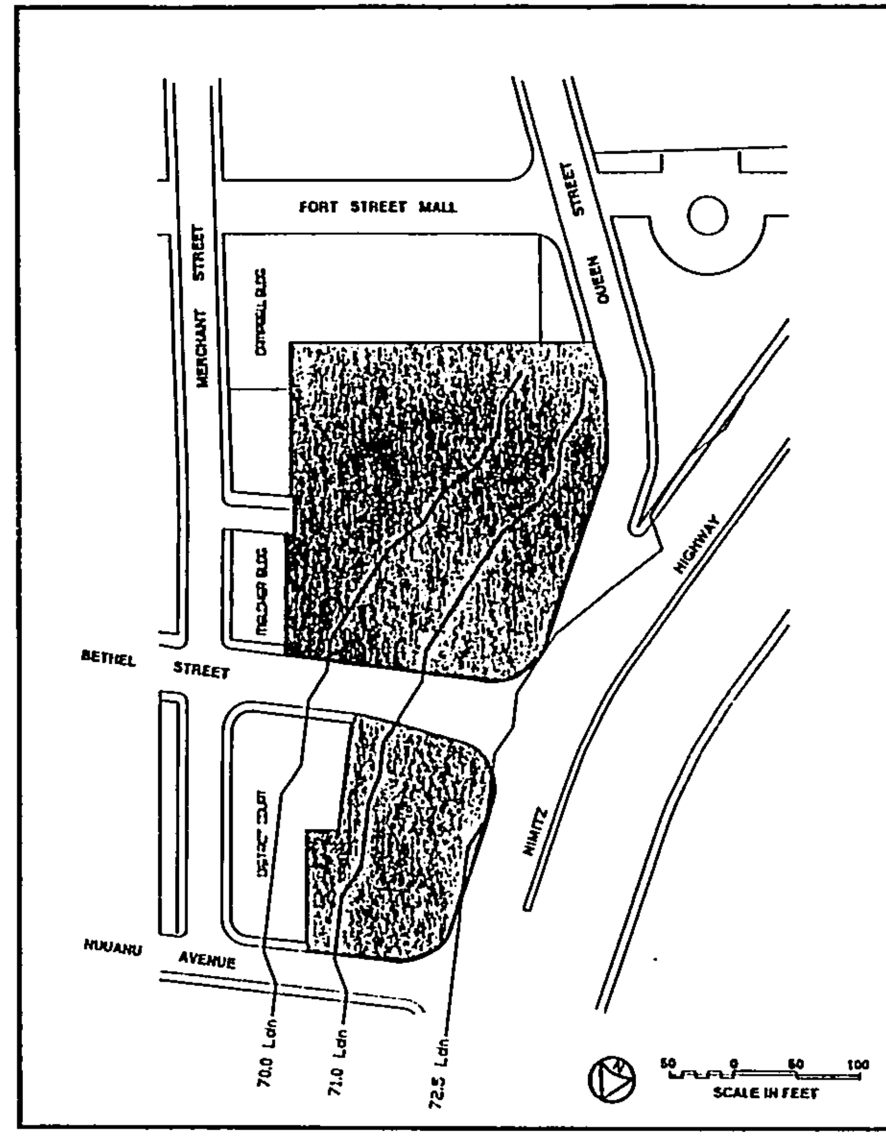

EXISTING TRAFFIC NOISE CONTOURS OVER PROJECT SITE (100 FT RECEPTOR ELEVATION)

FIGURE 7

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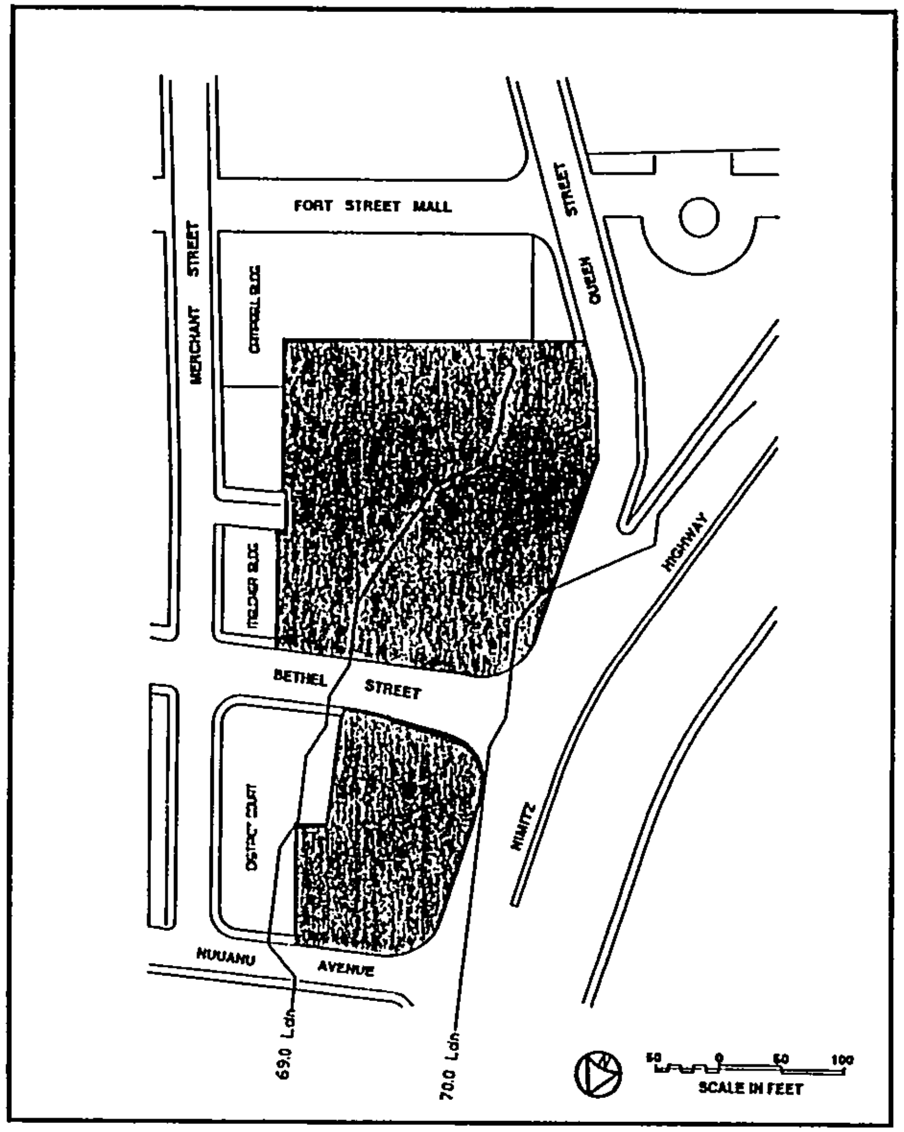

EXISTING TRAFFIC NOISE CONTOURS OVER PROJECT SITE (200 FT RECEPTOR ELEVATION)

FIGURE 8

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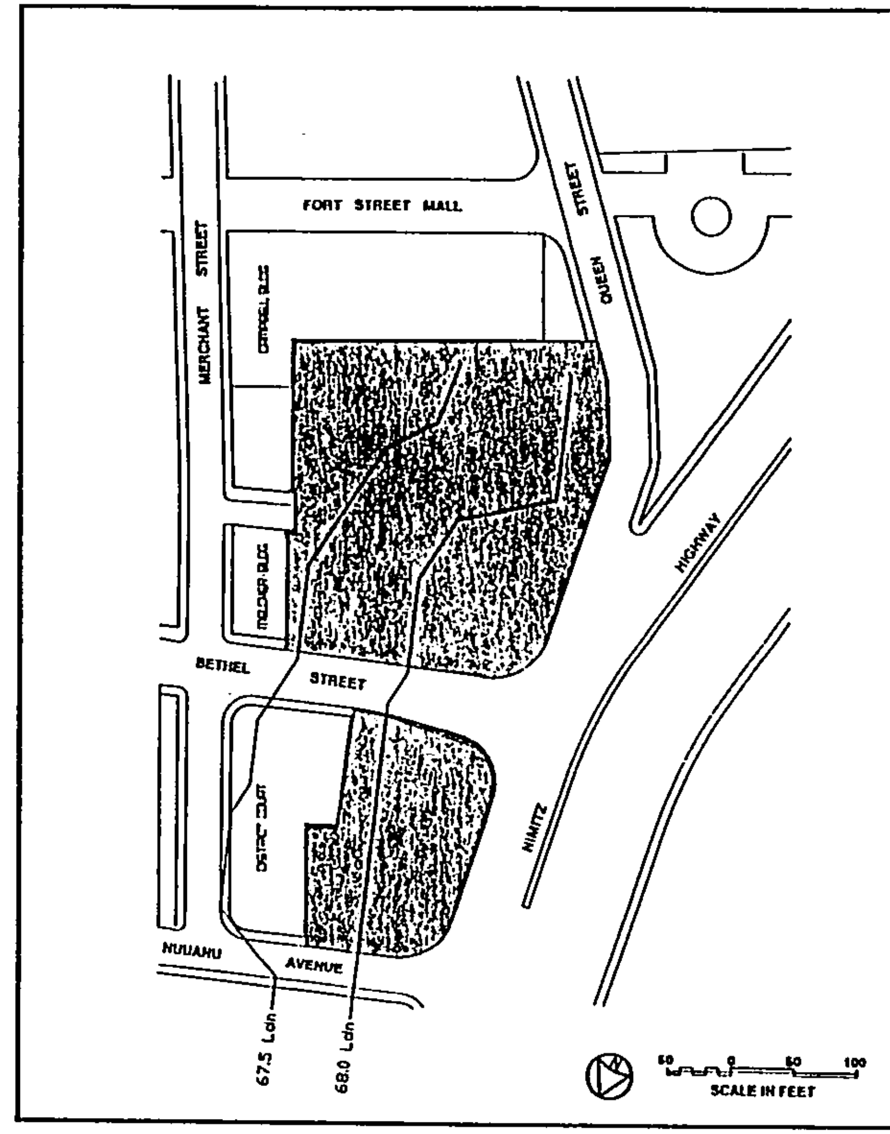

EXISTING TRAFFIC NOISE CONTOURS OVER PROJECT SITE (300 FT RECEPTOR ELEVATION)

FIGURE 9

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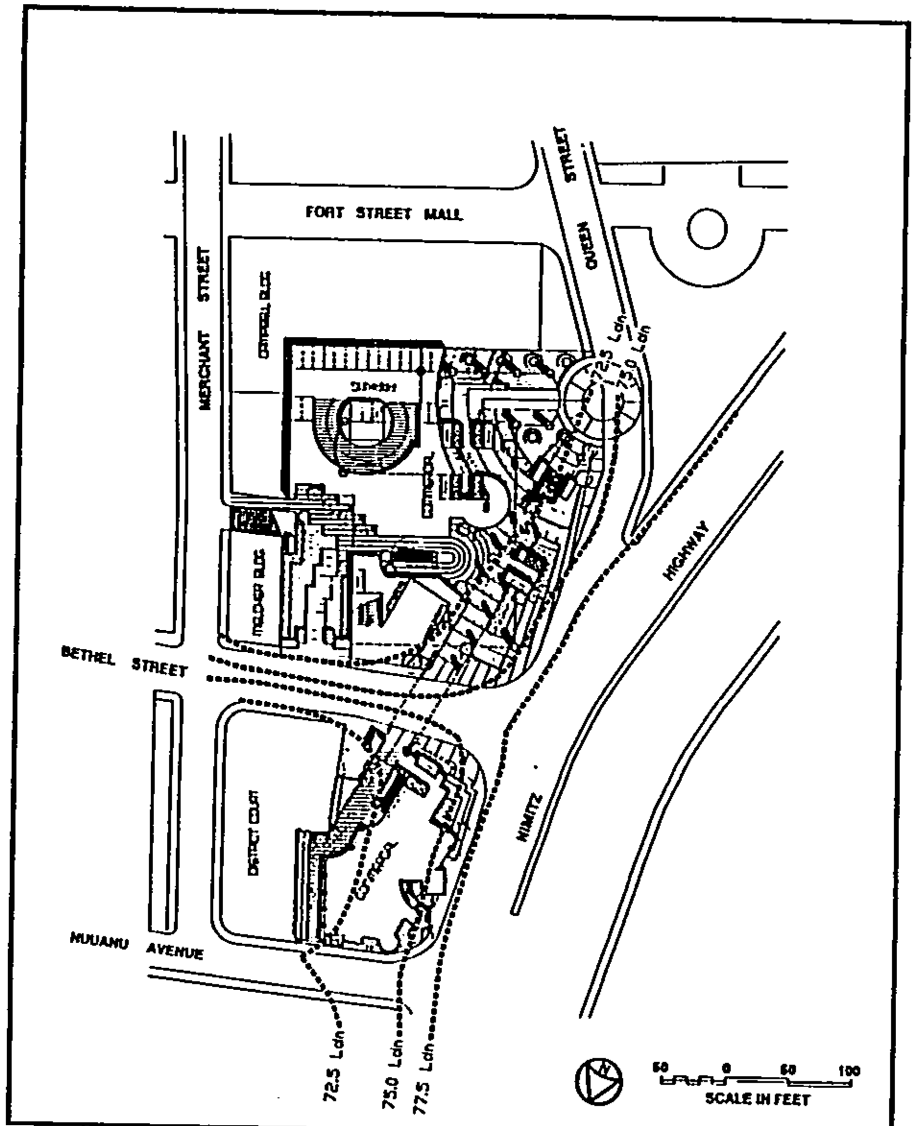
duced by 3 to 5 dB (or Ldn) if partial shielding (line-of-sight obstruction) exists between the roadway and the receptor location. If the receptor is located behind a major obstruction (large building), the noise levels in the tables and figures should be reduced by 5 to 10 dB.

CHAPTER VI. FUTURE TRAFFIC NOISE ENVIRONMENT

Predictions of future traffic noise levels were made using the traffic volume assignments of **Reference 6** for CY 1992 with and without the proposed project. The future projections of project plus non-project traffic noise levels on the roadways which would service the project are shown in **TABLE 3** for the PM peak hour of traffic. As indicated in **TABLE 3**, traffic noise levels are predicted to increase by 0.2 to 1.3 dB during the PM peak hour, with the largest increase expected along the section of Merchant Street which is between Bethel Street and the project entrance driveway. These predictions assume that average vehicle speeds and traffic mix will not change from current conditions. The dominant traffic noise source in the project area will continue to be traffic noise from Nimitz Highway, but the 0.2 dB increase in this noise source following project build-out is not expected to be significant. **TABLE 4** summarizes the predicted setback distances to the 65, 70, and 75 Ldn traffic noise contour lines along the roadways servicing the project and attributable to both project plus non-project traffic by CY 1992. The setback distances in **TABLE 4** do not include the beneficial effects of noise shielding from buildings, or the detrimental effects of additive contributions of noise from intersecting streets or reflections from building walls. As indicated in **TABLE 4**, relatively large setback distances to the 65 and 70 Ldn contours from the centerline of Nimitz Highway are predicted to continue to exist in CY 1992. **FIGURES 10 thru 13** depict the predicted traffic noise contours over the project site following project build-out in CY 1992 for ground level and elevated receptors. The beneficial effects of shielding from the proposed high-rise structure are not included in the figures, but the additive noise contributions from the adjoining streets are included in the noise contours. As indicated in the figures, the proposed residential units which face Nimitz Highway are expected to be exposed to traffic noise levels between 65 to 70 Ldn, and be within the



FUTURE TRAFFIC NOISE CONTOURS OVER PROJECT SITE (5 FT RECEPTOR ELEVATION)

FIGURE 10

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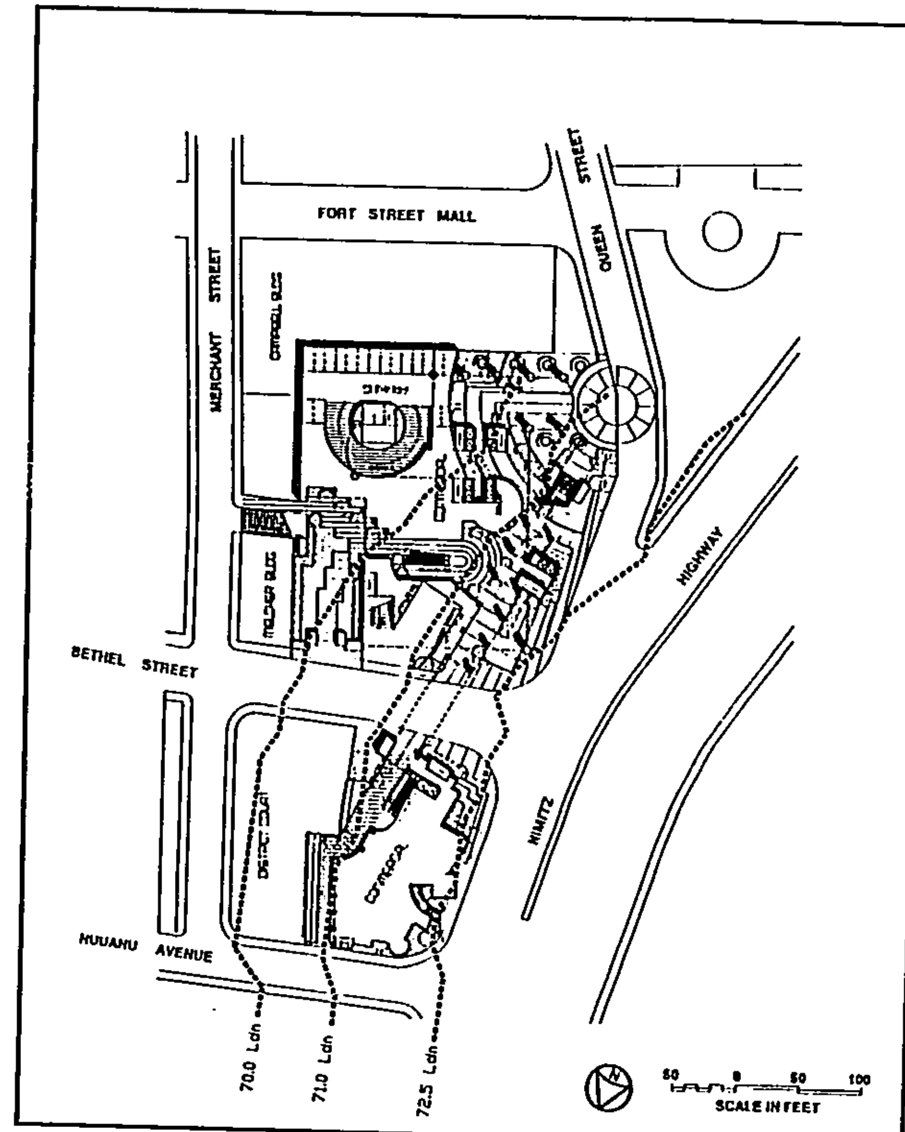

FUTURE TRAFFIC NOISE CONTOURS OVER PROJECT SITE (100 FT RECEPTOR ELEVATION)

FIGURE 11

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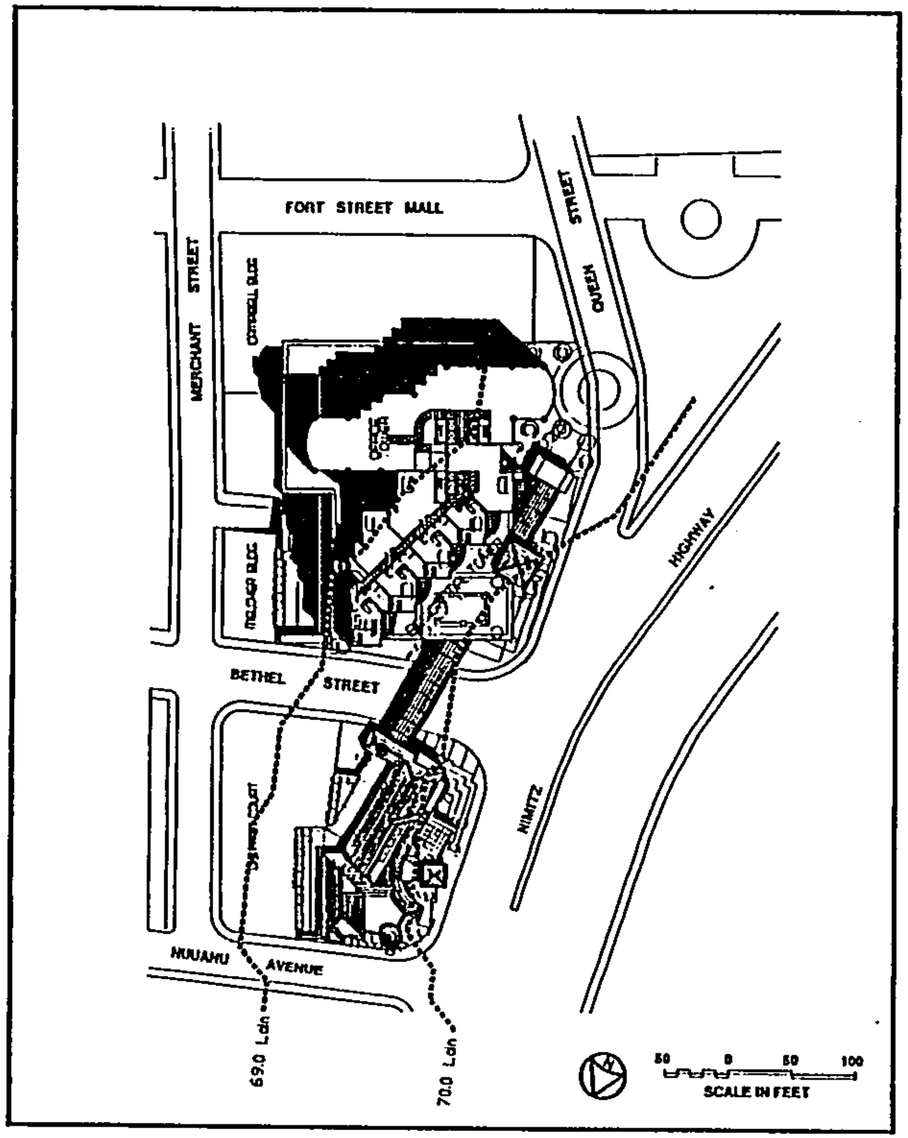
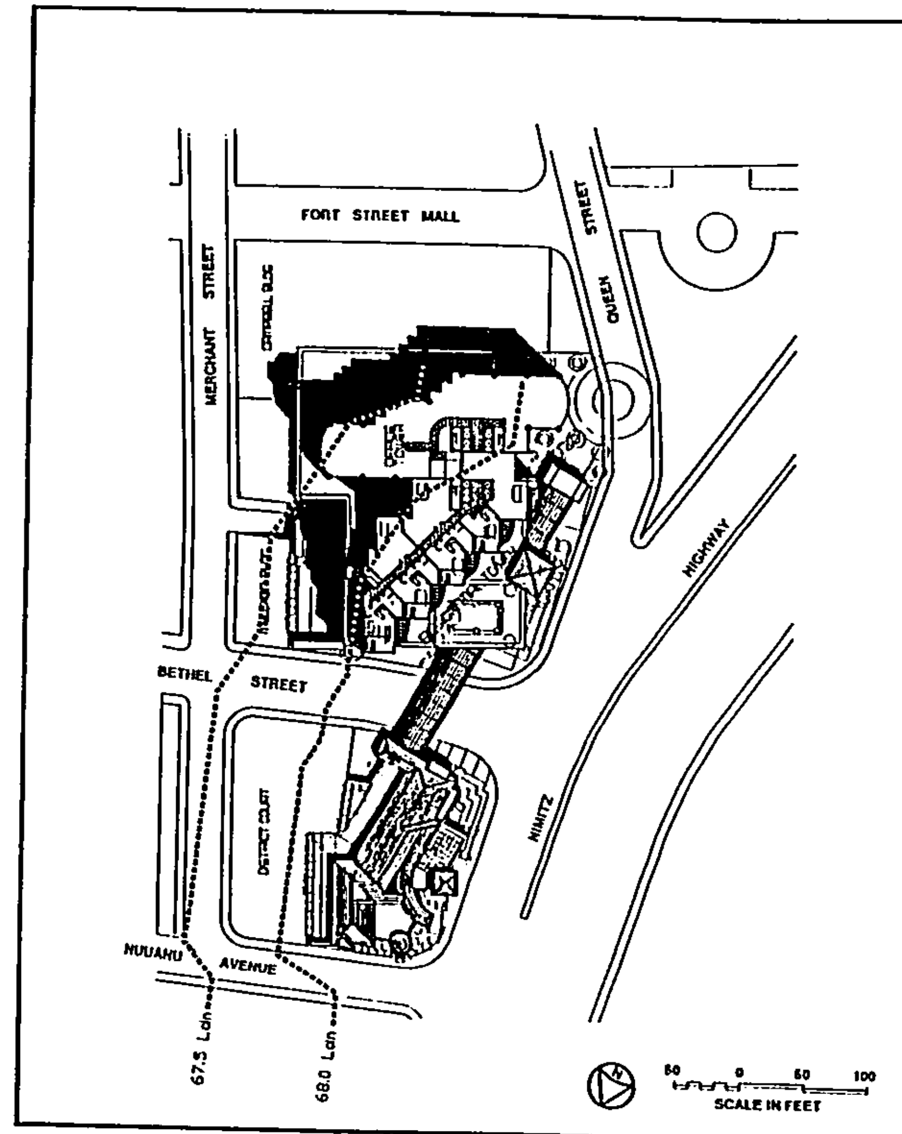


FUTURE TRAFFIC NOISE CONTOURS OVER PROJECT SITE (200 FT RECEPTOR ELEVATION)

FIGURE 12



FUTURE TRAFFIC NOISE CONTOURS OVER PROJECT SITE (300 FT RECEPTOR ELEVATION)

FIGURE 13

"Significant Exposure, Normally Unacceptable" noise exposure category. The proposed mauka residential units which face east should experience at least 5 dB less traffic noise than those which face Nimitz Highway. These mauka units should experience traffic noise levels between 60 to 65 Ldn, and be within the "Moderate Exposure, Acceptable" category.

TABLE 5 presents the predicted increases in traffic noise levels associated with non-project and project traffic by CY 1992, and as measured by the Ldn descriptor system. As indicated in TABLE 5, the increases in traffic noise along Merchant and Bethel Streets attributable to project traffic are predicted to be greater than those due to non-project traffic, with the combined traffic noise increases along these two streets predicted to range from 1.0 to 1.3 Ldn. This level of increase is considered to be moderate, and should not generate adverse noise impacts due to commercial character of the surrounding area. Minimal increases ranging from 0.0 to 0.3 Ldn in traffic noise levels are expected to result from project traffic along Nimitz Highway, Nuuanu Avenue, and Queen Street. These changes will be difficult to measure and are considered to be insignificant.

TABLE 5

CALCULATIONS OF PROJECT AND NON-PROJECT TRAFFIC NOISE CONTRIBUTIONS (CY 1992)

STREET SECTION	NOISE LEVEL INCREASES (Ldn) DUE TO NON-PROJECT TRAFFIC	PROJECT TRAFFIC
Nimitz Highway @ Project	0.2	0.0
Merchant Street @ Bethel St.	0.2	1.1
Bethel Street @ Nimitz Hwy.	0.3	0.7
Nuuanu Avenue @ Nimitz Hwy.	0.3	0.0
Queen Street @ Nimitz Hwy.	0.3	0.3

CHAPTER VII. DISCUSSION OF PROJECT RELATED NOISE AND VIBRATION IMPACTS AND POSSIBLE MITIGATION MEASURES

<u>Traffic Noise.</u> Impacts from traffic noise are possible at the proposed project dwelling units in the Residential Tower, and particularly those which face Nimitz Highway. Because these units are expected to be in the luxury category, mitigation of high traffic noise levels through the use of total closure and air conditioning is recommended. Minimum exterior-to-interior noise reductions of approximately 25 dB are required to achieve an interior noise level of 45 Ldn, which is the maximum recommended level of interior noise which minimizes risks of adverse health and welfare effects. This level of exterior-to-interior noise reduction is not difficult to obtain with standard construction materials and methods. However, because of the luxury nature of the proposed units and the relatively high levels of exterior noise associated with Nimitz Highway, it is suggested that glazing and exterior wall components with minimum STC 35 rating be used for the dwelling units to minimize risks of occupant dissatisfaction.

<u>General Construction Noise.</u> Audible construction noise will probably be unavoidable during the entire project construction period. The total time period for construction is unknown, but it is anticipated that the actual work will be moving from one location on the project site to another during that period. Actual length of exposure to construction noise at any receptor location will probably be less than the total construction period for the entire project. Typical levels of exterior noise from construction activity (excluding pile driving activity) are shown in FIGURE 14. The impulsive noise levels of impact pile drivers are approximately 15 dB higher than the levels shown in FIGURE 14, while the intermittent noise levels of vibratory pile drivers are at the upper end of the noise level ranges depicted in the figure. Typical levels of construction noise inside naturally ventilated and air conditioned structures are approximately 10 and 20 dB less,

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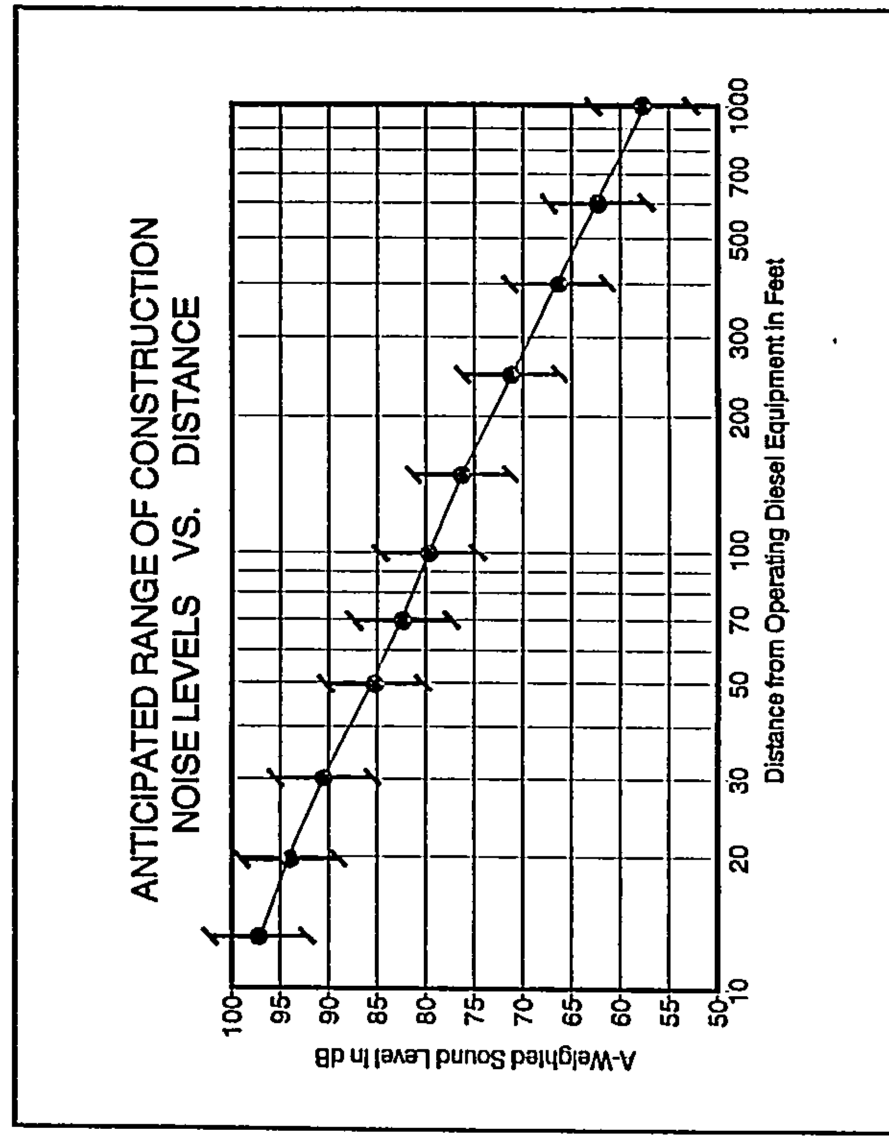

CONSTRUCTION NOISE LEVELS VS. DISTANCE

FIGURE 14

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respectively, than the levels shown in **FIGURE 14**. The business offices within the neighboring buildings to the east of the project site are predicted to experience the highest noise levels during construction activities due to their close proximity to the construction site. Adverse impacts from construction noise are not expected to be in the "public health and welfare" category due to the temporary nature of the work, the business/commercial character of the neighborhood, the prevalent use of air conditioning within the adjoining buildings, and due to the administrative controls available for regulation of construction noise. Instead, these impacts will probably be limited to the temporary degradation of the quality of the acoustic environment in the immediate vicinity of the project site.

Mitigation of construction noise to inaudible levels will not be practical in all cases due to the intensity of construction noise sources (80 to 90+ dB at 50 FT distance), and due to the exterior nature of the work (pile driving, grading and earth moving, trenching, concrete pouring, hammering, etc.). The use of properly muffled construction equipment should be required on the job site.

The incorporation of State Department of Health construction noise limits and curfew times, which are applicable on the island of Oahu (**Reference 4**), is another noise mitigation measure which are normally applied to construction activities. **TABLE 6** depicts the allowed hours of construction for normal construction noise (levels which do not exceed 95 dB at the project's property line) and for construction noise which exceeds 95 dB at the project's property line. Noisy construction activities are not allowed on holidays, Saturdays, Sundays, during the early morning, and during the late evening periods under the DOH permit procedures. Because of the business/commercial character of the project area, a variance from the DOH curfew periods for noisy construction activities should be considered since it may shorten the total construction period and thereby lessen the cumulative noise exposure period of

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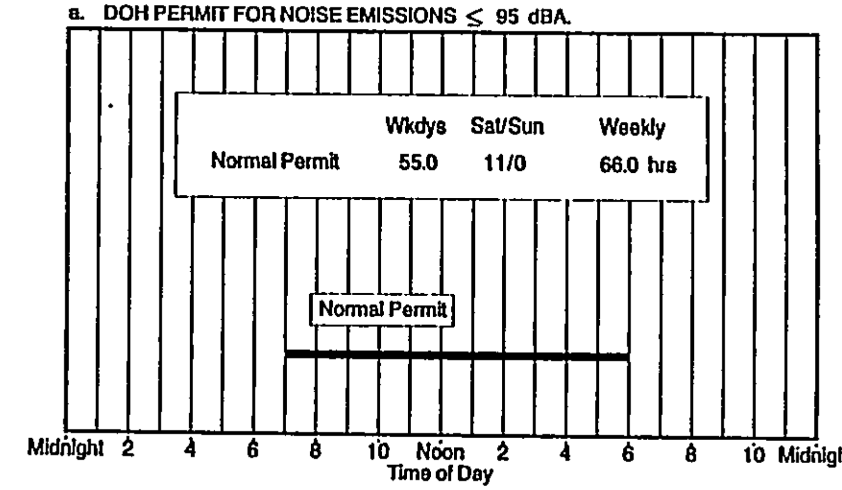
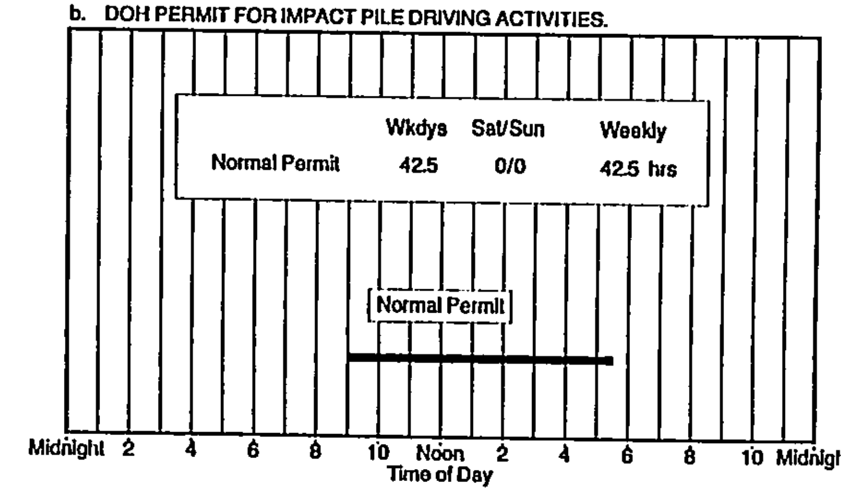
TABLE 6

AVAILABLE WORK HOURS UNDER DOH PERMIT PROCEDURES FOR CONSTRUCTION NOISE

a. DOH PERMIT FOR NOISE EMISSIONS ≤ 95 dBA.



b. DOH PERMIT FOR IMPACT PILE DRIVING ACTIVITIES.



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the occupants in the adjoining commercial buildings.

__Vibration from Pile Driving.__ Pile driving will probably be necessary to implant sheet and concrete piles into the ground over the project site. Induced ground vibrations from these pile driving operations have the potential to cause architectural and structural damage to structures. In addition, historic buildings, such as the Melcher's Building, Old Police Station and District Court Building, Old Bishop Bank, and the Bishop Estate Building are located on parcels which are immediately adjacent to the project site. Because of the potential for vibration induced damage to the neighboring buildings, research was conducted using the resources of Hamilton Library at the University of Hawaii. APPENDIX A2 lists the pertinent periodicals and books which were reviewed during the course of the research effort. The foundation plans for the proposed project structures, the soils report, or structural integrity reports on the historic buildings were not available for review prior to the formulation of this vibration impact assessment.

Ground vibrations generated during pile driving operations are generally described in terms of peak particle (or ground) velocity in units of inches/second. The human being is very sensitive to ground vibrations, which are perceptible at relatively low particle velocities of 0.01 to 0.04 inches/second. Damage to structures, however, occur at even higher levels of vibration as indicated in TABLE 7. The most commonly used damage criteria for structures is the 2.0 inches/second limit derived from work by the U.S. Bureau of Mines. A more conservative limit of 0.2 inches/second is also used, and is suggested for planning purposes on this project because of the repetitive nature of pile driving operations which can increase risks of damage due to fatiguing, plus the historic nature and age of the adjacent buildings.

Based on measured vibration levels during pile driving operations under various soil conditions and at various distances, estimates of ground vibration levels vs. distance from the pile

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TABLE 7
SUMMARY OF BUILDING DAMAGE CRITERIA

PEAK GROUND VELOCITY (mm/sec)	PEAK GROUND VELOCITY (in/sec)	COMMENT
193.04	7.6	Major damage to buildings (mean of data).
137.72	5.4	Minor damage to buildings (mean of data).
101.16	4.0	'Engineer structures' safe from damage.
50.8	2.0	Safe from damage limit (probability of damage <5%).
		No structural damage.
33.02	1.3	Threshold of risk of 'architectural' damage for houses.
25.4	1.0	No data showing damage to structures for vibration <1 in./sec.
15.24	0.6	No risk of 'architectural' damage to normal buildings.
10.16	0.4	Threshold of damage in older homes.
5.08	0.2	Statistically significant percentage of structures may experience minor damage (including earthquake, nuclear event, and blast data for old and new structures).
		No 'architectural' damage.
3.81	0.5 to 0.15	Upper limits for ruins and ancient monuments.
1.0	0.04	Vertical vibration clearly perceptible to humans.
0.32	0.01	Vertical vibration just perceptible to humans.

Source: 'State-of-the-Art Review: Prediction and Control of Groundborne Noise and Vibration from Rail Transit Trains'; U.S. Department of Transportation; December 1983.

DRAFT

driver have been made for various soil conditions and for various energy ratings of the pile drivers. **FIGURE 15**, which was extracted from **Reference 14**, may be used to predict vibration levels for the soil conditions indicated. When coral layers must be penetrated, vibration levels can be expected to be higher than those shown in **FIGURE 15**, particularly if the adjacent structures are supported by the common coral layer. From **FIGURE 15**, and for wet sand soil conditions, the 0.2 inches/second vibration damage criteria will be exceeded at a scaled energy distance factor of approximately 0.7. The scaled energy distance factor is equal to the square root of the energy (in foot-pounds) per blow of the hammer divided by the distance (in feet) between the pile tip and the monitoring location. For a 30,000 foot-pound pile driver, a scaled energy distance of 0.7 equates to a separation distance of 247 FT. Under clay soil conditions, and using the prediction procedures contained in **FIGURE 15**, a shorter separation distance of 115 FT is required to not exceed the 0.2 inches/second criteria when using a 30,000 foot-pound pile driver. It should be noted that 0.2 inches/second vibration levels were measured from a 22,400 foot-pound pile driver at even shorter separation distances of approximately 30 FT in sandy, layered soil (**Reference 4**). The measurement data reported in **Reference 4** are significantly lower than the vibration levels predicted by the methodology of **Reference 14**.

As indicated above, predictions of peak ground vibration levels vs. scaled energy distance factor from the driven pile are not precise, with initial uncertainty factor for a given location in the order of 10:1. For this reason, it is standard practice to employ seismograph monitoring of ground vibrations during pile driving operations with a 3-axis geophone or accelerometer. If pile drivers of approximately 30,000 foot-pounds or larger ratings are anticipated to be used on the job site, the initial vibration predictions indicate that there is some risk of exceeding the 0.2 inches/second vibration damage criteria at 100 to 250 FT separa-

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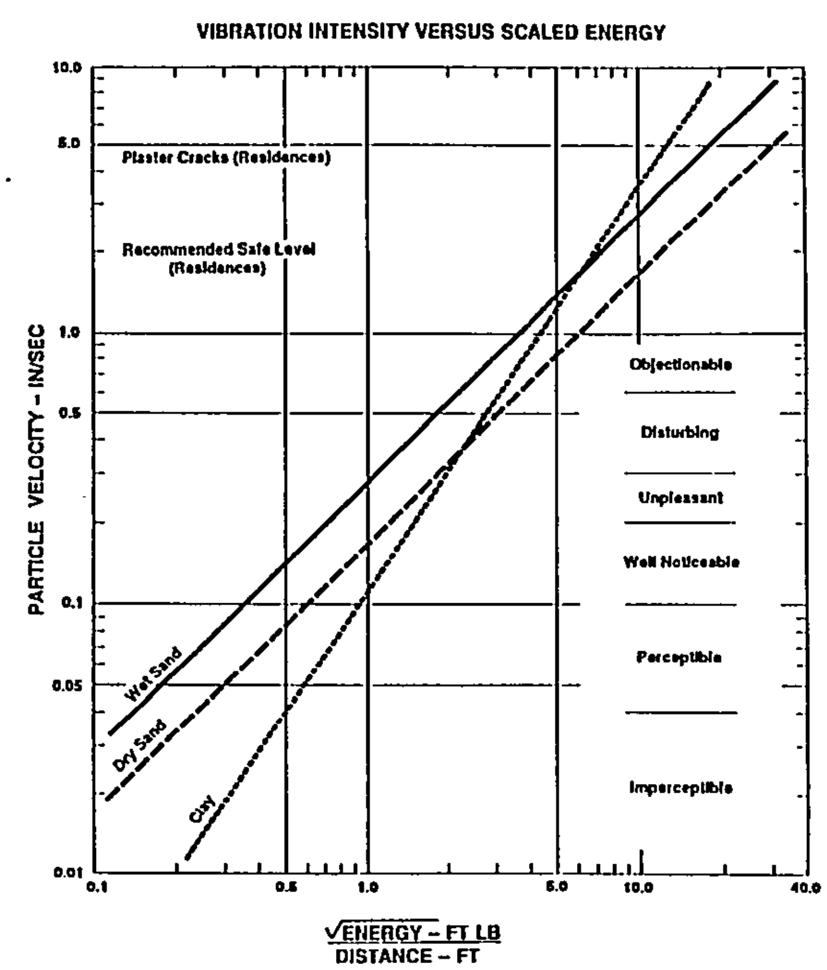

MAXIMUM VIBRATION INTENSITIES EXPECTED FROM PILE DRIVING

FIGURE 15

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tion distances, and monitoring during pile driving operations is warranted. Monitoring alone, however, may not be a practical mitigation measure unless there are alternative pile driving methods or foundation plans which can be employed if the damage criteria is exceeded. For these reasons, the following preventative measures are recommended for implementation during the planning and design phases of the project:

- In addition to the normal planning and design concerns regarding potential damage due to settling and heaving during construction, consideration should also be given to risks of damage due to vibration from pile driving. A damage criteria of 0.2 inches/second should be used in conjunction with the vibration prediction method of Reference 14 to identify the potential damage risk distances to the driven piles.

- If predicted vibration levels from pile driving exceed 0.2 inches/second at the historic buildings, and predicted levels cannot be reduced by sizing of the pile driver or through the use of alternate types of piles (bored or non-displacement types), test piles should be driven and its vibrations monitored and recorded prior to completion of the foundation design. The monitoring of the test piles should be designed to measure the expected peak, 3-axis vibration levels at the historic buildings. The results of the monitoring should be used to define the empirical distance from the driven pile to the 0.2 inches/second damage risk location, and to evaluate the risks of structural damage to the adjacent structure during actual construction.

- If predicted vibration levels from pile driving exceed 2.0 inches/second at the historic buildings, the use of alternate types of piles should be considered for implementation during the design phase.

APPENDIX A1. NOISE IMPACT REFERENCES

(1) "Guidelines for Considering Noise in Land Use Planning and Control"; Federal Interagency Committee on Urban Noise; June 1980.

(2) "Environmental Criteria and Standards, Noise Abatement and Control, 24 CFR, Part 51, Subpart B"; U.S. Department of Housing and Urban Development; July 12, 1979.

(3) "Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety"; Environmental Protection Agency (EPA 550/9-74-004); March 1974.

(4) "Title 11, Administrative Rules, Chapter 43, Community Noise Control for Oahu"; Hawaii State Department of Health; November 6, 1981.

(5) Barry, T. and J. Reagan, "FHWA Highway Traffic Noise Prediction Model"; FHWA-RD-77-108, Federal Highway Administration; Washington, D.C.; December 1978.

(6) Traffic Impact Assessment Report for Kaahumanu Square (Draft); Pacific Planning & Engineering, Inc.; June 1989.

(7) October 5, 1988 24-Hour Traffic Counts; Station SL-30, Nimitz Highway at Nuuanu Stream Bridge; Hawaii State Department of Transportation.

(8) April 28-29, 1980 24-Hour Traffic Counts #697, #652, and #632; Bethel, Merchant, and Queen Streets at Nimitz Highway; Honolulu Department of Transportation Services.

APPENDIX A2. LIST OF VIBRATION IMPACT REFERENCES REVIEWED

1. Dym, Clive L.; "Attentuation of Ground Vibration"; Sound and Vibration; April 1976.

2. Fleming, W.G.K.; Weltman, A.J.; Randolph, M.F,; Elson, W.K.; Pile Driving; John Wiley and Sons; 1985.

3. Gutowski, T.G. and Dym, C.L.; "Propagation of Ground Vibration": A Review; Journal of Sound and Vibration; July 1976.

4. Gutowski, T.G.; Wittig, L.E.; and Dym, C.L.; "Some Aspects of the Ground Vibration Problem"; May-June 1978.

5. Hanna, T.H.; The Measurement of Pore Water Pressures Adjacent to a Driven Pile; Canadian Geotechnical Journal; September 1967.

6. Liu, Thomas K; Kinner, Edward B.; Yegian, Mishac K.; "Ground Vibrations"; Sound and Vibration; October 1974.

7. Richart, Jr., F.E.; Hall, Jr., J.R.; Woods, R.D.; Vibrations of Soils and Foundations; Prentice-Hall, Inc.; 1970.

8. Scanlan, R.H.; Seismic Wave Effects on Soil-Structure Interaction; Earthquake Engineering and Structural Dynamics, Vol. 4; May 1975.

9. State-of-the-Art Review: Prediction and Control of Ground-borne Noise and Vibration from Rail Transit Trains; December 1983.

10. Tomlinson, M.J.; Pile Design and Construction Practice; A Viewpoint Publication.

11. Vibration Effects of Earthquakes on Soils and Foundations; American Society for Testing and Materials; June 1968.

12. Weisflog, W.E.; Vibratory Pile Driving; February 1967.

13 Wiss, John F.; Nicholls, Harry R.; A Study of Damage to a Residential Structure from Blast Vibrations; American Society of Civil Engineers; 1974.

14. Wiss, John F., Janney, Elstner and Assoc.; Damage of Pile Driving Vibration; Highway Research Record, Number 155.

15. Zeevaert, Leonardo; Feld, Jacob; Fegan, Joseph C.; Tschebotarioff, Gregory P.; Effect of Driving Wood Piles Into Soft Clay; December 1948.

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APPENDIX B

EXCERPTS FROM EPA'S ACOUSTIC TERMINOLOGY GUIDE

Descriptor Symbol Usage

The recommended symbols for the commonly used acoustic descriptors based on A-weighting are contained in Table I. As most acoustic criteria and standards used by EPA are derived from the A-weighted sound level, almost all descriptor symbol usage guidance is contained in Table I.

Since acoustic nomenclature includes weighting networks other than "A" and measurements other than pressure, an expansion of Table I was developed (Table II). The group adopted the ANSI descriptor-symbol scheme which is structured into three stages. The first stage indicates that the descriptor is a level (i.e., based upon the logarithm of a ratio), the second stage indicates the type of quantity (power, pressure, or sound exposure), and the third stage indicates the weighting network (A, B, C, D, E.....). If no weighting network is specified, "A" weighting is understood. Exceptions are the A-weighted sound level and the A-weighted peak sound level which require that the "A" be specified. For convenience in those situations in which an A-weighted descriptor is being compared to that of another weighting, the alternative column in Table II permits the inclusion of the "A". For example, a report on blast noise might wish to contrast the LCdn with the LAdn.

Although not included in the tables, it is also recommended that "Lpn" and "LepN" be used as symbols for perceived noise levels and effective perceived noise levels, respectively.

It is recommended that in their initial use within a report, such terms be written in full, rather than abbreviated. An example of preferred usage is as follows:

The A-weighted sound level (LA) was measured before and after the installation of acoustical treatment. The measured LA values were 85 and 75 dB respectively.

Descriptor Nomenclature

With regard to energy averaging over time, the term "average" should be discouraged in favor of the term "equivalent". Hence, Leq, is designated the "equivalent sound level". For Ld, Ln, and Ldn, "equivalent" need not be stated since the concept of day, night, or day-night averaging is by definition understood. Therefore, the designations are "day sound level", "night sound level", and "day-night sound level", respectively.

The peak sound level is the logarithmic ratio of peak sound pressure to a reference pressure and not the maximum root mean square pressure. While the latter is the maximum sound pressure level, it is often incorrectly labelled peak. In that sound level meters have "peak" settings, this distinction is most important.

"Background ambient" should be used in lieu of "background", "ambient", "residual", or "indigenous" to describe the level characteristics of the general background noise due to the contribution of many unidentifiable noise sources near and far.

With regard to units, it is recommended that the unit decibel (abbreviated dB) be used without modification. Hence, DBA, PNdB, and EPNdB are not to be used. Examples of this preferred usage are: the Perceived Noise Level (Lpn was found to be 75 dB. Lpn = 75 dB). This decision was based upon the recommendation of the National Bureau of Standards, and the policies of ANSI and the Acoustical Society of America, all of which disallow any modification of bel except for prefixes indicating its multiples or submultiples (e.g., deci).

Noise Impact

In discussing noise impact, it is recommended that "Level Weighted Population" (LWP) replace "Equivalent Noise Impact" (ENI). The term "Relative Change of Impact" (RCI) shall be used for comparing the relative differences in LWP between two alternatives.

Further, when appropriate, "Noise Impact Index" (NII) and "Population Weighed Loss of Hearing" (PHL) shall be used consistent with CHABA Working Group 69 Report Guidelines for Preparing Environmental Impact Statements (1977).

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APPENDIX B (CONTINUED)

TABLE I

A-WEIGHTED RECOMMENDED DESCRIPTOR LIST

TERM	SYMBOL
1. A-Weighted Sound Level	L_A
2. A-Weighted Sound Power Level	L_{WA}
3. Maximum A-Weighted Sound Level	L_{max}
4. Peak A-Weighted Sound Level	L_{Apk}
5. Level Exceeded x% of the Time	L_x
6. Equivalent Sound Level	L_{eq}
7. Equivalent Sound Level over Time (T) (1)	$L_{eq(T)}$
8. Day Sound Level	L_d
9. Night Sound Level	L_n
10. Day-Night Sound Level	L_{dn}
11. Yearly Day-Night Sound Level	$L_{dn(Y)}$
12. Sound Exposure Level	L_{SE}

(1) Unless otherwise specified, time is in hours (e.g. the hourly equivalent level is $L_{eq(1)}$). Time may be specified in non-quantitative terms (e.g., could be specified a $L_{eq(WASH)}$ to mean the washing cycle noise for a washing machine).

SOURCE: EPA ACOUSTIC TERMINOLOGY GUIDE, BNA 8-14-78, NOISE REGULATION REPORTER.

APPENDIX B (CONTINUED)

TABLE II

RECOMMENDED DESCRIPTOR LIST

TERM	A-WEIGHTING	ALTERNATIVE(1) A-WEIGHTING	OTHER(2) WEIGHTING	UNWEIGHTED
1. Sound (Pressure) (3) Level	L_A	L_{pA}	L_B, L_{pB}	L_p
2. Sound Power Level	L_{WA}		L_{WB}	L_W
3. Max. Sound Level	L_{max}	L_{Amax}	L_{Bmax}	L_{pmax}
4. Peak Sound (Pressure) Level	L_{Apk}		L_{Bpk}	L_{pk}
5. Level Exceeded x% of the time	L_x	L_{Ax}	L_{Bx}	L_{px}
6. Equivalent Sound Level	L_{eq}	L_{Aeq}	L_{Beq}	L_{peq}
7. Equivalent Sound Level (4) Over Time(T)	$L_{eq(T)}$	$L_{Aeq(T)}$	$L_{Beq(T)}$	$L_{peq(T)}$
8. Day Sound Level	L_d	L_{Ad}	L_d	L_{pd}
9. Night Sound Level	L_n	L_{An}	L_{Bn}	L_{pn}
10. Day-Night Sound Level	L_{dn}	L_{Adn}	L_{Bdn}	L_{pdn}
11. Yearly Day-Night Sound Level	$L_{dn(Y)}$	$L_{Adn(Y)}$	$L_{Bdn(Y)}$	$L_{pdn(Y)}$
12. Sound Exposure Level	L_S	L_{SA}	L_{SB}	L_{Sp}
13. Energy Average value over (non-time domain) set of observations	$L_{eq(e)}$	$L_{Aeq(e)}$	$L_{Beq(e)}$	$L_{peq(e)}$
14. Level exceeded x% of the total set of (non-time domain) observations	$L_{x(e)}$	$L_{Ax(e)}$	$L_{Bx(e)}$	$L_{px(e)}$
15. Average L_x value	L_x	L_{Ax}	L_{Bx}	L_{px}

(1) "Alternative" symbols may be used to assure clarity or consistency.

(2) Only B-weighting shown. Applies also to C,D,E,.....weighting.

(3) The term "pressure" is used only for the unweighted level.

(4) Unless otherwise specified, time is in hours (e.g., the hourly equivalent level is Leq(1). Time may be specified in non-quantitative terms (e.g., could be specified as Leq(WASH) to mean the washing cycle noise for a washing machine.

Update To

APPENDIX C

NOISE AND VIBRATION IMPACT ASSESSMENT

NOISE STUDY
FOR THE PROPOSED
KAAHUMANU PARKING STRUCTURE
DEVELOPMENT PROJECT

Prepared for:
R. M. TOWILL CORPORATION

Prepared by:
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1126 12th Avenue, Room 305
Honolulu, Hawaii 96816

MAY 1990

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

CHAPTER I. SUMMARY

The existing and future traffic noise levels in the vicinity of the proposed Kaahumanu Parking Structure Redevelopment Project in Downtown Honolulu were evaluated for their potential impacts and their relationship to current FHA/HUD noise standards. The traffic noise level increases along the 5 roadways bordering the project site were calculated. Following project build-out by CY 1992, increases in traffic noise of 0.3 to 1.5 Ldn units are predicted to occur as a result of project plus non-project traffic.

Along Nimitz Highway, traffic noise levels are expected to increase by 0.3 Ldn, primarily as a result of non-project traffic. Along Bethel, Merchant, and Queen Streets and along Nuuanu Avenue, traffic noise levels are expected to increase by approximately 0.2 to 0.3 Ldn by CY 1992 as a result of non-project traffic. Project traffic will add approximately 0.3 to 1.3 Ldn additional units of noise along Merchant, Bethel, and Queen Streets in the immediate vicinity of the project. These levels of traffic noise increases resulting from project generated traffic are not considered to be significant. In addition, because of the business/commercial character of the project area, the predicted moderate increases in traffic noise levels along Merchant, Bethel and Queen Streets are not expected to generate adverse noise impacts.

It will not be possible to obtain adequate setback of the project's Residential Tower from the centerline of Nimitz Highway so as to meet FHA/HUD noise standards along the south face of the Residential Tower. Because of this, impacts from traffic noise are possible at the proposed project dwelling units in the Residential Tower, and particularly those which face Nimitz Highway. Because these units are expected to be in the luxury category, mitigation of high traffic noise levels through the use of closure and air conditioning is recommended.

Unavoidable, but temporary, noise impacts will occur during the construction of the proposed project, particularly during the

excavation and pile driving activities on the project site. Because construction activities are predicted to be audible within the project and at adjoining properties, the quality of the acoustic environment may be degraded to unacceptable levels during periods of construction. Mitigation measures to reduce construction noise to inaudible levels will not be practical in all cases, but the use of quiet equipment is recommended as a standard mitigation measure. The project site is adjacent to lands which are used for business/commercial purposes. For this reason, a variance from the normal construction curfew periods as required under the State Department of Health noise regulations is recommended to minimize construction noise impacts on adjoining properties during the normal working hours.

Because of the presence of historic buildings adjacent to the project site and the potential for damage to these buildings from vibration during pile driving operations, vibration monitoring is recommended during close-in pile driving operations where vibration levels are expected to exceed 0.2 inches/second at adjacent historic buildings. In addition, it is expected that the design of the supporting piles and construction methods for the project buildings will be optimized to minimize risks of damage to adjacent structures from settling or heaving. A vibration limit of 2.0 inches/second should not be exceeded at the adjacent historic buildings, and modifications to the project's foundation and pile driving plans prior to design and construction are recommended if these limits are expected to be exceeded.

CHAPTER II. PURPOSE

The primary objective of this study was to describe the existing and future traffic noise environment in the environs of the proposed Kaahumanu Parking Structure Redevelopment Project in Downtown Honolulu on the island of Oahu. Traffic noise level increases and impacts associated with the proposed development were to be determined within the project site as well as along the public roadways expected to service the project traffic. A specific objective was to determine future traffic noise level increases associated with both project and non-project traffic, and the potential noise impacts associated with these increases. Assessments of possible future impacts from short term construction noise and vibration at the project site were also included as noise study objectives. Specifically, the potential risks of structural damage to adjacent historic buildings from pile driving operations on the project site were included in the noise and vibration impact assessment. Recommendations for minimizing identified noise and vibration impacts were also to be provided as required.

CHAPTER III. NOISE DESCRIPTORS AND THEIR RELATIONSHIP TO LAND USE COMPATIBILITY

The noise descriptor currently used by federal agencies (such as FHA/HUD) to assess environmental noise is the Day-Night Average Sound Level (Ldn). This descriptor incorporates a 24-hour average of instantaneous A-Weighted Sound Levels as read on a standard Sound Level Meter. By definition, the minimum averaging period for the Ldn descriptor is 24 hours. Additionally, sound levels which occur during the nighttime hours of 10:00 PM to 7:00 AM are increased by 10 decibels (dB) prior to computing the 24-hour average by the Ldn descriptor. A more complete list of noise descriptors is provided in **APPENDIX B** to this report.

TABLE 1, derived from **Reference 1**, presents current federal noise standards and acceptability criteria for residential land uses. Land use compatibility guidelines for various levels of environmental noise as measured by the Ldn descriptor system are shown in **FIGURE 1**. As a general rule, noise levels of 55 Ldn or less occur in rural areas, or in areas which are removed from high volume roadways. In urbanized areas which are shielded from high volume streets, Ldn levels generally range from 55 to 65 Ldn, and are usually controlled by motor vehicle traffic noise. Residences which front major roadways are generally exposed to levels of 65 Ldn, and as high as 75 Ldn when the roadway is a high speed freeway. In the project area, traffic noise levels associated with Nimitz Highway are typically greater than 75 Ldn along the Right-of-Way due to the large volume of traffic on that major thoroughfare. The range of background ambient noise levels at other urbanized areas on Oahu are shown in **FIGURE 2**.

For the purposes of determining noise acceptability for funding assistance from federal agencies (FHA/HUD and VA), an exterior noise level of 65 Ldn or lower is considered acceptable. This standard is applied nationally (**Reference 2**), including Hawaii. Because of our open-living conditions, the predominant use of nat-

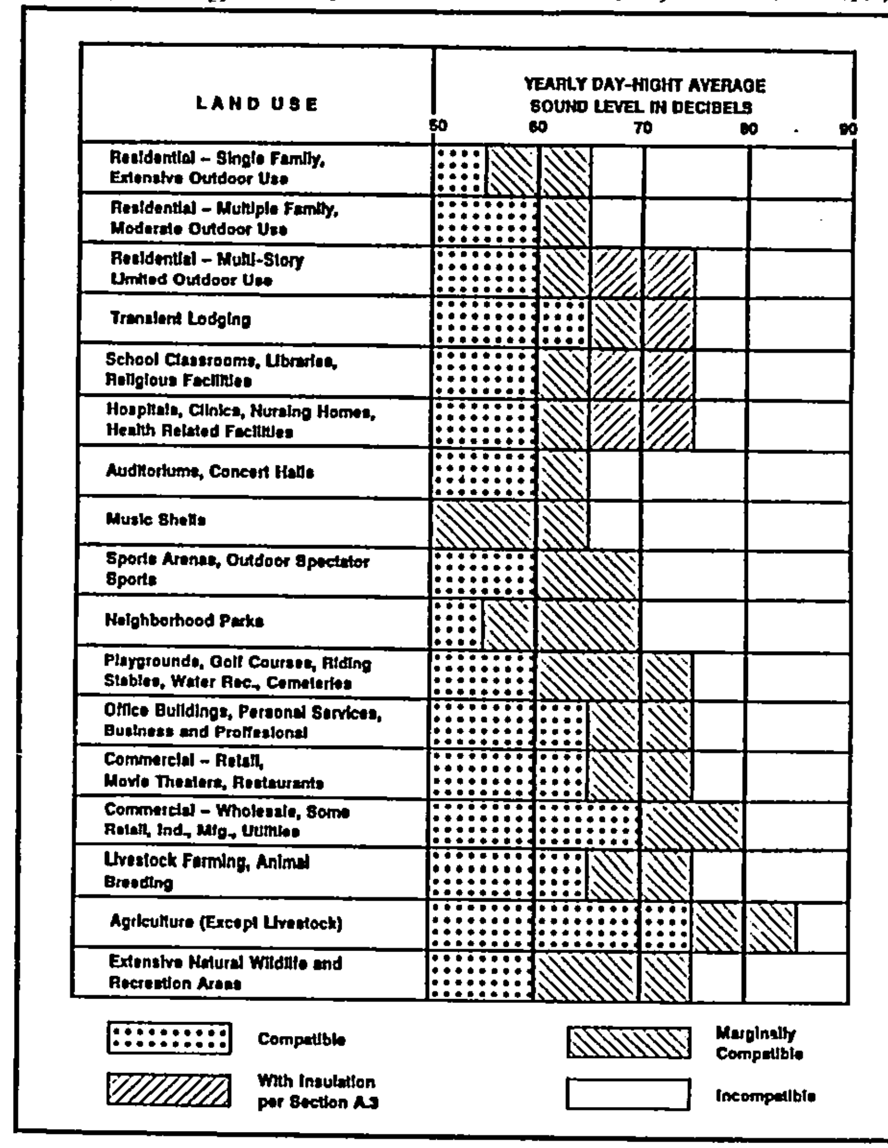
TABLE 1

EXTERIOR NOISE EXPOSURE CLASSIFICATION (RESIDENTIAL LAND USE)

NOISE EXPOSURE CLASS	DAY-NIGHT SOUND LEVEL	EQUIVALENT SOUND LEVEL	FEDERAL[1] STANDARD
Minimal Exposure	Not Exceeding 55 L_{dn}	Not Exceeding 55 L_{eq}	Unconditionally Acceptable
Moderate Exposure	Above 55 L_{dn} But Not Above 65 L_{dn}	Above 55 L_{eq} But Not Above 65 L_{eq}	Acceptable(2)
Significant Exposure	Above 65 L_{dn} But Not Above 75 L_{dn}	Above 65 L_{eq} But Not Above 75 L_{eq}	Normally Unacceptable
Severe Exposure	Above 75 L_{dn}	Above 75 L_{eq}	Unacceptable

Notes: (1) Federal Housing Administration, Veterans Administration, Department of Defense, and Department of Transportation.

(2) FHWA uses the L_{eq} instead of the L_{dn} descriptor. For planning purposes, both are equivalent if: (a) heavy trucks do not exceed 10 percent of total traffic flow in vehicles per 24 hours, and (b) traffic between 10:00 PM and 7:00 AM does not exceed 15 percent of average daily traffic flow in vehicles per 24 hours. The noise mitigation threshold used by FHWA for residences is 67 L_{eq}.

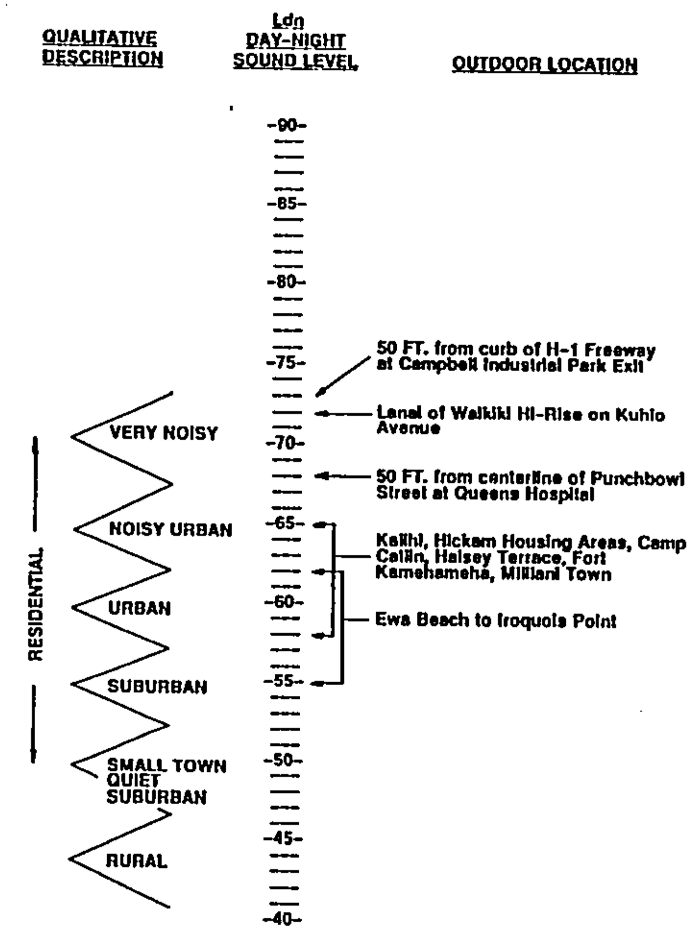


LAND USE COMPATIBILITY WITH YEARLY DAY-NIGHT AVERAGE SOUND LEVEL AT A SITE FOR BUILDINGS AS COMMONLY CONSTRUCTED (Source: American National Standards Institute)

FIGURE 1

FIGURE 2

RANGE OF EXTERIOR BACKGROUND AMBIENT NOISE LEVELS



urally ventilated dwellings, and the relatively low exterior-to-interior sound attenuation afforded by these naturally ventilated structures, an exterior noise level of 65 Ldn does not eliminate all risks of noise impacts. Because of these factors, and as recommended in **Reference** 3, a lower level of 55 Ldn is considered as the "Unconditionally Acceptable" (or "Near-Zero Risk") level of exterior noise. However, after considering the cost and feasibility of applying the lower level of 55 Ldn, government agencies such as FHA/HUD and VA have selected 65 Ldn as a more appropriate regulatory standard.

For commercial, industrial, and other non-noise sensitive land uses, exterior noise levels as high as 75 Ldn are generally considered acceptable. Exceptions to this occur when naturally ventilated office and other commercial establishments are exposed to exterior levels which exceed 65 Ldn.

On the island of Oahu, the State Department of Health (DOH) regulates noise from construction activities, through the issuance of permits for allowing excessive noise during limited time periods. State DOH noise regulations are expressed in maximum allowable property line noise limits rather than Ldn (see **Reference** 4). Although they are not directly comparable to noise criteria expressed in Ldn, State DOH noise limits for residential, commercial, and industrial lands equate to approximately 55, 60, and 76 Ldn, respectively.

It should be noted that the noise compatibility guidelines and relationships to the Ldn noise descriptor may not be applicable to impulsive noise sources such as pile drivers. The use of penalty factors (such as adding 10 dB to measured sound levels or the use of C-Weighting filters) have been proposed. However, the relationships between levels of impulsive noise sources and land use compatibility have not been as firmly established as have the relationships for non-impulsive sources. The State DOH limits for impulsive sounds which exceed 120 impulses in any 20 minute period are 10 dB above the limits for non-impulsive sounds. If impulsive sounds do not exceed 120 impulses in any 20 minute time period, there are no regulatory limits on their sound levels under the State DOH regulations.

CHAPTER IV. GENERAL STUDY METHODOLOGY

Existing traffic noise levels were measured at four locations in the project environs to provide a basis for developing the project's traffic noise contributions along the roadways which will service the proposed development. The locations of the measurement sites are shown in **FIGURE 3**. Noise measurements were performed during the month of January 1990. The results of the traffic noise measurements were compared with calculations of existing traffic noise levels to validate the computer model used. The traffic noise measurement results, and their comparisons with computer model predictions of existing traffic noise levels are summarized in **TABLE 2**.

Traffic noise calculations for the existing conditions as well as noise predictions for the Year 1992 were performed using the Federal Highway Administration (FHWA) Noise Prediction Model (**Reference 5**). Traffic data entered into the noise prediction model were: hourly traffic volumes, average vehicle speeds, estimates of traffic mix, and hard ground propagation loss factor. The traffic study for the project (**Reference 6**), Hawaii State Department of Transportation counts on Nimitz Highway (**Reference 7**), and Honolulu Department of Transportation Services counts at Bethel, Merchant, and Queen Streets (**Reference 8**) were the primary sources of data inputs to the model. For existing and future traffic on Nimitz Highway, it was assumed that the average noise levels, or Leq(h), during the PM peak hour were 0.5 dB less than the 24-hour Ldn along the highway. For the other roadways bordering the project, it was assumed the average noise levels during the PM peak hour were 2 Ldn greater than the 24-hour Ldn. These assumptions were based on computations of both the hourly Leq and the 24-hour Ldn of traffic noise on Nimitz Highway, and on Bethel, Merchant, and Queen Streets (see **FIGURES 4 and 5**).

Traffic noise calculations for both the existing and future conditions in the project environs were developed for ground level

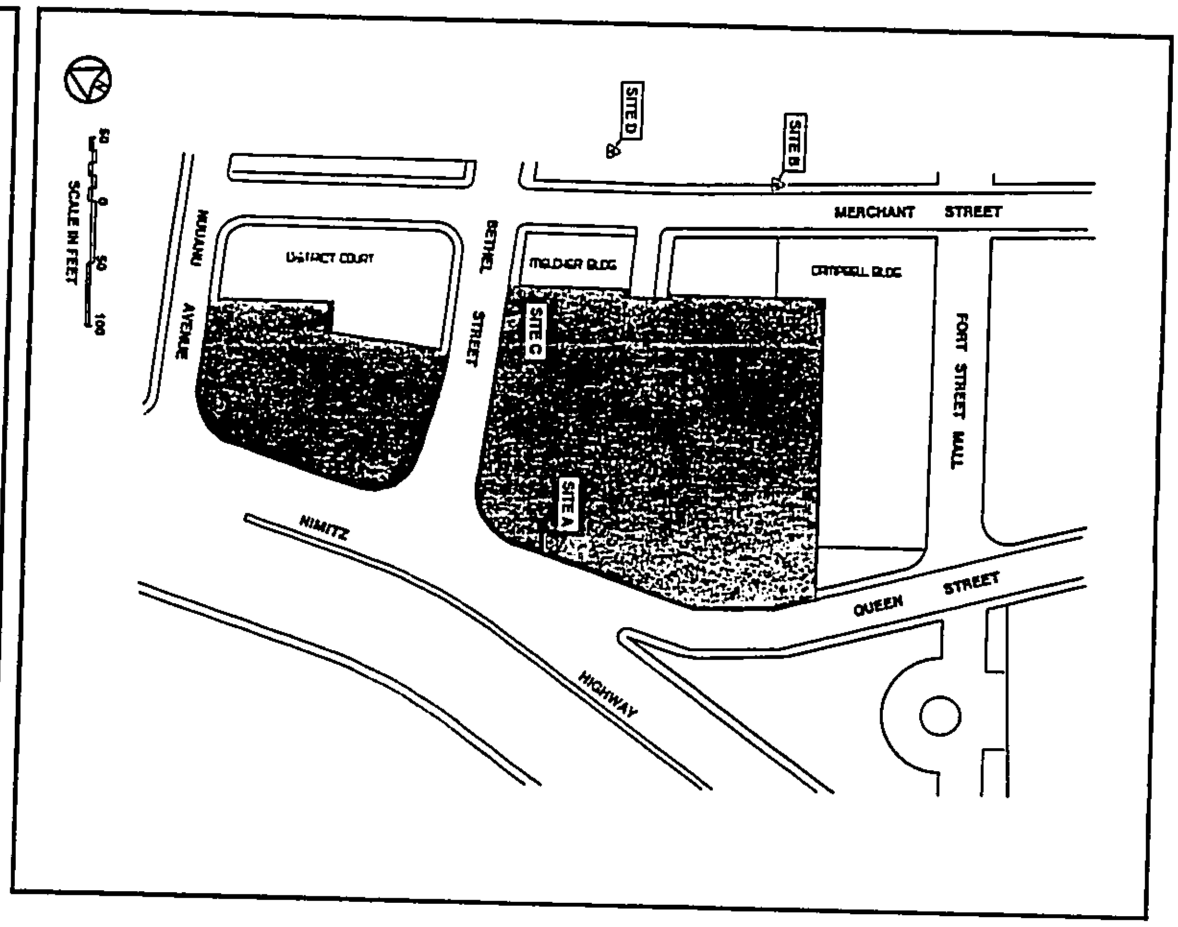


FIGURE 3

LOCATIONS OF NOISE MEASUREMENT SITES

TABLE 2

TRAFFIC NOISE MEASUREMENT RESULTS

Location	Time of Day (HRS)	Ave.Speed (MPH)	—Hourly Traffic Volume— Auto	Med.Truck	Heavy Truck	Measured Leq (dB)	Predicted Leq(dB)
A. 80 FT from the center-line of Nimitz Highway (1/18/90).	1450 TO 1619	45	6,362	170	98	73.1	73.1
B. 21 FT from the center-line of Merchant Street (1/23/90).	1514 TO 1613	25	483	26	5	66.2	66.1
C. 27 FT from the center-line of Bethel Street (1/23/90).	1618 TO 1717	25	1,218	14	17	70.9	68.4
C. 27 FT from the center-line of Bethel Street (1/18/90).	1710 TO 1740	25	1,118	13	19	71.7	68.5
D. 45 FT from the center-line of Merchant Street (1/18/90).	1643 TO 1707	25	699	19	3	63.2	62.5

Note:

Traffic noise contributions from Nimitz Highway caused higher than predicted noise levels at Site C.

FIGURE 4

HOURLY VARIATIONS OF TRAFFIC NOISE AT 100 FT SETBACK DISTANCE FROM THE CENTERLINE OF NIMITZ HIGHWAY AT NUUANU STREAM BRIDGE

STATION SL-30 00/05/88)

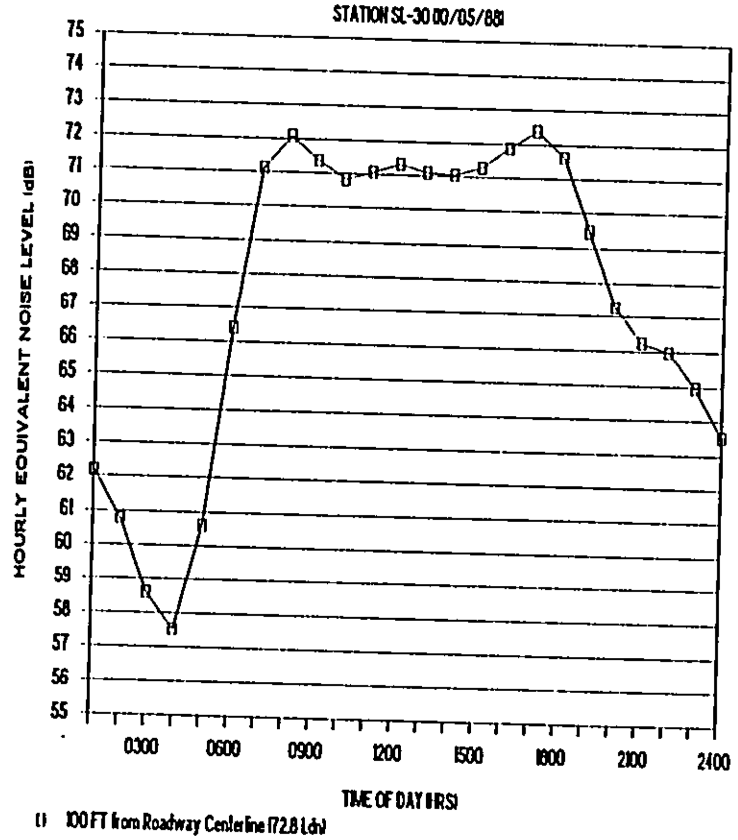
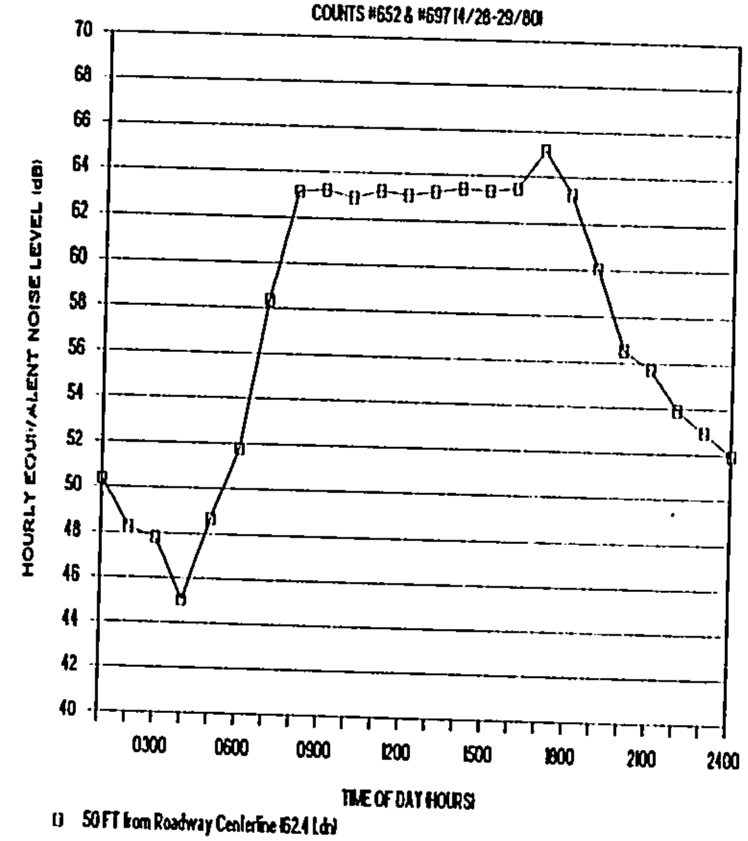


FIGURE 5

HOURLY VARIATIONS OF TRAFFIC NOISE AT 50 FT SETBACK DISTANCE FROM THE CENTERLINE OF BETHEL STREET MAUKA OF NIMITZ HIGHWAY

COUNTS #652 & #697 (4/28-29/80)



and elevated receptors without the benefit of shielding effects. Traffic noise levels were calculated for future conditions with and without the proposed mixed use project. The forecasted changes in traffic noise levels over existing levels were calculated for both future scenarios, and noise impact risks evaluated. The relative contributions of non-project and project traffic to the total noise levels were also calculated, and an evaluation of possible traffic noise impacts was made.

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

CHAPTER V. EXISTING NOISE ENVIRONMENT

The existing traffic noise levels in the project environs along Nimitz Highway and Bethel Street are in the "Significant Exposure, Normally Unacceptable" category in the project environs. Along Merchant Street, existing traffic noise levels are in the "Moderate Exposure, Acceptable" category.

The results of the January 1990 traffic and background ambient noise measurements are summarized in **TABLE 2**, with measurement locations identified in **FIGURE 3**. Site A was located on the top deck (3rd level) of the existing municipal parking structure. The remaining Sites B thru D were located at street level. As shown in **TABLE 2**, correlation between measured and predicted traffic noise levels was good except at Site C, where traffic noise from Nimitz Highway contaminated the Bethel Street noise measurement data.

Results of calculations of existing (CY 1989) traffic noise levels during the PM peak hour period are shown in **TABLE 3**. The results of the calculations apply at 50 FT distances from the centerlines of the roadway sections in the project environs. Calculated setback distances from these roadways to the existing 65, 70, and 75 Ldn contours are shown in **TABLE 4**. Existing traffic noise contours over the project site for ground level and elevated receptors are shown in **FIGURES 6 thru 9**. As indicated in the figures, the existing noise levels over the project site are relatively high, and are dominated by traffic noise from Nimitz Highway. In these figures, only the applicable traffic noise contours which cross through the project site are shown. The traffic noise levels shown in the tables and figures only apply when unobstructed line-of-sight conditions exist to the roadways. These conditions would generally occur at short (50 to 100 FT) distances to a roadway, within any flat, open space along the roadway, and at distant, but elevated locations above the roadway. The existing traffic noise levels shown in the tables and figures should be re-

TABLE 3

COMPARISONS OF EXISTING AND CY 1992 TRAFFIC NOISE LEVELS
ALONG ACCESS ROADS TO PROJECT SITE
(PM PEAK HOUR AND 50 FT FROM ROADWAY CENTERLINES)

LOCATION	SPEED (MPH)	VPH	***** HOURLY LEQ IN dB **** AUTO	MT	HT	ALL VEH
EXISTING (CY 1989) PM PEAK HR. TRAFFIC:						
Nimitz Highway @ Project	45	6,344	72.0	67.4	72.2	75.8
Merchant Street @ Bethel St.	25	611	58.7	57.1	58.3	62.8
Bethel Street @ Nimitz Hwy.	25	1,255	61.9	56.0	63.2	66.0
Nuuanu Avenue @ Nimitz Hwy.	25	344	56.2	51.6	55.8	59.8
Queen Street @ Nimitz Hwy.	25	825	60.0	58.4	59.6	64.1
CY 1992 PM PEAK HR. TRAFFIC WITH THE PROJECT:						
Nimitz Highway @ Project	45	6,760	72.3	67.7	72.5	76.1
Merchant Street @ Bethel St.	25	869	60.2	58.6	59.8	64.4
Bethel Street @ Nimitz Hwy.	25	1,543	62.8	56.9	64.1	66.9
Nuuanu Avenue @ Nimitz Hwy.	25	365	56.5	51.9	56.0	60.0
Queen Street @ Nimitz Hwy.	25	948	60.6	59.0	60.2	64.7

Notes:

The following assumed traffic mixes of autos, medium trucks, and heavy vehicles were used for existing and future conditions:

(a) Nimitz Highway at Project: 95.0% autos, 2.5% medium trucks, and 2.5% heavy trucks or buses.

(b) Merchant and Queen Streets: 95.0% autos, 4.0% medium trucks, and 1.0% heavy trucks or buses.

(c) Bethel Street: 97.0% autos, 1.5% medium trucks, and 1.5% heavy trucks or buses.

(d) Nuuanu Avenue: 97.0% autos, 2.0% medium truck, and 1.0% heavy trucks or buses.

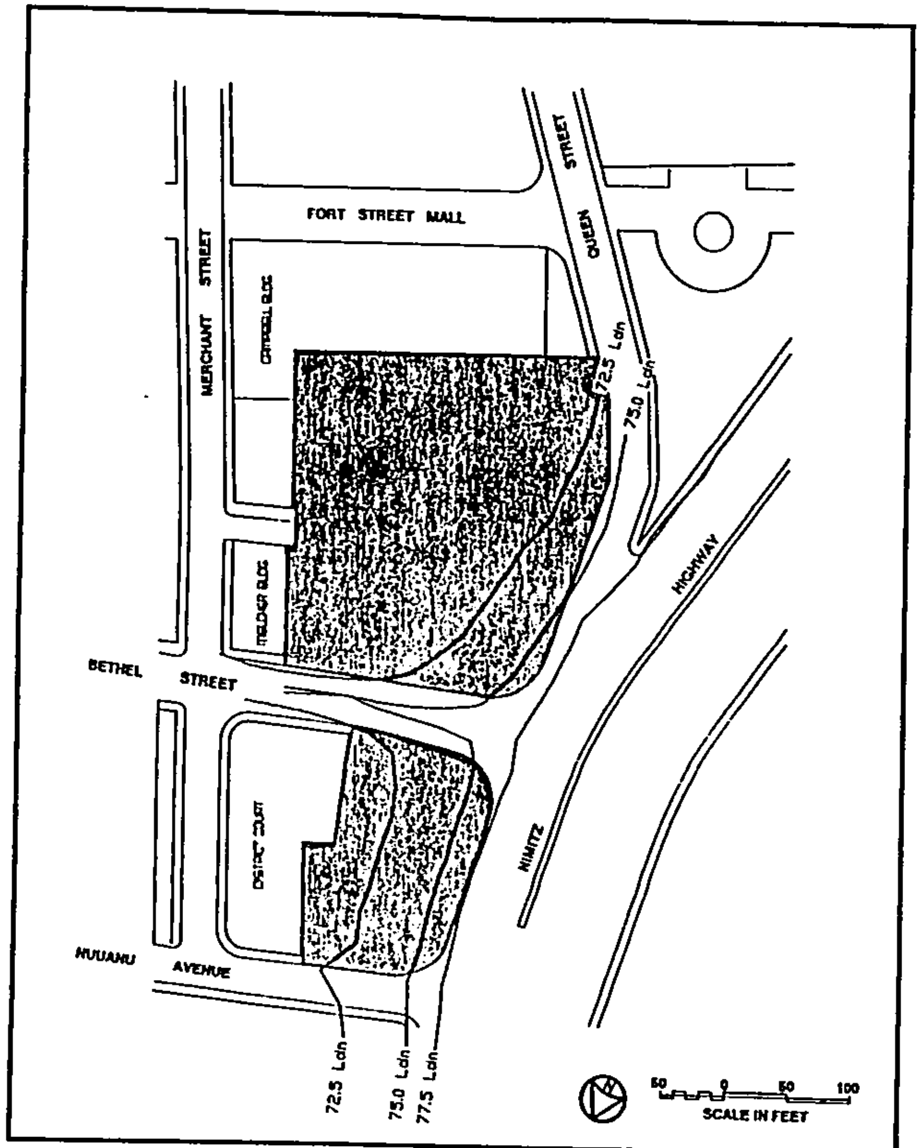
TABLE 4

EXISTING AND CY 1992 DISTANCES TO 65, 70, AND 75 Ldn CONTOURS

STREET SECTION	65 Ldn SETBACK (FT) EXISTING	CY 1992	70 Ldn SETBACK (FT) EXISTING	CY 1992	75 Ldn SETBACK(FT) EXISTING	CY 1992
Nimitz Highway @ Project	674	718	213	227	67	72
Merchant Street @ Bethel St.	19	27	6	9	2	3
Bethel Street @ Nimitz Hwy.	40	49	13	16	4	5
Nuuanu Avenue @ Nimitz Hwy.	9	10	3	3	1	1
Queen Street @ Nimitz Hwy.	26	30	8	9	3	3

Notes:

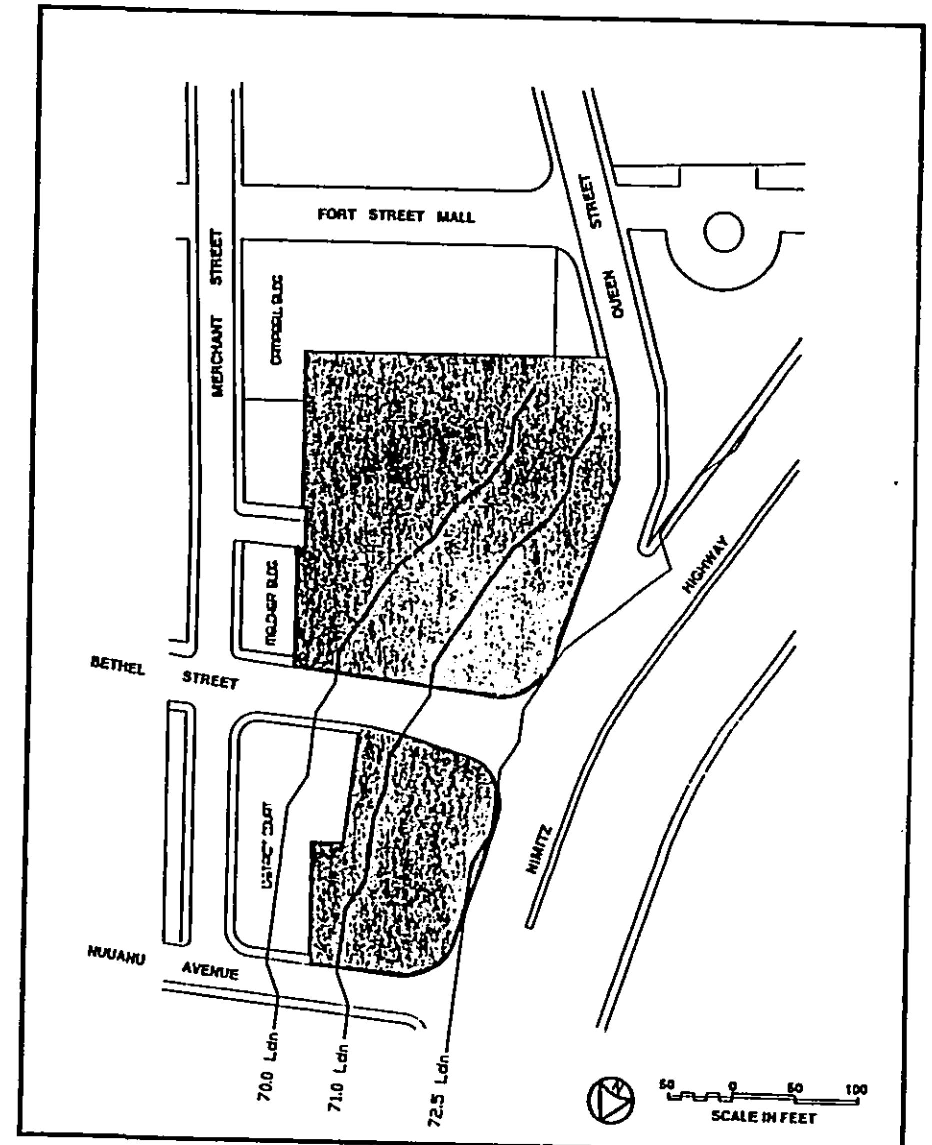
(1) All setback distances are from the roadways' centerlines.
(2) See TABLE 3 for traffic volume, speed, and mix assumptions.
(3) Ldn assumed to be equal to PM Peak Hour Leq plus 0.5 dB along Nimitz Highway.
(4) Ldn assumed to be equal to PM Peak Hour Leq less 2.0 dB along other roadways.
(5) Setback distances are for unobstructed line-of-sight conditions.
(6) Hard ground conditions assumed along all roadways.



EXISTING TRAFFIC NOISE CONTOURS OVER PROJECT SITE (5 FT RECEPTOR ELEVATION)

FIGURE 6

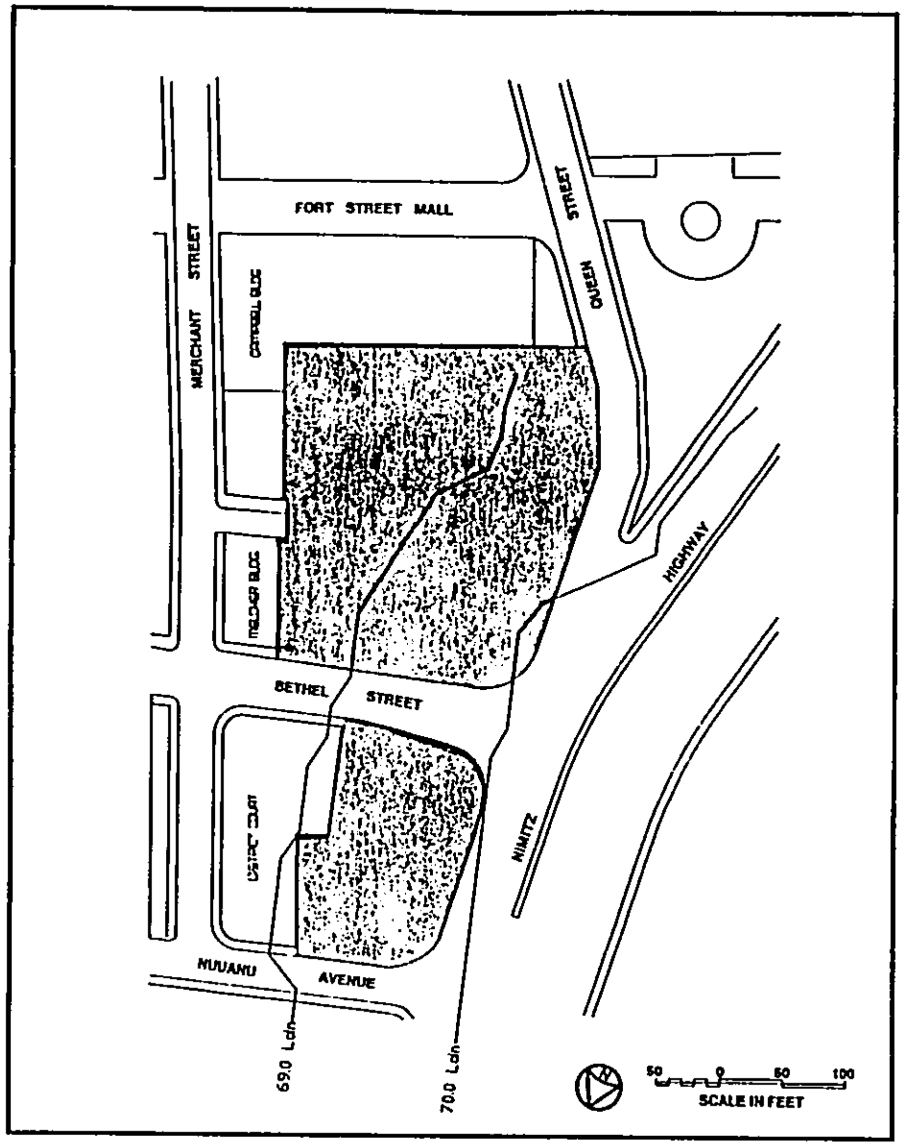
Page 19



EXISTING TRAFFIC NOISE CONTOURS OVER PROJECT SITE (100 FT RECEPTOR ELEVATION)

FIGURE 7

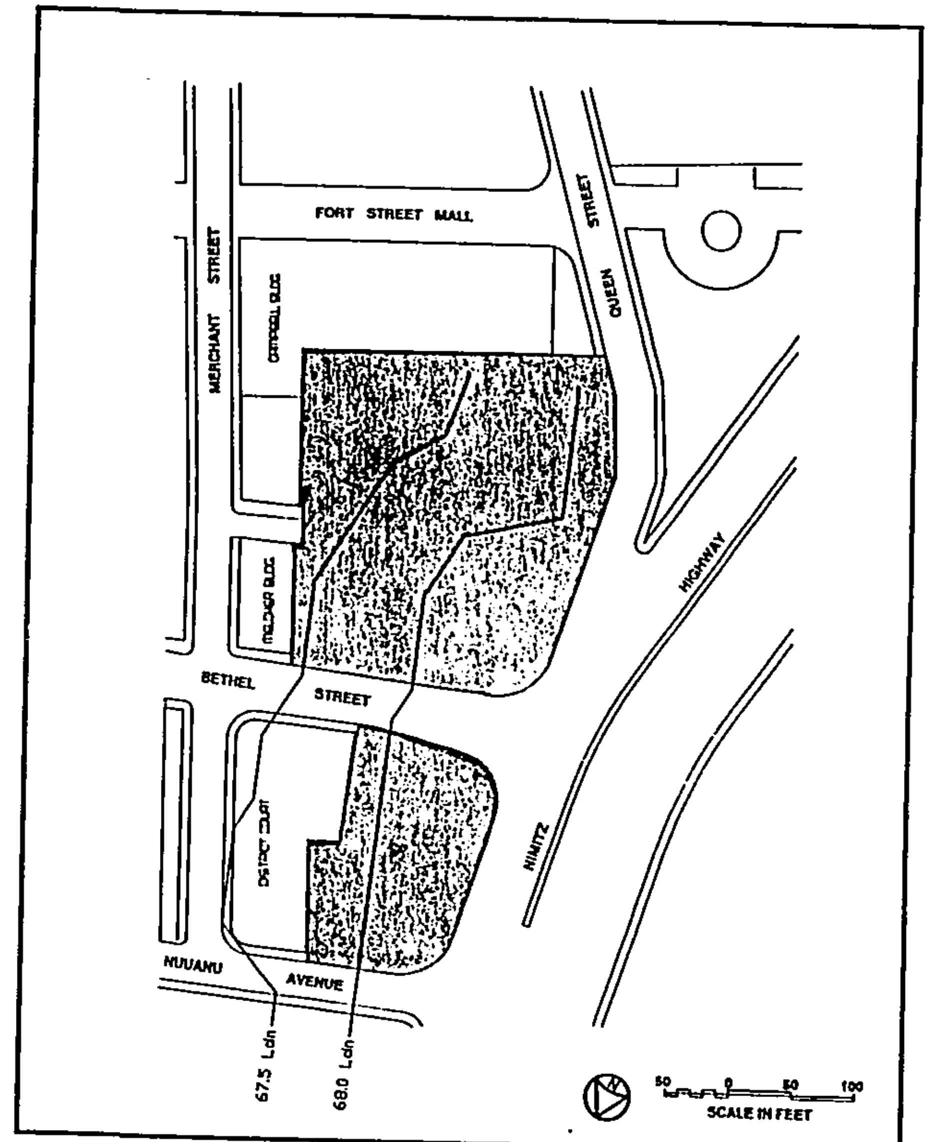
Page 20



EXISTING TRAFFIC NOISE CONTOURS OVER PROJECT SITE (200 FT RECEPTOR ELEVATION)

FIGURE 8

Page 21



EXISTING TRAFFIC NOISE CONTOURS OVER PROJECT SITE (300 FT RECEPTOR ELEVATION)

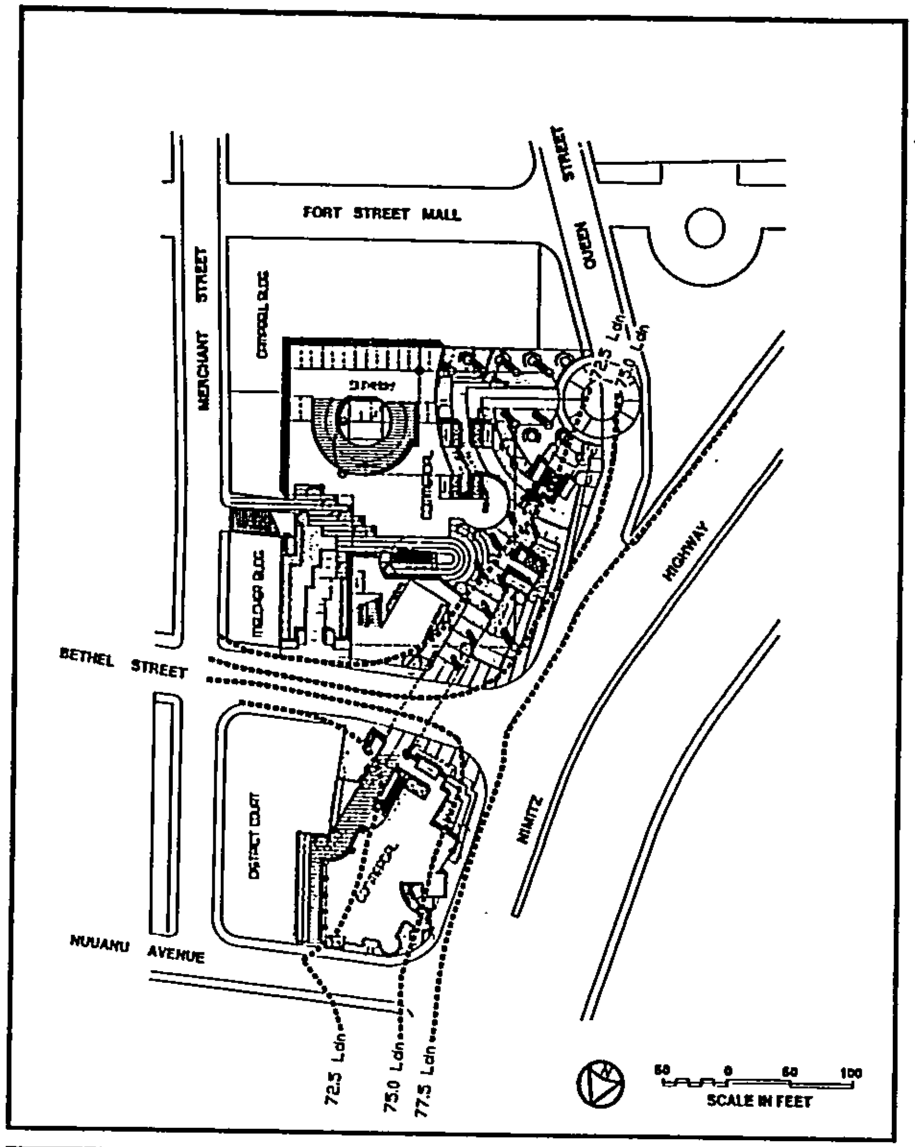
FIGURE 9

Page 22

duced by 3 to 5 dB (or Ldn) if partial shielding (line-of-sight obstruction) exists between the roadway and the receptor location. If the receptor is located behind a major obstruction (large building), the noise levels in the tables and figures should be reduced by 5 to 10 dB.

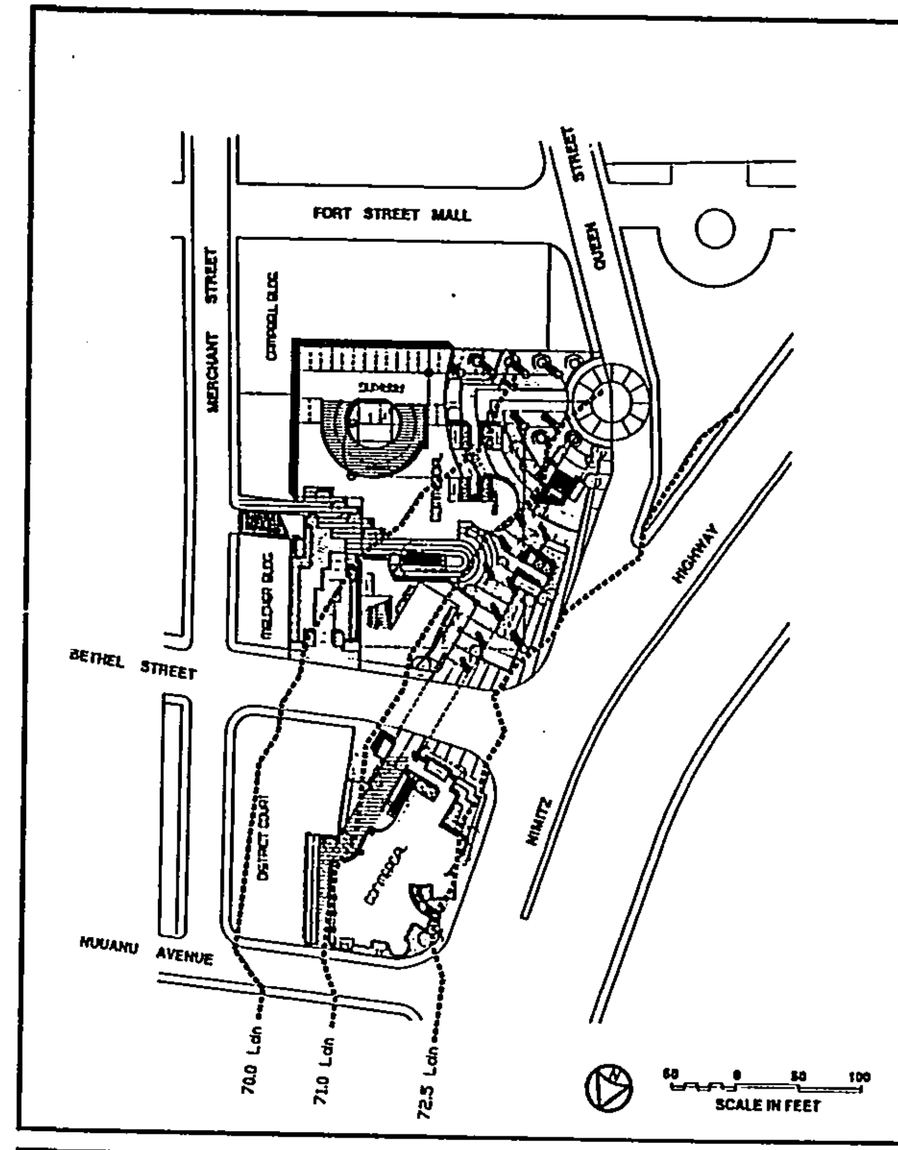
CHAPTER VI. FUTURE TRAFFIC NOISE ENVIRONMENT

Predictions of future traffic noise levels were made using the traffic volume assignments of **Reference 6** for CY 1992 with and without the proposed project. The future projections of project plus non-project traffic noise levels on the roadways which would service the project are shown in **TABLE 3** for the PM peak hour of traffic. As indicated in **TABLE 3**, traffic noise levels are predicted to increase by 0.3 to 1.5 dB during the PM peak hour, with the largest increase expected along the section of Merchant Street which is between Bethel Street and the project entrance driveway. These predictions assume that average vehicle speeds and traffic mix will not change from current conditions. The dominant traffic noise source in the project area will continue to be traffic noise from Nimitz Highway, but the 0.3 dB increase in this noise source following project build-out is not expected to be significant. **TABLE 4** summarizes the predicted setback distances to the 65, 70, and 75 Ldn traffic noise contour lines along the roadways servicing the project and attributable to both project plus non-project traffic by CY 1992. The setback distances in **TABLE 4** do not include the beneficial effects of noise shielding from buildings, or the detrimental effects of additive contributions of noise from intersecting streets or reflections from building walls. As indicated in **TABLE 4**, relatively large setback distances to the 65 and 70 Ldn contours from the centerline of Nimitz Highway are predicted to continue to exist in CY 1992. **FIGURES 10 thru 13** depict the predicted traffic noise contours over the project site following project build-out in CY 1992 for ground level and elevated receptors. The beneficial effects of shielding from the proposed high-rise structure are not included in the figures, but the additive noise contributions from the adjoining streets are included in the noise contours. As indicated in the figures, the proposed residential units which face Nimitz Highway are expected to be exposed to traffic noise levels between 65 to 70 Ldn, and be within the



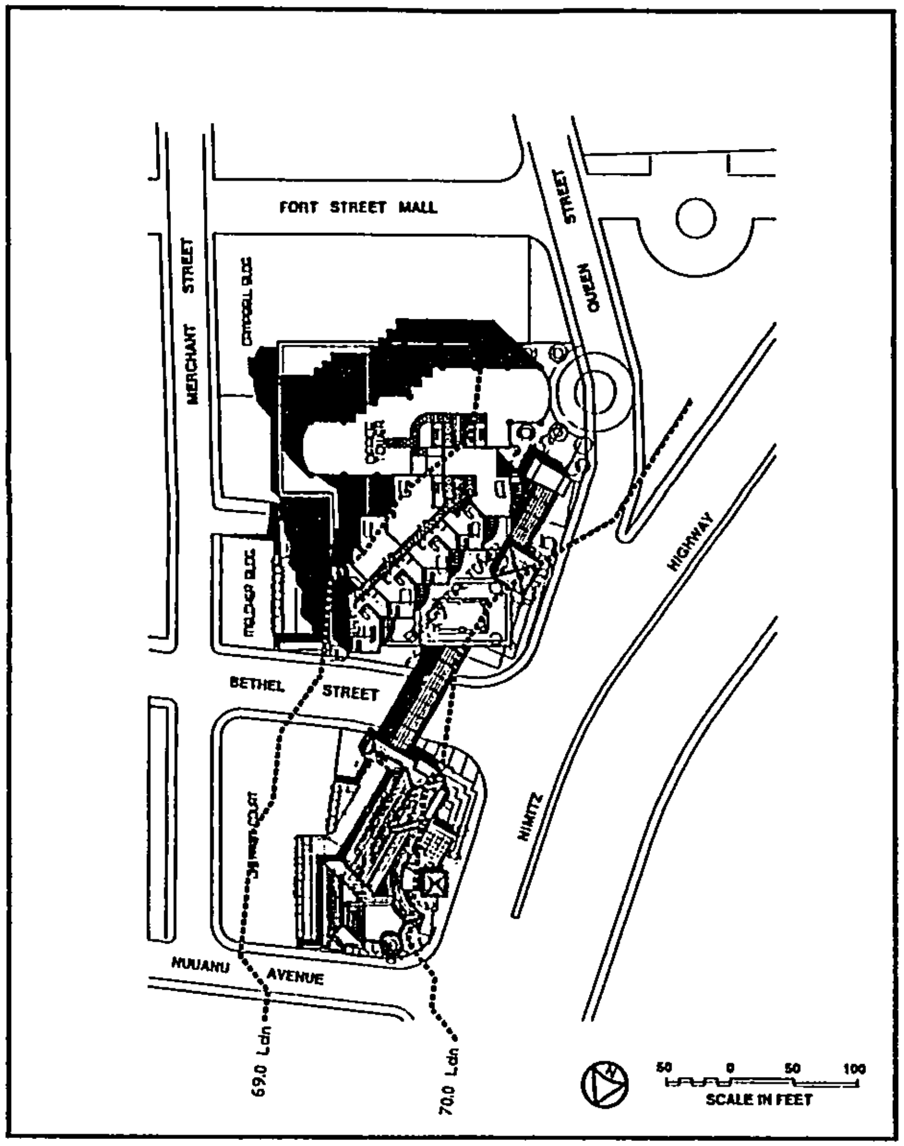
FUTURE TRAFFIC NOISE CONTOURS OVER PROJECT SITE (5 FT RECEPTOR ELEVATION)

FIGURE 10



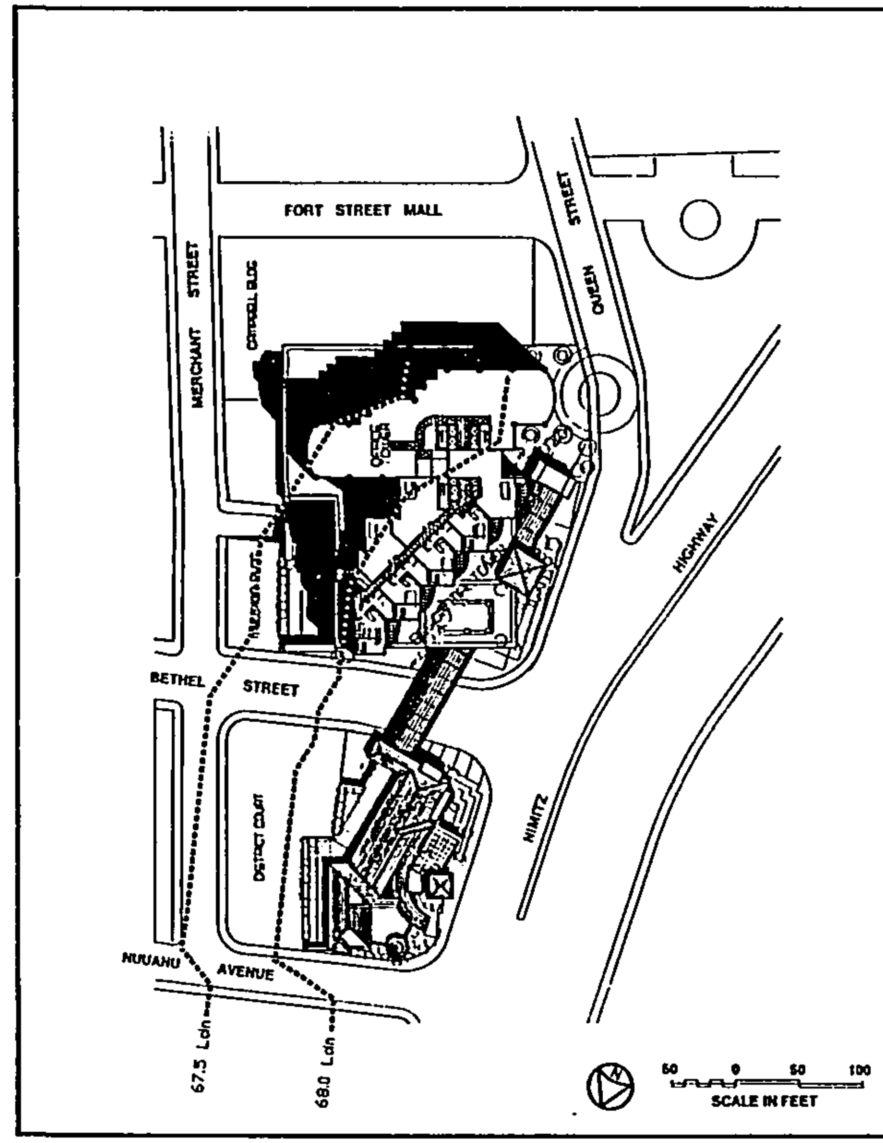
FUTURE TRAFFIC NOISE CONTOURS OVER PROJECT SITE (100 FT RECEPTOR ELEVATION)

FIGURE 11



FUTURE TRAFFIC NOISE CONTOURS OVER PROJECT SITE (200 FT RECEPTOR ELEVATION)

FIGURE 12



FUTURE TRAFFIC NOISE CONTOURS OVER PROJECT SITE (300 FT RECEPTOR ELEVATION)

FIGURE 13

"Significant Exposure, Normally Unacceptable" noise exposure category. The mauka side of the project which faces toward the east should experience at least 5 dB less traffic noise than the side which faces Nimitz Highway. Traffic noise levels on the mauka side should range between 60 to 65 Ldn, and be within the "Moderate Exposure, Acceptable" category.

TABLE 5 presents the predicted increases in traffic noise levels associated with non-project and project traffic by CY 1992, and as measured by the Ldn descriptor system. As indicated in TABLE 5, the increases in traffic noise along Merchant and Bethel Streets attributable to project traffic are predicted to be greater than those due to non-project traffic, with the combined traffic noise increases along these two streets predicted to range from 0.9 to 1.5 Ldn. This level of increase is considered to be moderate, and should not generate adverse noise impacts due to commercial character of the surrounding area. Minimal increases ranging from 0.0 to 0.3 Ldn in traffic noise levels are expected to result from project traffic along Nimitz Highway, Nuuanu Avenue, and Queen Street. These changes will be difficult to measure and are considered to be insignificant.

TABLE 5

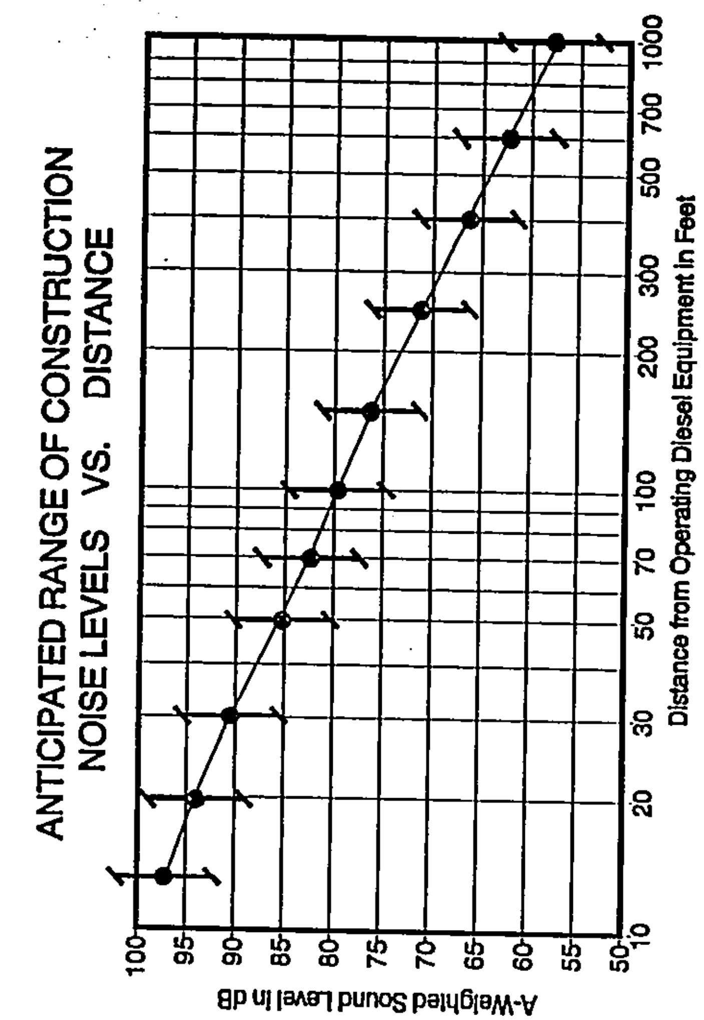
CALCULATIONS OF PROJECT AND NON-PROJECT TRAFFIC NOISE CONTRIBUTIONS (CY 1992)

STREET SECTION	NOISE LEVEL INCREASES (Ldn) DUE TO NON-PROJECT TRAFFIC	PROJECT TRAFFIC
Nimitz Highway @ Project	0.3	0.0
Merchant Street @ Bethel St.	0.2	1.3
Bethel Street @ Nimitz Hwy.	0.3	0.6
Nuuanu Avenue @ Nimitz Hwy.	0.3	0.0
Queen Street @ Nimitz Hwy.	0.3	0.3

CHAPTER VII. DISCUSSION OF PROJECT RELATED NOISE AND VIBRATION IMPACTS AND POSSIBLE MITIGATION MEASURES

Traffic Noise. Impacts from traffic noise are possible at the proposed project dwelling units in the Residential Tower, and particularly those which face Nimitz Highway. Because these units are expected to be in the luxury category, mitigation of high traffic noise levels through the use of total closure and air conditioning is recommended. Minimum exterior-to-interior noise reductions of approximately 25 dB are required to achieve an interior noise level of 45 Ldn, which is the maximum recommended level of interior noise which minimizes risks of adverse health and welfare effects. This level of exterior-to-interior noise reduction is not difficult to obtain with standard construction materials and methods. However, because of the luxury nature of the proposed units and the relatively high levels of exterior noise associated with Nimitz Highway, it is suggested that glazing and exterior wall components with minimum STC 35 rating be used for the dwelling units to minimize risks of occupant dissatisfaction.

General Construction Noise. Audible construction noise will probably be unavoidable during the entire project construction period. The total time period for construction is unknown, but it is anticipated that the actual work will be moving from one location on the project site to another during that period. Actual length of exposure to construction noise at any receptor location will probably be less than the total construction period for the entire project. Typical levels of exterior noise from construction activity (excluding pile driving activity) are shown in FIGURE 14. The impulsive noise levels of impact pile drivers are approximately 15 dB higher than the levels shown in FIGURE 14, while the intermittent noise levels of vibratory pile drivers are at the upper end of the noise level ranges depicted in the figure. Typical levels of construction noise inside naturally ventilated and air conditioned structures are approximately 10 and 20 dB less,



CONSTRUCTION NOISE LEVELS VS. DISTANCE

FIGURE 14

respectively, than the levels shown in **FIGURE 14**. The business offices within the neighboring buildings to the east of the project site are predicted to experience the highest noise levels during construction activities due to their close proximity to the construction site. Adverse impacts from construction noise are not expected to be in the "public health and welfare" category due to the temporary nature of the work, the business/commercial character of the neighborhood, the prevalent use of air conditioning within the adjoining buildings, and due to the administrative controls available for regulation of construction noise. Instead, these impacts will probably be limited to the temporary degradation of the quality of the acoustic environment in the immediate vicinity of the project site.

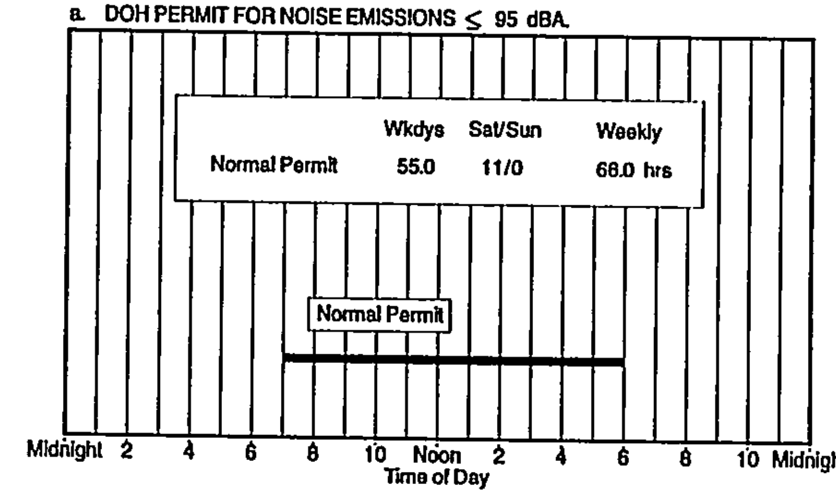
Mitigation of construction noise to inaudible levels will not be practical in all cases due to the intensity of construction noise sources (80 to 90+ dB at 50 FT distance), and due to the exterior nature of the work (pile driving, grading and earth moving, trenching, concrete pouring, hammering, etc.). The use of properly muffled construction equipment should be required on the job site.

The incorporation of State Department of Health construction noise limits and curfew times, which are applicable on the island of Oahu (**Reference 4**), is another noise mitigation measure which are normally applied to construction activities. **TABLE 6** depicts the allowed hours of construction for normal construction noise (levels which do not exceed 95 dB at the project's property line) and for construction noise which exceeds 95 dB at the project's property line. Noisy construction activities are not allowed on holidays, Saturdays, Sundays, during the early morning, and during the late evening periods under the DOH permit procedures. Because of the business/commercial character of the project area, a variance from the DOH curfew periods for noisy construction activities should be considered since it may shorten the total construction period and thereby lessen the cumulative noise exposure period of

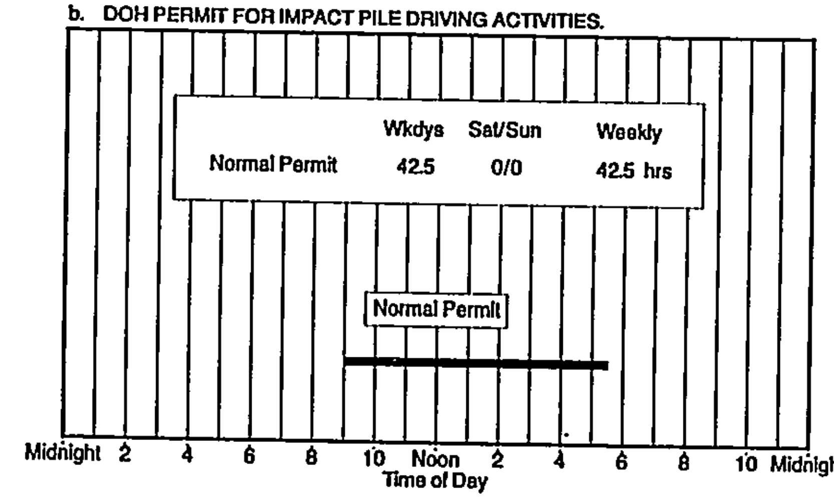
TABLE 6

AVAILABLE WORK HOURS UNDER DOH PERMIT PROCEDURES FOR CONSTRUCTION NOISE

a. DOH PERMIT FOR NOISE EMISSIONS $\leq$ 95 dBA.



b. DOH PERMIT FOR IMPACT PILE DRIVING ACTIVITIES.



the occupants in the adjoining commercial buildings.

<u>Vibration from Pile Driving.</u> Pile driving will probably be necessary to implant sheet and concrete piles into the ground over the project site. Induced ground vibrations from these pile driving operations have the potential to cause architectural and structural damage to structures. In addition, historic buildings, such as the Melcher's Building, Old Police Station and District Court Building, Old Bishop Bank, and the Bishop Estate Building are located on parcels which are immediately adjacent to the project site. Because of the potential for vibration induced damage to the neighboring buildings, research was conducted using the resources of Hamilton Library at the University of Hawaii. APPENDIX A2 lists the pertinent periodicals and books which were reviewed during the course of the research effort. The foundation plans for the proposed project structures, the soils report, or structural integrity reports on the historic buildings were not available for review prior to the formulation of this vibration impact assessment.

Ground vibrations generated during pile driving operations are generally described in terms of peak particle (or ground) velocity in units of inches/second. The human being is very sensitive to ground vibrations, which are perceptible at relatively low particle velocities of 0.01 to 0.04 inches/second. Damage to structures, however, occur at even higher levels of vibration as indicated in TABLE 7. The most commonly used damage criteria for structures is the 2.0 inches/second limit derived from work by the U.S. Bureau of Mines. A more conservative limit of 0.2 inches/second is also used, and is suggested for planning purposes on this project because of the repetitive nature of pile driving operations which can increase risks of damage due to fatiguing, plus the historic nature and age of the adjacent buildings.

Based on measured vibration levels during pile driving operations under various soil conditions and at various distances, estimates of ground vibration levels vs. distance from the pile

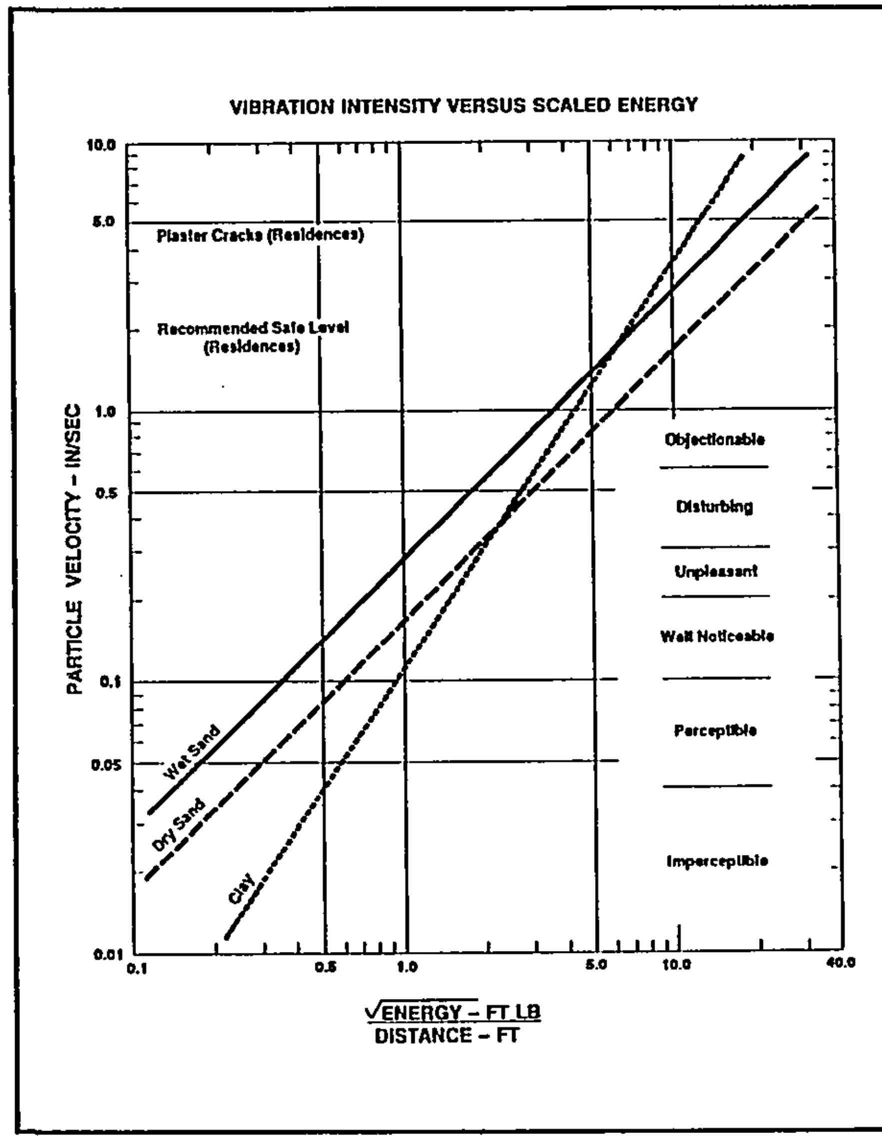
TABLE 7
SUMMARY OF BUILDING DAMAGE CRITERIA

PEAK GROUND VELOCITY (mm/sec)	PEAK GROUND VELOCITY (in/sec)	COMMENT
193.04	7.6	Major damage to buildings (mean of data).
137.72	5.4	Minor damage to buildings (mean of data).
101.16	4.0	'Engineer structures' safe from damage.
50.8	2.0	Safe from damage limit (probability of damage <5%).
		No structural damage.
33.02	1.3	Threshold of risk of 'architectural' damage for houses.
25.4	1.0	No data showing damage to structures for vibration <1 in./sec.
15.24	0.6	No risk of 'architectural' damage to normal buildings.
10.16	0.4	Threshold of damage in older homes.
5.08	0.2	Statistically significant percentage of structures may experience minor damage (including earthquake, nuclear event, and blast data for old and new structures).
		No 'architectural' damage.
3.81	0.5 to 0.15	Upper limits for ruins and ancient monuments.
1.0	0.04	Vertical vibration clearly perceptible to humans.
0.32	0.01	Vertical vibration just perceptible to humans.

Source: 'State-of-the-Art Review: Prediction and Control of Groundborne Noise and Vibration from Rail Transit Trains'; U.S. Department of Transportation; December 1983.

driver have been made for various soil conditions and for various energy ratings of the pile drivers. **FIGURE 15**, which was extracted from **Reference 14**, may be used to predict vibration levels for the soil conditions indicated. When coral layers must be penetrated, vibration levels can be expected to be higher than those shown in **FIGURE 15**, particularly if the adjacent structures are supported by the common coral layer. From **FIGURE 15**, and for wet sand soil conditions, the 0.2 inches/second vibration damage criteria will be exceeded at a scaled energy distance factor of approximately 0.7. The scaled energy distance factor is equal to the square root of the energy (in foot-pounds) per blow of the hammer divided by the distance (in feet) between the pile tip and the monitoring location. For a 30,000 foot-pound pile driver, a scaled energy distance of 0.7 equates to a separation distance of 247 FT. Under clay soil conditions, and using the prediction procedures contained in **FIGURE 15**, a shorter separation distance of 115 FT is required to not exceed the 0.2 inches/second criteria when using a 30,000 foot-pound pile driver. It should be noted that 0.2 inches/second vibration levels were measured from a 22,400 foot-pound pile driver at even shorter separation distances of approximately 30 FT in sandy, layered soil (**Reference 4**). The measurement data reported in **Reference 4** are significantly lower than the vibration levels predicted by the methodology of **Reference 14**.

As indicated above, predictions of peak ground vibration levels vs. scaled energy distance factor from the driven pile are not precise, with initial uncertainty factor for a given location in the order of 10:1. For this reason, it is standard practice to employ seismograph monitoring of ground vibrations during pile driving operations with a 3-axis geophone or accelerometer. If pile drivers of approximately 30,000 foot-pounds or larger ratings are anticipated to be used on the job site, the initial vibration predictions indicate that there is some risk of exceeding the 0.2 inches/second vibration damage criteria at 100 to 250 FT separa-



MAXIMUM VIBRATION INTENSITIES EXPECTED FROM PILE DRIVING

FIGURE 15

tion distances, and monitoring during pile driving operations is warranted. Monitoring alone, however, may not be a practical mitigation measure unless there are alternative pile driving methods or foundation plans which can be employed if the damage criteria is exceeded. For these reasons, the following preventative measures are recommended for implementation during the planning and design phases of the project:

- In addition to the normal planning and design concerns regarding potential damage due to settling and heaving during construction, consideration should also be given to risks of damage due to vibration from pile driving. A damage criteria of 0.2 inches/second should be used in conjunction with the vibration prediction method of **Reference 14** to identify the potential damage risk distances to the driven piles.

- If predicted vibration levels from pile driving exceed 0.2 inches/second at the historic buildings, and predicted levels cannot be reduced by sizing of the pile driver or through the use of alternate types of piles (bored or non-displacement types), test piles should be driven and its vibrations monitored and recorded prior to completion of the foundation design. The monitoring of the test piles should be designed to measure the expected peak, 3-axis vibration levels at the historic buildings. The results of the monitoring should be used to define the empirical distance from the driven pile to the 0.2 inches/second damage risk location, and to evaluate the risks of structural damage to the adjacent structure during actual construction.

- If predicted vibration levels from pile driving exceed 2.0 inches/second at the historic buildings, the use of alternate types of piles should be considered for implementation during the design phase.

APPENDIX A1. NOISE IMPACT REFERENCES

(1) "Guidelines for Considering Noise in Land Use Planning and Control;" Federal Interagency Committee on Urban Noise; June 1980.

(2) "Environmental Criteria and Standards, Noise Abatement and Control, 24 CFR, Part 51, Subpart B;" U.S. Department of Housing and Urban Development; July 12, 1979.

(3) "Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety;" Environmental Protection Agency (EPA 550/9-74-004); March 1974.

(4) "Title 11, Administrative Rules, Chapter 43, Community Noise Control for Oahu;" Hawaii State Department of Health; November 6, 1981.

(5) Barry, T. and J. Reagan, "FHWA Highway Traffic Noise Prediction Model;" FHWA-RD-77-108, Federal Highway Administration; Washington, D.C.; December 1978.

(6) Traffic Impact Assessment Report for Kaahumanu Square (Draft); Pacific Planning & Engineering, Inc.; June 1989.

(7) October 5, 1988 24-Hour Traffic Counts; Station SL-30, Nimitz Highway at Nuuanu Stream Bridge; Hawaii State Department of Transportation.

(8) April 28-29, 1980 24-Hour Traffic Counts #697, #652, and #632; Bethel, Merchant, and Queen Streets at Nimitz Highway; Honolulu Department of Transportation Services.

APPENDIX A2. LIST OF VIBRATION IMPACT REFERENCES REVIEWED

1. Dym, Clive L.; "Attentuation of Ground Vibration;" Sound and Vibration; April 1976.

2. Fleming, W.G.K.; Weltman, A.J.; Randolph, M.F,; Elson, W.K.; Pile Driving; John Wiley and Sons; 1985.

3. Gutowski, T.G. and Dym, C.L.; "Propagation of Ground Vibration: A Review;" Journal of Sound and Vibration; July 1976.

4. Gutowski, T.G.; Wittig, L.E.; and Dym, C.L.; "Some Aspects of the Ground Vibration Problem;" Noise Control Engineering; May-June 1978.

5. Hanna, T.H.; "The Measurement of Pore Water Pressures Adjacent to a Driven Pile;" Canadian Geotechnical Journal; September 1967.

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8. Scanlan, R.H.; "Seismic Wave Effects on Soil-Structure Interaction"; Earthquake Engineering and Structural Dynamics, Vol. 4; May 1975.

9. State-of-the-Art Review: Prediction and Control of Groundborne Noise and Vibration from Rail Transit Trains;" December 1983.

10. Tomlinson, M.J.; "Pile Design and Construction Practice;" A Viewpoint Publication.

11. "Vibration Effects of Earthquakes on Soils and Foundations;" American Society for Testing and Materials; June 1968.

12. Weisflog, W.E.; "Vibratory Pile Driving;" February 1967.

13 Wiss, John F.; Nicholls, Harry R.; "A Study of Damage to a Residential Structure from Blast Vibrations;" American Society of Civil Engineers; 1974.

14. Wiss, John F., Janney, Elstner and Assoc.; "Damage of Pile Driving Vibration;" Highway Research Record, Number 155.

15. Zeevaert, Leonardo; Feld, Jacob; Fegan, Joseph C.; Tschebotarioff, Gregory P.; "Effect of Driving Wood Piles Into Soft Clay"; American Society of Civil Engineers; December 1948.

APPENDIX B

EXCERPTS FROM EPA'S ACOUSTIC TERMINOLOGY GUIDE

Descriptor Symbol Usage

The recommended symbols for the commonly used acoustic descriptors based on A-weighting are contained in Table I. As most acoustic criteria and standards used by EPA are derived from the A-weighted sound level, almost all descriptor symbol usage guidance is contained in Table I.

Since acoustic nomenclature includes weighting networks other than "A" and measurements other than pressure, an expansion of Table I was developed (Table II). The group adopted the ANSI descriptor-symbol scheme which is structured into three stages. The first stage indicates that the descriptor is a level (i.e., based upon the logarithm of a ratio), the second stage indicates the type of quantity (power, pressure, or sound exposure), and the third stage indicates the weighting network (A, B, C, D, E.....). If no weighting network is specified, "A" weighting is understood. Exceptions are the A-weighted sound level and the A-weighted peak sound level which require that the "A" be specified. For convenience in those situations in which an A-weighted descriptor is being compared to that of another weighting, the alternative column in Table II permits the inclusion of the "A". For example, a report on blast noise might wish to contrast the LCdn with the LAdn.

Although not included in the tables, it is also recommended that "Lpn" and "LepN" be used as symbols for perceived noise levels and effective perceived noise levels, respectively.

It is recommended that in their initial use within a report, such terms be written in full, rather than abbreviated. An example of preferred usage is as follows:

The A-weighted sound level (LA) was measured before and after the installation of acoustical treatment. The measured LA values were 85 and 75 dB respectively.

Descriptor Nomenclature

With regard to energy averaging over time, the term "average" should be discouraged in favor of the term "equivalent". Hence, Leq, is designated the "equivalent sound level". For Ld, Ln, and Ldn, "equivalent" need not be stated since the concept of day, night, or day-night averaging is by definition understood. Therefore, the designations are "day sound level", "night sound level", and "day-night sound level", respectively.

The peak sound level is the logarithmic ratio of peak sound pressure to a reference pressure and not the maximum root mean square pressure. While the latter is the maximum sound pressure level, it is often incorrectly labelled peak. In that sound level meters have "peak" settings, this distinction is most important.

"Background ambient" should be used in lieu of "background", "ambient", "residual", or "indigenous" to describe the level characteristics of the general background noise due to the contribution of many unidentifiable noise sources near and far.

With regard to units, it is recommended that the unit decibel (abbreviated dB) be used without modification. Hence, DBA, PNdB, and EPNdB are not to be used. Examples of this preferred usage are: the Perceived Noise Level (Lpn was found to be 75 dB. Lpn = 75 dB). This decision was based upon the recommendation of the National Bureau of Standards, and the policies of ANSI and the Acoustical Society of America, all of which disallow any modification of bel except for prefixes indicating its multiples or submultiples (e.g., deci).

Noise Impact

In discussing noise impact, it is recommended that "Level Weighted Population" (LWP) replace "Equivalent Noise Impact" (ENI). The term "Relative Change of Impact" (RCI) shall be used for comparing the relative differences in LWP between two alternatives.

Further, when appropriate, "Noise Impact Index" (NII) and "Population Weighed Loss of Hearing" (PHL) shall be used consistent with CHABA Working Group 69 Report Guidelines for Preparing Environmental Impact Statements (1977).

APPENDIX B (CONTINUED)

TABLE I

A-WEIGHTED RECOMMENDED DESCRIPTOR LIST

TERM	SYMBOL
1. A-Weighted Sound Level	L_A
2. A-Weighted Sound Power Level	L_{WA}
3. Maximum A-Weighted Sound Level	L_{max}
4. Peak A-Weighted Sound Level	L_{Apk}
5. Level Exceeded x% of the Time	L_x
6. Equivalent Sound Level	L_{eq}
7. Equivalent Sound Level over Time (T) (1)	$L_{eq(T)}$
8. Day Sound Level	L_d
9. Night Sound Level	L_n
10. Day-Night Sound Level	L_{dn}
11. Yearly Day-Night Sound Level	$L_{dn(Y)}$
12. Sound Exposure Level	L_{SE}

(1) Unless otherwise specified, time is in hours (e.g. the hourly equivalent level is $L_{eq(1)}$. Time may be specified in non-quantitative terms (e.g., could be specified a $L_{eq(WASH)}$ to mean the washing cycle noise for a washing machine).

SOURCE: EPA ACOUSTIC TERMINOLOGY GUIDE, BNA 8-14-78, NOISE REGULATION REPORTER.

APPENDIX B (CONTINUED)

TABLE II

RECOMMENDED DESCRIPTOR LIST

TERM	A-WEIGHTING	ALTERNATIVE(1) A-WEIGHTING	OTHER(2) WEIGHTING	UNWEIGHTED
1. Sound (Pressure) (3) Level	L_A	L_{pA}	L_B, L_{pB}	L_p
2. Sound Power Level	L_{WA}		L_{WB}	L_W
3. Max. Sound Level	L_{max}	L_{Amax}	L_{Bmax}	L_{pmax}
4. Peak Sound (Pressure) Level	L_{Apk}		L_{Bpk}	L_{pk}
5. Level Exceeded x% of the time	L_x	L_{Ax}	L_{Bx}	L_{px}
6. Equivalent Sound Level	L_{eq}	L_{Aeq}	L_{Beq}	L_{peq}
7. Equivalent Sound Level (4) Over Time(T)	$L_{eq(T)}$	$L_{Aeq(T)}$	$L_{Beq(T)}$	$L_{peq(T)}$
8. Day Sound Level	L_d	L_{Ad}	L_d	L_{pd}
9. Night Sound Level	L_n	L_{An}	L_{Bn}	L_{pn}
10. Day-Night Sound Level	L_{dn}	L_{Adn}	L_{Bdn}	L_{pdn}
11. Yearly Day-Night Sound Level	$L_{dn(Y)}$	$L_{Adn(Y)}$	$L_{Bdn(Y)}$	$L_{pdn(Y)}$
12. Sound Exposure Level	L_S	L_{SA}	L_{SB}	L_{Sp}
13. Energy Average value over (non-time domain) set of observations	$L_{eq(e)}$	$L_{Aeq(e)}$	$L_{Beq(e)}$	$L_{peq(e)}$
14. Level exceeded x% of the total set of (non-time domain) observations	$L_{x(e)}$	$L_{Ax(e)}$	$L_{Bx(e)}$	$L_{px(e)}$
15. Average L_x value	L_x	L_{Ax}	L_{Bx}	L_{px}

(1) "Alternative" symbols may be used to assure clarity or consistency.

(2) Only B-weighting shown. Applies also to C,D,E,....weighting.

(3) The term "pressure" is used only for the unweighted level.

(4) Unless otherwise specified, time is in hours (e.g., the hourly equivalent level is Leq(1). Time may be specified in non-quantitative terms (e.g., could be specified as Leq(WASH) to mean the washing cycle noise for a washing machine.

APPENDIX D

HISTORIC BUILDING IMPACT ASSESSMENT

Spencer Mason Architects

KAAHUMANU PARKING STRUCTURE REDEVELOPMENT PROJECT

HARBOR COURT AND NUUANU COURT DEVELOPMENT

Section of Draft Environmental Impact Statement

Existing Environment Chapter

Historic Districts and Buildings

Prepared by
Spencer Mason Architects

Prepared for
R.M. Towill Corporation

March 23, 1990

EXISTING ENVIRONMENT CHAPTER

HISTORIC BUILDINGS AND DISTRICTS

EXISTING ENVIRONMENTAL SETTING

HISTORIC BUILDINGS AND DISTRICTS

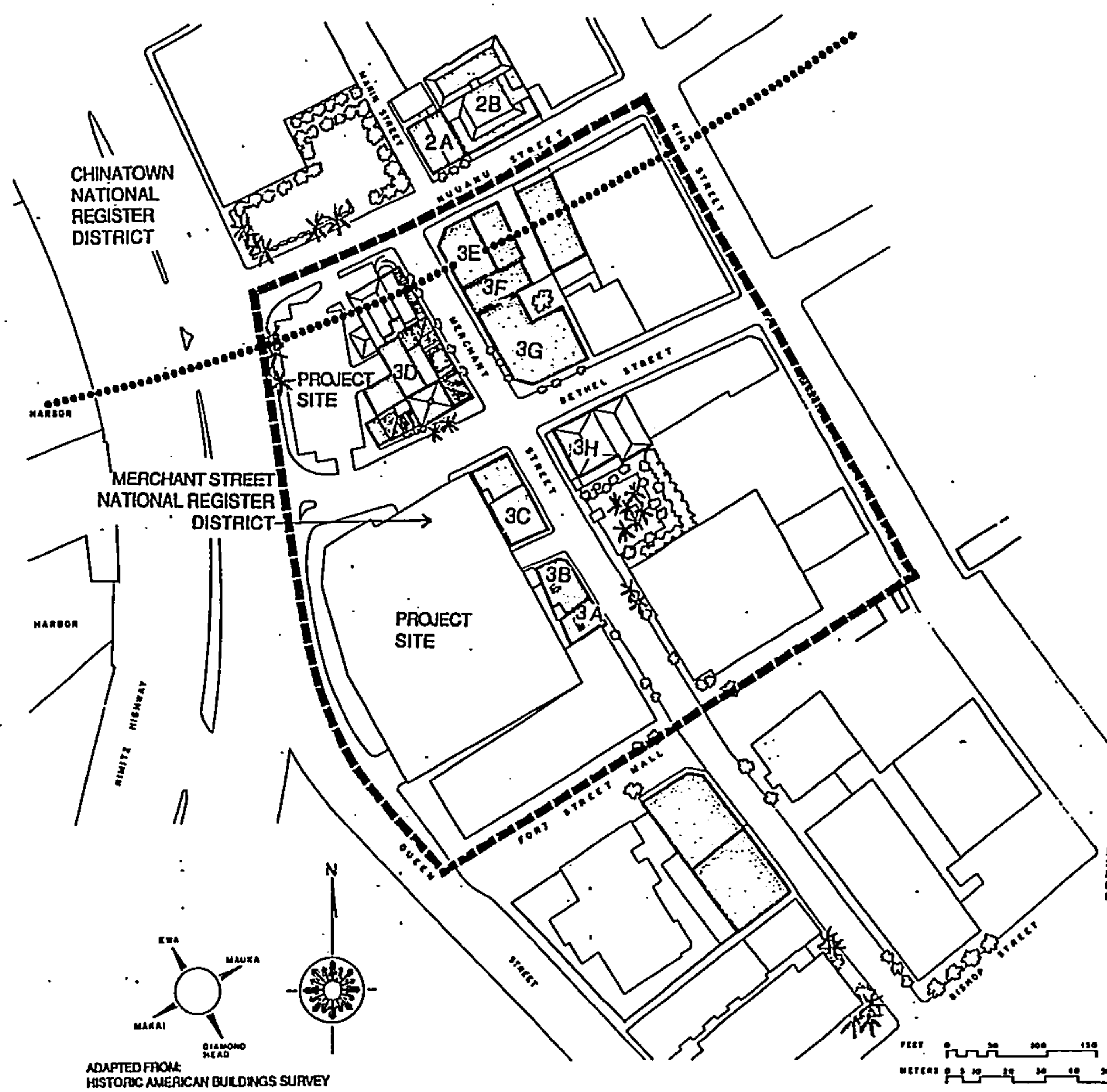
In the vicinity of the project site there are a number of historic buildings and two historic districts. Their location is shown on Figure 1 with a key to the individual building names. The historic buildings and districts which might be impacted by the project are described briefly in the following sections, illustrated with photographs, and their significance summarized. Information was derived from field surveys and files in the Historic Sites Section of the State Department of Land and Natural Resources. The most valuable research material was the set of reports prepared by the Historic American Buildings Survey of historic buildings on Nuuanu and Merchant Streets. Most of these were prepared in 1987, but a report on the Kamehameha V Post Office was compiled in 1967.

A. ALOHA TOWER

1. Description

Built in 1926, this 184-foot, ten-story, concrete tower was the tallest building in the Territory until the 1960s. Designed by Arthur Reynolds, its Art Moderne style was the most avant garde architectural fashion of the decade.

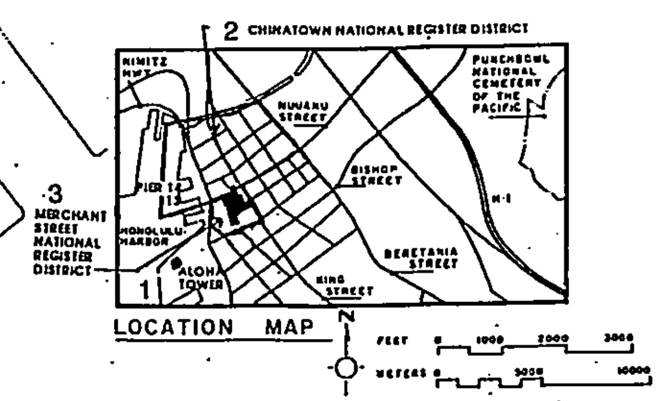
The cream-colored, stuccoed tower has four identical sides. On each face of the building is a bronze clock face above six stories of triplet windows. Spandrels, with a geometric relief pattern, and window frames are of aluminum, a popular and recent architectural material of the period. Above the clock faces are four projecting balconiès, supported by brackets, with the word "ALOHA" in large block letters inscribed in the balcony parapet. Wide segmental-arch openings on



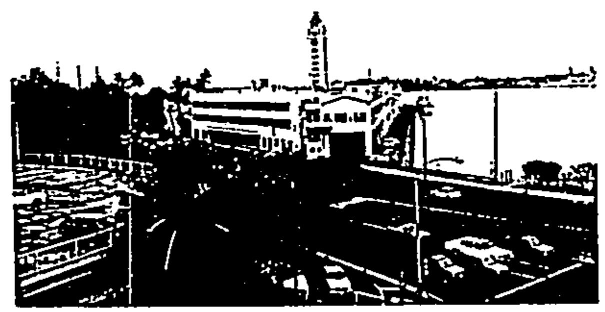
ADAPTED FROM:
HISTORIC AMERICAN BUILDINGS SURVEY
SITE PLAN, NO. HI-55

HISTORIC BUILDINGS AND DISTRICTS IN THE VICINITY OF THE PROJECT SITE

Building/District Name	Date
1. Aloha Tower	1926
2. Chinatown Historic District	
2A. T.R. Foster Building	1891
2B. The Nippu Jiji Building	1899
3. Merchant Street Historic District	
3A. Bishop Estate Building	1896
3B. Bank of Bishop & Co.	1878
3C. Melcher's Building	1853
3D. Honolulu Police Station	1930
3E. Royal Saloon	1890
3F. J.T. Waterhouse Building	1870s
3G. Yokohama Specie Bank	1908
3H. Kamehameha V Post Office	1870



LOCATION MAP



Aloha Tower 1926

the tenth floor span the distance between the corner piers. Tall lancet windows are centered in the two exterior faces of each corner pier, below arched lintels. Convexly curved pyramidal caps of stucco top each corner pier. The more steeply convex roof is painted green and has eight sides. There are four tall, narrow, gable-topped dormers on the wider roof sections. The windows in the dormers are similar to those in the corner piers. The roof is topped by a pedestal-type "widow's walk", with metal railing, and a mast with cross arm and cables, for hanging signal flags.

2. Significance

Due not only to its distinctive architectural features and height, but also because of its important historic role, Aloha Tower is an important element in the Honolulu townscape. Until the establishment of commercial airline flights, it was the landmark in Honolulu for both visitors and residents. To arriving boat passengers it represented the warm welcome Hawaii offers; and to residents it was a symbol of the importance of shipping to the state's economy. Aloha Tower also played an important role in World War II.

The piers on which Aloha Tower stands, the first to be built of precast concrete cylinders, were completed in 1918. There was debate over the need for, and the height of the proposed Aloha Tower, but the legislature settled the issue in favor of the ten-story advocates. Aloha Tower replaced the lookout and semaphore station on "Telegraph Hill" in Kaimuki. With a commanding view of Honolulu Harbor, the tower housed other offices as well as the lookout station for the Harbor Pilots. Aloha Tower was completed in June 1926, a year before luxury liner travel to Hawaii began, with the maiden voyage of Matson's *Malolo* in November 1927.

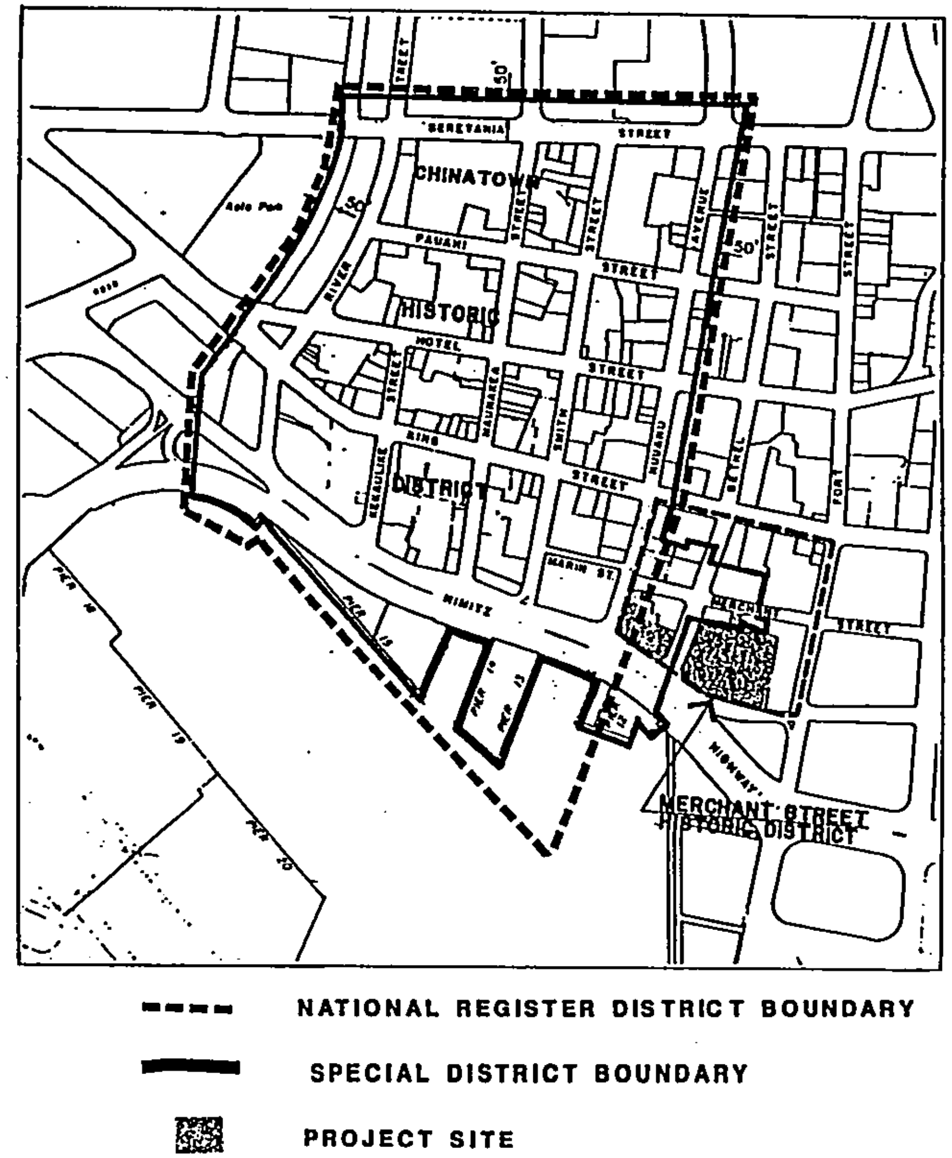
During World War II, following the Japanese attack on Pearl Harbor, the U.S. Navy took control of Aloha Tower, painting it in green camouflage, and restricting access. It became a control center for convoy shipping which supported the various island invasions in World War II. Military control of the tower was not relinquished until December 20, 1947. Then the camouflage paint was sandblasted, and the tower repainted white.

Besides the war-time painting and its removal, the major alteration to the tower was the construction in 1964 of the passenger terminal in front of it. This building, as well as the automobile ramp and escalators to this upper-level terminal, obscure the base of Aloha Tower. The setting was also altered by the construction in 1952 of the Nimitz Highway extension, which ran from Iwilei Road to Richards Street.

B. CHINATOWN HISTORIC DISTRICT

1. Description

The Chinatown district is a grouping of buildings with two sets of boundaries, one related to the National Register of Historic Places, and one defined by the City and County of Honolulu, officially termed a "Special District." The two Chinatown boundaries are shown on Figure 2. One boundary of the National Register district of Chinatown includes a 50-foot strip along the Diamond Head side of Nuuanu Avenue, and thus includes a small portion of the western part of the Harbor Court project site. Within the last few years, the City and County expanded the Chinatown Special District to incorporate most of the historic buildings in the Merchant Street National Register Historic District. Thus, the block encompassing the western part of the project lies within the Chinatown Special District, as do the Melcher's, Bishop Estate, and Bank of Bishop & Co. buildings, which abut the main portion of the project site. Only the buildings in the National Register district of Chinatown are discussed below.



Buildings within the National Register Merchant Street Historic District, which encompasses part of the City and County's Chinatown Special District, are discussed in following sections.

The Chinatown district is recognized as a grouping of buildings similar in size, use, character and period. A great many structures were built soon after the devastating fire of January 20, 1900. There are buildings dating from post World War II, scattered throughout the district, including high rises in the mauka blocks. The buildings from the first half of the century are mostly two- and three-story structures that form continuous street facades. Originally the typical pattern of use was commercial ground level, with residential upper floor(s). This is reflected in the facade designs: very open storefront designs, usually of large plate glass sheets and double recessed doors, are used on the street level, and vertically oriented double-hung windows on the upper level. Common building materials and elements of older Chinatown structures include brick or lava rock walls, arched window openings, decorative parapets, corrugated metal awnings with decorative wood trim. There is a great variety in design details such as: masonry placement and mortar patterns; oriental motifs in roof tiles and window grille; and classical forms including pilasters, friezes, and pediments.

In the Chinatown National Register Historic District there are four buildings that are in proximity to the project site. On the corner of Nuuanu Street and Nimitz Highway, directly across Nuuanu from the project site, is the warehouse-type building that Bank of Hawaii remodeled in the 1970s for office use, adding a fifth floor. Tax Office records indicate this four-story, reinforced concrete warehouse building dates from 1914 and was built for Honolulu Iron Works. The only decorative elements of the building are the cornice and the articulated structural grid.

The Pier 13/14 building located on Nimitz Highway at the foot of Smith Street, has a direct viewline to and from both sections of the project site. This functional building has a central three-story office

section flanked by storage sheds along the piers, almost as tall as the central section. The cargo openings are as tall as one and a half stories, with flanking pilasters three stories tall. The highway facade has a unified stucco finish. The hipped caps on the stepped false front and the large, decorative letters inscribed above the cargo openings relieve the monotony of the functional design.

The T.R. Foster Building and the Nippu Jiji Building are two Chinatown buildings in the National Register Historic District, which are also close to the project site, mauka of Marin Street and facing Nuuanu Street. The Old Police Station blocks most of the low-level viewlines between these buildings and the project site, but these buildings may be affected by the project and so are described below. The T.R. Foster and Nippu Jiji are related to the Merchant Street Historic District, as well as the Chinatown Historic District. Three Merchant Street Historic District buildings are also partly within the Chinatown Historic District since the boundary on the Diamond Head extends fifty feet on this side of Nuuanu Street.

Nippu Jiji is a two-story building with heavily rusticated lava stone facade in the Richardsonian Romanesque style. The three bays in the upper floor are identical. There are five double-hung windows in each bay, the central one slightly wider than the others. Piers with shouldered blocks suggesting capitals separate the flanking windows from the middle three and support an elliptical arch over these central windows. Stone mullions divide the arched transom window and correspond to the separations between the windows below; the side sections of the transom window are fixed, while the center unit is a hopper type. The wall above the five windows has a checkerboard pattern of projecting and recessed square stones. The piers defining the bays are corbeled just below the cornice and corbeled arches support the cornice between the piers. The stepped, central section of the parapet has the sign "1895-1923 / THE NIPPU JIJI" while the flanking parapet consists of a stone railing with lava blocks for balusters. Due to the slope of the street, and to remodelings, each of the three bays of the ground floor are different. The mauka bay has a

The Nippu Jiji Building 1899

mid-bay pier defining a doorway that probably was the original entrance to the second floor. A row of transom windows above a flat, rod-supported canopy unify the first-floor facade. The storefront windows and doors have been remodeled with large plate glass panels in wood frames above stallboards with grill inserts. Numerous alterations have been made to the building, including total remodeling of the interior, a set-back penthouse on the roof, and a five-story addition in the rear.

The two-story T.R. Foster building is built of brick, with decorative elements of cast iron and concrete, in Victorian classical motifs. The first floor is divided into two tripartite bays. There are cast-iron pilasters with Corinthian capitals in the center and ends of the first-floor facade. Between these are pairs of engaged colonettes, largely covered by flat wooden mullions, except for their capitals. The windows and doors on the ground floor have been altered. The second floor has six nearly identical bays, varying only slightly in width. Each bay has one segmental-arched, double-hung window, with one-over-one-light sash. The arch has a keystone and paneled voussoirs. Below the window sills are recessed panels in the brick wall. The pilasters defining the bays have horizontally and vertically scored sections, with projecting moldings at the window sill and sash heights, as well as Corinthian capitals. These pilasters support a string course between extensions that rise through the cornice to the stepped parapet. The cornice is supported by bracket triplets above each window and, in line with the pilasters, is accentuated by triangular-topped shapes which are decoratively carved. The parapet is stepped symmetrically, with a central pediment, topped by a pinnacle and supported by short pilasters with Corinthian capitals. Raised letters in the tympanum spell out "T.R. FOSTER" arcing over "1891." Different decorations are used in each of the three pairs of stepped panels below the parapet cornice. The outer four piers each terminate with a ball on a pedestal. A simple, one-story, brick warehouse is located in the rear of the T.R. Foster building and has a similar pediment. Both buildings are built with brick in the common bond pattern.

T.R. Foster Building 1891

2. Significance

Chinatown is important in the history of Honolulu, as the location where immigrants, first the Chinese and later other ethnic groups, made the break from plantation work and opened small shops and businesses. The proximity of this area to the harbor and the downtown commercial core made it a logical place for immigrant settlement. As early as 1860, the area between Nuuanu Avenue and Nuuanu Stream was known as Chinatown. Chinatown had a major fire in 1886 and was rebuilt with wider, straighter streets than its original narrow, winding lanes, but still with mostly wooden buildings. Because bubonic plague was found in the neighborhood in 1899, the Territorial government undertook "systematic" burning of blocks, which was thought to be the only way to eliminate the germs of the plague. On January 20, 1900 the burning went out of control and destroyed most of Chinatown. Chinatown was largely rebuilt with brick and stone buildings. As mentioned in the subsection above, the district is a harmonious architectural grouping, and is significant for its historical and continuing role as a settlement and business area for many ethnic groups in Hawaii.

The warehouse building at the corner of Nuuanu Street and Nimitz Highway reflects the traditional concentration of warehouse and industrial uses in the makai side of Chinatown. Although this building is of fairly recent date, it replaced several smaller buildings with similar uses. The Pier 13/14 building shows the close ties of Chinatown to the waterfront, and the shipping activities that were critical to the success of Chinatown businesses.

The Nippu Jiji building was erected in 1897 by sugar industry capitalist William Irwin as a speculative commercial and office building. The first occupant was Yoichi Takakuwa, who ran a wholesale store and led the Reform Association, which worked for improved conditions for Japanese immigrants. The building survived the fire of 1900, and in 1923 became the home for the *Nippu Jiji* newspaper. This Japanese-language newspaper had started in 1895 as the *Yamoto*, and changed names several times; the name was changed in 1942 to the *Hawaii Times*. The newspaper aided and educated the immigrant Japanese laborers. It also promoted understanding between generations and with the surrounding community by printing an English language section, starting regularly in 1919. The newspaper relocated its offices in 1985 and ceased operation in 1985. The building is also important architecturally. The office of C.B. Ripley designed the buildings, and probably this is an early work of C.W. Dickey, who was working with Ripley at the turn of the century. Several Dickey buildings of this period were similar lava stone structures in a Richardsonian Romanesque style. Thus, the building is significant for its role in the Japanese immigrant community and for its architectural quality.

The T.R. Foster building was constructed in 1891, as noted on the facade and in Thrum's *Annual* for 1892. The structure was built by the Inter-Island Steamship Navigation Company, as a memorial to its founder, who had died in 1889. The building was first rented as a warehouse to Lovejoy Shipping Company, until 1918. With the incentive of serving the increased trade and shipping resulting from the 1876 Reciprocity Treaty, T.R. Foster purchased a steamship in 1878, and incorporated the Inter-Island Steamship Navigation Company in 1883. The company played a critical role in the island's freight and passenger shipping until the 1950s. Moreover, during World War II its boats were called into war service. Besides its connection with this company which was a significant one in Hawaii, the building is architecturally significant as an example of an elaborate Victorian-period, classical-style structure. The details and proportions of the building are well designed and executed; it is a fine example of its period.

C. MERCHANT STREET HISTORIC DISTRICT

1. Description

The Merchant Street Historic District on the National Register of Historic Places includes the four blocks bounded by Nuuanu Street, King Street, Fort Street Mall, and Queen Street. The entire project site lies within this National Register district. There were discussions about changing the boundaries of the Merchant Street District to include the Judd Building, Stangenwald Building, C. Brewer Building and Alexander & Baldwin Building. Although these four buildings are all located in an adjacent block and would make a logical extension of the district, the eastern boundary has not been formally amended. The Nippu Jiji and the T.R. Foster buildings were also thought to be part of the Merchant Street Historic District, as well as the Chinatown Historic District, but no boundary amendments have been made on this western side.

There are 11 historic buildings within the Merchant Street National Register Historic District. All but the last are also within the City and County's Chinatown Special District. The uses, periods, and styles of the buildings in the Merchant Street Historic District are much more varied than the Chinatown Historic District buildings. The names and dates of these buildings are given below.

1.	Former Bishop Estate Building	1896
2.	Bank of Bishop & Co.	1878
3.	Melcher's Building	1853
4.	Former Honolulu Police Station	1930
5.	Royal Saloon	1890
6.	J.T. Waterhouse Building	1870s
7.	Yokohama Specie Bank	1908
8.	Kamehameha V Post Office	1870
9.	Wing Wo Tai & Co. Building	1916
10.	The Friend Building	1887
11.	McCandless Building	1906

The first eight buildings on this list are adjacent to, or in the immediate vicinity of the project site. Brief descriptions and summaries of significance for those buildings follow the general significance statement below, and their locations shown on Figure 1.

2. Significance

The Merchant Street Historic District encompasses an important section of the early historic commercial area in Honolulu. From the mid-nineteenth century into the early decades of the twentieth, this area adjacent to the harbor was the location of warehouses, stores, banks, government buildings, accommodations, and saloons that served the visiting businessmen and ships' crews, as well as residents. The value of this land was recognized as early as the 1840s when the British consul Richard Charlton laid claim to the land. His dispute with the King over this led to the occupation of the Kingdom by a British warship, and a five-month provisional cession of the islands to Great Britain. The Hawaiian Kingdom was restored without settling the land claim. Finally it was agreed that British officials would decide the claim, and they awarded it to Charlton. He subsequently sold the land; then it was subdivided and commercial development soon followed.

The Merchant Street Historic District contains a representative sample of commercial buildings in Honolulu from the 1850s through 1930. The Melcher's and the Wing Wo Tai & Co. buildings held retail stores where imported goods were sold. The Waterhouse building was a warehouse. The Royal Saloon was an inevitable waterfront use. Government buildings built in the area which are still standing are the Kamehameha V Post Office and the former Police Station. A customs office was formerly located on the land adjacent to the Post Office. Two banks built their headquarters near this thriving hub of commercial activity: the Yokohama Specie Bank and the Bank of Bishop & Co. The population in Honolulu more than tripled between

1880 and 1900, and this created a building boom in these decades. In addition to the quantity of buildings in this period, their high quality was evident to observers then and now.

The concentration of new commercial and office development in the areas to the east and north after the 1920s spared most of the buildings in the Merchant Street Historic District. The extant historic structures serve as important landmarks in the development of commerce and government in Honolulu, as well as one of the most significant architectural groupings in the state. The range of building styles, types, and sizes is so varied, yet they are so compatible with each other, that these historic buildings serve as a collective example of sensitive contextual design.

C1. FORMER BISHOP ESTATE BUILDING

1. Description

This two-story building of lava stone has a fairly narrow main facade, yet its materials and design create the effect of a much larger building. The rusticated stone work and round-arched windows are in the Richardsonian Romanesque style. The tooled, red mortar joints are decorative. The stone lintels, voussoirs, and springers are heavier blocks than the rest of the facade. The smallest stones are above the second story windows; these are square in shape, laid in a checkerboard fashion with an alternating recessed and projecting pattern. Four engaged column-like forms of rusticated stone, carried on smooth rounded corbels, divide the upper facade into three bays, with a larger middle bay. The central bay has a gable-shaped cornice. The columns extend above the cornice; the two central ones have rounded caps and the side ones have low conical capstones. The cornice and unadorned brackets under it are of dressed lava stone. The second-story has four identical one-over-one-light, double-hung windows with shouldered arches. The first floor has two door

Bishop Estate Building 1896

openings flanking a large triple window. The doors and the window grouping have arched transoms above stone lintels. Stone mullions separate the first-floor window into a large central and two flanking sections, all 1/1 double-hung with wood sash; the transom above is also divided. The right-side doorway has double doors with one small molded panel above and two below a large vertical light. The left-side doorway appears similar, to retain the symmetry of the design, but is a single door designed to resemble a double door.

The building abuts the former Bank of Bishop & Co. Building to the west stands very close to the 1960s Campbell building on the east. A cast-iron pilaster fragment from the old Campbell block remains between the Bishop Estate building and the new Campbell building. To the rear of the Bishop Estate building is the project site, now the three-level Kaahumanu parking garage. A small rear yard, unmaintained, separates the two structures.

2. Significance

The architectural office of Clinton Briggs Ripley received the commission for this building. Charles William Dickey was working for Ripley at this date, and is generally given credit for the design of this building. Dickey was raised on Maui, and is considered one of Hawaii's best architects. Other buildings known to be by him display similar design motifs and materials. It is interesting to note that the design accommodates the cornice of the earlier Bank of Bishop & Co., which projects one-and-a-half feet into the Bishop Estate Building facade. The fact that the buildings were both commissioned by the Charles Bishop family is reflected in this design solution.

The lava stone was from the Kamehameha quarries owned by the Bishop Estate. The Estate was established when Bernice Pauahi Bishop died in 1884, and the bulk of her income from her vast landholdings were to be used to found and maintain the Kamehameha Schools. Her husband used his own funds to establish the Bernice

Pauahi Bishop Museum, and he deeded this building to the museum in 1896.

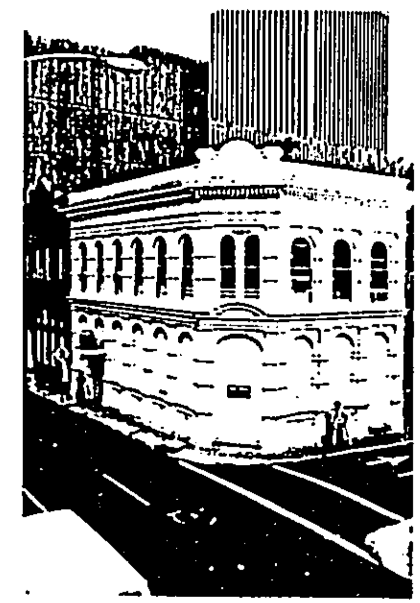
The former Bishop Estate building is significant for its high-quality design, as well as being example of an important architect's early work. Moreover, the structure is associated with persons and institutions that have played a significant role in the islands' history.

C2. FORMER BANK OF BISHOP & CO.

1. Description

The former Bank of Bishop & Co. is located on the corner of Merchant Street and the former Kaahumanu Street, now an entrance to the Kaahumanu Parking Garage and part of the project site. The two-story building, in the Italian Renaissance Revival style, is of brick construction with stucco finish. The two original entries and all of the first floor windows, have been enclosed with stucco. Modern double doors have been placed in the third original entry, and a rounded, flat-roof canopy added. The arched forms of the windows and doors are still visible because the surfaces in the openings are recessed. The wall surface is highly modulated with pilasters, horizontal banding, keystones, paneled podium, horizontal moldings above the windows, and denticulated cornice. There are six bays along Merchant Street, three along Kaahumanu Street and a wide, angled corner bay. The bays are defined by Doric-style pilasters on each floor. Between the windows, two projecting horizontal bands wrap around each pilaster and adjacent wall surfaces.

The second floor has wood-sash, round-headed, 1/1-light, double-hung windows, one to a bay except in the corner bay there are two. Since the corner bay is wider, the arch is a shouldered elliptical shape, rather than rounded. There are two narrow, round-headed windows in the upper opening. Over the former corner entrance there is a



Bank of Bishop & Co. 1878

segmental pediment. Above the sheet-metal cornice, the parapet rises 1' 5", but on the angled corner the shouldered segmental pediment and flanking pilasters are slightly taller. Historic photos show the parapet previously was constructed like a small mansard roof, and the sheet metal cornice formerly had quite different decorations with brackets, rather than the existing dentils. The cornice on the Diamond Head end projects one-and-a-half feet into the Bishop Estate Building facade.

The building abuts the former Bishop Estate Building on the Diamond Head side. To the rear of these buildings is the project site, now the three-level Kaahumanu parking garage. There is a small unmaintained yard separating the two historic buildings from the parking structure.

2. Significance

The Bank of Bishop & Co., the first banking institution in the Hawaiian kingdom, was started by Charles Reed Bishop in 1858, only 13 years after his arrival in the islands. In 1850 he had married Princess Bernice Pauahi, who as one of Kamehameha royal family had extensive land holdings, which helped finance his bank. The 1878 building on the corner of Merchant and Kaahumanu Streets was the second location for the institution, but the first building constructed expressly for the bank. The location was an important one, known as "The Corner," because of its proximity to the Post Office and the wharfs, the sources of the latest news.

After the death of his wife in 1884, Charles Bishop's interest in the bank diminished. In 1889 he established the Bernice Pauahi Bishop Museum in her memory, and devoted most of his time to this institution, which remains an important library, cultural and scientific research center, as well as museum. The bank was left to his former partner, Samuel Mills Damon, after Bishop moved to California, subsequent to the overthrow of the monarchy in 1893. However, the building was deeded to the Bishop Museum in 1896. The

bank of Bishop & Co. was incorporated as "The Bank of Bishop & Co." in 1919, in 1929 became the Bishop First National Bank, and eventually was renamed and continues as First Hawaiian Bank. The bank moved from this building in 1925, and the structure subsequently housed a offices for a Japanese steamship line, the Hawaii Meat Co., insurance brokers, and the law firm of Harriet Bouslog.

The building was designed by Thomas J. Baker, known to be a bricklayer in San Francisco before arriving in Honolulu in 1876. In this period the profession of architecture was evolving and more overlap was common between builders and designers. During his three and a half years in Honolulu, Baker is also known to have been one of the three designers of Iolani Palace, construction on which was started in 1879. George Lucas was the builder of the Bank of Bishop & Co.

The bank building is significant for its architecture which reflects the high-quality work of a builder turned designer. Although altered over the years, the building retains the integrity of its original design, which is still clearly visible. Part of the second floor interiors retain their original materials and design. The building is also associated with persons and institutions of great importance in the history of the islands, Charles Reed Bishop and the banking and museum institutions he founded.

C3. MELCHER'S BUILDING

1. Description

This two-story building was constructed in two phases; the 1853 portion is known to be built of coral blocks with a stucco finish, while the addition of the 1930s is most likely stuccoed brick. The original section was on the corner of Merchant and Kaahumanu Streets, and the expansion extended it to Bethel Street. The original

Melcher's Building 1853

building had three bays along Kaahumanu Street and four bays along Merchant Street; the extension added two bays along Merchant Street, with quite different proportions, and has five bays along Bethel Street. From historic photographs it is evident that numerous alterations were made to the building over the years, including: changing the original hip roof to flat; altering the cornice; reducing the size of the door and window openings; elimination of the quoins; and major structural changes in the most recent renovations of 1987.

The building still retains much of its original appearance. The projecting belt course between the first and second floor, as well as the cornice and the overall shape of the building give it a horizontal emphasis. In the recent renovations, pairs of eight-light, wood-sash casement windows were installed in the previously blocked-up openings of the first floor. In the first floor of the extension, in the recessed entry, a ten-light wood-frame door with 15-pane sidelights replaced the inappropriate aluminum-frame glass storefront arrangement. The remodeled surround for this entry opening has simplified classical pilaster and pediment. The door surround on the makai end of the Kaahumanu Street facade is even simpler, with only some planar differentiation from the wall. The is a decorative shield shape, supporting an Ionic capital and festooned with ribbons, with raised letters spelling "H. D. CO./H. C. CO."-- the initials of Hawaiian Dredging Company and Hawaiian Construction Company, the firm occupying the building from 1920 to 1950. The door itself is modern, with sidelights and transom. On the three bays at the makai end of the first floor of the Bethel Street facade, three small eight-pane windows high on the wall have replaced the previous jalousie windows. The first-floor bays nearest the corner of Bethel and Merchant Streets have no window openings on the first floor.

The second floor has 6/6 double-hung windows. Compared to the original section, the the windows on the addition are more closely spaced. On the second-floor of the Merchant Street facade there are four such windows, two over the door opening and two over the blank wall at the corner. The cornice ties into the parapet, appearing as two sets of moldings. Leader boxes and down spouts at three corners drain the flat roof behind the parapet. Extensive air-conditioning and ventilating ducts and equipment are located on the roof.

The Melcher's building is built up to the property boundary on all sides. Three boundaries are public sidewalks; along Merchant Street and Kaahumanu Street these are paved with square granite blocks. This sidewalk material was originally used as ballast in the ships trading between China and Honolulu. The building faces the Bank of Bishop & Co. across Kaahumanu Street. With the Honolulu Police Station, the Yokohama Specie Bank, and the Kamehameha V Post Office, it creates an intersection of compatible architectural styles and scale. The makai side of this building abuts the project site. Looking down the narrow space between this building and the existing Kaahumanu parking garage wall, it is evident that this side of the building is quite unfinished.

2. Significance

Two German importers, Gustave Melcher and Gustave Reiners, built this structure as a retail store. Its location at the intersection of Merchant Street and Kaahumanu Street, which led directly to the harbor, was advantageous for such a firm. The store opened in 1853 and was fitted with koa counters and glass-enclosed shelves. Drygoods from Europe, including fabrics, cigars, and china, were the items stocked here. The business was purchased by a former clerk in the store, F. A. Schaefer, in 1867. Schaefer, who served as Consul of the Kingdom of Italy, operated in this building until 1920. The firm of Hawaiian Dredging Company made this building its home office from 1920 until 1950, when it sold the property to the City and County of Honolulu.

The Melcher's building is significant as one of the oldest extant buildings in Honolulu, and the oldest in the Merchant Street Historic District. It is also the oldest extant commercial building in Honolulu

Honolulu Police Station 1930

constructed of coral blocks. Amid the wooden construction prevalent in the mid-1850s in Honolulu, this was a prominent building due to its masonry material. Also, the building is associated with the Hawaiian Dredging Company, a construction company which played a significant role in the history of the territory and state.

C4. HONOLULU POLICE STATION

1. Description

The Honolulu Police Station is the largest and youngest of the historic buildings in the Merchant Street Historic District. Its facade stretches along the full length of Merchant Street between Bethel and Nuuanu Streets, and it occupies about half the depth of the block as well. The building ranges from two-and-a-half to four stories, with a variety of roof levels and building sections that break up its apparent mass. The architectural style is Spanish Colonial Revival, reflected in its stucco walls, red tile roof, and the elaborate decoration around the doors and some windows. The interior of this building is also a noteworthy example of the style, and retains much of its original materials.

The only major alterations to the exterior appearance of the building are the addition in the makai/Ewa corner, and the enclosure of the balcony over the former garage opening. These changes have been made in a compatible style.

The most remarkable elements in the design are the highly decorative doorways, at the Bethel and Merchant Street corner, and mid-way along the Merchant Street elevation. The terra cotta surrounds are monumental in size, with classical design motifs. The large openings are infilled with paneled wood, part of which is hinged to create paneled doors. The mid-block door is notable for its large terra cotta scrolls. The three main door surrounds incorporate a window opening

topped by elaborate broken pediments. Another decorative doorway surround is at the makai end of the Bethel Street elevation; this entrance has been blocked with a stucco insert, and the landscaping obscures this design feature.

The walls are built of concrete with a cream-colored stucco finish. The most interesting wall shapes are the curving wall-plane rails of the exterior stairs on the Ewa end. The bottom eight feet of the wall along Merchant Street projects slightly from the rest of the wall surface, and is topped by a watertable. The windows in this basement level are screened by geometrical concrete blocks.

The window sash are steel, and most windows are casements, generally with transoms above. There is variety in window sizes. The window openings are generally unadorned and appear punched through the thick walls. The third-floor windows on the Merchant Street facade are flanked by non-operable shutters and separated by projecting pilaster-like forms which extend below the window sill level. Decorative wrought-iron grillwork is found on selected windows: over the mid-Merchant Street door, over the blocked-up door at the makai end of the Bethel Street elevation, and over the window at the top of the Ewa-end semicircular tower. Simple geometric iron work is used for the grilles on two of the Bethel Street tower windows and for the balcony railing at the top floor of the makai side. One window on the Bethel Street tower is screened with semicircular tiles laid in a fan-like pattern. This window is further elaborated with engaged spiral columns carried on corbels and supporting a decorative pediment.

A fan-like tile screen is also used in the wall of the balcony of the tower. This balcony has a corbeled support. The tower contains the main stairs and elevators for the building. It extends only slightly higher than the rest of the building mass and is capped by a low-pitched pyramidal hip roof, with a flagpole at the top. The roofing of the rest of the building is a combination of hip shapes and flat roof with parapets. There is also a half cone on the semicircular Ewa end, and a shed roof over the enclosed balcony on the Bethel Street side. Red tiles are used on all the sloping roof forms, and composition roofing on the flat areas behind parapets. There are coved and molded stucco cornices under the eaves of the tiled roofs.

2. Significance

The Honolulu Police Station was built in 1930, replacing an earlier station building on the same site. Louis E. Davis, a Honolulu architect, designed the building, and it was built by F.M. Dias. The station cost $235,000. Some of the materials used for this government building were imported from France (11 tons of Roja Alicante marble) and the Philippines (the mahogany doors). The sandstone on the walls of the foyer came from a closer source, a quarry in Waianae.

During World War II, the building housed the Alien Property Custodian's office. Under martial law, declared on December 7, 1941, the property of foreign citizens of countries at war with the United States could be confiscated. This agency closed the Yokohama Specie Bank directly across the street from this building.

In the newspaper article announcing the opening of the building, the uses of the various floors were discussed. The vice squad, military police, and shore patrol were in the basement. The general offices, foot patrol, and traffic departments were located on the main floor. The second floor held the jail, while the courtrooms and related offices were on the top floor. This was a much greater differentiation of function than was possible in the smaller 1886 building that this one replaced. After the Police Department left the building in 1967, the District Courts remained until 1983. The building was vacant for a few years, until renovated for the City's Real Property Assessment and Public Housing offices.

The continuous use of this site for a police station from 1886 to 1967 is significant. The location of the building near the harbor and the hub

of so much commercial activity was a logical choice. The building is also extremely significant for its architectural quality and integrity.

C5. ROYAL SALOON BUILDNG

1. Description

The Royal Saloon is a small, one-story, brick building located on the mauka corner of the intersection of Merchant and Nuuanu Streets. A small addition is evident on the Nuuanu Street side, because of its greatly different architecture. In the original part of the building there are three bays along Nuuanu Street, three along Merchant Street, and an angled corner bay. The bays are not of equal sizes, but have similar segmental-arch openings with decorative voussoirs and keystones, set in segmental-arch recesses, and divided by unadorned, stuccoed pilasters. The three bays along Nuuanu Street are all about ten feet wide. The corner bay is wider at 11'-6". The two Ewa-end bays on the Merchant Street side are about 14 feet wide. The end bay is the widest, and its 24-foot width accommodates two windows and a door, unlike the other bays in the original building which have only one opening. The addition on Nuuanu Street has two unequal bays, also divided by plain pilasters. The walls of the main building section are mostly exposed brick, with some stucco above the arch over the door and window openings. The facade of the Nuuanu Street addition has a stucco finish.

The main entry is in the corner bay. The recessed double doors are up one step. Another recessed entry is located in the middle of the large bay on Merchant Street. In both entries the recessed area is panelled in a pattern similar to the doors. There are segmental arch transoms above both doorways. On the Nuuanu Street side there is a door in the narrow bay of the addition, with one wood panel below a glass panel, and a two-light transom. In the middle bay of the original Nuuanu Street elevation and the Ewa-end bay on Merchant Street, door

Royal Saloon 1890

openings appear to have been converted to windows, as there are wood panels and concrete stoops under the windows.

In the four bays of the original building there are two-over-two-light, double-hung windows with wood sash, the top sash following the segmental arch of the opening. The two windows on the Nuuanu elevation of the addition are fixed with six panes (three over three).

The cornice and parapet unify the irregular bays of the original building. The cornice has triglyph-style brackets supporting it. The cornice molding is interrupted by the capital-like triangular decorations along the pilasters. The pilasters continue above the parapet and end in a hipped shape. The parapet has recessed panels containing barbell-shaped balusters. Above the parapet are triangular pediments, over the corner bay and over the Diamond Head bay. The roof behind is a combination hip and gable roof. The addition has a flat roof with a slight slope.

2. Significance

The Royal Saloon was built in 1890, on the site of his earlier saloon, by W.C. Peacock. He later became the manager of the Moana Hotel. The widening of Merchant Street necessitated the demolition of his earlier structure, and the temporary relocation of his business. Because of its location near the harbor, Peacock's saloon served a social function for residents and visitors from the 1870s until 1916. From 1916 until the 1970s, when it was renovated for a restaurant, the building was used as offices and for retail businesses.

The building is an important reminder of the social function a waterfront saloon served in the nineteenth century. The Royal Saloon is also significant for its architectural design, which endows this small building with an imposing presence.

C6. WATERHOUSE BUILDING

1. Description

This narrow, two-story building has a quite simple design, but a pleasing facade. Its main feature is the Mission Revival style parapet with louvered oculus. The facade wall is brick with a stucco finish. The first floor is not quite symmetrical, because the window on the Ewa side is narrower, and positioned closer to the facade edge than the window on the other side of the central, recessed door. The narrow window is fixed with 15 panes (3x5), while the other is a double casement with a pair of 2x5 panes. Both first-floor windows have exposed brick sills and transoms. The door and window openings on the first floor have segmental arches.

There are two windows on the second floor, symmetrically placed. They are also double casements with 2x5 panes, but without transoms. String courses at the sill and lintel levels provide horizontal balance to a very vertical composition. The flat roof is visible behind the lower sections of the parapet, apparently an addition over an earlier roof.

Fire insurance maps and historic photos show this building was built as a one-story structure with a simple front-facing gable, and the second story was added about 1911-1914.

2. Significance

This structure was built by John Waterhouse in the 1870s, as a one-story warehouse. He arrived in Hawaii from Tasmania in 1851, and became a successful importer and merchant. He owned several properties in downtown Honolulu, including several halls which where used for lectures and assemblies. Waterhouse is famous for

J.T. Waterhouse Building 1870s

circulating his own coinage, for use only in his stores. There was no official Hawaiian kingdom coinage at this time.

This building's significance rests largely with its association with this important person in Hawaiian history. However, its architecture is compatible and contributes to the overall character of the historic district.

C7. YOKOHAMA SPECIE BANK

1. Description

The Yokohama Specie Bank, located at the intersection of Merchant and Bethel Streets, is an elegant, two-story, brick, terra cotta, and stone structure that is prominent in the Merchant Street Historic District. The doors and windows are monumental in scale, but the building does not have an imposing appearance. The decorative details and classical elements enliven the surface of the building. The L-shaped building has a high base of smooth ashlar masonry. The walls above are buff-colored brick, with extensive terra cotta decoration on the public facades. There are four unequal bays on both the Merchant Street and Bethel Street facades, plus the angled corner bay. Giant Ionic-order pilasters of brick, with terra cotta capitals, rise from the base to support an elaborate terra cotta entablature. Except in the corner bay, the wide frieze has a wreath shape around the louvered vent in line with each window; these are connected by garlands. The terra cotta design in the corner bay frieze is even more elaborate and centered over the two windows. The cornice above the frieze has dentils and modillions, and on top is a balustraded parapet. The corner bay has a highly ornate projecting pediment above the parapet.

There are three entrances to the building from the sidewalks: the main corner entry, one in the Ewa end of the Merchant Street facade, and one in the second bay from the mauka end on Bethel Street. The

Yokohama Specie Bank 1908

corner entry is the most prominent, with six steps leading under a richly decorated, arched, terra cotta entry surround to large double doors with copper-clad frames. Foliated designs and the dates "1880" and "1908" are in the spandrels. The Merchant Street entry is more deeply recessed and reached by seven steps. The arched terra cotta portal is almost as elaborate as the one over the corner entry and the doors are similar as well. The Bethel Street entrance is up three steps, and the doors are not recessed. The terra cotta door surround is also arched, but is smaller and has less elaborate decoration. The double copper-clad doors are simpler.

On the first floor are one-over-one-light, double-hung windows with copper sash, under transoms of a similar size. The second floor windows have no transoms, but are otherwise similar to those on the first floor. Generally there is a pair of windows in each bay. The mauka bay and second bay from the Ewa end have triple windows. The first-floor windows are flanked by Ionic capped pilasters, while brackets top the divisions between the second-floor windows.

2. Significance

The branch of the Yokohama Specie Bank, one of Japan's premier banking institutions, was the first Japanese bank to be established in the Hawaiian islands. The founding of the bank in Japan dates to 1890, and the construction of this building was started in 1908, the two dates that are commemorated in stone on either side of the main entry. Before this building was constructed, the Yokohama Shokin Ginko (Specie Bank) had already been operating in Hawaii since 1892 from the Japanese consulate and then on King Street. The sophisticated structure reflects the substantial percentage of immigrant Japanese in the Hawaiian community, as well as their efforts to maintain their ties to their home country.

The Honolulu architect Harry Livingston Kerr designed the building. This prolific architect designed over 900 buildings in Hawaii. This is

certainly one of his finest extant works. It was considered the most fireproof building in town when it opened, for there was no exposed wood.

Sensitive renovation of the building interior and exterior has been undertaken. The integrity of the design, materials, workmanship, feeling, and association has been maintained. The immediate setting has not changed since 1930, since the three other buildings at the Merchant/Bethel intersection are historic as well.

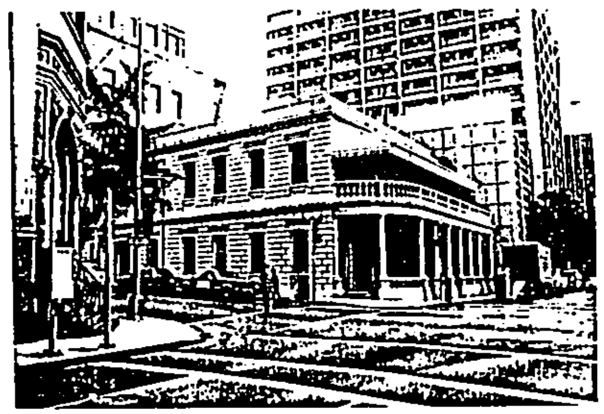
The confiscation of the building during World War II, and the uses to which it was turned, are important aspects of the history of that period as well. The funds of Japanese depositors, totalling over $1 million, were impounded in 1943. Most was paid back by late 1949, but no interest was paid until 1967, when the government finally settled the lawsuits. Following confiscation by the Alien Custodian Agency, the building was used for storing other confiscated good and the basement was converted into a 250-man cellblock, used to contain drunken soldiers. After the U.S. Justice Department sold the building in 1954, it changed owners and tenants several times. It now houses the offices for several businesses, including *Honolulu* magazine.

For both historical and architectural reasons, this is one of the most significant structures in the Merchant Street Historic District.

C8. KAMEHAMEHA V POST OFFICE

1. Description

This two-story post office is located at the intersection of Bethel and Merchant Streets. The original part of the building measured approximately 55 feet by 55 feet. A rear addition, measuring about 33 feet by 60 feet, fronts on Bethel Street, and was designed in the



Kamehameha V Post Office 1870

same style as the original. The classical style elements such as the rusticated masonry, Doric columns, and balustrades are well designed and executed. The walls of the original building are constructed of reinforced concrete blocks, while the addition is built of brick with a stucco finish to match the original section's appearance. The cornice and balustrade of the original section were cast and poured concrete, while the addition use sheet metal for these elements.

The columned portico along Merchant Street is situated three steps above the adjacent sidewalk. The arched openings, filled with postal boxes, that were on the original building's portico, have been altered and replaced with a stucco wall surfaces. The windows have an unusual design, with an entablature over a segmental arch, with the space between divided into two voussoirs. Most are double-hung and have a modified Queen Anne pattern of panes. Beneath the windows are recessed panels of concrete.

There are two hip roofs, one on each section of the building. These are visible above the balustrade. A corrugated metal shed awing, with elaborately jigsaw-cut wood border covers most of the upper balcony. Another shed-roof awning, without the jigsawn border, covers the first-floor-level area outside the Diamond Head wall of the original section of the building. The first-floor wall in this section is smooth plaster, with rustication limited to quoins outlining the fours openings. The wall of the addition on the Diamond Head side is entirely smooth plaster, without any rustication.

The Post Office Building abuts the McCandless building on the mauka side and adjoins the Alan Sanford Davis park on the Diamond Head side. Two upright cannons are set in the sidewalk near the Bethel/Merchant Street intersection.

2. Significance

Built in 1870, this classical-style post office was really avant garde in its use of reinforced concrete blocks -- at the date a very new construction material. The architect-builder, J.G. Osborne was from England where they were experimenting with iron reinforcement of concrete. This building was declared by the American Society of Civil Engineers to be the earliest example of the use of reinforced concrete in the United States.

In addition to the building's architectural importance, the use is historically significant as well. It is one of the oldest extant public buildings in Hawaii, dating from the monarchy period. The site was chosen to be near the harbor, and the incoming mail boats. This was the first building expressly built as a post office in Hawaii, although in its early years it also housed the offices and presses of the government newspaper, the *Hawaiian Gazette*, and a postal savings bank.

By 1894 the post office was using the entire building. By the time the islands became a territory of the United States, in 1900, the addition was needed to accommodate the growing volume of mail. In 1922 the post office moved from this building to the Federal Building at Richards and Merchant Streets. Various government departments have utilized the building since then. The structure remains an important contributor to the Merchant Street Historic District, with significant architectural and historic value.

KAAHUMANU PARKING STRUCTURE REDEVELOPMENT PROJECT

HARBOR COURT AND NUUANU COURT DEVELOPMENT

Section of Draft Environmental Impact Statement

Environmental Impacts and Mitigation Measures Chapter

Historic Districts and Buildings

Prepared by
Spencer Mason Architects

Prepared for
R.M. Towill Corporation

March 23, 1990

ANALYSIS OF IMPACTS ON HISTORIC BUILDINGS AND DISTRICTS AND POTENTIAL MITIGATION MEASURES

LAWS, REGULATIONS, AND POLICIES REGARDING HISTORIC BUILDINGS AND DISTRICTS

There are federal, state, and county laws, regulations, and policies regarding the protection of historic buildings and districts. The main federal regulations in this area are known as 36 CFR 800, and implement the provisions of the 1966 National Historic Preservation Act, as amended and of Executive Order 11593 ("Protection and Enhancement of the Cultural Environment"). These apply to federal agency actions and to private projects if federal funds or permits are required. This project does not require any federal funds or permits.

The state and county regulations are similar to the federal process, with less formalized procedures. The State of Hawaii has recognized the value of protecting historic properties in the State Constitution and further promoted preservation by enacting the "Historic Preservation" law, Chapter 6E, Hawaii Revised Statutes, and by adopting the Hawaii State Plan and State Historic Preservation Functional Plan. The State Department of Land and Natural Resources, Historic Sites Section (DLNR-HSS) is currently in the process of promulgating administrative rules to implement the laws and policies relating to historic preservation.

The *General Plan*, adopted by City and County of Honolulu, also has historic preservation policies:

- Identify, and to the extent possible, preserve and restore buildings, sites, and areas of cultural, historic, and archaeological significance; and
- Cooperate with State and Federal governments in developing and implementing a comprehensive preservation program.

To accomplish these policies, the City has developed specific regulations for the Chinatown Special District, and recently established by resolution a "Comprehensive Historic Preservation Review Policy to Help Preserve the City's Historic and Archaeological Properties." The review process applies to any project altering the land of any historic property, which is undertaken by a City agency, or requires a City permit. This project and most development projects fall under the historic preservation review process. The resolution outlined a six-step review process that each development project should follow:

(a) Identify any historic and archaeological properties likely to be affected by a development project,

(b) Evaluate the significance of the historic and archaeological properties involved,

(c) Assess the impact of the development project on significant historic and archaeological properties,

(d) Submit the assessment to the Historic Sites Section [of DLNR] for review and concurrence, and that Section is to consult with the Office of Hawaiian Affairs when Native Hawaiian properties are involved,

(e) Prepare a plan, in consultation with Historic Sites Section, and that Section is to consult with the Office of Hawaiian Affairs when Native Hawaiian properties are involved, to mitigate the impact of the development project on any significant historic and archaeological properties, and

(f) Implement the mitigation plan.

The initial step of the procedure, identification of all registered and register-eligible historic properties in the potential impact area of the project, is discussed in Chapter 3. That section also summarized the significance of the buildings identified and described. All are on the National Register, either individually or as part of the Chinatown and/or Merchant Street Historic Districts; Aloha Tower is also listed on the

Hawaii Register (see Table 1). The significance of the registered buildings has already been recognized by the the Hawaii Historic Places Review Board and the National Park Service staff of the Keeper of the National Register, who are responsible for the nomination and listing.

After the evaluation of significance, the "assessment of impact" stage is entered. The federal regulations (36 CFR 800.9) spell out criteria of adverse effect:

> An undertaking is considered to have an adverse effect when the effect on a historic property may diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association. Adverse effects on historic properties include, but are not limited to:
>
> (1) Physical destruction, damage, or alteration of all or part of the property;
> (2) Isolation of the property from or alteration of the character of the property's setting, when that character contributes to the property's qualification for the National Register;
> (3) Introduction of visual, audible, or atmospheric elements that are out of character with the property or alter its setting;
> (4) Neglect of a property resulting in its deterioration or destruction; and
> (5) Transfer, lease, or sale of the property . . . [without] adequate restrictions or conditions . . . included to insure preservation of the property's significant historic features.

The section of the *Land Use Ordinance* relating to the Chinatown Special District also contains the following policy on historic preservation:

- Preserve and restore, and to the extent possible, buildings and sites of historic, cultural, and/or architectural significance, and encourage new development which is compatible with and complements these buildings and sites, primarily through building materials and finishes, architectural detailing, and provisions for pedestrian amenities, such as storefront windows and historic signage details.

Table 1. Register Status of Historic Buildings in Project Site Vicinity.

Building/District Name	Date	Register Status
1. Aloha Tower	1926	NR & HR - I
2. Chinatown Historic District		NR - D
2A. T.R. Foster Building	1891	NR - B in D
2B. The Nippu Jiji Building	1899	NR - B in D
3. Merchant Street Historic District		NR - D
3A. Bishop Estate Building	1896	NR - B in D
3B. Bank of Bishop & Co.	1878	NR - B in D
3C. Melcher's Building	1853	NR - B in D
3D. Honolulu Police Station	1930	NR - B in D
3E. Royal Saloon	1890	NR - B in D
3F. J.T. Waterhouse Building	1870s	NR - B in D
3G. Yokohama Specie Bank	1908	NR - B in D
3H. Kamehameha V Post Office	1870	NR - B in D & I

LEGEND

NR = National Register
HR = Hawaii Register
I = Listed on Register(s) as Individual Building
D = Listed on Register as District
B in D = Historic Building within National Register District

Source: Hawaii Historic Places Review Board (February 1985). Listing by Island of Sites on National and Hawaii Registers of Historic Places. Author: Honolulu.

The City and County's "Development Plan Special Provisions for the Primary Urban Center" sets out urban design principals and controls to regulate "prominent views of historically and architecturally significant urban areas, places and buildings, such as . . . Chinatown." For the Downtown area, which includes Chinatown, it more specifically states:

- Views from public streets and thoroughfares to the Aloha Tower [and] Honolulu Harbor . . . shall be preserved and enhanced where feasible.

The above criteria and policies are used in the following sections to assess the impacts of the proposed project. The Nuuanu Court building and a small portion of the Harbor Court site (approximately 1,000 s.f. of the former Kaahumanu Street) are within the Chinatown Special District. This report will be submitted to the Historic Sites Section of DLNR for review. Their input will be used to develop a mitigation plan. The mitigation measures will be outlined in the final EIS and could be made conditions of the permits for the project.

CONSTRUCTION PERIOD: POTENTIAL IMPACTS AND MITIGATION MEASURES

Because the two buildings that comprise the project are different in scale and character, some of their potential impacts are dissimilar; thus, each is discussed separately. Potential mitigation measures follow the discussion of each type of impact.

Harbor Court Tower Building

The Harbor Court Building is 350 feet tall, consisting of a combination office/residential tower with a tiered podium approximately 100 feet tall. One basement level of parking is planned. There are a number of potential construction period impacts that could result from the construction of the Harbor Court Tower, since it is sited within a few feet of the Bishop Estate Building and the Bank of Bishop & Co. building, and the basement parking level abuts the property line shared with the Melcher's Building.

There is the potential for damage to the historic buildings by excavation for foundations and the basement level. Such impacts would fall under the first criteria of adverse effect: "Physical destruction, damage, or alteration of all or part of a property." These construction period effects could cause long-term damage to the historic buildings. Since the type of foundations to be used for the tower are currently under investigation, the potential impacts will be generally discussed, in terms of worst-case scenarios. After each potential impact, a possible mitigation measured is given.

1) Use of impact pile drivers for sheet piles or soldier piles could cause excessive ground-borne vibration to be transmitted to nearby structures. If piles are required, drilled pile holes or vibratory pile drivers, rather than impact drivers, should be used to minimize vibrations.

2) Use of large backhoes to break hard coralline materials with excessive pounding could cause ground-borne vibration to be transmitted to nearby structures. The potential impacts could be mitigated by limiting backhoe pounding and/or pre-drilling the material before pounding.

3) Excavation itself could result in the lateral movement of shoring and bracing, or the bottom of the excavation could heave, either of which could cause settlement of adjacent grounds. To minimize potential impacts, excavation shoring and bracing should be checked to ensure adequacy, and the ground nearby monitored before, during, and after construction for settlement.

4) Pumping to dewater the excavated area could result in the lowering of the watertable, and cause ground settlement and cracking in nearby buildings. Ground settlement should also be monitored

before, during, and after construction so that mitigation can be undertaken if impacts result from excavation dewatering.

Although there are quite a number of potential impacts from excavation and foundation work, there are potential mitigation measures for each. Specifics would have to be worked out for each historic building affected, depending on the investigation of their foundations, the soils in the area, and other factors.

Monitoring should include photo documentation of the buildings adjacent to the project site, prior to construction, to establish a base for assessing any cracking or other damage to the building due to construction activity.

A matt foundation is currently the preferred alternative and will have the least impacts on the historic structures. Soils engineers should further investigate potential foundation impacts and mitigation measures. Investigations could include soil borings at locations directly adjacent to the historic structures to determine the location of the coral ledge with respect to the foundation. The potential for settlement of the historic structures due to dewatering will be less if the foundations are on the coral ledge.

The construction will also create dust which will settle on the nearby buildings. The dust particles could damage building materials and obscure details on historic buildings. The construction dust impact can be mitigated by cleaning the historic buildings in the area after construction is complete, using brushes and a gentle water-pressure washing.

An indirect construction-period impact could possibly result from construction noise, construction truck traffic, and loss of parking spaces during the construction period. These could make business-as-usual difficult for tenants in the historic districts of Chinatown and Merchant Street, and possibly affect the maintenance of the historic structures. The direct impacts and potential mitigation measures relating to noise, traffic and parking are discussed in separate sections of the Environmental Impact Statement. Mitigation could include control of construction equipment parking or standing on the public streets around the project site, and provisions for a shuttle to an outlying parking area for workers' vehicles. With such measures the effect on the businesses in the historic district, and the likelihood of the indirect impact of neglected and deteriorated historic buildings, will be minimized.

Nuuanu Court Building

A five-story building with a half-story basement is to be built makai of the former Honolulu Police Station. The plans for the basement were not finalized when the analysis of the impacts on historic buildings was conducted. The potential exists for impacts on nearby historic buildings from vibrations or settlement due to excavation and foundation work. If the excavation is confined to the Nuuanu Court building footprint, there would be a 20-foot wide separation from the Police Station. With this separation and the low building height of the Nuuanu Court building, the potential impacts from foundation work for this building could be less than for the tower building on the other block. Since half-story basement parking levels are planned for both buildings, the potential for impacts from dewatering the excavated areas would be similar.

The volume of construction dust from this part of the project will be less, but its impact on the nearby historic buildings similar. Also, because the Nuuanu Court building is relatively small and will displace fewer parking spaces in the construction period, the potential for indirect impact on the economic base of historic buildings from construction-period noise, traffic and parking problems is less.

The potential mitigation measures discussed in the previous section would apply to this part of the development also.

OPERATIONAL PERIOD: POTENTIAL IMPACTS AND MITIGATION MEASURES

All historic buildings will be retained as a part of this development action. A potential positive economic effect of the project on the nearby historic buildings may result from the increased pedestrian traffic the project is expected to draw to the area. The potential long-term adverse impacts on historic buildings and districts are discussed below, considering the two parts of the project separately. Mitigation measures are addressed after each impact discussion.

Harbor Court Tower and Pedestrian Bridge over Bethel Street

As discussed in the previous section on laws and regulations, isolation of a historic property (including buildings or districts), or alteration of its character are considered adverse effects. The proposed development will make some changes in the setting of the historic buildings and districts it is near. However, mitigation measures can minimize the effect of the alterations.

Figures A and B show the Merchant Street and Bethel Street elevations of the Harbor Court Tower and pedestrian bridge. Photo 1 shows the model of the overall project and surrounding blocks.

The pedestrian bridge will change the relationship of the Merchant Square Historic District to the harbor and waterfront. From some vantage points, the view of the harbor will be framed, while from other points the bridge will partially interrupt views makai. Since the harbor is the major reason for the establishment and development of this district, the change in the views to the harbor alters the character of the district's setting. The City and County's "Development Plan" principles and controls, quoted earlier, call for protection of views from any public street to the harbor. Other considerations, such as pedestrian safety and economics, are weighed also in the decision to have a bridge. To minimize the isolation of the Merchant Street Historic District from the harbor and the waterfront, the bridge

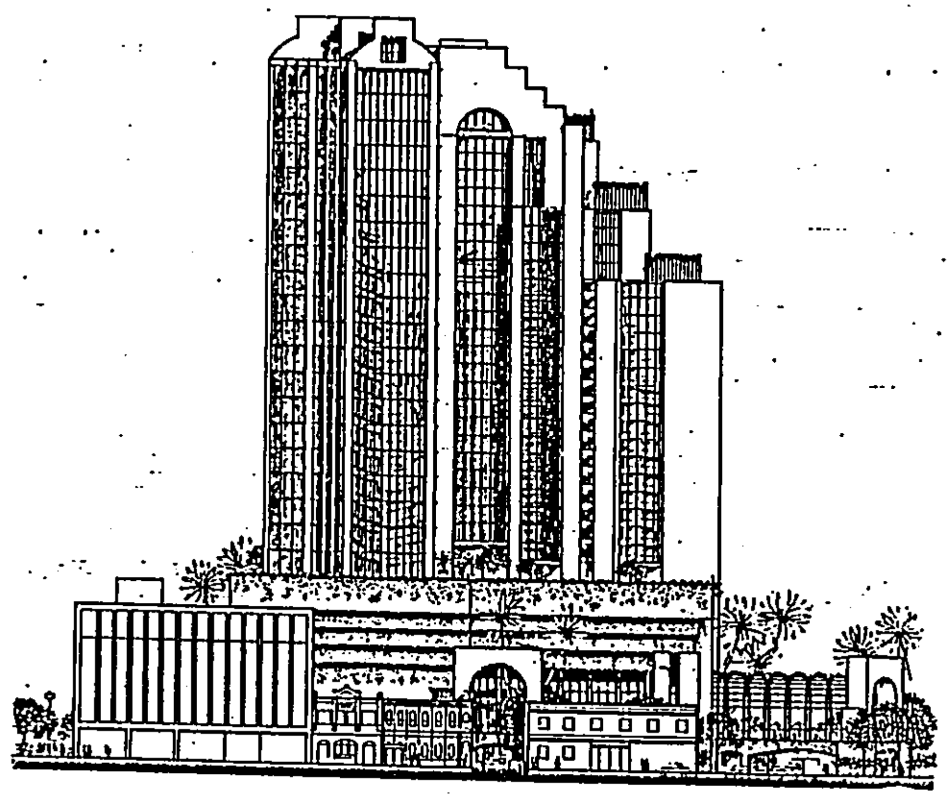


Figure A. MERCHANT STREET ELEVATION: HARBOR COURT BUILDING

Source: Lacayo Architects (June 15, 1989). Sheet A.10.

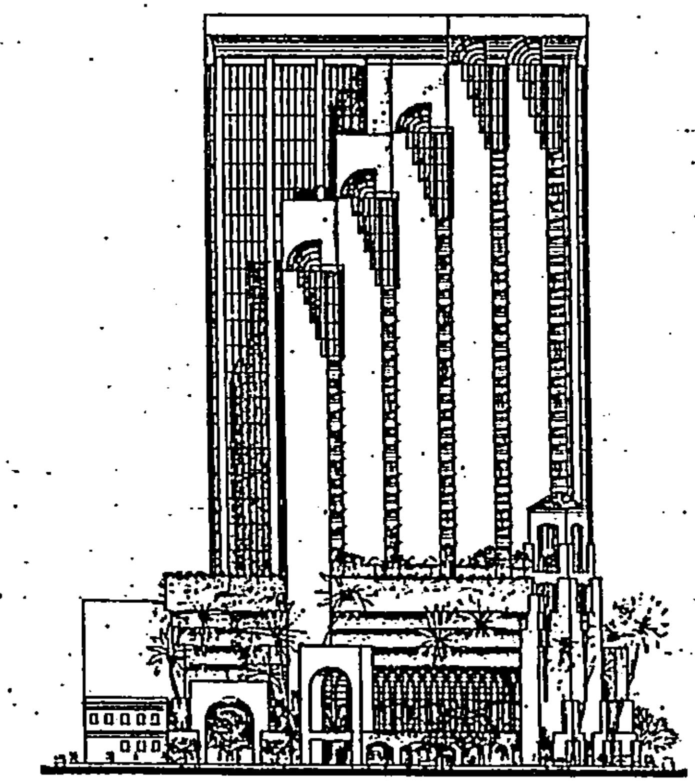


Figure B. BETHEL STREET ELEVATION: HARBOR COURT BUILDING

Source: Lacayo Architects (June 15, 1989). Sheet A.11.

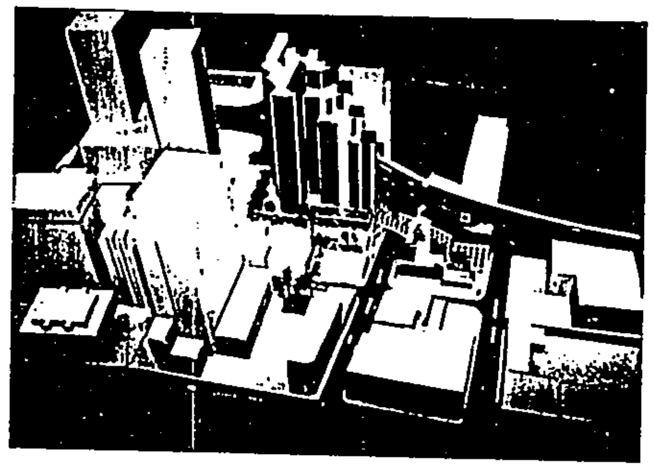


Photo 1. BIRD'S EYE VIEW OF PROJECT MODEL AND SURROUNDING BLOCKS

Model of project submitted by Lacayo Architects, model of surrounding blocks provided by City & County Department of Housing and Community Development.

could be open-air, rather than roofed, and designed with a thin deck depth. The drawings of the bridge show multiple thin arches, but no spanning glass or other material is planned by the architect.

The tower building and its podium introduce visual elements that are of a different character than the historic district's established character. The dimensions of the project impact the scale of the two- and three-story buildings adjacent to it and across the street. Figure A indicates the difference in scale and architectural design. A lower tower building would have less impact on the setting of the historic district. However, the economics of the project rule out any substantial reduction in the project's height or massing.

The schematic design of the parking garage podium shown in the drawings contrasts with the traditional construction methods and human scale of the historic buildings, especially its stepped-out cantilevering and the mass of its top level. Potential mitigation that could be incorporated as the design is refined include a stepped-back treatment above the height of the Police Station eaves. Such a change in design might effect economics or parking; the podium design could more easily incorporate architectural articulation, such as banding, to visually reduce the scale of the top level. Such measures would minimize the character-altering effect of this element of the project. The details of the ground level of the podium along Bethel Street have not yet been worked out, but should articulate openings and other elements to create a streetscape that is compatible with the historic district's scale.

From the Ewa side of the intersection of Merchant and Bethel Streets in the Merchant Street Historic District, Aloha Tower, the symbol of Honolulu Harbor, can be seen partially above the existing parking garage. Due to the podium's height this view will be lost. The loss of this view, between the center of the historic district and Aloha Tower, could be avoided by setting back the podium at the Bethel Street/Nimitz Highway intersection. However, it is likely the view to Aloha Tower will be changed in the future by the development planned on on Pier 11.

A few other design elements of the Harbor Tower contrast with the existing character of the historic district: especially the arches and one garage ramp. The three-stories tall arch seen between the Bank of Bishop & Co. building and the Melcher's building in Figure A shows the arch is a large-scale features between two smaller buildings. There is another arch along Bethel Street, shown in Figure B, that connects the Melcher's Building with the plaza-level commercial and loading areas. The height of this Bethel Street arch is lower than seen in the profile of it on Figure A. As the schematic designs are refined, measures to mitigate the impact of the arches could include decisions on their scale and articulation, to reflect the proportions of the styles found in the district.

The entry to the existing parking structure between the Bank of Bishop & Co. building and the Melcher's Building is the remaining segment of the former Kaahumanu Straet, once an important access to the harbor. The connection of the street to the harbor is still evident in the granite blocks of the sidewalk along the side of the Melcher's Building; these granite blocks were used as ballast in the ships trading between China and Honolulu, up through the early 1900s. The majority of the street was destroyed when the municipal parking structure was built. The remnant is to be converted into a ramp to the basement parking level. The ramp will also alter the character of the two facades of the buildings adjacent to it. These facades were meant to be street-fronting faces of the building, not walls of a ramp.

The details of the ramp design have not yet been finalized. The schematic design consolidated the sidewalk area on the Bank of Bishop & Co. side and had the ramp located immediately adjacent to the Melcher's Building. This would mean removing the sidewalk of granite blocks, creating a sloping base for this building, and leaving the door at the makai end of this facade in a visually awkward position, hanging over a ramp several feet below. The pedestrian-level wall that runs parallel to Merchant Street at the end of the ramp opening also might be a visually intrusive element unless carefully designed to be clearly separate from the Melcher's Building. To avoid such impacts entirely, the entrance to the parking which runs between the Bank of Bishop & Co. and the Melcher's Building could be at

grade or the ramp relocated to avoid or minimize the impact on these buildings. These options have other effects, however, on either vehicular or pedestrian movement. Another mitigation measure could be to redesign the ramp and retain a sidewalk on each side of it. This would avoid altering the base of the Melcher's Building, and would minimize the change to pedestrians' perception of the streetscape. It would also provide a clear separation of the new ramp structure and wall from the historic building. Should redesign of the ramp not be possible, a horizontal base to the Melcher's Building could be added to maintain the original street plane reference. If the granite blocks in the sidewalk on the Diamond Head side of the Melcher's Building cannot be retained, an alternative mitigation measure would be to relocate them to the Ewa side of the building, where there is now a concrete sidewalk.

The makai side of the Melcher's Building will be exposed in an inner courtyard area. Plantings are shown in the plans to screen this windowless wall, so the impact of exposing this wall will be minimized. An existing adverse visual condition is the mechanical equipment on the roof of the Melcher's Building. Relocating or screening this equipment is a possible additional mitigation measure; one that would also improve the appearance of the project from Merchant and Bethel Streets.

The proposed Harbor Court tower in the afternoon will cast a shadow over a portion of Merchant Street, and the Bishop Estate, Bank of Bishop & Co., and Melcher's Buildings, as well as the minipark next to the Kamehameha V Post Office. Much of this area is already in shadow in the morning due to the Pioneer Plaza highrise on the southeast side of Merchant Street. However, the location of the tower minimizes the extent of additional shading on the Merchant Street Historic District.

Nuuanu Court Building

The conceptual elevations of the Nuuanu Court Building are shown juxtaposed with those of the Honolulu Police Station in Figures C, D & E. Although the building elevations shown in the Bethel Street view of Figure C are not in exactly parallel planes (see Figure 3-9), this drawing gives an indication of the character of the two buildings.

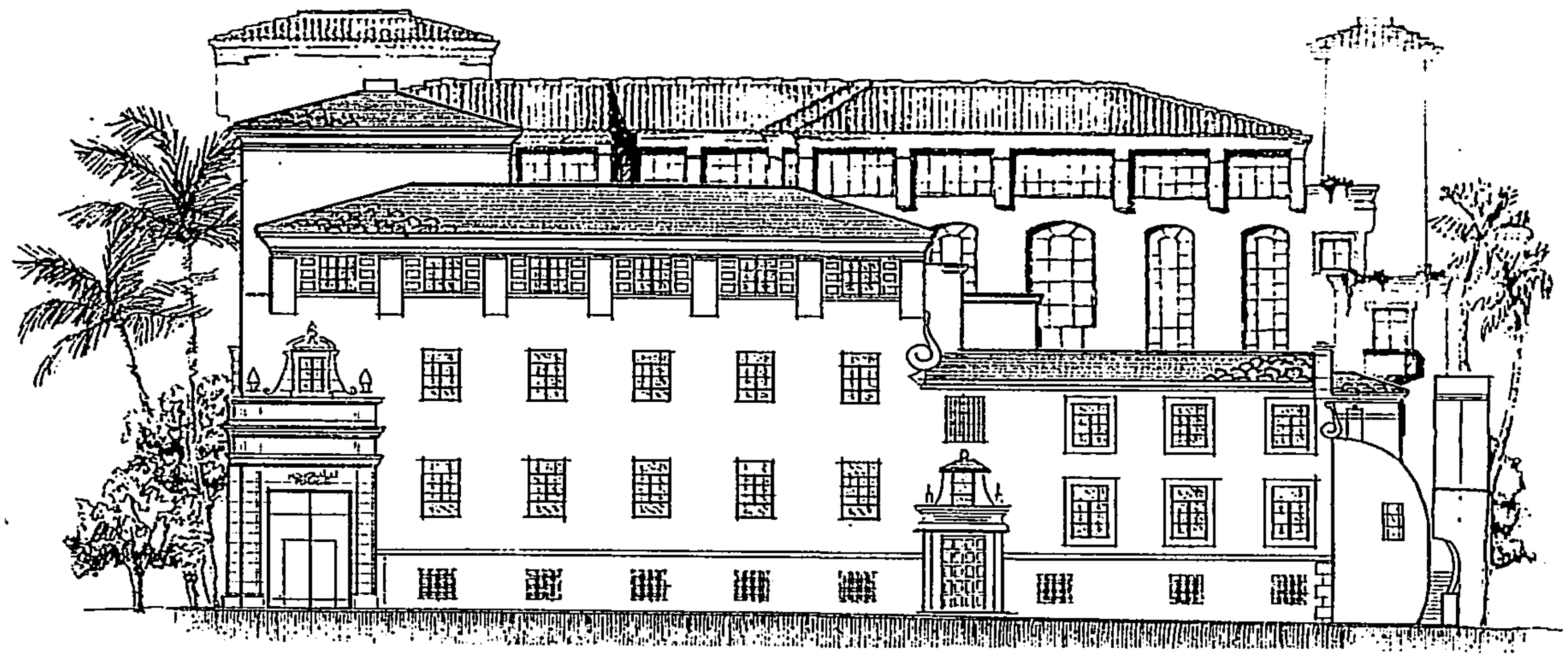
The design of the Nuuanu Court Building reflects the character and material of the Honolulu Police Station Building. The fenestration pattern in the Honolulu Police Station Building, however, is not closely reflected in the spacing and sizes of the Nuuanu Court Building windows. Part of that is because the former is three and a half stories, while the latter is five stories tall. The new building will be in keeping with the character of the existing building, especially if the specifications insure that the roof tiles and wall materials match or are compatible with the Honolulu Police Station.

The new building will allow for views of the makai facade of the old building, but at a reduced view angle. However, this side was never intended as a major public face of the building. The makai windows of the Honolulu Police Station will lose their views of the harbor and receive less sunlight. To mitigate this loss, there will be views of a well-landscaped courtyard and of a compatibly designed building. From Merchant Street only a small portion of the Nuuanu Court Building will be visible above the lower section of the Honolulu Police Station.

The only major design elements of the Nuuanu Court Building that are in a different character from the historic district are the large arches that are located at each end of the pedestrian walkway between the buildings. As the schematic designs are finalized, the arches at the pedestrian entrances to the walkway between the new and old buildings could be designed to reflect the proportions and articulation of the Spanish Colonial Revival style of the historic Honolulu Police Station.

Source: Nuuanu Court Building: Lacayo Architects (May 25,1990)
Sheet A.25
Honolulu Police Station: Fred N. Sutter & Associates, Inc.
and City & County Building Department (June 9,1986)
Sheet A-13.

Figure C. BETHEL STREET ELEVATION:
NUUANU COURT BUILDING
AND HONOLULU POLICE STATION



Source: Honolulu Police Station: Historic American Buildings Survey (1987). Project No. HI-55, Sheets 12 & 13, drawn by Coy E. Burney.
Nuuanu Court Building: Lacayo Architects (May 25,1990) Sheet A.25

Figure D. MERCHANT STREET ELEVATION: HONOLULU POLICE STATION AND NUUANU COURT BUILDING BEHIND

Source: Honolulu Police Station: Fred N. Sutter & Associates, Inc. and City & County Building Department (June 9, 1986). Sheet A.12
Nuuanu Court Building: Lacayo Architects (May 25, 1990) Sheet A.25

Figure E. NUUANU STREET ELEVATION: HONOLULU POLICE BUILDING AND NUUANU COURT BUILDING

Because a five-story building will be erected where there is now a view over a parking lot, the present visual connection to Aloha Tower from the corner of Marin and Nuuanu Streets will be lost. The existing view to the harbor down Nuuanu Street will be slightly narrowed by a building abutting the property line at this most makai end of the street. However, the view to the harbor was similarly restricted in the past, when buildings stood on the site of the parking lot.

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Individual reports on buildings as follows as well as general report.
Melcher's Building, HI-34
Royal Saloon, HI-55 B
J.T. Waterhouse Building, HI-55 C
Yokohama Specie Bank, HI-55 D
Judd Building, HI-55 G
Bishop Estate Building, HI-55 H
Bank of Bishop & Co., HI-55 I
Honolulu Police Station, HI-55 K
T.R. Foster Building, HI-55 L
Irwin Block (Nippu Jiji Building), HI-55 M
Project jointly sponsored by First American Title Co., Historic Hawaii Foundation, and the National Park Service. Laura S. Alderman, project historian; Robert C. Geibner, project supervisor.

Historic American Buildings Survey (1987). *Merchant and Nuuanu Streets Commercial Buildings; HABS No. HI-55* Set of 14 drawings showing site plan and elevations of buildings on Merchant and Nuuanu Street. Robert C. Geibner, project supervisor; J. Scott Anderson, architectural foreman; architectural technicians: Coy E. Burney, Kenneth R. Imoehl, and Michel A. van Ackere.

Historic American Buildings Survey (1967). *OLD POSTOFFICE, City and County of Honolulu, Oahu, Hawaii: Photograph - Data Book Report; HABS HA-7.* [sic]. Frances Jackson of State Archives prepared history portion; A. Lewis Koue, FAIA of National Park Service prepared architectural description.

APPENDIX E

ARCHAEOLOGICAL RESOURCES ASSESSMENT

Bishop Museum Applied Research Group,

Public Archaeology Section

MS. 033090

HISTORICAL LITERATURE AND DOCUMENTS SEARCH ARCHAEOLOGICAL TESTING AND SUBSEQUENT PROCEDURES FOR THE PROPOSED REDEVELOPMENT OF THE KA'AHUMANU PARKING STRUCTURE DOWNTOWN HONOLULU, O'AHU ISLAND TMK 2-1-02: 16, 20, 26, AND 56

PART I
HISTORICAL LITERATURE AND DOCUMENTS SURVEY

by

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for

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February 1990

Public Archaeology Section
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Honolulu, Hawai'i

INTRODUCTION

The Public Archaeology Section of Bishop Museum Applied Research Group completed pre-field, historical data search under contract to R. M. Towill Corporation. The following report summarizes the findings of this first increment of preliminary archaeological assessment for the proposed Ka'ahumanu Parking Structure Redevelopment project. The objective of this data search was twofold:

1) To gain a chronological overview of the historical period occupation of the project area, and
2) To facilitate the upcoming subsurface testing phase through the determination of archaeologically sensitive locales within the project area.

SITE DESCRIPTION

The two Ka'ahumanu parking areas proposed for redevelopment include a two level parking garage and a street level paved parking lot. The parking structure is separated from the paved parking lot by Bethel Street. Both parking areas are fronted by Nimitz Highway (formerly known as Queen Street) and overlook the Honolulu Harbor. Parcel 26, the paved parking lot, is bounded by Nu'uanu Avenue to the north and includes the waterfront half-section of this block. Parcels 16, 20 and 56 contain the double-tiered garage and is bounded by the historic district of Fort and Merchant Streets preserved in 1950. Entrance to the parking garage, included in the proposed redevelopment, is from Merchant Street, the entrance formerly being Ka'ahumanu Street.

PRELIMINARY RESEARCH

Preliminary research for the Ka'ahumanu Parking Lot redevelopment project focused on historic land use, and chronology of building structure use, development, and demolition. Records and documents consulted to obtain this chronology within the proposed redevelopment area were taken from archived land claim and fire insurance maps, tax records, photographs curated by the Hawai'i State Archives, and published literature. Honolulu business directories were consulted for approximate dates of structure uses by individual businesses, while local newspaper articles provided additional information. An abundance of printed research material on the project area exists, and basic pertinent information located was abstracted for preliminary documentation.

AREAL BACKGROUND

Proposed redevelopment of the Ka'ahumanu parking lot complexes cover the site of Honolulu's oldest downtown section first impacted in the early 1790's. These parking areas are within "Charlton's Land Claim" obtained by the first British consul to Hawai'i, Richard Charlton, prior to 1842. By 1865, this site was fully developed with major arterials and business structures associated with interests in shipping and sugar. Perimeters of these primary business structures and streets remained totally undisturbed from 1865 until extension of Bethel Street from Merchant to Nimitz (Queen) occurred in 1930. In 1950 the Ka'ahumanu Parking Lot was constructed and Ka'ahumanu Street, existing prior to 1842, was covered. Historic buildings along Fort and Merchant streets were preserved for the Honolulu historic district; the remaining buildings were demolished for the parking tier. The area is currently covered

with asphalt and no archaeological survey has been undertaken. Extent of the depth of the two previous redevelopment impacts on surface and subsurface features are unknown.

ENCAPSULATION OF EARLY HISTORIC HONOLULU

Access to deep water anchorage in Honolulu Harbor in the 1790's promoted an early influx of whalers and mariners. "The Fort", historic businesses and homesite settlements followed in the wake of post-contact sailing vessels to Honolulu. Within the immediate harbor of Honolulu in 1810, King Kamehameha I's brief residential compound (1809-1812) extended along the immediate Honolulu waterfront. To the north of the 1810 structures was Nihoa Shipyard. In 1816 the Fort at Honolulu was built by John Young (Wiswell 1978:102) which destroyed the southwest section of the compound and Kamehameha's Heiau (Hale o Lono) situated south of the compound. A western style two story frame structure depicted in Honolulu Harbor in the early 1820's was erected by Kaahumanu (wife of Kamehameha I) and was situated near the fort on Honolulu Point (Silverman 1987:72). The northeast third section of Kamehameha's compound and the southwest portion of Nihoa shipyard (Figure 2) appear to have been located within the boundaries of the present Ka'ahumanu parking garage and the asphalted parking lot.

Richard Charlton, the first British consul to Hawai'i (1825-1842) obtained a land claim enclosing the site area which was signed by high chiefs Kalanimoku and Boki. Legal title to Charlton's land claim was secured in 1847 and was sold upon obtaining legal title that year to Robert Janion (Day 1984:22). Charlton's land claim map (Figure 3) filed with the Public Record

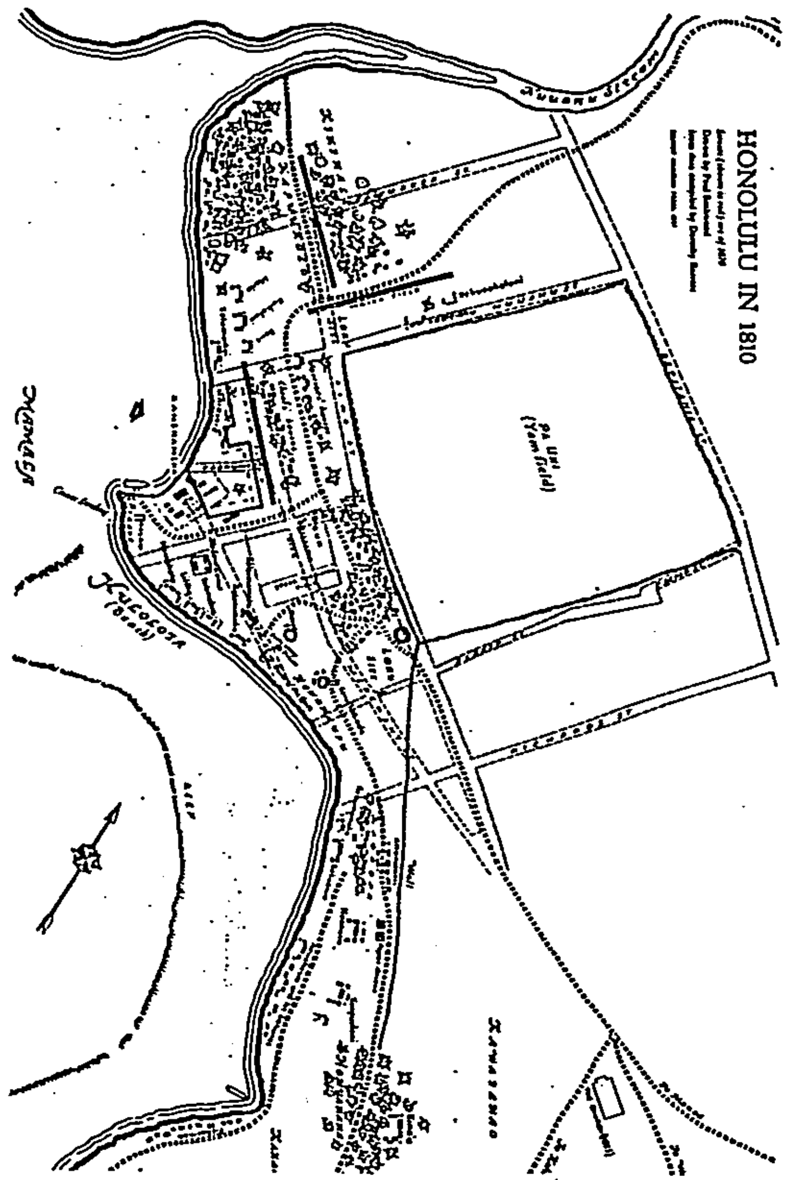


Figure 2: HONOLULU IN 1810 (Hawaii State Archives).

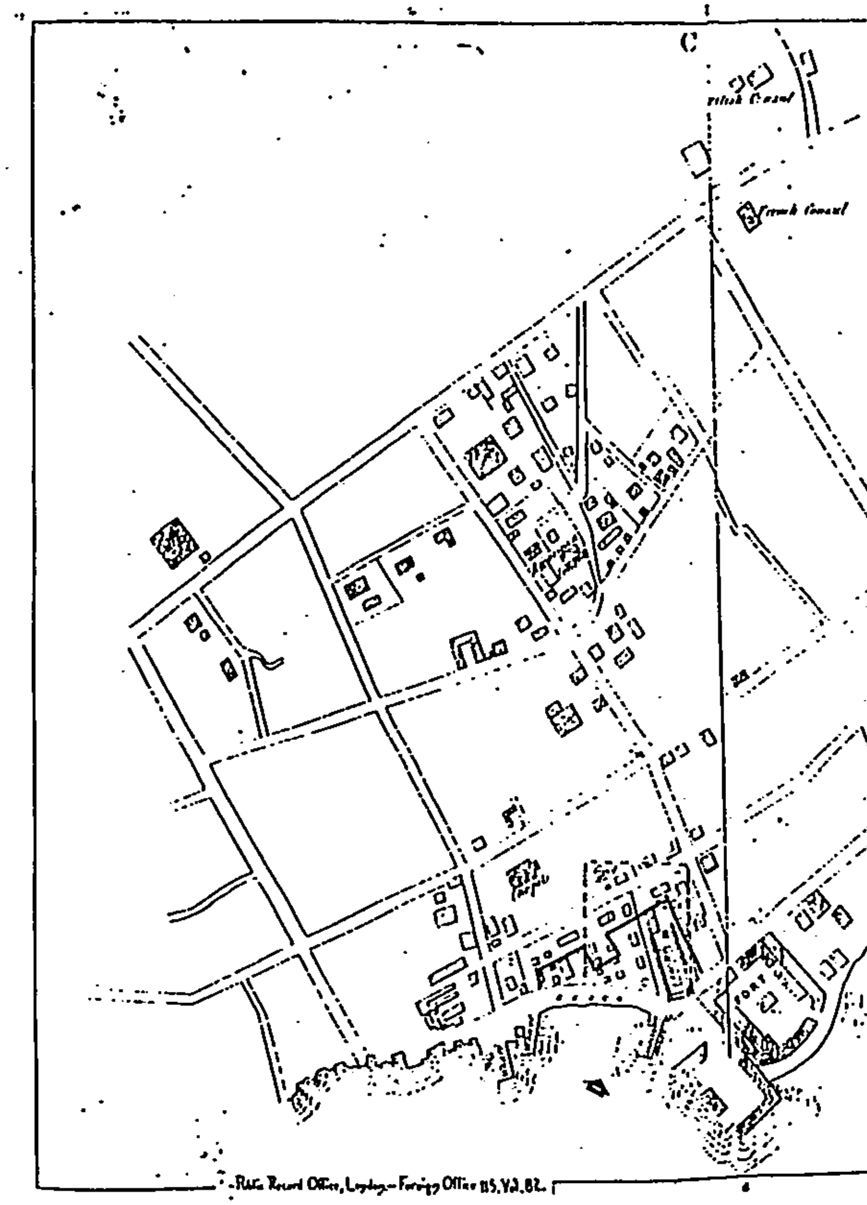


Figure 3. CHARLTON'S LAND CLAIM (Hawaii State Archives).

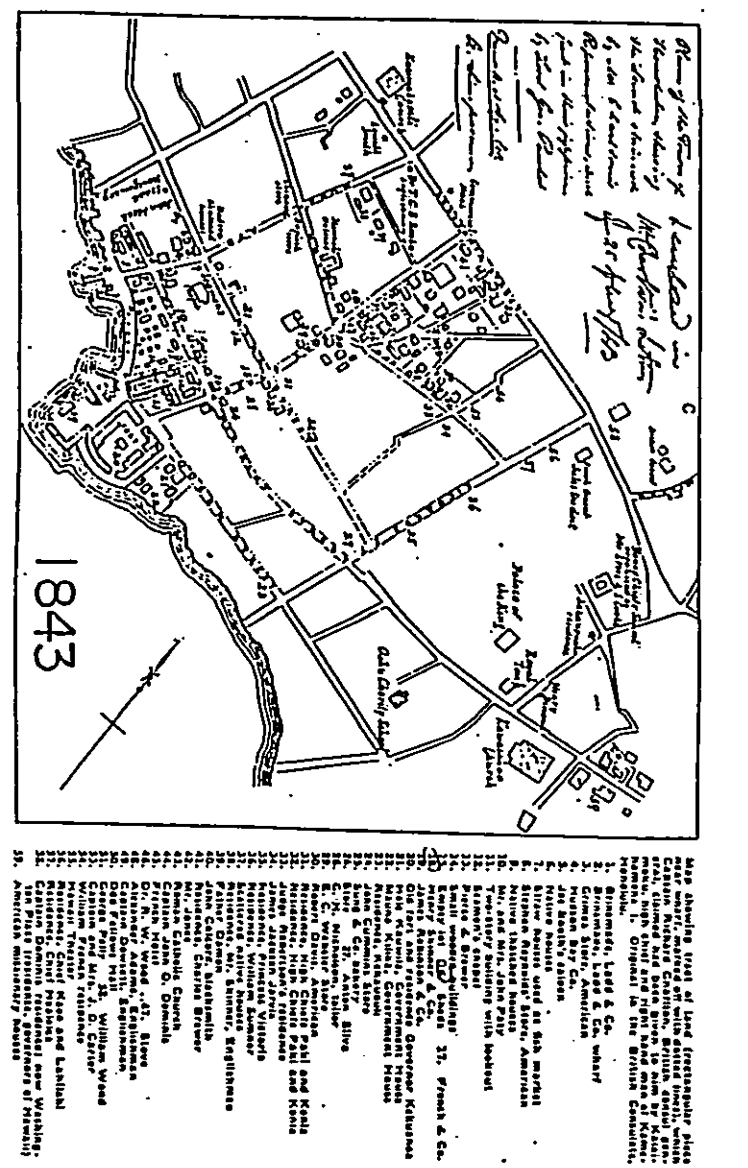
Office in London in 1843 shows a major structure, and a number of sheds added north of King Kamehameha's previous compound. The major structure at the corner of Ka'ahumanu and Queen Streets was the business of Henry Skinner and Company, later A. S. Cleghorn's Store (Figure 4). Honolulu land division deeds awarded in 1848 and related to the site area have not yet been researched.

Streets constructed in Honolulu in 1843 bounding the proposed reconstruction site were Queen Street, facing the harbor, and Ka'ahumanu, which ran east and west from Merchant to Queen Street. Nimitz Highway, referred to in this report as Queen Street, follows the pre-1810 waterfront trail which was dry at low tide. The eastern boundaries of the trail (Queen Street) still exist. Ka'ahumanu Street was eliminated in 1950 for the Ka'ahumanu Street parking garage (Honolulu Advertiser, 11 February 1950 3:3). The current entrance to Ka'ahumanu parking garage from Merchant Street follows the original perimeters of Ka'ahumanu Street and is included in the proposed project development.

HONOLULU BUSINESS DISTRICT, 1850>

Honolulu tax records from Tax District One in 1855 indicate that forty-five parcels situated between Merchant, Ka'ahumanu, Fort and Queen Streets were being taxed. Nineteen parcels between the waterfront wharf, Ka'ahumanu, Nu'uanu and Merchant streets were also taxed in this district (1855 Honolulu Assessments Book 1:54-55). The exact location of taxed parcels and whether structures existed on these parcels has not been definitely documented.

PLATE 151



Map of Honolulu City—August 25, 1843
(Copy of photostat in Public Archives; original in British Consulate)

TERRITORIAL PLANNING BOARD

This is the earliest map of Honolulu which shows and names streets. 1843.

Figure 4. HONOLULU IN 1843.

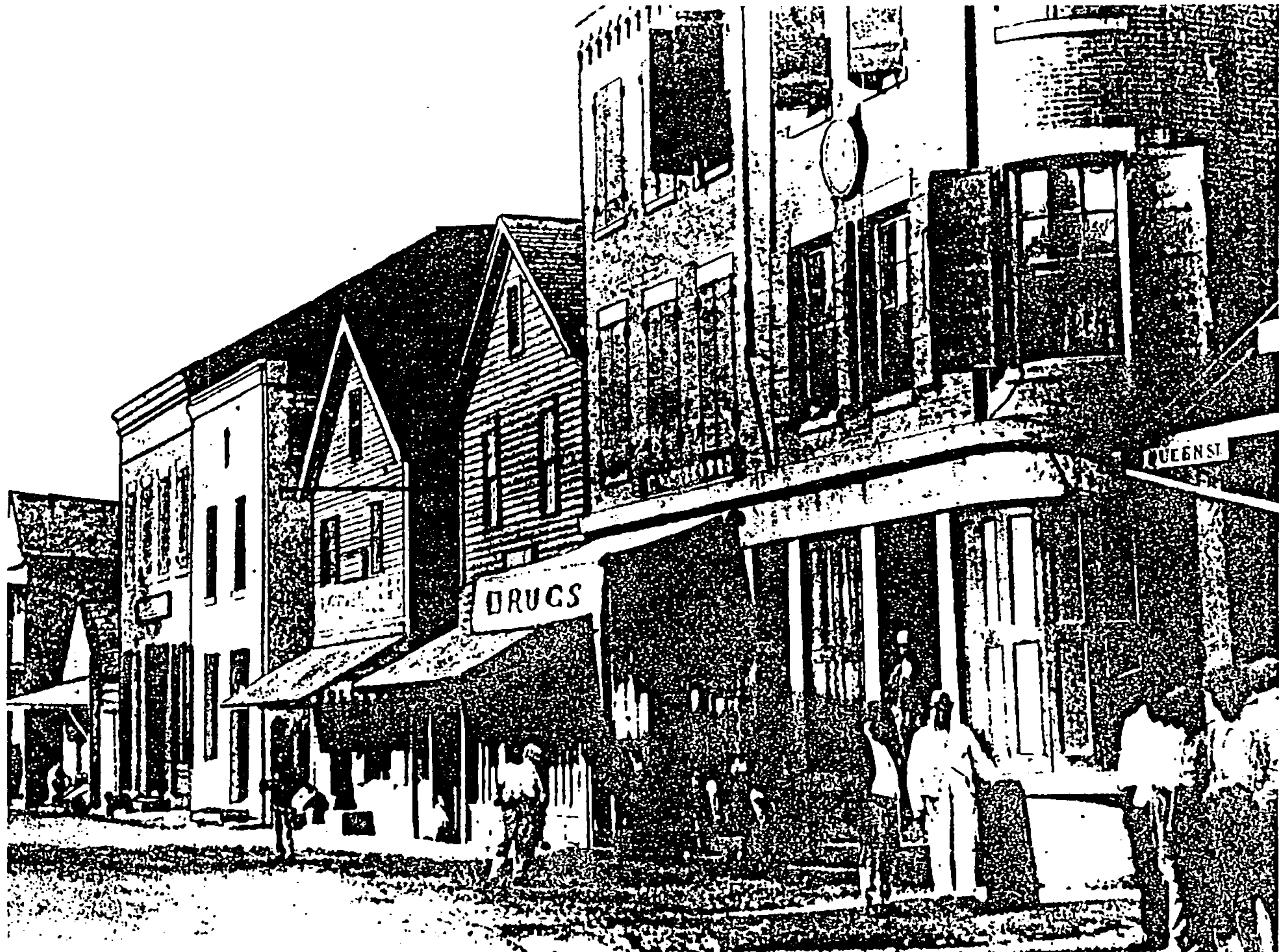


Plate 1: HONOLULU IN 1865, QUEEN STREET LOOKING NORTH FROM KA'AHUMANU STREET (Hawaii State Archives).

The Ka'ahumanu parking lot and garage site proposed for redevelopment covers the remains of fourteen business structures that were erected prior to 1865 (Plate 1). These business structures were intermittently remodeled over the years; however, foundations of these buildings were unaltered until the first redevelopment phases began in 1930 and 1950. This original business district of Honolulu was south of China Town and was not affected by the China Town fires of 1886 and 1900. The interior of one building on the corner of Queen and Ka'ahumanu was destroyed by fire after the turn of the century, but was remodeled. These pre-1865 structures are discussed separately following the project area along Queen Street north to Nu'uanu Street, and along the south side of Ka'ahumanu. Original addresses, which were renumbered several times, are retained.

T. H. DAVIES BUILDING (Janions Block), 41 Queen Street

Theophilus H. Davies, a shipping merchant and sugar factor, arrived in Honolulu in 1856. In 1868, Theo. H. Davies established his store and offices with Robert Janion (purchaser of Charlton's land claim in 1847) as a silent partner (Day 1984:31). There are indications that the T. H. Davies building was erected in 1858, or early 1859 by Robert Janion, the subject area being referred to in a newspaper article as "Janions new block" (The Friend, April 1859:31). The T. H. Davies block containing two buildings bounded A. S. Cleghorn's store to the south on Queen Street and Cleghorn's on the east on Ka'ahumanu Street. Both Davies buildings housed separate business. In 1869, the Queen Street Davies building was occupied by C. S. Bartow, an auctioneer and commission merchant (Greer 1966:39). The T. H. Davies structures are pictured ca. 1865 as frame constructions. By 1879, however the Davies

Figure 5, AREA MAP, 1879

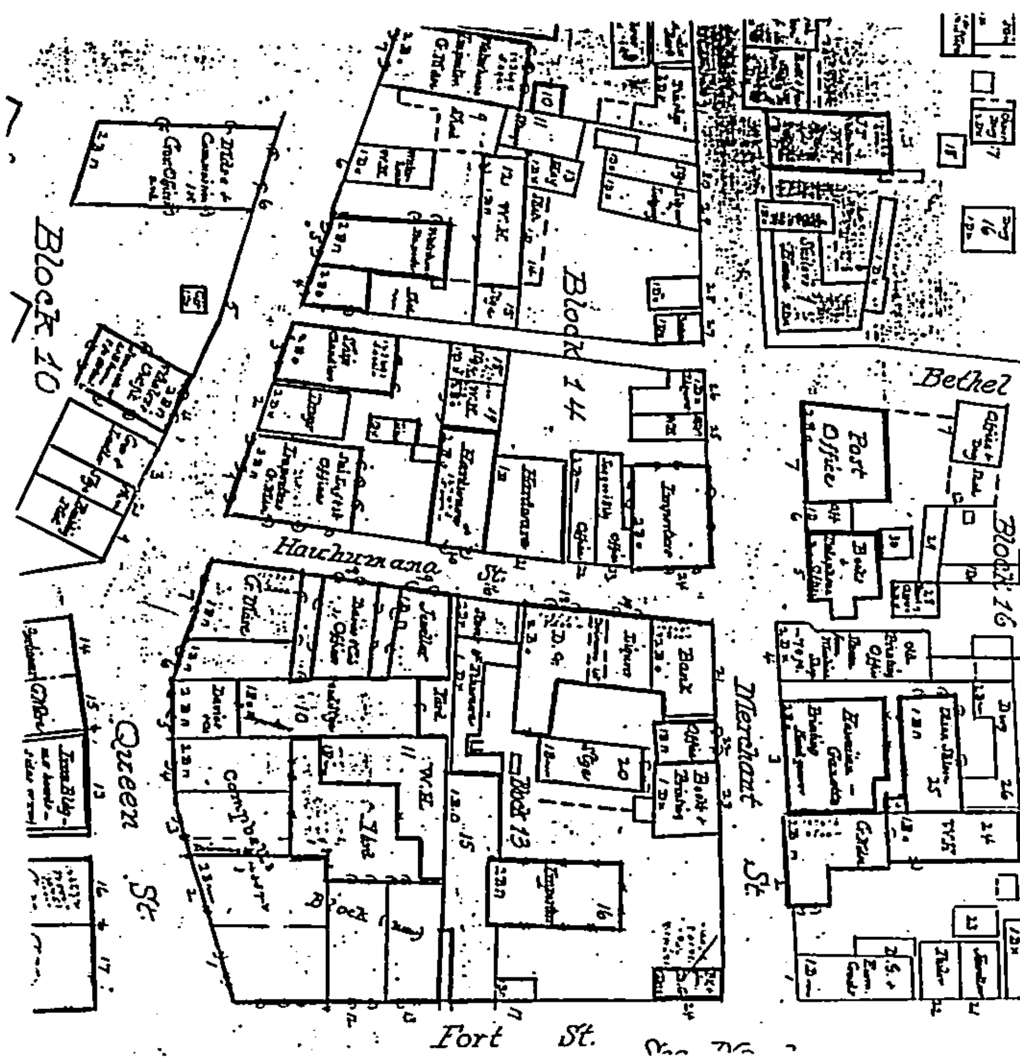


Figure 7. AREA MAP, 1914-1927.

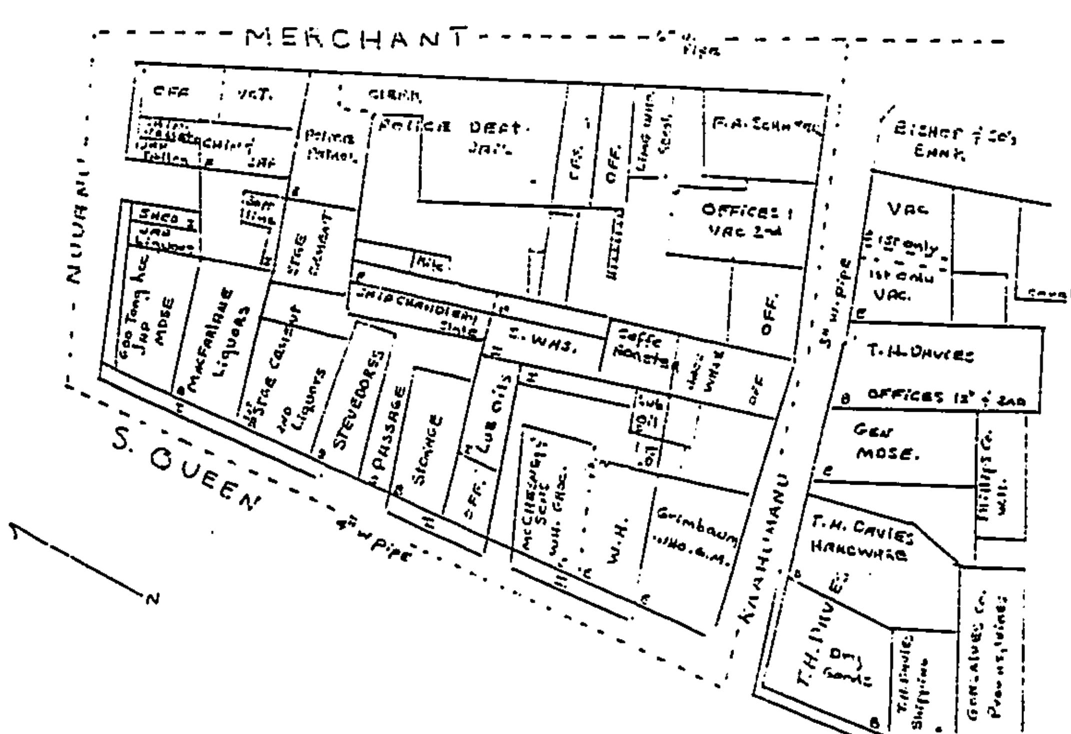


Figure 6. AREA MAP, 1900.

buildings were two story brick structures (Figure 5). The Davies estate and this specific building housed Gonsalves Wholesale Liquors after 1900, and later a merchandise store (Figures 6, 7) until razed in 1950 for the Ka'ahumanu parking garage (The Honolulu Advertiser, 11 February 1950, 3:3).

CLEGHORN BUILDING, corner Ka'ahumanu and Queen Streets

Cleghorn's Store site has been occupied continuously with structures from before 1810 (Figures 2, 3, 4). In 1843, the site was occupied by the business of Henry Skinner Company (Figure 4). Archibald Scott Cleghorn arrived in Hawai'i in 1851 (Day 1984:33), yet neither he nor Henry Skinner appear in the tax records for this corner in 1855 (1855 Tax Assessments Book 1:54,55). Cleghorn and Company was well established at this address as general merchants by 1869 (Greer 1966:39). A. S. Cleghorn became General Collector of Customs in 1885 and was succeeded at this address by transfer to T. H. Davies. Documented as a one story brick building in the 1879 map (Figure 5), Cleghorn advertised his store as being fireproof in 1884 (Thrum 1884:advertisements). At the turn of the century Cleghorn's had become part of the T. H. Davies estate and housed a dry goods store (Figure 6). A second story had been added: the first floor around 1914 was being used as an auction room while the upstairs functioned as a meeting hall (Figure 7). Prior to demolition for the Ka'ahumanu parking garage in 1950, Cleghorn's housed a wholesale liquor store (Figure 8).

MAKEE-ANTON BLOCK, corner Queen and Ka'ahumanu

Initially constructed of brick, the Makee-Anton Block was the site of City Hospital and Dr. Fontaine's offices. Apparently erected before 1852, Dr. Fontaine's "old stand" at Nu'uanu Street was assumed by Dr. George Lathrop, with Dr. Fountaine then located in the *Makee Block* (The Friend, September 1852:44). Owned by J. A. Anthon and James Makee, the block was taxed in 1855 to J. Makee (1855 Tax Assessments Book 1:55). It is unknown if this was a one or more story structure at that time. Between 1855 and 1860, physicians and surgeons B. Hoffman and S. P. Ford opened a "new drug store" (later identified as the "McKibbin Building") in the Makee Block (The Friend, May 1855:39 and December 1860). Ca. 1865 photographs show the Makee-Anton structure as a two story frame building (Plate 1). Between 1865 and 1869, date unascertained, the Makee Building had been converted into offices and a third floor added.

In 1869 City Hospital was no longer in Makee Block. Instead, Makee Block was occupied by M. S. Grimbaum and Company (dry goods) in the north section of the block with Bishop Bank in the east section. The second floor housed D. C. Waterman, a Chilean consul and shipping/commission merchant, and the U. S. Consulate. The third floor was occupied by Hawaii F & AM Lodge 21 (Greer 1966:39). Grimbaum and Company, later a wholesale grocer, occupied this site until 1908 (City Directories) and were the sole occupants of the entire structure in 1900 (Figure 5). In 1875, A. J. Cartwright, president of Manufacturers Insurance Company of Boston, occupied the section previously used by Bishop Bank (Thrum 1875:advertisements). At the turn of the century, the first story of Makee Block had been faced with granite (Figure 6).

Between 1914 and 1927 as shown on the Fire Insurance Map (Figure 7), the Makee Block was owned by the T. H. Davies estate. The roof and interior of the building was destroyed by fire and was apparently restored. After the extension of Bethel Street in 1930, and expansion of the Honolulu Police Department, the Makee Block was used as Police departmental offices with an auto shelter occupying Grimbaum's earlier warehouse space. The Makee Block was demolished for the Ka'ahumanu Parking garage in 1950.

MCKIBBIN BUILDING, 37 Queen Street

Remodeled as a "new drugstore" in 1855 and adjoining City Hospital (Makee-Anton Block), McKibbins Drugstore was initially occupied by a Dr. Hoffman (The Friend, May 1955:39). At what date A. McKibbin was established at this location has not been documented. A. McKibbin, druggist was located at Merchant and Ka'ahumanu in 1856 (The Friend, April 1856:32), but by 1869 this building had become known as "McKibbin's" (Greer 1966:38). A photograph of McKibbins' ca. 1865 (Plate 1) shows McKibbins occupying the northwest corner of the Makee-Anton Block. The 1879 Fire Insurance map (Figure 5) shows no changes, although by 1900 the building was used as a warehouse. The McKibbin Building was later used as an auto shelter until removed for the Ka'ahumanu parking garage in 1950.

BOLLES BUILDING, 35 Queen Street

According to advertisements placed by the B. F. Bolles Company, their commission merchant and ship chandlery business was established in 1847 (Thrum 1884:advertisements). The ad unfortunately does not state the location of the building in that year. Photographs of Queen Street (Plate 1) identify the B. F. Bolles Company at this address as a two story frame building with a gabled roof. In 1879, Bolles and Company advertised their business as being in a *new* fireproof building (Thrum 1879:advertisements). Fireman's Insurance map of 1879 (Figure 5) substantiates the building was constructed of brick with an iron facing. In 1884, Bolles and Company was replaced by the Hawaiian Carriage Manufacturing Company (City Directories). From 1900 until removed in 1930, Wilder (later Inter-Island) Steam Ship chandlery department occupied the premises (City Directories). The Bolles building was removed during construction of Bethel Street from Merchant to Queen in 1930.

SPENCER BUILDING, 33 Queen Street

Note: Between the Bolles and Spencer Buildings a small passage, or alley, ran from Queen east to Merchant Street (Figure 5). This access was cut off by a brick wall placed during construction of the Police Department and Jail (foot of Bethel on Merchant Street) in 1886. A ship chandlery storage built of stone with a slate roof was placed against the brick wall before 1900 (Figure 6).

The C. N. Spencer Building was a two story frame structure on Queen Street by 1865 (Plate 1). The Spencer establishment is also noted in Greer's list for 1869 (1966:38). Little information has been located on C. N. Spencer and Company, which was a commission merchant firm. Fireman's Insurance Map of 1879 (Figure 5) shows the building as being of brick with an iron front. The building apparently was vacant in 1879 with an attached shed and another separate storage shed to the rear of the building. Plate 3, a photograph taken of the Spencer Building in 1900/01 indicates that this business district was lively at the turn of the century. Later maps and Honolulu city directories inclusive from 1903 to 1927 show the building as office spaces of McCabe, Hamilton and Remy Company (stevedores). This building was removed for the Bethel Street extension in 1930.

HACKFELD BUILDING, (Waterhouse) 31 Queen Street

Henrich (Henry) Hackfeld opened shop in Honolulu in 1849 (Day 1948:47) and in 1858 was advertising "masts of all kinds" (The Friend, January 1858:7). No addresses were given for Henry Hackfeld on these dates. The Hackfeld Building, a two story structure, was located on Queen Street prior to 1865 (Plate 1) and H. Hackfeld was in association with this building by 1869 (Greer 1966:39). In 1869, Henry Hackfeld was also taxed in the C. Brewer Estate, which was across Queen Street (1869 Honolulu Assessment Book 1, tax number 145). Henry Hackfeld apparently moved his business about this period to the Brewer Block as his business is not located at this address in any of the Honolulu city directories extant after 1875.

In 1871, Hackfeld's Building was a two story brick structure (Plate 2) and by 1879 an iron front had been added to the building (Figure 5). In 1879 the building was also owned by J. T. Waterhouse (see 25-29 Queen Street) who were in business at these addresses until 1899. Hackfeld's Building is shown on later maps (Figures 6, 7) as being used for storage until removed for the Bethel Street extension in 1930.

Plate 2. HONOLULU 1871, QUEEN STREET FROM CORNER OF NU'UANU (Hawaii State Archives).

Plate 3. HONOLULU 1900/1901, McCABE, HAMILTON AND RENY (Hawaii State Archives).

WATERHOUSE BLOCK, 25-29 Queen Street

The J. T. Waterhouse buildings (1865) consisted of a one story frame structure separated by a vacant lot (and back shed) from a larger two story structure (Plate 1). The date of John Thomas Waterhouse, Sr.'s, merchant and import business association with these buildings is not known; however, he arrived in Honolulu in 1851 (Day 1948:125) and was taxed for these properties in 1869 (1869 Honolulu Assessment Book 1, tax number 72). Plate 2, a photograph of J. T. Waterhouse Importer building taken in 1871 bears the inscription "Est. 1851" at the eaves of the roof.

Waterhouse's small frame building at 29 Queen Street was remodeled from a one story frame into a two story brick building, and a two story brick building was erected in the space between these buildings between 1880 and 1900 (Figure 6). Waterhouse and Sons consolidated with May and McIntyre and Pacific Hardware Company in 1899, and moved from this location (Honolulu Advertiser 18 May 1949, Ed:4). Waterhouse's buildings were occupied by Macfarlane and Company, wholesale liquors, until 1912 (Honolulu City Directories). Prior to the expansion of the Honolulu Police Department in the 1930's, the Waterhouse building at 27 Queen was a printing office (Figure 7). These buildings later became part of the Police Department offices (Figure 8), and were removed for the asphalt parking lot.

NOLTE'S OLD CORNER, corner Queen and Nu'uanu

Established in 1858 (Thrum 1875:56), H. J. Nolte's "billiard, coffee and refreshment saloon" was a one story frame structure (brick by 1879) situated

at this corner until the expansion of the Honolulu Police Department in the 1930's. Apparently the building was removed in the early 1930's as this corner was used as a parking space by the Police Department.

Nolte's Old Corner was occupied by H. J. Nolte (also a tobacco importer) through 1883. The Hart Brothers took possession of the building in 1884 when Nolte moved to the Brewer Block on the wharf across Queen Street. An 1877-1879 photograph of Nolte's Corner (Plate 4) taken from the water front shows Nolte's as a one story frame building with a board walk. Goo Tong Kee briefly operated a Japanese merchandise store at this location at the turn of the century, after which the building reverted to a restaurant. The back portion of Nolte's Old Corner facing Nu'uanu was sectioned off, and also held a Japanese liquor store in 1900 (Figure 6). The liquor store was reverted to the restaurant's kitchen prior to demolition.

DAVIES BLOCK, 4 Ka'ahumanu

T. H. Davies Block consisting of two buildings in 1865 is discussed under the Davies Block on Queen Street. The Ka'ahumanu Street Davies building was used as office spaces, being occupied by Cecil Brown, attorney between 1875 and 1879, and Davies and Company Offices from 1880 until about 1900. The building then housed Davies and Company Hardware until 1921 (Honolulu City Directories). This building was removed for the Ka'ahumanu parking garage in 1950.

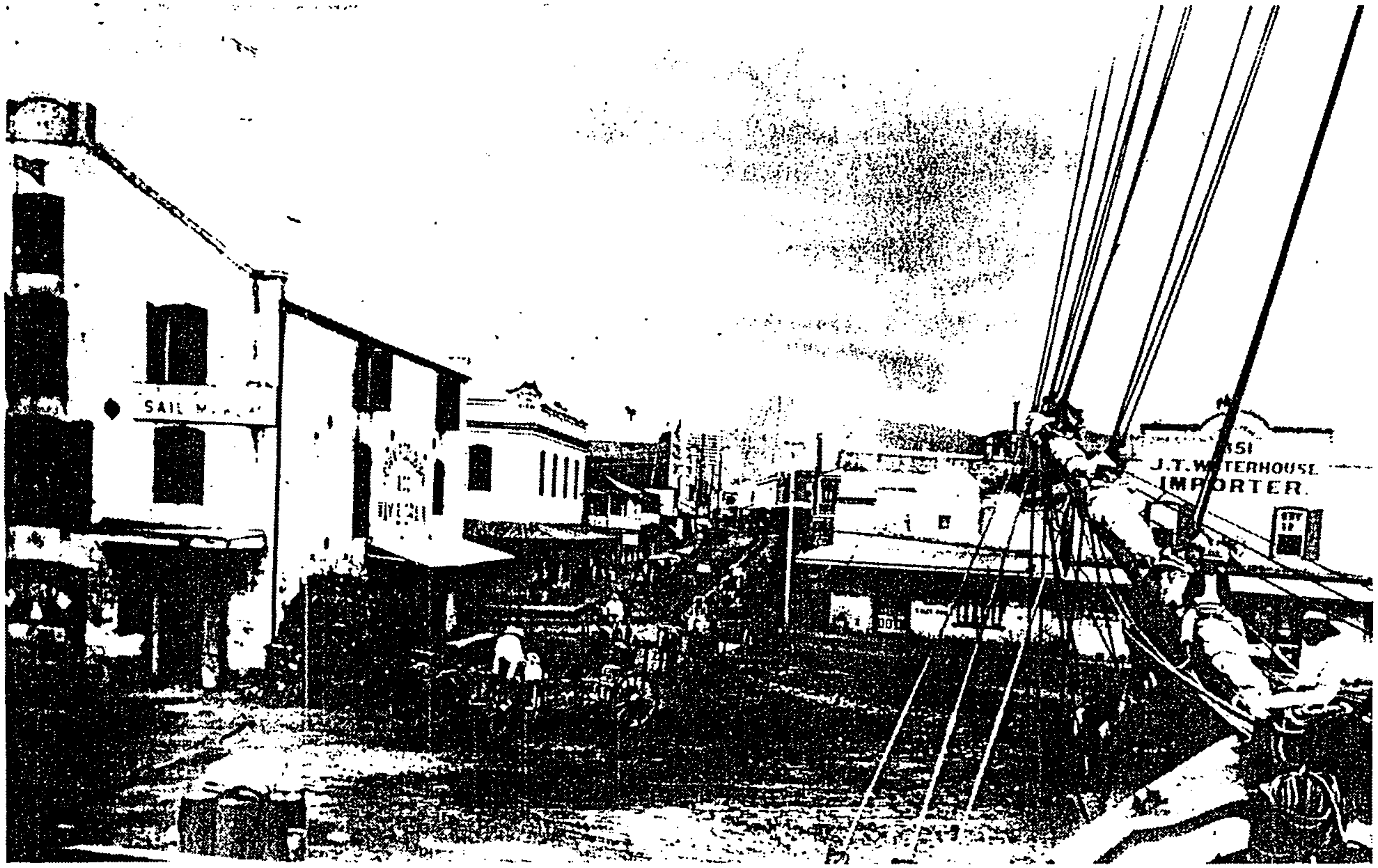


Plate 4: HONOLULU 1877-1879, NU'UANU STREET FROM WATERFRONT (Hawaii State Archives).

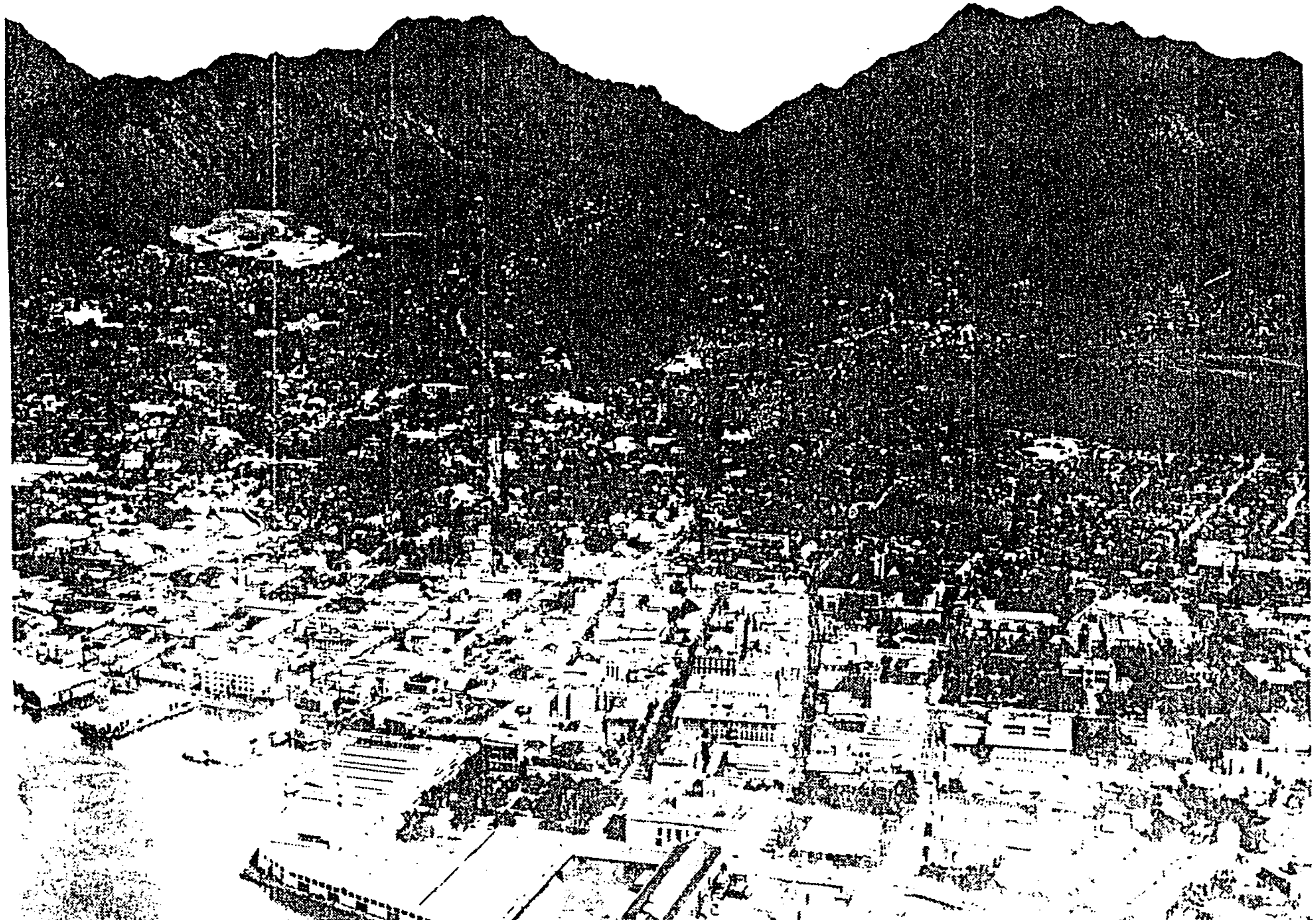


Plate 5: HONOLULU 1950, AERIAL VIEW DURING 1950 RECONSTRUCTION (Hawaii State Archives).

FLITNER BUILDING, 6 Ka'ahumanu Street

D. N. Flitner, a chronometer maker and watch repair business was located in this spot in 1853 (The Friend, October 1853:69). The business was assumed by T. M. Feltner by 1860 (The Friend, July 1860:55) who remained here until 1880. In 1880, E. Weller, a watchmaker, was occupying the Flitner Building and by 1900 the structure was a general merchandise store (Figures 5, 6). One of the earliest buildings noted as "fireproof" (Greer 1966:52), the Flitner Building was a one story brick building until remodeled into a two story structure sometime between 1900 and 1914 (Figure 6) as part of the Theo. H. Davies building complex. This building was removed with the other buildings on Ka'ahumanu Street for the Ka'ahumanu parking garage in 1950.

RHODES BUILDING, 8-12 Ka'ahumanu Street

The Rhodes Buildings consisting of three business sections were established before 1869 (Greer 1966:52). Original material of these buildings is unknown, however the two story brick structures (by 1879), housed John Nott and Company (tinsmith, sheet iron and copper smith, and plumber) from before 1869 until the 1880's (Honolulu City Directories). Rhode's second building at 10 Ka'ahumanu Street in 1869 was occupied by G. Rhodes, wholesale wines and liquors, while the upstairs was the location of the new business of J. H. Black, printer. Sailmakers, J. M. Oat and Son was located in the third building at 12 Ka'ahumanu in that year (Greer 1966:52).

H. MacFarlane and Company, wholesale wine and spirits distributors, assumed J. M. Oats and Son space by 1880 and were at 12 Ka'ahumanu Street

until 1900, moving to the Waterhouse Building fronting Queen Street. M. Phillips and Company, dealers in general merchandise, were in the G. Rhodes wine and liquor store before 1875, remaining at this location until 1887 (Honolulu City Directories).

By 1900, the Rhodes Buildings had been added to the T. H. Davies estate (Figure 6). General building use after this date was for office spaces flanking a grocery store (10 Ka'ahumanu) until removed for the Ka'ahumanu Street parking garage in 1950.

Historic buildings flanking the south and east boundaries of the Ka'ahumanu parking structure reflect a period of growth in Honolulu from the heart of the business district. As business buildings erected along Queen and Ka'ahumanu streets in the 1850's and 1860's matured, growth around the core business district radiated from the waterfront. The Bishop Bank building, adjoining Rhode's Block on Merchant street was erected in 1877, and the Campbell Block adjoining T. H. Davies buildings to the east on Queen Street and along Fort Street was erected in 1883. Still active at the turn of the Century, within a decade the "old" business district buildings approaching their half-century gradually fell into disuse and functioned increasingly as storage and warehouse structures. Redevelopment of old Honolulu in 1930 and 1950, and the expansion of the Honolulu Police Department during this period removed all visual surface remains from this district.

REDEVELOPMENT IMPACTS

Potential for subsurface features being encountered during redevelopment of the Ka'ahumanu parking areas is extremely likely. Primarily foundations of historic business structures, sheds, basements, and associated privies are expected to be uncovered although remnant pockets of deposition associated with traditional Hawaiian occupation may also be encountered. The level nature of the ground surface upon which the early business district of Honolulu was constructed suggests that the two redevelopment episodes impacted leveling of surface remains that had accumulated over the past century, and that extensive leveling of subsurface areas are minimal, although the shallower prehistoric and more traditional period deposition may have been obliterated. Building structure perimeters in the area had been established by 1869. No new construction during the district's existence, devastating fires, or disasters contributed to intrude the stability of this area. Ka'ahumanu Street also existed for over one hundred years and potential for documenting this street's development also exists.

Projected possibilities of rare inundation of early subsurface artifactual materials and features being disturbed during redevelopment prioritize preservation of information from the Ka'ahumanu project site. Specifically, the waterfront location of the site indicates possible water saturation preservation of prehistoric materials as well as early historic sheds and structures, artifacts from early mariners and Nihoa Shipyard. Information preserved within inundated areas include perishable fragments of bone and vegetable materials such as modified, wood, rope fibers and food remains. Information recovered from a hypothetical inundated shed site would

be structural remains indicating use of imported, or localized materials; soil compactness and soil changes characterizing the boundaries and sizes of structures, and activity areas. Associated historic artifacts made of other materials (metals, ceramics, glass) indicate function and use of these areas, sources of trade, and date the stratigraphic layer within a specific time range. Significant recovery of Honolulu historic deposits and features from the 1790's through the development and decline of Honolulu's early business district is projected.

RECOMMENDATIONS

The Ka'ahumanu parking garage constructed of concrete and the asphalt covered municipal parking lot cover the entire surface of the proposed redevelopment areas. This precludes archaeological surface survey and filing of archaeological site reports. Exposure of surface and subsurface areas available for archaeological testing is contingent upon demolition of the parking garage and removal of the asphalt parking lot. For minimal additional impacts to the redevelopment site during removal of concrete and asphalt, subsurface materials and structures, such as garage foundation piers and water service pipes must be left in situ. Monitoring during removal of surface materials is recommended.

Initial phases of archaeological testing include determining the depth of redevelopment disturbances of the site during the extension of Bethel Street in 1930, expansion of the Honolulu Police Department between 1930-1950, and construction of the parking garage in 1950. Ideally, core sampling and analysis would determine those impacts. Being an unknown, core sampling attempts combined with testing of two areas within the redevelopment parcels are recommended for archaeological testing. Test areas recommended are:

a) Test pit, corner of parcels 16 and 20 fronting Nimitz Highway
b) Backhoe assisted trench, north to south from Nu'uanu Avenue set back roughly 130 feet from Nimitz Highway

Artifactual deposition and feature recovery during phase one testing in Test pit "a" would determine disturbance depths, existence or non-existence of Kamehameha's residential compound remains, structural foundations (Cleghorn's and Makee-Anton Blocks) and location and stratification (if any) of Ka'ahumanu Street. Trench "b" in the asphalt parking lot would determine disturbance impacts for this area, expose rear structures (sheds, warehouses, privies) erected during the 1850-1870 period, those sheds erected prior to 1840, and locate the original surface of Honolulu's waterfront in addition to the corner of Nihoa Shipyard. Testing in both areas would confirm or disprove projected water saturated and preserved sites of Honolulu's prehistoric and early contact period. The foundation borings conducted by E. K. Hirata and Associates were monitored during February and March 1990. Several subsurface features were encountered.

Location of the Ka'ahumanu parking areas is highly visible to the public. Aggressive artifact collectors on O'ahu Island have continued illegal excavations in archaeologically protected areas, specifically during evening and night time hours. High fencing, alarm systems and/or manned patrol during these periods and weekends is a necessity.

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<u>Errata</u>

Page 15	Figure 8: Area Map, 1927-1953 should be included (See Next Page)
Page 19	Line four should read McCabe, Hamilton, and <u>Renny</u>.
Page 21	Plate 3 should read McCabe, Hamilton, and <u>Renny</u>.
Page 31	Under Hawaii State Archives, 19900/1901 should read McCabe, Hamilton and <u>Renny</u>.

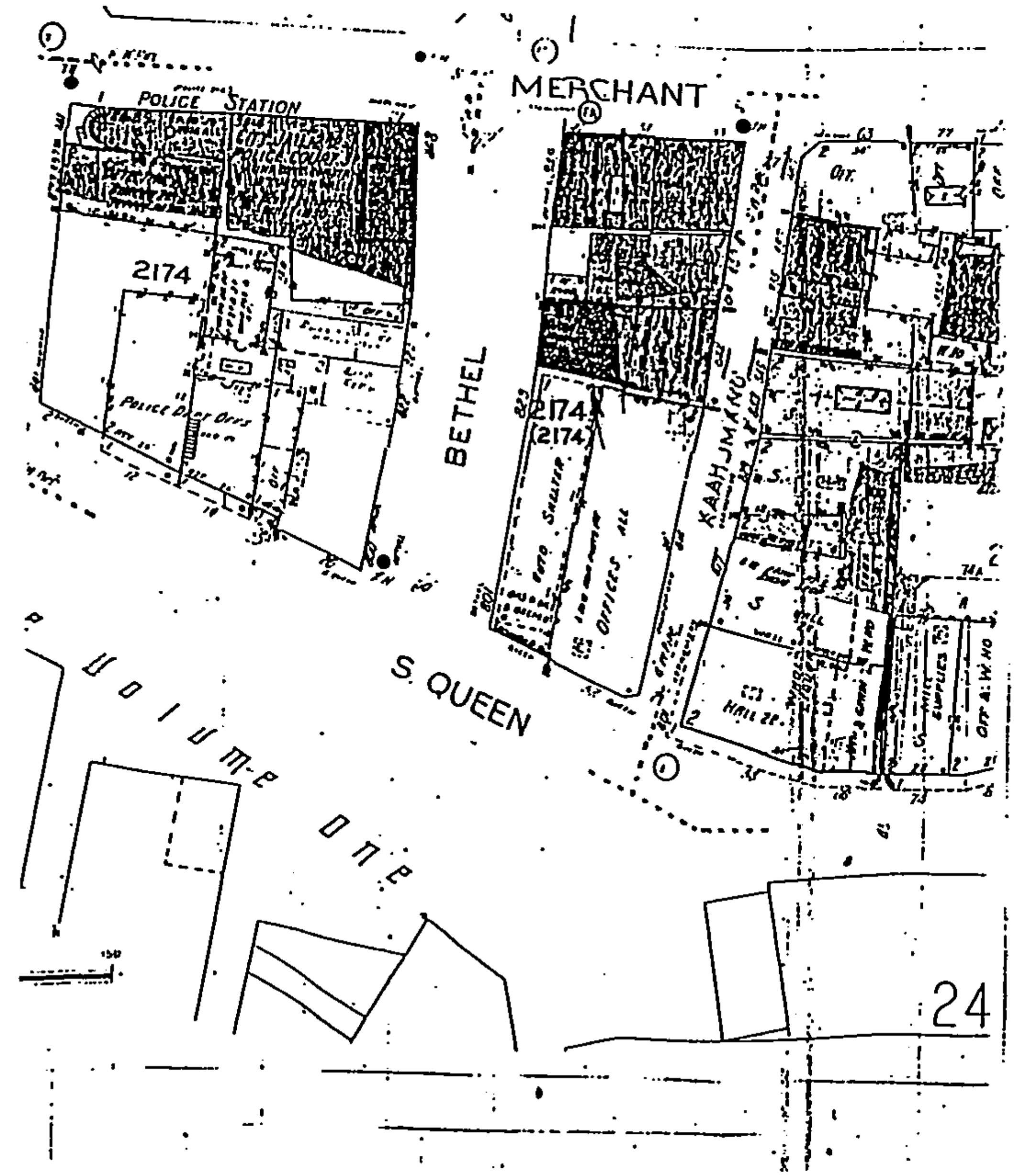


Figure 8: AREA MAP, 1927-1953 (Sanborn Map Company)

Update To

APPENDIX E

ARCHAEOLOGICAL RESOURCES ASSESSMENT

KA'AHUMANU REDEVELOPEMENT PROJECT

Preliminary recommended archaeological testing for the proposed Ka'ahumanu parking redevelopment includes a combination of core sampling and testing of two specific areas for mitigation. The areas recommended for testing are to determine if pre-historic deposits are present, to determine the depths of cultural material deposits and features, whether these deposits/features are in situ or disturbed, and the extent of preservation. Core sampling is recommended to determine depths of deposits and locations of possible features.

Initial coring of the Ka'ahumanu parking lot was undertaken by Ernest K. Hirata and Associates in 1985. A boring log of the 1985 corings was submitted to the Applied Research Group of Bishop Museum. Four core borings were done in 1985, three of these are within the proposed redevelopment area. Additional coring of both the open parking lot and the parking structure was conducted by the same consultants during February and March 1990. Six core borings were done in 1990; five corings were monitored and fill samples recovered. Locations of the corings are shown on the 1879 project area map (Figure 1a), fill material deposition, and brief descriptions of their contents are abstracted below:

1985:B2 6.5' fill material. 4" concrete slab contacted at about 12" below surface. Location in the former Waterhouse building area.

1985:B3 7' fill material. Decomposed wood at 2' below surface. In McKee-Anton Block.

1985:B5 6.5' fill material. Concrete fragments recovered from about 1.5 to 3' below surface. Located in warehouse behind Waterhouse buildings.

1990:B1 3.5' fill material. Brick fragments at 0.5-0.12' below surface. Solid red fired brick over concrete from 0.12-0.30' below surface. Location is in area of Noltes Old Corner Saloon back wall.

1990:B3 2.0' fill material. In former courtyard/back area of McKee-Anton Block. Cultural materials recovered were 2d common copper-brass nail, sheet and windowpane glass sherds, bottle glass sherds, concrete and cement fragments. One canine tooth recovered at 12" below surface in well preserved condition.

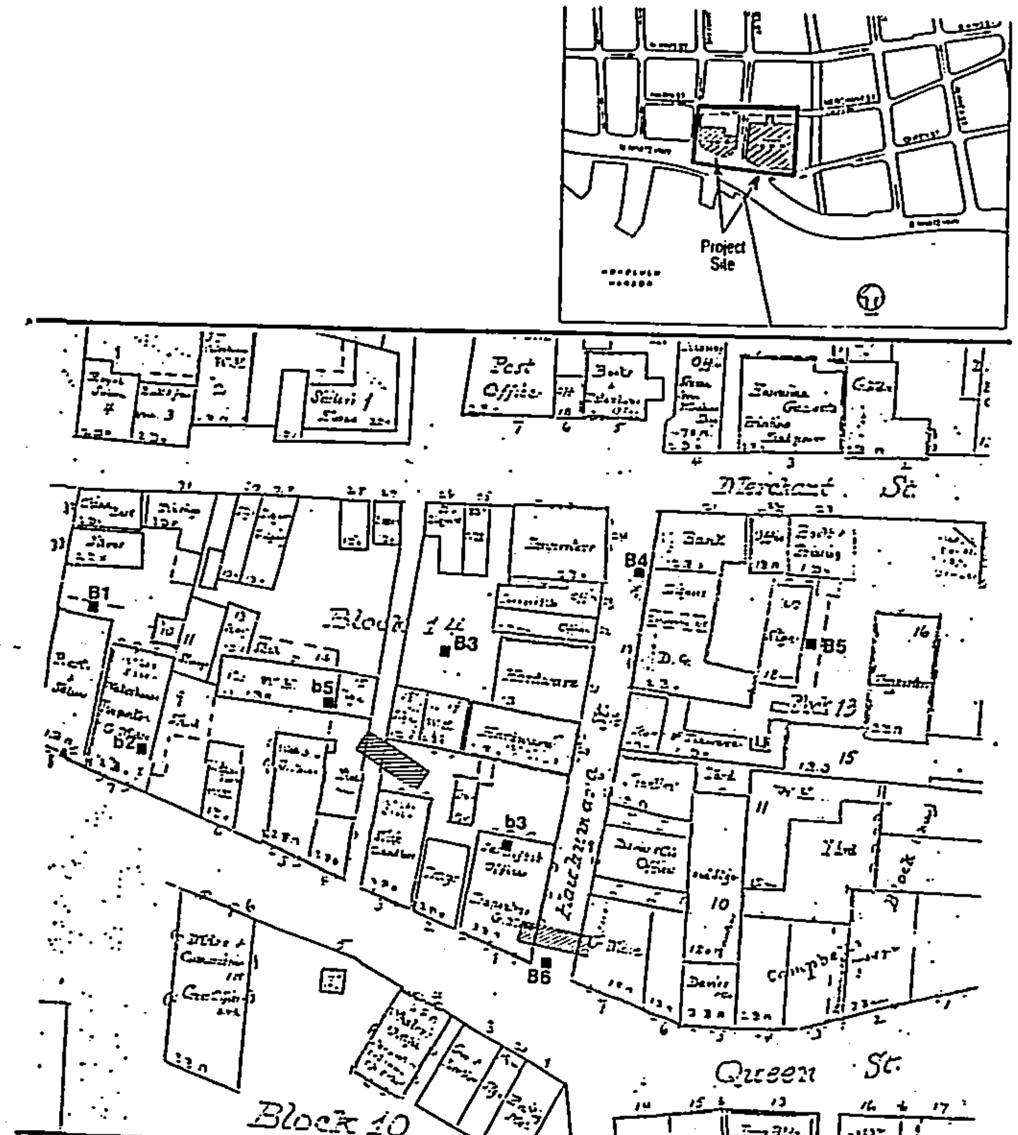
1990:B4 5.0' fill material. No cultural materials. Former Ka'humanu Street near Merchant.

1990:B5 4.5' fill material. Cultural materials taken from base at 4.5' below surace were unmodified wood fragments (well preserved), charcoal, small rounded red fired brick fragments. Area behind Campbell's Block.

1990:B6 3.3' fill material. Cultural materials from former area of Ka'ahumanu Street near Queen Street intersection included red fired brick sherds, concrete and slate fragments, bottle glass sherds and milled wood.

The results of boring show variation in depths of fill material ranging from two feet to six feet generally on a slope towards Queen Street and the Honolulu Harbor. The borings indicate good preservation of faunal and botanical remains from 12 inches to 4.5 feet below surface in moist surrounding matrix. Consistency at the depths at which concrete was contacted, presumably foundations and floor features, in these core borings also indicate in situ structural foundation remains. These results indicate changes to be made to the initial coring recommendations. No changes in the specific test trench strategies to determine prehistoric/early historic deposition, and locations of unmapped sheds, privies are proposed.

Improvements and widening of Queen Street towards the harbor occurred in 1882. Maps of the structures in the project area prior to, and following Queen Street improvements show no changes in building positions. Locations and lateral measurements of these structures are therefore considered a known. Core B1 (1990) indicates an in situ feature which is possibly the back wall of Noltes Old Corner Saloon built in 1858, first as a one story wood fame, and then brick building. The coring encountered solid red fired brick at 12" below surface overlying solid concrete to 30" below surface. Preliminary testing to expose this feature and the possible foundation extent is necessary to determine the integrety of the remains. Shovel tests/probes placed along Queen and Ka'ahumanu Street in structural foundation locations are an alternative to coring. Possible features contacted during shovel testing need to be further partially exposed. A complete data recovery plan will be formulated contingent upon the results of this initial testing phase.



b = 1985 Core Borings B = 1990 Core Borings ///= Proposed Test Trenches

Figure 1a. 1879 PROJECT AREA MAP

<u>APPENDIX F</u>

LIGHT IMPACT ASSESSMENT

TRB Architects, Ltd.

IMPACT ASSESSMENT OF BUILDING SHADOWS ON ADJACENT BUILDINGS

Prepared for the Final Environmental Impact Statement

for the

Kaahumanu Parking Structure

Redevelopment Project

Prepared by
TRB Architects, Ltd.

Prepared for
R.M. Towill Corporation

FINAL
July 1990

I. SUMMARY

A study was undertaken to determine the potential impacts of shadows cast by the proposed Kaahumanu Parking Structure Redevelopment on four existing buildings located along Merchant Street. The study found that shadows would be cast by the project on the Campbell Estate, Bishop Estate, Bank of Bishop & Co., and the Melcher's Buildings for much of the afternoon throughout the year. The study evaluated the effects of this shading on the basis of reduced light, heat and solar energy.

The study concluded that the impacts on the buildings due to these shadows would be minimal due to:

A. Light levels for the skylight shaded by the project will be similar to those experienced under cloudy skies and would remain adequate.

B. Solar energy for water heating is not currently being used nor likely will be considering the buildings' uses.

C. Shading the roof, skylights, and west walls of buildings from the hot afternoon sun is desirable year round in Hawaii's climate and will likely result in more comfortable building interiors or reduced air conditioning loads for the buildings studied.

Mitigation measures suggested include painting the wall of the project's parking structure a highly reflective color, and possible limited restoration of the Bishop Estate Building's interior.

II. PURPOSE

To determine the impact of the Kaahumanu Parking Structure Redevelopment on the availability of sunlight to the surrounding area. The report specifically focuses on the impact on the above four buildings located along the west side of Merchant Street (see attachment #1).

III. CRITERIA

The City & County of Honolulu has no criteria for determining the extent of impact on surrounding area by a project's shadows, nor does it define what is an acceptable impact. Some cities have used zoning regulations to control buildings' access to sunlight. For example, the 1916 zoning code of New York largely determined the shape of New York City's skyline to preserve sunlight penetration to the streets. Other cities such as San Francisco have regulated a building's height and massing where shadows of a building would impact parks and other outdoor public spaces. It is important to note that these examples are from cities in temperate climates that may have little relevance to the tropics where shade is often a welcome relief.

Sunlight provides both light and heat. In the absence of defined criteria, we suggest evaluating the impact of diminished sunlight due to an adjacent building's shadows on the basis of the impact of reduced light and heat.

A. Light: Potential impacts a project's shadows include the increased demand for electric lighting due to a loss of daylight. The reduction of light due to a shadow cast by a building is similar to the reduction of light due to overcast skies. The amount of light available outside under overcast conditions falls to 500 foot candles (see attachment #2). (Note: about 50-70 foot candles are comfortable for most indoor tasks.) This analogy of shadows and overcast skies assumes the window or skylight has a view of most of the skydome. In cases where an obstruction limits the view of the skydome, the amount of light will be further reduced.

B. Heat: Potential impacts from a project's shadows include decreased access to solar energy for water heating and other uses. When solar energy is not utilized, a project's shadows will be beneficial to most buildings since the heat and glare accompanying direct sunlight is undesirable. In Hawaii, windows and skylights should be shaded throughout the year to reduce the heat gain to a building's interior. Shading a building's roof and its walls (particularly west-facing walls) will also decrease the heat gain resulting in a more comfortable interior or a reduced air-conditioning load.

IV. PROCEDURE

A. A review was conducted of the drawings for the proposed project and the surrounding neighborhood for possible impacts. The buildings under consideration were visited and photographed. The location of windows, skylights and other features that would be impacted were noted.

B. A photographic study was conducted of shadows cast by the project at four representative times of the year; the summer solstice (June 21), the fall and spring equinoxes (September 21/March 21) and the winter solstice (December 21) (see attachment #3). Photographs were taken of shadows cast by a scale model of the project and surrounding buildings at two hour increments from 6AM to 6PM.

C. The photographs were reviewed to determine the existing and proposed lighting conditions for the four buildings studied (see attachment #4).

D. An assessment was made of the impact of the proposed lighting conditions, and possible mitigation measures are discussed.

V. PROJECT DESCRIPTION & LOCATION

The proposed project site is located on two parcels on the east side of Nimitz Highway, occupying both corners of Bethel Street. Honolulu Harbor lies to the west of the project site across Nimitz Highway. The project is bounded by Nuuanu Avenue to the north. To the south will be "Harbor Court", a joint office and residential tower atop a 12-story parking garage rising to 350 ft. A bridge over Bethel Street will connect the tower with "Nuuanu Court", a six-story commercial building. (Refer to Attachment #1.)

VI. ADJACENT BUILDINGS:

This study focuses on the potential impacts on one mid-rise, modern building and three low-rise, historic buildings bordering the site.

A. The Campbell Estate Building is an L-shaped, 6-story, concrete structure to the south and east of the project. No building openings face the project. All floors of this building are currently used as offices.

B. The Bishop Estate Building is a 2-story stone building built in 1896 (see attachment #5, site visit report). The building has four windows facing the projects site on the makai side. These windows are constructed on the existing property line and would not meet the current building code. A large ventilating skylight, approximately 4' x 20' is on the building's roof (see attachment #6, Interior Photographs). This skylight illuminates the building's stair and hall. At one time this skylight provided light for the adjacent offices. However, the majority of the interior windows have been painted over, reducing the building's use of daylight. The building currently has one second story office facing Merchant Street in use as a lawyer's office. The remainder of the second floor appears to be storage and toilet facilities.

C. The Bank of Bishop and Co. Building is a 2-story stucco structure connected to the interior of the Bishop Estate Building on both floors. The building has one large window on the second floor facing the site. This window also appears to be constructed on the property line. Three large second story windows face the Melcher's Building to the north. The building has a roof top ventilator but no skylight.

D. The Melcher's Building is a 2-story, stucco building constructed in 1853 with an addition dating from the 1930's. It has windows on both the upper and lower levels of the diamond head side, the Merchant Street side and the Bethel Street side. The building has a large air conditioning system on its roof, and no skylights.

VII. EXISTING LIGHTING CONDITIONS

The tables in attachment #4 list existing lighting conditions for each building based on an interpretation of the scale model photographs. Light conditions for each of the four buildings are listed as Shade, Partial Shade or Sun if a shadow fully, partially, or does not cover the building's roof top.

The existing lighting conditions are as follows:

A. **Campbell Estate Building:**

1. Winter: Partial Shade: 8AM
   Sun: 10AM - 4PM
2. Spring/Fall: Shade: 8AM
   Sun: 10AM - 4PM
   Partial Shade: 6PM
3. Summer: Shade: 6AM
   Partial Shade: 8AM - 10AM
   Sun: Noon - 6PM.

B. **Bishop Street Building:**

1. Winter: Shade: 8AM - 10AM
   Partial Shade: Noon
   Sun: 2PM - 4PM
2. Spring/Fall: Shade: 8AM - 10AM
   Partial Shade: Noon & 6PM
   Sun: 2PM - 4PM
3. Summer: Shade: 6AM - 10AM
   Sun: Noon - 6PM

C. **Bank of Bishop & Co. Building:**

1. Winter: Shade: 8AM
   Partial Shade: 10AM
   Sun: Noon - 4PM
2. Spring/Fall: Shade: 8AM
   Partial Shade: 10AM
   Sun: Noon - 4PM
3. Summer: Sun: 6AM - 6PM

D. **Melcher's Building:**

1. Winter: Shade: 8AM
   Sun: 10AM - 4PM
2. Spring/Fall: Shade: 8AM & 6PM
   Partial Shade: 10AM
   Sun: Noon - 4PM
3. Summer: Partial Shade: 6AM
   Sun: 10AM - 6PM

VIII. LIGHTING CONDITIONS AFTER PROJECT COMPLETION

Shadows from the project will be cast on the four buildings under consideration in the afternoon. In summer, the project will fully or partially shade the four buildings after about 2PM. In winter, the sun is lower in the sky causing partial or full shadows to be cast on the adjacent buildings after 12:00 noon. The lighting conditions after project completion will be as follows:

A. **Campbell Estate Building:**

1. Winter: Partial Shade: 8AM & 4PM
   Sun: 10AM - Noon
   Shade: 2PM

2. Spring/Fall: Shade 8AM & 6PM
   Sun 10AM - Noon
   Partial Shade: 2PM - 4PM

3. Summer: Shade: 6AM & 4PM - 6PM
   Partial Shade: 8AM - 10AM & 2PM
   Sun: Noon

B. **Bishop Estate Building:**

1. Winter: Shade: 8AM - 4PM

2. Spring/Fall: Shade: 8AM - 10AM, 2PM - 6PM
   Partial Shade: Noon

3. Summer: Shade: 6AM - 10AM, 2PM - 6PM
   Sun: Noon

C. **Bank of Bishop & Co. Building:**

1. Winter: Shade: 8AM, Noon - 4PM
   Partial Shade: 10AM

2. Spring/Fall: Shade: 8AM; 2PM - 6PM
   Partial Shade: 10AM - Noon

3. Summer: Sun: 6AM - Noon
   Shade: 2PM - 6PM

D. **Melcher's Building:**

1. Winter: Shade: 8AM, 2PM - 4PM
   Sun: 10AM
   Partial Shade: Noon

2. Spring/Fall: Shade: 8AM, 2PM, 6PM,
   Partial Shade: 10AM - Noon, 4PM

3. Summer: Partial Shade: 6AM, 2PM, & 6PM
   Sun: 8AM - Noon

IX. ANALYSIS OF IMPACTS AND POTENTIAL MITIGATION MEASURES

The impacts of shadows cast by the proposed project are evaluated by considering loss of light and solar heat gain (see Section III: Criteria) for the periods of the day a shadow would be cast (see Section VIII: Lighting Conditions After Project Completion).

A. **Campbell Estate Building:**

The project will primarily shade the leg of the "L" shaped building extending along Merchant Street.

1. Light: No impact from reduced light levels is expected as the building has no openings facing the site or on the roof.

2. Heat: Currently, solar energy is not being utilized by this building. If the use of solar energy was desired, much of the roof-top is unaffected by shadows from this project and could be utilized for this purpose. The Campbell Estate Building may experience a very slight decrease in heat gain and air conditioning load due to the shading of the west and north facing walls and partial shading of the roof.

B. **Bishop Estate Building:**

The Bishop Estate Building will be shaded during the afternoons throughout the year.

1. Light:
   a. Light conditions for the ventilating skylight will be similar to those currently experienced on cloudy days. From a conversation with the current occupant, we understand this lighting condition provides adequate illumination for the hallway (see item #8, attachment #5: Site Visit Report). Shading this skylight will likely reduce the heat and glare, increasing the visual and thermal comfort of the space.

   Mitigation measures: No mitigation measures are deemed necessary for the Kaahumanu Redevelopment. However, if the owners of the Bishop Estate Building wish to use the available daylight more effectively, they could consider the following:

i. Stripping the paint off the interior windows and glass doors separating the adjacent offices from the skylit hallway.

ii. Providing an open railing or a low wall at the stairway instead of the 8'-0" partition which has been added and which obstructs light penetration to the stairwell.

b. Windows facing the project site on the Makai side: The three second-floor windows will not receive direct afternoon sunlight as they currently have. The light coming in through these windows will be indirect, reflected off the wall of the project's parking structure. The current indirect light level will also be decreased for the first-floor window as afternoon sunlight will no longer shine on the upper wall of the Bishop Estate Building and be reflected down the space between the Bishop Estate Building and the existing parking garage.

Mitigation measures would include:

i. Painting the parking structure wall a highly reflective color (white or off-white).

ii. Painting the Bishop Estate Building wall facing the project, white as well.

2. Heat:
Currently, solar energy is not being utilized by this building for water heating nor would this be likely as the water demand is low. The afternoon shading of the Bishop Building's roof, west wall and skylight by the project will be beneficial from a thermal comfort standpoint. Less heat would enter the building's envelope which, in turn would require less natural ventilation or air conditioning (where used).

C. **Bank of Bishop & Co. Building:**

The Bank of Bishop & Co. Building will be shaded by the project after 12:00 noon in the winter and after mid-afternoon in the spring, summer, and fall.

1. Light:

a. One second-story window facing the project will have reduced light levels as described in B.1.b. above. However, the current light level at this window is already somewhat reduced by a shade tree growing outside of this window.

Mitigation measures: Paint parking structure wall as noted in B.1.b above.

b. The second-story windows on the northwest side facing the entry drive will be shaded by the project after 12:00 noon throughout the year. This should reduce the heat and glare through their windows, especially in the summer.

2. Heat:
Currently, solar energy is not being utilized by this building (see section B.2. above). Shading from the proposed project should decrease heat gain through the uninsulated roof and walls of the building, resulting in a more comfortable thermal environment.

D. **Melcher's Building:**
The Melcher's Building will be partially shaded by the proposed project after 2 PM in the summer and fully or partially shaded after noon spring, fall and winter.

1. Light:
The first and second story windows on the south side facing the entry drive will be shaded by the project in the early afternoons spring, fall and winter. This should reduce the glare and heat gain through these windows.

2. Heat:
Currently, solar energy is not being utilized by this building (see section B.2. above). The Melcher's Building may experience a slight reduction in the building's air-conditioning load due to the reduction of heat gain through the windows, roof and north and west walls due to the proposed project's shadows.

X. CONCLUSION

A. Positive Impacts:

The proposed project's shadows will benefit the buildings studied by reducing heat gain and glare through windows and a skylight. Shadows from the proposed project will also reduce the afternoon heat gain through the roof and walls of the buildings studied, thereby increasing the thermal comfort and reducing the cost of air-conditioning where used.

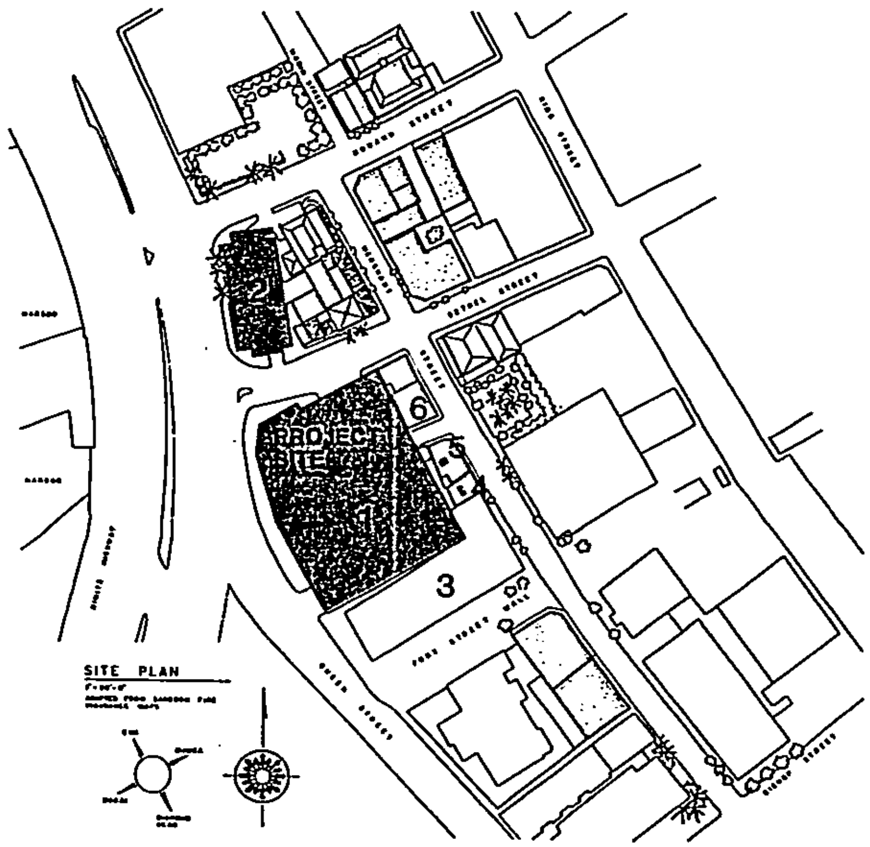
B. **Negative Impacts:**

The Bank of Bishop Co. Building and the Bishop Estate Building will experience decreased light levels for five windows directly facing the proposed parking garage. Usually windows such as these which do not conform to the building code cannot be replaced or repaired and must be closed up if major work is done on the building. However, a section in the Uniform Building Code may allow such existing conditions to remain in historic buildings provided any work performed does not make the building more unsafe than the existing building.

The designers of the Kaahumanu Parking Structure Redevelopment have somewhat mitigated the impact of the project by aligning the rear wall of the proposed parking structure with the rear wall of the existing garage. Had they elected to build the parking garage on the property line, the impact on these windows would have been much greater.

KR:tw

SHADOW.SDY



KEY
1. PROPOSED HARBOR COURT BUILDING
2. PROPOSED NUUANU COURT BUILDING
3. CAMPBELL ESTATE BUILDING
4. BISHOP ESTATE BUILDING (HISTORIC)
5. BANK OF BISHOP & CO. (HISTORIC)
6. MELCHER'S BUILDING (HISTORIC)

ATTACHMENT # 1

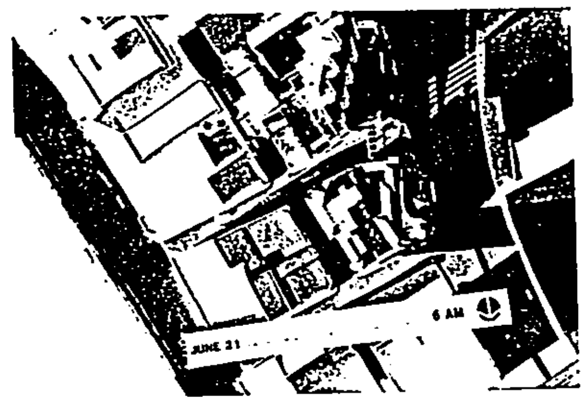
SUN INTENSITY, HAWAII

MONTH/MONTHS	8AM & 4PM		10AM & 2PM		NOON	
	clear	overcast	clear	overcast	clear	overcast
JUNE	5,000 ft cd	2,000	8,700	3,600	12,000	4,100
MAY & JULY	4,500	1,700	8,000	3,200	9,700	3,500
APRIL & AUGUST	4,200	1,400	7,600	2,600	9,200	3,100
MARCH & SEPTEMBER	4,000	1,200	7,300	2,200	8,600	2,500
FEBRUARY & OCTOBER	3,500	1,000	8,500	1,800	7,800	2,100
JANUARY & NOVEMBER	3,000	700	5,600	1,500	6,800	1,700
DECEMBER	2,400	500	4,700	1,100	5,700	1,500 ft cd

SOURCE: HAWAIIAN DESIGN,
STRATEGIES FOR ENERGY CONSERVATION
DBED, 1990

ATTACHMENT # 2

KAAHUMANU REDEVELOPMENT
SHADOW STUDY
JUNE 21



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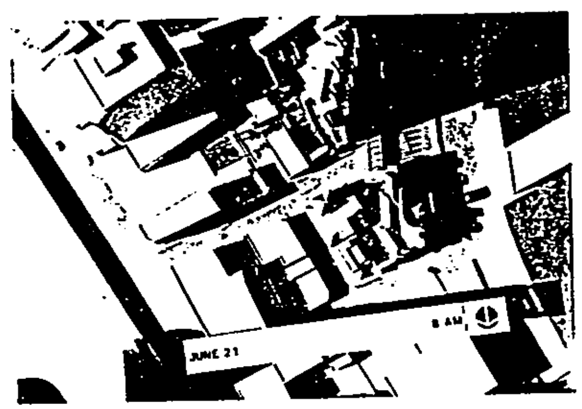

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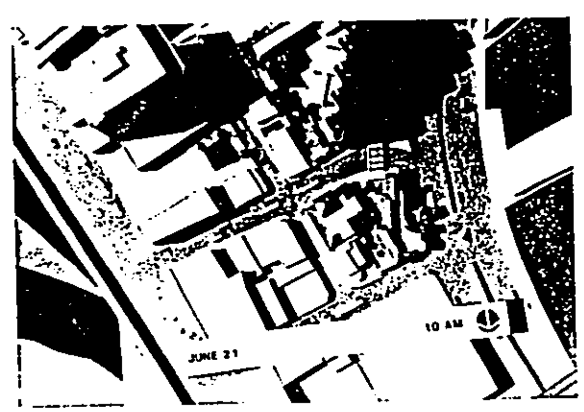
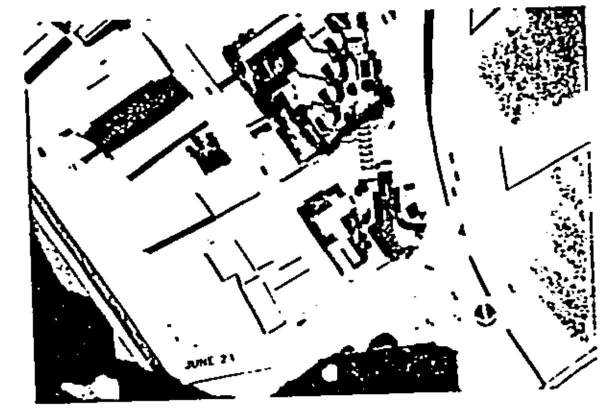


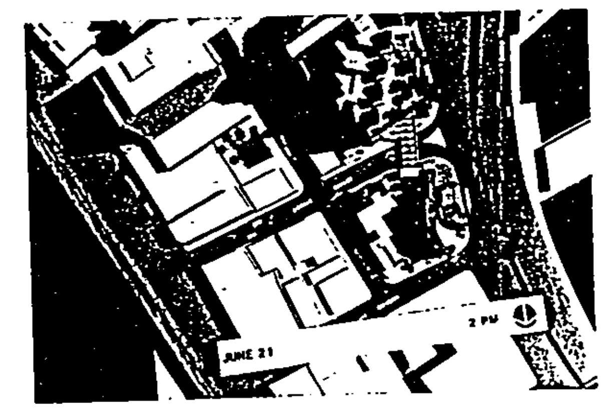
TTACHMENT # 3

10 AM

KAAHUMANU REDEVELOPMENT
SHADOW STUDY
JUNE 21



NOON



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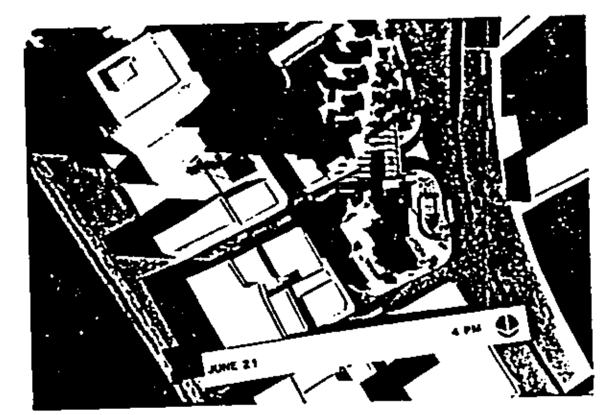

4 PM

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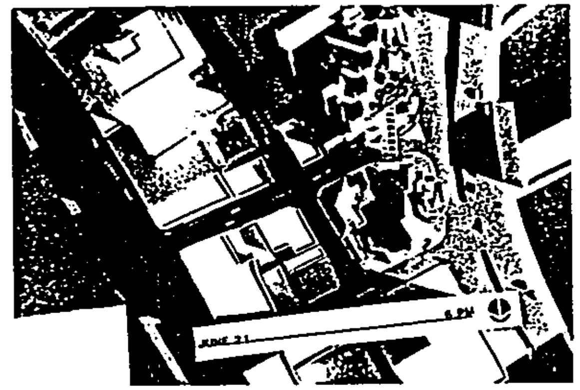
SHADOW STUDY
JUNE 21

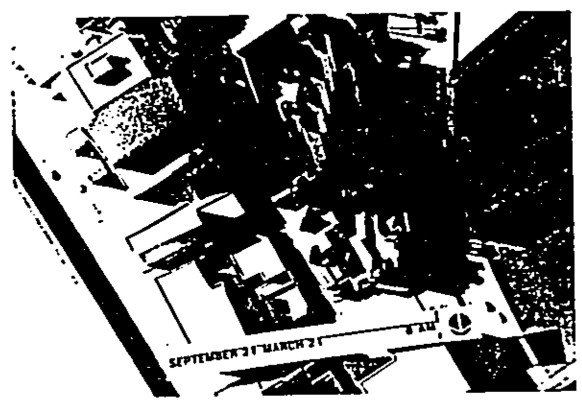


6 PM

KAAHUMANU REDEVELOPMENT
SHADOW STUDY
MARCH 21 / SEPTEMBER 21

NOT APPLICABLE

6 AM



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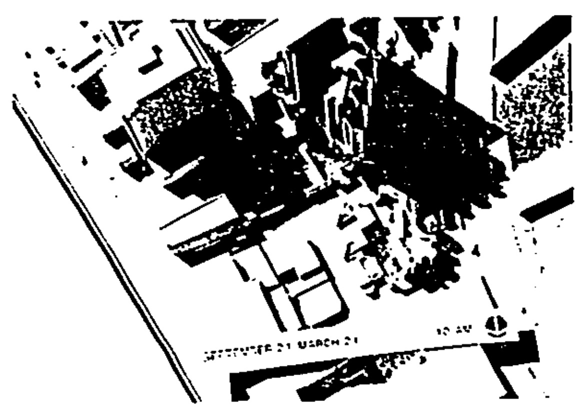

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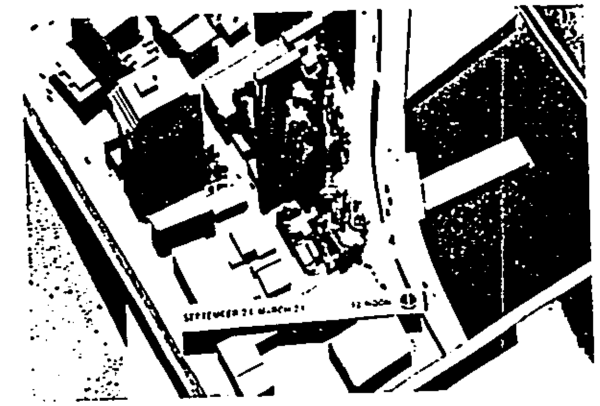
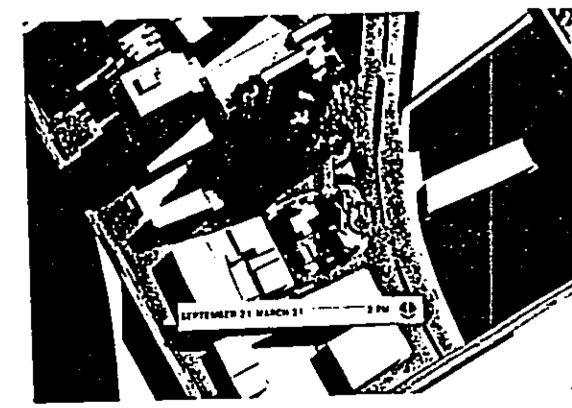
KAAHUMANU REDEVELOPMENT
SHADOW STUDY
MARCH 21 / SEPTEMBER 21



NOON



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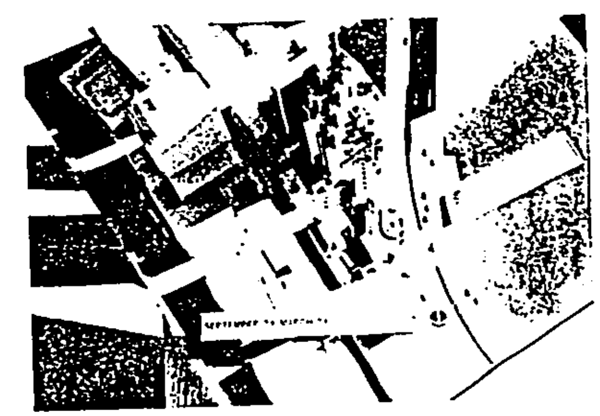


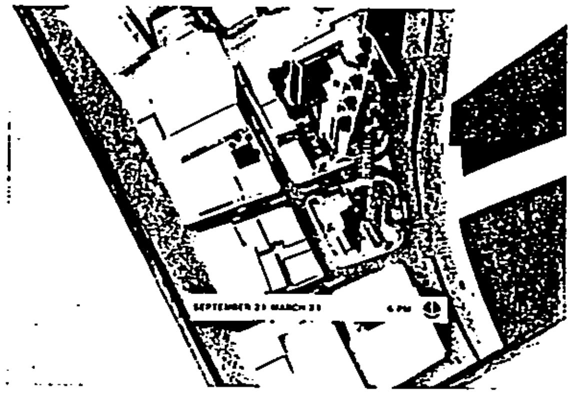
4 PM

KAAHUMANU REDEVELOPMENT

SHADOW STUDY

MARCH 21 / SEPTEMBER 21

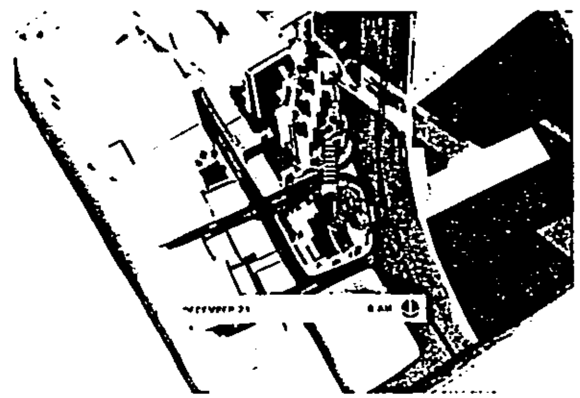
6 PM



KAAHUMANU REDEVELOPMENT
SHADOW STUDY
DECEMBER 21

NOT APPLICABLE

6 AM



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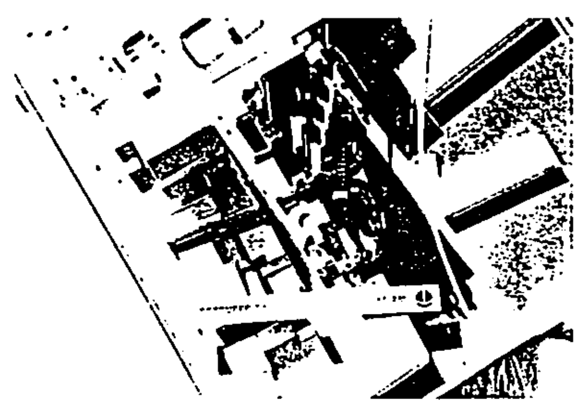

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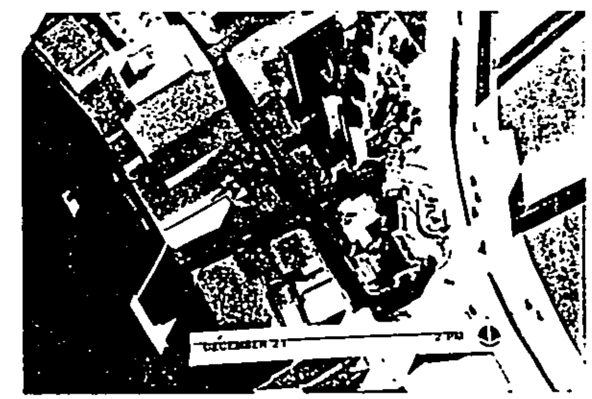
KAAHUMANU REDEVELOPMENT
SHADOW STUDY
DECEMBER 21

NOON



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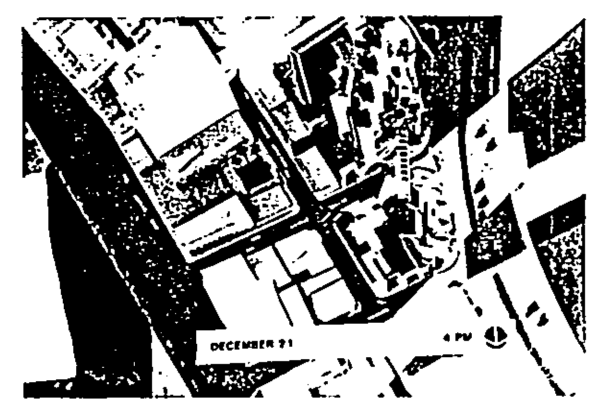


4 PM

KAAHUMANU REDEVELOPMENT
SHADOW STUDY
DECEMBER 21

NOT APPLICABLE

6 PM

KAAHUMANU SHADOW STUDY

DATE: 21 JUNE
EXISTING CONDITIONS

BUILDING	6 AM	8 AM	10 AM	NOON	2 PM	4 PM	6 PM
Campbell Estate Bldg.	Shade	P. Shade	P. Shade	Sun	Sun	Sun	Sun
Bishop Estate Bldg.	Shade	Shade	Shade	Sun	Sun	Sun	Sun
Bank of Bishop & Co.	Sun	Sun	Sun	Sun	Sun	Sun	Sun
Melcher's Bldg.	P. Shade	Sun	Sun	Sun	Sun	Sun	Sun

DATE: 21 JUNE
PROPOSED CONDITONS

BUILDING	6 AM	8 AM	10 AM	NOON	2 PM	4 PM	6 PM
Campbell Estate Bldg.	Shade	P. Shade	P. Shade	Sun	P. Shade	Shade	Shade
Bishop Estate Bldg.	Shade	Shade	Shade	Sun	Shade	Shade	Shade
Bank of Bishop & Co.	Sun	Sun	Sun	Sun	Shade	Shade	Shade
Melcher's Bldg.	P. Shade	Sun	Sun	Sun	P. Shade	P. Shade	P. Shade

KAAHUMANU SHADOW STUDY

DATE: 21 MARCH\21 SEPTEMBER
EXISTING CONDITIONS

BUILDING	6 AM	8 AM	10 AM	NOON	2 PM	4 PM	6 PM
Campbell Estate Bldg.		Shade	Sun	Sun	Sun	Sun	Shade
Bishop Estate Bldg.		Shade	Shade	P. Shade	Sun	Sun	Shade
Bank of Bishop & Co.		Shade	P. Shade	Sun	Sun	Sun	Shade
Melcher's Bldg.		Shade	P. Shade	Sun	Sun	Sun	Shade

DATE: 21 MARCH\21 SEPTEMBER
PROPOSED CONDITONS

BUILDING	6 AM	8 AM	10 AM	NOON	2 PM	4 PM	6 PM
Campbell Estate Bldg.		Shade	Sun	Sun	P. Shade	P. Shade	Shade
Bishop Estate Bldg.		Shade	Shade	P. Shade	Shade	Shade	Shade
Bank of Bishop & Co.		Shade	P. Shade	P. Shade	Shade	Shade	Shade
Melcher's Bldg.		Shade	P. Shade	P. Shade	Shade	P. Shade	Shade

ATTACHMENT # 4

KAAHUMANU SHADOW STUDY

DATE: 21 DECEMBER
EXISTING CONDITIONS

BUILDING	6 AM	8 AM	10 AM	NOON	2 PM	4 PM	6 PM
Campbell Estate Bldg.		P. Shade	Sun	Sun	Sun	Sun	
Bishop Estate Bldg.		Shade	Shade	P. Shade	Sun	Sun	
Bank of Bishop & Co.		Shade	P. Shade	Sun	Sun	Sun	
Melcher's Bldg.		Shade	Sun	Sun	Sun	Sun	

DATE: 21 DECEMBER
PROPOSED CONDITIONS

BUILDING	6 AM	8 AM	10 AM	NOON	2 PM	4 PM	6 PM
Campbell Estate Bldg.		P. Shade	Sun	Sun	Shade	P.Shade	
Bishop Estate Bldg.		Shade	Shade	Shade	Shade	Shade	
Bank of Bishop & Co.		Shade	P. Shade	Shade	Shade	Shade	
Melcher's Bldg.		Shade	Sun	P. Shade	Shade	Shade	

TRB ARCHITECTS, LTD.

Architecture • Interior Architecture • Energy Planning and Design

SITE VISIT
DATE: 10 July 1990
TIME: 2:00 PM
PROJECT: Harbor Court
PRESENT: Mark Bernstein, Attorney; Kent Royle, Cliff Terry

1. The buildings in question are the Bank of Bishop & Co. Building, a two story masonry structure, and the Bishop Estate Building, a two story stone structure. The buildings are connected on both the first and second floors by hallways which extend through the buildings' common wall.

2. At the top of the stair in the Bishop Estate Building is a large skylight approximately 4' wide x 20' long. The skylight is roofed with obscure glass and has fixed wood louvers approximately 4' high surrounding it. Note that the skylight originally supplied light to the rooms off the stairwell, but most of the interior windows have been painted over.

3. At the back wall of the Bishop Estate Building, on the Diamond Head side, is a tall, double-hung glass window which overlooks the top deck of the parking structure. Next to the room with this window is a lavatory with an outswing metal sash containing obscure wire glass, and adjacent to that room is a toilet compartment with a similar window.

4. On the upper level of the Bank of Bishop Building is a storeroom with a steel sash window containing one outswing section and glazed with obscure wire glass. The balance of the Ewa side rooms have no windows in the back wall.

5. The makai/Ewa room of the Bank of Bishop Building contains two double-hung windows with round top sash, facing Ewa toward the driveway to the garage. These windows will remain unobstructed by the new construction.

6. On the mauka/Ewa corner of the Bank of Bishop Building is a sitting room with windows facing Ewa, diagonally mauka/Ewa, and mauka. None of these will be obstructed.

ATTACHMENT # 5

Pauahi Tower Suite 1110 • 1001 Bishop Street • Honolulu, Hawaii 96813 • Phone (808) 528-2020 • Fax 523-1264

7. Bernstein has two major areas of concern: the effects of the construction process on the building, and the impact on the light and air which the building presently has access to.

8. Bernstein reports that the light level does not change dramatically when the sky clouds over, and that the glare from the direct light is substantially reduced. The light level does drop substantially when a storm approaches and the sky becomes significantly darker.

9. The air conditioning in the building consists of six window units on the second floor, and a split system on the ground floor. The back windows at the second floor are kept open slightly for ventilation.

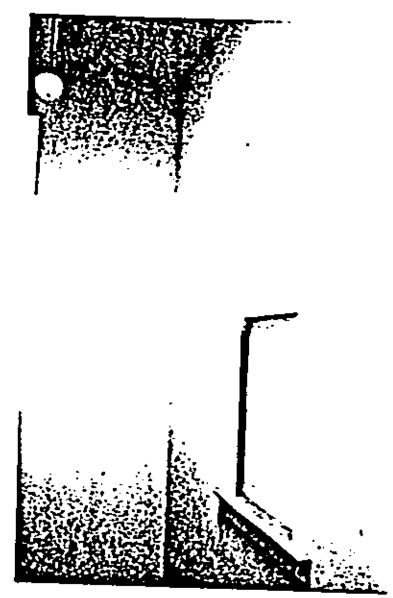
10. There is only one window at the makai side of the ground floor, opening into Harriet Bouslog's office. Berstein reports that she uses it for light but not for air, because her office is air conditioned. The shutter for this window was currently closed. Bernstein reported it is often closed for security.

CT:kl

HCSOLAR:BOUSLOG.RPT

KAAHUMANU REDEVELOPMENT
SHADOW STUDY
BISHOP ESTATE BUILDING

VENTILATING SKYLIGHT



INTERIOR WINDOW
TO SKYLIT HALLWAY

ATTACHMENT # 6

KAAHUMANU REDEVELOPMENT
SHADOW STUDY
BISHOP ESTATE BUILDING

MAKAI WINDOW
BISHOP ESTATE BUILDING

MAKAI WALLS OF THE BANK
OF BISHOP BUILDING AND THE
BISHOP ESTATE BUILDING

APPENDIX G

SOCIAL IMPACT ASSESSMENT

R. M. Towill Corporation, Planning Department

SOCIAL IMPACT ASSESSMENT

1.0 INTRODUCTION

1.1 PURPOSE AND OBJECTIVES

The objective of this report is to identify and assess the social impacts of the proposed project. The project, which will cover four parcels of land, is located on the mauka side of Nimitz Highway, where Nimitz Highway and Queen Street merge. The site is bounded by Nuuanu Avenue on the west, Merchant Street to the north, and the Fort Street Mall on the east. Bethel Street bisects the project site in a mauka-bound direction from Nimitz Highway.

This report was prepared by R. M. Towill Corporation for inclusion in the Environmental Impact Statement on behalf of BEAM Harbor Venture, developer of the project, and for the Department of Housing and Community Development of the City and County of Honolulu.

The social impact assessment report has been organized in the following manner:

- Introduction-- Summarizes the purpose, objectives and overview of the project and impacts.
- Existing Community-- Provides a description of the socio-demographic and economic conditions of the project area and vicinity. This section lends a historic perspective on the project site in the context of the evolution of the Honolulu waterfront, the current conditions and trends in terms of urban growth and population characteristics.
- Forces of Change-- Discussion of government and privately initiated development projects in downtown Honolulu which cumulatively impact the proposed project. Other programs will be discussed as appropriate.
- Social Impacts-- Provides disclosure of impacts including displacement, historic sites, views, impacts on surrounding land uses, and population. Issues and concerns of the community regarding the project are discussed through the use of the key informant interview methodology.

1.2 PROJECT SUMMARY

The proposed development is a multi-tower, mixed use complex that will comprise a residential condominium apartment, a first-class office tower, and a commercial plaza

consisting of a two-level galleria with retail shops and restaurants. The buildings will be bridged over Bethel Street at the upper level for pedestrian movement.

1.3 SOCIAL IMPACTS

The major social impacts of this project are as follows:

1.3.1 Displacement: While the site is currently occupied by a municipal parking garage which contains 411 parking stalls, and the ground level parking lot makai of the former Honolulu Police Station which contains 51 stalls, the proposed development will temporarily displace these parking spaces. Public parking stalls are available at alternative sites during the construction period.

1.3.2 Historic Buildings: The project site is surrounded by several historic structures, which date back to as early as 1870, including the Melcher's Building, Old Bishop Bank and Bishop Estate Buildings, the former Police Station and District Court Building, Yokohama Specie Bank Building, and the Kamehameha V Post Office Building. The project's architectural design will complement the historic character of these neighboring buildings. In accordance with development guidelines set by the City and County in its Request for Proposals, the design of the project will complement the architectural appearance and scale of the historic buildings in the Merchant Square Historic District. Provisions will be made to monitor the adjacent structures during the most severe construction activities, including demolition, excavation and pile driving.

1.3.3 Population Increase: The project will increase the downtown residential population by 225 persons. The maximum de facto population of the project is projected as approximately 1,800 during the day.

1.3.4 Impacts on Nearby Businesses and Activities: During construction, inconveniences such as traffic barriers, difficulty in gaining pedestrian access to neighboring businesses, noise, and lack of convenient parking will be experienced by businesses and other activities in the vicinity. However, these are normal inconveniences associated with downtown Honolulu developments, and these adverse conditions will be temporary.

When operational, the new complex will be an amenity for downtown residents and workers in downtown Honolulu. The new residents and visitors to this complex may increase the demand for services such as telecommunications, medical, retail shopping, marketing, and nighttime and weekend entertainment.

The proposed project will help facilitate the City and County's overall effort of redevelopment and rehabilitation of downtown Honolulu. Cumulative impacts of this and other projects are likely to include:

- Expansion of economic activities in downtown Honolulu;
- Increased evening and weekend activity in downtown Honolulu and Chinatown; and
- Increased demand for services induced by jobs directly attributable to the project. Examples of these include entertainment, dry cleaners, eateries, or government services resulting from taxes.

1.4 ISSUES AND CONCERNS

As part of the social impact assessment process, interviews with individuals in the community were conducted to provide interviewees the opportunity to discuss their concerns regarding the proposed project. The persons interviewed can fall into one of the following groups:

- Area residents and representatives of neighborhood organizations who also work in downtown;
- Owners and/or tenants of adjacent properties;
- Representatives of neighboring properties, businesses;
- Representatives of the downtown business community.

Issues of primary concern among downtown residents are the need for public open space for recreation, traffic congestion, and building design. Persons interviewed expressed the need for "activities for residents after 5 p.m.," in the CBD. Others expressed concern that the historic significance be recognized in the project's design.

Tenants who either own or work on adjacent properties were most concerned about construction-induced impacts, including noise, lack of convenient parking, and potential damage to abutting historic structures.

People who work or own businesses in the vicinity emphasized their concerns about the lack of parking for employees during construction and after project completion. Some are worried about potential competition if proposed activities are targeting the same market segments. However, for the most part, neighboring business welcome the project as it will "be an improvement" and an upgrade to what exists on the site today.

Likewise, the downtown business sector reacted postively toward the proposed addition of office space to downtown Honolulu, as the project and its attendant uses would help facilitate growth and economic vitality to the CBD.

2.0 EXISTING COMMUNITY

2.1 STUDY AREA

The proposed project is located in the central business district of the oldest business area in downtown Honolulu at the Diamond Head edge of Chinatown. The site consists of four parcels of land bounded by Nimitz Highway, Queen Street, Nuuanu Avenue, and Merchant Street. A three-level municipal parking structure (TMK no. 2-1-02:16) known as the Kaahumanu Municipal Garage occupies the largest of the four parcels, which comprises 34,343 sf. A paved at-grade parking lot (TMK no. 2-1-02:26) utilized by City and County office workers currently occupies the next largest parcel of 19,805 sf. The remaining parcels (totalling 7,051 sf) contain minimal structures associated with the parking lots. Three of the properties are owned by the City and County of Honolulu, while the fourth, which is utilized as the Merchant Street access to the Kaahumanu garage, is owned by the State of Hawaii. Conveyance of this parcel from the State to the City has been initiated; the City will then convey the land to the developer. State parcel bisects site.

Nimitz Highway borders the makai edge of the site. Nuuanu Avenue, a one-way makai-bound street forms the Ewa, or western border of the project site. Bethel Street, a one-way mauka-bound roadway, runs through the middle of the site. The Campbell Estate Building separates the Diamond Head or eastern edge of the project site from the Fort Street Mall, which is a pedestrian promenade. Merchant Street delineates the mauka or northern boundary of the project site. It is a one-way eastern-bound street.

The Melchers Building, located on the mauka ewa edge of Parcel 16, contains City and County Department of Housing and Community Development offices. The Bouslog Building, located on TMK No. 2-1-02:19, is adjacent to the municipal garage. Both of these buildings are historic structures.

2.2 EVOLUTION OF THE DOWNTOWN HONOLULU WATERFRONT

The following summary provides a brief historical overview of the project area's development. The history of the project site is tied to the Honolulu waterfront's evolution because it is located in the City's oldest downtown section first affected in the early 1790s. The chronology below contains excerpts from the Honolulu Waterfront Master Plan's "Evolution of the Honolulu Waterfront A Historical Perspective (1989), Bishop Museum's "Historical Literature and Documents Search Archaeological Testing and Subsequent Procedures (Part I)" for the subject project (February 1990), and a report on "Historic

Districts and Buildings," February 1990, prepared by Spencer Mason Architects for the project.

2.2.1 Early Historic Honolulu

The shoreline of downtown Honolulu's waterfront has undergone much change since the arrival of Westerners in the 1700s. Changes have occurred because of the maritime industry's requirements to meet commercial and industrial expansion of a city dependent on the sea.

Prior to the arrival of Europeans in Hawaii, Honolulu harbor consisted of a small reefed basin created by a natural flow of Nuuanu Valley freshwater streams. This flow of freshwater inhibited the growth of coral within the harbor bed, creating a long, narrow channel through the reef to deep water. The channel was 200 feet wide, three-quarters of amile long and about 30 feet deep. At its entrance lay a sandbar that would later limit entry to ships with a depth of less than 22 feet (Honolulu Waterfront Master Plan Final Report, 1989: Technical Report: "Evolution of the Honolulu Waterfront A Historical Perspective").

Access to deep water anchorage in Honolulu harbor in the 1790's promoted an early influx of whalers and mariners. "The Fort," historic businesses and homesite settlements followed in the wake of post-contact sailing vessels to Honolulu. Within the immediate harbor of Honolulu in 1810, King Kamehameha I's brief residential compound (1809-1812) extended along the immediate Honolulu waterfront. To the north of these structures was Nihoa Shipyard. The northeast third section of Kamehameha's compound and the southwest portion of Nihoa shipyard appear to have been located within the boundaries of the present Kaahumanu parking garage and the asphalted parking lot.

2.2.2 Growth of Downtown and Chinatown

The trend toward urbanization and impact of harbor expansion also influenced other areas of Honolulu. By 1850, the area known as Downtown took on an organized appearance especially with the establishment of western style land ownership in 1825. Most of the city's major streets were established and named.

Richard Charlton, the first British consul to Hawaii (1825-1842) obtained a land claim enclosing the project site which was signed by high chiefs Kalanimoku and Boki. Legal title to Charlton's land claim was secured in 1847 and was sold upon obtaining legal title that year to Robert Janion (Day 1984:22).

Streets constructed in Honolulu 1843 bounding the proposed reconstruction site were Queen Street, facing the harbor, and Kaahumanu, which ran east and west from Merchant to Queen Street. Nimitz Highway follows the pre-1810 waterfront trail which was dry at low tide. The eastern boundaries of the trail (Queen Street) still exist. Kaahumanu Street was eliminated in 1950 for the Kaahumanu Street parking garage (Honolulu Advertiser, Feb. 11,

1950, 3:3). The current entrance to the parking garage from Merchant Street follows the original perimeters of Kaahumanu Street and is included in the proposed project.

Honolulu in 1850 had a population of 11,000 and was the leading city in the Hawaiian islands. Two and three-storied framed buildings were replacing grass structures in the harbor area and several establishments were flourishing including, T.H. Davies (currently occupied by the Kaahumanu parking garage), Love's Bakery, McInerny Store, Dillingham & Company, Lewers & Dickson, Castle & Cooke, and C. Brewer & Company. The focal point for Honolulu's social life on Saturday evenings was the sprawling fish market located on the waterfront near Nuuanu Avenue.

The area referred to as "Chinatown" began developing in 1855 as the first Chinese plantation workers brought to Hawaii in 1850 left the plantations to take up work and residence in Honolulu. Chinatown did not become a major Chinese community center until the 1870s. During the early stage of Chinatown's development, the immigrants primarily lived within the area to earn a living. In the later phase, families were brought in and the Chinese began opening commercial establishments to make themselves more economically independent, to protect themselves against exploitation, and to organize social and cultural establishments to assure continuity of their cultural heritage. (Honolulu Waterfront Master Plan Technical Report, 1989)

2.2.2.1 Late 1800's to Present

By 1865, the project site was fully developed with major arterials and business structures associated with interests in shipping and sugar. Perimeters of these primary business structures and streets remained totally undisturbed from 1865 until the extension of Bethel Street from Merchant to Nimitz (Queen) occurred in 1930. In 1950 the Kaahumanu Parking Garage was constructed and Kaahumanu Street, existing prior to 1842, was covered. Historic buildings along Fort and Merchant Streets were preserved for the Honolulu historic district; the remaining buildings were demolished for the parking tiers.

At present, the project site and vicinity are characterized by the existence of relatively low-rise historic buildings occupied by private and government offices, a publishing company, restaurants, and specialty retail shops. The project site is underutilized, and represents a unique focal point of downtown Honolulu at which recent urban growth meets the historical and culturally rich edge of the original Honolulu waterfront meet.

Besides being located among several historic buildings, the project site is also located in two historic districts-- the Merchant Street and Chinatown National Register Districts. Within the last few years, the City and County expanded the Chinatown Special District to incorporate most of the historic buildings in the Merchant Street National Register Historic District. Thus, the block encompassing the western part of the project lies within the Chinatown Special District, as do the Melcher's, Bishop Estate, and Bank of Bishop & Co.

buildings, which abut the main portion of the project site. (See Table 1 for a list of historic buildings and identification of each building's status, in the project vicinity.)

TABLE 1: Register Status of Historic Buildings in Project Site Vicinity

	Building/District Name	Date	Register Status
1.	Aloha Tower	1926	NR & HR-I
2.	C. Brewer Building	1930	NR & HR-I
3.	Judd Building	1899	
4.	Chinatown Historic District		
	4a. T.R. Foster Building	1891	NR & D
	4b. The Nippu Jiji Building	1899	NR - B in D
5.	Merchant Street Historic District		NR - D
	5a. Bishop Estate Building	1896	NR - B in D
	5b. Bank of Bishop & Co.	1878	NR - B in D
	5c. Melcher's Building	1853	NR - B in D
	5d. Honolulu Police Station	1930	NR - B in D
	5e. Royal Saloon	1890	NR - B in D
	5f. J.T. Waterhouse Building	1870's	NR - B in D
	5g. Yokohama Specie Bank	1908	NR - B in D
	5h. Kamehameha V Post Office	1870	NR - B in D & I
	5i. Wing Wo Tai & Co. Building	1916	NR - B in D
	5j. The Friend Building	1887	NR - B in D
	5k. McCandless Building	1906	NR - B in D
6.	Stangenwald Building	1901	
7.	Alexander & Baldwin Building	1929	NR - HR-I

LEGEND:
- NR = National Register
- HR = Hawaii Register
- I = Listed on Register(s) as Individual Building
- D = Listed on Register as District
- B in D = Historic Building within National Register District

SOURCE: Hawaii Historic Places Review Board (February 1985). Listing by Island of Sites on National and Hawaii Registers of Historic Places. Author: Honolulu.

Within the context of downtown Honolulu, the project site is identified in the Gruen Plan (Gruen & Associates, 1968), which provided a vision for revitalization of the Central Business District, as part of the Commercial Core Superblock bounded by Beretania Street, Nuuanu Avenue, Nimitz Highway, and Richards Street. The activities encouraged by the Gruen Plan for this superblock were mixed development of multiple land uses, such as retail-commercial, financial institutions, offices, hotels, apartment hotels, public and semi-public uses, theaters, and restaurants. The proposed project comprises the land uses and activities consistent with the guidelines set forth by the Gruen Plan. While the project site has remained somewhat "isolated" from the recent urban growth of the financial district of the CBD by virtue of the proximity of the Kaahumanu Parking Structure to the various

government offices, the proposed redevelopment of the site envisions a more dynamic synergy between and among the prospective activities and downtown Honolulu as a whole.

2.3 NEIGHBORHOOD CHARACTERISTICS: DEMOGRAPHICS AND ECONOMIC CONDITIONS OF STUDY AREA RESIDENTS

The project site is located in Neighborhood Board No. 13, the boundaries of which are defined as:

> "Beginning at the intersection of H-1 Freeway and Ward Avenue, south along Ward Avenue to Beretania Street, west along Beretania Street to Alapai Street, south along Alapai Street to King Street, west along King Street to South Street, south along King Street to Ala Moana Boulevard, east along Ala Moana Boulevard to Keawe Street, thence south along Keawe Street and a straight line extended, thence west along the coast line to a straight line running parallel to Pier 17 which extends to Honolulu Harbor, thence in a straight line north to King Street thence north along Nuuanu Stream to School Street, thence east along School Street to Nuuanu Avenue, thence south along Nuuanu Avenue to the H-1 Freeway, thence east along the H-1 Freeway to Ward Avenue." See Figure 1.

This neighborhood board designation encompasses the downtown Honolulu area which, according to data from the U. S. Bureau of Census, comprises several census tracts–numbers 39, 40, 41, 42, 51 and 52. While the Neighborhood Board-designated area and the combined census tracts for downtown are not identical, many of the indicators are similar, thus enabling long-term trends to be studied by both study area designations.

2.3.1 Downtown Honolulu Overview

According to the 1980 census, 8,674 persons lived in Neighborhood Board No. 13 (N13) in 1980. They comprised 1.1 percent of the total population surveyed, or 762,534. Among the 8,674 persons in N13 Downtown, 13.7 percent, or 1,185 were under 15 years old and 13.7 percent, or 1,187 were 65 years or older. The neighborhood's median age was 34.4 as compared with that of the total survey population, or 28.1 years.

Of those 25 years old or over, 20.5 percent had a grade school education or less, and 70.2 percent were high school graduates, including 41.3 percent who had completed one or more years of college. About 22.6 percent of the population of 25 years old and over had completed 4 years or more of college.

Occupation describes the kind of work done by a person, whereas the industry classification of a person's job describes the main activity of the employer. Residents of this neighborhood were employed in the following industries: 897 persons were employed in retail trade, 847 persons were employed in professional and related services, and 529 persons were employed in public administration.

Of the 4,940 employed persons in N13 Downtown, 76.6 percent worked for wages or salary for a private company, business, or individual. Another 18.1 percent held local, state, or Federal government jobs. The self-employed represented 5.2 percent of the employed.

The median income in 1979 of households in N13 downtown was $14,631. The 1980 census showed that of the 4,406 year-round occupied housing units in N13 Downtown, 20.8 percent were occupied by owners and 79.2 percent by renters. The median value for specified owner-occupied homes (i.e., single-family houses without a commercial establishment or medical office on the property) was $90,000 as compared to $130,400 for the total survey area. The median contract rent paid for rental housing units in the neighborhood was $262 as compared to $279 for the total survey area.

2.3.2 The Project Site and Vicinity

For a closer look at the population and economic characteristics as delineated by the U. S. Census Bureau, the following tables and analyses have been prepared for the social impact assessment.

CENSUS TRACT 40-- "Downtown": Bounded by Nuuanu Avenue, South Beretania, Richards Street and Nimitz Highway; referred to as the Central Business District. The project site is located in CT40.

Primary Study Area (Census Tract 40): About a thousand people lived in Downtown Honolulu in 1985. This area's population has experienced modest growth since 1980.

Table 2: POPULATION TRENDS, CITY AND COUNTY OF HONOLULU AND STUDY AREA, 1950 TO 1985 (ESTIMATED)

	April 1, 1950	April 1, 1960	April 1, 1970	April 1, 1980	April 1, 1985
City & County of Honolulu	248,034	500,409	630,528	762,565	811,096
Approx. Downtown Neighborhood Board Area*	15,152	10,800	7,027	10,361	11,562
Census Tract 40	2,051	288	100	820	1,066

AVERAGE ANNUAL RATE OF GROWTH

	1950-60	1960-70	1970-80	1980-85	1950-85
City and County of Honolulu	7.3%	2.3%	1.9%	1.2%	3.4%
Approx. Downtown Neighborhood Board Area*	-4.0%	-3.5%	4.0%	2.1%	-0.8%
Census Tract 40	-6.6%	-10.0%	23.4%	5.1%	-1.7%

NOTE:
* The Approximate Downtown Neighborhood Board Area comprises Census Tracts 39, 40, 41, 42, 51, and 52. While it is not identical with the Downtown Neighborhood Board area, it is comparable for analysis of long-term trends.

SOURCES: U.S. Bureau of the Census, 1972, 1981a; Hawaii State Department of Planning and Economic Development, 1973; Hawaii State Department of Business and Economic Development, 1988.

2.4 ISSUES AND CONCERNS OF THE WIDER COMMUNITY

2.4.1 Statewide and Islandwide Issues/Concerns

Current issues which concern Oahu residents are reflected in opinion polls-- major issues include housing and traffic congestion or transportation.

The 900 residents surveyed in late October and early November, 1989 for SMS Research and Marketing Services, Inc.'s Quarterly Consumer Study of December, 1989, identified housing and transportation as major issues. Protection of the environment (examples are geothermnal, oil spills, and quality of drinking water) began to concern those surveyed in late 1989 (personal communication, James Dannemiller, SMS Research and Marketing Services, Inc., February 24, 1990). In fact, according to Mr. Dannemiller, the environment will probably be the emerging issue of the 1990's.

Concerns related to tourism have lessened, while no relative change was found with regard to development in Hawaii. The concern about education lessened by the end of

1989. Land use issues have been important to increasing numbers of respondents in recent years, but due partly to the complexity of the issues, these are still not major concerns.

Respondents to a February 1988 poll mentioned traffic most often as a problem "that government should do something about," (Keir, 1988a). The cost of housing, the quality of public education, and crime were mentioned less often, but by at least a fifth of the sample.

Jobs, crime, traffic, education, and housing were priorities for Oahu residents according to earlier surveys (Aloha United Way and the Health and Community Services Council, 1987). Concern over traffic increased markedly during the 1980's, to emerge as the major issue by 1987.

Foreign investment has been much discussed by community groups, local government leaders, and the media. When polled in 1988, most of the 701 individuals surveyed opposed the purchase of land in Hawaii by foreign investors for several different reasons/purposes (Keir, 1988b, 1988c). However, in response to open-ended questions, Oahu residents have not identified foreign investment as an issue of major concern (Community Resources, Social Impact Assessment for the Proposed Alii Place, September 1989).

2.4.2 Downtown Neighborhood Residents' Concerns

This area's population is slightly older than the islandwide community with the Downtown Neighborhood Board having a median age of 34.4 years in 1980, while the island's median age was 28.1 years.

Residential structures are predominantly highrises and are distributed throughout this area. Like the Ala Moana-Kakaako neighborhood, the Downtown area's household size (1.85 persons) and family size (2.72 persons) were smaller than Oahu's average household size of 3.1 persons and family size of 3.62 persons.

This area has two very distinct communities. In the financial and office district, which is commonly referred to as "downtown," the residential community is more affluent and generally well-educated. The other community is commonly known as Chinatown. Residents here are less affluent and less educated. The Chinatown population is more ethnically diverse than that of the financial district of downtown. (Earthplan, Social Impact Assessment report for the Honolulu Waterfront Master Plan, 1989.)

The Downtown Neighborhood Board No. 13 minutes and newsletter indicate some of the concerns of the residents of the project area. The Downtown Neighborhood Board represents residents of an area with diverse and growing uses. The following is a summary of minutes of the Downtown Neighborhood Board No. 13 for the period of September 1986 through February 1990.

Overall, the Downtown Neighborhood Board minutes indicate that this Board is open to the community changes. In many cases, there is some support for public and private development proposals, although this support is increasingly tempered by apprehensions on how to accommodate the growing residential community. For example, the Board did not support the City's residential proposal at Smith and Beretania Streets-- instead, it expressed a desire for a park and underground parking to serve nearby residents.

The Board is also concerned about neighborhood safety after downtown business hours, and seeks to upgrade the area by eliminating the adult entertainment facilities along Hotel Street. An ongoing issue is how to address the needs of the homeless. This Board often expresses interest in islandwide issues and participates in a number of forums which addresses transportation and major developments.

Other major issues and concerns include:

* **Parking and Traffic Congestion.** Board members raised questions about parking in Fort Street Mall, Union Mall, and sidewalks-- areas normally reserved for pedestrians. Even plans to establish a "Mayor's Performance Hotline" at Iolani Palace prompted questions from the Board regarding the parking needs of the service.

In discussions, residents showed some tolerance for congestion on roads and sidewalks. The Board supported efforts to alleviate rush-hour traffic by staggering work hours and favored a legislative bill to encourage ride-sharing. Board members have identified congestion due to commuter traffic as a concern.

* **Safety and Security.** Board members were generally favorable to the Police Department's foot patrols, although one resident hoped to see more patrols. One resident reported that he felt unsafe on foot at night.

Others discussed prostitutes in Aala Park and residential areas a a problem. Graffiti, loitering youths, and drunk driving were also discussed.

* **Proposed Projects in the Downtown Neighborhood area.** The Board discussed plans for several developments, including the River/Nimitz building, the commercial area at Hale Pauahi, the Pacific Nations Center, the Pan Pacific Plaza, the Alakea/Richards Redevelopment project, and the Aloha Tower Development project. Other projects located in adjacent areas were discussed, including the updated Kakaako Makai Area Plan. In other discussions, Board members and other residents expressed concern with:

- The preservation of open space;
- Encouraging residential development, especially for families with children, in the city center;

- Traffic and parking problems during and after construction; and,
- Design aesthetics.

The Board voted unanimously that parking facilities should not be displaced due to new residential or commercial developments. The Board also expressed concern for the ability of the zoning system to accommodate the transportation, utility, and recreational needs which increase with the number of proposed Downtown developments.

The Board accepted a Downtown Improvement Association study showing that more office and parking space are needed in downtown.

A mailed survey to Downtown Neighborhood Board area residents in 1986 gathered 166 responses-- only three percent of the households surveyed (Honolulu City and County Neighborhood Commission, 1987). While the survey had a low response rate, the tabulation can indicate some of the opinions held by the respondents at the time. Respondents rated public services; i.e., the bus system, police, sanitation, and "health and safety" as "Excellent" or "Good." In written comments, some residents expressed concerns with respect to pedestrian safety and noise (Community Resources Inc., Social Impact Assessment for Alakea/Richards Parking Garage EIS, September 1989).

2.4.3 The Downtown Business Community's Concerns

Some of the concerns of the downtown business sectors have been expressed by the Downtown Improvement Association (DIA) of Honolulu and the Chamber of Commerce of Hawaii. The DIA was founded in 1958 to work for the redevelopment of downtown Honolulu. It originally urged development for business, government, and retail activities in the central Honolulu area (Downtown Improvement Association, February, 1988). As retail trade moved away from the Central Business District (CBD), the DIA has come to support separate development for the downtown business district and the government center.

The DIA views steady growth of office space and parking in downtown Honolulu as a priority. It supports orderly growth to allow decision makers to plan for expansion, and to minimize risks in development.

The organization has repeatedly urged that land use regulations for downtown Honolulu be changed to increase allowable density by 20 percent and to raise building heights from 350 to 500 feet (DIA, August 1986, and June 1989).

A majority of delegates to a September 1984 convention of the Chamber of Commerce of Hawaii, established in 1850, voted in favor of private redevelopment of downtown Honolulu, and in support of government development of the Aloha Tower area for maritime, business, and recreational uses (Chamber of Commerce, 1985). In 1986,

Chamber of Commerce delegates voted in favor of continuing redevelopment of downtown areas statewide, and maximum building densities in downtown Honolulu (Chamber of Commerce, 1987). The Chamber's 1988 review of downtown development led to a re-affirmation of the 1987 position (Chamber of Commerce, 1989).

3.0 FORCES FOR CHANGE INDEPENDENT OF THE PROJECT

Major development projects occurring and proposed to occur in the foreseeable future in Honolulu's CBD and vicinity are expected to increase both the inventory of office space and the desirability of adjacent areas to residents and visitors. The overall economic impact is expected to be increasing activity to facilitate the growth and vitality of metropolitan Honolulu. Major projects are underway in various stages of development. Overall, these projects will not only increase the supply of offices and other mixed uses, but will also expand the boundaries of the central downtown Honolulu area. Further, large-scale projects, such as the Aloha Tower development, are scheduled to be completed after the proposed Kaahumanu project opens.

With new support from the State on the prospective rapid transit system for Oahu, long-range transportation options to commuters in Honolulu will increase. However, because the projected office and commercial/retail developments are expected to be completed prior to the start up of a rapid transit system, close coordination will be necessary to assure maximum usefulness of the transit line to users in terms of convenience and service to the critical mass. Nonetheless, construction of major development projects of the State and the City and County are expected to have short term impacts on parking availability and traffic in the primary urban center of Honolulu. Interim parking plans which will minimize these short term construction related impacts.

3.1 GOVERNMENT PROGRAMS FOR THE PRIMARY URBAN CENTER

Both the State and the City and County are actively proceeding with their redevelopment programs in the central area of Honolulu's primary urban center. The State's major efforts are in the development of the waterfront. Meanwhile, the City has identified underutilized parcels it controls and has sought to redevelop these.

The development projects being pursued by both the State and the City and County may simultaneously spur revitalization of the central business district's commercial/retail activity as well as expand the borders of the downtown Honolulu CBD particularly with the active development programs at the Aloha Tower and in Kakaako makai and to the east, and Chinatown to the west.

In late December 1989/early January 1990, the State selected Aloha Tower

Associates to negotiate the lease and development agreement for the Aloha Tower project. If built as planned, the Honolulu waterfront will add more than 2 million square feet of office, retail, parking and residential space to downtown. The development will include a two-story mix of retail shops, eight movie theaters, and an entertainment center extending from Irwin Park directly through Pier 9. A pedestrian promenade will extend from Piers 5 to 14, with a 110 +/- room business-class hotel complex at Piers 10 and 11. This project will add 400,000 square feet of office and commercial space; and 270 residential units. A historic park on Pier 12 will be developed. Parking that will be provided are: 600 stalls at a new Maritime Building and Terminal at Piers 5 and 6; 2,000 stalls at the hotel-office complex at Piers 8 through 11, and 405 at the condominium towers at Piers 12 through 14. Pier 8 will berth the proposed high-speed commuter ferry.

Construction of this development is expected to begin in early 1991, and continue in various phases until completion in Spring 1995. Completion of the business hotel is anticipated to be late 1994 ("Pacific Business News," Jan. 8, 1990).

The State's planners view the Aloha Tower site as providing "a unique identity and environment that incorporates the historical maritime aspects of the waterfront with the modern central business district of Honolulu," (Honolulu Waterfront Master Plan, 1989). The historical emphasis links this area with both the Chinatown waterfront and the Kakaako waterfront, where two museum sites are designated in addition to the existing Hawaii Maritime Center (within the primary project area).

The City and County of Honolulu has not issued comprehensive plans, but has pursued a policy of redevelopment in the primary urban center of Honolulu. The City's goals/policies for redevelopment include:

- providing housing;
- encouraging retail and recreational development in Chinatown;
- beautification;
- countering impressions that the urban core is not a safe area, and thereby encouraging evening and night activity; and
- promoting employment.

The following provides a description of projects (planned, proposed or under construction) that are sponsored by the City and County as part of the implementation of the policy of redevelopment as stated above.

PROJECT	UNITS	PROPOSED DEVELOPMENT
RIVER NIMITZ Location: Municipal parking lot at the corner of River Street and Nimitz Hwy.	90	Proposed Development: 60 - one-bedroom rental units 30 - two-bedroom rental units 3,933 sq. ft. commercial space 5,028 sq. ft. office space 139 parking stall Target Market: 33-1/3% - low/moderate income households 33-1/3% - gap group income households 33-1/3% - market prices
MAUNAKEA SMITH Location: Chinatown. Parking structure bordered by Nimitz Hwy., Maunakea and Smith Streets.	262	Residential: 22 - studio rental units 112 - one-bedroom rental units 128 - two-bedroom rental units Commercial: 18,660 s.f. Parking: 461 stalls (260 for public use) Target Market: (Rental Units) 20% - low/moderate income households 40% - gap group income households 40% - market prices
SMITH BERETANIA Location: Chinatown. Municipal parking lot bounded by Beretania, Smith and Pauahi Streets.	--	Underground parking w/park and child care center above. (420 stalls, 25,000 s.f. park, 10,000 s.f. day care and 30,000 s.f. commercial space)
PACIFIC NATIONS CENTER (BLOCK J) Location: Central Business District. Site bordered by Fort Kukui, Queen Emma and Beretania Streets.	--	Large commercial mixed-use complex containing approximately 1.2 million square feet. Securities exchange facility to be housed in project.

KEKAULIKE PARKING LOT Location: Chinatown. Site bordered by Maunakea and and Kekaulike Streets between King and Hotel Streets.	132	Residential: 84 - studio units 42 - one-bedroom units 6 - two-bedroom units Commercial: 40,000 sq. ft. Parking: 258 stalls (126 for public use) Target Market: (See Maunakea Smith)
PARK PLACE Location: Iwilei. Site bordered by King Street, Nimitz Hwy., Iwilei Road and Nuuanu Stream	420	Residential: 211 - one-bedroom units 211 - two-bedroom units 50% sales and 50% rental units Commercial: 19,000 sq. ft. Parking: 422 stalls Target Market: To be determined.
FOSTER GARDENS ESTATE Location: Site bordered by River, Kukui, Nuuanu Avenue, and Vineyard Boulevard	1,600	Residential: 800 sales and 800 rental units Commercial: 73,000 sq. ft. Parking: Not Determined Target Market: To Be Determined
ALAKEA-RICHARDS PARKING FACILITY Location: Hawaii Capital District. Site located between Alakea, Hotel and Richards Streets	N/A	• 24-story office bldg of 232,537 s.f. • 9,088 s.f. retail commercial space • 1,000 parking stalls • Development to have 70,715 s.f. of office space and 235 parking stalls dedicated to the City.

CHINATOWN GATEWAY PLAZA Location: Hotel Street between Nuuanu Avenue and Bethel Street	200	Residential: 200 one-bedroom rental apartments Parking: 275 parking stalls Commercial: 25,000 s.f. Pedestrian Plaza: 27,000 s.f. Target Market: 20% low/moderate income households 40% gap group income households 40% market income households
PROPOSED PROJECT Kaahumanu Parking Garage Redevelopment	122	Residential: 122 two-bedroom units totaling 171,000 s.f. Parking: 1,035 stalls Office: 220,500 s.f. Retail: 40,800 s.f.

The City and County projects have tended to implement the notion of the urban center as a mixed-use area, simultaneously encouraging residential, retail, and office development.

3.2 LAND USE ACTIVITIES OF THE STATE AND NON-PROFIT GROUPS

The State Department of Accounting and General Services is, at present, seeking funds during the 1990 State Legislative session to do some restoration and renovation of the Kamehameha V Post Office Building located across from the project site on Merchant Street.

Other activities occurring on the northeast side within the CBD are:

- The ongoing renovation of the Iolani Palace grounds by the State and the Friends of Iolani Palace. The goal of the master plan is to restore the grounds to replicate the site as it was during King Kalakaua's period. There are plans to replace the existing blacktop (asphalted) areas with landscaping and carriage paths. The Friends of Iolani Palace also plans to shorten the length of tours thereby allowing for more visitors to the Palace and its grounds. This will tend to increase the the number of tourists in the CBD.

3.3 SPECIFIC PROJECTS IN PROGRESS OR PLANNED FOR CENTRAL HONOLULU

By the time the project is completed in 1993, other buildings in and within the vicinity that are currently under construction or planned for development are expected to be completed. These include:

Residential:

- Chinatown Gateway Plaza residential project (described in Section 3);
- River-Nimitz Housing;
- Honolulu Park Place condominium tower;
- Aloha Tower Condos;

Office/Commercial/Retail:

- Aloha Tower Festival Marketplace (310,000 sf of commercial space);
- Hawaii National Bank Building (140,000 sf of office space open in 1990);
- Alii Place (240,000 sf of office/commercial);

In the short term, new office space in the Honolulu CBD is not expected to expand the existing inventory significantly. However, when the project is completed in 1993 and thereafter, substantial increases to the office inventory in the CBD and vicinity are possible. The potential magnitude of additional inventory can be found in projects such as the Pacific Nations Center (650,000 sf); Pan Pacific Plaza (26,000 sf); Merchandise Mart redevelopment (200,000 sf).

One analyst has suggested that, with the opening of Pan Pacific Plaza, the downtown office supply will shift from a "landlord's market" to a "tenant's market" (F. Veregge, 1989). On the other hand, it is also possible that the additional space will simply meet pent-up demand, and the vacancy rate will remain relatively low until after the project is completed (Parsons Hawaii, 1989).

3.4 PARKING, TRAFFIC ISSUES

Traffic congestion has been identified as a problem in downtown Honolulu (See Neighborhood Board discussion in Section 2). As the office inventory increases, traffic

congestion will likely increase with additional workers and people doing business in the CBD arriving in the area. As a long range means to help alleviate the problem, the State and City and County are coordinating plans for a rapid transit system in Honolulu. Other programs to improve matters in the shorter term include: State initiatives to encourage staggered hours commuting, a demonstration telecommuting project, and the use of contra-flow lanes on major highways. The State is currently planning a water transit system for Oahu commuters, with a terminal site tentatively identified as Pier 8 beginning servicing commuters from West Oahu in 1992. The City and County has expanded its bus fleet to provide increased mass transit opportunities.

Business interests and residents have noted that by actively redeveloping several sites now used for parking lots, the City and County may reduce the Downtown parking supply during the construction period (Downtown Improvement Association, July 1989). In response to this concern, the Department of Housing and Community Development outlined the steps to be taken to mitigate the problem:

- New facilities, now under construction, at Bethel-Hotel and River-Nimitz, could be opened as soon as possible and prior to the completion of these; i.e., the River-Nimitz parking stalls could be opened before construction of the residential component is completed.
- The scheduling of some projects could be slowed to avoid a sudden withdrawal of a number of stalls from the downtown inventory.
- Additional stalls outside the CBD could be made available to the public; e.g., at the Alapai City office building site, and at the Neal Blaisdell Center.
- New parking facilities can be developed.

The State has been criticized with regard to parking facilities. Asbestos removal at the State Capitol will necessitate closing some stalls. The State has identified lots at which additional parking can be created.

The overall increase in office space by mid-1992 is expected to amount to about 20 percent of existing inventory. The increase in parking will be about half the increase in office space. Consequently, the supply of parking is likely to become even tighter in the near future.

4.0 SOCIAL IMPACTS

This section contains discussions regarding the potential social impacts of the project, and appropriate mitigation measures where appropriate. The major impacts include:

- Displacement of current activities on-site;
- Historic structures adjacent to and within the vicinity;
- Population impacts of the project;
- Impacts on adjacent businesses and other nearby land users;
- Impacts on the wider community;
- Issues identified by members of the community relative to the project; and
- Mitigation measures for possible adverse impacts or problems identified by members of the community.

Employment and income impacts are separately discussed in environmental impact statement. The discussion of population in this social impact assessment is based on assumptions about operational employment developed for the environmental impact statement.

The major social impacts of this project include impacts on historic, adjacent structures, on businesses and other activities, and contributions to the development of Honolulu's urban center. Adverse impacts will be most felt by the immediately adjacent buildings -- Old Bishop Trust Building and the Melcher's Building-- during project site demolition and construction. Construction methods to minimize damage to these structures will have to be utilized. Similarly, other businesses on Merchant Street and adjacent areas, will experience inconveniences during construction, such as lack of convenient parking for clients, and noise from construction equipment.

4.1 DISPLACEMENT OF EXISTING ACTIVITIES

The project site is now utilized for public parking on the larger lot (parcels 16, 56 and 20) and parking for City and County employees on ewa parcel 26. Thus, the displacement impacts of this project refer to activities of persons who use the site, and not on residents per se.

Displacement impacts will be limited. The 462 parking stalls on the project site will be temporarily displaced during the construction period, and replaced on-site in the new highrise complex. Interim parking plans by the City and County's Housing and Community Development Department include alternate parking sites during construction, between late

1991 and until completion of the project in 1993.

In order to avoid the taking away of on-street parallel parking stalls on Bethel and Marin Streets and Nuuanu Avenue during construction, construction workers will be required by the contractor to park at a designated off-site parking lot and transported to and from the construction site daily.

Upon completion of the new project, 1,035 parking stalls will be available for public use.

4.2 IMPACTS ON HISTORIC BUILDINGS

The project site is directly adjacent to two historic buildings on Merchant Street: on the ewa corner at Merchant and Bethel is the Melcher's Building, occupied by City and County Housing and Community Development Department's Rehabilitation Loans and Inspections branch. Located on the Diamond Head corner is the Old Bishop Bank Building, owned by Harriet Bouslog, a law corporation, and occupied by several attorneys' offices.

The Melcher's Building will not be included in the project except for allowable floor area calculation purposes. After the start of construction, the Melcher's Building site will be legally separated from the project site.

The Old Bishop Trust Building adjoins the project site. The building is separated on the makai wall from the existing municipal parking structure by a narrow, triangular strip of land, approximately 15 feet in length. Negotiations are underway to include some or all of the building in the project. At this time no commitments have been made.

4.3 POPULATION IMPACTS

Two types of population are calculated for new development projects-- residential population and de facto population. The former involves people living at the project site. The latter involves people present at any given time, including, for example, workers and customers.

4.3.1 Residential Population

The project as proposed in the Draft Environmental Impact Statement will add to the residential population of the area as it contribute 122 hotel/condominium apartments to the available housing stock. The condominiums are each planned to have two bedrooms and two baths.

An estimate of the population added at the project site can be derived from the reported density of population of the project area. A recent estimate (Honolulu Department of General Planning, 1987) shows for 1985:

Project area population	7,983 persons
Total housing units	4,313 units
Persons per unit:	1.85

Applying the ratio derived above, the project site will have a resident population of approximately 225 persons when the condominium units are fully occupied.

4.3.2 Relationship of Resident Population to City and County Population Guidelines

The City and County's General Plan mandates the establishment of guidelines for growth in the different Development Plan areas of Oahu. The potential increase in the primary urban center's residential population attributable to the project is small compared to the growth projected by City guidelines (see Table 2). The project's population impact thus concurs with City policy.

Population projections to the year 2010 provided by the Department of Business and Economic Development (DBED) known as "M-K Series" shows population growth in the primary urban center, although this area is expected to account for a slightly smaller proportion of the island population than it does currently. The increase in number of people expected by this project is well within the projections indicated by DBED.

The City's Department of General Planning also estimates the "population capacity" of different areas, based on information about land zoned for residential use. The most recent review of the data shows 550 acres of land in the primary urban center area to be available for development, which could support 22,236 new housing units and a population of 166,317 in addition to the existing population (Parsons Hawaii, 1989).

TABLE 2: POPULATION GUIDELINES FOR THE PRIMARY URBAN CENTER

	Primary Urban Center	Project Site Number	Project Site Percentage of PUC
December 1987 population (1)	448,340		
1987 population as percentage of total City & County population	53.8%		
2010 population range (M-K Series projections) (2)	457,900 - 506,500	225	.05%
Difference between 1987 and upper 2010 population estimates	58,160	225	.4%

(1) City and County Department of General Planning (1988), Parsons Hawaii, 1989.

(2) Department of Business and Economic Development (DBED) 1989.

4.3.3 De Facto Population

An estimate of on-site population for periods of full occupancy and high business activity was derived with several assumptions, and is shown in Table 3. This estimate for the purpose of discussing a worst case scenario.

TABLE 3: DE-FACTO POPULATION AT DAYTIME PEAK

Segments of the Population	Number of People
Residential Population @ 1.85 persons/unit (assuming half the residents are on-site at peak time (1)	225
Office Workers (2) 1 person per 200 s.f. 245,500 s.f.	1,227
Retail space (3) 1 person per 30 s.f. 37,600 s.f.	1,253
Restaurant space (4) One-quarter of occupancy load (Occupany load: 1 person per 15 s.f.) 11,000 s.f.	183
Total:	2,888

NOTES: (1) While the project identifies the residential component as a hotel/condominium, for this analysis, a permanent residential configuration was assumed as the population ratio to space is higher.

(2) John Child and Company, 1989.

(3) Parsons Hawaii, 1989.

(4) ibid.

The project's peak day time de facto population is estimated at 1,784 persons. This projection is intended to illustrate a worst case scenario with maximal estimates of on-site population. It represents prototypical activity on a weekday that is also a peak shopping day, such as a Friday before Christmas. On most weekdays, fewer customers would be expected in retail spaces.

4.4 IMPACTS ON NEARBY LAND USERS

Possible impacts of the project on nearby business activities and government offices will differ in the construction and operational phases. Two small parks– the historic site of Honolulu's first customs office (approximately 25,000 s.f.) and Walker Park on Queen and Nimitz – are located on Merchant Street mauka of the Bouslog Building, and at the ewa end of the Amfac building, respectively. The parks provide urban respite areas, and are utilized as a resting area during weekdays at lunch time. Adverse conditions during construction will probably discourage use of this park by office workers during the week.

4.4.1 Construction Phase

Noise, dust, and occasional obstructions may make pedestrian access along the edge of the project site unpleasant thereby dissuading some from traversing this section of Bethel and Merchant Streets to get to and from destinations on this edge of downtown Honolulu. However, for the most part, passage along the perimeters of the project site will remain open.

4.4.2 Operational Phase

The project will increase the local (residential) and worker population. Thus, utilization of this park will probably increase. The commercial space at the project site is expected to attract commuters who use the water transit (planned at Pier 8) or rapid transit (a station is tentatively planned on the makai side of the project site) while waiting for their ferry or train. The project could include retail and food establishments where commuters and future downtown residents would frequent at night.

4.5 GENERAL SOCIAL IMPACTS

The preceding sections dealt with specific impacts of the project on identifiable segments of the community. The project is expected, however, to have wider effects. This section contains discussion of major impacts that can be expected based predominantly on views expressed by members of the community in interviews.

The project is one of a series of developments planned or underway in central Honolulu. It will have impact as it contributes to the cumulative changes in Honolulu. This development's multi-use mixture contributes to the revival of the CBD as a vibrant residential area of central urban core, characteristic of the early Honolulu waterfront which offered 24-hour activities by way of not only business, but entertainment as well. The project is intended to be the focal point of several new developments where the financial district of Honolulu and Chinatown meet. The Aloha Tower development's festival marketplace is scheduled to be completed approximately at the same time the Kaahumanu project is. The expansion of commercial, retail and entertainment activities in the waterfront and Chinatown areas of central Honolulu appear to indicate a large scale effort to revitalize the concept of providing future residents of downtown the comforts and conveniences of living in downtown Honolulu around the clock. Two major cumulative impacts of the projects projected for the area are that:

(1) The Kaahumanu project will offer evening and weekend activity in downtown Honolulu. It will contribute to efforts to make downtown an after-hours destination by attracting people downtown and by housing persons who either need to be on call during the State Legislative session, on general business, or interested in entertainment downtown.

Its central location in the CBD, proximity to the waterfront, and to Chinatown places the project in a position to attract after-hours clientele.

(2) While traffic congestion may be apparent during construction of the project, the long term, cumulative impact will be positive as persons needing to do business or arriving at work on-site will have other transportation options including rapid transit and the water transit. Individuals whose destination are the project site and its vicinity are likely users of alternative transportation modes due to the anticipated stations as presently shown.

4.6 ISSUES AND CONCERNS EXPRESSED BY MEMBERS OF THE COMMUNITY REGARDING THE PROJECT

4.6.1 Sources of Information

During the course of preparing this social impact assessment, interviews were conducted with 18 persons, to identify issues and concerns of members of the community regarding the proposed Kaahumanu Parking Structure Redevelopment project. (Interviewees are listed in Table 4.)

Interviews were conducted with the objective of learning about the concerns of four groups:

- **Residents** of the study area and buildings near the project site;
- **Adjacent neighbors** who either own properties, businesses, or are tenants;
- **Nearby**-- persons who either own land, work for or are involved with organizations in the blocks adjoining the project site (office buildings, other); and
- **The Downtown business community.**

In the interviews, persons were asked to comment on the impact the project would have on themselves and others they knew. They were not asked to take a position for or against the project.

The individuals interviewed were asked to comment as knowledgeable members of the community, not as representatives of their organizations. Organizational affiliations are shown in Table 4 only to indicate the experience and interests of the persons consulted. The persons interviewed were told that their views would be summarized in this social impact assessment and that individual conversations would remain confidential. For some, the project needed no introduction; others discussed the project after information in the EIS Preparation Notice for the project was summarized.

TABLE 4: PERSONS INTERVIEWED AS OF FEBRUARY 27, 1990

Name	Organization/Affiliation
1. Andrew Rothstein	Downtown Neighborhood Board #13, Chair
2. William A. Grant	Downtown Improvement Association, Executive Director
3. Bob Stauffer for Gary Gill	Senior Aide to the Chairman, Econ. Development and Transportation Services, Honolulu City Council, District 6 (incl. downtown)
4. Lynne Matusow	Downtown Neighborhood Board #13, Head of Planning Committee
5. Berna Cabacungan	Resident, Harbor Square
6. Mark Bernstein	Attorney-at-Law, in the Bouslog Building
7. Gordon Arakaki for Robert B. Robinson	Chamber of Commerce of Hawaii
8. Phyllis Fox	Historic Hawaii Foundation
9. Randy Iwase	Aloha Tower Development Corporation, Executive Director
10. Joyce Miyake for Linda Wu	L & W Associates, Realtors, owners of Merchant Square
11. Mark Hastert	Aloha Tower Proposal Evaluation Team, Helber Hastert Kimura Planners
12. Kevin Sumimoto	Living Interiors, owner/manager
13. Buzz Paxton	Commission on Fort Street Mall
14. Don Murphy	Murphy's Bar & Grill, owner/manager
15. Dave Pellegrin	Honolulu Publishing Co., Chairman
16. Duncan F. Dempster	Bankoh Corporation, Vice President
17. Teuane Tominaga	State Department of Accounting and General Services, State Public Works Engineer
18. Ed Igarashi	State Department of Human Services Administrative Services Officer

4.6.2 Overview of Community Issues and Concerns

Interviews were conducted between late January and February 1990. Descriptions of the development were of the project as of this point in time were not yet final. Thus, the views discussed in this summary are an indication of how a sample of the community viewed the project at a given time.

The interviews were conducted to identify issues, not to establish the extent of support or opposition in the community. (Quantitative information about support for the project or issues of concern to the community at large would be best gathered through a formal polling process.) Some individuals chose, however, to explain why they supported or opposed the project.

Different groups of persons interviewed had different views of the project. Two concerns were, however, widely shared:

- **Parking:** Concern was expressed for the loss of public parking during construction and the amount of public parking included in the project. Most interviewees considered downtown public parking inadequate.

• **Construction Related Impacts:** The blockage of street lanes and traffic disruption during construction were frequently discussed by neighboring businesses.

In both cases, many key informants expressed concern because they saw existing conditions as causing problems. Any impact attributable to the project would then exacerbate a bad situation. Some did not necessarily see the project as having major traffic or parking impacts in itself.

Persons involved in enterprises without parking were most concerned with the supply of public parking. They were likely to mention their customers' or clients' need for public parking. Employers in the vicinity were also concerned about the lack of parking for their employees.

Table 5 summarizes much of the interview data by identifying, for each set of interviewees, how often different issues were mentioned or found to be important. The distinction between primary, additional and occasional concerns is based on analysis by R.M. Towill Corporation of the strength of different concerns at the time of the interview.)

TABLE 5: ISSUES MENTIONED IN INTERVIEWS

The issues listed in this table are expanded in the accompanying text. This table shows topics mentioned relatively often in the interviews. It is not a list of all the issues discussed, but of issues that emerged as important for members of the groups identified below.

Different groups sometimes approached the same issue with different concerns, so the listing of an issue in two rows does not mean that two groups agree on that issue.

Groups of Persons Interviewed	Primary Concerns	Additional Concerns	Occasional Concerns
Residents	Open Space Traffic	Construction impacts	Bldg design
Adjacent Neighbors	Construction impacts Traffic Parking spaces Damage to adjacent buildings	Views, light, and air pollution	Access
Nearby Activities	Parking for customers, citizens visiting government buildings, employees Traffic	Viewplanes Noise	Infrastructure systems Competition
Downtown Business Community	Office/retail space	Not enough demand for market residential in downtown	Foreign investors

Members of each group did not all share a single point of view, but there were important common tendencies in each group:

Residents: Area residents had mixed responses to the project. Most welcomed the project's commercial space, restaurants, and residential component.

Almost all area residents stressed that open space was very limited in the area. Many sought more space for outdoor recreation. Some felt that the project needed to provide some share of the City's park dedication requirements. Overall, the need for more recreational areas for residents in the CBD for exercise and relaxation was emphasized.

One expressed the need for a bus loop through downtown -- one that would offer the conveniences of easy access to offices and shopping.

Adjacent Users: The lack of public parking during construction was viewed as the most critical concern. Other construction related inconveniences such as noise and dust would disrupt current activities. Possible structural damage to adjacent buildings due to ground movement was also a concern. One thought the project would reduce natural light and air to an adjacent historic building, saying that the reduction would be serious.

Nearby Land Users: The demand for parking was the major issue for this group. Many operate businesses that depend on public parking for their customers. Most suggested that more public parking is needed in the project. Some discussed the existing parking structure as a resource for persons who park downtown only occasionally.

Downtown traffic was also a concern of several interviewees.

Some nearby land users discussed the project as possibly blocking viewplanes. However, others thought the project would improve the area as long as landscaping and design are given close attention.

Downtown Business Community: Interviewees from this group generally approved of the project as providing office space. Some supported it as contributing to orderly growth in downtown Honolulu. Another questioned the residential apartment component saying that the entire complex should be devoted to office use.

Some stressed the need for the projects that would be competing for the same office/commercial market to be complementary and compatible with one another. One suggested a linkage over Nimitz Highway between the Aloha Tower development, Walker Park, and Kaahumanu redevelopment -- the retail/commercial components of Aloha Town and the project would be "magnets" or destination points for this bridge.

4.6.3 Additional Comments of Key Informants

The persons interviewed for the social impact assessment largely discussed the issues identified above -- the need for public parking during construction and upon project completion, traffic, and architectural recognition and structural protection of surrounding historic buildings.

Some informants asked whether the project would have architectural features similar to those found in the former Police Station building. One recommended that the historic significance of the area be displayed in an area designated for public viewing. Some commented that the project seemed architecturally pleasing and that it would be a positive addition to the city's skyline.

The building's design on the mauka or Merchant Street side was of concern to some, because it will be visible from the Merchant Square block-- and that the less attractive, street-level service entry would be oriented in this direction. The expressed concern was that facades be designed carefully to not negatively affect ground and second level views from the mauka sides of the complex.

4.7 POSSIBLE MITIGATION MEASURES

The developer has made serious efforts to design the project in order to achieve positive aesthetic impacts and to minimize possible adverse impacts on the historic structures located adjacent to the project site. Completion of the parking component of the complex prior to the rest of the project is also being considered in order to put back into operation the number of parking spaces lost during construction as quickly as possible.

- The building's design is intended to complement nearby historic structures. The five-story Rampart Suites office condominium building is designed to blend in with architecturally and aesthetically with its neighboring Police Station building.

- Parking will continue to be provided on-site; a total of about 1,035 spaces, including the existing 462 public spaces, will be added to the total CBD parking inventory.

- The existing parking exit onto Queen Street will be eliminated completely as it is a safety hazard for cars exiting the structure. The parking ingresses and egresses will be located in strategic locations on Bethel and Mercant Streets which would lead to less chance in the future that vehicles entering and leaving the project will contribute to traffic congestion;

- Although 1,035 parking spaces will be provided, passersby will not be confronted with the sight of these cars; and,

- Landscaping, fountains, street level promenades, and courtyard entries will provide amenities for pedestrians.

The developer is considering ways to limit noise and vibration impacts during construction. The impact of noise and vibration impacts are greatest when and if pile driving occurs. Impacts on neighboring historic buildings (Old Bishop Bank Building and the Melchers Building) would be considerably minimized if a mat foundation, rather than piles, can be used. Soils testing is currently underway to help confirm the viability and feasibility of the use of the mat foundation over the pile driving method.

The project's developer and architects, along with the City and County staff, have conducted discussions with representatives of adjacent and neighboring land users. The development team has heard the concerns of the adjacent and neighboring businesses and has explored ways to minimize or alleviate anticipated impacts.

The widespread concern with public parking during the construction phase cannot be addressed on-site. The City has developed an interim parking plan which identifies alternate parking sites.

APPENDIX H

MARKET ASSESSMENT

John Child and Company, Inc.

john child
REAL ESTATE APPRAISERS & CONSULTANTS
& COMPANY, INC.

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of the Pacific
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June 9, 1989

Mr. Michael T. McCormack
McCormack Properties, Ltd.
1580 Makaloa Street, Suite 500
Honolulu, Hawaii 96814

Dear Mr. McCormack:

At your request, John Child & Company, Inc. has assessed the market support for the proposed Harbor Court Towers. Our analyses, findings and conclusions are presented in the accompanying report.

BACKGROUND

The City & County of Honolulu, through the Department of Housing and Community Development (DHCD) has requested proposals for the redevelopment of the Kaahumanu Parking Garage and the District Court Parking Lot in downtown Honolulu. The largest of the two lots, with 64,608#, is presently improved with a three-story parking garage. The smaller site adjoins the District Court Building and has an area of 19,745#.

Beam Venture proposes to develop the two properties with the Harbor Court Towers, a mixed use development with about 223,000# of office space, 37,600# of retail space and 170 residential apartments. As a part of the submittal process, Beam Venture requires an assessment of the market support for the mixed use development. As a result, Beam Venture has asked John Child & Company, Inc. to assist in assessing the market support for the proposed uses.

STUDY OBJECTIVE

The objective of our assistance is to assess and project the market support for the commercial office, ancillary retail, and residential condominium components of the Harbor Court Towers.

Robert J. Vernon MAI, CRE
Theodore Vecchio SREA, ASA
Karen Char MAI
Craig T. Smith ASA
Uson Y. Ewart ASA
Paul D. Cool

The purpose of our assistance is to provide market assessments and supporting data which can be used by Beam Venture in evaluating the appropriate mix of uses in the project and by DHCD in reviewing the feasibility of the proposed development plan.

The effective date of this study, its findings and conclusions is May 15, 1989.

LIMITING CONDITIONS

This study is subject to the limiting conditions presented in Addendum A of the accompanying report.

* * * * *

We appreciate the opportunity to assist you. Please contact us if you have any questions.

Very truly yours,

JOHN CHILD & COMPANY, INC.

Robert J. Vernon, MAI, CRE
Chairman

Uson Y. Ewart, ASA
Appraiser

Paul D. Cool
Appraiser

CERTIFICATION

We certify, to the best of our knowledge and belief:

1. Statements of fact in this report are true and correct.
2. Reported analyses, opinions and conclusions are limited only by the reported assumptions and limiting conditions and are our unbiased professional analyses, opinions and conclusions.
3. We have no present or prospective interest in the property that is the subject of this report, and we have no personal interest or bias with respect to the parties involved.
4. Our compensation is not contingent on an action or event resulting from the analyses, opinions or conclusions in, or use of, this report.
5. Our analyses, opinions and conclusions were developed and this report conforms with the requirements of the Uniform Standards of Professional Appraisal Practice, Code of Professional Ethics and Standards of Professional Practice of the American Institute of Real Estate Appraisers (Appraisal Institute), International Society of Real Estate Appraisers (Society) and American Society of Appraisers (ASA), and the use of this report is subject to the requirements of these professional organizations relating to review by its duly authorized representatives.
6. Robert J. Vernon, MAI is currently certified under the continuing education program of the Appraisal Institute.

   ASA has a mandatory recertification program. Uson Y. Ewart is currently certified under this program.
7. The undersigned made a personal inspection of the property that is the subject of this report.
8. No one other than the undersigned prepared the analysis, opinions and conclusions in this report.

JOHN CHILD & COMPANY, INC.

Robert J. Vernon, MAI, CRE
Chairman

Paul D. Cool
Appraiser

Uson Y. Ewart, ASA
Appraiser

TABLE OF CONTENTS

TABLE OF CONTENTS

I - EXECUTIVE SUMMARY

This section presents the study background and objective, study approach, and the major findings of the market assessments.

BACKGROUND

The City & County of Honolulu, through the Department of Housing and Community Development (DHCD) has requested proposals for the redevelopment of the Kaahumanu Parking Garage and the District Court Parking Lot in downtown Honolulu. The largest of the two lots, with 64,608#, is presently improved with a three-story parking garage. The smaller site adjoins the District Court Building and has an area of 19,745#.

Beam Venture proposes to develop the two properties with the Harbor Court Towers, a mixed use development with about 223,000# of office space, 37,600# of retail space and 170 residential apartments. As a part of the submittal process, Beam Venture requires an assessment of the market support for the mixed use development. As a result, Beam Venture has asked John Child & Company, Inc. to assist in assessing the market support for the proposed uses.

STUDY OBJECTIVE

The objective of our assistance is to assess and project the market support for the commercial office, ancillary retail, and residential condominium components of the Harbor Court Towers.

The purpose of our assistance is to provide market assessments and supporting data which can be used by Beam Venture in evaluating the appropriate mix of uses in the project and by DHCD in reviewing the feasibility of the proposed development plan.

The effective date of this study, its findings and conclusions is May 15, 1989.

LIMITING CONDITIONS

This study is subject to the limiting conditions presented in Addendum A.

STUDY APPROACH

Our study approach to complete the objective of the assignment is outlined as follows:

1. Reviewed the conceptual development plans for the Harbor Court Towers.

2. Assessed the current and projected demand for office space, ancillary retail space and residential condominium units in the Urban Honolulu area.

3. Identified existing, planned and proposed residential and commercial developments in the market.

4. Assessed the competitive position of the Harbor Court Towers relative to the existing and future sources of competition.

5. Projected the market shares and supportable development size for the commercial and residential components of Harbor Court Towers.

6. Preliminarily estimated the current sales price and rental ranges which could be achieved in Harbo. Court Towers.

STUDY FINDINGS

The major findings and conclusions for the commercial and residential market assessments are discussed under the following subheadings.

Commercial Market Assessment

The commercial office and retail components of the Harbor Court Towers are located in the Pier Tower and the Rampart Suites, which together, include about 223,000# of commercial office space and 37,600# of ancillary retail space.

Demand for office space generally grows in relation to growth of the general population and increases in employment. Based on population and employment expansion, the annual demand for office space in Honolulu is projected at about 290,000# in 1989 and 1990, and nearly 260,000# over the following five years.

The office component of Harbor Court Towers is expected to face major competition from two projects in downtown Honolulu which would be developed between 1990 and 1992, including:

- BetaWest Alakea-Richards Street Site
- Pan Pacific Plaza.

Other likely sources of additional competition could result from developments outside the Financial district or projects with accelerated development timetables, including:

- Hawaii National Bank
- Honvest Tower
- Merchandise Mart Site.

If office development at Harbor Court Towers is delayed beyond 1992, its market support could be affected by two additional projects, including:

- HECO Site & Aloha Tower Complex
- Pacific Nations Center

Based on the evaluation of the potential competition in Honolulu, the office component of the Harbor Court Towers could be expected to capture a market share between 10% and 40% between 1990 and 1993, totalling about 227,000# to 241,000# of occupied net rentable office area.

The long-term vacancy rate in Honolulu is expected to average about 5%. As a result, the supportable net rentable office area at Harbor Court Towers, allowing for a 5% stabilized vacancy rate, is projected between nearly 240,000# and 254,000#.

Based on the relationship observed in other Class A office developments in Honolulu, and considering the location and design concept of the Harbor Court Towers, an office complex of this size could support an additional 15% of ancillary retail space totalling between about 35,900# and 38,100#.

Residential Market Assessment

The residential component of Harbor Court Towers includes a total of 170 apartments in a distinctive high-rise tower oriented towards Honolulu Harbor. Although plans are preliminary, the residential units are envisioned to share a variety of design characteristics and finishings making the units appealing to discerning buyers seeking well designed high-quality apartments.

The unit mix tentatively consists primarily of two-bedroom units, with 141 units or nearly 85% of the project divided among six varieties of two-bedroom floor plans. Based on the conceptual design, these units would range in interior area between about 1,000# and nearly 1,800#. The remaining 29 units consist of one-bedroom apartments with interior areas between about 760# and 918#.

Expressed as a price per square foot of enclosed area, retail prices for the one- and two-bedroom units do not differ substantially. As a result, the following analyses place particular emphasis on the two-bedroom apartments which comprise the majority of the development. The preliminary retail prices for the 170 residential apartments in the Harbor Court Towers is presented under the following subheadings.

A review of the relevant market area produced seven existing condominium projects and five additional projects which are either proposed or under construction that are considered to be reliable for comparison. The selected projects are in Central Honolulu, within a radius of about 1 mile of Harbor Court Towers. The existing projects were constructed between 1968 and 1987 while the new projects are scheduled for completion between 1989 and 1991.

Current two-bedroom unit sales prices in the selected projects range broadly between about $200,000 and $1,000,000 or between about $150 and $750 per square foot of enclosed apartment area. However, typical two-bedroom prices tend to cluster between about $250 and $450 per square foot.

The projects considered most similar to the Harbor Court Towers support prices between about $320 and $400 per square foot of enclosed apartment area.

The Harbor Court Towers includes about 203,000# of enclosed apartment area, with the typical unit averaging about 1,170# of enclosed area. Based on the findings by the preliminary comparative analysis, the average unit could be priced near the upper end of the observed range, and support an average apartment price between about $440,000 and $470,000, shown as follows:

Average Retail Price Range
(Preliminary, 1989)

Price per square foot	$ 375	$ 400
Enclosed apartment area	1,170	1,170
Indicated price, rounded	$440,000	$470,000

Based solely on enclosed apartment areas, the price range for the two-bedroom units could be between about $370,000 and $700,000 while the one-bedroom unit prices could range from about $285,000 to $370,000. However, price differentials between the units within the project are expected to result from variations in:

- Floor height and view planes
- Intra-building positioning
- Apartment size and design
- Penthouse location.

The preliminary pricing analysis could be refined as the development plan is refined and specific design characteristics are formulated.

RESIDENTIAL CONDOMINIUM DEMAND

Housing requirements are projected as the net difference between households and the number of existing housing units. Based on the difference between the projected households and the number of existing housing units, the housing requirements in Urban Honolulu are projected to increase from about 3,200 in 1989 to a cumulative

total of about 14,100 by 1995. The multi-family housing requirements in Urban Honolulu are projected to increase from about 2,700 units in 1989 to about 12,000 units by 1995.

Considering the recent price distributions and projected future trends, between about 14% and 16% of the future multi-family housing requirements on Oahu would be at prices above $300,000, in constant 1989 dollars. As a result, the multi-family housing requirements at prices in excess of $300,000 is projected to total between 1,680 and 1,920 units from 1989 to 1995.

The requirement for one-bedroom units is projected to remain at about 25% of all sales over $300,000 and total between about 320 to 370 units through 1995. Similarly, the requirement for two-bedroom units is projected at about 70% of all sales over $300,000, totalling between about 1,180 and 1,340 units by 1995.

Currently, about 1,070 one- and two-bedroom units in five high-quality residential condominiums are under construction in Urban Honolulu. A majority of the units in each of these projects have been reserved. As of the date of this analysis, only about 25 one-bedroom units and 150 two-bedroom units are available for sale. These units are anticipated to be marketed before Harbor Court Towers enters the market.

The residential component of Harbor Court Towers is expected to face varying degrees of competition from five other projects. These projects contain a total of about 1,690 units and include:

- Toshin Sogyo Condominium
- Victoria Group Condominium
- Imperial Plaza
- Waterpark Towers
- Aloha Motors Site.

The Harbor Court Towers residential component will have a significant competitive advantage over most of the projects entering the market between 1990 and 1992 because of its superior design characteristics and unique location.

Based on the evaluation of the competition, the Harbor Court Towers project could capture between 20% and 45% of the market for multi-family housing priced above $300,000 between 1990 and 1992. As a result, the 170 residential units could be marketed in about three years.

If the strength of the Japanese yen remains steady or increases against the U.S. dollar and the economy remains stable or improves slightly over the next year and, assuming that interest rates are stable or decline slightly through the same period, the residential component of the Harbor Court Towers could experience accelerated sales resulting from increased demand from the foreign investor segment of the market.

II - COMMERCIAL MARKET ASSESSMENT

The market assessment for commercial office and ancillary retail development is discussed in terms of existing, planned and proposed commercial office development, current and projected demand, estimated market share and supportable net rentable area under the following subheadings.

PROPOSED COMMERCIAL DEVELOPMENT PLAN

The commercial office and retail components of the Harbor Court Towers are located in the Pier Tower and the Rampart Suites, which together, include about 223,000# of commercial office space and 37,600# of ancillary retail space, shown as follows:

Harbor Court Towers Commercial Component
(Square Feet)

	Office	Retail
Pier Tower	198,340	21,700
Rampart Suites	24,900	15,900
Total	223,240	37,600

The Rampart Suites on floors three through five are expected to be sold as condominium units to business operators and delivered in a "loft" condition, allowing the space to be finished for office use, residential use, or a combination of the two. For the purposes of this analysis, these Rampart Suites are assumed to find primary market support as office suites.

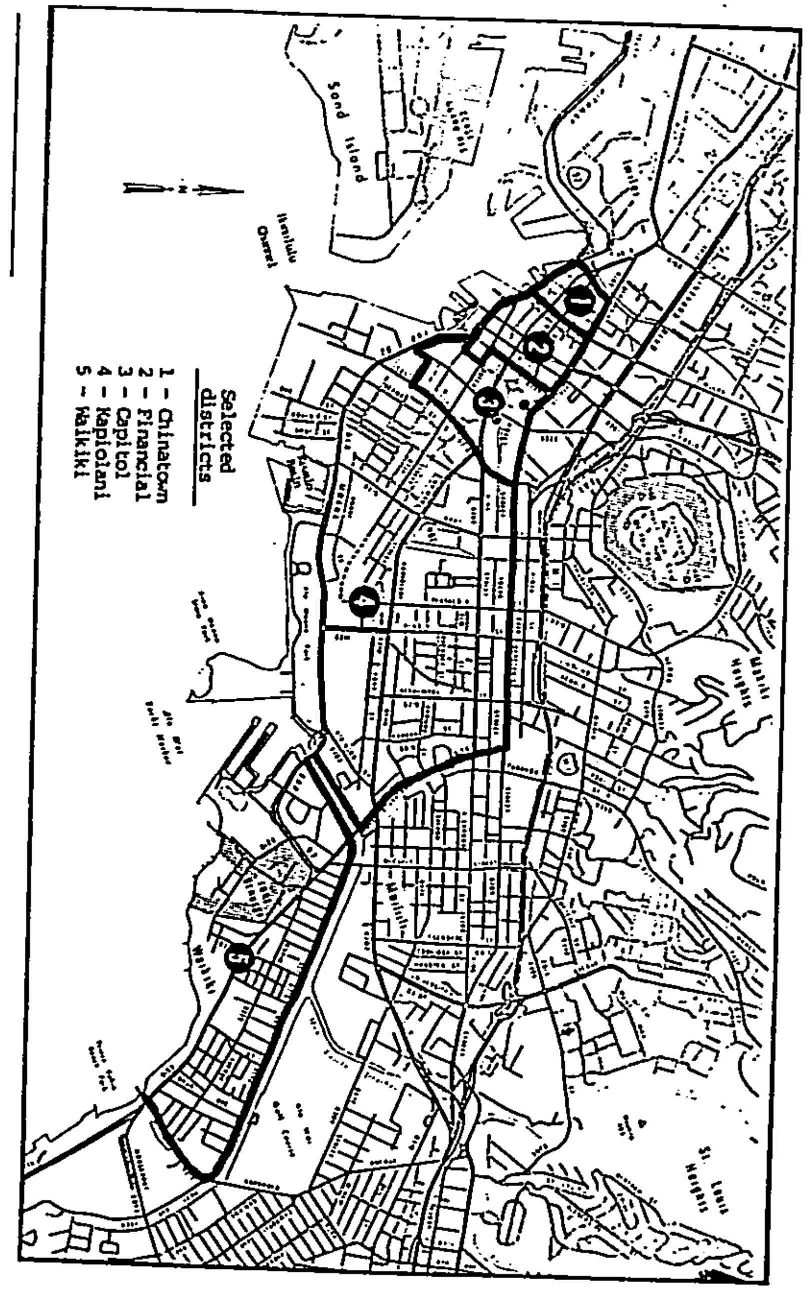
MARKET AREA DEFINITION

The existing Class A office space in Honolulu extends from the Chinatown district of downtown Honolulu to Waikiki. The primary market area includes two segments of the Honolulu office market; the districts are defined below and shown on the map in Exhibit II-A.

- Financial district, including expansion into Chinatown
- Kapiolani district.

Similar to other major cities across the United States, office development in Honolulu began in its financial district. Location in the financial district offered tenants convenient proximity to major financial, legal and other professional businesses as well as the various State and County government agencies.

Map of Selected Districts



As land prices and rents increased, office development began to extend eastward outside the financial district to the Kapiolani district.

Developments in the Kapiolani district initially appealed to tenants who did not need to be in the financial district and those who preferred a convenient location to a variety of wholesalers and retailers, particularly those interacting with the regional Ala Moana Shopping Center.

Today, the financial and Kapiolani districts are no longer insulated from one another. Land prices and rent levels are competitive as the two districts compete for the same market segments.

Other smaller, less competitive sectors of the Honolulu office market include the Capitol and Waikiki districts. The Capitol district includes government buildings and has no privately-owned office buildings. The Waikiki office market is supported largely by users associated with the visitor industry.

BUILDING MEASUREMENTS

All building areas are expressed in terms of net rentable area, unless otherwise noted. In Honolulu, net rentable area is synonymous with usable area as defined by Building Owners and Managers Association International (BOMA) and includes only those actual tenant-occupied areas.

OFFICE SPACE SUPPLY

The supply of office space is reviewed in terms of existing, under construction, planned and proposed developments under the following subheadings.

Existing Office Inventory

As of October 1988, Honolulu had about 6.3 million square feet of rentable office space from downtown Honolulu to Waikiki, as defined and compiled by BOMA. [1]

About 69% of the office space is in downtown Honolulu, primarily in the financial district, while the remainder is in the Kapiolani district and Waikiki, shown as follows:

BOMA Office Space Inventory [2]
October 1988

District	Rentable area (#)	Percent of total
Downtown	4,491,228	69%
Kapiolani	1,816,360	28
Waikiki	228,964	3
Total	6,536,552	100%

In a December 1988 survey, Grubb & Ellis estimated the Honolulu office market to include about 7.8 million square feet of net rentable area, shown as follows:

Grubb & Ellis Office Space Inventory
December 1988

District	Net rentable area (#)	Percent of total
Downtown	4,683,000	60%
Kapiolani	2,581,000	33
Waikiki	527,000	7
Total	7,791,000	100%

Based on the two surveys, about 6.3 million to 7.8 million square feet of office space has been developed in Honolulu. About 4.5 million square feet or between 59% and 73% of this space is in downtown Honolulu, primarily in the financial district. The BOMA statistics are used for the purpose of this analysis.

---

[1] Includes usable office areas and common areas excluding any major vertical penetrations of the floors.
[2] Includes competitive and non-competitive space as defined by BOMA.

About 5.1 million square feet of office space in Honolulu is distributed among 24 Class A office buildings, as shown in Exhibit II-B and summarized by district below:

Class A Office Space by District

District	Net rentable area (#)
Financial	3,135,983
Kapiolani	1,565,900
Waikiki	401,500
Total	5,103,383

In addition to the office space, Class A office developments in Honolulu have typically allocated between 5% and 15% of the net rentable area for ancillary retail uses, as also shown in Exhibit II-B.

These ancillary retail areas are usually occupied by tenants who service the needs of the office users in and immediately around the complex. Typical retail users include:

- Restaurants
- Convenience shops
- Gift shops
- Florists
- Hair stylists
- Jewelry shops.

Exhibit II-B

HARBOR COURT TOWERS
Existing Class A Office Buildings [1]

Project	Year completed	Net Rentable Area (#) Office	Retail	Parking stalls
Financial District:				
Amfac Center	1969/71	439,000	34,000	930
Bishop Square/				
Pacific Tower	1972	485,000	31,000	916
Pauahi Tower	1983	429,700	81,000	
Bishop Trust	1970	136,400	0	0
Central Pacific Plaza	1983	185,400	16,500	287
Davies Pacific Center	1972	288,883	25,921	423
1164 Bishop Street	1975	170,000	7,400	107
Grosvenor Center	1979/81	550,000	17,000	800
Hasegawa Komuten Building	1980	76,300	2,700	221
Ocean View Center	1987	92,900	1,800	180 [2]
Pioneer Plaza	1977	217,000	21,000	362
Queen Street Building	1975	65,400	1,000	190
Kapiolani District:				
Waterfront Plaza	1988	420,000	90,000	1150
Ala Moana Building	1961	165,000	36,400 [3]	276
Ala Moana Pacific Center	1983	152,000	19,600 [3]	539
First Insurance Center	1962/83	186,000	0	510
HMSA Building	1983	161,300	12,900	450
Kapiolani Commercial Center	1978	76,500	3,700	234
American Savings Building (Pan Am Building)	1969	153,200	33,200	396
615 Piikoi Building	1979	139,900	21,300	400
1221 Kapiolani Blvd. (Blackfield Building)	1976	112,000	16,000	359
Waikiki District:				
Bank of Hawaii	1967	81,700	65,200 [3]	252
Waikiki Business Plaza	1965	173,400	20,100	500
Waikiki Trade Center	1981	146,400	45,900	402
	Total	5,103,383	603,621	

[1] Excludes commercial condominium projects.
[2] Garage contains 275 stalls; 180 office tenant stalls and 95 for U.S. Post Office.
[3] Includes ground floor and mezzanine bank space.

Source: John Child & Company, Inc.

Under Construction/Planned Inventory

A total of eight office developments with about 1.3 million square feet of net rentable office area are either under construction or planned for near-term development, as shown in Exhibit II-C.

The inventory includes about 500,000# in three projects expected to be completed during 1989. The three projects are:

- City Financial Tower
- Commerce Tower
- Pacific Park Plaza.

About 325,000# or 65% of the leasable area in these three projects has been leased, with the bulk of the remaining space in Pacific Park Plaza and Commerce Tower, as shown in Exhibit II-C.

Five other projects with about 800,000# have firm development timetables with completion dates between 1990 and 1991. They include:

- Chinatown Gateway
- Hawaii National Bank Building
- Honvest Tower
- Pan Pacific Plaza
- BetaWest Alakea-Richards Street Site.

All but the BetaWest development are presently under construction.

Proposed Inventory

A total of eight projects in Honolulu are in various stages of planning and could contribute an additional 2.85 million square feet of Class A office space, as shown in Exhibit II-C. About 1.4 million square feet or about half the proposed inventory is in three projects in downtown Honolulu and include:

- Pacific Nations Center
- HECO Site & Aloha Tower Complex
- Merchandise Mart Site.

These developments constitute the primary source of competition for future office space demand in downtown Honolulu. Based on development interest, the Merchandise Mart Site could be developed between 1992 and 1994. Development of the Pacific Nations Center and the HECO Site & Aloha Tower Complex is less eminent and could be developed after 1994.

HARBOR COURT TOWERS
Available Class A Office Space

Project	Year of completion	Commercial Office Space (#) Total	Pre-leased	Available	Ancillary Retail Space (#) Total	Pre-leased	Available
Under construction/planned:							
City Financial Tower	1989	163,946	149,000	14,946	16,688	16,688	0
Pacific Park Plaza	1989	226,000	135,600	90,400	34,000	20,400	13,600
Commerce Tower	1989	114,482	40,000	74,482	10,455	3,700	6,755
Chinatown Gateway	1990	20,000	0	20,000 [1]	0	0	0
Hawaii National Bank	1990	100,000	50,000	50,000	0	0	0
Honvest Tower	1991	102,360	0	102,360	10,300	10,300	0
Pan Pacific Plaza	1991	394,528	20,000	374,528	35,000	10,000	25,000
BetaWest Alakea-Richards Street Site	1991	196,500	0	196,500	12,750	0	12,750
Total - under construction/planned		1,317,816	394,600	923,216	119,193	61,088	58,105
Proposed:							
Pacific Nations Center (Block J)	N/A	650,000	0	650,000	80,000	0	80,000
HECO Site & Aloha Tower Complex	N/A	600,000	0	600,000	54,000	0	54,000
Merchandise Mart Site	N/A	200,000	0	200,000	0	0	0
59 South King Street	N/A	88,000	0	88,000 [2]	0	0	0
404 Piikoi (Nauru) Phase IV	N/A	206,250	0	206,250	0	0	0
Convention Center -							
State	N/A	408,000	0	408,000 [1]	0	0	0
City	N/A	550,000	0	550,000 [1]	0	0	0
Department of Housing and Community Development mixed use site	N/A	150,000	0	150,000	20,000	0	20,000
Total - proposed		2,852,250	0	2,852,250	154,000	0	154,000

[1] Includes office and retail space.
[2] The proposed building contains about 123,000#; however, this analysis excludes about 35,000# which would replace the existing building on the site.

Source: Projects' developers and leasing agents.
"Convention center: Idea whose time may come." Honolulu Star-Bulletin, February 6, 1989.

Exhibit II-C

An additional 34% of the proposed inventory is in the State and City convention center developments. The office space associated with the convention center(s) could largely be supported by users associated with the visitor industry.

Honolulu Waterfront Redevelopment

Plans for revitalizing the 346-acre Honolulu Waterfront between Ala Moana Beach Park and Pier 21 at Honolulu Harbor are currently under review by the State. The Office of State Planning has been charged with the responsibility of recommending a comprehensive master plan for the area.

The Honolulu Waterfront could include about 3.[illegible] million square feet of office space on 15 development sites owned by the State of Hawaii or Bishop Estate. About 1.0 million square feet, including the HECO Site & Aloha Tower Complex, could be developed by 2000. An additional 1.0 million square feet could be developed between 2001 and 2010 and the 1.4 million square feet could be developed at some point beyond 2010.

OFFICE SPACE DEMAND

The demand for office space in Honolulu is discussed in terms of historical and projected demand under the following subheadings.

Historical Demand

The historical demand for office space in Honolulu averaged 200,000# to 225,000# annually during the 1970's. For the past 5 years, however, the historical demand for properties in downtown Honolulu and the Kapiolani area is estimated to have averaged over 309,000#, as shown in Exhibit II-D.

The primary factors which account for the demand for new office space include:

- Expansion of existing businesses
- Establishment of new local businesses
- Expansion of existing firms into new cities
- Movement into the central business district from suburban locations.

Projected Demand

Demand for office space generally grows in relation to growth of the general population and increases in employment. Therefore, projections of future population and employment growth can be used as a measure of future demand for new office space.

Exhibit II-D

HARBOR COURT TOWERS
Historical Absorption of Office Space
(Square Feet)
1982-1987

	Total Competitive Office Space		
	Downtown Honolulu	Kapiolani area	Total
1987	3,831,814	1,847,559	5,679,373
1982	2,880,095	1,253,019	4,133,114
Increase over 5 years, rounded	952,000	595,000	1,546,000
Average annual increase, rounded	190,000	119,000	309,000

Source: BOMA Surveys and John Child & Company, Inc.

Government, legal and professional services have grown dramatically over the past 10 to 15 years. These employment sectors and related service-oriented businesses have generated most of the recent demand for new office space.

The demand analysis focuses on three employment sectors that generate the majority of jobs requiring office space, including:

- Banking, finance, real estate and insurance
- Services (excluding hotels)
- Government.

The Department of Business & Economic Development (DBED) projected job formations by industry sector for Oahu and the State through the year 2010. These projections are considered reasonable and have been adopted by the State and County for long-range planning.

Total employment in the three selected employment sectors is projected to increase from about 177,200 in 1985 to about 230,900 by 2000, as shown in Exhibit II-E.

The historical relationship between the increase in employment and its resultant impact on office demand in Honolulu was studied to project the office space requirements.

According to BOMA, the office space inventory increased by about 1,546,000# between 1982 and 1987. Over the same period, the number of new jobs in selected employment categories is estimated by interpolation to have increased by about 22,500 jobs, shown as follows:

Estimated New Jobs

1987	197,400
1982	(174,900)
New jobs formed	22,500

As a result, the office space requirement for each new job was about 69#, shown as follows:

Office Space Per Job

New office space demand	1,546,000#
New jobs	÷ 22,500
Office space per job, rounded	69#

Exhibit II-E

HARBOR COURT TOWERS
New Job Formation in Selected Categories
(Jobs in Thousands)
1980-2000

Employment category	1980	1985	1990	1995	2000
Banking, finance	27.0	27.0	29.5	32.0	33.4
Services (excluding hotels)	62.6	71.2	86.9	99.9	110.6
Government	75.6	79.0	81.5	84.4	86.9
Total jobs for selected categories	165.2	177.2	197.9	216.3	230.9
New jobs by period	--	12.0	20.7	18.4	14.6

Source: Department of Business and Economic Development, Population and Economic Projections for the State of Hawaii to 2010 (Series M-K), November 1988 and for years 1985 to 2010. Department of Planning and Economic Development Series M-F Projections for 1980.

Assuming each new job in the selected employment sectors resulted in a demand for about 70# of office space, the demand for office space could be expected to gradually decline from nearly 290,000# per year in 1989 and 1990 to about 204,000# per year by 2000 and total nearly 2.9 million square feet between 1989 and 2000, as shown in Exhibit II-F.

This projection is consistent with historical demand ranging from about 309,000# for the past 5 years and 200,000# to 225,000# during the 1970's.

MARKET OUTLOOK

Assuming completion of the known office developments, the total inventory of Class A office space could increase from about 5.6 million square feet to nearly 9.7 million square feet, shown as follows:

Projected Office Inventory
(Net Rentable Area in #)

Existing	5,103,383
Projected:	
1989	504,428
1990	120,000
1991	693,388
After 1991 [1]	3,252,250
Subtotal	4,570,066
Total	9,673,449

The supply of office space would average about 380,000# per year over the 12-year period between 1989 and 2000 to fully support the complete development of the planned and proposed office projects.

Assuming the 960,000# of space associated with the convention centers is excluded, the annual supply would average about 300,000# over the 12-year period. By contrast, the demand for office space over the next 12 years is projected to average only about 230,000# per year and total about 2.76 million square feet by 2000.

[1] Includes the HECO Site & Aloha Tower Complex and an additional 400,000# which could be developed elsewhere in the Honolulu Waterfront area.

Exhibit II-F

HARBOR COURT TOWERS
Average Annual Office Space Demand
1986-2000

	1986 1990	1991-1995	1996-2000
Projected new jobs in selected industries	20,700	18,400	14,600
Office space per job (#)	x 70	x 70	x 70
Total office space demand (#)	1,449,000	1,288,000	1,022,000
Number of years	+ 5	+ 5	+ 5
Average annual office space demand (#)	289,800	257,600	204,400

Source: John Child & Company, Inc.

Based on the analysis of the projected supply and demand, the office market is expected to remain competitive into the foreseeable future. The well located Class A office buildings are expected to continue to be attractive to existing and new tenants.

Those planned and proposed office developments that occupy desirable central locations in existing office markets are likely to have a competitive advantage over those developments in secondary locations.

ASSESSMENT OF THE COMPETITION

A total of seven of the known office developments in Honolulu could compete in varying degrees with Harbor Court Towers for office space tenants, as shown in Exhibit II-G.

The office component of Harbor Court Towers is expected to face major competition from two projects in downtown Honolulu which would be developed between 1990 and 1992, including:

- BetaWest Alakea-Richards Street Site
- Pan Pacific Plaza.

The Harbor Court Towers office development would occupy a prominent location with views across the Honolulu waterfront. By contrast, both the BetaWest development and the Pan Pacific Plaza would occupy less desirable sites away from the center of the financial district. View planes from these two developments may also be less impressive. As a result, the Harbor Court Towers would have a competitive advantage over these two office developments.

Other likely sources of additional competition could result from developments outside the financial district or projects with accelerated development timetables, including:

- Hawaii National Bank
- Honvest Tower
- Merchandise Mart Site.

The Hawaii National Bank Building and Honvest Tower are expected to have a majority of the available space leased by the scheduled completion in 1990. Both projects occupy less desirable locations compared to Harbor Court Towers. Therefore, any space which may be available in the two projects would be competitive to a limited degree.

Exhibit II-G

HARBOR COURT TOWERS
Evaluation of Competition

	Projected year of completion	Available area (#)	Degree of competition
Primary:			
BetaWest Alakea-Richards Street Site	1991	196,500	Major
Pan Pacific Plaza	1991	374,528	Major
Subtotal - Primary		571,028	
Secondary:			
Hawaii National Bank	1990	50,000	Limited
Honvest Tower	1990	102,360	Limited
Merchandise Mart site	1991+	200,000	Potential
Subtotal - Secondary		352,360	
Tertiary:			
HECO Site & Aloha Tower Complex	1995±	600,000	Potential
Pacific Nations Center	1995±	650,000	Potential
Subtotal - Tertiary		1,250,000	
Total		2,173,388	

Source: John Child & Company, Inc.

Office development on the Merchandise Mart Site could represent a major source of competition, similar to BetaWest and Pan Pacific Plaza. The current owner has received a building permit and has notified the existing tenants to vacate. However, the development timetable is less defined than would appear by the recent actions of the owner.

If office development at Harbor Court Towers is delayed beyond 1992, its market support could be affected by two additional projects, including:

- HECO Site & Aloha Tower Complex
- Pacific Nations Center.

Office development on the HECO Site & Aloha Tower Complex would be the most significant source of competition. Competition from Pacific Nations Center would be limited because of its location outside the established downtown Honolulu office market.

PROJECTED MARKET SUPPORT

Based on the evaluation of the potential competition in Honolulu, the office component of the Harbor Court Towers could be expected to capture a market share of 10% to 40% between 1990 and 1994, totalling about 258,000# of occupied net rentable office area, as shown in Exhibit II-H.

Honolulu's vacancy rate was reported at 5.7% based on a national survey conducted by Coldwell Banker Commercial Group in September 1988. [1] The survey described the Honolulu office vacancy rate as the lowest in the nation as of the third quarter of 1988. By comparison, the national average for U.S. metropolitan areas is 19.6%. The long-term vacancy rate in Honolulu is expected to average about 5%. As a result, the supportable net rentable office area at Harbor Court Tower, allowing for a 5% stabilized vacancy rate, is projected at between nearly 240,000# and 254,000#, as shown in Exhibit II-H.

Based on the relationship observed in other Class A office developments in Honolulu, and considering the location and design concept of the Harbor Court Towers, an office complex of this size could support an additional 8% to 10% of ancillary retail space totalling about 25,000#.

[1] The survey excluded "non-competitive" buildings, such as government offices, medical buildings, office condominiums and commercial buildings occupied by a single tenant.

Exhibit II-H

HARBOR COURT TOWERS
Supportable Class A Office Space
(Net Rentable Area)
1990-1993

Year	Total Class A demand (#)	Market share	Supportable office space (#)	
1990	289,800	25 - 30%	72,500 -	86,900
1991	257,600	35 - 40	90,200 -	103,000
1992	257,600	15 - 20	38,600 -	51,500
1993	257,600	10	25,800	0
Subtotal - occupied net rentable area	1,062,600		227,100	241,400
Stabilized occupancy rate	95%		95%	95%
Supportable net rentable area	1,118,500		239,100	254,100

Source: John Child & Company, Inc.

MARKET RENTS AND LEASE TERMS

This section reviews the typical lease terms for office space leases including rental rates, tenant improvement allowances, rental concessions, common area maintenance and major tenant leases.

Market Rent

Rental rates for office space are usually quoted on a gross rent basis. That is, the initial rate (the base rent) is a gross figure that provides fully serviced space. During the initial fixed rental period, the only additional costs to the tenant would be:

- Parking fees (if any)
- Hawaii State general excise tax.

Increases in building operating expenses above the base year are prorated and passed through to the tenants. Because a variety of methods are used in establishing the base year and recovering the expense escalations, stated rental rates may not be directly comparable. Therefore, the gross rent or total occupancy cost must be considered.

Oahu Rental Rate Overview

The monthly gross rental rates on Oahu typically range from $1.00 to $2.65 per square foot, based on a rental survey prepared by Grubb & Ellis, as shown in Exhibit II-I.

Factors influencing rental rates include:

- Class of building
- Age and condition of the space
- Location and prominence.

The rental rates are typically lower for older Class B buildings and higher for well located Class A buildings. Rental rates within downtown Honolulu and the Kapiolani area do not vary significantly by location.

Exhibit II-I

HARBOR COURT TOWERS
Gross Rental Rates
(Monthly, Per #)

Market area	Low	High
Downtown	$1.50	$2.65
King Corridor [1]	1.40	2.10
Kapiolani [1]	1.50	2.50
Ala Moana [1]	1.30	2.40
Kakaako [1]	1.50	2.30
Waikiki	1.60	2.65
Airport	1.04	1.80
East Oahu	1.60	2.25
Leeward	1.15	2.50
Windward	1.20	2.15

[1] Kapiolani district.

Source: Grubb & Ellis Company, Hawaii Real Estate 1989.

Honolulu Rental Rates

Gross rental rates for office space in selected buildings in downtown Honolulu typically range from $1.50 to nearly $2.90 per square foot, as shown in Exhibit II-J. The range is largely a function of three factors:

- Building prominence and quality
- Locational characteristics
- Lease dates and characteristics of the specific office suites.

Typical rental rates in most of the existing office buildings, including City Financial Tower and Oceanview Center, range from about $2.20 to $2.65 per square foot.

The highest rates are achieved by the most prominent Class A buildings with rents approaching $3.00 per square foot. The less prominent structures, including two downtown Honolulu commercial condominium developments, have lower rental rates which range between $1.50 and $1.80 per square foot.

Ground floor retail space generally commands higher rental rates. These rents in existing projects range from about $3.30 to $4.00 per square foot. The rate may vary substantially based on the frontage, exposure and other design features of the project.

Tenant Improvement Allowances

Finishing allowances for tenant improvements vary based on overall market conditions and depends on whether the space is being leased to an existing or new tenant.

For existing office buildings, finishing allowance ranges from $0 to $5 per square foot for lease retentions (renewals of existing tenants) and up to $20 for rollover spaces (new tenants). Finishing allowances in selected new and proposed projects typically range from $20 to $30 per square foot, as shown in Exhibit II-K.

The finishing allowance is usually a negotiable item which varies substantially depending on market conditions.

Rental Concessions

Honolulu had an oversupply of office space during the early 1980's with more than 900,000# of new office space by 1983. In order to attract tenants, property owners had to offer a variety of rental concessions.

Exhibit II-J

HARBOR COURT TOWERS
Selected Office Building Rents
(Per #)

Building name and basis of quoted rents	Base rent	CAM	Gross Rent Monthly	Gross Rent Annually
Amfac Center				
Typical office	$1.36-$2.06	$ 0.64	$2.00-$2.70	$24.00-$32.40
Typical retail	2.75- 3.50	0.56	3.31- 4.06	39.72- 48.72
Bishop Square				
Typical office	1.62- 2.10	0.65- 0.68	2.30- 2.75	27.60- 33.00
Century Square				
Typical office	1.13- 1.18	0.62	1.75- 1.80	21.00- 21.60
Davies Pacific Center				
Typical office	1.65- 1.85	0.62	2.27- 2.47	27.24- 29.64
Executive Centre				
Typical office	N/A	N/A	1.50- 1.75	18.00- 21.00
Grosvenor Center				
Typical office	1.95- 2.22	0.75	2.70- 2.97	32.40- 35.64
Typical retail	2.66	0.75	3.41	40.92
Hasegawa Komuten				
Typical office	N/A	N/A	1.80- 2.30	21.60- 27.60
James Campbell Building				
Typical office	1.56	0.54	2.10	25.20
Ocean View Center				
Typical office	N/A	N/A	2.20	26.40
Pioneer Plaza				
Typical office	1.56- 1.64	0.65	2.21- 2.29	26.52- 27.48
Waterfront Plaza				
Typical office	1.80- 2.15	0.72	2.52- 2.87	30.24- 34.44
City Financial Tower				
Typical office	1.81	0.68	2.49	29.88
Commerce Tower				
Typical office	1.81	0.64	2.45	29.40
Typical retail	3.50	0.40	3.90	46.80
Pacific Park Plaza				
Typical office	1.48- 1.91	0.54	2.02- 2.45	24.24- 29.40
Pan Pacific Plaza				
Typical office	N/A	N/A	2.35- 2.90	28.20- 34.80

Source: Projects' leasing agents.
"1989 Office Guide," Hawaii Business, February 1989.
"Commercial & Industrial Leasing Guide," Hawaii Investor, March 1989.

Exhibit II-K

HARBOR COURT TOWERS
Finishing Allowances for Selected Projects
(Per #)

Completed Projects	
Bishop Square	$20.00
Waterfront Plaza	32.00
Under Construction	
City Financial Tower	27.00
Commerce Tower	$20.00-23.00
Honvest Tower	21.00-22.00
Pacific Park Plaza	25.00
Pan Pacific Plaza	

Note: Tenant finishing allowances are negotiable in many buildings.

Source: Projects' leasing agents.

The rent concessions were and continue to be structured to preserve and maintain the targeted contract base rent. The use of rent concessions decline as the demand for office space improves. The most common rent concessions include:

- Rent-free occupancy during the initial two to six months.
- Increased tenant improvement allowances.
- Extended lease term and/or fixed rent period and granting extension options.
- Exemptions or adjustments that limit annual increases in expense recoveries.
- Rent-free or reduced rent for parking stalls for a specific period.
- Assumption of the tenant's lease obligation at its prior location.
- Contributions toward moving expenses.
- More visible signage and change of the building name to reflect the name of the major tenant.

In many older, fully occupied buildings, concessions are no longer offered to the smaller tenants. However, large (and substantial) tenants usually have the leverage to negotiate some concessions.

A number of the recently completed and planned projects continue to offer some form of concessions as incentives to attract tenants away from their existing buildings.

Common Area Maintenance Expenses

Common area maintenance (CAM) expenses, also referred to as building operating expenses, include expenses directly related to the maintenance of public space, parking areas and other common area, and general operating expenses. In the past, CAM expenses have typically excluded:

- Ground lease rent
- Capital improvements
- Advertising and leasing expenses
- Expenses associated with vacant space.

In recent years, building owners and managers have become more aggressive in maximizing their expense recoveries. As a result, leasing and advertising expenses are being recovered in some buildings. In addition, some buildings that operate at relatively high occupancy levels recover virtually all CAM expenses from tenants, even though the buildings are not 100% occupied.

Ground rent is usually fully paid by the owner; however, tenant leases at City Financial Tower, Ala Moana Pacific Center and the Gold Bond Building provide for ground rent escalations above the base year to be recovered from the tenants. The Waikiki Trade Center tenants also pay a portion of the ground rent.

Because of these and other lease differences, CAM expenses vary by building. The tenant's CAM expense for existing buildings typically range from about $0.60 to $0.80 per square foot per month, as previously shown in Exhibit II-J.

Basis of Rent Calculation

Rentable area is the total area of a floor excluding building elements which penetrate through the floor. This area is fixed by the design of the building. Usable area is the actual occupied tenant area of a floor. The usable area can be modified by corridors, rest rooms and other common area uses.

The terms usable area and rentable area are standards developed by BOMA to establish the two basic methods that are used in measuring the office area of a given floor.

Major tenants are usually considered to be full floor or multi-floor space users. Relative rental rates generally vary by the type of tenancy, shown as follows:

Area leased	Basis of rent
Partial floor	Usable area [1]
Full floor or larger	Rentable area

Based on these BOMA standards, major tenants are charged for a proportionally larger area; therefore, discounts of 10% to 15% would offset the difference between rentable and usable area on a floor.

In many cases, higher discounts and/or more favorable lease terms are negotiated for the major tenants. These cases reflect a number of factors, including:

- Size
- Financial strength of the tenant
- Market conditions.

[1] In Honolulu, usable area is usually referred to as net rentable area.

During soft market conditions, a potential major credit tenant may have the ability to negotiate any or all of the rental concessions discussed previously.

Market Lease Terms

Office building management, operating and leasing practices are tending toward standardization in the Honolulu market. The lease terms in typical office space leases are summarized as follows:

- Office lease agreements on new space are usually written for loft condition to semi-finished, fully serviced space with a finishing allowance to cover minimum finishing standards.
- Previously occupied space is usually leased in its as-is condition, with tenants often receiving allowances of up to $5 per square foot, or equivalent concessions.
- Lease terms range from about 2 to 10 years; the typical term is 3 to 5 years.
- The base rents are generally fixed for the first 2 to 3 years.
- Parking is usually available on an office space-to-parking stall ratio at an additional specific monthly rate per stall.
- The typical lease is an "escalator lease" which requires lessees to absorb, on a proportionate rentable space basis, any annual increases in operating expenses which develop during the lease term following the base year of the lease.
- The lessee is required to pay, as additional rent, the general excise tax applicable to the base rent, parking fees and any expense recoveries.

Some variations exist regarding the manner in which the base year is established and used for recovering operating expense [1] escalations. Typical alternatives are as follows:

- The base year is the first full year of operation and remains fixed for the life of the building.

[1] Sometimes referred to as common area maintenance (CAM) expenses.

- The base year is the year in which the lease is written. For these buildings, the owner establishes a new base year as the leases are renewed.
- Other variations include establishing a fixed amount for the owner's operating expense. All increases in expenses beyond this amount are reimbursed by the tenants. In these cases, the fixed amount is typically the owner's estimated first year operating expense.

Typical leases in the newer buildings are very aggressive and are structured to recover virtually all operating expenses.

Market Lease Terms and Rent
for the Harbor Court Towers

The market lease terms and rents for the office and retail space in Harbor Court Towers are discussed under the following subheadings.

Lease Terms

The market lease terms are expected to include:

- Typical duration of leases between three and five years.
- Fixed rent period between two and three years.
- Escalator clause to pass through any expense escalation over the base year amount to the tenants.
- Parking stalls available for monthly rent based on a ratio of about 1 stall per 600# of area leased.
- Tenant paying general excise tax in addition to the base rent, parking fees and expense recoveries.

As a part of the escalator clause, the owner would establish a fixed base year. The base year would not be adjusted as the leases are renewed.

Lease Rents

The office component of the Harbor Court Towers is expected to be well designed and include quality materials, finishes and amenities. Therefore, the gross rent could range from $2.60 to $2.75 per square foot for the typical office space, in 1989 dollars.

The ground floor retail space would have higher gross rents ranging between about $3.50 to $3.75 per square foot, in 1989 dollars, depending on location, visibility and size of space.

Common Area Maintenance

Common area maintenance charges and operating expense recoveries in Class A office buildings typically range between about $0.60 and $0.75 per square foot per month.

Assuming the Harbor Court Towers office component has typical physical and efficiency characteristics, the current CAM expenses would be similar to these indicators.

Tenant Improvement Allowances

A moderate surplus inventory could exist between 1990 and 1992 during the period that Harbor Court Towers would be in its initial leasing phase. Tenants could expect to negotiate a finishing allowance between about $20.00 and $25.00 per square foot.

III - RESIDENTIAL CONDOMINIUM MARKET ASSESSMENT

The market assessment for the residential condominium component of the Harbor Court Towers development is discussed in terms of preliminary retail prices, current and projected demand, existing, planned and proposed supply, estimated market share, and absorption under the following subheadings.

PROPOSED RESIDENTIAL DEVELOPMENT PLAN

The residential component of Harbor Court Towers includes a total of 170 apartments in a distinctive high-rise tower oriented towards Honolulu Harbor. Although plans are preliminary, the residential units are envisioned to share a variety of design characteristics and finishings making the units appealing to discerning buyers seeking well designed high-quality apartments.

The unit mix tentatively consists primarily of two-bedroom units, with 141 units or nearly 85% of the project divided among six varieties of two-bedroom floor plans. Based on the conceptual design, these units would range in interior area between about 1,000# and nearly 1,800#. The remaining 29 units consist of one-bedroom apartments with interior areas between about 760# and 918#.

PRELIMINARY RETAIL PRICES

The basis for estimating retail prices for the residential component of Harbor Court Towers is the sales comparison approach. This approach compares and adjusts recent apartment sales in comparable condominium projects to the 170 Harbor Court Towers apartments.

Retail prices for the one- and two-bedroom units do not differ substantially. As a result, the following analyses place particular emphasis on the two-bedroom apartments which comprise the majority of the development. The preliminary retail prices for the 170 residential apartments in the Harbor Court Towers is presented under the following subheadings.

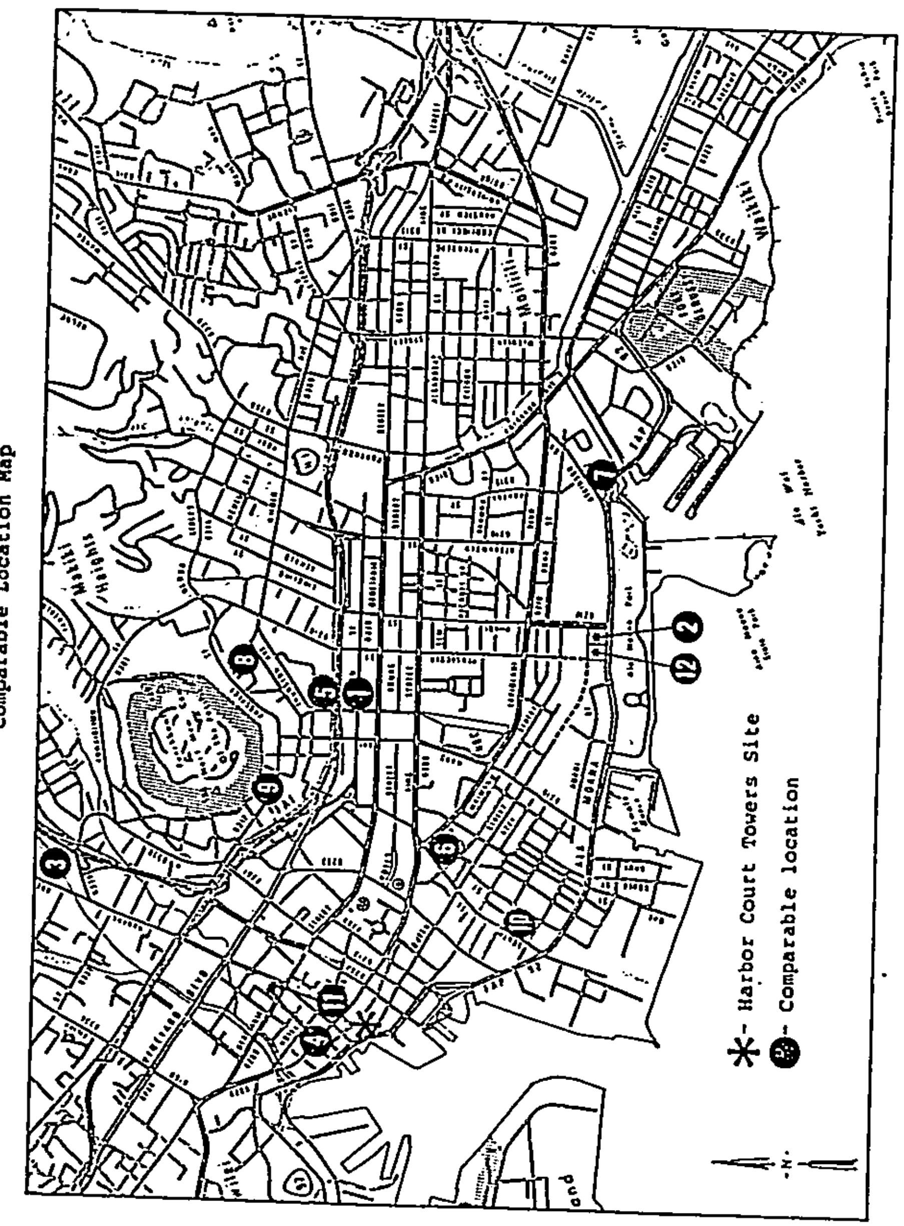
Market Activity

A review of the relevant market area produced seven existing condominium projects and five additional projects which are either proposed or under construction that are considered to be reliable for comparison.

The selected projects are in Central Honolulu, within a radius of about 1 mile of Harbor Court Tower, as shown in Exhibit III-A. The existing projects were constructed between 1968 and 1987 while the new projects are scheduled for completion between 1989 and 1991, as shown in Exhibit III-B.

Exhibit III-A

HARBOR COURT TOWERS
Comparable Location Map



The existing comparable projects were researched for current resale and listing activity, while the proposed projects were reviewed for new sales activity.

Current two-bedroom unit sales prices in the selected projects range broadly between about $200,000 and $1,000,000 or between about $150 and $750 per square foot of enclosed apartment area. However, typical two-bedroom prices tend to cluster between about $250 and $450 per square foot, as shown in Exhibit III-C.

Asking prices for two-bedroom units within each existing project are significantly higher than their corresponding recent resales, suggesting continued price escalations. Current asking prices range between about $220,000 and $1.4 million, as shown in Exhibit III-D.

Preliminary Retail Prices

The current price ranges exhibited in the selected comparable two-bedroom apartments were compared on a preliminary basis to the Harbor Court Towers units for similarities and variations in:

- Location
- Floor height and view planes
- Apartment size, design and finish
- Age and condition
- Project quality and amenities
- Parking
- Land tenure.

The comparative analysis is included in Exhibit III-E.

The projects considered most similar to the Harbor Court Towers support prices between about $320 and $400 per square foot of enclosed apartment area, as shown in Exhibit III-F.

The Harbor Court Towers includes about 203,000# of enclosed apartment area, with the typical unit averaging about 1,170# of enclosed area. Based on the findings by the preliminary comparative analysis, the average unit could be priced near the upper end of the observed range, and support an average apartment price between about $440,000 and $470,000, shown as follows:

Average Retail Price Range
(Preliminary, 1989)

Price per square foot	$ 375	$ 400
Enclosed apartment area	1,170	1,170
Indicated price, rounded	$440,000	$470,000

Exhibit III-B

HARBOR COURT TOWERS
Identification of Selected Condominium Projects

Project	Tenure	Year built	Unit Count: Total	Unit Count: Two bedrooms	Two-bedroom net area (#)
Existing:					
1. Admiral Thomas	Leasehold	1980	148	74	1,586 - 1,634
2. 1350 Ala Moana	Leasehold	1968	353	351	943 - 1,215
3. Craigside	Leasehold	1981	290	52	1,204
4. Honolulu Tower	Fee simple	1982	395	158	993 - 1,064
5. Continental Plaza	Fee simple	1982	70	66	1,434 - 1,502
6. Royal Capitol Plaza	Leasehold	1987	297	162	829 - 1,061
7. Yacht Harbor Towers	Fee simple/ leasehold	1972	456	228	1,173 - 1,474
Under construction:					
8. 1015 Wilder	Fee simple	1989E	58	11	1,240
9. Iolani Palms	Fee simple	1989E	31	16	905 - 927
10. Waterfront Towers	Leasehold	1989E	306	176	1,188 - 2,082
11. Honolulu Park Place	Fee simple	1990E	437	290	875 - 1,218
12. Nauru Tower	Leasehold	1991E	304	266	1,220 - 1,892

Note: E = estimated.

Source: John Child & Company, Inc.

Exhibit III-C

HARBOR COURT TOWERS
Current Two-Bedroom Sales Prices
in Selected Condominium Projects

Project	Total	Per ft	Typical price per ft
Existing:			
Admiral Thomas	$400,000 - $ 750,000	$300 - $550	$350 - $375
1350 Ala Moana	300,000 - 600,000	300 - 475	320 - 400
Craigside	190,000 - 260,000	160 - 215	160 - 215
Honolulu Tower	160,000 - 225,000	150 - 225	180 - 200
Continental Plaza	250,000 - 350,000	170 - 250	190 - 210
Royal Capitol Plaza	220,000 - 350,000	245 - 380	320 - 340
Yacht Harbor Towers			
Leasehold	600,000 - 900,000	480 - 650	550 - 600
Fee simple	700,000 - 1,000,000	600 - 750	650 - 700
Under construction:			
1015 Wilder	435,000 - 850,000 [1]	350 - 560	350 - 560
Iolani Palms	240,000 - 375,000	260 - 405	320 - 405
Waterfront Towers	265,000 - 600,000	220 - 350	275 - 350
Honolulu Park Place	215,000 - 495,000	240 - 405	270 - 370
Nauru Tower	420,000 - 790,000	345 - 570	440 - 490

[1] Price range for two- and three-bedroom units.

Source: Multiple Listing Service Hawaii, REsearch/TMK, April 1989; interviews with project sponsors and John Child & Company, Inc.

Exhibit III-D

HARBOR COURT TOWERS
Current Two-Bedroom Asking Prices in
Selected Condominium Projects

	Total	Per ft
Admiral Thomas	$720,000 - 1,200,000	$450 - 550
1350 Ala Moana	360,000 - 750,000	400 - 610
Craigside	220,000 - 270,000	185 - 225
Honolulu Tower	225,000 - 265,000	225 - 250
Continental Plaza	430,000 - 500,000	300 - 350
Royal Capitol Plaza	225,000 - 400,000	250 - 375
Yacht Harbor Towers		
Leasehold	790,000 - 1,400,000	660 - 850
Fee simple	Limited	Limited

Source: Multiple Listing Service, Oahu, February-March 1989.

Exhibit III-E

HARBOR COURT TOWERS
Comparison of the Selected Comparables
to the Typical Units in Harbor Court Towers

	Harbor Court Towers	Admiral Thomas	Craigside	Honolulu Tower	Continental Plaza	Royal Capitol Plaza	1015 Wilder	Iolani Palms	Waterfront Towers	Honolulu Park Place	Nauru Tower	1350 Ala Moana	Yacht Harbor Towers
Location	Downtown	Mid-town/ similar	Nuuanu/ inferior	Downtown/ similar	Punchbowl/ inferior	Kakaako/ similar	Punchbowl/ inferior	Punchbowl/ inferior	Downtown/ equal	Downtown/ similar	Ala Moana/ similar	Ala Moana/ similar	Ala Moana/ similar
View planes	Harbor/Ewa and mauka	City/distant ocean	Valley/city	City/partial ocean and mauka	City/distant ocean	City and ocean	Mauka	City/distant ocean	Ocean, Ewa and Diamond Head	City/distant ocean and mauka	Ocean, Ewa and Diamond Head	Ocean, Ewa and Diamond Head	Ocean, Ewa and Diamond Head
Unit size	1,295 sq.ft.	Superior	Equal	Inferior	Superior	Inferior	Equal	Inferior	Similar	Inferior	Similar	Similar	Similar
Design and quality	Very good	Similar	Similar	Inferior	Similar	Inferior	Similar	Similar	Similar	Inferior	Superior	Similar	Similar
Age and condition	Proposed/ excellent	9 years/ inferior	8 years/ inferior	7 years/ inferior	6 years/ inferior	3 years/ similar	Under const./ equal	Under const./ equal	Under const./ equal	Under const./ equal	Under const./ equal	21 years/ inferior	17 years/ inferior
Land tenure	Leasehold	Equal	Equal	Superior	Superior	Equal	Superior	Superior	Equal	Superior	Equal	Equal	Equal/ superior
Overall	--	Similar	Inferior	Inferior	Inferior	Similar	Similar	Similar	Similar	Inferior	Superior	Similar	Similar

Source: John Child & Company, Inc.

Exhibit III-F

HARBOR COURT TOWERS
Reliability of Indicated Prices
Based on Overall Comparability
(Per square foot)

	Low	High
Inferior:		
Craigside	$160	$215
Continental Plaza	190	210
Honolulu Tower	180	200
Honolulu Park Place	270	370
Similar:		
Admiral Thomas	350	375
1350 Ala Moana	320	400
Royal Capitol Plaza	320	340
1015 Wilder	350	560
Iolani Palms	320	405
Waterfront Towers	275	350
Yacht Harbor Towers [1]	550	600
Superior:		
Nauru Tower	440	490

[1] Leasehold price indicator.

Source: John Child & Company, Inc.

Based solely on enclosed apartment areas, the price range for the two-bedroom units could be between about $370,000 and $700,000 while the one-bedroom unit prices could range from about $285,000 to $370,000. However, price differentials between the units within the project are expected to result from variations in:

- Floor height and view planes
- Intra-building positioning
- Apartment size and design
- Penthouse location.

The preliminary pricing analysis could be refined as the development plan is refined and specific design characteristics are formulated.

RESIDENTIAL CONDOMINIUM DEMAND

The projected demand for residential condominium development is discussed in terms of projected households, housing types, anticipated price ranges and unit types under the following subheadings.

Market Area Definition

The market area for the residential units in the Harbor Court Towers is Urban Honolulu. Urban Honolulu extends from Hawaii Kai to Moanalua, as shown on the map included as Exhibit III-G.

Population

Of the more than 811,000 residents on Oahu in 1985, more than 382,000 or nearly 50% reside in Urban Honolulu, as shown in Exhibit III-H. The resident population in Urban Honolulu has increased at an annual rate averaging about 0.9% between 1980 and 1985, slightly lower than the island-wide growth rate of 1.2%.

The State Department of Business and Economic Development projects the island's population to increase at a rate of about 1.1% per year between 1985 and 1995, reaching about 910,000 by 1995. During this period, the resident population in Urban Honolulu is expected to account for 45% to 50% of the island-wide population, and is projected at 432,400 by 1995, as shown in Exhibit III-H.

Household Size

The average household size on Oahu has declined over the past 10 to 15 years as the rate of household formation slows and the number of children per family declines. This trend, which has been experienced nationwide, is expected to continue.

Project Market Area

Map of Urban Honolulu

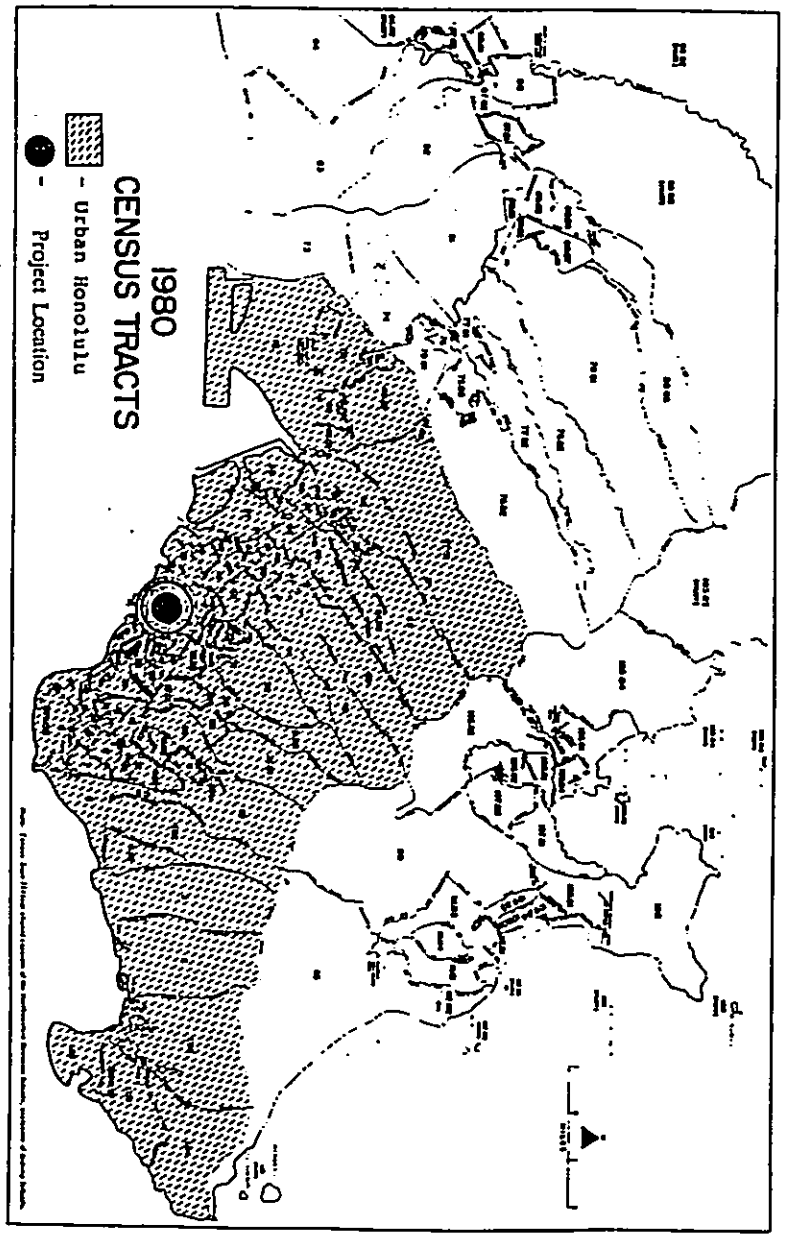


Exhibit III-H

HARBOR COURT TOWERS
Historical and Projected
Households in Urban Honolulu
1980-1995

	Population		Household Size		Households	
Year	Urban Honolulu	Oahu	Urban Honolulu	Oahu	Urban Honolulu	Oahu
1980	365,048	764,800	2.79	3.15	130,800	242,800
1985	382,561	811,100	2.60	2.80	147,100	289,700
1987	393,300	830,600	2.60	2.80	151,300	296,600
1989	404,000	851,300	2.60	2.80	155,400	304,000
1990	409,300	861,600	2.60	2.80	157,400	307,700
1995	432,400	910,400	2.60	2.80	166,300	325,100

Source: U.S. Bureau of the Census, "Census of Population and Housing," 1980; Department of General Planning, "Residential Development Implications of the Development Plans," 1985; Hawaii State Department of Business and Economic Development, "Population and Economic Projections for the State of Hawaii to 2010" (Series M-K), November 1988; and John Child & Company, Inc.

Over the projection period, household sizes in Urban Honolulu and on Oahu are projected to average 2.6 persons and 2.8 persons, respectively, as also shown in Exhibit III-H.

Households

The projected number of households is a function of population and household size. Based on the estimates of future population and household size, the number of households on Oahu is projected to increase from 304,000 in 1989 to 325,100 by 1995. Similarly, Urban Honolulu households are projected to increase from about 155,400 in 1989 to 166,300 by 1995, as shown in Exhibit III-H.

Housing Requirements

Housing requirements are projected as the net difference between households and the number of existing housing units. The housing requirements in Urban Honolulu between 1988 and 1995 are analyzed in terms of total housing and multi-family requirements, and requirements by price range and unit type under the following subheadings.

Total Housing Requirements

Between 1980 and 1985, about 14,100 new housing units were added on Oahu; of this total, nearly 8,400 units were in Urban Honolulu. The housing inventory as of 1988 is estimated at about 272,100 units island-wide and about 151,700 units in Urban Honolulu, as shown in Exhibit III-I.

Based on the difference between the projected households and the number of existing housing units, the housing requirements on Oahu are projected to increase from about 24,000 units in 1989 to 45,100 units by 1995. Housing requirements in Urban Honolulu are projected to increase from about 3,200 in 1989 to a cumulative total of about 14,100 by 1995, as shown in Exhibit III-I.

Historical and Projected Housing Requirement
1980-1995

Year	Total Housing Units: Urban Honolulu	Total Housing Units: Oahu	Existing Housing Units: Urban Honolulu	Existing Housing Units: Oahu	Projected Housing Requirement, Total: Urban Honolulu	Projected Housing Requirement, Total: Oahu	Projected Housing Requirement, Multi-Family: Urban Honolulu [1]	Projected Housing Requirement, Multi-Family: Oahu [2]
1980	130,800	242,800	141,865	252,038	(11,065)	(9,238)	(9,400)	(5,500)
1985	147,100	289,700	150,235	266,127	(3,135)	23,573	(2,700)	14,100
1987	151,300	296,600	151,200	273,054	100	23,546	100	14,100
1989	155,400	304,000	152,200	280,000	3,200	24,000	2,700	14,400
1990	157,400	307,700	152,200	280,000	5,200	27,700	4,400	16,600
1995	166,300	325,100	152,200	280,000	14,100	45,100	12,000	27,100

[1] Projected at 85% of demand.
[2] Projected at 60% of demand.

Source: Hawaii State Department of Business and Economic Development, "Housing Unit Estimates for Hawaii," 1970-1986; and John Child & Company, Inc.

Multi-Family Requirements

Given the amount of vacant land available for single- and multi-family residential development on Oahu, about 60% of the housing requirement on Oahu is expected to be for multi-family units. The share of multi-family units in Urban Honolulu is projected at about 85%, significantly higher than the island-wide rate because of higher development densities permitted by zoning.

The multi-family housing requirements on Oahu are projected to increase from about 14,400 units in 1989 to about 27,100 units by 1995. Of these, nearly 2,700 units are estimated to be required in Urban Honolulu in 1989, increasing to about 12,000 units by 1995, as shown in Exhibit III-I.

Requirements by Price

Over 5,950 residential condominium units were sold in Urban Honolulu in 1988. Of these, 408 units or nearly 7% of the total were sold at prices in excess of $300,000, as shown in Exhibit III-J. The proportion of apartment sales priced over $300,000 is increasing. Nearly 8% of all units sold in Urban Honolulu through March 1989 have been at prices over $300,000, as shown in Exhibit III-J.

There are five new high-quality condominium projects in Urban Honolulu which have reported significant presales activity. The projects include:

- Waterfront Towers
- Honolulu Park Place
- Nauru Tower
- Iolani Palms
- 1015 Wilder.

Of the 1,070 one- and two-bedroom units in these developments, project representatives report that about 80% or nearly 900 units have been "reserved." The majority of these units are priced in excess of $300,000 and could represent an additional 8% to 12% of the total units sold in 1989, bringing the unit sales priced over $300,000 to between 15% and 20% of the total sales.

Considering the recent price distributions and projected future trends, between about 14% and 16% of the future multi-family housing requirements on Oahu would be at prices above $300,000, in constant 1989 dollars. As a result, the multi-family housing requirements at prices in excess of $300,000 is projected to total between 1,680 and 1,920 units from 1989 to 1995, as shown in Exhibit III-K.

Exhibit III-J

HARBOR COURT TOWERS
Price Distribution of Condominium
Sales in Urban Honolulu

Price range	1987 Number	1987 Percent	1988 Number	1988 Percent	1989 [1] Number	1989 [1] Percent
Under $100,000	1,362	46.7%	2,441	41.0%	294	32.8%
$100,000 - 199,999	1,098	37.6	2,456	41.3	434	48.4
200,000 - 299,999	241	8.3	648	10.9	99	11.0
300,000 - 399,999	72	2.5	198	3.3	35	3.9
400,000 and over	144	4.9	208	3.5	35	3.9
Total	2,917	100.0%	5,951	100.0%	897	100.0%

[1] Through March 1989.

Source: Multiple Listing Service Hawaii, REsearch/THK, April 1989.

Exhibit III-K

HARBOR COURT TOWERS
Projected Multi-Family Housing Requirements
for Units Priced Above $300,000 in Urban Honolulu
1989-1995

Year	Total requirement per period	Requirement Over $300,000 Low	Requirement Over $300,000 High
1989	2,700	380	430
1990	1,700	240	270
1991-1995	7,600	1,060	1,220
Total	12,000	1,680	1,920

Source: John Child & Company, Inc.

Requirements by Unit Type

About one-third of condominiums resold on Oahu over the past three years were one-bedroom units, based on sales activity reported through the Honolulu Board of Realtors Multiple Listing Service. Two-bedroom unit types accounted for between 39% and 40% of the resales. A review of units priced above $300,000 indicate that about 25% of the units were one-bedroom apartments and 70% were two-bedroom apartments, as shown in Exhibit III-L.

Based on the indicated demand preference by unit type, the requirement for one-bedroom units is projected to remain at about 25% of all sales over $300,000 and total between about 320 to 370 units through 1995, as shown in Exhibit III-M. Similarly, the requirement for two-bedroom units is projected at about 70% of all sales over $300,000, totalling between about 1,180 and 1,340 units by 1995.

COMPETITIVE HOUSING SUPPLY

Currently, about 1,070 one- and two-bedroom units in five high-quality residential condominiums are under construction in Urban Honolulu. A majority of the units in each of these projects have been reserved. As of the date of this analysis, only about 25 one-bedroom units and 150 two-bedroom units are available for sale, as shown in Exhibit III-N.

Most of the unsold inventory is in Nauru Tower. The project sponsor has indicated that interest remains strong although the unsold units have been taken off the market and will not be available for sale until mid-1989, at which time they may be sold by way of an auction.

Regardless of the manner of sale, the five projects are expected to be sold out by the time Harbor Court Towers enters the market in 1991.

The residential component of Harbor Court Towers is expected to face varying degrees of competition from five other projects. These projects contain a total of about 1,690 units, as shown in Exhibit III-O. These projects are discussed in further detail under the following subheadings.

Toshin Sogyo Condominium

The Toshin Sogyo project is a fee simple, luxury residential condominium currently under construction. Located along Kapiolani Boulevard, the units will have uninterrupted seaward views over Ala Moana Shopping Center. It is the only luxury development presently under construction that has not been offered for presales.

HARBOR COURT TOWERS
Apartment Sales Over $300,000 in
Urban Honolulu by Unit Type

	Total	Percent
Studio	0	0%
One-bedroom	107	25
Two-bedroom	307	70
Three-bedroom or more	21 [1]	5
Total	435	100%

[1] Estimated.

Source: Honolulu Board of REALTORS, Multiple Listing Service, and John Child & Company, Inc.

HARBOR COURT TOWERS
Sales Status of Two-Bedroom Units
in Selected New Projects

Project	One-Bedroom Units: Total	Estimated sold	Available	Two-Bedroom Units: Total	Estimated sold	Available	Likelihood of unsold inventory by 1991
Waterfront Towers	126	120	6	176	168	8	Limited
Honolulu Park Place	147	147 [1]	0	290	290 [1]	0	Limited
Nauru Tower	38	19	19 [2]	266	133	133 [2]	Limited
Iolani Palms	0	0	0	16	10	6	Limited
1015 Wilder	1	1	0	11	10	1	Limited
Total	312	287	25	759	611	148	

[1] Reportedly sold out in early May 1989.
[2] The project sponsor anticipates the apartments will be successfully auctioned off during the summer of 1989.

Source: Interviews with project representatives and John Child & Company, Inc.

Exhibit III-N

Exhibit III-M

HARBOR COURT TOWERS
Projected Housing Requirements Priced Over $300,000
1989-1995

Year	One-bedroom	Two-bedroom
1989	95 - 110	270 - 300
1990	40 - 50	170 - 190
1991-1995	185 - 210	740 - 850
Total	320 370	1,180 1,340

Source: John Child & Company, Inc.

Exhibit III-O

HARBOR COURT TOWERS
Selected Proposed Condominium Projects

Project	Projected year of completion	Residential Units: Total	One-bedroom	Two-bedroom	Three-bedroom	Price range
Toshin Sogyo Condominium	1990	90	0	90	0	$500,000 and above
Victoria Group Condominium	1990	50	0	30	20	400,000 - $800,000
Imperial Plaza	1991	294	34	260	0	Not available
Waterpark Tower	1992	456	150	300	6	225,000 - 340,000
Aloha Motors site	1992+	800	NA	NA	NA	400,000 - 700,000
		1,690	184	680	26	

Sources: Interviews with project representatives.

The 90 two-bedroom units are planned to be priced in excess of $500,000. After meeting the requirement of offering 50% of the units for sale to owner-occupants, the remaining units are expected to be sold in Japan. Construction is expected to be completed in 1990.

Victoria Group Condominium

The 50-unit luxury fee simple project at 1076 South Beretania Street was recently announced by Victoria Group. The project will include two- and three-bedroom units with areas between 1,700# and 3,400#. Prices are expected to range between $400,000 and $800,000. Sales are planned to begin in the second half of 1989. Construction is planned to start early in 1990.

Imperial Plaza

Imperial Plaza is a proposed mixed use residential/commercial project to be developed on the site at the corner of Kapiolani Boulevard and Cooke Street. The luxury development will include 260 two-bedroom units and 34 one-bedroom units in a distinctively designed 400-foot tower. Construction is anticipated to begin in September 1989 with completion by April 1991. Neither prices nor marketing strategy has been announced.

Waterpark Towers

Waterpark Towers is a recently announced good-quality mixed use leasehold condominium apartment project planned for development on the city block bounded by South, Halekauwila, Keawe and Pohukaina Streets in the Kakaako area, near downtown Honolulu. The site is located immediately inland from the Waterfront Towers project.

S & G Venture currently proposes to construct 456 residential units and ancillary commercial and light industrial space in two 45-story towers on the 4.2-acre site. The project is still in its formative planning stage but construction could begin in mid-1990 with completion in mid-1992.

The residential component would include 150 one-bedroom, 300 two-bedroom and 6 three-bedroom units. One tower is planned to have an uninterrupted westerly harbor and seaward view above the eighth floor. The second tower's easterly view orientation toward Diamond Head may be partially blocked or channelized by future high-rise development on neighboring sites. Pricing not definite, but is expected to range primarily between $200,000 and $350,000. About 25% of the units are expected to be sold to foreign investors.

Aloha Motors Site

The former Aloha Motors site, at the intersection of Kalakaua Avenue and Kapiolani Boulevard, is presently being considered by the County for development with a convention center complex. First Development, Inc. is requesting County approval for increased height and density allowances for the 10-acre site. With the necessary variances, the multi-use project could include:

- 120,000# main exhibition hall
- 80,000# of auditorium and meeting space
- 500,000# of office and retail space
- 800 hotel rooms
- 800 condominium apartments.

The magnitude and timing of the project are indefinite. The tenure, quality, characteristics, unit mix and price range of this project are not yet known. The sale of its condominium apartments will probably not commence until after 1992, and is not expected to represent a significant amount of competition.

EVALUATION OF COMPETITION

The Harbor Court Towers residential component will have a significant competitive advantage over most of the projects entering the market between 1990 and 1992 because of its superior design characteristics and unique location.

Four of the five projects to be developed between 1990 and 1992 are considered most similar in physical and design characteristics and pricing. Together, they include about 180 one-bedroom apartments and 690 two-bedroom apartments, as shown in Exhibit III-P.

The Toshin Sogyo project is considered to be competitive with the Nauru Tower in terms of price and quality. Its location is slightly inferior. It is anticipated that the units will be offered for sale within the next 12 months. About 50% of the units are expected to be sold in Japan.

Pricing for the Victoria Group's 50-unit South Beretania Street project is placed within the range of Harbor Court Towers. It is expected to be competitive only to a limited degree because of its substantially inferior locational and view characteristics compared with Harbor Court Towers.

The Imperial Plaza could represent a major source of competition because of its size, location, unit mix, level of quality and development timetable. Although prices have not been announced, it can be expected the units in Imperial Plaza will be priced competitively.

Exhibit III-P

HARBOR COURT TOWERS
Anticipated Sources of Competition
for Buyers of Two-Bedroom Units

Project	Estimated year of completion	Estimated Available Units: One-bedroom	Estimated Available Units: Two-bedroom
Toshin Sogyo Condominium	1990	0	90
Victoria Group Condominium	1990	0	30
Imperial Plaza	1991	34	260
Waterpark Tower	1992	150	310
Available units from competition		184	690
Harbor Court Towers	1991	29	145
Total		213	835

Source: Interviews with project representatives and John Child & Company, Inc.

Waterpark Towers is expected to commence marketing in 1990-1991 and could be competitive with Harbor Court Towers. However, its location, views, and quality are inferior to Harbor Court Towers.

PROJECTED MARKET SHARE AND ABSORPTION PERIOD

Based on the evaluation of the competition, the Harbor Court Towers project could capture between 20% and 45% of the market for multi-family housing priced above $300,000 between 1990 and 1992. As a result, the 170 residential units could be marketed in about three years, as shown in Exhibit III-Q.

If the strength of the Japanese yen remains steady or increases against the U.S. dollar and the economy remains stable or improves slightly over the next year and, assuming interest rates are stable or slightly below current levels through the same period, the residential component of the Harbor Court Towers could experience accelerated sales resulting from increased demand from the foreign investor segment of the market.

Exhibit III-Q

HARBOR COURT TOWERS
Projected Market
Support for Harbor Court Towers
1990-1993

	Demand		Market share		Supportable units	
Year	Low	High	Low	High	Low	High
One-bedroom units:						
1990	40	50	25%	30%	10	15
1991	37	42	40	45	15	20
1992	37	42	20	25	5	10
Subtotal - one-bedroom units					30	45
Two-bedroom units:						
1990	170	190	25	30	40	55
1991	148	170	40	45	60	75
1992	148	170	20	25	30	40
1993	148	170	10	0	15	0
Subtotal - two-bedroom units					145	170
Total					175	215

Source: John Child & Company, Inc.

LIMITING CONDITIONS AND UNDERLYING ASSUMPTIONS

This report is subject to the following limiting conditions and underlying assumptions.

Property Description

This study is based on conceptual architectural drawings prepared by Lacayo Architects, Inc. dated June 15, 1989, as revised.

Hazardous Substances

The existence of hazardous substances which may or may not be present on the property, or other environmental conditions which may impact the property were not called to our attention nor did we become aware of any hazardous substance or condition during our site visit. We are not trained or qualified to detect hazardous substances or conditions even if these hazards, or evidence of potential presence of these hazards, are visible on the property.

This report assumes no hazardous substance or condition exists which would impact the analysis, opinions or conclusions.

Basis of Analysis, Opinions, and Conclusions

The analysis, opinions, and conclusions of this report are our informed judgement based on market and economic conditions as of the date of the report.

We have relied on data and information provided by others. We believe the information to be reliable; however, we do not assume any responsibility for the accuracy of information provided by others.

Our analysis, opinions, and conclusions assume:

1. No hidden or unapparent surface or subsurface conditions of the property, structures, soils, subsoils, geological formations, ground water, or drainage conditions exist which would render the property more or less valuable.

2. The client has provided us with all significant, relevant information covering the subject of this report.

No responsibility is assumed for matters legal in nature affecting the property or its title, which is assumed to be good and merchantable.

Properties in Hawaii typically include a reservation in favor of the State of Hawaii of all mineral and metallic mines. Our analyses, opinions and conclusions assume these reservations do not have an impact on the value or use of the property.

Any drawings, maps, photographs, and similar exhibits accompanying this report are included to assist the reader in visualizing the property. No responsibility is assumed for the accuracy of these exhibits.

All applicable public and private zoning codes and regulations, building and health codes, and other factors which affect the utility and value of the property were considered.

Terms of Assignment

Our assistance is limited to preparing this report to be used for your internal information. As a result, in accepting this report, the client specifically agrees that our findings and conclusions are solely for internal decision-making and that our report will not be referred to or presented to any other party for obtaining financing or any other purpose.

We have no obligation to update our report because of events and transactions occurring subsequent to the date of the report.

Neither our fees nor payment were contingent upon the results of the report.

Use of Report

This report may not be reproduced or published without the prior written consent of John Child & Company, Inc., and then only with proper qualification.

This report is valid only if presented in whole, with original photographs and exhibits, if any, and the official seal of John Child & Company, Inc. embossed on the letter of transmittal and certification.

This report conforms with the By-Laws and Regulations of the American Institute of Real Estate Appraisers of the National Association of Realtors, the International Society of Real Estate Appraisers, and the American Society of Appraisers.

The contents of this report, the identity of the appraisers or any reference to John Child & Company, Inc., the American Institute of Real Estate Appraisers, the International Society of Real Estate Appraisers, and the American Society of Appraisers, or to their respective designations may not be disseminated to the public through advertising media, public relations media, news media, sales media, or any other public means of communication.

QUALIFICATIONS OF JOHN CHILD & COMPANY, INC.

John Child & Company, Inc. (John Child) is a professional real estate service corporation which specializes in real estate appraisal and consulting. Founded in 1937, John Child is one of the largest and oldest real estate appraisal and consulting companies in Hawaii. The Company enjoys an established reputation for quality work and professional service. Our reputation is based on our ability to identify and use appropriate and current valuation techniques, our indepth knowledge and analysis of local market conditions and trends, and the extensive training, education and experience of our professional staff.

PROFESSIONAL STAFF

The Company's professional staff has a wide range of real estate experience gained through a range of field experience, professional accomplishments, training and education. As a result, staff members hold designations earned from the major professional organizations.

Our staff members have earned their reputation for quality work and professional service. They qualify as expert witnesses in the courts of Hawaii, California and Massachusetts; instruct and lecture at the University of Hawaii and for various business and professional organizations; serve as review appraisers and arbitrators; and continue to attend courses, seminars and workshops to strengthen their own specialized appraisal skills and education. Our professional staff members include:

- Robert J. Vernon, MAI, CRE, Chairman
- Theodore Wrobel, SREA, ASA, President
- Karen Char, MAI, Executive Vice President
- Craig T. Smith, ASA, Appraiser
- Uson Y. Ewart, ASA, Appraiser
- Paul D. Cool, Appraiser
- Darlene K. Ariola, Real Estate Analyst
- May M.S. Wong-Tsui, Real Estate Analyst
- Elizabeth J. Kimura, Real Estate Analyst
- Kurt C.L. Chun, Real Estate Analyst

All of our professional staff have attended recent seminars on FHLBB R41c and have been involved in preparing appraisal reports according to the FHLBB standards. The education and professional experiences of our staff members are outlined in their accompanying resumes.

SCOPE OF PROFESSIONAL SERVICES

The Company's real estate appraisal and consulting practice includes:

- Appraisal of real estate
- Highest and best use studies
- Market and financial feasibility analyses
- Economic and fiscal impact assessments
- Arbitration
- Litigation support.

Our studies cover a variety of real estate interests including fee simple, leasehold, leased fee and other partial interest or rights. Our extensive experience includes a variety of properties such as:

- Mixed-use developments
- Office buildings
- Shopping centers and retail facilities
- Hotels and resort facilities
- Industrial properties
- Residential rental apartments
- Residential condominium apartments
- Single-family subdivisions
- Special-purpose properties.

SELECTED CLIENTS

Our clients represent a variety of private and public interests. Selected clients include:

Amfac, Inc.
Amfac Property Development Co.
Ashford & Wriston
Azabu U.S.A. Corporation
Bank of America
Bank of Hawaii
B.P. Bishop Estate/Kamehameha Schools
Estate of James Campbell
Cades, Schutte, Fleming & Wright
Case & Lynch
Castle & Cooke, Inc.
- Mililani Town, Inc.
- Oceanic Properties
Chaminade College
Citibank, N.A.
City & County of Honolulu
- Department of Housing & Community Development
The Equitable Life Assurance Society of the United States of America
Federal Home Loan Bank Board
Finance Realty
First Federal Savings and Loan Association
First Hawaiian Bank
GECC Financial
Goodsill, Anderson, Quinn & Stifel
Hawaiian Electric
Hawaiian Telephone
Honolulu Federal Savings Bank
C. Itoh & Co., Ltd.
Kaiser Development Company
Kitano Indo Gaisha Co., Ltd.
Kokusai-Motorcars Co., Ltd.
Loyalty Development, Loyalty Enterprises, Loyalty Finance Co.
Mitsui Trust & Banking Co., Ltd.
Nature Conservancy
Pacific Construction Co., Ltd.
Peat Marwick Main & Co.
Realty Mortgage Investors of the Pacific (RAMPAC)
Security Pacific Mortgage Corp.
Servco Pacific Inc.
Stark Development Company, Ltd.
State of Hawaii
- Department of Land & Natural Resources
- Department of Transportation
U.S. Department of the Army
U.S. Department of the Interior
U.S. Department of the Navy

ROBERT J. VERNON, MAI, CRE
Chairman

Professional Awards

Professional Recognition Award by the American Institute of Real Estate Appraisers for 1976-1978 and 1979-1981.

Meritorious Service Award presented by the Honolulu Chapter of the Society of Real Estate Appraisers, 1983.

Education

Bachelor of Arts, Ohio State University, 1954.

Various courses sponsored by the American Institute of Real Estate Appraisers and the Society of Real Estate Appraisers.

Professional Associations

Member, American Institute of Real Estate Appraisers (MAI designation)

- Past National Vice President of the Southwest Region (1984-1985)
- Past President of the Honolulu Chapter
- Past National Governing Councillor
- Past member of the National Professional Standards Committee
- Past member of the National Admissions Committee
- Member of the National Admissions Appeal Board.

Member, American Society of Real Estate Counselors (CRE designation).

Senior member, American Society of Appraisers in the Real Property discipline (ASA designation)

- Charter member
- Past President of the Honolulu Chapter.

Member, American Right Of Way Association

- Past Treasurer
- Education Chairman.

Charter member, National Association of Review Appraisers (CRA designation).

Member, Panel of Arbitrators of the American Arbitration Association.

Member, Aloha Chapter of the International Fraternity of Lambda Alpha, an honorary Professional Land Economics Fraternity

- Past Vice President of the Aloha Chapter.

Professional Experience

Chairman, John Child & Company, Inc. (1959 to present).

Instructor/Author

"Fundamental and Advanced Real Estate Valuation Techniques," University of Hawaii and Honolulu Board of Realtors, since 1965.

"Residential Valuation," American Institute of Real Estate Appraisers.

Various lectures to Honolulu Chapters of the American Institute of Real Estate Appraisers, American Society of Appraisers, and Society of Real Estate Appraisers; and Engineering Association of Hawaii.

Technical training of real estate personnel of the State of Hawaii Tax Office, Real Property Division.

Graduate Realtors Institute, Small Business Management Program of the University of Hawaii and Hawaii State Real Estate Commission; training manuals in fundamental and advanced real estate valuation techniques.

Various real estate courses, University of Guam and Guam Board of Realtors.

Certification

The American Institute of Real Estate Appraisers conducts a voluntary program of continuing education for its designated members. MAIs and RMs who meet the minimum standards of this program are awarded periodic educational certification. Robert J. Vernon, MAI is certified under this program.

Court Testimony

Qualified as an expert witness in the valuation of real property in the Courts of the State of Hawaii.

USON Y. EWART, ASA
Appraiser

Education

Bachelor of Architecture, Cornell University, 1972.

Punahou School, 1967.

Certificate in Advanced Real Estate, University of Hawaii Small Business Management Program.

Courses, workshops, seminars, and examinations including:

- AIREA, Exam 1A-1 Real Estate Appraisal Principles
- AIREA, Exam 1A-2 Basic Valuation Procedures
- AIREA, Standards of Professional Practice
- AIREA, Capitalization Update Seminar
- AIREA, Techniques and Solutions for Contemporary Problems
- AIREA, Capitalization Theory and Techniques, Parts A and B
- AIREA, Case Studies in Real Estate Valuation
- AIREA, Review of R41c and FHLBB Recordkeeping Requirements
- AIREA, Valuation Analysis and Report Writing
- SREA, Investment Analysis Workshop
- SREA, Application of Market Extractions
- SREA, Construction Costs Estimating Workshop.

Professional Associations

Senior Member, American Society of Appraisers in the Real Property Discipline (ASA designation)

- President, Honolulu Chapter No. 16
- Past Vice President and Secretary, Honolulu Chapter No. 16.

Candidate, American Institute of Real Estate Appraisers (candidate for MAI designation).

Professional Experience

Appraiser, John Child & Company, Inc. (1977 to present).

Court Testimony

Qualified as an expert witness in the valuation of real property in the Courts of the State of Hawaii and the United States District Courts in Massachusetts and California.

Certification

The American Society of Appraisers conducts a voluntary program of recertification through continuing education and/or participation in professional activities each five years. Uson Y. Ewart, ASA, has been recertified through April 10, 1994.

PAUL D. COOL
Appraiser

Education

Bachelor of Business Administration, Business Economics And Quantitative Methods, University of Hawaii, 1980.

Courses, workshops, and seminars including:

- AIREA, Standards of Professional Practice, 1987
- AIREA, Standards of Professional Practice Update, 1985
- AIREA, Real Estate Appraisal Principles, 1986
- AIREA, Basic Valuation Procedures, 1986
- AIREA, Review of R41c and the Recordkeeping Requirements of the FHLBB, 1987
- AIREA, Capitalization Theory and Techniques, Part A, 1987
- AIREA, Capitalization Theory and Techniques, Part B, 1987
- AIREA, Case Studies in Real Estate Valuation, 1987
- AIREA, Valuation Analysis and Report Writing, 1987
- SREA, Introduction to Appraising Real Property, 1979
- SREA, Principles of Income Property Valuation, 1983
- SREA, Applied Income Property Valuation, 1984
- University of Hawaii, Principles and Practices of Real Estate, 1979
- University of Hawaii, Property Valuation, 1979.

Professional Associations

Candidate, American Institute of Real Estate Appraisers (candidate for MAI designation).

Professional Experience

Appraiser, John Child & Company, Inc. (1975 to present).

Court Testimony

Qualified as an expert witness in the valuation of real property in the Courts of the State of Hawaii.

Update To

APPENDIX H

MARKET ASSESSMENT
SECTION II - COMMERCIAL

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III - OFFICE AND ANCILLARY RETAIL MARKET ASSESSMENT

This section presents the market assessment for the commercial office and ancillary retail space in Harbor Court Towers (Harbor Court) in terms of the existing and planned supply of office space, current and projected demand, assessment of the competition and the projected market support.

BUILDING MEASUREMENTS

All building areas are expressed in terms of usable area, unless otherwise noted. In Honolulu, usable area is synonymous with net rentable area and includes only those actual tenant-occupied areas.

MARKET AREA DEFINITION

The existing Class A office space in Honolulu extends from the Chinatown district of downtown Honolulu to Waikiki. The primary market area includes two segments of the Honolulu office market; the districts are defined below and shown on the map in Exhibit III-A.

- Financial district, including expansion into Chinatown
- Kapiolani district
- Waikiki.

Similar to other major cities across the United States, office development in Honolulu began in its financial district. Location in the financial district offered tenants convenient proximity to major financial, legal and other professional businesses as well as the various State and County government agencies.

As land prices and rents increased, office development began to extend eastward outside the financial district to the Kapiolani district.

Developments in the Kapiolani district initially appealed to tenants who did not need to be in the financial district and those who preferred a convenient location to a variety of wholesalers and retailers, particularly those servicing stories in the regional Ala Moana Shopping Center and Waikiki.

Today, the financial and Kapiolani districts are no longer insulated from one another. Land prices and rent levels are relatively comparable as the two districts compete for the same market segments.

Other smaller, less competitive sectors of the Honolulu office market include the Capitol and Waikiki districts. The Capitol district includes government buildings and has no privately-owned office buildings. The Waikiki office market is supported largely by users associated with the visitor industry.

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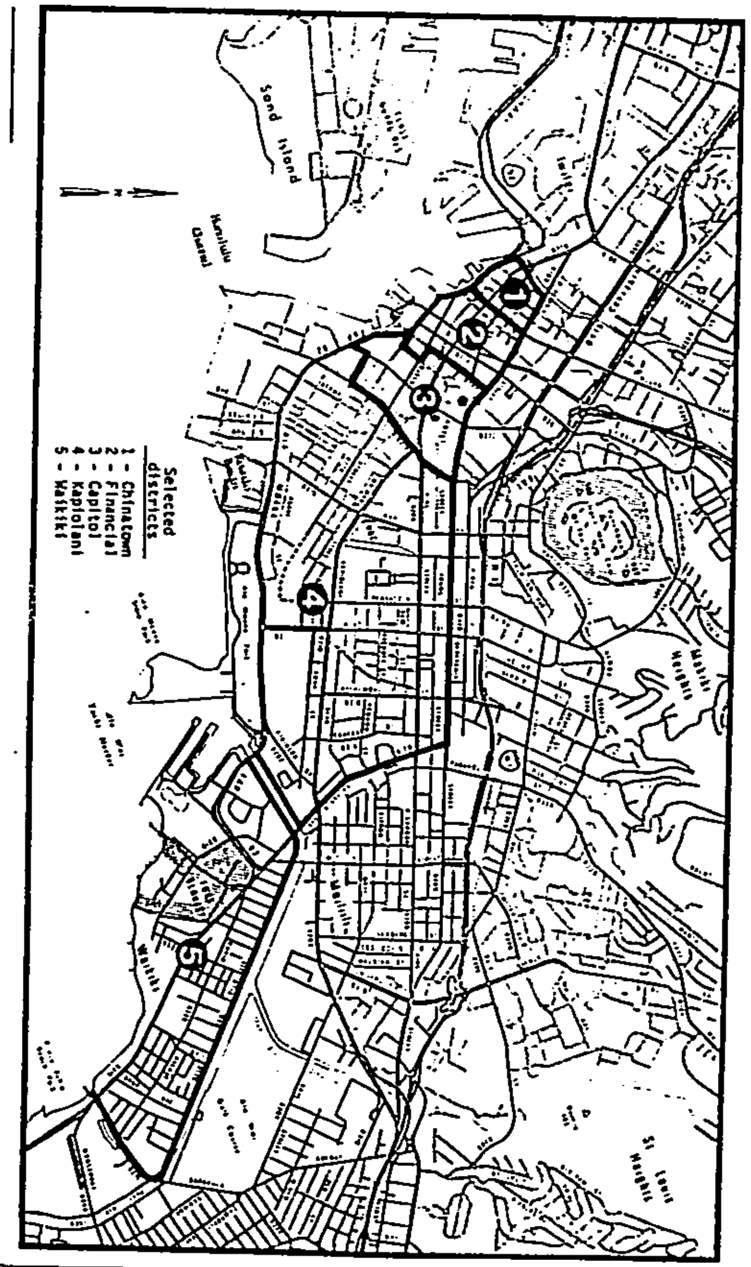
HARBOR COURT TOWERS
Map of Selected Districts in Honolulu



Source: John Child & Company, Inc.

Exhibit III-A

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OFFICE SPACE DEMAND

The demand for office space in Honolulu is discussed in terms of historical and projected demand under the following subheadings.

Historical Demand

The historical demand for office space in Honolulu has typically ranged between about 175,000# to over 300,000# annually since 1978. Since 1986, however, the demand for office space is estimated to have averaged about 250,000# annually, as shown in Exhibit III-B.

Demand for office space has grown in relation to increases in employment. The demand analysis focuses on three employment sectors that generate the majority of jobs requiring office space, including:

- Banking, finance, real estate and insurance
- Services (excluding hotels)
- Government.

These employment sectors and related service-oriented businesses have generated most of the recent demand for new office space. The primary factors which account for the demand for new office space include:

- Expansion of existing businesses
- Establishment of new local businesses
- Expansion of existing firms into new cities
- Movement into the central business district from suburban locations.

Employment opportunities in government, legal and professional services has increased from about 157,000 jobs in 1978 to about 194,500 in 1988, as shown in Exhibit III-C. As a result, a total of about 37,700 new jobs were created in these selected employment categories, as shown in Exhibit III-D.

During the same 10-year period, the demand for office space in Honolulu increased by about 2,100,000#. Since 1978, the office space requirement for each new job has averaged about 56#, as also shown in Exhibit III-D.

Projected Demand

The Department of Business & Economic Development (DBED) projects continued growth in both the population and economy of the State, although at rates below those of past 25 years.

Two of today's major industries, sugar and pineapple, are expected to decline in employment, while manufacturing and Federal government are expected to achieve only modest gains. Employment in trade, services and diversified agriculture, however, are expected to show largest increases.

Exhibit III-B

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HARBOR COURT TOWERS
Historical Absorption of Office and
Ancillary Retail Space in Honolulu
(Square Feet)
1978-1989

	Supply			Demand	
Year	Office	Retail	Occupancy [1]	Office	Retail
1978	2,858,831	343,612	98.0% E	2,802,000	337,000
1980	3,473,064	404,871	98.6	3,424,000	399,000
1982	3,748,064	413,371	92.2	3,456,000	381,000
1984	4,665,068	476,394	86.4	4,031,000	412,000
1986	4,665,068	476,394	93.9	4,380,000	447,000
1988	5,177,968	568,194	94.7	4,904,000	538,000
1989	5,567,914	618,882	96.3	5,362,000	596,000
Average annual:					
1978-1980	307,000	31,000		311,000	31,000
1980-1982	138,000	4,000		16,000	(9,000)
1982-1984	459,000	32,000		288,000	16,000
1984-1986	0	0		175,000	18,000
1986-1988	256,000	46,000		262,000	46,000
1988-1989	195,000	25,000		229,000	29,000
1978-1989	233,000	24,000		233,000	24,000

E = Estimated.

[1] Based on 3rd or 4th quarter occupancy levels, as reported by BOMA for periods from 1980 through 1986. 1988 and 1989 occupancy data from Coldwell Banker.

Source: John Child & Company, Inc.

Exhibit III-C

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HARBOR COURT TOWERS
Job Counts for Selected Employment Sectors
City & County of Honolulu
1978-1988

	1978	1980	1982	1984	1986	1988
Finance, banking, real estate	25,000	29,250	27,250	27,300	27,850	29,300
Service, excluding hotel	58,000	64,450	64,350	69,550	76,000	82,100
Government	73,850	75,550	76,550	77,800	79,200	83,100
Total	156,850	169,250	168,150	174,650	183,050	194,500

Source: Department of Labor and Industrial Relations, Labor Force Data Book, Annual.

Exhibit III-D

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HARBOR COURT TOWERS
Office and Ancillary Retail Space Requirements
1978-1988

	Additional Space		Job count change	Additional Space Per Job	
	Office	Retail		Office	Retail
1978-1980	622,000	62,000	12,400	50	5
1980-1982	32,000	(18,000)	(1,100)	(29)	16
1982-1984	575,000	31,000	6,500	88	5
1984-1986	349,000	35,000	8,400	42	4
1986-1988	524,000	91,000	11,450	46	8
1978-1988	2,102,000	201,000	37,650	56	5

Source: John Child & Company, Inc.

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DBED projects job formations in the selected industry sectors to increase at an annual rate averaging about 1.6% between 1990 and 2000. As a result, employment in the selected sectors could total about 203,000 in 1990 and increase to about 240,000 by 2000, shown as follows:

Projected Job Count
in Selected Employment Categories

Year	Projected job count
1990	203,200
1992	211,400
1994	218,900
1996	226,600
1998	233,400
2000	240,500

Assuming each new job in the selected employment sectors resulted in a demand for about 55# of office space, the additional demand for office space could average about 205,000# annually and total about 2,050,000# by 2000, as shown in Exhibit III-E.

OFFICE SUPPLY

The supply of office space is reviewed in terms of existing, planned and proposed developments under the following subheadings.

Existing Supply

About 5,570,000# of office space in Honolulu is distributed among 27 Class A office buildings, as shown in Exhibit III-F and summarized by district below:

Class A Office Space Inventory by District

District	Net rentable area (#)	Percent of total
Financial	3,251,481	59%
Kapiolani	1,791,900	32
Waikiki	524,533	9
Total	5,567,914	100%

Exhibit III-E

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HARBOR COURT TOWERS
Projected Office and Ancillary Retail Space Requirements
1990-2000

	Job count change	Additional Space Per Job (#) Office	Retail	Total Additional Space Requirement (#) Office	Retail
1990-1992	8,200	55	5	451,000	41,000
1992-1994	7,500	55	5	412,500	37,500
1994-1996	7,700	55	5	423,500	38,500
1996-1998	6,800	55	5	374,000	34,000
1998-2000	7,100	55	5	390,500	35,500
Total	37,300			2,051,500	186,500

Source: John Child & Company, Inc.

Exhibit III-J

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HARBOR COURT TOWERS
Supportable Office Space in Harbor Court Towers
1991-1996

Year	Total Class A demand (#)	Market Share Low	Market Share High	Supportable Office Space (#) Low	Supportable Office Space (#) High	Projected cumulative office space occupancy
1991	225,500	0%	5%	0	11,300	0% - 6%
1992	225,500	45	50	101,500	112,800	51 - 62
1993	206,200	20	25	41,200	51,600	72 - 89
1994	206,300	10	10	20,600	20,600	82 - 100
1995	211,700	10	0	21,200	0	93 - 100
1996	211,800	5	0	10,600	0	98 - 100
Total	1,287,000			195,100	196,300	

Source: John Child & Company, Inc.

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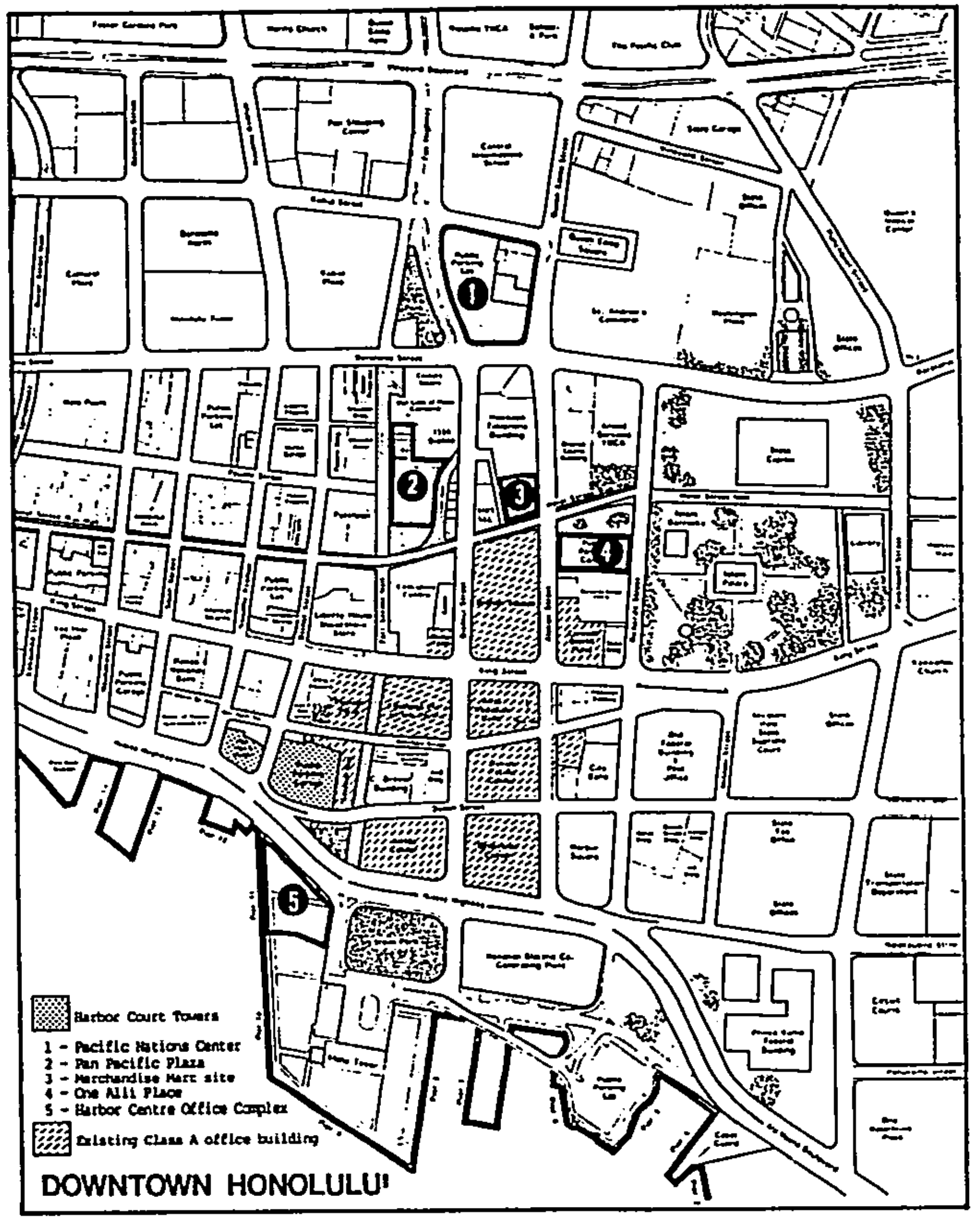
Exhibit III-I

HARBOR COURT TOWERS
Location of Proposed Office Buildings



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Based on the evaluation of the potential competition in Honolulu, Harbor Court could be leased over a four- to five-year period, with pre-leasing beginning as early as 1991. Harbor Court could capture a market share between 45% and 50% in 1992. In subsequent years, Harbor Court could capture between 5% and 25% and reach a stabilized occupancy of about 95% between 1994 and 1997, as shown in Exhibit III-J.

Based on the demand experienced in existing Class A office developments in Honolulu, and considering the location, prominence and design concept of the Harbor Court, a complex of this size could support an ancillary retail space totalling about 30,000# and 40,000#.

For the purposes of this analysis, the office and ancillary retail space is projected to be leased at the following rates:

Projected Absorption and Occupancy

	Occupied Area		Occupancy Rate	
	Office	Retail	Office	Retail
1993	138,950	28,760	70%	85%
1994	168,730	32,150	85	95
Stabilized	188,580	32,150	95	95

Exhibit III-H

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HARBOR COURT TOWERS
Projected Office Space Supply and Demand
(#)
1989-1997

	1989	1990	1991	1992	1993	1994	1995	1996	1997
Demand:									
Existing	5,361,900	5,361,900	5,601,900	5,827,400	6,052,900	6,259,100	6,465,400	6,677,100	6,888,900
Annual addition	—	240,000	225,500	225,500	206,200	206,300	211,700	211,800	187,000
Total - demand	5,361,900	5,601,900	5,827,400	6,052,900	6,259,100	6,465,400	6,677,100	6,888,900	7,075,900
Supply:									
Existing	5,567,914	5,567,914	5,732,396	6,458,406	6,458,406	6,843,406	6,955,406	7,520,406	7,520,406
Planned/proposed:									
Commerce Tower		114,482							
Hawaii National Bank		50,000							
Honvest Tower			102,360						
One Alii Place			196,500						
Pan Pacific Plaza			427,150						
Harbor Court					190,000				
Aloha Tower:									
Maritime Building					195,000				
Aloha Marketplace Offices						112,000			
Harbor Centre							340,000		
Pacific Nations Center							225,000		
Subtotal - planned	0	164,482	726,010	0	385,000	112,000	565,000	0	0
Total	5,567,914	5,732,396	6,458,406	6,458,406	6,843,406	6,955,406	7,520,406	7,520,406	7,520,406
Projected occupancy	96.3%	97.7%	90.2%	93.7%	91.5%	93.0%	88.8%	91.6%	94.1%

Source: John Child & Company, Inc.

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ASSESSMENT OF THE COMPETITION

A total of five of the known office developments in Honolulu could compete in varying degrees with Harbor Court for office space tenants. The locations of these developments are shown in Exhibit III-I. Harbor Court is expected to face leasing competition from three projects in downtown Honolulu which would be developed between 1991 and 1993, including:

- One Alii Place
- Pacific Nations Center
- Pan Pacific Plaza.

The Harbor Court office development would occupy a prominent location with views across the Honolulu waterfront. By contrast, the three competitive office developments would occupy less desirable sites away from the center of the financial district. Views from these developments may also be less impressive. As a result, Harbor Court would have a competitive advantage over these two office developments.

Other likely sources of additional competition could result from developments outside the financial district or projects with accelerated development timetables, including:

- Harbor Centre Office Complex (pre-leasing)
- Merchandise Mart Site.

The marketing of Harbor Court could overlap with that of the Harbor Centre Office Complex, proposed for development on a portion of the Aloha Tower redevelopment site. As a result, Harbor Centre could represent an additional source of competition.

Office development on the Merchandise Mart Site could represent a major source of competition. However, the development timetable has not been announced.

PROJECTED MARKET SUPPORT

Harbor Court is expected to be comparable or superior to the leading first-class office buildings in downtown Honolulu. The development amenities and finishes would be comparable to Bishop Square.

Harbor Court could be expected to attract tenants seeking high-quality office space in downtown Honolulu. Tenants could include businesses benefiting from prime locations in Class A office buildings near the financial center. Tenants could be expected to be:

- Executive corporate offices of major local companies
- Companies with professional sales staff such as real estate brokers, insurance, financial advisors and stock brokers
- Financial institutions
- Attorneys and professional services
- Branch offices of international and national companies.

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HARBOR COURT TOWERS
Leasing Status of New Class A Office Space

Project	Year of completion	Commercial Office Space (#) Total	Pre-leased	Available	Ancillary Retail Space (#) Total	Pre-leased	Available
Under construction:							
Commerce Tower	1990	114,482	57,000	57,482	10,455	5,000	5,455
Hawaii National Bank	1990	100,000	50,000	50,000	0	0	0
Honvest Tower	1991	102,360	13,000	89,360	10,300	10,300	0
One Alii Place	1991	196,500	0	196,500	12,750	0	12,750
Pan Pacific Plaza	1991	427,150	100,000	327,150	40,000	20,000	20,000
Total - under construction		940,492	220,000	720,492	73,505	35,300	38,205
Planned:							
Harbor Court	1993	190,000	0	190,000	32,000	0	32,000
Pacific Nations Center	1993	225,000	0	225,000	N.A.	0	N.A.
Aloha Tower office developments	1993-1995	647,000	0	647,000	22,000	0	22,000
Total - planned		1,062,000	0	1,062,000	54,000	0	54,000
Proposed:							
Merchandise Mart site	N/A [1]	200,000	0	200,000	0	0	0
Campbell Estate Office Tower	N/A	260,000	0	260,000	0	0	0
Convention Centers:							
Aloha Motors site	N/A	550,000	0	550,000 [2]	0	0	0
International Market Place	N/A	408,000	0	408,000 [2]	0	0	0
59 South King Street	N/A	88,000	0	88,000 [3]	0	0	0
404 Piikoi, Phase IV	N/A	206,250	0	206,250	0	0	0
Victoria Station	N/A	87,000	0	87,000 [2]	0	0	0
Total - proposed		1,799,250	0	1,799,250	0	0	0

[1] Development timetable is not available; however, demolition of the existing site improvements are underway.
[2] Includes office and retail space.
[3] The proposed building contains about 123,000#; however, this analysis excludes about 35,000# which would replace the existing building on the site.

Source: Projects' developers and leasing agents; "Convention center: Idea whose time may come," Honolulu Star-Bulletin, February 6, 1989; "Development popping up throughout Downtown Honolulu," Pacific Business News, June 26, 1989; The Downtowner, September 1989.

Exhibit III-G

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Assuming completion of the known office developments, the total inventory of Class A office space could increase from nearly 5,600,000# to about 9,300,000#, shown as follows:

Projected Office Inventory

	Net rentable area (#)
Existing	5,567,914
Projected:	
1990	164,482
1991	726,010
1992	0
1993	385,000
1994	112,000
1995	565,000
After 1995	1,799,300
Subtotal	3,751,792
Total	9,319,706

OCCUPANCY LEVELS

Honolulu's occupancy rate was reported at 96.3% based on a national survey conducted by Coldwell Banker Commercial Group in 1989. The survey described the Honolulu office occupancy rate as the highest in the nation as of the fourth quarter of 1989. By comparison, the national average for U.S. metropolitan areas is about 83.3%

Construction of new office space could amount to about 2,000,000# between 1990 and 1995, assuming completion of the known office developments. As a result, the total inventory of Class A office space could increase from 5,570,000# to about 7,520,000#, as shown in Exhibit III-H.

Office space demand over the next 10 years is projected to average about 200,000# annually, as previously shown in Exhibit III-E.

Based on the projected supply and demand, the average office occupancy rate is projected to decline to between about 89% by 1995 as the proposed developments are completed. Thereafter, the occupancy rate is projected to increase to about 94% by 1997, as shown in Exhibit III-H.

Exhibit III-F

HARBOR COURT TOWERS
Existing Class A Office Buildings [1]

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Project	Year completed	Net Rentable Area (#) Office	Net Rentable Area (#) Retail	Parking stalls
Financial District:				
Amfac Center	1969/71	439,000	34,000	930
Bishop Square -				
Pacific Tower	1972	447,948	33,791	916
Pauahi Tower	1983	418,304	14,023	
Bishop Trust	1970	136,400	0	0
Central Pacific Plaza	1983	185,400	16,500	287
City Financial Tower	1989	163,946	16,688	352
Davies Pacific Center	1972	288,883	25,921	423
1164 Bishop Street	1975	170,000	7,400	107
Grosvenor Center	1979/81	550,000	17,000	800
Hasegawa Komuten Building	1980	76,300	2,700	221
Ocean View Center	1987	92,900	1,800	180 [2]
Pioneer Plaza	1977	217,000	21,000	362
Queen Street Building	1975	65,400	1,000	190
Subtotal - Financial District		3,251,481	191,823	4,768
Kapiolani District:				
Waterfront Plaza	1988	420,000	90,000	1,150
Ala Moana Building	1961	165,000	36,400 [3]	276
Ala Moana Pacific Center	1983	152,000	19,600 [3]	539
First Insurance Center	1962/83	186,000	0	510
HMSA Building	1983	161,300	12,900	450
Kapiolani Commercial Center	1978	76,500	3,700	234
Pacific Park Plaza	1989	226,000	34,000	560
American Savings Building (Pan Am Building)	1969	153,200	33,200	396
615 Piikoi Building	1979	139,900	21,300	400
1221 Kapiolani Boulevard (Blackfield Building)	1976	112,000	16,000	359
Subtotal - Kapiolani District		1,791,900	267,100	4,874
Waikiki District:				
Bank of Hawaii	1967	81,700	65,200 [3]	252
Kalakaua Center	1979 [4]	123,033	28,759	218
Waikiki Business Plaza	1965	173,400	20,100	500
Waikiki Trade Center	1981	146,400	45,900	402
Subtotal - Waikiki District		524,533	159,959	1,372
Total		5,567,914	618,882	11,014

[1] Excludes commercial condominium projects.
[2] Garage contains 275 stalls; 180 office tenant stalls and 95 for U.S. Post Office.
[3] Includes ground floor and mezzanine bank space
[4] Extensively renovated in 1988.

Source: John Child & Company, Inc. based on interviews with project leasing agents.

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In addition to the office space, Class A office developments in Honolulu have typically allocated between 5% and 15% of the net rentable area for ancillary retail uses, as also shown in Exhibit III-F. Ancillary retail areas are usually occupied by tenants who service the needs of the office users in and immediately around the development. Typical retail users in Class A office developments include:

- Restaurants
- Convenience shops
- Florists
- Hair stylists
- Jewelry shops.

Under Construction, Planned and Proposed Developments

Five office developments with about 940,000# of net rentable office area are either under construction or planned for development, as shown in Exhibit III-G. The inventory includes about 214,000# in two projects expected to be completed in 1990, including:

Project	Net rentable area (#)
Commerce Tower	114,482
Hawaii National Bank	100,000
Total	214,482

About 107,000# or 45% of the net rentable area in these projects has been leased.

Ten projects in Honolulu are in various stages of planning and could add 2,860,000# of Class A office space to the office inventory, as also shown in Exhibit III-G. About 1,060,000#, or about 37% of the inventory, would be in six projects in downtown Honolulu. They include:

- Harbor Court Towers
- Aloha Tower office developments
- Pacific Nations Center (Block J)
- Merchandise Mart Site
- Campbell Estate Office Tower
- 59 South King Street.

Harbor Court, Aloha Tower and Pacific Nations Center are planned to be completed by 1995. Development of the other proposed projects is less imminent and may not be completed until after 1995. The two proposed convention centers could comprise about 958,000#. The associated office space would largely be supported by users associated with the visitor industry.

Update To

<u>APPENDIX H</u>

MARKET ASSESSMENT
SECTION III - RESIDENTIAL

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III - RESIDENTIAL CONDOMINIUM MARKET ASSESSMENT

The market assessment for Water Tower of the Harbor Court Towers (Harbor Court) is discussed in terms of general real estate trends, current and projected demand, existing, planned and proposed supply, estimated market share, and absorption of residential condominium units under the following subheadings.

MARKET AREA DEFINITION

The market area for the residential units would be urban Honolulu. Urban Honolulu extends from Hawaii Kai to Moanalua, as shown on the map included as Exhibit III-A.

GENERAL REAL ESTATE TRENDS

The demand for condominium units in Honolulu and on Oahu has remained high since 1985, resulting in increasing sales volume, rising prices and shorter marketing periods. General real estate trends are discussed in terms of condominium resales volume, prices and days on market.

Resales Volume

About 24,400 condominium units resold on Oahu between 1985 and 1989. About 15,800 units or nearly 65% of these resales were in urban Honolulu. Resales volume in Honolulu has ranged between about 3,600 and 4,300 since 1987, and represents a doubling in volume since 1985, as shown in Exhibit III-B.

Resales Prices

Average resales prices on Oahu have increased from about $98,900 in 1985 to $164,400 in 1989, reflecting an annual compound increase of about 13.5%. In contrast, the average resale price in Honolulu increased at an annual rate of nearly 18% from $99,100 in 1985 to $190,600 in 1989, as shown in Exhibit III-C.

About 10% of the condominium units sold in 1989 were priced over $300,000, based on a review of original sales and resales. The proportion of apartment sales priced over $300,000 has increased from only about 7% in 1987 and 1988, as shown in Exhibit III-D.

HARBOR COURT TOWERS
Map of Urban Honolulu

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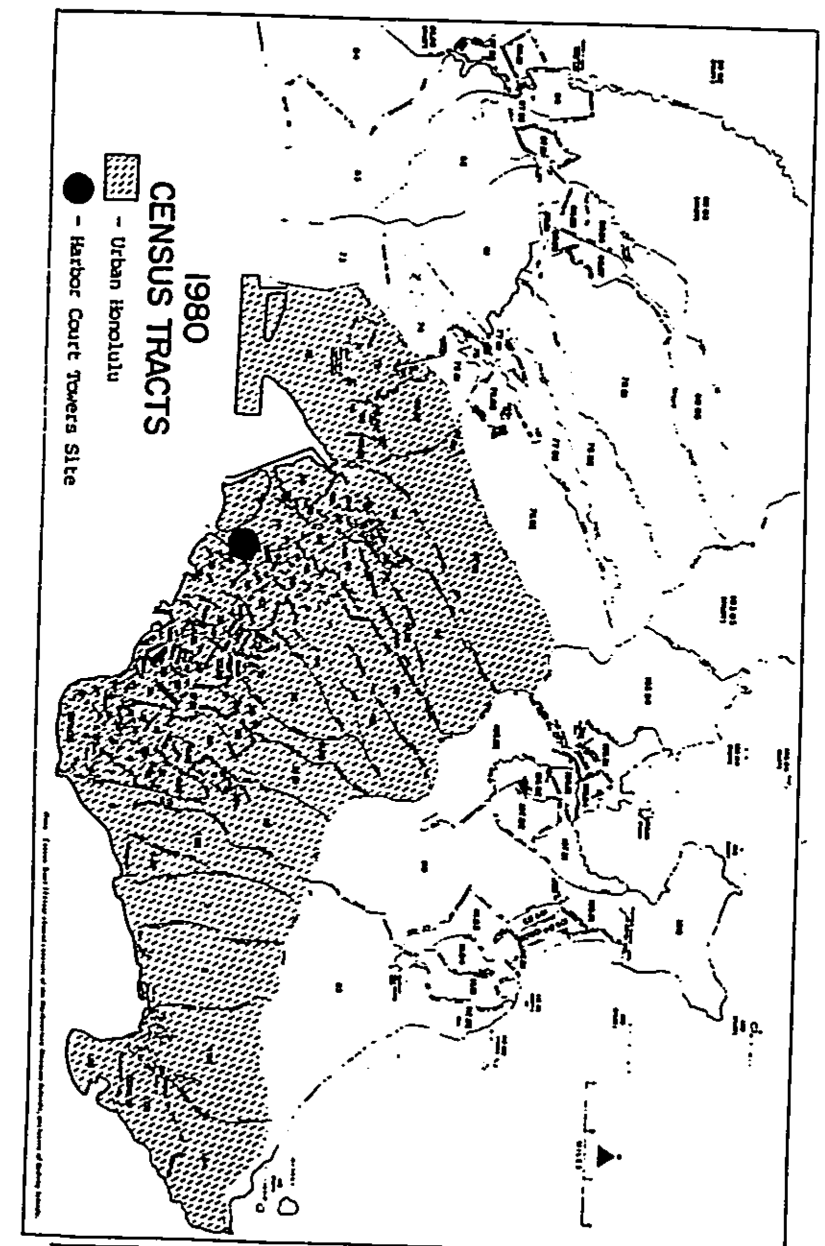

Exhibit III-A

Exhibit III-B

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HARBOR COURT TOWERS
Condominium Resales
1985-1989

Year	Honolulu [1]	Oahu
1985	1,812	2,861
1986	2,397	3,600
1987	3,560	4,848
1988	4,284	6,562
1989	3,775	6,546
Total	15,828	24,417

[1] Includes tax map key zones 1 to 3.

Source: John Child & Company, Inc. based on Multiple Listing Service, Oahu, December 1985 to December 1989.

Exhibit III-C

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HARBOR COURT TOWERS
Average Condominium Resale Prices
1985-1989

Year	Honolulu [1]	Oahu
1985	$ 99,100	$ 98,900
1986	111,700	107,700
1987	133,200	124,700
1988	155,500	138,300
1989	190,600	164,400

[1] Includes tax map key zones 1 to 3.

Source: John Child & Company, Inc. based on Multiple Listing Service, Oahu, December 1985 to December 1989.

Exhibit III-D

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HARBOR COURT TOWERS
Price Distribution of Condominium
Sales in Urban Honolulu

Price range	1987	1988	1989
Under $100,000	46.7%	41.0%	24.8%
$100,000 - 199,999	37.6	41.3	46.5
200,000 - 299,999	8.3	10.9	18.4
300,000 - 399,999	2.5	3.3	5.2
400,000 and over	4.9	3.5	5.1
Total	100.0%	100.0%	100.0%

Source: Multiple Listing Service Hawaii, REsearch/THK, February 1990.

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Eight new condominium projects in urban Honolulu are comparable to Harbor Court and have reported significant presales activity. The projects include:

- Honolulu Park Place
- Imperial Plaza
- Nauru Tower
- Queen Victoria
- Uraku Tower Hawaii
- Waterfront Towers
- Waterpark Tower
- Waialae Residence.

Considering the recent price escalations, reservations and presales in the comparable developments under construction, units priced over $300,000 could represent 15% to 25% of all condominium sales in Honolulu.

Resales Days on Market

The average days on market in Honolulu has decreased over 40% from 123 days in 1985 to 73 days in 1989. The island-wide days on market follows a similar pattern, as shown in Exhibit III-E.

EXISTING AND PROPOSED
COMPARABLE CONDOMINIUM INVENTORY

The market assessments of Harbor Court is based on a review of the market performance experienced by similar condominium developments. The selection of the comparable projects and their design characteristics are presented under the following subheadings.

Comparable Projects

Of the condominium projects in urban Honolulu, 14 projects were selected for analysis. These projects were considered most similar to Harbor Court in terms of:

- Location
- Unit size and design
- Quality.

The selected projects are in central Honolulu; most are within a radius of about one mile of Harbor Court, as shown in Exhibit III-F.

Four existing projects were built between 1968 and 1987. The remaining 10 projects are under construction or proposed and have completion dates scheduled between 1990 and 1992, as shown in Exhibit III-G.

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HARBOR COURT TOWERS
Location of Comparable Condominium Projects

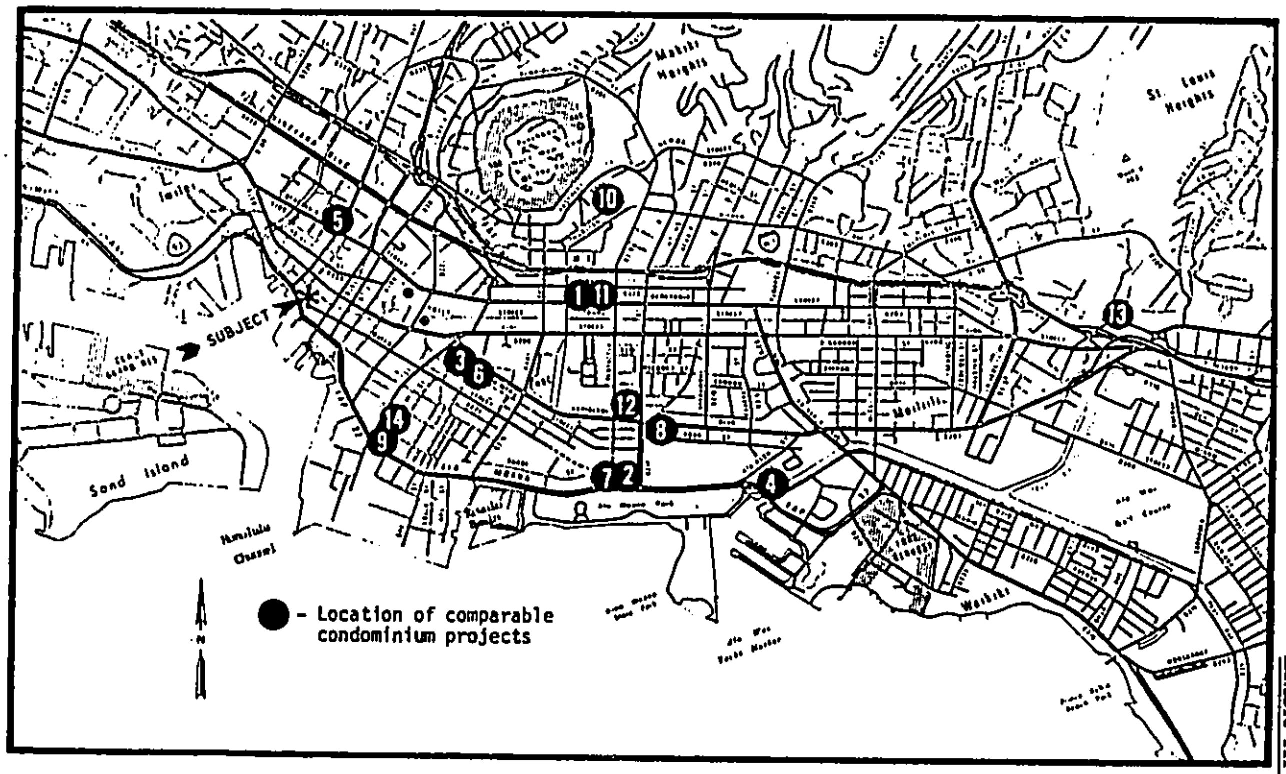

Exhibit III-F

Exhibit III-E

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HARBOR COURT TOWERS
Average Condominium Resale Days on Market
1985-1989

Year	Honolulu [1]	Oahu
1985	123	115
1986	121	115
1987	100	103
1988	70	74
1989	73	61

[1] Includes tax map key zones 1 to 3.

Source: John Child & Company, Inc. based on Multiple Listing Service, Oahu, December 1985 to December 1989.

Exhibit III-G

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HARBOR COURT TOWERS
Selected Comparable Condominium Projects

No.	Project	Tenure	Year built
	Existing:		
1	Admiral Thomas	Leasehold	1980
2	1350 Ala Moana	Leasehold	1968
3	Royal Capitol Plaza	Leasehold	1987
4	Yacht Harbor Tower	Fee simple/ Leasehold	1972
	Under construction:		
5	Honolulu Park Place	Fee simple	1990
6	Imperial Plaza	Fee simple	1991
7	Nauru Tower	Leasehold	1991
8	Uraku Tower Hawaii	Fee simple	1990
9	Waterfront Towers	Leasehold	1990
10	1015 Wilder	Fee simple	1990
	Planned/proposed:		
11	Queen Victoria	Fee simple	1991
12	Universe Plaza	Fee simple	1992
13	Waialae Residence	Fee simple	1990
14	Waterpark Towers	Leasehold	1992

Source: Project brokers, developers and public records.

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Unit Mix

The 14 projects include about 3,500 units. About 2,300 units or 65% of the total are two-bedroom units. Another 960 or about 27% of the units are one-bedroom. About 2,600 or 8% include three bedrooms and atypical penthouse units, as shown in Exhibit III-H.

Historically, the unit mix in the majority of developments in Honolulu has typically emphasized one- and two-bedroom units. Of the 1,250 apartments in the existing comparable developments, about 32% are one-bedroom units while about 65% are two-bedroom units. Three-bedroom units comprise the remaining 3%.

By contrast, about 65% of the 2,270 units in the developments under construction or planned are two-bedroom units. One-bedroom units comprise only about 25% of this inventory while three-bedroom units and specialty penthouse units represent about 10%.

Unit Size

Unit sizes of the two-bedroom apartments in the comparable condominium projects range between about 900# and 1,800#, as shown in Exhibit III-I. Typically, the larger apartment sizes are found in the higher quality projects.

SALES PRICES

Sale prices are discussed in terms of current, original sale and asking prices for the two-bedroom units in the comparable condominium projects under the following subheadings.

Current Prices

Current prices for two-bedroom units in the comparable condominium projects are between about $250,000 and $1,300,000. Typical prices per square foot range from about $300 to $800, as shown in Exhibit III-J.

Significant price variations result primarily from location, floor height and view planes. Other factors influencing the typical price ranges include:

- Apartment sizes
- Design and quality
- Land tenure.

Exhibit III-H

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HARBOR COURT TOWERS
Unit Mix of Comparable Condominium Projects

No.	Project	Apartment Mix: 1-Bdrm.	2-Bdrm.	3-Bdrm.	Other	Total
	Existing:					
1	Admiral Thomas	60	74	13	0	147
2	1350 Ala Moana	0	353	0	0	353
3	Royal Capitol Plaza	131	162	0	0	293
4	Yacht Harbor Tower	207	229	20	0	456
	Subtotal	398	818	33	0	1,249
	Under construction:					
5	Honolulu Park Place	145	290	0	0	435
6	Imperial Plaza	0	166	40	0	206
7	Nauru Tower	74	222	0	8 [1]	304
8	Uraku Tower Hawaii	0	81	9	0	90
9	Waterfront Towers	126	176	0	4 [1]	306
10	1015 Wilder	0	11	46	0	57
	Subtotal	345	946	95	12	1,398
	Planned/proposed:					
11	Queen Victoria	0	24	24	0	48
12	Universe Plaza	68	203	67	5 [1]	343
13	Waialae Residence	0	4	20	0	24
14	Waterpark Towers	150	300	6	0	456
	Subtotal	218	531	117	5	871
	Total	961	2,295	245	17	3,518

[1] Penthouse units.

Source: Project brokers, developers and public records.

Exhibit III-I

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HARBOR COURT TOWERS
Net Areas of Comparable Two-Bedroom Apartments [1]

No.	Project	Net area (sf)
	Existing:	
1	Admiral Thomas	1,586 - 1,634
2	1350 Ala Moana	943 - 1,215
3	Royal Capitol Plaza	829 - 1,061
4	Yacht Harbor Tower	1,173 - 1,474
	Under construction:	
5	Honolulu Park Place	875 - 1,218
6	Imperial Plaza	893 - 2,450
7	Nauru Tower	1,220 - 1,892
8	Uraku Tower Hawaii	1,275
9	Waterfront Towers	1,188 - 2,082
10	1015 Wilder	1,240
	Planned/proposed:	
11	Queen Victoria	1,700 - 2,000
12	Universe Plaza	N/A
13	Waialae Residence	1,043
14	Waterpark Towers	1,200

[1] Excluding lanais.

Source: Project brokers, developers and public records.

Exhibit III-J

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HARBOR COURT TOWERS
Current Two-Bedroom Sales Prices
in Comparable Projects

No.	Project	Sales Price: Total unit price	Sales Price: Price per ¢
	Existing:		
1	Admiral Thomas	$620,000 - $ 750,000	$390 -$470
2	1350 Ala Moana	350,000 - 550,000	350 - 450
3	Royal Capitol Plaza	250,000 - 310,000	280 - 350
4	Yacht Harbor Tower -		
	Fee simple	880,000 - 1,000,000	750 - 780
	Leasehold	800,000 - 1,000,000	630 - 730
	Under construction:		
5	Honolulu Park Place	260,000 - 450,000	270 - 470
6	Imperial Plaza	350,000 - 750,000	400 - 600
7	Nauru Tower	420,000 - 1,000,000	345 - 760
8	Uraku Tower Hawaii	550,000 - 935,000	480 - 790
9	Waterfront Towers	400,000 - 1,300,000	335 - 625
10	1015 Wilder	510,000 - 680,000	410 - 550
	Planned/proposed:		
11	Queen Victoria	625,000 - 850,000	360 - 480
12	Universe Plaza	N/A N/A	N/A N/A
13	Waialae Residence	375,000 - 420,000	360 - 400
14	Waterpark Towers	N/A N/A	N/A N/A

Source: Project brokers, developers and MLS Hawaii, REsearch/TMK, February 1990.

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Asking Prices

Asking prices for two-bedroom units in the comparable projects are between about $300,000 and $1,800,000 or about $340 per square foot to nearly $1,370 per square foot, as shown in Exhibit III-K. These asking prices are about 10% to 20% higher than recent sales prices.

Prices at selected projects under construction in urban Honolulu have typically increased between about 5% and 25% over the past 12 to 18 months, as shown below:

Price Increase Over 12 to 18 Months in
Selected Condominium Projects

Project	Typical increase
Waterfront Towers	5% - 20% [1]
Honolulu Park Place	7 - 15
1015 Wilder	15 - 40
Nauru Towers	20 - 50

COMPETITIVE HOUSING SUPPLY

All types of housing, including rentals, condominiums and single-family residences, are in demand. The market for condominium apartment sales and resales is strong; the velocity of sales and resales has escalated during the past year, and sales prices have increased.

The market for new residential condominium units in urban Honolulu is very strong. Virtually all the inventory has been or will be marketed during the construction term. Examples of this trend are shown in Exhibit III-L. In most instances, units have been sold as quickly as they are offered. Examples of this pattern are shown in Exhibit III-M.

Currently, nearly 950 two-bedroom units in six comparable residential condominiums are under construction in urban Honolulu. Most of the units in these projects have been reserved. Only about 20 two-bedroom units are available for sale, as shown in Exhibit III-N.

The residential units in Harbor Court are expected to face varying degrees of competition from four other projects. These projects include about 530 units, about 165 units have been reserved, as shown in Exhibit III-O.

[1] Units on the upper and penthouse floors have experienced up to 40% increases.

Exhibit III-K

DRAFT

HARBOR COURT TOWERS
Current Two-Bedroom Asking Prices
in Comparable Projects

No.	Project	Asking Prices: Total unit price	Asking Prices: Price per ft²
	Existing:		
1	Admiral Thomas	\$ 600,000 - \$ 995,000	\$370 - \$ 630
2	1350 Ala Moana	390,000 - 530,000	400 - 500
3	Royal Capitol Plaza	300,000 - 400,000	340 - 470
4	Yacht Harbor Tower -		
	Fee simple	1,100,000 - 1,400,000	860 - 990
	Leasehold	890,000 - 1,800,000	700 - 1,370
	Under construction:		
9	Waterfront Towers	600,000 - 1,000,000	400 - 700
10	1015 Wilder	795,000	600

Source: Project brokers, developers and MLS Hawaii, REsearch/TMK, February 1990.

Exhibit III-L

DRAFT

HARBOR COURT TOWERS
Sale Status of Selected Condominium Developments

Project name	No. Units: Total	No. Units: Offered	Market experience
Waterfront Towers	302	302	All units sold during construction. Active resale market with sharply increased prices.
Nauru Tower	304	152	152 units reserved in one day. Backup names taken. Remaining units to be sold in increments at higher prices. Auction held for second release.
Uraku Tower Hawaii	90	85	80 units sold in a 3-week period.
Honolulu Park Place	435	219	All units reserved in hours. More than 150 backup buyers identified. A second increment was offered and sold in May 1989.
Imperial Plaza	206	206	90% of the units reserved in a few weeks.
Waterpark Towers	315	158	The 158-unit offering was reserved in a few hours. More than 150 backup names taken.
Queen Victoria	515	26	Lottery held; fully reserved in a period of three hours.
Waialae Residence	24	12	Fully reserved in about two weeks.

Source: John Child & Company, Inc. based on interviews with project developers and brokers.

Exhibit III-M

DRAFT

HARBOR COURT TOWERS
First Offering Reservation Experience

Project	Total no. of units	First Offering: Date	No. of units offered	Reservations Received: Total	%	Time frame
Waterfront Towers	306	Aug-87	306	260	85	2 weeks
Nauru Tower	304	Jul-88	152	165	109	1 day
2nd offering [1]		Jul-89	12	60	500	2 weeks
1015 Wilder	57	Sep-88	57	51	89	4 months [2]
Honolulu Park Place	435	Nov-88	219	250	114	1 day
Imperial Plaza	206	Jul-89	107	105	98	1 day
Waialae Residence	24	Nov-89	24	12	50	1 week
Uraku Tower Hawaii	90	Nov-89	90	80	89	3 weeks
Waterpark Towers	158	Dec-89	158	308	195	1 day
Queen Victoria	52	Jan-90	26	60	231	1 day

[1] Upset prices were set on 12 units for sealed bids. In two weeks 60 bids were received. Final accepted prices were 0.5% to 24% higher than upset prices.

[2] Developer indicated that the project was 90% sold based on "word-of-mouth" advertising.

Source: John Child & Company, Inc. based on interviews with project developers and newspaper reports.

Exhibit III-N

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HARBOR COURT TOWERS
Sales Status of Two-Bedroom Units
in Selected New Projects

Project	Two-Bedroom Units: Total	Estimated sold	Available
Honolulu Park Place	290	290	0
Imperial Plaza	166	150	16
Nauru Tower	222	222	0
Uraku Tower Hawaii	81	76	5
Waterfront Towers	176	176	0
1015 Wilder	11	11	0
Total	946	925	21

Source: John Child & Company, Inc. based on interviews with project representatives.

Exhibit III-O

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HARBOR COURT TOWERS
Sales Status of Selected Projects

Project	Projected year of completion	Two-Bedroom Units Total	Sold	Available
Universe Plaza	1992	203	NA	203
Queen Victoria	1991	24	13	11
Waialae Residence	1990	4	2	2
Waterpark Tower	1992	300	150	150
		531	165	366

Source: John Child & Company, Inc. based on interviews with project representatives.

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BUYER PROFILE

The largest segment of buyers in the most recently marketed comparable projects have been Hawaii residents. About 50% to 85% of the buyers have been from Hawaii, as shown in Exhibit III-P.

Another significant market segment is Japanese buyers, which account for about 15% to 50% of units sold, as also shown in Exhibit III-O.

EVALUATION OF COMPETITION

The five projects to be developed between 1990 and 1992 are considered similar in physical and design characteristics and pricing, but are expected to be sold out by their completion dates.

COMPETITIVE POSITION

The residential units in Harbor Court would have a significant competitive advantage over most of the projects entering the market between 1992 and 1993 because:

- The site is in downtown Honolulu, within walking distance of major employment centers.
- The site overlooks the Honolulu Harbor and the Ewa plain. Most apartments will have panoramic views.
- Each apartment is designed as two "lock-out" units, equivalent to two separate "hotel" rooms. Harbor Court will include a hotel rental operation for owners who decide to place their apartments in the rental pool.
- Both buildings will be part of a master-planned mixed-use development with a variety of onsite restaurants and other retail facilities.

Based on the current profile of buyers at comparable condominiums, a primary market segment for the Harbor Court residential apartments is expected to be affluent Hawaii residents desiring a residence close to their work place. Local investors and Japanese individuals and corporations are also expected to represent major market segments, attracted by the opportunity to place units into the hotel rental operation.

Currently, the demand for well located residential condominiums in Honolulu is very strong. The inventory of available units is limited; as a result, the newest projects are being presold in days.

Based on current market conditions, the 122 apartments in Harbor Court are expected to be presold during the construction period.

Exhibit III-P

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HARBOR COURT TOWERS
Buyer Origin
(Percentage of Current Sales)

Project	Japan	Other foreign	Hawaii resident	Mainland west coast	Other mainland	Total
Under construction/ planned:						
Honolulu Park Place	15%	5%	80%	—	—	100%
Imperial Plaza	20	—	70	—	—	—
Iolani Palms	15	—	85	—	—	100
Nauru Tower	—	—	75	—	—	—
Uraku Tower Hawaii	50	—	50	—	—	100
Waterfront Towers [1]	30	—	60	[2]	10%	100
1015 Wilder	—	—	70	—	—	—

[1] Current resale activity of units priced at $800,000 and greater indicates over 50% are Japanese buyers.
[2] The 10% is for all Mainland purchases, their statistics did not separate the group.

Source: John Child & Company, Inc. based on interviews with project brokers and developers and news articles.

APPENDIX I

TRAFFIC IMPACTS ASSESSMENT

Pacific Planning and Engineering Inc.

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KAAHUMANU SQUARE

TRAFFIC IMPACT ASSESSMENT REPORT

JUNE 1989

PACIFIC PLANNING & ENGINEERING, INC.

TRAFFIC IMPACT ASSESSMENT REPORT

FOR

KAAHUMANU SQUARE

TMK: 2-1-02: parcels 16, 20, 26 & 56
Honolulu, Hawaii

June 1989

Prepared for:
McCormack Properties

Prepared by:
Pacific Planning & Engineering, Inc.
1144 Tenth Avenue, Suite 202
Honolulu, Hawaii 96816

TABLE OF CONTENTS

APPENDICES

LIST OF FIGURES

EXECUTIVE SUMMARY

Pacific Planning & Engineering, Inc. (PPE) was engaged to undertake a traffic impact study to identify and assess future traffic impacts caused by the proposed Kaahumanu Square residential, commercial and office complex in Honolulu, Oahu.

The project is part of a program by the City & County of Honolulu through the Department of Housing and Community Development to revitalize Downtown Honolulu. Kaahumanu Square is a multi-tower residential, commercial and office complex. Parking requirements for the project include replacement of the 462 stalls from the present structure and ground level parking stalls next to the District Court Building across Bethel Street, as well as provision for the new residential, commercial and office complex.

The project site is located in the central business district of downtown Honolulu on the Island of Oahu. The site consists of two parcels of land at the corner of Nimitz Highway, Queen Street, Bethel Street, and Merchant Street.

This report identifies and evaluates the probable impact of the traffic generated by the proposed development in the year 1992 when the project is expected to be completed. Impacts are assessed during the morning and afternoon peak hours, *without* and *with* the proposed project.

The analysis primarily focuses on four nearby intersections. They are Bethel Street at Merchant Street, Bethel Street at Nimitz Highway, Merchant Street at Bishop Street and Bishop Street at Queen Street. These intersections provide access and egress to the project from all directions. The report discusses the impact on the intersections by determining *levels of service* and presents the findings and recommendations.

Conclusion

The results of the traffic operation analysis indicate that the proposed Kaahumanu Square redevelopment will not significantly change the traffic flow quality in 1992 when the project is expected to be completed. The replacement of the 462 parking stalls from the existing structure is expected to continue to generate the same level of traffic, while the proposed commercial and office spaces will generate approximately 450 additional trips during the morning and afternoon peak hours. On the other hand, location of the 174 residential condominium units near a large employment center may reduce the number of vehicular trips generated by the redevelopment project.

The operational analysis for the signalized intersections indicate the Level-of-Service (LOS) dropping from LOS E to LOS F during the morning and afternoon peak hours due to an increase in traffic volumes. However, field observations indicate the study intersections are presently operating at LOS F because of existing congested conditions during the morning and afternoon peak hours. The low volume of traffic at the intersections indicate downstream traffic congestions that cause low volume of traffic negotiating the signalized intersections and thus indicating LOS C.

The planning analysis for the signalized intersections indicate that three of the four study intersections will be under capacity, with the project generated traffic. The reason for the under capacity is due primarily to low traffic volume at the intersections resulting from illegal parking and lane blockage by motorists unloading and loading passengers and goods at curbside along Merchant, Bishop and Queen Streets.

The increase in traffic generated by the proposed project is not expected to significantly affect the existing traffic conditions. The recommendations made herein are intended to improve already congested conditions.

Recommendations

1. The entrance to the project parking structure should provide for a deceleration lane to permit through traffic to proceed forward and also to improve sight distance for drivers exiting from the parking structure.
2. The turning radius at the intersection of Bethel and Merchant Street should be lengthened so that vehicles turning right from Bethel Street onto Merchant Street need not encroach into the middle lane to safely negotiate the right turn movement.
3. The intersection of Queen Street, Nimitz Highway and Bethel Street should be improved.
4. Expedite City and County of Honolulu Department of Transportation Services plans to install a centralized computer controlled traffic signal network.

PROJECT DESCRIPTION

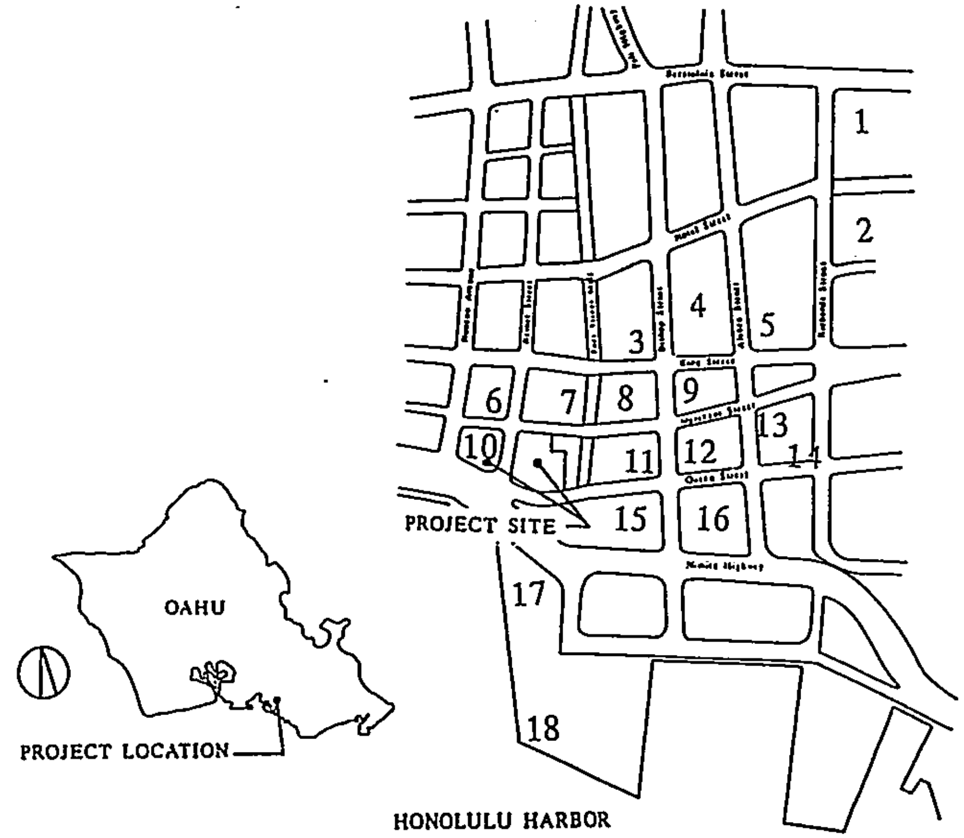
The proposed Kaahumanu Square, a multi-tower residential, commercial and office complex, is part of a program by the City & County of Honolulu through the Department of Housing and Community Development to revitalize Downtown Honolulu. It will be used to expand business and employment opportunities within the Primary Urban Center and enhance the visual and social environment of the city.

The proposed project is planned for two parcels of land bounded by Nuuanu Avenue, Nimitz Highway, Bethel Street, Merchant Street and Queen Street. Figure 1 shows the general project location on Oahu and Figure 2 shows the project vicinity including the surrounding land use and roadway network.

The project site covers a total 79,718 square feet of land designated for urban use. It is located in the downtown Central Business District as identified by Tax Map Key 2-1-02: parcels 16, 20, 26 and 56.

Parcel 26, a proposed commercial development, will be connected to Parcels 16, 20 and 56 by a pedestrian walkway elevated over Bethel Street. Vehicular parking for the project will be located in a multi-level parking structure on Parcels 16, 20 and 56. Vehicular access to the parking structure will be from Bethel Street and Merchant Street.

The project plan includes provision for office and commercial space for businesses, open spaces for community activities, a possible rapid transit station and a "makai gateway" to downtown Honolulu for visitors approaching from the airport area or Waikiki. It will also provide pedestrian links to Fort Street Mall, Amfac Triangle Park and the Merchant Street Historic District.



LEGEND

1. State Capitol
2. Iolani Palace
3. Bishop Trust
4. 1001 Bishop
5. Central Pacific Plaza
6. Yokohama Specie Bank
7. Pioneer Plaza
8. Financial Plaza
9. First Hawaiian Bank
10. Old Police Station
11. Alexander & Baldwin
12. Davies Pacific Center
13. City Center Building
14. City Bank Building
15. Amfac Center
16. Grosvenor Center
17. Pier Eleven
18. Aloha Tower

Figure 1. Project Location Map

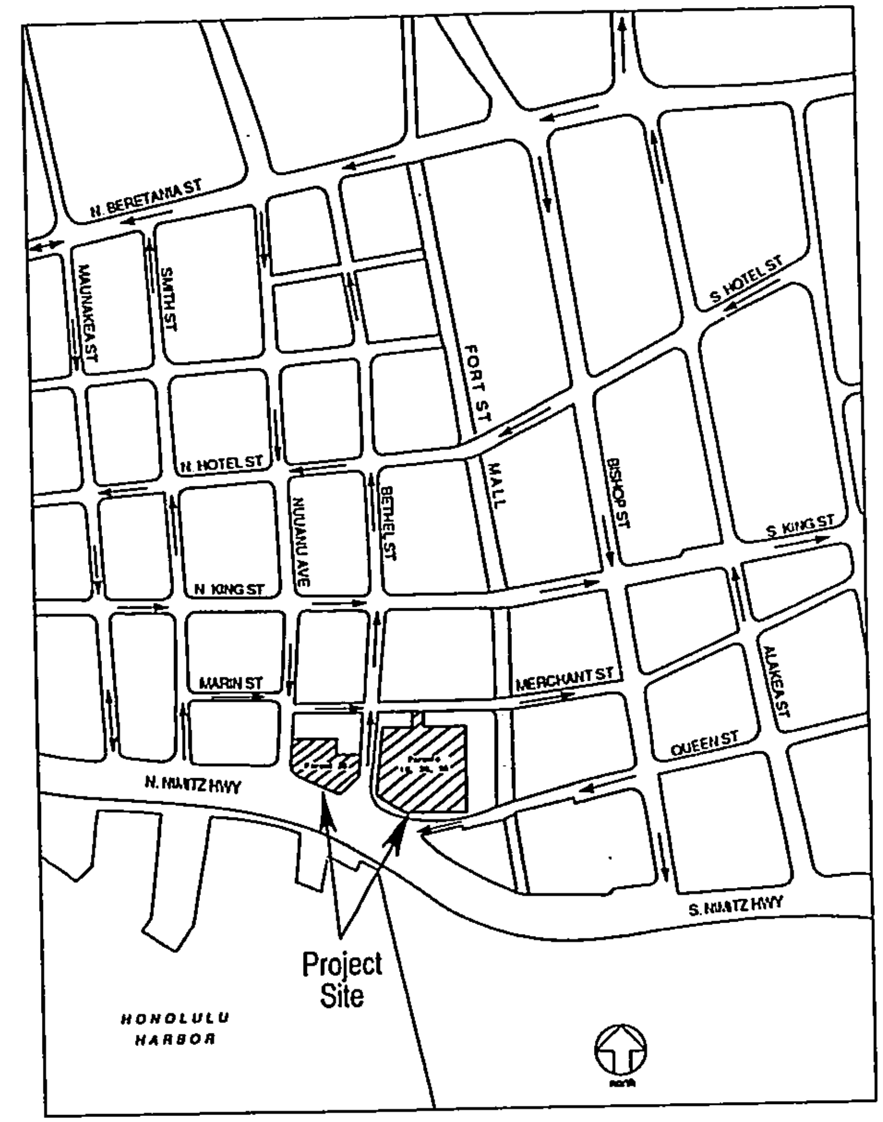


Figure 2. Project Vicinity and Roadway Network

Presently, the site is being utilized as the Kaahumanu Parking Structure and a parking lot for District Court. The structure contains 426 stalls for public parking and is bordered by Queen Street, Bethel Street and Merchant Street. The District Court parking lot is used by employees and visitors of the District Court Building. It is bordered by Nuuanu Avenue, Nimitz Highway and Bethel Street.

Vehicular access from Bethel Street to the existing Kaahumanu Parking Structure is chained and closed to traffic. The project plan calls for utilization of this Bethel Street access to the parking facilities of Kaahumanu Square with a down ramp to the basement level of the parking structure. Exit from the existing parking structure, presently located on Queen Street, will be closed and access into and out of the project site will be either from Bethel Street or Merchant Street as shown on Figure 3.

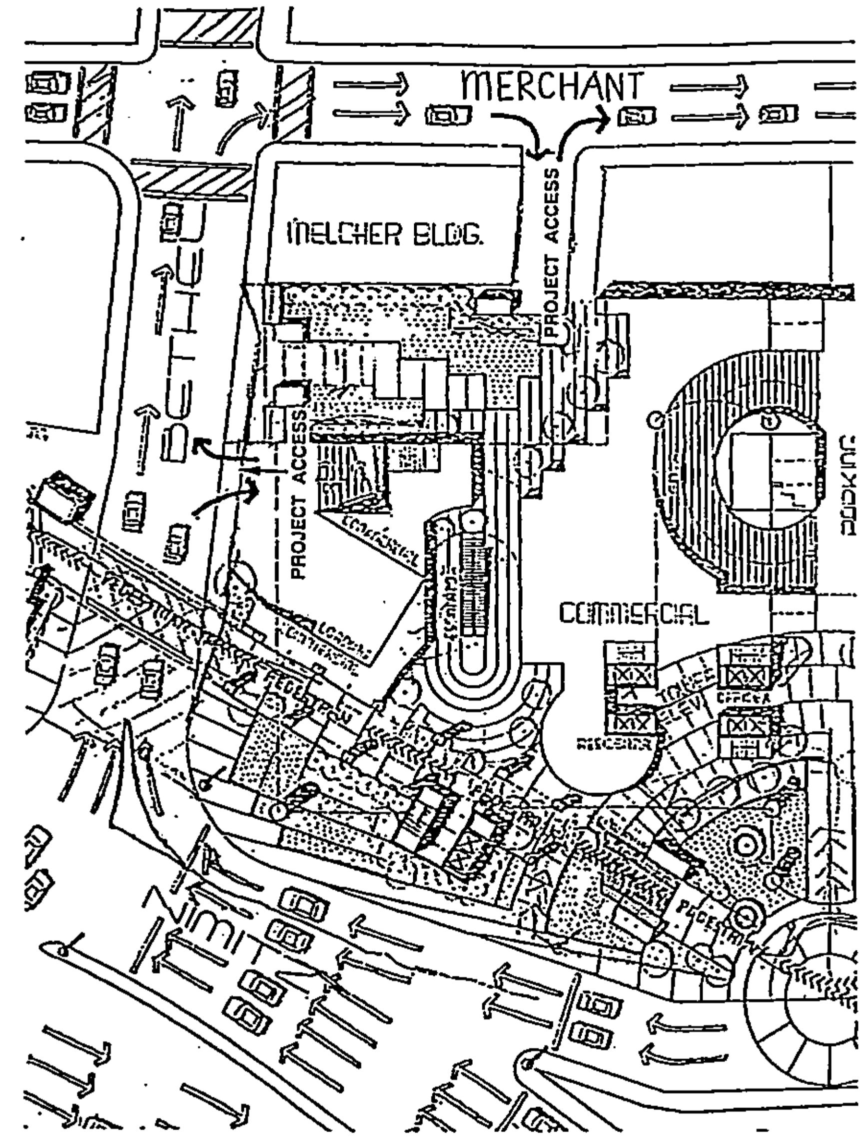


Figure 3. Access To Project Site

EXISTING CONDITIONS

A review of the project site and adjoining area was conducted to determine traffic conditions surrounding the proposed project. The review included the land uses, roadway facilities, parking, traffic controls, and traffic conditions.

Area Conditions

The land uses immediately surrounding the proposed Kaahumanu Square consists of various city government offices and office buildings and plazas owned by major businesses. Buildings to the north and east of the project lie within the Merchant Street Historical District and are designated historical sites.

On the eastern border (Kokohead) of the project site is the Campbell Building. Across Merchant Street, west of the project site, is the Pioneer Plaza while to the south (Kokohead-makai) lies the Amfac Center and Amfac Park. Nimitz Highway borders the project site on the west. Across Nimitz Highway is Honolulu Harbor and the Aloha Tower complex.

Historical Sites

Melcher's Building, located on the northeast corner of the project site, is the oldest commercial building in downtown Honolulu and is presently occupied by City offices.

The Old Bishop Bank and Bishop Estate Buildings lie on the eastern border (mauka) of the project site. Located across Bethel Street from Melcher's Building, to the eastern border (mauka) of Parcel 26 of the project site, lies the old Police Station and District Court Building.

The Yokohama Specie Bank Building is located northeast (mauka-ewa) of Melcher's Building across Bethel Street and is currently used by Honolulu Magazine, it is an example of "old Honolulu."

Kamehameha V Post Office building, also located mauka of Melcher's Building across Merchant Street, was the first concrete structure in Hawaii.

Roadway Facilities

The major roadway facilities providing access to Kaahumanu Square are Nimitz Highway and Bishop Street. Minor facilities include Nuuanu Avenue, Bethel Street, Merchant Street and Queen Street.

All the streets immediately surrounding the project site are one-way. They provide circulation which travels in a north, east, south, west pattern around the site. The speed limit on the one-way streets is 25 miles per hour. Generally, the turning radius for vehicles making left or right turns at the curbs is 12 feet.

Street widths are generally 8-10 feet with the exception of the outer or curbside lanes which are wider for vehicles using these lanes to drop off and pick up passengers. Most of the roadways have gutter lanes, with the exception of Merchant Street and Queen Street.

Nimitz Highway is a major divided two-way arterial. Four lanes run to the west (Ewabound) and four lanes run to the east (Kokohead bound). Two exclusive left turn lanes are provided for vehicles approaching from the Ewa direction and turning left onto Bethel Street. Vehicles approaching Bethel Street from the Kokohead direction must merge with vehicles leaving the business district via Queen Street before turning right onto Bethel Street. The intersection of Nimitz Highway with Bethel Street is a signalized T-intersection.

Bishop Street is a major one-way arterial with five southbound (makai) lanes. It forms a one-way couplet with Alakea Street. Signalized intersections are formed with Merchant Street and Queen Street. The intersection with Merchant Street has four through lanes and an exclusive left turn lane which turns into Merchant Street (Kokohead bound).

At the intersection with Queen Street, Bishop Street has four lanes consisting of two through lanes, an exclusive right turn lane (Ewabound) and an exclusive left turn lane (Kokohead bound) into Queen Street. Makai of Queen Street, two through lanes continue on to intersect with Nimitz Highway. A bus stop is located on Bishop Street past the intersection with Queen.

Queen Street is a four lane two-way arterial which runs northeast to southwest. It is located on the makai side of the project where it joins with Nimitz Highway at the southeastern corner of the project. Approaching Bishop Street from the Kokohead direction, two lanes are headed east (Kokohead bound) and two headed west (Ewabound).

Past the intersection, continuing in the Ewa direction, Queen is a one-way street except for a lane originating from the Amfac building parking structure which is Kokohead bound to allow exiting vehicles access onto Bishop Street.

Where the Amfac Building connects with the Amfac Park, a single lane exiting from the Amfac parking structure merges onto Queen Street in the Ewabound direction. Vehicles exiting the Kaahumanu Parking Structure use Queen Street to merge with traffic travelling on Nimitz Highway in the ewabound direction.

Bethel Street runs through two parcels of the project site and connects Nimitz Highway and Merchant Street. It is a local one-way street headed in the north (mauka) direction. There are two through lanes and one exclusive right turn lane into Merchant Street (Kokohead bound). The 8-foot turning radius of the right lane causes vehicles turning right to encroach into the middle lane of Merchant Street before completing the turn.

Parking, stopping, loading and unloading is not allowed on Bethel Street between Nimitz Highway and Merchant Street, with the exception of the area where the outer Ewa lane is 16 feet wide. A laneage sign is located at the corner of the exclusive right turn lane into Merchant Street.

Merchant Street is a one-way arterial which runs in an west to east direction. The far left lane is a shared as a through and left turn lane, while the remaining two lanes are through lanes. The intersection with Bethel Street is signalized and all four corners of the intersection are situated within the designated historical sites.

Nuuanu Avenue is a three lane one-way arterial running north to south (mauka to makai) which forms a one-way couplet with Bethel Street located south of Nuuanu Avenue. A signalized T-intersection formed with Nimitz Highway includes two exclusive left turn lanes and one exclusive right turn lane provided for vehicles turning onto Nimitz

Highway in the Kokohead bound and Ewa bound directions, respectively. Mauka of its intersection with Nimitz Highway, Nuuanu Avenue forms an unsignalized T-intersection with Merchant Street.

Pedestrian Facilities

Due to heavy pedestrian traffic in the downtown area, the following facilities have been provided for pedestrian activity.

Intersections are provided with crosswalks in all four directions, the exception to this is that no pedestrian crosswalk is provided to cross Nimitz Highway at its intersection with Bethel Street. Wheelchair ramps are also provided at most corners.

There are sidewalks on every block within the study area and picking up and dropping off of passengers were observed on all streets during the peak hour.

Traffic Conditions

Traffic volume records from the State Department of Transportation were collected and reviewed. Peak hours of traffic on the roads surrounding the proposed project site generally occurs between 7:00 and 8:00 am in the morning and between 4:30 and 5:30 pm in the afternoon on weekdays. Traffic volume data from the DOT was used to determine traffic trends in the general area. Figure 4 summarizes the trend in average daily traffic (ADT) along Nimitz Highway at Nuuanu Avenue (Sta. 405A). The plotted data shows a very slow increase in traffic on the order of 0.2% per year.

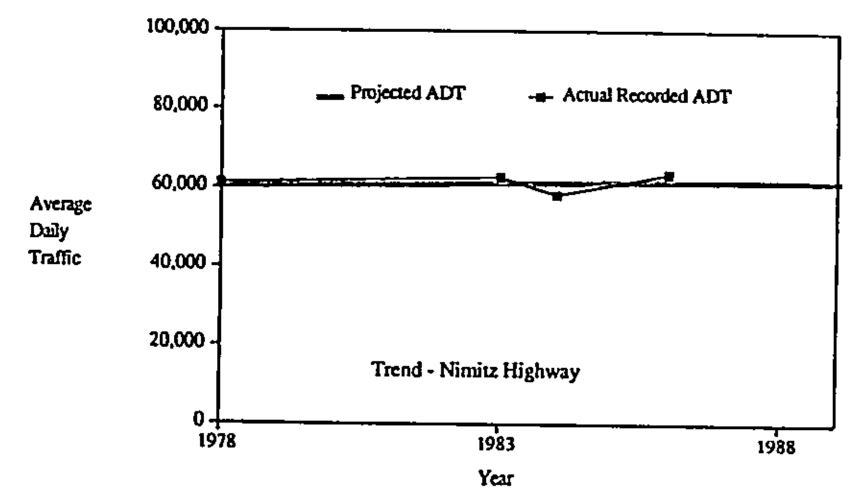


Figure 4. Trend in ADT on Nimitz Highway at Nuuanu Avenue

Manual turning movement traffic counts were taken by Pacific Planning & Engineering, Inc. (PPE) at the intersections of Bethel Street at Merchant Street, Bethel Street at Nimitz Highway, Merchant Street at Bishop Street and Bishop Street at Queen Street during the morning and afternoon peak hours on June 6 and 7, 1989.

In addition, manual counts of vehicle turning movements from Nuuanu Avenue onto Nimitz Highway, vehicles entering and exiting the present Kaahumanu Parking Structure and pedestrian counts were taken. Video records were made of the major intersections during the peak hours. These records provided detailed understanding of the intersection performance as well as the effects of downstream congestion. The weather was dry with a slight overcast in the morning peak hour and sunny and clear in the afternoon. The recorded traffic volumes are shown in Figures 5 and 6.

The existing traffic volumes were analyzed to determine their level-of-service, utilizing the analysis techniques for signalized intersections from the Highway Capacity Manual. The results are discussed in the chapter titled "Traffic Impact Analysis".

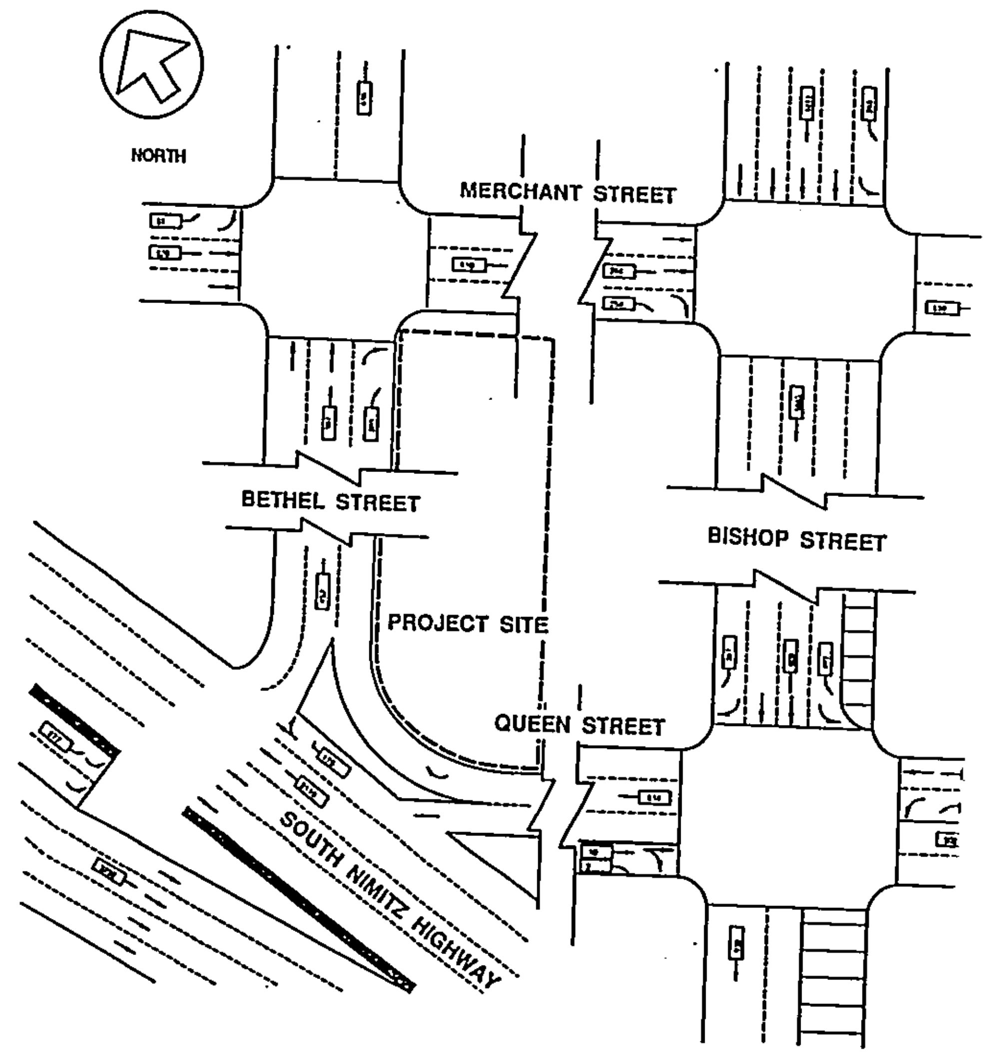


Figure 5. Existing Traffic Volumes 1989 Morning Peak Hour

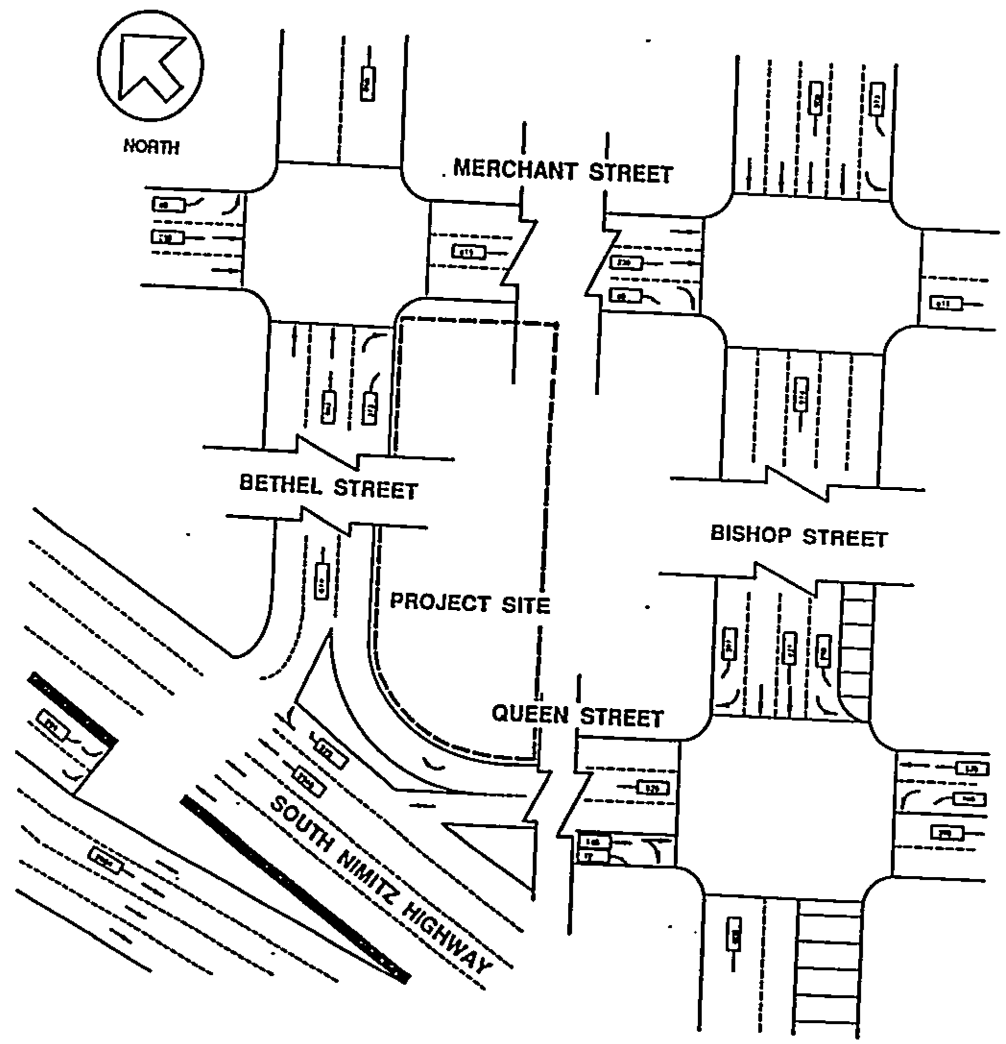


Figure 6. Existing Traffic Volumes 1989 Afternoon Peak Hour

Observed Traffic Conditions

During the traffic counts and video review taken by Pacific Planning and Engineering, Inc., the following observations were made:

During the Morning Peak Hour at:

- Bethel Street and Merchant Street
  1. Between 8:00 and 8:05 am, a queue formed in the exclusive right turn lane on Bethel Street and into Queen Street and Nimitz Highway. Vehicles in the far right lane on Merchant Street (Kokohead bound) were unable to cross Bethel Street. Only the far right lane on Merchant Street was congested, however, vehicles on the middle and far left lane were observed moving freely through the intersection. The congestion was apparently caused by vehicles entering the parking structure from the entrance on Merchant Street who were temporarily stopped while parking tickets were loaded into the machine.
  2. When a queue formed on the exclusive right lane on Bethel Street to turn into Merchant Street, vehicles were observed using the middle lane of Bethel Street to turn right into Merchant Street.
- Nimitz Highway and Bethel Street
  1. Vehicles attempting to turn left or right into Bethel Street (mauka bound) from Nimitz Highway were unable at times to cross the intersection during the green sequence of the stop light due to a queue of traffic on Bethel Street.
- Bishop Street and Merchant Street and Queen Street
  1. About 100 pedestrians were observed crossing Bishop Street at its intersection with Queen Street within a 15 minute period of the peak traffic hour.
  2. Passengers were dropped off along Bishop Street, Merchant Street and Queen Street causing other vehicles to drive around them.

During the Afternoon Peak Hour at:

- Bethel Street and Merchant Street
  1. During a 15 minute period, a queue formed on Bethel Street and into Queen Street and Nimitz Highway and vehicles on the far right lane of Merchant Street (Kokohead bound) were unable to cross the intersection.
  2. A queue would form every 15 to 20 minutes for through vehicles on Bethel Street. The signal at the Bethel Street and King Street intersection to the north caused vehicles to queue past the Merchant Street intersection.
  3. Vehicles used the left (Ewa) side of Bethel Street to pick up passengers (one car was observed parked for 20 minutes). Vehicles generally tended to pick up passengers on both sides of Bethel Street after they passed the Merchant Street intersection, however, some vehicles were observed stopping at the corners of the intersection to pick up passengers which caused vehicles following them to stop.
  4. Pedestrians were observed crossing the intersection in all four directions. At times, this caused a delay for vehicles attempting to turn from Bethel into Merchant and from Merchant into Bethel.
  5. Vehicles were observed using the middle lane of Bethel Street to turn into Merchant Street when a queue formed on the exclusive right turn lane.
- Nimitz Highway at Bethel Street
  1. Vehicles attempting to turn left or right into Bethel Street (mauka bound) from Nimitz Highway were unable at times to cross the intersection during the green sequence of the stop light due to a queue of traffic on Bethel Street.
  2. Vehicles traveling eastbound along Nimitz Highway would queue from the Bishop Street and Alakea Street intersections to Bethel Street.
- Bishop Street and Merchant Street and Queen Street
  1. About 100 pedestrians were observed crossing Queen Street at its intersection with Bishop Street within a 15 minute period of the peak traffic hour. About 110 were observed to cross Bishop Street.
  2. Passengers were dropped off along Bishop Street, Merchant Street and Queen Street causing other vehicles to drive around them.

TRAFFIC IMPACT ANALYSIS

Traffic conditions *without* and *with* the Kaahumanu Square project were estimated for the year 1992. Traffic generated by the proposed project was added to the forecasted 1992 ambient traffic to estimate future traffic on the roadway network with the project.

Future Ambient Traffic

Ambient traffic is the traffic which would occur regardless of whether the proposed project was built or not. Traffic counts by the State Department of Transportation shows that average daily traffic (ADT) has been increasing by about 0.2% annually at the intersection of Nimitz Highway and Nuuanu Street, as discussed in the section on "Existing Conditions."

The existing peak hour traffic volumes shown in Figures 5 and 6 were increased by 0.6% (0.2% for three years) to obtain the ambient traffic forecast volumes in 1992. The resultant ambient traffic volumes are shown in Figures 7 and 8.

Project Generated Traffic

The standard three-step procedure of trip generation, distribution and assignment was used to estimate traffic from the proposed redevelopment.

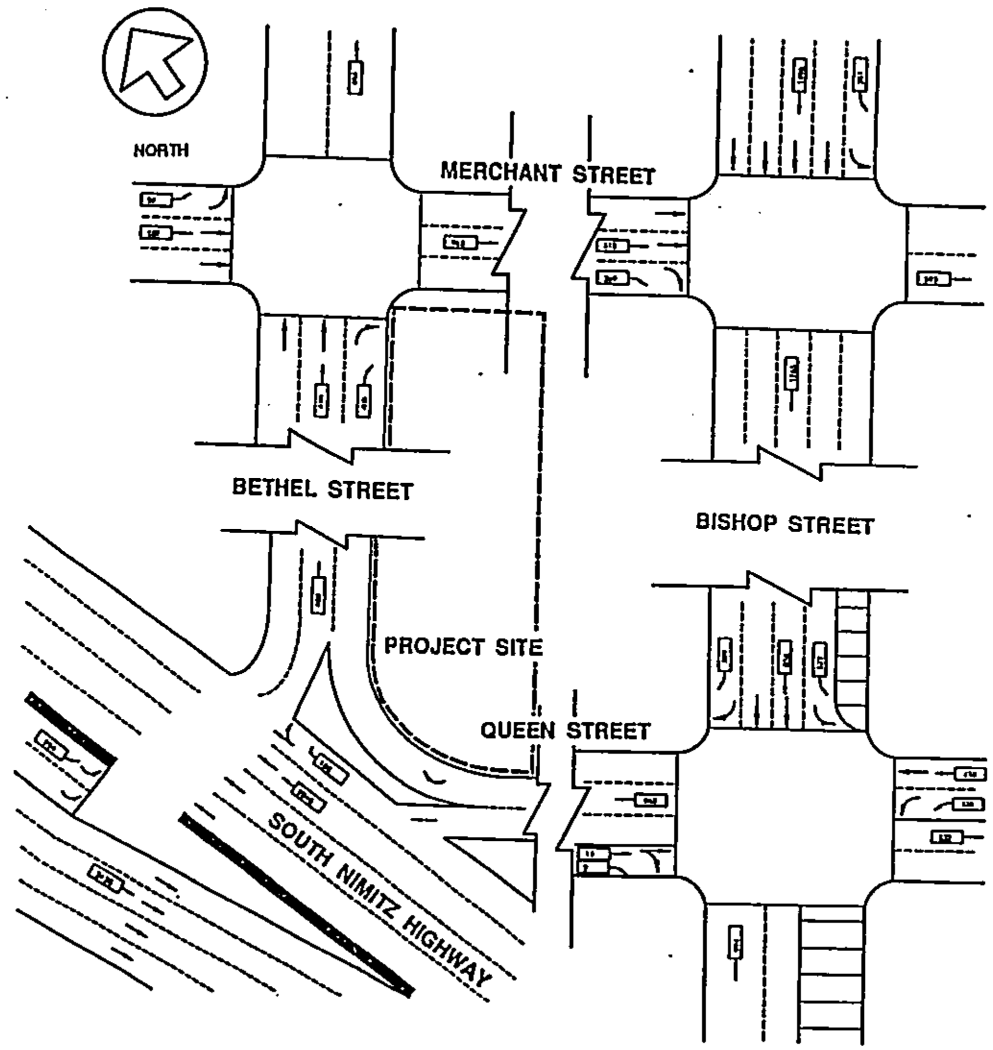


Figure 7. Ambient Traffic Volumes 1992 Morning Peak Hour

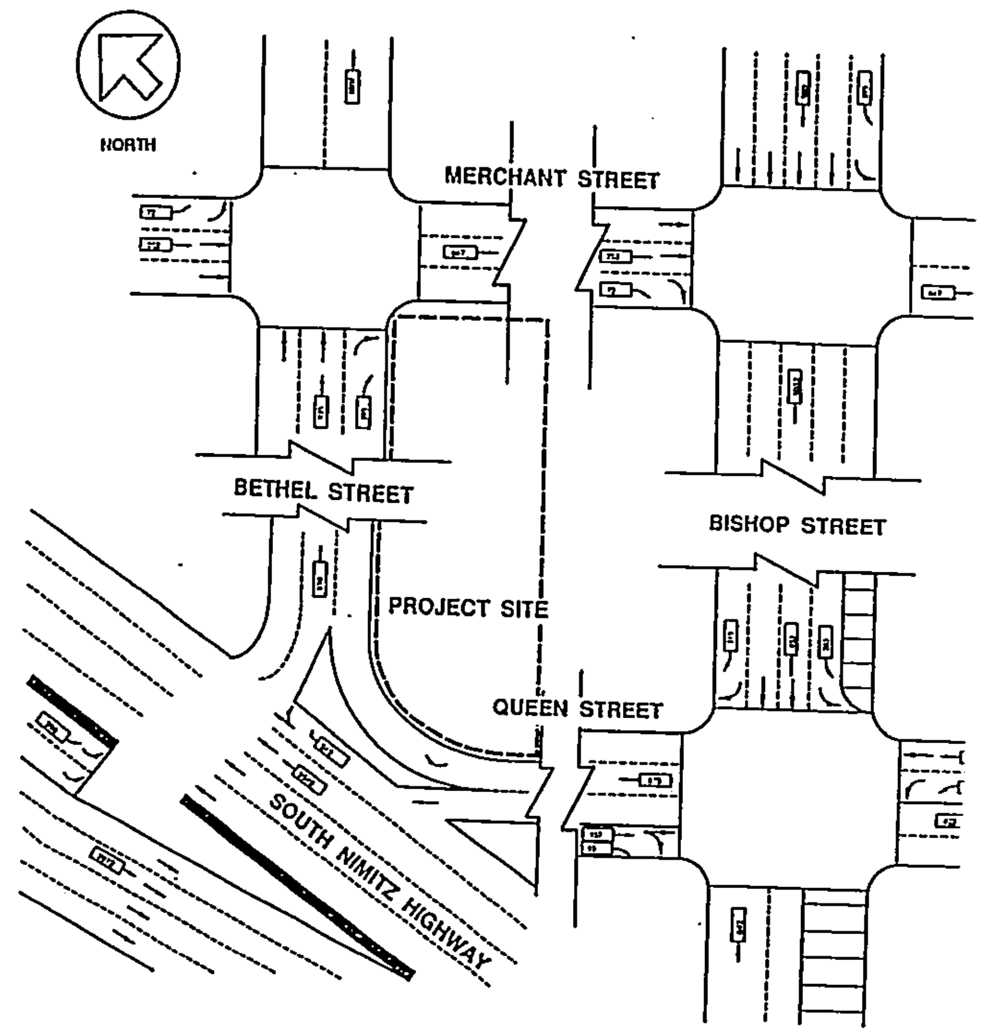


Figure 8. Ambient Traffic Volumes 1992 Afternoon Peak Hour

The trip generation step calculates the number of trips which would be generated during the morning and afternoon peak hours by the proposed project. The number of trips generated were estimated based on the proposed land uses and trip generation data from the Trip Generation Report, 1987 (Fourth Edition), Institute of Transportation Engineers (ITE).

The Kaahumanu Square project consists of 21,700 square feet of commercial space, 198,340 square feet of office space, and 174 units of residential condominium units. The resultant number of trips and the unit rates are shown in Table 1.

Table 1. Trip Generation

	Morning Peak Hour				Afternoon Peak Hour			
	Trip Rate		No. of Trips		Trip Rate		No. of Trips	
Land Use	Enter	Exit	Enter	Exit	Enter	Exit	Enter	Exit
Commercial (trips/1000sf) 21,700 s.f.	1.99	1.99	43	43	2.25	2.25	49	49
Office (trips/1000sf) 198,340 s.f.	1.58	0.24	313	48	0.28	1.47	56	272
Residential Condominium 174 units	.0.06	0.27	10	47	0.23	0.14	40	24
Total Number of Trip Ends			366	138			145	365

Trip Distribution

The trip distribution step assigns trips generated by the new development to their expected origins and destinations. In the analysis, percentages of the trips entering and

exiting the project site were applied to the estimated vehicle trip ends for origins and destinations outside the immediate area.

It is assumed that the vehicles generated by the project will be arriving from all directions using the major arterials leading into the project site. Therefore 60% of the traffic was assumed to arrive from the north using Bishop Street and Nuuanu Avenue while the remaining 40% would enter from the south from Nimitz Highway onto Bethel Street.

Vehicles exiting the project site will very likely travel the same route to return to their origin. The percentage of vehicles entering and exiting the parking structure was equally split between the proposed Bethel Street and Merchant Street accesses.

Traffic Assignment

The traffic assignment step assigns trips to a specific route on the roadway network that will take the driver from origin to destination. Based on trip distributions listed above, project generated vehicles were assigned to the one-way streets adjacent to the project site as follows:

1. Traffic entering the project site:
   a. Forty percent of the project generated traffic will be travelling south along Bishop Street turning right on Queen Street, turning right again on Bethel Street and enter the parking structure access.
   b. Twenty percent of the project generated traffic will be travelling south along Nuuanu Avenue, turning left on Merchant Street and enter the parking structure through the Merchant Street access.

c. The remaining forty percent of the project generated traffic will be travelling along Nimitz Highway, turning right into Bethel Street for those arriving from the Kokohead direction or turning left onto Bethel Street for those arriving from the Ewa direction. Vehicles will then enter the parking structure either through the Bethel Street or Merchant Street access depending on the degree of congestion or accessibility at the Bethel Street access.

2. Traffic exiting the project site.

a. Fifty percent of the project generated traffic is assumed to exit from the Merchant Street proceeding across Bishop Street to Alakea Street or turning right onto Bishop Street and heading south to Nimitz Highway.

b. The remaining fifty percent of the project generated traffic is assumed to exit from the Bethel Street exit turning right onto Bethel Street, proceeding mauka across Merchant Street or turning right onto Merchant Street following in the same direction as those vehicles exiting the Merchant Street exit.

<u>Traffic Forecasts</u>

Applying the predicted growth in ambient traffic on to the basic field counts and then adding the effects of the development's generated traffic, results in the future forecasted traffic. The resultant forecasted traffic volumes are shown in Figures 9 and 10. Tables 2, 3, 4 and 5 presents the results of the forecast at the four impacted intersections for the present condition, the future <u>without</u> the Kaahumanu Square Project and the future <u>with</u> the Kaahumanu Square Project. The volumes represents vehicle movements approaching each intersection during the development's morning and afternoon peak hour generation.

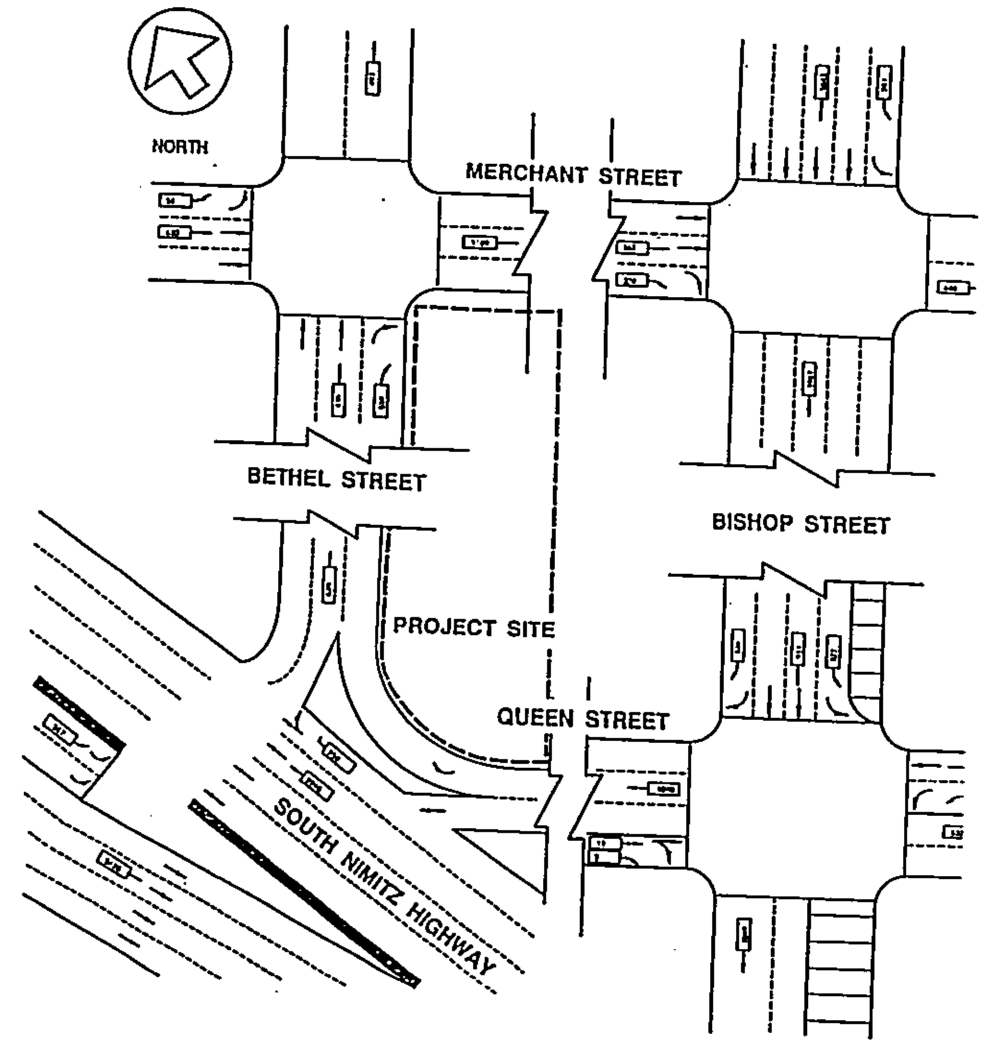


Figure 9. Forecast Traffic Volumes 1992 Morning Peak Hour

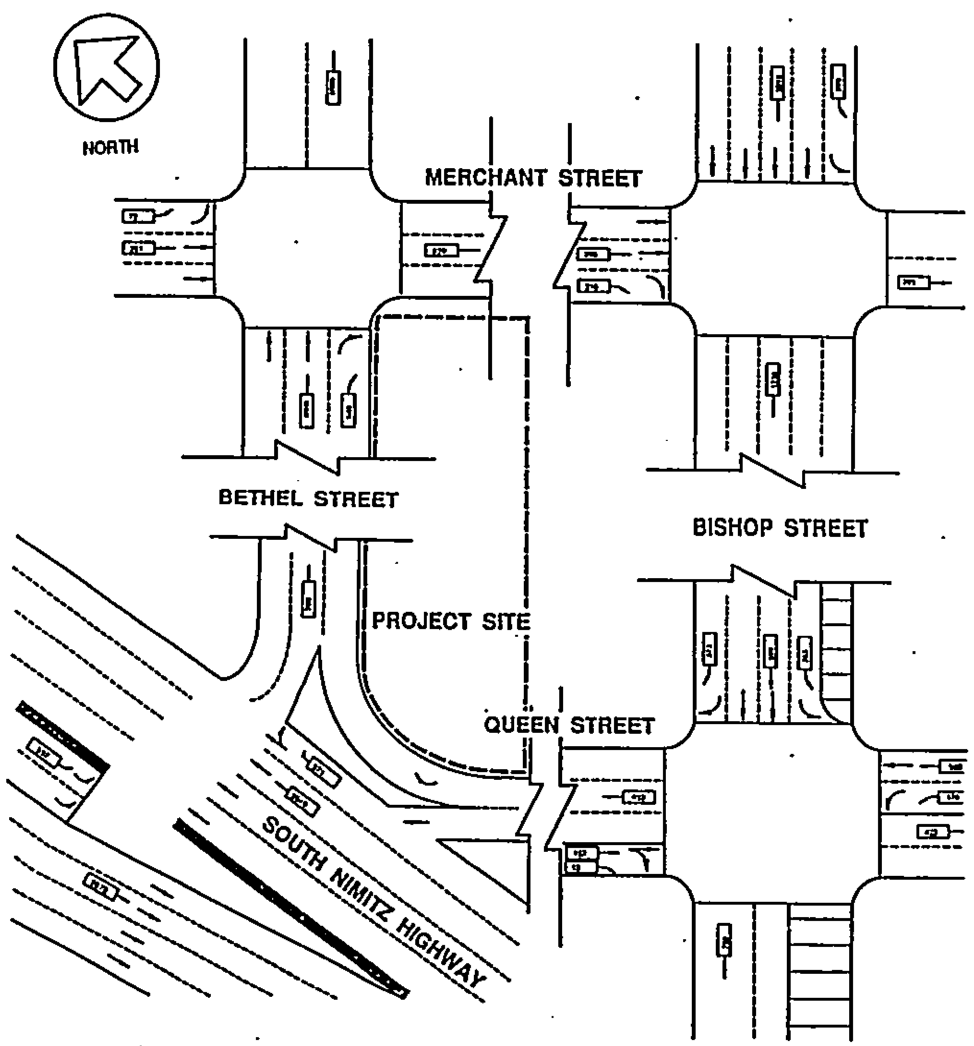


Figure 10. Forecasted Traffic Volumes 1992 Afternoon Peak Hour

Table 2. Traffic Volumes
Bethel Street & Merchant Street
Signalized Intersection

7:15 to 8:15 am

Approach Turning Movement	1989 Present	1992 w/o Project	1992 w/ Project
Northbound (Bethel Street)			
Through	387	410	438
Right	385	408	559
Eastbound (Merchant Street)			
Left	51	54	54
Through	525	557	630
Total	1348	1429	1681

4:15 to 5:15 am

Approach Turning Movement	1989 Present	1992 w/o Project	1992 w/ Project
Northbound (Bethel Street)			
Through	882	935	1008
Right	373	395	548
Eastbound (Merchant Street)			
Left	68	72	72
Through	238	252	281
Total	1561	1654	1909

Table 3. Traffic Volumes
Merchant Street & Bishop Street
Signalized Intersection

7:15 to 8:15 am

Approach Turning Movement	1989 Present	1992 w/o Project	1992 w/ Project
Southbound (Bishop Street)			
Left	265	281	281
Through	1411	1496	1643
Eastbound (Merchant Street)			
Through	294	312	367
Right	254	269	324
Total	2224	2358	2615

4:15 to 5:15 am

Approach Turning Movement	1989 Present	1992 w/o Project	1992 w/ Project
Southbound (Bishop Street)			
Left	373	395	395
Through	906	960	1018
Eastbound (Merchant Street)			
Through	238	252	398
Right	68	72	218
Total	1585	1679	2029

Table 4. Traffic Volumes
Bishop Street & Queen Street
Signalized Intersection

7:15 to 8:15 am

Approach Turning Movement	1989 Present	1992 w/o Project	1992 w/ Project
Southbound (Bishop Street)			
Left	492	522	522
Through	808	856	911
Right	367	389	536
Eastbound (Queen Street)			
Through	10	11	11
Right	2	2	2
Westbound (Queen Street)			
Left	128	136	136
Through	447	474	474
Total	2254	2390	2592

4:15 to 5:15 am

Approach Turning Movement	1989 Present	1992 w/o Project	1992 w/ Project
Southbound (Bishop Street)			
Left	250	265	265
Through	427	453	599
Right	297	315	373
Eastbound (Queen Street)			
Through	148	157	157
Right	12	13	13
Westbound (Queen Street)			
Left	166	176	176
Through	528	560	560
Total	1828	1939	2143

Table 5. Traffic Volumes
Nimitz Highway, Nuuanu Avenue & Bethel Street
Signalized Intersection

7:15 to 8:15 am

Approach Turning Movement	1989 Present	1992 w/o Project	1992 w/ Project
Southbound (Nuuanu Avenue)			
Left	288	305	305
Right	226	240	240
Eastbound (Nimitz Highway)			
Left (into Bethel Street)	277	294	367
Through	2944	3121	3121
Westbound (Nimitz Highway)			
Through	2119	2246	2246
Right (into Bethel Street)	175	186	259
Total	6029	6392	6539

4:15 to 5:15 am

Approach Turning Movement	1989 Present	1992 w/o Project	1992 w/ Project
Southbound (Nuuanu Avenue)			
Left	115	122	122
Right	229	243	243
Eastbound (Nimitz Highway)			
Left (into Bethel Street)	291	308	337
Through	2689	2850	2850
Westbound (Nimitz Highway)			
Through	3348	3549	3549
Right (into Bethel Street)	323	342	371
Total	6995	7414	7472

Traffic Impacts

Traffic impacts resulting from the Kaahumanu Square project are measured by the change in Level-of-Service (LOS) or capacity level for a given intersection. LOS for a given intersection is divided into six categories ranging from free-flow (LOS A) to congested flow (F). A detailed explanation of each category is given in Appendix A. The LOS or the capacity of a given intersection was determined by the use of the "Operational Analysis" calculation procedures contained in the Highway Capacity Manual (HCM), Special Report 209, 1985. The results of the operational analysis are shown in Table 6.

Table 6. LEVEL OF SERVICE
SIGNALIZED INTERSECTIONS

Intersection	1989	1992 w/o Project	1992 w/ Project
Merchant Street @ Bethel Street			
Morning Peak Hour	C	C	D
Afternoon Peak Hour	B	B	C
Merchant Street @ Bishop Street			
Morning Peak Hour	C	C	C
Afternoon Peak Hour	C	C	C
Bishop Street @ Queen Street			
Morning Peak Hour	D	E	F
Afternoon Peak Hour	C	C	C
Nimitz Highway @ Bethel Street			
Morning Peak Hour	C	C	C
Afternoon Peak Hour	D	E	F

Planning analysis uses an intersection's critical volume to determine whether an intersection will be over, near, or under capacity. The critical volume measures intersection capacity using the volume of conflicting traffic movements. A critical volume of less than 1200 vehicles indicates that an intersection is under capacity, between 1200 and 1400 vehicles indicates near capacity, and greater than 1400 vehicles indicates over capacity. The results of the analysis are shown in Table 7.

Table 7. Critical Volumes and Capacity Level
Planning Analysis--Signalized Intersection

Morning Peak Hour

Intersection	1989 Existing		1992 w/o Project		1992 w/ project	
	Critical Vol.	Capacity Level	Critical Vol.	Capacity Level	Critical Vol.	Capacity Level
Bethel @ Merchant	404	Under	428	Under	471	Under
Bishop @ Merchant	500	Under	530	Under	595	Under
Bishop # Queen	929	Under	996	Under	996	Under
Bethel @ Nimitz	1024	Under	1085	Under	1112	Under

Afternoon Peak Hour

Intersection	1989 Existing		1992 w/o Project		1992 w/ project	
	Critical Vol.	Capacity Level	Critical Vol.	Capacity Level	Critical Vol.	Capacity Level
Bethel @ Merchant	536	Under	569	Under	616	Under
Bishop @ Merchant	492	Under	521	Under	594	Under
Bishop # Queen	778	Under	825	Under	826	Under
Bethel @ Nimitz	1146	Under	1214	Near	1234	Near

CONCLUSION AND RECOMMENDATIONS

Conclusion

The results of the traffic operation analysis indicate that the proposed Kaahumanu Square redevelopment will not significantly change the traffic flow quality in 1992 when the project is expected to be completed. The replacement of the 462 parking stalls from the existing structure is expected to continue to generate the same level of traffic, while the proposed commercial and office spaces will generate approximately 450 additional trips during the morning and afternoon peak hours. On the other hand, location of the 174 residential condominium units near a large employment center may reduce the number of vehicular trips generated by the redevelopment project.

The operational analysis for the signalized intersections indicate the Level-of-Service (LOS) dropping from LOS E to LOS F during the morning and afternoon peak hours due to an increase in traffic volumes. However, field observations indicate the study intersections are presently operating at LOS F because of existing congested conditions during the morning and afternoon peak hours. The low volume of traffic at the intersections indicate downstream traffic congestions that cause low volume of traffic negotiating the signalized intersections and thus indicating LOS C.

The planning analysis for the signalized intersections indicate that three of the four study intersections will be under capacity, with the project generated traffic. The reason for the under capacity is due primarily to low traffic volume at the intersections resulting from illegal parking and lane blockage by motorists unloading and loading passengers and goods at curbside along Merchant, Bishop and Queen Streets.

The increase in traffic generated by the proposed project is not expected to significantly affect the existing traffic conditions. The recommendations made herein are intended to improve already congested conditions.

Recommendations

1. The entrance to the project parking structure should provide for a deceleration lane to permit through traffic to proceed forward and also to improve sight distance for drivers exiting from the parking structure.
2. The turning radius at the intersection of Bethel and Merchant Street should be lengthened so that vehicles turning right from Bethel Street onto Merchant Street need not encroach into the middle lane to safely negotiate the right turn movement.
3. The intersection of Queen Street, Nimitz Highway and Bethel Street should be improved as shown on Figure 11.
4. Expedite City and County of Honolulu Department of Transportation Services plans to install a centralized computer controlled traffic signal network.

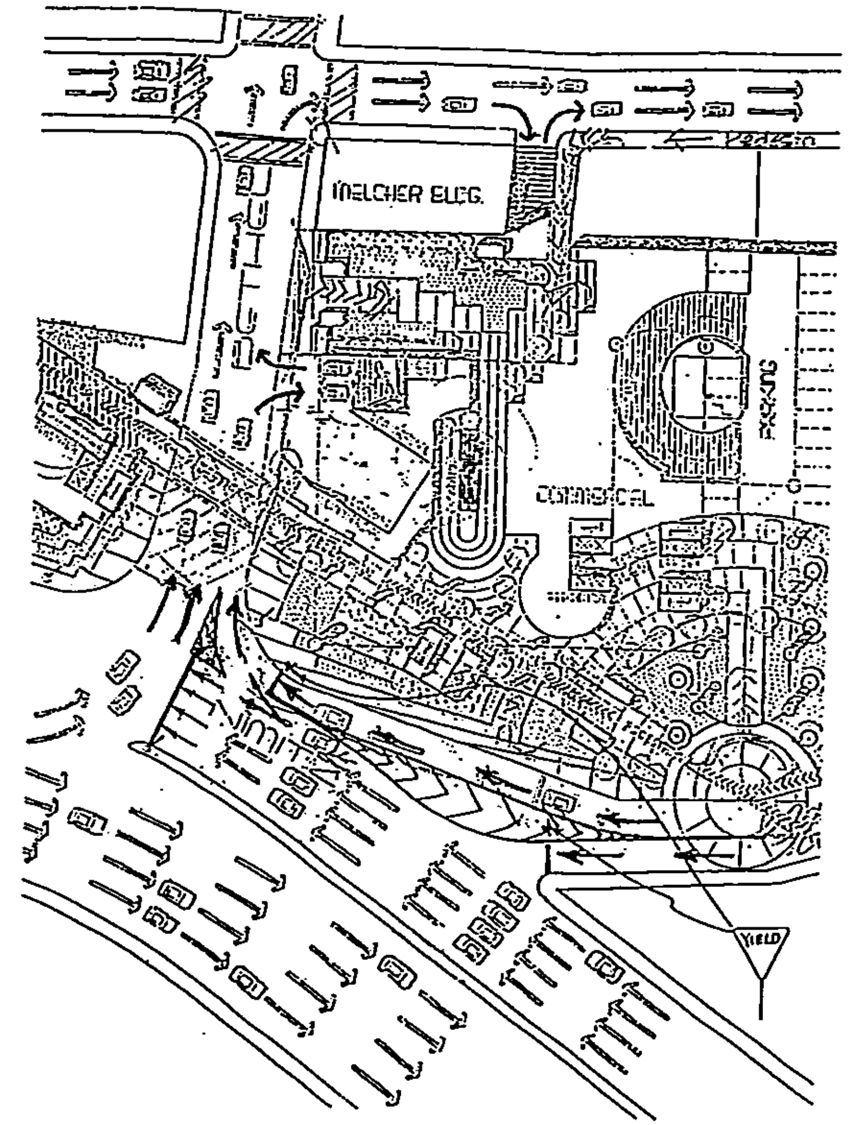


Figure 11. Queen Street, Bethel Street and Nimitz Highway Intersection Improvements

APPENDIX A

Definition of Level-of-Service
for
Signalized Intersections

APPENDIX A
DEFINITION OF LEVEL-OF-SERVICE FOR SIGNALIZED INTERSECTIONS

The concept of levels of service is defined as a qualitative measure describing operational conditions within a traffic stream, and their perception by motorists and/or passengers. A level of service definition generally describes these conditions in terms of such factors as speed and travel time, freedom to maneuver, traffic interruptions, comfort and convenience, and safety. Six levels of service are defined for each type of facility for which analysis procedures are available. They are given letter designations, from A to F, with level-of-service A representing the best operating conditions and level-of-service F the worst.

Level of service for signalized intersections is defined in terms of delay. Delay is a measure of driver discomfort, frustration, fuel consumption, and lost travel time. Specifically, level-of-service criteria are stated in terms of the average stopped delay per vehicle for a 15-minute analysis period.

Level-of Service A describes operations with very low delay, i.e., less than 5.0 sec per vehicle. This occurs when progression is extremely favorable, and most vehicles arrive during the green phase. Most vehicles do not stop at all. Short cycle lengths may also contribute to low delay.

Level-of-Service B describes operations with delay in the range of 5.1 to 15.0 sec per vehicle. This generally occurs with good progression and/or short cycle lengths. More vehicles stop than for LOS A, causing higher levels of average delay.

Level-of-Service C describes operations with delay in the range of 15.1 to 25.0 sec per vehicle. These higher delays may result from fair progression and/or longer cycle lengths. Individual cycle failures may begin to appear in this level. The number of vehicles stopping is significant at this level, although many still pass through the intersection without stopping.

Level-of-Service D describes operations with delay in the range of 25.1 to 40.0 sec per vehicle. At level D, the influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, or a high v/c ratios (volume of cars to capacity of intersection). Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.

Level-of-Service E describes operations with delay in the range of 40.1 to 60.0 sec per vehicle. This is considered to be the limit of acceptable delay. These high delay values generally indicate poor progression, long cycle length, and high v/c ratios. Individual cycle failures are frequent occurrences.

Level-of-Service F describes operations with delay in excess of 60.0 sec per vehicle. This is considered to be unacceptable to most drivers. This condition often occurs with oversaturation, i.e., when arrival flow rates exceed the capacity of the intersection. It may also occur at high v/c ratios below 1.00 with many individual cycle failures. Poor progression and long cycle lengths may also be major contributing causes to such delay levels

REFERENCE: Highway Capacity Manual (Special Report 209, 1985)

APPENDIX B

Manual Traffic Counts

Intersection of Bethel Street and Merchant Street

Time Period	Bethel Northbound		Merchant Eastbound		Total
	RT	TH	LT	TH	
7:00 to 7:15	63	74	7	107	251
7:15 to 7:30	82	94	11	124	311
7:30 to 7:45	87	96	17	134	334
7:45 to 8:00	106	127	8	149	390
8:00 to 8:15	110	70	15	118	313
8:15 to 8:30	103	85	6	111	305
8:30 to 8:45	70	75	9	86	240
Peak Hour 7:15 to 8:15	385	387	51	525	

Time Period	Bethel Northbound		Merchant Eastbound		Total
	RT	TH	LT	TH	
4:00 to 4:15	84	195	11	59	349
4:15 to 4:30	89	211	13	63	376
4:30 to 4:45	82	220	19	64	385
4:45 to 5:00	118	226	17	61	422
5:00 to 5:15	84	225	19	50	378
5:15 to 5:30	74	194	13	45	326
Peak Hour 4:15 to 5:15	373	882	68	238	

Intersection of Bishop Street and Merchant Street

Time Period	Bishop Southbound		Merchant Eastbound		Total
	LT	TH	RT	TH	
7:00 to 7:15	60	318	46	62	486
7:15 to 7:30	64	336	57	69	526
7:30 to 7:45	76	348	76	83	583
7:45 to 8:00	73	362	64	92	591
8:00 to 8:15	52	365	57	50	524
8:15 to 8:30	32	294	37	47	410
8:30 to 8:45	34	225	34	48	341
Peak Hour 7:15 to 8:15	265	1411	254	294	

Time Period	Bishop Southbound		Merchant Eastbound		Total
	LT	TH	RT	TH	
4:00 to 4:15	84	202	11	59	356
4:15 to 4:30	89	205	13	63	370
4:30 to 4:45	82	243	19	64	408
4:45 to 5:00	118	230	17	61	426
5:00 to 5:15	84	228	19	50	381
5:15 to 5:30	74	199	13	45	331
Peak Hour 4:15 to 5:15	373	906	68	238	

Intersection of Bishop Street and Queen Street

Time Period	Bishop Southbound			Queen Eastbound		Queen Westbound		Total
	LT	TH	RT	RT	TH	LT	TH	
7:00 to 7:15	106	181	77	0	3	27	87	481
7:15 to 7:30	110	190	93	0	5	29	123	550
7:30 to 7:45	134	200	90	1	0	32	97	554
7:45 to 8:00	120	215	91	1	3	40	117	587
8:00 to 8:15	128	201	93	0	2	27	110	561
8:15 to 8:30	95	179	57	2	5	22	100	460
8:30 to 8:45	78	131	50	2	6	21	103	391
Peak Hour 7:15 to 8:15	492	806	367	2	10	128	447	

Time Period	Bishop Southbound			Queen Eastbound		Queen Westbound		Total
	LT	TH	RT	RT	TH	LT	TH	
4:00 to 4:15	45	102	66	2	17	44	108	384
4:15 to 4:30	63	93	62	1	17	35	129	400
4:30 to 4:45	66	120	76	4	47	43	132	488
4:45 to 5:00	67	106	74	2	28	45	131	453
5:00 to 5:15	54	108	85	5	56	43	136	487
5:15 to 5:30	59	94	59	3	51	38	137	441
Peak Hour 4:30 to 5:30	250	427	297	12	148	166	528	

Intersection of Nimitz Highway and Bethel Street and Nuuanu Avenue

Time Period	Nuuanu Southbound		Nimitz Eastbound		Nimitz Westbound		Total
	LT	RT	LT	TH	RT	TH	
7:00 to 7:15	69	66	70	768	28	532	1533
7:15 to 7:30	96	66	65	730	40	570	1567
7:30 to 7:45	65	48	69	845	50	583	1660
7:45 to 8:00	58	46	73	601	57	434	1269
8:00 to 8:15							0
8:15 to 8:30							0
8:30 to 8:45							0
Peak Hour 7:00 to 8:00	288	226	277	2944	175	2119	6029

Time Period	Nuuanu Southbound		Nimitz Eastbound		Nimitz Westbound		Total
	LT	RT	LT	TH	RT	TH	
4:00 to 4:15	33	50	65	730	74	857	1809
4:15 to 4:30	29	55	82	670	74	822	1732
4:30 to 4:45	23	71	73	684	92	846	1789
4:45 to 5:00	30	53	71	605	83	823	1665
5:00 to 5:15							0
5:15 to 5:30							0
Peak Hour 4:00 to 5:00	115	229	291	2689	323	3348	6995

Note: Through movement counts on Nimitz Highway taken by PPE in November 1988

APPENDIX C

Planning and Operational Analysis

This Appendix will be available upon reader's request.

Update To

APPENDIX I

TRAFFIC IMPACTS ASSESSMENT

REVISED

TRAFFIC IMPACT ASSESSMENT REPORT

FOR

KAAHUMANU PARKING STRUCTURE REDEVELOPMENT

TMK: 2-1-02: parcels 16, 20, 26 & 56
Honolulu, Hawaii

June 1990

Prepared for:
McCormack Properties

Prepared by:
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Honolulu, Hawaii 96816

TABLE OF CONTENTS

APPENDICES

LIST OF FIGURES

LIST OF TABLES

EXECUTIVE SUMMARY

Howard Abe & Associates was engaged to update the traffic impact study dated 1989 by Pacific Planning & Engineering, Inc. to identify and assess future traffic impacts caused by the proposed Kaahumanu Parking Structure residential, commercial and office complex in Honolulu, Oahu.

The project is part of a program by the City & County of Honolulu through the Department of Housing and Community Development to revitalize Downtown Honolulu. Kaahumanu Parking Structure Redevelopment Project is a multi-tower residential, commercial and office complex. Parking requirements for the project include replacement of the 462 stalls from the present structure, and ground level parking stalls next to the District Court Building across Bethel Street, as well as provision for the new residential, commercial and office complex.

The project site is located in the central business district of downtown Honolulu on the Island of Oahu. The site consists of two parcels of land at the corner of Nimitz Highway, Queen Street, Bethel Street, and Merchant Street.

This report identifies and evaluates the probable impact of the traffic generated by the proposed development in the year 1993 when the project is expected to be completed. Impacts are assessed during the morning and afternoon peak hours, *without* and *with* the proposed project.

The analysis primarily focuses on four nearby intersections. They are Bethel Street at Merchant Street, Bethel Street at Nimitz Highway, Merchant Street at Bishop Street and Bishop Street at Queen Street. These intersections provide access and egress to the project from all directions. The report discusses the impact on the intersections by determining *levels of service* and presents the findings and recommendations.

Conclusion

Based on field observations conducted on June 6 and 7, 1989 and more recently during the week of May 14 to 18, 1990, traffic at three of the four study intersections were heavily congested and operating at LOS F during the morning and afternoon peak hours. The congestion is caused by motorist stopping to drop-off passengers and pick-up passengers at the curb-side and along travel lanes during the morning and afternoon peak hours. Traffic backup and delays are also caused by downstream congestion.

Traffic along Nimitz Highway during the morning and afternoon peak hours were operating at LOS C or better during the field observation except for short periods when downstream congestion or stalled vehicles caused traffic to backup to the Bethel Street intersection.

The results of the traffic operation analysis indicate that the proposed Kaahumanu Parking Structure Redevelopment project will not significantly change the existing congested traffic flow quality at the three study intersections in 1993 when the project is expected to be completed.

The estimated 600 plus vehicle trips generated by the proposed project during the morning and afternoon peak hours will add approximately 5% to the Nimitz Highway traffic forecasted for 1993; therefore, the impact of the project generated traffic along Nimitz Highway/Ala Moana Boulevard will be insignificant. However, the impact on local streets such as Bethel, Merchant, Bishop and Queen Streets may be much more significant, unless recommended improvements are initiated.

Although the results of the operational analysis on Table 6 indicate that the existing traffic at the four study intersections are operating at LOS D or better, field observations indicate the intersections are actually operating at LOS F during the morning and afternoon peak hours because of downstream congestion, or due to motorists stopping in travelled lanes to drop-off or pick-up passengers causing traffic to come to a complete halt.

If the traffic though the intersections operated uninterrupted or with minimal delay, the number of vehicles entering and exiting the study intersections will increase. The increase in the number of vehicle trips will result in the LOS of the signalized intersection to reflect the true LOS F for the morning and afternoon peak hours.

Results of the increase in traffic generated by other developments on normal through traffic growth to the year 1993 indicate further deterioration of LOS at the signalized intersections.

Adding the project generated traffic to the ambient traffic in 1993 results in the LOS to drop to F at the intersection of Bishop Street with Queen Street, and at Nimitz Highway with Bethel Street, as shown on Table 6.

The results of the planning analysis on Table 7 indicate the study intersections will be operating under capacity in 1993, even with the project generated traffic. The primary reason for the under capacity results at three of the four intersections are due to low traffic counts. The number of vehicles entering and exiting the study intersections are low because traffic congestion downstream of the study intersections cause traffic to backup thereby preventing motorists from entering the intersection. The cause of this traffic backup is primarily the result of motorists dropping-off or picking-up passengers in the middle of the road along Bethel, Merchant, Bishop and Queen Streets during the morning and afternoon peak hours.

As long as motorists continue to stop illegally or block traffic to drop-off and pick-up passengers, the total number of vehicles entering and exiting the study intersections will remain below the actual capacity of the intersection. The result of these low traffic counts at the intersections reflect the low critical volumes as indicated on Table 7.

The increase in traffic generated by the proposed project is not expected to significantly affect the existing traffic conditions. There will be no net increase in the number of public parking stalls; therefore, the trips generated by public stalls will remain the same. The parking stalls currently available at the District Court building will, in the short term, be eliminated. However, these stalls will be replaced in the new complex. The recommendations made herein are intended to improve already congested conditions.

Recommendation

1. The entrance to the project parking structure should provide for a deceleration lane to permit through traffic to proceed forward and also to improve sight distance for drivers exiting from the parking structure, as shown on Figure 11.
2. The turning radius at the intersection of Bethel and Merchant Street should be lengthened so that vehicles turning right from Bethel Street onto Merchant Street need not encroach into the middle lane to safely negotiate the right turn movement.
3. The intersection of Queen Street, Nimitz Highway and Bethel Street should be improved, as shown on Figure 11.
4. The existing eight (8) parking stalls along Bethel Street between Merchant Street and King Street should be eliminated. Also, parking along Merchant Street between Nuuanu and Bishop Street should be restricted during the morning and afternoon peak hours.
5. Eliminate the transit bus stop on Bishop Street fronting the Amfac building because buses stopping to pickup and drop-off passengers during the peak hour is causing congestion and traffic backup. The bus stop at the corner of Bishop Street and King Street is only one and a half (1.5) blocks or about 200 steps mauka and within reasonable walking distance from the bus stop to be eliminated.

6. Install additional traffic signals at the Nimitz/Queen/Bethel Street intersection to provide smooth traffic flow for motorists entering Bethel Street from Nimitz Highway and Queen Street as shown on Figure 11. The additional traffic signal lights will eliminate the present unsafe "weaving" condition along Bethel Street between Nimitz Highway and the proposed access driveway to the project.
7. Expedite City and County of Honolulu Department of Transportation Services plans to install a centralized computer controlled traffic signal network.

PROJECT DESCRIPTION

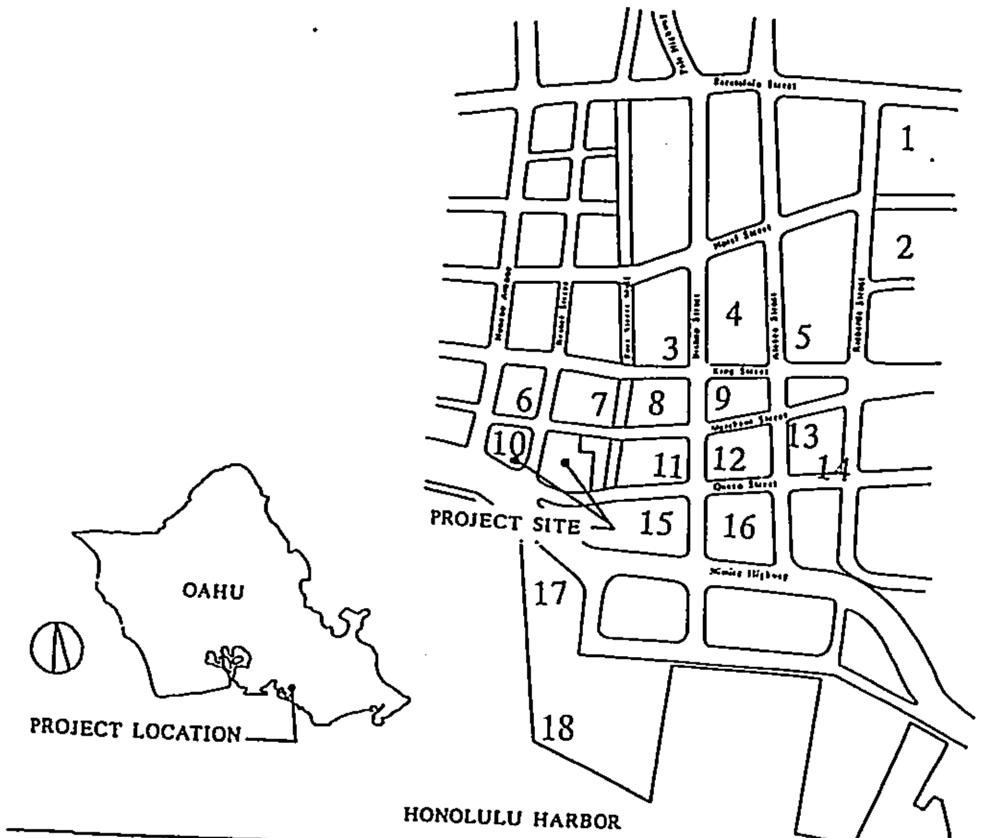
The proposed Kaahumanu Parking Structure Redevelopment, a multi-tower residential, commercial and office complex, is part of a program by the City & County of Honolulu through the Department of Housing and Community Development to revitalize Downtown Honolulu. It will be used to expand business and employment opportunities within the Primary Urban Center and enhance the visual and social environment of the city.

The proposed project is planned for two parcels of land bounded by Nuuanu Avenue, Nimitz Highway, Bethel Street, Merchant Street and Queen Street. Figure 1 shows the general project location on Oahu and Figure 2 shows the project vicinity including the surrounding land use and roadway network.

The project site covers a total 79,718 square feet of land designated for urban use. It is located in the downtown Central Business District as identified by Tax Map Key 2-1-02: parcels 16, 20, 26 and 56.

Parcel 26, a proposed commercial development, will be connected to Parcels 16, 20 and 56 by a pedestrian walkway elevated over Bethel Street. Vehicular parking for the project will be located in a multi-level parking structure on Parcels 16, 20 and 56. Vehicular access to the parking structure will be from Bethel Street and Merchant Street.

The project plan includes provision for office and commercial space for businesses, open spaces for community activities, a possible rapid transit station and a "makai gateway" to downtown Honolulu for visitors approaching from the airport area or Waikiki. It will also provide pedestrian links to Fort Street Mall, Amfac Triangle Park and the Merchant Street Historic District.



LEGEND

1. State Capitol
2. Iolani Palace
3. Bishop Trust
4. 1001 Bishop
5. Central Pacific Plaza
6. Yokohama Specie Bank
7. Pioneer Plaza
8. Financial Plaza
9. First Hawaiian Bank
10. Old Police Station
11. Alexander & Baldwin
12. Davies Pacific Center
13. City Center Building
14. City Bank Building
15. Amfac Center
16. Grosvenor Center
17. Pier Eleven
18. Aloha Tower

Figure 1. Project Location Map

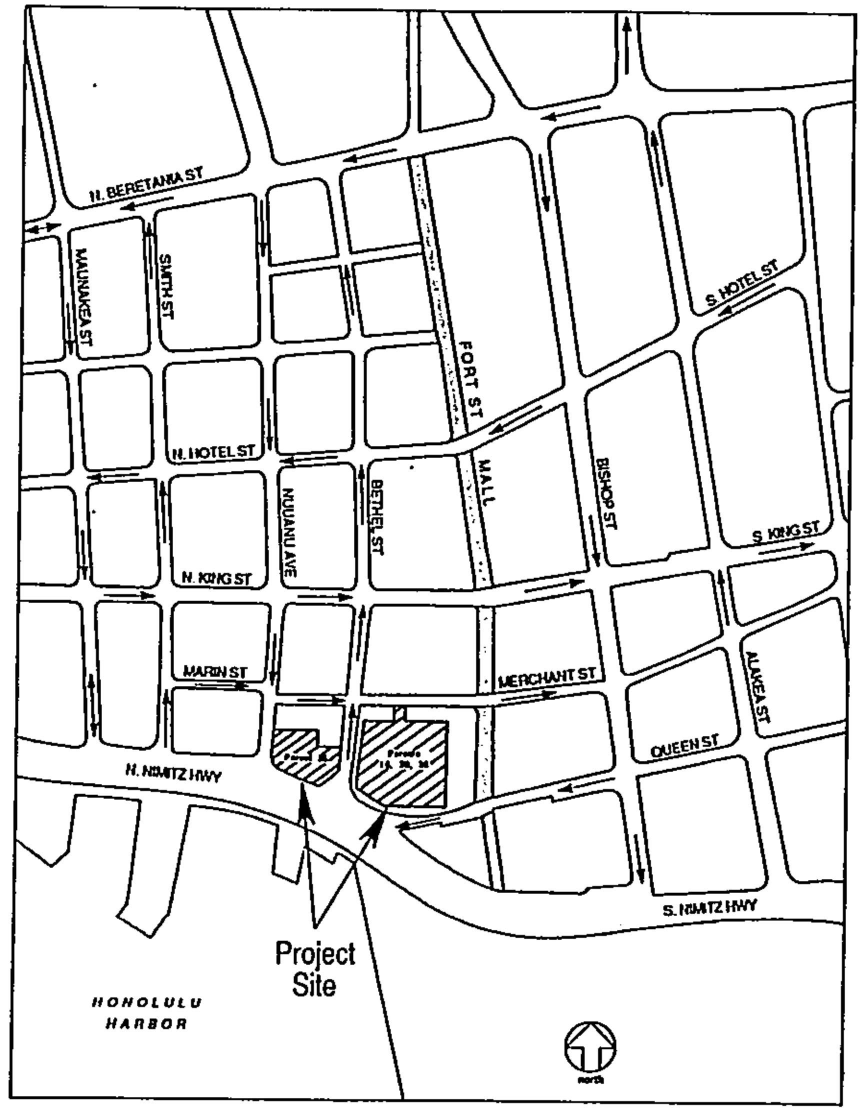


Figure 2. Project Vicinity and Roadway Network

Presently, the site is being utilized as the Kaahumanu Parking Structure and a parking lot for District Court. The structure contains 426 stalls for public parking and is bordered by Queen Street, Bethel Street and Merchant Street. The District Court parking lot is used by employees and visitors of the District Court Building. It is bordered by Nuuanu Avenue, Nimitz Highway and Bethel Street.

Vehicular access from Bethel Street to the existing Kaahumanu Parking Structure is chained and closed to traffic. The project plan calls for utilization of this Bethel Street access to the parking facilities of Kaahumanu Parking Structure Redevelopment with a down ramp to the basement level of the parking structure. Exit from the existing parking structure, presently located on Queen Street, will be closed and access into and out of the project site will be from Bethel Street or Merchant Street as shown on Figure 3.

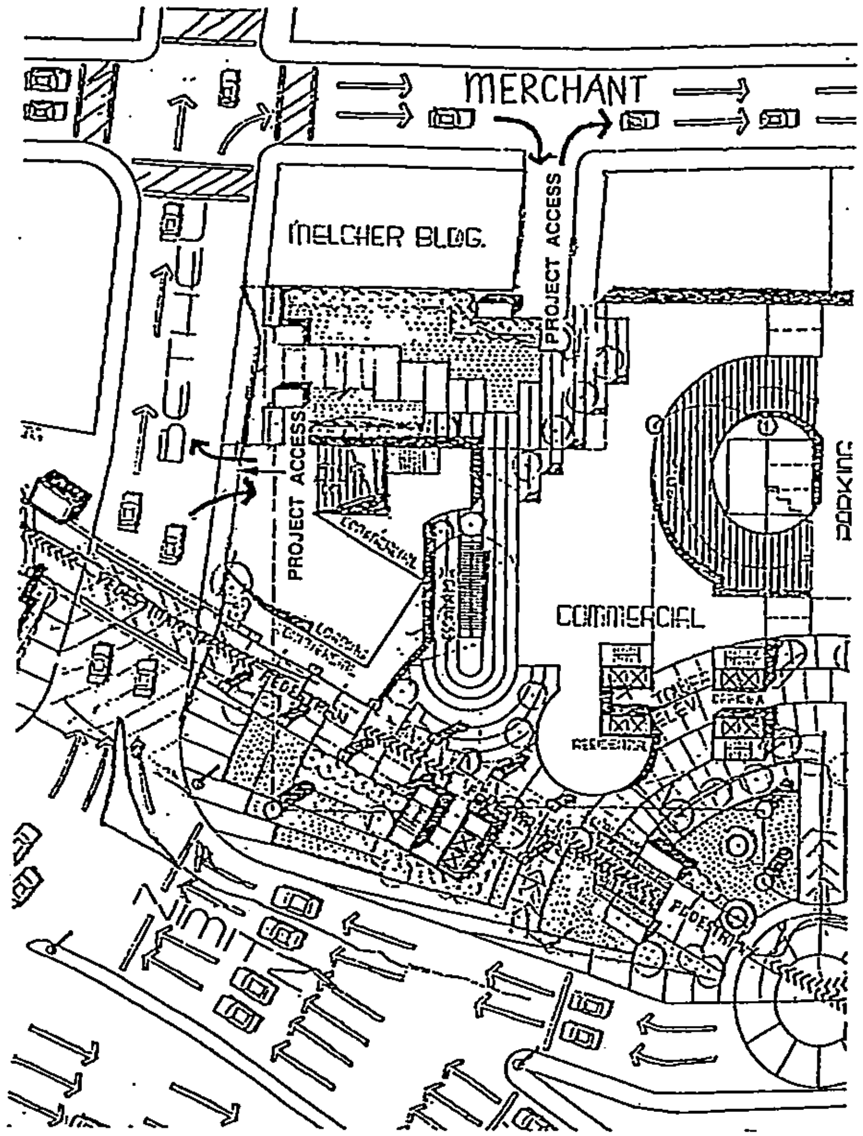


Figure 3. Access To Project Site

EXISTING CONDITIONS

A review of the project site and adjoining area was conducted to determine traffic conditions surrounding the proposed project. The review included the land uses, roadway facilities, parking, traffic controls, and traffic conditions.

Area Conditions

The land uses immediately surrounding the proposed Kaahumanu Parking Structure Redevelopment consists of various city government offices and office buildings and plazas owned by major businesses. Buildings to the north and east of the project lie within the Merchant Street Historical District and are designated historical sites.

On the eastern border (Kokohead) of the project site is the Campbell Building. Across Merchant Street, west of the project site, is the Pioneer Plaza while to the south (Kokohead-makai) lies the Amfac Center and Amfac Park. Nimitz Highway borders the project site on the west. Across Nimitz Highway is Honolulu Harbor and the Aloha Tower complex.

Historical Sites

Melcher's Building, located on the northeast corner of the project site, is the oldest commercial building in downtown Honolulu and is presently occupied by City offices.

The Old Bishop Bank and Bishop Estate Buildings lie on the eastern border (mauka) of the project site. Located across Bethel Street from Melcher's Building, to the eastern border (mauka) of Parcel 26 of the project site, lies the old Police Station and District Court Building.

The Yokohama Specie Bank Building is located northeast (mauka-ewa) of Melcher's Building across Bethel Street and is currently used by Honolulu Magazine, it is an example of "old Honolulu."

Kamehameha V Post Office building, also located mauka of Melcher's Building across Merchant Street, was the first concrete structure in Hawaii.

Roadway Facilities

The major roadway facilities providing access to Kaahumanu Square are Nimitz Highway and Bishop Street. Minor facilities include Nuuanu Avenue, Bethel Street, Merchant Street and Queen Street.

All the streets immediately surrounding the project site are one-way. They provide circulation which travels in a north, east, south, west pattern around the site. The speed limit on the one-way streets is 25 miles per hour. Generally, the turning radius for vehicles making left or right turns at the curbs is 10-15 feet.

Lane widths are generally 9-10 feet with the exception of the outer or curbside lanes which are wider for vehicles using these lanes to drop off and pick up passengers. Most of the roadways have gutter lanes, with the exception of Merchant Street and Queen Street.

Nimitz Highway is a major divided two-way arterial. Four lanes run to the west (Ewabound) and four lanes run to the east (Kokohead bound) between River Street and Richard Street where Nimitz Highway becomes Ala Moana Boulevard. Two exclusive left turn lanes are provided for vehicles approaching from the Ewa direction and turning left onto Bethel Street. Vehicles approaching Bethel Street from the Kokohead direction must merge with vehicles leaving the business district via Queen Street before turning right onto Bethel Street. The intersection of Nimitz Highway with Bethel Street is a signalized T-intersection.

Bishop Street is a major one-way arterial with five southbound (makai) lanes. It forms a one-way couplet with Alakea Street. Signalized intersections are formed with Merchant Street and Queen Street. The intersection with Merchant Street has four through lanes and an exclusive left turn lane which turns into Merchant Street (Kokohead bound).

At the intersection with Queen Street, Bishop Street has four lanes consisting of two through lanes, an exclusive right turn lane (Ewabound) and an exclusive left turn lane (Kokohead bound) into Queen Street. Makai of Queen Street, two through lanes continue on to intersect with Nimitz Highway. A bus stop is located on Bishop Street past the intersection with Queen.

Queen Street is a four lane two-way arterial which runs northeast to southwest. It is located on the makai side of the project where it joins with Nimitz Highway at the southeastern corner of the project. Approaching Bishop Street from the Kokohead direction, two lanes are headed east (Kokohead bound) and two headed west (Ewabound).

Past the intersection, continuing in the Ewa direction, Queen is a one-way street except for a lane originating from the Amfac building parking structure which is Kokohead bound to allow exiting vehicles access onto Bishop Street.

Where the Amfac Building connects with the Amfac Park, a single lane exiting from the Amfac parking structure merges onto Queen Street in the Ewabound direction. Vehicles exiting the Kaahumanu Parking Structure use Queen Street to merge with traffic travelling on Nimitz Highway in the ewabound direction.

Bethel Street runs through two parcels of the project site and connects Nimitz Highway and Merchant Street. It is a local one-way street headed in the easterly (mauka) direction. There are two through lanes and one exclusive right turn lane into Merchant Street (Kokohead bound). The 10-foot turning radius of the right lane causes vehicles turning right to encroach into the middle lane of Merchant Street before completing the turn.

Parking, stopping, loading and unloading is not allowed on Bethel Street between Nimitz High[illegible]y and Merchant Street, with the exception of the area where the outer Ewa lane is 16 feet wide. A laneage sign is located at the corner of the exclusive right turn lane into Merchant Street.

Merchant Street is a one-way arterial which runs in an north to south direction. The far left lane is a shared as a through and left turn lane, while the remaining two lanes are through lanes. The intersection with Bethel Street is signalized and all four corners of the intersection are situated within the designated historical sites.

Nuuanu Avenue is a three lane one-way arterial running east to west (mauka to makai) which forms a one-way couplet with Bethel Street located south of Nuuanu Avenue. A signalized T-intersection formed with Nimitz Highway includes two exclusive left turn lanes and one exclusive right turn lane provided for vehicles turning onto Nimitz Highway in the Kokohead bound and Ewa bound directions, respectively. Mauka of its intersection with Nimitz Highway, Nuuanu Avenue forms an unsignalized T-intersection with Merchant Street.

Pedestrian Facilities

Due to heavy pedestrian traffic in the downtown area, the following facilities have been provided for pedestrian activity.

Intersections are provided with crosswalks in all four directions, the exception to this is that no pedestrian crosswalk is provided to cross Nimitz Highway at its intersection with Bethel Street. Wheelchair ramps are also provided at most corners.

There are sidewalks on every block within the study area and picking up and dropping off of passengers were observed on all streets during the peak hour.

Traffic Conditions

Traffic volume records from the State Department of Transportation were collected and reviewed. Peak hours of traffic on the roads surrounding the proposed project site generally occurs between 7:00 and 8:00 am in the morning and between 4:30 and 5:30 pm in the afternoon on weekdays. Traffic volume data from the DOT was used to determine traffic trends in the general area. Figure 4 summarizes the trend in average daily traffic (ADT) along Nimitz Highway at Nuuanu Avenue (Sta. 405A). The plotted data shows a very slow increase in traffic on the order of 0.2% per year.

The reason for the slow growth rate in traffic (0.2% per year) is because Nimitz Highway is not capable of handling any more traffic during the peak hours. The six lane capacity of Nimitz Highway is at saturation point during the peak hours; therefore, without additional laneage there can be no increase in traffic. The very low increase rate in traffic along Nimitz Highway reflects the slight traffic growth during non-peak hours or longer duration of the morning and afternoon peak hours.

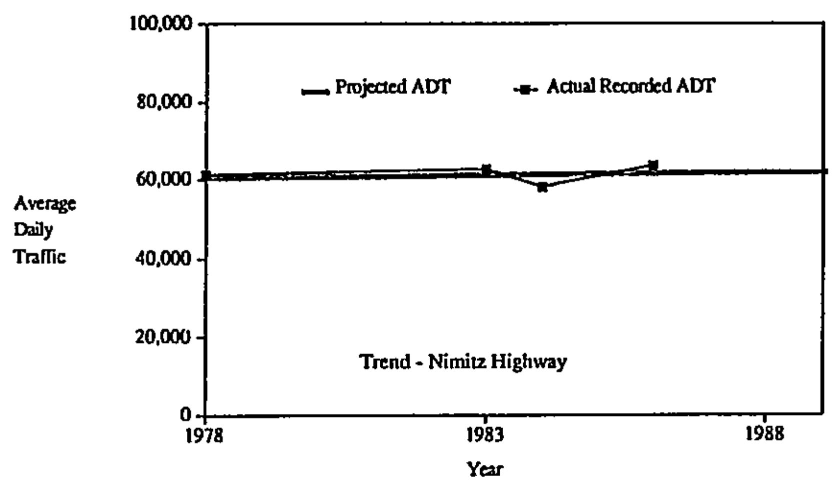


Figure 4. Trend in ADT on Nimitz Highway at Nuuanu Avenue

Manual turning movement traffic counts were taken by Pacific Planning & Engineering, Inc. (PPE) at the intersections of Bethel Street at Merchant Street, Bethel Street at Nimitz Highway, Merchant Street at Bishop Street and Bishop Street at Queen Street during the morning and afternoon peak hours on June 6 and 7, 1989.

In addition, manual counts of vehicle turning movements from Nuuanu Avenue onto Nimitz Highway, vehicles entering and exiting the present Kaahumanu Parking Structure and pedestrian counts were taken. Video records were made of the major intersections during the peak hours. These records provided detailed understanding of the intersection performance as well as the effects of downstream congestion. The weather was dry with a slight overcast in the morning peak hour and sunny and clear in the afternoon. The recorded traffic volumes are shown in Figures 5 and 6.

The existing traffic volumes were analyzed to determine their level-of-service, utilizing the analysis techniques for signalized intersections from the Highway Capacity Manual. The results are discussed in the chapter titled "Traffic Impact Analysis".

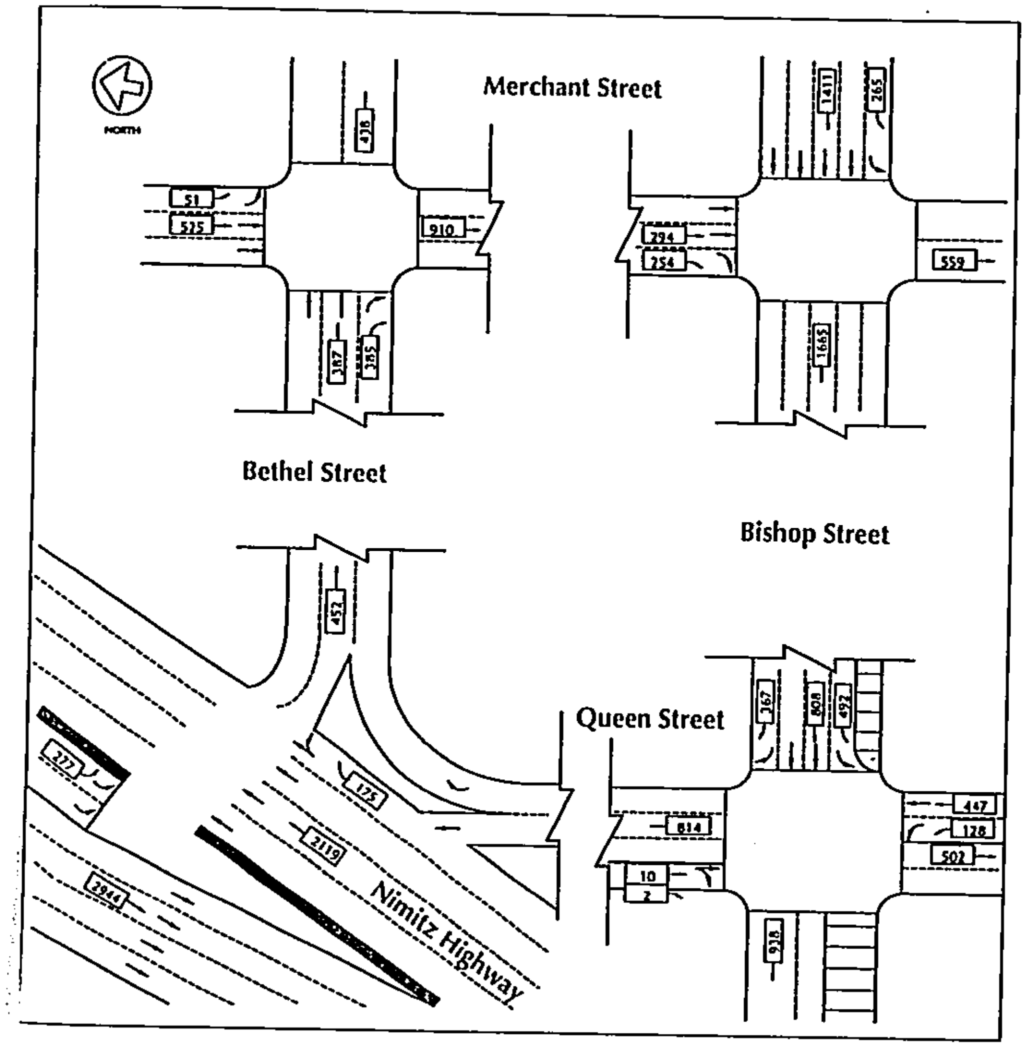


Figure 5. Existing Traffic Volumes 1989 Morning Peak Hour

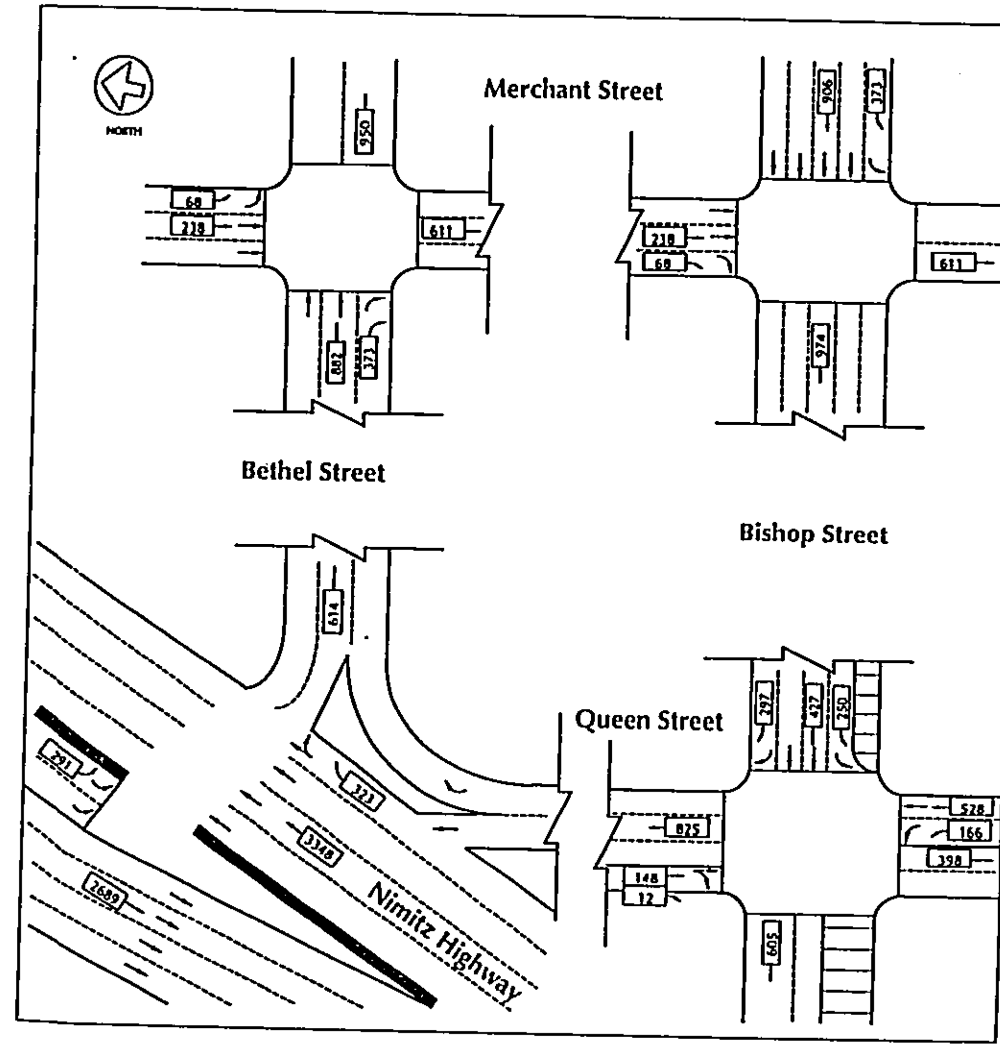


Figure 6. Existing Traffic Volumes 1989 Afternoon Peak Hour

Observed Traffic Conditions

During the traffic counts on June 6 and 7, 1989, and subsequent review of videotape taken by Pacific Planning and Engineering, Inc., the following observations were made:

During the Morning Peak Hour at:

- Bethel Street and Merchant Street
  1. Between 8:00 and 8:05 am, a queue formed in the exclusive right turn lane on Bethel Street and into Queen Street and Nimitz Highway. Vehicles in the far right lane on Merchant Street (Kokohead bound) were unable to cross Bethel Street. Only the far right lane on Merchant Street was congested, however, vehicles on the middle and far left lane were observed moving freely through the intersection. The congestion was apparently caused by vehicles entering the parking structure from the entrance on Merchant Street who were temporarily stopped while parking tickets were loaded into the machine.
  2. When a queue formed on the exclusive right lane on Bethel Street to turn into Merchant Street, vehicles were observed using the middle lane of Bethel Street to turn right into Merchant Street.
- Nimitz Highway and Bethel Street
  1. Vehicles attempting to turn left or right into Bethel Street (mauka bound) from Nimitz Highway were unable at times to cross the intersection during the green sequence of the stop light due to a queue of traffic on Bethel Street.
- Bishop Street and Merchant Street and Queen Street
  1. About 100 pedestrians were observed crossing Bishop Street at its intersection with Queen Street within a 15 minute period of the peak traffic hour.
  2. Passengers were dropped off along Bishop Street, Merchant Street and Queen Street causing other vehicles to drive around them.

During the Afternoon Peak Hour at:

- Bethel Street and Merchant Street
  1. During a 15 minute period, a queue formed on Bethel Street and into Queen Street and Nimitz Highway and vehicles on the far right lane of Merchant Street (Kokohead bound) were unable to cross the intersection.
  2. A queue would form every 15 to 20 minutes for through vehicles on Bethel Street. The signal at the Bethel Street and King Street intersection to the east caused vehicles to queue past the Merchant Street intersection.
  3. Vehicles used the left (Ewa) side of Bethel Street to pick up passengers (one car was observed parked for 20 minutes). Vehicles generally tended to pick up passengers on both sides of Bethel Street after they passed the Merchant Street intersection, however, some vehicles were observed stopping at the corners of the intersection to pick up passengers which caused vehicles following them to stop.
  4. Pedestrians were observed crossing the intersection in all four directions. At times, this caused a delay for vehicles attempting to turn from Bethel into Merchant and from Merchant into Bethel.
  5. Vehicles were observed using the middle lane of Bethel Street to turn into Merchant Street when a queue formed on the exclusive right turn lane.
- Nimitz Highway at Bethel Street
  1. Vehicles attempting to turn left or right into Bethel Street (mauka bound) from Nimitz Highway were unable at times to cross the intersection during the green sequence of the stop light due to a queue of traffic on Bethel Street.
  2. Vehicles traveling eastbound along Nimitz Highway would queue from the Bishop Street and Alakea Street intersections to Bethel Street.
- Bishop Street and Merchant Street and Queen Street
  1. About 100 pedestrians were observed crossing Queen Street at its intersection with Bishop Street within a 15 minute period of the peak traffic hour. About 110 were observed to cross Bishop Street.
  2. Passengers were dropped off along Bishop Street, Merchant Street and Queen Street causing other vehicles to drive around them.

Follow-up field observation of morning and afternoon peak hour traffic along Nimitz Highway on May 17 and 18, 1990 indicated the following:

- Between River Street and Fort Street during the morning and afternoon peak hours:
  1. No major traffic congestions occurred along Nimitz Highway between River Street and Fort Street. Observed level-of-service in both directions of Nimitz Highway was LOS "C" or better except for short 5 minute periods between 7:25-7:30 and 8:00-8:05 am when the LOS dropped to "D" for Diamond Head bound traffic due to downstream congestion caused by traffic merging from four lanes along Nimitz Highway to three lanes beyond Richard Street where Nimitz Highway becomes Ala Moana Boulevard. Average speed along Nimitz Highway was observed between 35-40 mph except during short periods when traffic slowed to an average of 25 mph.
  2. All of the minor roads along Nimitz Highway between River and Fort Street operated at LOS "C" or better during the morning and afternoon peak hours except for a short period of time when vehicles turning left from Nimitz Highway onto Bethel Street were unable to advance due to downstream traffic congestion along Bethel Street between Merchant and King Street. The traffic backup was caused by double-parked vehicles along Bethel Street between Merchant and King Street where motorists stopped to pickup passengers during the afternoon peak hour.
  3. The existing Kaahumanu Parking Structure was only one-third filled by 8:00 am. Only the ground level parking stalls were partially filled with the second and third levels empty of vehicles. During the beginning of the afternoon peak hour at 4:30 pm, the Kaahumanu Parking Structure was only 50% occupied.
  4. During the entire morning and afternoon peak hours, it was noted that motorists ignored the "transverse right shoulder marking" along the Ewa bound extreme right-lane of Nimitz Highway adjacent to the Amfac Center Plaza exit driveway, and continued to drive <u>over</u> the hatched (painted) lines.
  5. A stalled vehicle at the intersection of Nimitz Highway and Fort Street in the Diamond Head direction caused traffic to backup for 5 minutes around 8:05 am.

- Between Fort Street and Richard Street during the morning and afternoon peak hours:
  1. No major traffic congestions occurred along Nimitz Highway between Fort Street and Richard Street except for vehicles turning left from Nimitz Highway onto Bishop, Alakea, and Halekauwila Street.
     a. At the Bishop Street intersection, occasionally through traffic along Nimitz Highway partially blocked the intersection preventing vehicles from Bishop Street to enter onto Nimitz Highway during the morning peak hour.
     b. At the Alakea Street intersection, the double left-turn storage lanes on Nimitz Highway filled up to capacity during the morning peak hour causing vehicles to stop at the Bishop Street intersection resulting in further delays for drivers attempting to turn left onto Nimitz Highway from Bishop Street.
     c. At the Halekauwila Street left-turn storage lane, the queue of vehicles extended beyond the capacity of the storage lane causing motorists to use one of the Nimitz Highway through lanes to wait for an opportunity to enter into the left-turn storage lane. Occasionally, the queue of vehicles along this center lane extended back past the Bishop Street intersection.
  2. Observed level-of-service for Ewa bound through traffic along Nimitz Highway during the morning and afternoon peak hour traffic was LOS C and LOS D for Diamond Head bound traffic. Average vehicular speed along Nimitz Highway during the morning and afternoon peak hours were observed between 30 to 35 mph between Fort and Richard Street.
- Ala Moana Boulevard/Nimitz Highway between Richard Street and Punchbowl Street during the morning and afternoon peak hours:
  1. No major traffic congestion occurred along Nimitz Highway/Ala Moana Boulevard between Richard and Punchbowl Street during the morning and afternoon peak hours. The observed level-of-service in the Ewa direction was LOS "C" or better and LOS "D" in the Diamond Head direction due to down stream congestions. Average speed along Nimitz Highway/Ala Moana Boulevard was noted at between 25 and 30 mph.

2. Punchbowl Street traffic entering Ala Moana Boulevard was able to clear the intersection within the "green" phase with no queue forming on Punchbowl Street during the morning and afternoon peak hours.
3. At the Richard Street left-turn storage lane, all vehicles attempting to turn left from Nimitz Highway onto Richard Street (headed makai towards waterfront piers) were able to clear the intersection during the "green" phase.

TRAFFIC IMPACT ANALYSIS

Traffic conditions *without* and *with* the Kaahumanu Square project were estimated for the year 1993. Traffic generated by the proposed project was added to the forecasted 1993 ambient traffic to estimate future traffic on the roadway network with the project.

Future Ambient Traffic

Ambient traffic is the traffic which would occur regardless of whether the proposed project was built or not. Traffic counts by the State Department of Transportation shows that average daily traffic (ADT) has been increasing by about 0.2% annually at the intersection of Nimitz Highway and Nuuanu Street, as discussed in the section on "Existing Conditions."

The existing peak hour traffic volumes shown in Figures 5 and 6 were increased by 0.8% (0.2% for four years) to obtain the ambient traffic forecast volumes in 1993. The resultant ambient traffic volumes are shown in Figures 7 and 8.

Project Generated Traffic

The standard three-step procedure of trip generation, distribution and assignment was used to estimate traffic from the proposed redevelopment.

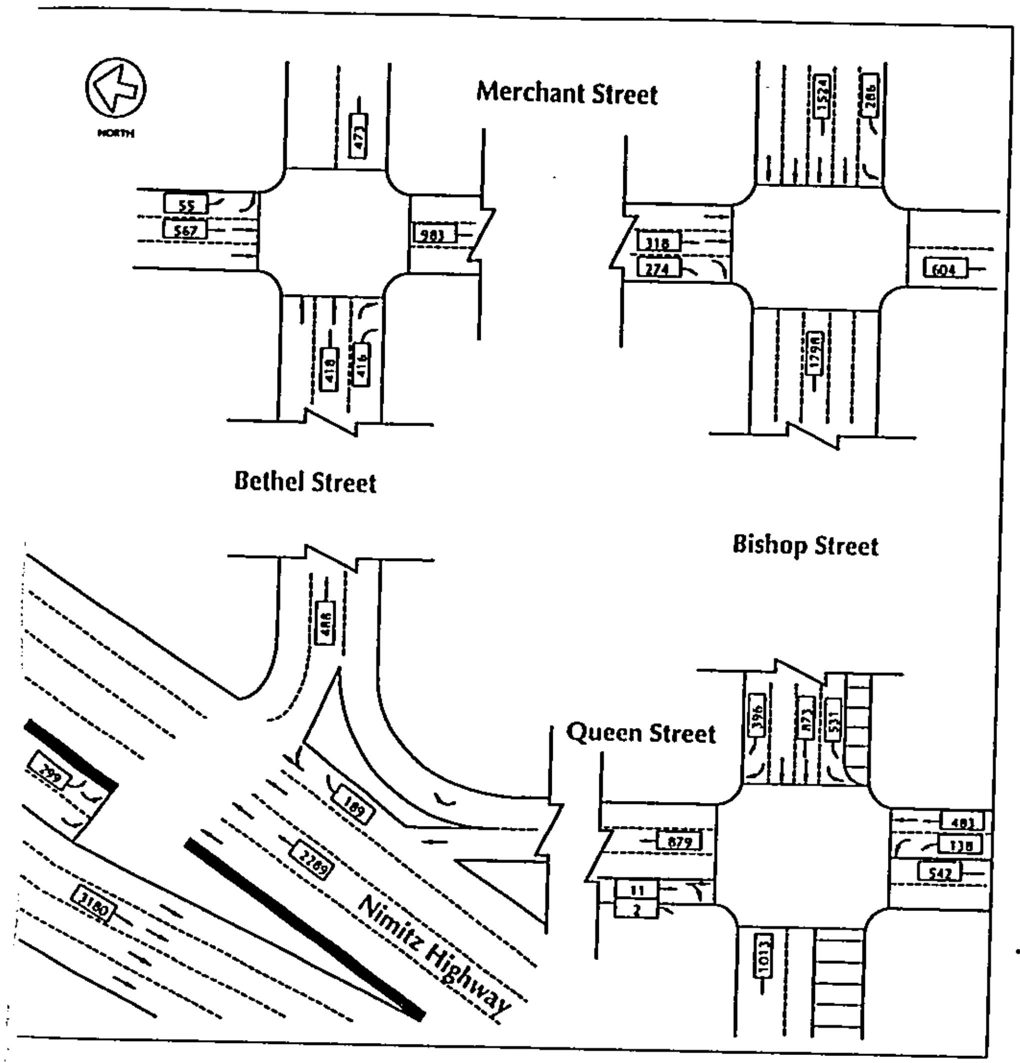


Figure 7. Ambient Traffic Volumes 1993 Morning Peak Hour

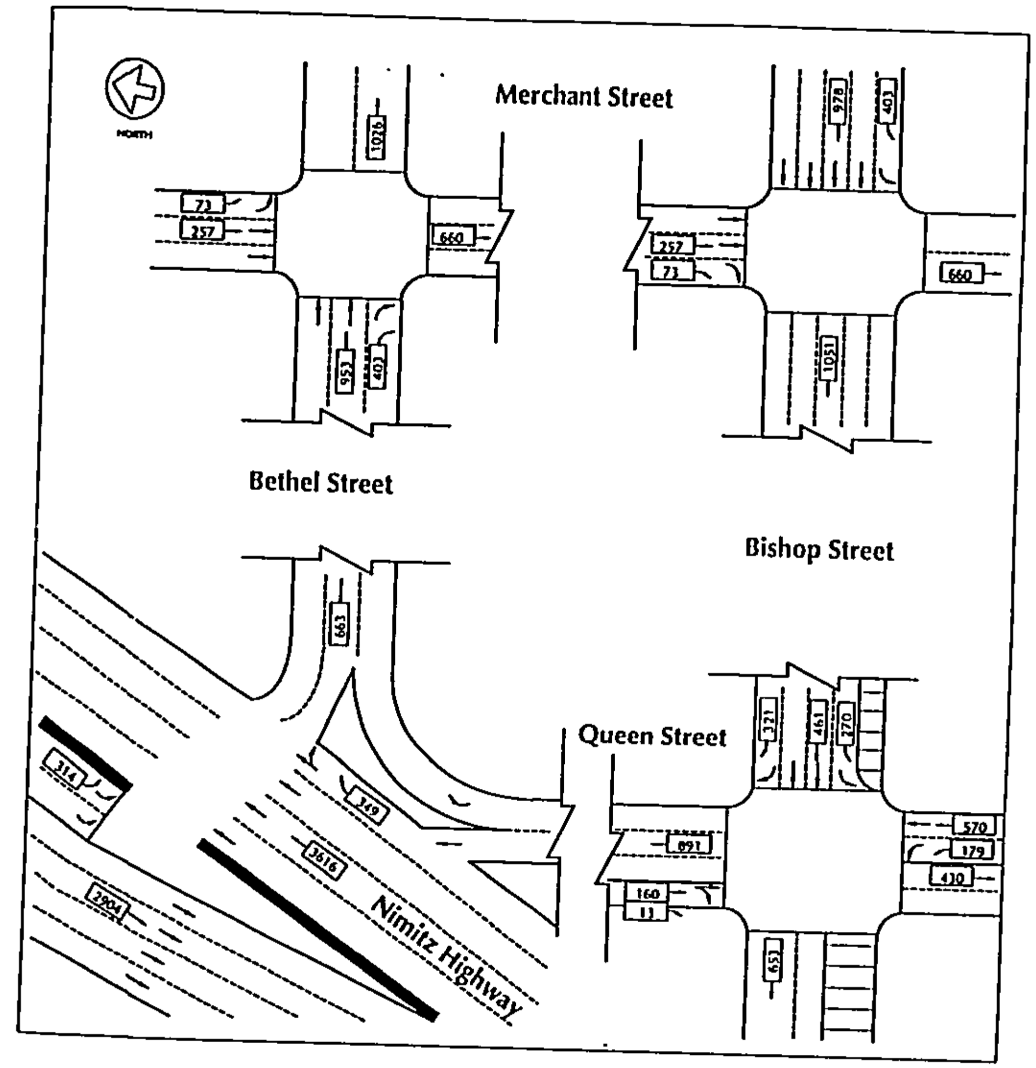


Figure 8. Ambient Traffic Volumes 1993 Afternoon Peak Hour

The trip generation step calculates the number of trips which would be generated during the morning and afternoon peak hours by the proposed project. The number of trips generated were estimated based on the proposed land uses and trip generation data from the Trip Generation Report, 1987 (Fourth Edition), Institute of Transportation Engineers (ITE).

The Kaahumanu Square project consists of 34,240 square feet of commercial space, 200,000 square feet of office space, 24,900 square feet of office-condominium units, and 122 units of residential condominium units. The resultant number of trips and the unit rates are shown in Table 1.

Table 1. Trip Generation

	Morning Peak Hour				Afternoon Peak Hour			
	Trip Rate		No. of Trips		Trip Rate		No. of Trips	
Land Use	Enter	Exit	Enter	Exit	Enter	Exit	Enter	Exit
Commercial (trips/1000sf) 34,240 s.f.	1.99	1.99	68	68	2.25	2.25	77	77
Office (trips/1000sf) 200,000 s.f.	1.58	0.24	316	48	0.28	1.47	56	294
Office Condo (trips/1000sf) 24,900 s.f.	1.58	0.24	39	6	0.28	1.47	7	37
Residential Condominium 122 units	0.06	0.27	7	33	0.23	0.14	28	17
Total Number of Trip Ends			430	155			168	425

Trip Distribution

The trip distribution step assigns trips generated by the new development to their expected origins and destinations. In the analysis, percentages of the trips entering and exiting the project site were applied to the estimated vehicle trip ends for origins and destinations outside the immediate area.

It is assumed that the vehicles generated by the project will be arriving from all directions using the major arterials leading into the project site. Therefore 60% of the traffic was assumed to arrive from the east using Bishop Street and Nuuanu Avenue while the remaining 40% would enter from the west from Nimitz Highway onto Bethel Street.

Vehicles exiting the project site will very likely travel the same route to return to their origin. The percentage of vehicles entering and exiting the parking structure was equally split between the proposed Bethel Street and Merchant Street accesses.

Traffic Assignment

The traffic assignment step assigns trips to a specific route on the roadway network that will take the driver from origin to destination. Based on trip distributions listed above, project generated vehicles were assigned to the one-way streets adjacent to the project site as follows:

1. Traffic entering the project site:
   a. Forty percent of the project generated traffic will be travelling makai along Bishop Street turning right on Queen Street, turning right again on Bethel Street and enter the parking structure access.

b. Twenty percent of the project generated traffic will be travelling makai along Nuuanu Avenue, turning left on Merchant Street and enter the parking structure through the Merchant Street access.

c. The remaining forty percent of the project generated traffic will be travelling along Nimitz Highway, turning right into Bethel Street for those arriving from the Kokohead direction or turning left onto Bethel Street for those arriving from the Ewa direction. Vehicles will then enter the parking structure either through the Bethel Street or Merchant Street access depending on the degree of congestion or accessibility at the Bethel Street access.

2. Traffic exiting the project site.

a. Fifty percent of the project generated traffic is assumed to exit from the Merchant Street proceeding across Bishop Street to Alakea Street or turning right onto Bishop Street and heading makai to Nimitz Highway.

b. The remaining fifty percent of the project generated traffic is assumed to exit from the Bethel Street exit turning right onto Bethel Street, proceeding mauka across Merchant Street or turning right onto Merchant Street following in the same direction as those vehicles exiting the Merchant Street exit.

Traffic Forecasts

Applying the predicted growth in ambient traffic on to the basic field counts and then adding the effects of the development's generated traffic, results in the future forecasted traffic. The resultant forecasted traffic volumes are shown in Figures 9 and 10. Tables 2, 3, 4 and 5 presents the results of the forecast at the four impacted intersections for the present condition, the future without the Kaahumanu Square Project and the future with the Kaahumanu Square Project. The volumes represents vehicle movements approaching each intersection during the development's morning and afternoon peak hour generation.

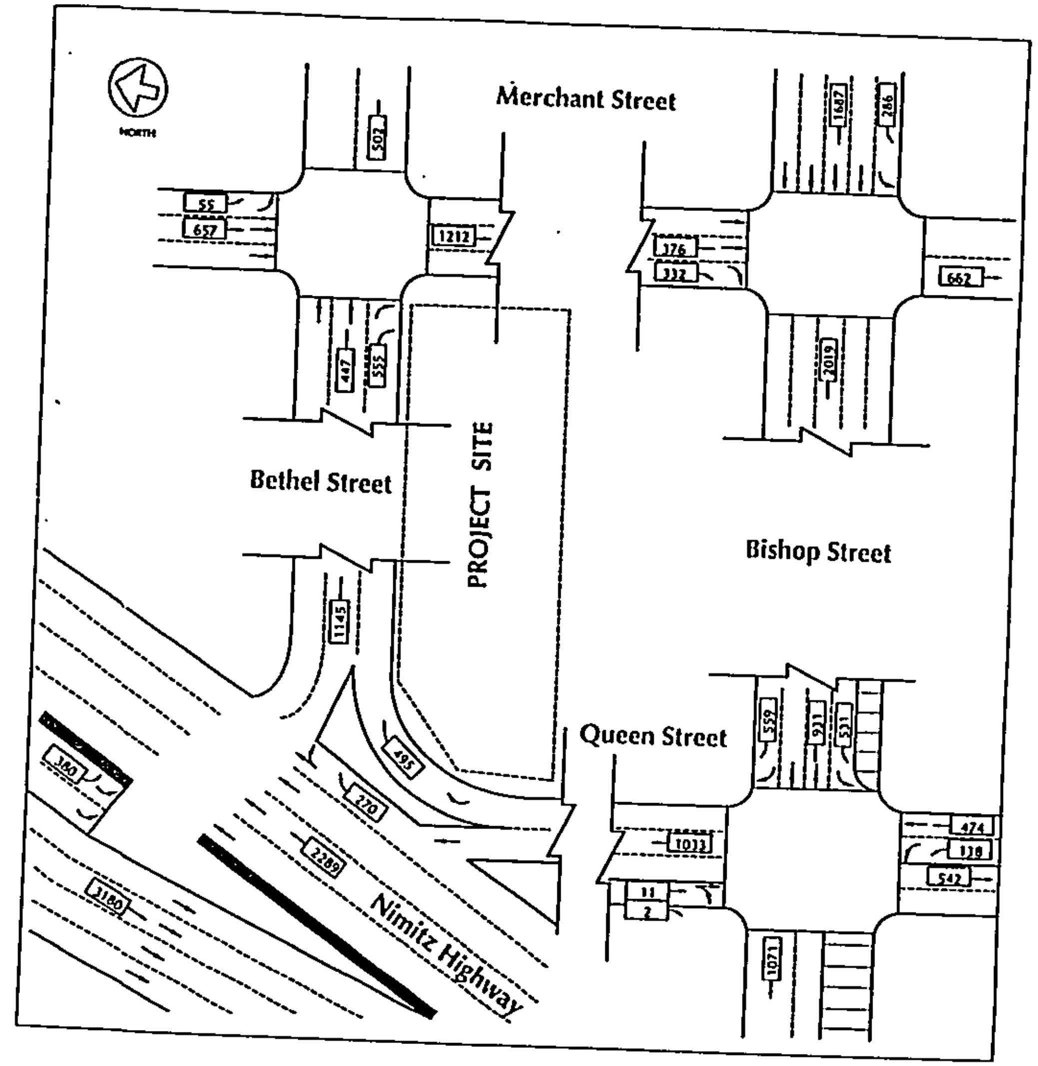


Figure 9. Forecast Traffic Volumes 1993 Morning Peak Hour

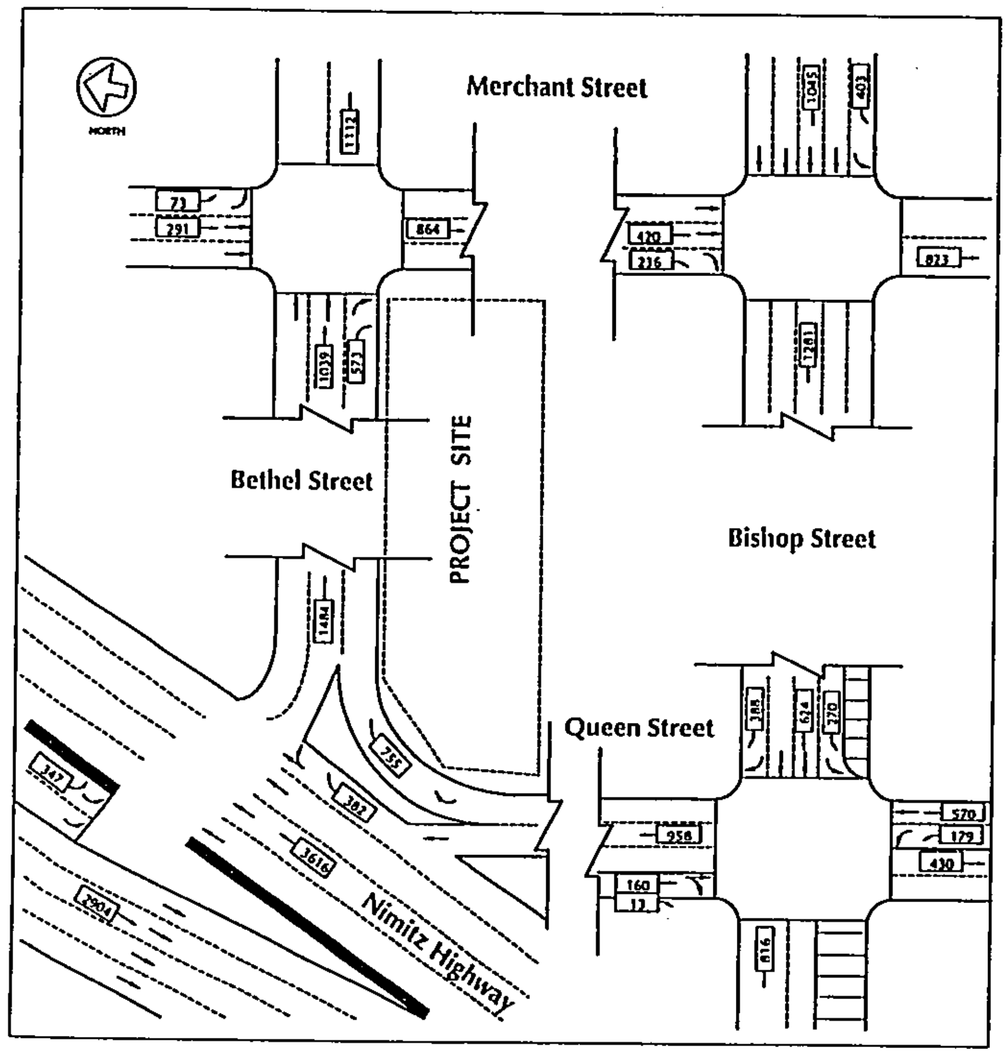


Figure 10. Forecasted Traffic Volumes 1993 Afternoon Peak Hour

Table 2. Traffic Volumes
Bethel Street & Merchant Street
Signalized Intersection

7:15 to 8:15 am

Approach / Turning Movement	1989 Present	1993 w/o Project	1993 w/ Project
Eastbound (Bethel Street)			
Through	387	418	447
Right	385	416	555
Southbound (Merchant Street)			
Left	51	55	55
Through	525	567	657
Total	1348	1456	1714

4:15 to 5:15 pm

Approach / Turning Movement	1989 Present	1993 w/o Project	1993 w/ Project
Eastbound (Bethel Street)			
Through	882	953	1039
Right	373	403	573
Southbound (Merchant Street)			
Left	68	73	73
Through	238	257	291
Total	1561	1686	1976

Table 3. Traffic Volumes
Merchant Street & Bishop Street
Signalized Intersection

7:15 to 8:15 am

Approach Turning Movement	1989 Present	1993 w/o Project	1993 w/ Project
Westbound (Bishop Street)			
Left	265	286	286
Through	1411	1524	1687
Southbound (Merchant Street)			
Through	294	318	376
Right	254	274	332
Total	2224	2402	2681

4:15 to 5:15 pm

Approach Turning Movement	1989 Present	1993 w/o Project	1993 w/ Project
Westbound (Bishop Street)			
Left	373	403	403
Through	906	978	1045
Southbound (Merchant Street)			
Through	238	257	420
Right	68	73	236
Total	1585	1711	2104

Table 4. Traffic Volumes
Bishop Street & Queen Street
Signalized Intersection

7:15 to 8:15 am

Approach Turning Movement	1989 Present	1993 w/o Project	1993 w/ Project
Westbound (Bishop Street)			
Left	492	531	531
Through	808	873	931
Right	367	396	559
Southbound (Queen Street)			
Through	10	11	11
Right	2	2	2
Northbound (Queen Street)			
Left	128	138	138
Through	447	483	483
Total	2254	2434	2655

4:15 to 5:15 pm

Approach Turning Movement	1989 Present	1993 w/o Project	1993 w/ Project
Westbound (Bishop Street)			
Left	250	270	270
Through	427	461	624
Right	297	321	388
Southbound (Queen Street)			
Through	148	160	160
Right	12	13	13
Northbound (Queen Street)			
Left	166	179	179
Through	528	570	570
Total	1828	1974	2204

Table 5. Traffic Volumes
Nimitz Highway, Nuuanu Avenue & Bethel Street
Signalized Intersection

7:00 to 8:00 am

Approach / Turning Movement	1989 Present	1993 w/o Project	1993 w/ Project
Westbound (Nuuanu Avenue)			
Left	288	311	311
Right	226	244	244
Southbound (Nimitz Highway)			
Left (into Bethel Street)	277	299	380
Through	2944	3180	3180
Northbound (Nimitz Highway)			
Through	2119	2289	2289
Right (into Bethel Street)	175	189	270
Total	6029	6512	6674

4:30 to 5:30 pm

Approach / Turning Movement	1989 Present	1993 w/o Project	1993 w/ Project
Westbound (Nuuanu Avenue)			
Left	115	124	124
Right	229	247	247
Southbound (Nimitz Highway)			
Left (into Bethel Street)	291	314	347
Through	2689	2904	2904
Northbound (Nimitz Highway)			
Through	3348	3616	3616
Right (into Bethel Street)	323	349	382
Total	6995	7554	7620

Traffic Impacts

Traffic impacts resulting from the Kaahumanu Parking Structure Redevelopment project are measured by the change in Level-of-Service (LOS) or capacity level for a given intersection. LOS for a given intersection is divided into six categories ranging from free-flow (LOS A) to congested flow (F). A detailed explanation of each category is given in Appendix A. The LOS or the capacity of a given intersection was determined by the use of the "Operational Analysis" calculation procedures contained in the Highway Capacity Manual (HCM), Special Report 209, 1985. The results of the operational analysis are shown in Table 6.

Table 6. LEVEL OF SERVICE
SIGNALIZED INTERSECTIONS

Intersection	1989	1993 w/o Project	1993 w/ Project
Merchant Street @ Bethel Street			
Morning Peak Hour	C	C	D
Afternoon Peak Hour	B	B	C
Merchant Street @ Bishop Street			
Morning Peak Hour	C	C	C
Afternoon Peak Hour	C	C	C
Bishop Street @ Queen Street			
Morning Peak Hour	D	E	F
Afternoon Peak Hour	C	C	C
Nimitz Highway @ Bethel Street			
Morning Peak Hour	C	C	C
Afternoon Peak Hour	D	E	F

Although the results of the operational analysis on Table 6 indicate that the existing traffic at the four study intersections are operating at LOS D or better, field observations indicate the intersections are actually operating at LOS F during the morning and afternoon peak hours because of downstream congestion, or due to motorists stopping in travelled lanes to drop-off or pick-up passengers causing traffic to come to a complete halt.

If the traffic though the intersections operated uninterrupted or with minimal delay, the number of vehicles entering and exiting the study intersections will increase. The increase in the number of vehicle trips will result in the LOS of the signalized intersection to reflect the true LOS F for the morning and afternoon peak hours.

Results of the increase in traffic generated by other developments on normal through traffic growth to the year 1993 indicate further deterioration of LOS at the signalized intersections.

Adding the project generated traffic to the ambient traffic in 1993 results in the LOS to drop to F at the intersection of Bishop Street with Queen Street, and at Nimitz Highway with Bethel Street, as shown on Table 6.

Planning analysis uses an intersection's critical volume to determine whether an intersection will be over, near, or under capacity. The critical volume measures intersection capacity using the volume of conflicting traffic movements. A critical volume of less than 1200 vehicles indicates that an intersection is under capacity, between 1200 and 1400 vehicles indicates near capacity, and greater than 1400 vehicles indicates over capacity. The results of the analysis are shown in Table 7.

Table 7. Critical Volumes and Capacity Level
Planning Analysis--Signalized Intersection

Morning Peak Hour

Intersection	1989 Existing		1993 w/o Project		1993 w/ project	
	Critical Vol.	Capacity Level	Critical Vol.	Capacity Level	Critical Vol.	Capacity Level
Bethel @ Merchant	404	Under	489	Under	553	Under
Bishop @ Merchant	500	Under	658	Under	610	Under
Bishop @ Queen	929	Under	1014	Under	1005	Under
Bethel @ Nimitz	1024	Under	1112	Under	1155	Under

Afternoon Peak Hour

Intersection	1989 Existing		1993 w/o Project		1993 w/ project	
	Critical Vol.	Capacity Level	Critical Vol.	Capacity Level	Critical Vol.	Capacity Level
Bethel @ Merchant	536	Under	603	Under	666	Under
Bishop @ Merchant	492	Under	532	Under	613	Under
Bishop @ Queen	778	Under	840	Under	882	Under
Bethel @ Nimitz	1146	Under	1314	Near	1331	Near

The results of the planning analysis on Table 7 indicate the study intersections will be operating under capacity in 1993, even with the project generated traffic. The primary reason for the under capacity results at three of the four intersections are due to low traffic counts. The number of vehicles entering and exiting the study intersections are low because traffic congestion downstream of the study intersections cause traffic to backup thereby preventing motorists from entering the intersection. The cause of this traffic backup is primarily the result of motorists dropping-off or picking-up passengers in the middle of the road along Bethel, Merchant, Bishop and Queen Streets during the morning and afternoon peak hours.

As long as motorists continue to stop illegally or block traffic to drop-off and pick-up passengers, the total number of vehicles entering and exiting the study intersections will remain below the actual capacity of the intersection. The result of these low traffic counts at the intersections reflect the low critical volumes as indicated on Table 7.

Estimated 40% or 254 trips generated by the project is assumed to enter and exit onto Nimitz Highway during the morning peak hour and 258 trips during the afternoon peak hour. Percentage increase in traffic along Nimitz Highway/Ala Moana Boulevard is estimated to be 5% of the morning and afternoon peak hour traffic forecasted for 1993, and therefore, the impact of the project generated traffic along Nimitz Highway/Ala Moana Boulevard will be insignificant.

Nimitz Highway, between River and Richard Streets, is an eight-lane divided highway with exclusive left-turn lanes at major intersections and therefore capable of handling the additional project generated traffic. However, Nimitz Highway narrows to a six-lane divided highway with exclusive left-turn lanes as it becomes Ala Moana Boulevard in the vicinity of Richard and Halekauwila Streets. Nimitz Highway is also a six-lane divided highway north of or Ewa of the Nuuanu Stream Bridge. The additional through lanes in both direction between River Street and Ala Moana Boulevard provide additional capacity along Nimitz Highway. The result of the added capacity is also reflected in higher average travel speed (30-35 mph vs. 20-25 mph elsewhere) along this section of Nimitz Highway as indicated in Figure II-5 page II-13 of the "Honolulu Waterfront Master Plan" Traffic Impact Report dated March 1989 by Pacific Planning and Engineering, Inc. Furthermore, the same Waterfront Traffic Report indicates the lowest critical volume (950) at the intersection of Nimitz Highway and Bishop Street (Table V-1, page V-2) in the year 2010 even with the Honolulu Waterfront Project.

The 250 plus vehicle trips the proposed Kaahumanu Parking Structure Redevelopment project is estimated to generate along Nimitz Highway/Ala Moana Boulevard during the

morning and afternoon peak hours will not significantly change the existing traffic flow quality in 1993 when the project is expected to be completed.

The impact of the proposed Aloha Tower Development Project on Nimitz Highway will need to be fully analyzed since that project, scheduled for completion in 1996, is estimated to increase traffic along Nimitz Highway/Ala Moana Boulevard by 50% or 3000 plus vehicle trips during the morning and afternoon peak hours.

CONCLUSION AND RECOMMENDATIONS

Conclusion

Based on field observations conducted on June 6 and 7, 1989 and more recently during the week of May 14 to 18, 1990, traffic at three of the four study intersections were heavily congested and operating at LOS F during the morning and afternoon peak hours. The congestion is caused by motorist stopping to drop-off passengers and pick-up passengers at the curb-side and along travel lanes during the morning and afternoon peak hours. Traffic backup and delays are also caused by downstream congestion.

Traffic along Nimitz Highway during the morning and afternoon peak hours were operating at LOS C or better during the field observation except for short periods when downstream congestion or stalled vehicles caused traffic to backup to the Bethel Street intersection.

The results of the traffic operation analysis indicate that the proposed Kaahumanu Parking Structure Redevelopment project will not significantly change the existing congested traffic flow quality at the three study intersections in 1993, when the project is expected to be completed.

The estimated 600 plus vehicle trips generated by the proposed project during the morning and afternoon peak hours will add approximately 5% to the Nimitz Highway traffic forecasted for 1993; therefore, the impact of the project generated traffic along Nimitz Highway/Ala Moana Boulevard will be insignificant. However, the impact on local streets such as Bethel, Merchant, Bishop and Queen Streets may be much more significant, unless recommended improvements are initiated.

Although the results of the operational analysis on Table 6 indicate that the existing traffic at the four study intersections are operating at LOS D or better, field observations indicate the intersections are actually operating at LOS F during the morning and afternoon peak hours because of downstream congestion, or due to motorists stopping in travelled lanes to drop-off or pick-up passengers causing traffic to come to a complete halt.

If the traffic though the intersections operated uninterrupted or with minimal delay, the number of vehicles entering and exiting the study intersections will increase. The increase in the number of vehicle trips will result in the LOS of the signalized intersection to reflect the true LOS F for the morning and afternoon peak hours.

Results of the increase in traffic generated by other developments on normal through traffic growth to the year 1993 indicate further deterioration of LOS at the signalized intersections.

Adding the project generated traffic to the ambient traffic in 1993 results in the LOS to drop to F at the intersection of Bishop Street with Queen Street, and at Nimitz Highway with Bethel Street, as shown on Table 6.

The results of the planning analysis on Table 7 indicate the study intersections will be operating under capacity in 1993, even with the project generated traffic. The primary reason for the under capacity results at three of the four intersections are due to low traffic counts. The number of vehicles entering and exiting the study intersections are low because traffic congestion downstream of the study intersections cause traffic to backup thereby preventing motorists from entering the intersection. The cause of this traffic backup is primarily the result of motorists dropping-off or picking-up passengers in the middle of the road along Bethel, Merchant, Bishop and Queen Streets during the morning and afternoon peak hours.

As long as motorists continue to stop illegally or block traffic to drop-off and pick-up passengers, the total number of vehicles entering and exiting the study intersections will remain below the actual capacity of the intersection. The result of these low traffic counts at the intersections reflect the low critical volumes as indicated on Table 7.

The increase in traffic generated by the proposed project is not expected to significantly affect the existing traffic conditions. The recommendations made herein are intended to improve already congested conditions.

Recommendations

1. The entrance to the project parking structure should provide for a deceleration lane to permit through traffic to proceed forward and also to improve sight distance for drivers exiting from the parking structure, as shown on Figure 11.
2. The turning radius at the intersection of Bethel and Merchant Street should be lengthened so that vehicles turning right from Bethel Street onto Merchant Street need not encroach into the middle lane to safely negotiate the right turn movement.
3. The intersection of Queen Street, Nimitz Highway and Bethel Street should be improved, as shown on Figure 11.
4. The existing eight (8) parking stalls along Bethel Street between Merchant Street and King Street should be eliminated. Also, parking along Merchant Street between Nuuanu and Bishop Street should be restricted during the morning and afternoon peak hours.
5. Eliminate the transit bus stop on Bishop Street fronting the Amfac building because buses stopping to pickup and drop-off passengers during the peak hour is causing congestion and traffic backup. The bus stop at the corner of Bishop Street and King Street is only one and a half (1.5) blocks or about 200 steps mauka and within reasonable walking distance from the bus stop to be eliminated.

6. Install additional traffic signals at the Nimitz/Queen/Bethel Street intersection to provide smooth traffic flow for motorists entering Bethel Street from Nimitz Highway and Queen Street as shown on Figure 11. The additional traffic signal lights will eliminate the present unsafe "weaving" condition along Bethel Street between Nimitz Highway and the proposed access driveway to the project.
7. Expedite City and County of Honolulu Department of Transportation Services plans to install a centralized computer controlled traffic signal network.

NOTE: Figure 11 is subject to change throughout the design process. Meetings between the Department of Transportation Services and the architects have been and will continue to be held as the design of the project progresses, to create a suitable traffic central and access plan.

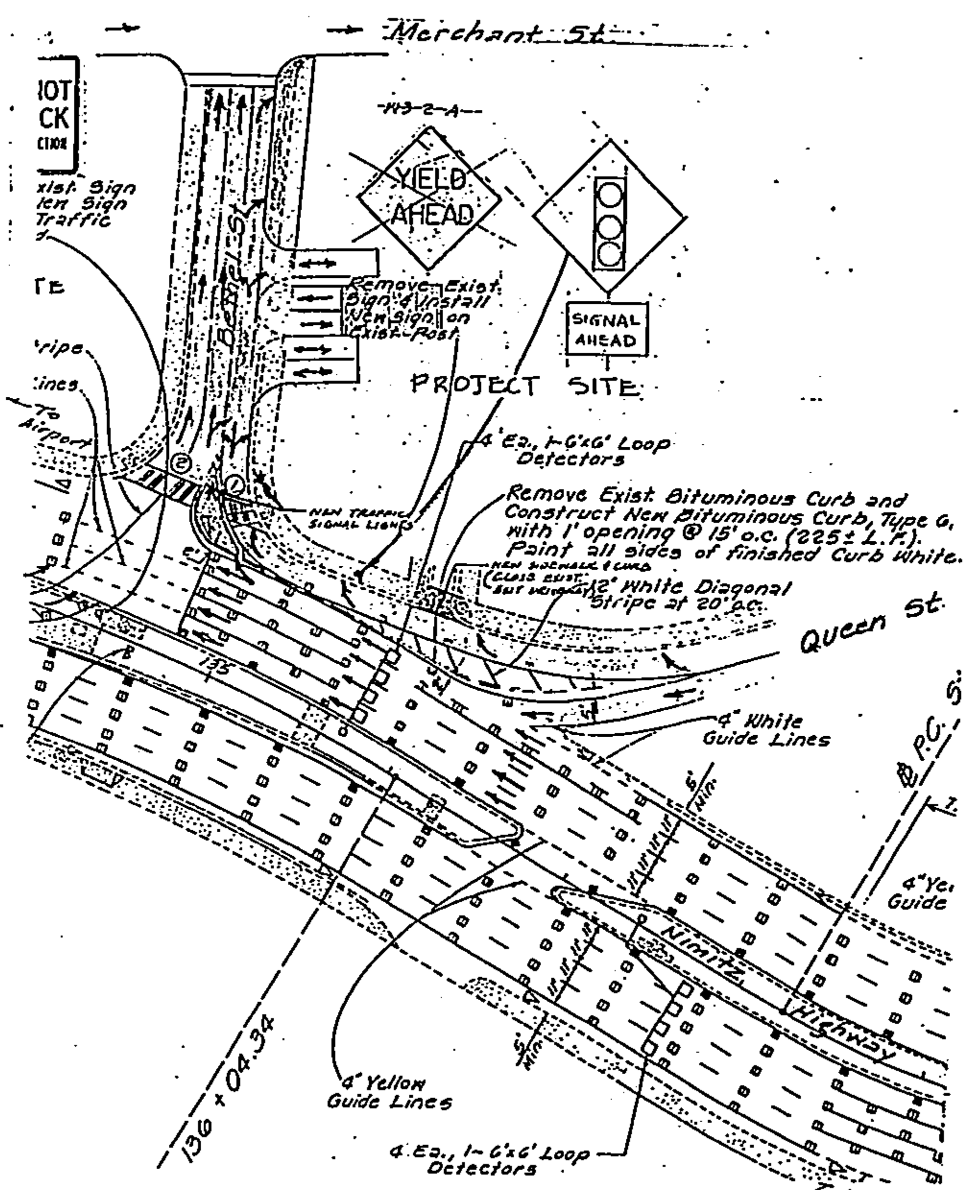


Figure 11. Queen Street, Bethel Street and Nimitz Highway Intersection Improvements

APPENDIX A

Definition of Level-of-Service
for
Signalized Intersections

APPENDIX A
DEFINITION OF LEVEL-OF-SERVICE FOR SIGNALIZED INTERSECTIONS

The concept of levels of service is defined as a qualitative measure describing operational conditions within a traffic stream, and their perception by motorists and/or passengers. A level of service definition generally describes these conditions in terms of such factors as speed and travel time, freedom to maneuver, traffic interruptions, comfort and convenience, and safety. Six levels of service are defined for each type of facility for which analysis procedures are available. They are given letter designations, from A to F, with level-of-service A representing the best operating conditions and level-of-service F the worst.

Level of service for signalized intersections is defined in terms of delay. Delay is a measure of driver discomfort, frustration, fuel consumption, and lost travel time. Specifically, level-of-service criteria are stated in terms of the average stopped delay per vehicle for a 15-minute analysis period.

Level-of Service A describes operations with very low delay, i.e., less than 5.0 sec per vehicle. This occurs when progression is extremely favorable, and most vehicles arrive during the green phase. Most vehicles do not stop at all. Short cycle lengths may also contribute to low delay.

Level-of-Service B describes operations with delay in the range of 5.1 to 15.0 sec per vehicle. This generally occurs with good progression and/or short cycle lengths. More vehicles stop than for LOS A, causing higher levels of average delay.

Level-of-Service C describes operations with delay in the range of 15.1 to 25.0 sec per vehicle. These higher delays may result from fair progression and/or longer cycle lengths. Individual cycle failures may begin to appear in this level. The number of vehicles stopping is significant at this level, although many still pass through the intersection without stopping.

Level-of-Service D describes operations with delay in the range of 25.1 to 40.0 sec per vehicle. At level D, the influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, or a high v/c ratios (volume of cars to capacity of intersection). Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.

Level-of-Service E describes operations with delay in the range of 40.1 to 60.0 sec per vehicle. This is considered to be the limit of acceptable delay. These high delay values generally indicate poor progression, long cycle length, and high v/c ratios. Individual cycle failures are frequent occurrences.

Level-of-Service F describes operations with delay in excess of 60.0 sec per vehicle. This is considered to be unacceptable to most drivers. This condition often occurs with oversaturation, i.e., when arrival flow rates exceed the capacity of the intersection. It may also occur at high v/c ratios below 1.00 with many individual cycle failures. Poor progression and long cycle lengths may also be major contributing causes to such delay levels

REFERENCE: Highway Capacity Manual (Special Report 209, 1985)

APPENDIX B

Manual Traffic Counts

Intersection of Bishop Street and Queen Street

Time Period	Bishop Westbound LT	Bishop Westbound TH	Bishop Westbound RT	Queen Southbound RT	Queen Southbound TH	Queen Northbound LT	Queen Northbound TH	Total
7:00 to 7:15	106	181	77	0	3	27	87	481
7:15 to 7:30	110	190	93	0	5	29	123	550
7:30 to 7:45	134	200	90	1	0	32	97	554
7:45 to 8:00	120	215	91	1	3	40	117	587
8:00 to 8:15	128	201	93	0	2	27	110	561
8:15 to 8:30	95	179	57	2	5	22	100	460
8:30 to 8:45	78	131	50	2	6	21	103	391
Peak Hour 7:15 to 8:15	492	806	367	2	10	128	447	

Time Period	Bishop Westbound LT	Bishop Westbound TH	Bishop Westbound RT	Queen Southbound RT	Queen Southbound TH	Queen Northbound LT	Queen Northbound TH	Total
4:00 to 4:15	45	102	66	2	17	44	108	384
4:15 to 4:30	63	93	62	1	17	35	129	400
4:30 to 4:45	66	120	76	4	47	43	132	488
4:45 to 5:00	67	106	74	2	28	45	131	453
5:00 to 5:15	54	108	85	5	56	43	136	487
5:15 to 5:30	59	94	59	3	51	38	137	441
Peak Hour 4:30 to 5:30	250	427	297	12	148	166	528	

Intersection of Nimitz Highway and Bethel Street and Nuuanu Avenue

Time Period	Nuuanu Westbound LT	Nuuanu Westbound RT	Nimitz Southbound LT	Nimitz Southbound TH	Nimitz Northbound RT	Nimitz Northbound TH	Total
7:00 to 7:15	69	66	70	768	28	532	1533
7:15 to 7:30	96	66	65	730	40	570	1567
7:30 to 7:45	65	48	69	845	50	583	1660
7:45 to 8:00	58	46	73	601	57	434	1269
8:00 to 8:15							0
8:15 to 8:30							0
8:30 to 8:45							0
Peak Hour 7:00 to 8:00	288	226	277	2944	175	2119	6029

Time Period	Nuuanu Westbound LT	Nuuanu Westbound RT	Nimitz Southbound LT	Nimitz Southbound TH	Nimitz Northbound RT	Nimitz Northbound TH	Total
4:00 to 4:15	33	50	65	730	74	857	1809
4:15 to 4:30	29	55	82	670	74	822	1732
4:30 to 4:45	23	71	73	684	92	846	1789
4:45 to 5:00	30	53	71	605	83	823	1665
5:00 to 5:15							0
5:15 to 5:30							0
Peak Hour 4:00 to 5:00	115	229	291	2689	323	3348	6995

Note: Through movement counts on Nimitz Highway taken by PPE in November 1988

Intersection of Bishop Street and Merchant Street

Time Period	Bishop Westbound LT	Bishop Westbound TH	Merchant Southbound RT	Merchant Southbound TH	Total
7:00 to 7:15	60	318	46	62	486
7:15 to 7:30	64	336	57	69	526
7:30 to 7:45	76	348	76	83	583
7:45 to 8:00	73	362	64	92	591
8:00 to 8:15	52	365	57	50	524
8:15 to 8:30	32	294	37	47	410
8:30 to 8:45	34	225	34	48	341
Peak Hour 7:15 to 8:15	265	1411	254	294	

Time Period	Bishop Westbound LT	Bishop Westbound TH	Merchant Southbound RT	Merchant Southbound TH	Total
4:00 to 4:15	84	202	11	59	356
4:15 to 4:30	89	205	13	63	370
4:30 to 4:45	82	243	19	64	408
4:45 to 5:00	118	230	17	61	426
5:00 to 5:15	84	228	19	50	381
5:15 to 5:30	74	199	13	45	331
Peak Hour 4:15 to 5:15	373	906	68	238	

Intersection of Bethel Street and Merchant Street

Time Period	Bethel Eastbound		Merchant Southbound		Total
	RT	TH	LT	TH	
7:00 to 7:15	63	74	7	107	251
7:15 to 7:30	82	94	11	124	311
7:30 to 7:45	87	96	17	134	334
7:45 to 8:00	106	127	8	149	390
8:00 to 8:15	110	70	15	118	313
8:15 to 8:30	103	85	6	111	305
8:30 to 8:45	70	75	9	86	240
Peak Hour 7:15 to 8:15	385	387	51	525	

Time Period	Bethel Eastbound		Merchant Southbound		Total
	RT	TH	LT	TH	
4:00 to 4:15	84	195	11	59	349
4:15 to 4:30	89	211	13	63	376
4:30 to 4:45	82	220	19	64	385
4:45 to 5:00	118	226	17	61	422
5:00 to 5:15	84	225	19	50	378
5:15 to 5:30	74	194	13	45	326
Peak Hour 4:15 to 5:15	373	882	68	238	

<u>APPENDIX J</u>

CIVIL ENGINEERING REPORT

R. M. Towill Corporation, Engineering Department

CIVIL ENGINEERING REPORT

FOR THE

KAAHUMANU HARBOR COURT

HONOLULU, OAHU, HAWAII

TMK: 2-1-1:16, 20, 25, 56

JUNE 1989

Prepared By:

R. M. Towill Corporation
420 Waiakamilo Road, Suite 411
Honolulu, Hawaii 96817-4941

TABLE OF CONTENTS

LIST OF FIGURES

SECTION 1
INTRODUCTION

1.1 PROJECT LOCATION

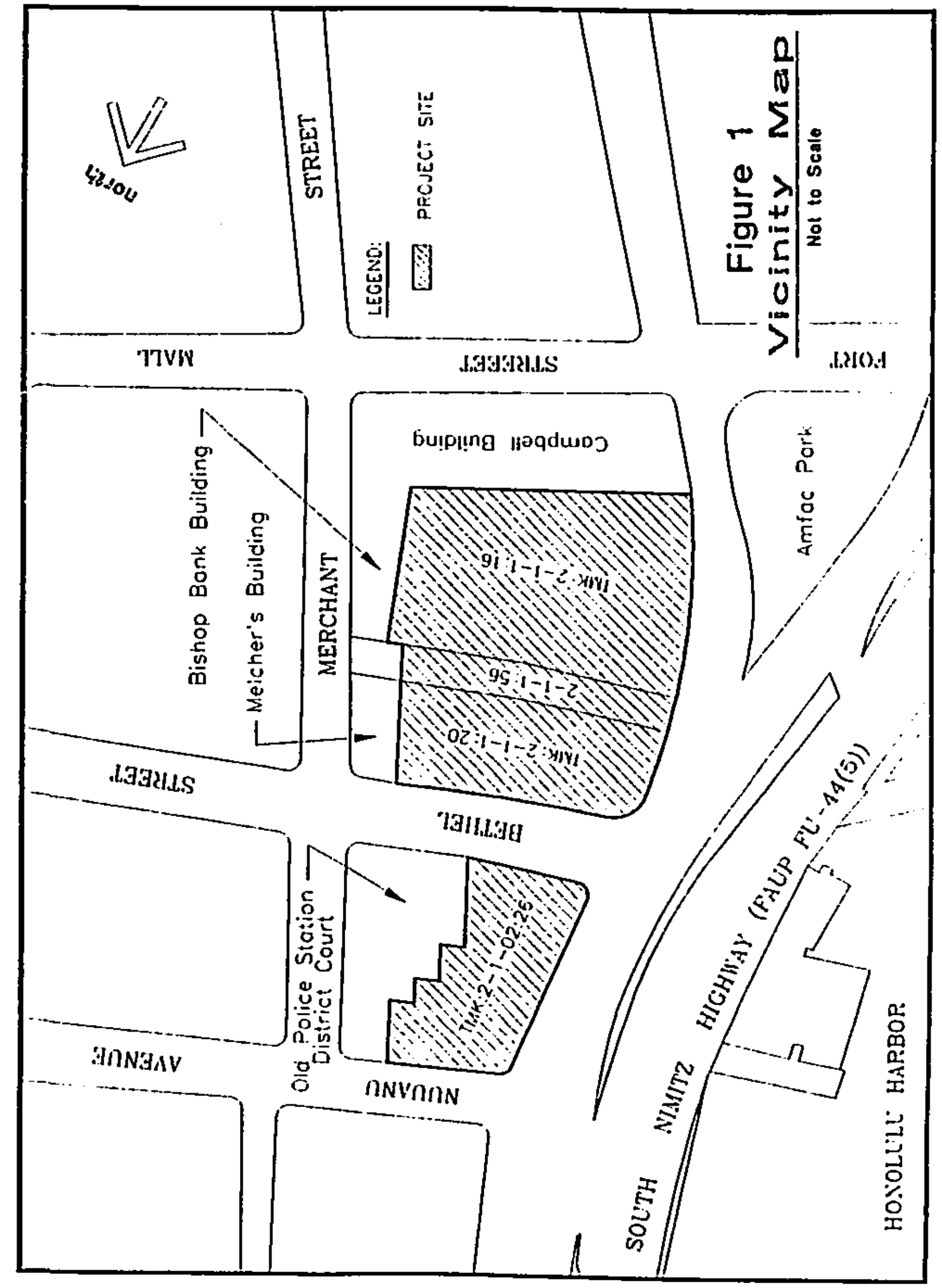
Kaahumanu Harbor Court, as shown on Figure 1, is located north of Nimitz Highway between Nuuanu Avenue and Fort Street Mall. Bethel Street divides the site into two sections, or parcels. The two parcels are currently occupied by the Kaahumanu Parking Structure and a parking lot, respectively.

1.2 DESCRIPTION OF PROPOSED DEVELOPMENT

Kaahumanu Harbor Court is proposed a commercial/residential complex with 174 apartment units, 198,340 square feet of office space, and 68,500 square feet of commercial and circulation space.

1.3 PURPOSE OF REPORT

The purpose of this report is to assess the adequacy of the existing infrastructure elements, namely sanitary sewer, water distribution system, and storm drainage system and to determine the infrastructure improvements necessary to support this project.



SECTION 2
SANITARY SEWER

2.1 EXISTING ELEMENTS

The existing municipal sewer system serving the project area consists of an 8-inch sewer line along Bethel Street, an 8-inch sewer line along Merchant Street, a 24-inch sewer line along Nimitz Highway, and an 8-inch sewer line under the existing parking structure. Records at the Division of Wastewater Management indicate that this line under the parking structure once served Melcher's Building and the Old Bishop Bank Building. This line appears to be abandoned. The 8-inch sewer line along Bethel Street currently serves only the Old Police Station/District Court Building. The approximate locations and capacities of the existing sewer lines are shown on Figure 2.

2.2 REQUIRED SEWER IMPROVEMENTS

Estimated wastewater flows were determined using the criteria of Design Standards of the Division of Wastewater Management, Volume 1 (February 1984) and are summarized below.

ESTIMATED WASTEWATER FLOW

Residential Towers:	39,000 gallons per day
Office Towers:	109,000 gallons per day
Lounge:	3,000 gallons per day
Plaza Commercial:	4,000 gallons per day
Gallerial Commercial:	8,000 gallons per day
Total	163,000 gallons per day

2.3 REQUIRED IMPROVEMENTS/UPGRADES

The Division of Wastewater Management, City & County of Honolulu, has determined that the existing sewerage system is adequate for this estimated wastewater flow. They recommend that the building sewer laterals be connected to the 8-inch line in Bethel Street. The Division of Wastewater Management is not certain if the 8-inch line under the parking structure is abandoned. During construction, the status of this line can be determined and if determined to be active, can be relocated.

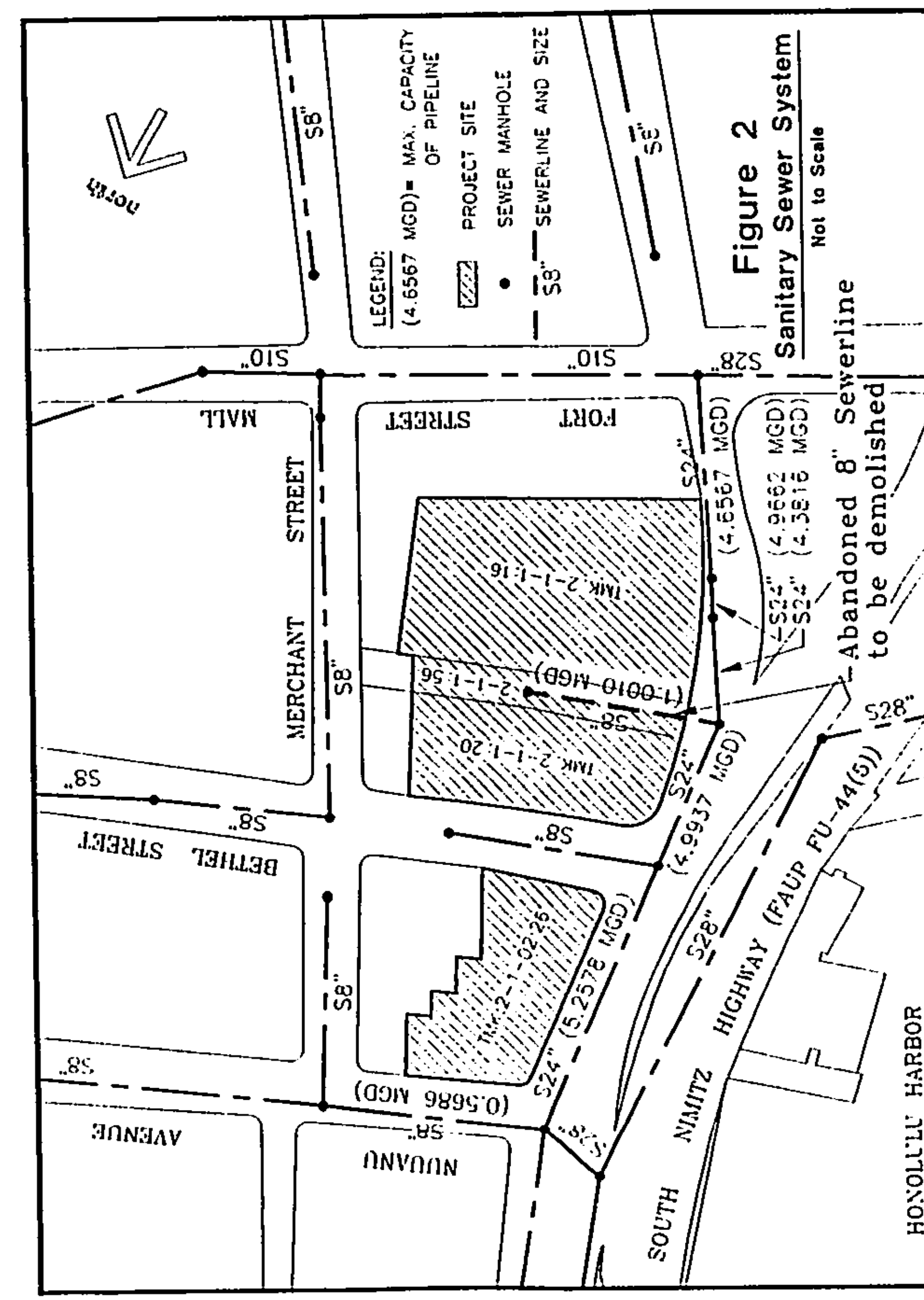


Figure 2
Sanitary Sewer System
Not to Scale

SECTION 3
WATER DISTRIBUTION SYSTEM

3.1 EXISTING SUPPLY AND DISTRIBUTION

The existing water system consists of a 12-inch water main along Bethel Street, a 6-inch water main along Merchant Street, and an 8-inch and 12-inch water main along Nimitz Highway (see Figure 3).

3.2 REQUIRMENTS FOR DEVELOPMENT

The projected water demand by the proposed development was determined using the criteria in Water System Standards - Volume 1 (1985) of the Board of Water Supply is summarized below.

ESTIMATED WATER DEMAND

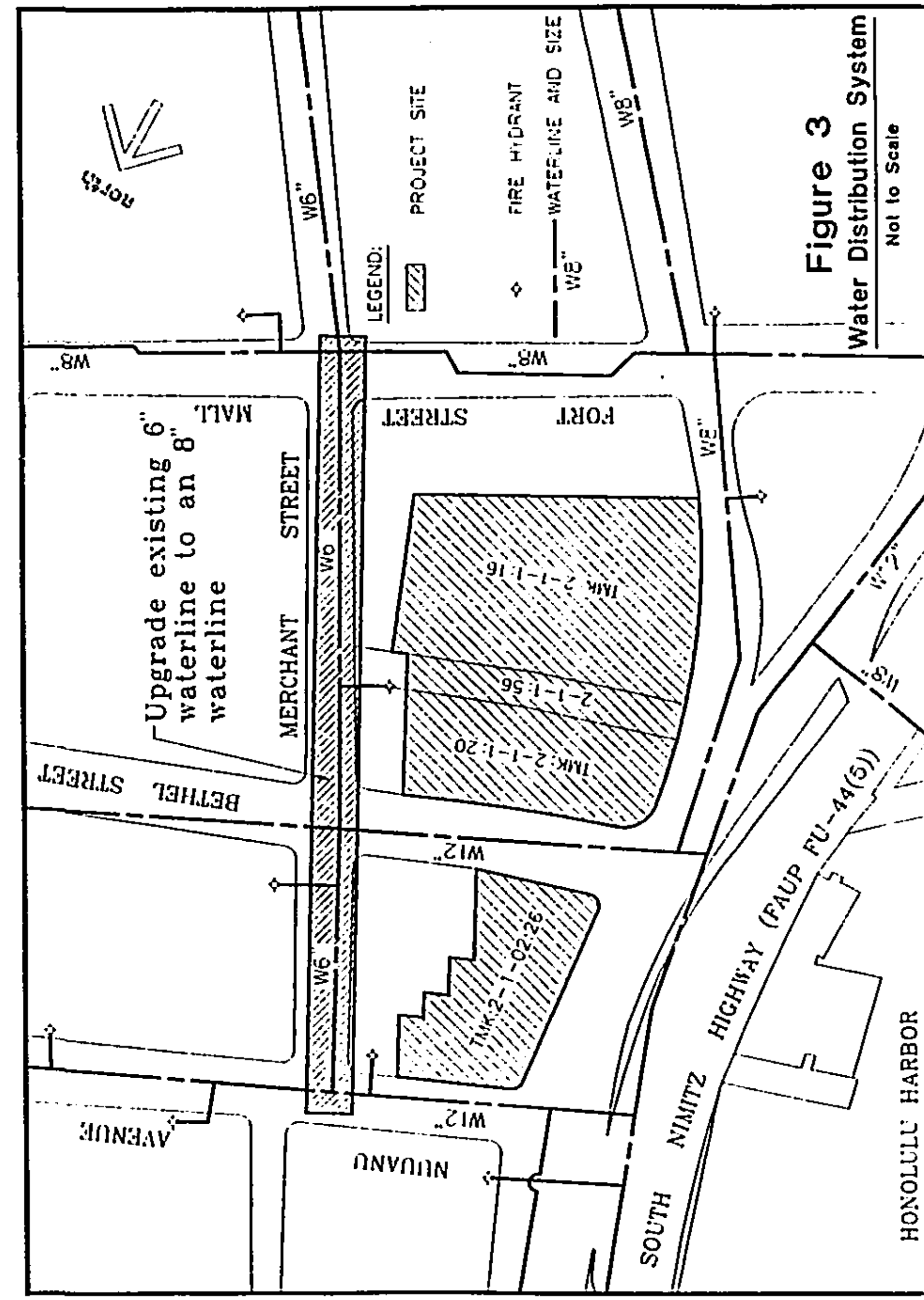
Residential Towers:	52,200 gallons per day
Office Towers:	23,800 gallons per day
Lounge:	600 gallons per day
Plaza Commercial:	900 gallons per day
Gallerial Commercial:	1,700 gallons per day
Total	79,200 gallons per day

FIRE FLOW REQUIREMENTS

Flow:	2,000 gallons per minute
Duration:	2 hours

3.3 REQUIRED IMPROVEMENTS/UPGRADES

Based on these projected water demands, the Board of Water Supply (BWS) has confirmed that the current water system serving the Kaahumanu area is presently adequate to serve the proposed development. However, an upgrade of approximately 600 linear feet of existing 6-inch water main on Merchant Street is required to maintain the present level of service to the area.



SECTION 4
STORM DRAINGE SYSTEM

4.1 EXISTING SYSTEM DESCRIPTION

The existing drainage system consists of an 18-inch drain line along Bethel Street and a 30-inch drain line along Queen Street (see Figure 4). The storm runoff generated by the project is estimated according to the criteria in the Storm Drainage Standards of the Department of Public Works (May 1988) and is summarized below.

SURFACE RUNOFF

Kaahumanu Parking Structure:	6.2 cfs
Nuuanu-Nimitz Parking Area:	2.2 cfs

4.2 REQUIRED IMPROVEMENTS/UPGRADES

The drainage system in the vicinity of the project was found to be adequate for this project. No additional improvements are required.

Because surface runoff is directly proportional to the characteristics of the ground surface, the increase in surface runoff expected from this project is minimal. Presently both parcels are covered by hard surfaces. The proposed project will soften the ground cover to minimize any increase in surface runoff.

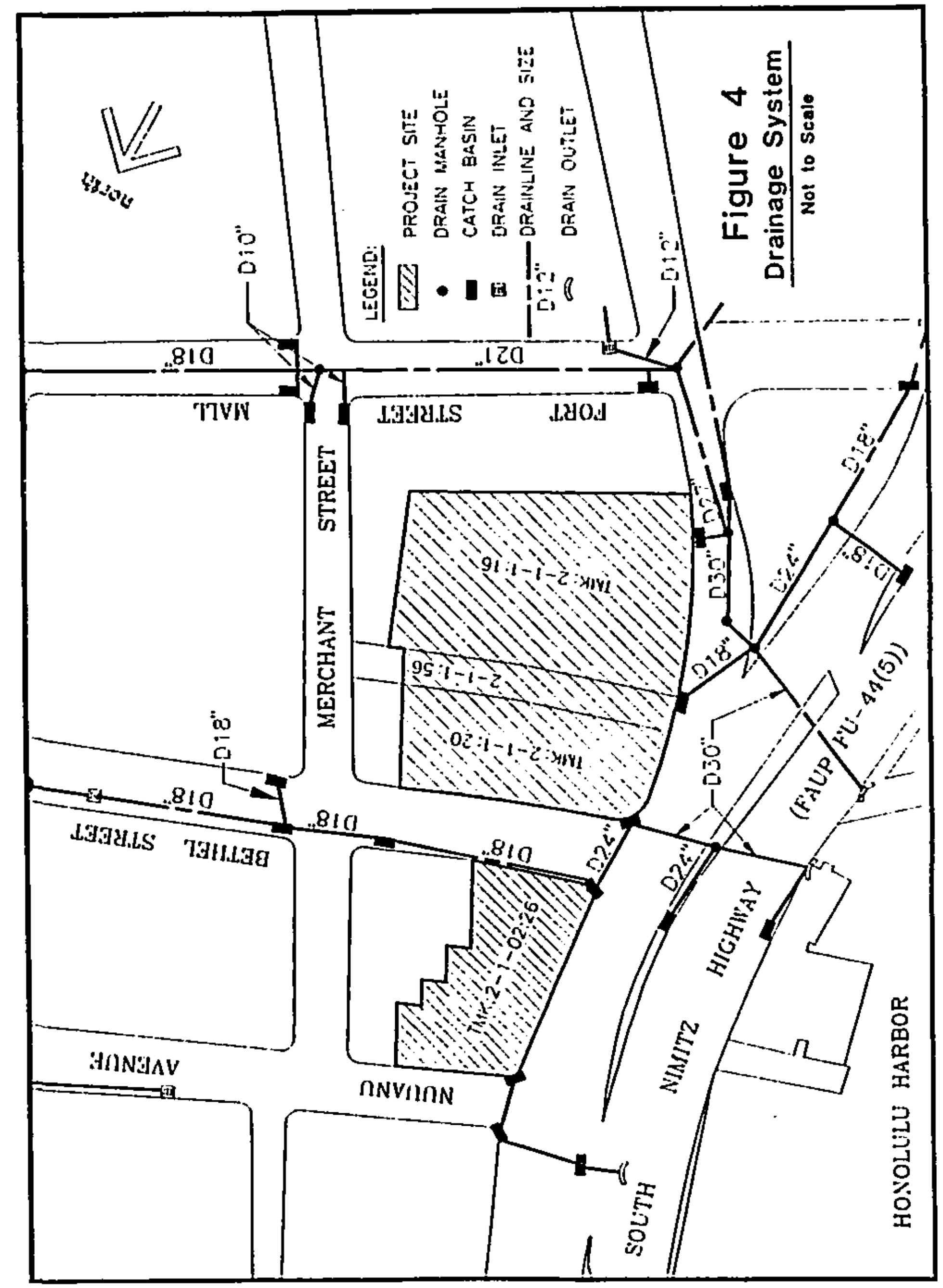


Figure 4
Drainage System
Not to Scale

SECTION 5
SUMMARY

In summary, an inventory of the existing sewer, water, and drainage systems has been compiled and is shown on Figures 2 through 4.

The current sewer system has been found to be adequate for the proposed development Currently, the 8-inch sewer line along Bethel Street which services the Old Police Station/District Court is adequate for this project. An existing eight sewer line located within the project site will require field verification to determine if it is active. If found to be active, relocation of this line will be required. Otherwise this line may be demolished.

The water system has been found to be deficient along Merchant Street and will require upgrading to an 8-inch line. The remainder of the water system is adequate for this project.

The drainage system has been found to be adequate for this project and requires no additional improvements.

CALCULATIONS

DESIGN SHEET

Project Title: Harbor Court - Engineering Rpt — Job No.: ____ — Page 1 of 2
Location: Downtown, Honolulu, Oahu, Hawaii — Prepared By: GMT — Date: 6/5/87
Item: Sewer Demands — Checked By: ____ — Date: ____

Purpose: To determine future demand resulting from a proposed development of Kaahumanu Parking Structure Lot.

Given: No. Apt. Units = 174 (Lacayo AIA Inc.)
Density of residential occupancy = 2.8 persons per apt. unit
(Ref. Design Standards of the Division of Waste Water Management - Vol. I Sec. 22.2.1)
Average Daily per Capita Flow = 80 gal./day
(ibid)
Equivalent population for Central Business = 300 cpa
cpa = capita per acre
(Ref. Design Standards of the Division of Waste Water Management - Vol. I Sec. 22.2.2)
Areas (Lacayo AIA Inc.)
Office Towers = 198340 sq. ft
Lounge = 4760 sq. ft
Plaza Commercial = 7700 sq. ft
Galleria Commercial = 14,000 sq. ft.

Residential Towers

174 units × 2.8 persons/unit = 487.2 persons
487.2 persons × 80 gal/day per person = 38976 gal/day
say 39000 gal/day

Office Towers:

$198340 \text{ sq ft} \left(\frac{Ac}{43560 \text{ sq ft}}\right)\left(300 \frac{capita}{Ac}\right) = 1366.0$ persons
1366.0 persons × 80 gal/day per person = 109280 gal/day
say = 109000 gal/day

Lounge

$4760 \text{ sq. ft} \left(\frac{Ac}{43560 \text{ sq ft}}\right)\left(300 \frac{capita}{Ac}\right) = 32.8$ persons
32.8 persons × 80 gal/day per person = 2623 gal/day
say 3000 gal/day

R. M. TOWILL CORPORATION

DESIGN SHEET

Project Title: Harbor Court - Engineering Rpt — Job No.: ____ — Page 2 of 2
Location: Downtown, Honolulu, Oahu, Hawaii — Prepared By: GMT — Date: 6/5/87
Item: Sewer Demands (cont.) — Checked By: ____ — Date: ____

Plaza Commercial

$7700 \text{ sq ft} \left(\frac{Ac}{43560 \text{ sq ft}}\right)\left(300 \frac{capita}{Ac}\right) = 53.0$ persons
53.0 persons × 80 gal/day per person = 4242 gal/day
say 4000 gal/day

Galleria Commercial

$14,000 \text{ sq. ft} \left(\frac{Ac}{43560 \text{ sq ft}}\right)\left(300 \frac{capita}{Ac}\right) = 96.4$ persons
96.4 persons × 80 gal/day per person = 7712 gal/day
say 8000 gal/day

Summary

Residential Towers	39000 gal/day
Office Towers	109000 gal/day
Lounge	3000 gal/day
Plaza Commercial	4000 gal/day
Galleria Commercial	8000 gal/day
Total	163000 gal/day

R. M. TOWILL CORPORATION

DESIGN SHEET

Project Title: Harbor Court - Engineering Rpt Job No: Page 1 of 2
Location: Downtown, Honolulu, Oahu, Hawaii Prepared By: GMT Date 6/5/87
Item: Water Demands Checked By: Date

Purpose: To determine future water demands resulting from a proposed development of Kaahumanu Parking Structure Lot.

Given: No. Apt units = 174 (Lacayo AIA Inc)
Average Daily Demand
Multi Family High Rise = 300 gallons per unit
Commercial/Residential Mix = 120 gallons per 1000 sq ft
(Water System Standards - Vol. 1 1985: Table 15)
Areas (Lacayo AIA Inc.)
Office Towers = 198840 sq ft.
Lounge = 4760 sq ft.
Plaza Commercial = 7700 sq ft
Galleria Commercial = 14,000 sq ft.

Residential Towers

174 units x 300 gal/unit = 52200 gal/day

Office Towers

198840 sq ft. $\left(\frac{120 \text{ gal}}{1000 \text{ sq ft.}}\right)$ = 23800 gal/day

Lounge

4760 sq ft $\left(\frac{120 \text{ gal}}{1000 \text{ sq ft}}\right)$ = 571 gal/day
say 600 gal/day

Plaza Commercial

7700 sq ft $\left(\frac{120 \text{ gal}}{1000 \text{ sq ft}}\right)$ = 924 gal/day
say 900 gal/day

Galleria Commercial

14000 sq. ft $\left(\frac{120 \text{ gal}}{1000 \text{ sq ft}}\right)$ = 1680 gal/day
say 1700 gal/day

DESIGN SHEET

Project Title: Harbor Court - Engineering Rpt Job No Page 2 of 2
Location: Downtown, Honolulu, Oahu, Hawaii Prepared By: GMT Date 6/5/87
Item: Water Demands Checked By Date

Summary

Residential Towers	52200 gal/day
Office Towers	23800 gal/day
Lounge	600 gal/day
Plaza Commercial	900 gal/day
Galleria Commercial	1700 gal/day
Total	79200 gal/day

Fire Flow Requirements

Flow 2000 gal/min
Duration 2 hrs

(Water System Standards - Vol 1 1985; Table 16)

DESIGN SHEET

Project Title Harbor Court - Engineering Rpt Job No.: ______ Page 1 of 2

Location Downtown, Honolulu, Oahu, Hawaii Prepared By: GMT Date 6/3/87

Item Drainage Study Checked By: ______ Date ______

Purpose: Determine the surface runoff for the project site and the optional parcel. Use Rational Method

Given: Rational Method $Q = CIA$

Q = Flow rate in cubic feet per second

C = runoff coefficient

I = rainfall intensity in inches per hour for a duration equal to the time of concentration

A = drainage area (acres)

Assume $C = 0.9$ from Table 2 Storm Drain Standards - May 1988

Length of Drainage Area

Project site 370 ft

Optional Parcel 160 ft

Character of Ground: Paved

Percent Slope: Assumed 0.5%

Time of Concentration (T_c) (Plate 3 - Storm Drain Standards - May 1988)

Project site 8.5 minutes

Optional Parcel 6.5 minutes

1-hour Rainfall Intensity (T_m = 10 years) = 2 inches

(Plate 1 - Storm Drain Standards - May 1988)

Correction Factor (Plate 4 - Storm Drain Standards - May 1988)

Project site 2.5

Optional Parcel 2.7

Rainfall Intensity

1-hour Rainfall Intensity x Correction Factor

Project site $I = 2 \text{ in} \times 2.5 = 5.0$ in/hr

Optional site $I = 2 \text{ in} \times 2.7 = 5.4$ in/hr

Drainage Area

Project site 59931 sq ft

Optional site 17805 sq ft

R. M. TOWILL CORPORATION

DESIGN SHEET

Project Title Harbor Court - Engineers Rpt Job No. ______ Page 2 of 2

Location Downtown, Honolulu, Oahu, Hawaii Prepared By: GMT Date 6/3/87

Item Drainage Study Checked By: ______ Date ______

Project site

$Q = CIA$

$Q = (0.9)(5.0 \text{ in/hr})(59931 \text{ sq ft})\left(\frac{\text{Ac}}{43560 \text{ sq ft}}\right) = 6.2 \text{ cfs}$

Optional site

$Q = (0.9)(5.4 \text{ in/hr})(17805 \text{ sq ft})\left(\frac{\text{Ac}}{43560 \text{ sq ft}}\right) = 2.2 \text{ cfs}$

R. M. TOWILL CORPORATION