Royal Kinau

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT
CITY AND COUNTY OF HONOLULU
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DEPUTY DIRECTOR

January 28, 1997

Mr. Gary Gill, Director
Office of Environmental Quality Control
Central Pacific Plaza
220 South King Street, Suite 400
Honolulu, Hawaii 96813

Dear Mr. Gill:

Subject: Final Environmental Assessment
for the Royal Kinau Housing Project
Tax May Keys: 1/2-1-40: 27

The Department of Housing and Community Development has reviewed the Final Environmental Assessment (EA) for the subject project and anticipates a negative declaration determination. Please publish a notice of availability of the final environmental assessment for this project in the February 8, 1997 edition of the Environmental Notice.

We have enclosed a completed OEQC Environmental Notice Publication Form and four copies of the Final EA. Please contact Rae Gee at 527-5088 if you have any questions.

Sincerely,

ROBERT AGRES, JR.
Acting Director

Enclosures

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1997-02-08-OA-FEA-Royal Kinau

Final
Environmental Assessment

for the

ROYAL KINAU

Honolulu, Hawaii

PROPOSING APPLICANT: Royal Kinau Partnership
1816 Makiki Street
Honolulu, Hawaii 96822

ACCEPTING AUTHORITY: Department of Housing & Community Development
City and County of Honolulu
650 South King Street, 5th floor
Honolulu, Hawaii 96813

January 1997

Prepared By:

Stanley Yim & Associates, Inc.
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Telephone: 533-1885
Facsimile: 533-6127

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Traffic Impact Analysis Report

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I. STATEMENTS OF OBJECTIVE

The goals of this assessment are,

1. to evaluate environmental concerns if any, resulting from the development of a twelve story residential tower apartment building along with a lower floor level for senior housing amenities, laundry facilities for the senior rental units, the building's electrical and mechanical rooms, a storage area, the trash collection facility, and 34 of the 57 parking stalls. The other 23 parking stalls and the loading stall are on the ground level above.

2. to arrive at mitigation measures to address such concerns to minimize impacts on and/or to the surrounding environment.

II. AGENCIES & PERSONS CONSULTED

CITY AND COUNTY OF HONOLULU

Department of Housing and Community Development
Department of Land Utilization
Department of Public Works
Department of Transportation Services
Department of Wastewater Management
Department of Parks and Recreation
Board of Water Supply

STATE OF HAWAII

Department of Agriculture
Department of Transportation
State Historic Preservation Division, Dept of Land & Natural Resources

FEDERAL

U.S. Department of Army - Corps of Engineers
U.S. Department of the Interior - Fish and Wildlife Service

OTHERS

The Nature Conservancy of Hawaii
The Makiki/Lower Punchbowl/Tantalus Neighborhood Board No. 10
The Downtown Neighborhood Board No. 13
Soils International (the project's soils investigation and report)
Towill, Shigeoka and Associates, Inc. (the project's topographic survey & map)
L&M Architects
The Royal Kinau Partnership

III. DESCRIPTION OF PROPOSED ACTION

A. General Information

APPLICANT: The Royal Kinau Partnership
1816 Makiki Street
Honolulu, Hawaii 96822

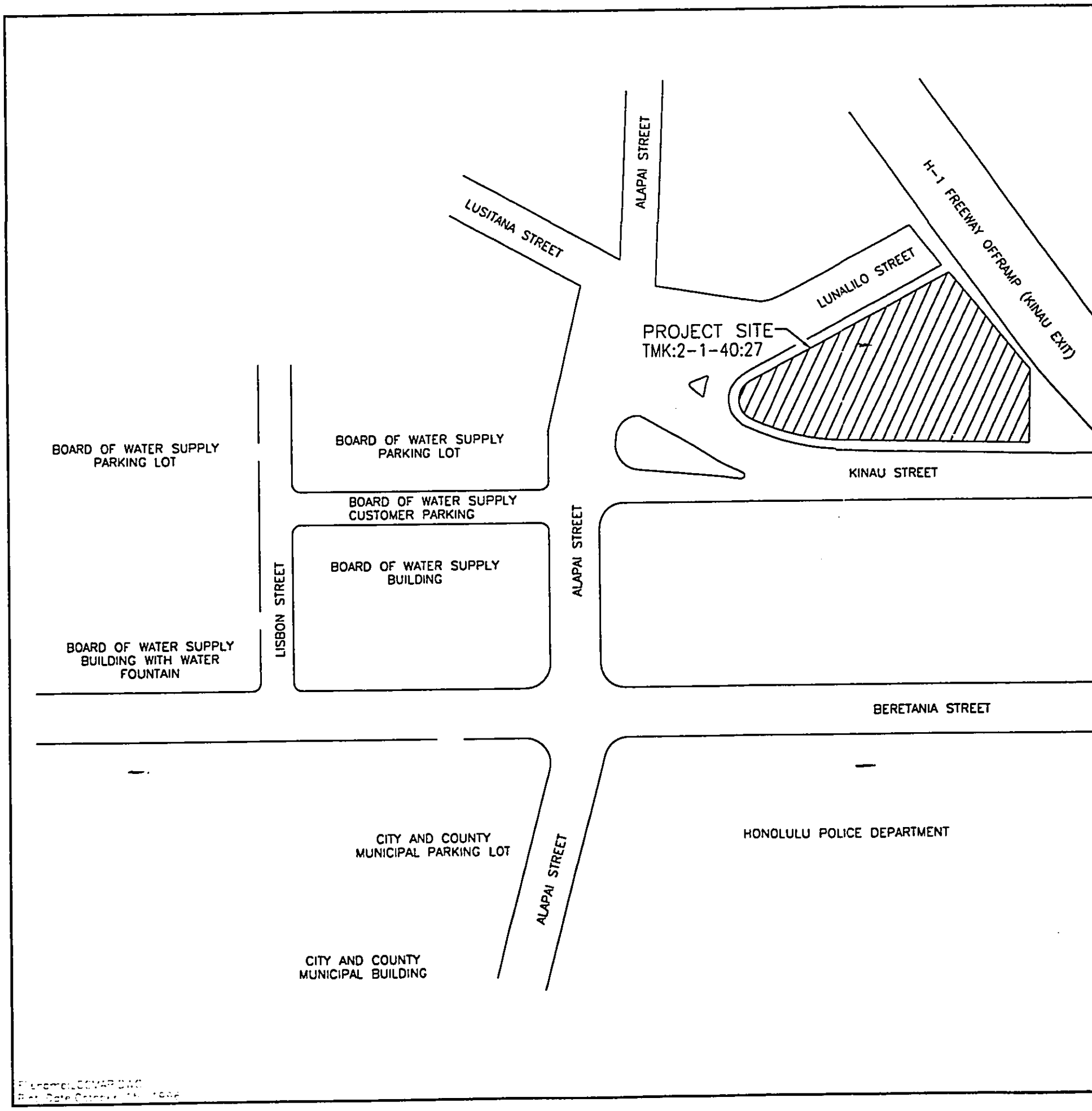
ACCEPTING AUTHORITY:
Department of Housing & Community Development
City and County of Honolulu
650 South King Street, 5th Floor
Honolulu, Hawaii 96813

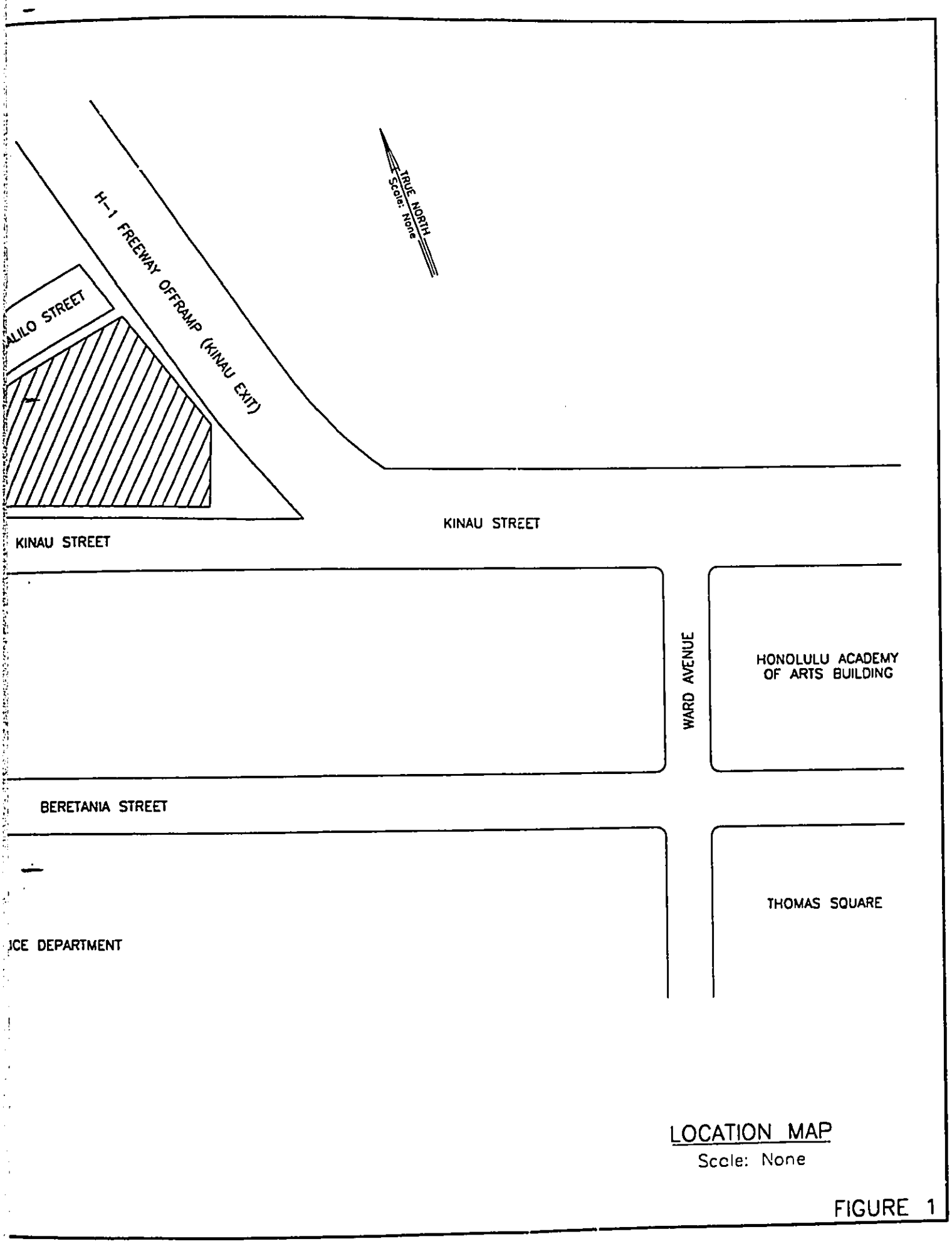
AGENT: Stanley Yim & Associates, Inc.
1001 Bishop Street, Pacific Tower, Suite 410
Honolulu, Hawaii 96813
Telephone: 533-1885
Facsimile: 533-6127

TAX MAP KEY: 2-01-40:27

The Royal Kinau site is located in the Hawaii Capitol Special District and is owned by the Royal Kinau Partnership. The parcel is bounded by the dead end portion of Lunalilo Street along the north, Kinau Street along the south, the H-1 Freeway Kinau off ramp along the east, and a State owned vacant lot on the southeast side. Figure 1 shows the site's location, abutting streets, and configuration.

The Royal Kinau project will make available 48 one bedroom units for senior affordable housing and, 24 two bedrooms and 12 one bedroom units for market sales under the City's Chapter 201E HRS Program through the City's Department of Housing and Community Development. The project will also have a fenced and landscaped private park area with picnic tables and barbecue facilities. Parking for the project will be provided on two levels for 28 full size stalls of which 2 will be designated as handicap stalls, 29 compact stalls, and 1 loading stall.


LUSITANA STREET
ALAPAI STREET
H-1 FREEWAY OFFRAMP (KINAU EXIT)
LUNALILO STREET
PROJECT SITE
TMK:2-1-40:27
KINAU STREET
BOARD OF WATER SUPPLY
PARKING LOT
BOARD OF WATER SUPPLY
PARKING LOT
BOARD OF WATER SUPPLY
CUSTOMER PARKING
BOARD OF WATER SUPPLY
BUILDING
LISBON STREET
ALAPAI STREET
BOARD OF WATER SUPPLY
BUILDING WITH WATER
FOUNTAIN
BERETANIA STREET
CITY AND COUNTY
MUNICIPAL PARKING LOT
ALAPAI STREET
HONOLULU POLICE DEPARTMENT
CITY AND COUNTY
MUNICIPAL BUILDING



LOCATION MAP
Scale: None

FIGURE 1

The project plans call for the construction of a 12 story residential apartment building with a lower level floor for senior housing amenities, the laundry area, the electrical and mechanical rooms, a storage area, the trash collection facility, and 34 parking stalls. The remaining stalls and the handicap and loading stalls will be on the ground level above. Each level will have separate driveways with the lower level driveway being off of Kinau Street and the ground level driveway being off of the dead end portion of Lunalilo Street.

There will be a new hollow tile retaining wall built along the east side of the residential tower to accommodate grade differences at that location.

The sidewalk and planting areas along the Lunalilo Street frontage to and including the intersection at Lunalilo and Kinau Streets will be modified and improved to provide for a new driveway and the removal of an existing traffic island at the intersection. The modifications and improvements are to satisfy Ordinance 2412 requirements as set forth by the City. The new work will conform to city standards and, approvals will be obtained from the respective city agencies prior to starting the construction.

Plans showing the site layout, the proposed improvements and modifications to the sidewalk areas along the Lunalilo Street frontage and the Lunalilo & Kinau Streets intersection, and the landscape plantings are attached as Appendix A. These plans also show the utility connections from existing services in the street for the new units. Other plans and maps impacting the Royal Kinau development are,

1. <u>State Land Use Map</u>:

   The area in which the site is located is designated as "Urban" on the State Land Use Map at the State Land Use Commission. The proposed Royal Kinau is a development that is permitted in "Urban" designated areas with no boundary change needed. The State Land Use Map is not impacted by this project.

2. **Development Plan**:

The City's Development Plan (DP) at the Department of Land Utilization designates the site and surrounding areas as "Medium Density Apartment". The City's Planning Department's Article 2, Section 24-2.2(a)(4)(C) of the Development Plan Special Provisions for the Primary Urban Center states areas designated for Medium Density Apartment shall have a general density of 90 units per net acre. While the proposed project does conform to the site's Medium Density Apartment DP land use designation, its density however, is exceeded by about 50 percent relative to the property size. Hence an exemption from Article 2, Section 24-2.2(a)(4)(C) of the Special Provisions for the Primary Urban Center is needed.

3. **Zoning Map**:

The City's Zoning Map at the Department of Land Utilization designates zoning for the site as Apartment (A-2). The Royal Kinau fits this zoning designation and will not require changes to the existing zoning for the area.

4. **Flood Insurance Rate Map**:

Panel 120 of the Federal Flood Insurance Rate Map dated September 4, 1987 shows the site in an area designated ZONE X (unshaded). This puts the site outside of the 500 year flood plain.

There are no major streams, natural drainage ways and/or drainage channels near the site and no work is planned in this project that will either lead to, or impact any offshore waters. A Department of the Army permit is not needed for this project.

5. **Agriculture Lands of Importance to the State of Hawaii**:

The site is not considered important for agriculture land. The site has neither the size, location, nor soil quality necessary to produce sustained high yields of crops economically.

6. **Special Management Area Map**:

The site is not in a Special Management Area and will not need a special management area (SMA) use permit.

7. **Street Widening**:

No street widening is required by either the State's Department of Transportation or the City's Department of Transportation Services. Both agencies have reviewed the project's conceptual plans.

The City's Department of Transportation Services had asked the project to verify with the State Department of Transportation (Highways Division) as to whether or not a right turn lane will be built in the future off of the H1 freeway Kinau Street off-ramp. The State has since responded that they "have investigated the project site and conclude that a right turn lane off of the Kinau off-ramp will not be constructed in the future". A copy of the State's response letter is attached as Exhibit 1 in Appendix C.

In addition to the right turn lane off of the Kinau Street off-ramp, the City's Department of Transportation Services also wants to remove one of the existing traffic islands at the Kinau and Lunalilo Streets intersection. They also want the sidewalk and planting areas along Lunalilo Street and a part of the intersection modified to reduce the resulting intersection width subsequent to removing the traffic island. The modifications will set the alignment for the new curb at varying distances away from the existing right of way resulting in a sidewalk and planting area of increasing widths as it approaches the intersection. The curb return radius at the

intersection will be set at 20ft so that the new improvements can extend outwards and be as near as possible to the traffic island being removed. Plans showing these modifications are attached as Appendix A and will be submitted to the City agencies which include the Department of Transportation Services for approval.

8. Special Districts:

The project is located in the Hawaii Capitol Special District.

Department of Land Utilization's (DLU's) input received in their December 16, 1996 letter (see Exhibit 12 in Appendix C) says a major special district permit is needed. DLU however, has indicated in that same letter they would have no objection to an exemption from this requirement should the project request for it. Hence the project will be seeking the exemption.

DLU also indicated in that same letter that the project has parking space overhangs of 3 feet extending into the required yard space. That condition is not allowed in the special district. However, they will support an exemption to allow the overhangs to remain. As a result, the project will also seek this exemption.

9. Other Information:

Park Dedication: The size and configuration of the project's site imposes a constraint insofar as meeting the City's Park Dedication requirements. As a result the project needs to obtain an exemption from the Parks Dedication requirements. The City's Department of Land Utilization has indicated in their December 16, 1996 letter that they would have no objections to the project obtaining an exemption from the procedures and regulations of Park Dedication.

Open Space Requirements: The project has 37 percent of the lot area as open space. The City's Department of Land Utilization in their letter of December 16, 1996 says the minimum required open

space for the project is 40 percent. They would however, have no objections to the project obtaining an exemption to allow the 37 percent open space to remain.

Building Heights: The maximum permitted height for the project is 100 feet with another 12 feet allowed for roof top machinery enclosure. The project's building exceeds both maximum allowable heights and as such, will be seeking the necessary exemptions from the height limits. DLU has indicated they would not object to the project obtaining an exemption from the height limits.

Parking: The project plans call for 57 stalls and one loading stall developed as follows,

Unit	ratio	# of stalls
48 elderly rental units	4:1	12
36 market units	1:1	36
guest stalls	10%	9
TOTAL		57

Neighborhood Boards: In October 1995, a project was presented to Neighborhood Board No. 13 (Downtown) and Neighborhood Board No. 10 (Makiki/Lower Punchbowl/Tantalus) for information and to solicit community input. That project was to have provided either 94 or 96 affordable senior rental units, more or less, in a residential tower. It too was to have been developed under the Chapter 201E, Hawaii Revised Statues, whereby the processing of affordable housing projects is expedited. Copies of the minutes for the two neighborhood boards are attached as Exhibits 8 and 9 in Appendix C for information.

Then, on April 3rd, 1996, that project was presented to the City's Design Advisory Committee for review. The results of the committee's review and their comments are attached as Exhibit 2 in Appendix C. It was noted then that their review was performed

specific to the 201E proposal and should not be construed as an approval should the project come under the normal review process.

That project has since evolved into the present Royal Kinau development where two significant differences are to be noted. First, the number of affordable senior rental units have decreased from 96 units to 48 units. Second, in the neighborhood board presentations, the plans indicated that all of the units in the building would be for affordable senior rentals versus the current proposal wherein the building now contains 48 affordable senior rentals and 36 market condominiums.

Subsequent to the neighborhood board presentations, the 9% low income tax credit program which was to be a major component of the financing package was found to be granted annually and on a competitive basis. The alternative financing would be the 4% low income tax credit program that is available periodically but on a non-competitive basis. The uncertainty of obtaining the 9% tax credits made changing the project's financing package to the 4% tax credit program attractive. Unfortunately, financing the entire project under the 4% tax credit program is not economically feasible. To make the project feasible, profits generated from the sale of the market units would be needed to subsidize the affordable senior rentals. Hence the current mix in the Royal Kinau project now contains a blend of both affordable senior rental and market condominium units.

Letters dated November 18, 1996 were sent to both Neighborhood Boards informing them of the amendments made to the project as initially presented to them in October 1995. Copies of the letters are attached as Exhibits 10 and 11 in Appendix C.

B. Existing Conditions

The site presently has an old two story wood rooming house with rental units. The tenants at the rooming house are renting on a month

to month basis. They have been informed of the upcoming Royal Kinau project and that they will receive ninety (90) days notice of their need to vacate at which time, they will be displaced with no relocation assistance.

The site has four to five existing mango trees, a plumeria tree and a lime tree. Aside from the trees, most of the other yard areas are either overgrown with weeds or unplanted.

A soils investigation and report for the site was conducted by Soils International. The report is available for review at the office of Stanley Yim & Associates, Inc. The USDA Soil Conservation Services "Soil Survey of the Islands of Kauai, Oahu, Maui, Molokai, and Lanai, State of Hawaii", designates the onsite material as being in the Tantalus silty clay silt loam series with slopes ranging from 8 to 15 percent slopes. The Tantalus series consist of well-drained soils on uplands that developed many years ago in volcanic ash and material weathered from cinders.

A map showing the site topography is attached as Appendix B. The existing ground generally slopes north to south with an elevation difference of around 10 to 12 feet. The elevations range from a low of approximately 42.6 feet to a high of about 55.1 feet, more or less.

Existing street access is available off of either the dead end portion of Lunalilo Street or Kinau Street by way of 3 driveways off of Kinau Street and 1 driveway off of Lunalilo Street.

The State Historic Preservation staff has reviewed the project site and has found no historic sites at the parcel. Given the parcel's past development history, and the fact that subsurface historic deposits are unlikely at that location, the State Historic Preservation has surmised the proposed project will have "no effect" on historic sites. See Exhibit 7, Appendix C attached.

C. Community Facilities and Services

Fire Prevention Resources: A new fire hydrant will be installed fronting the project site on Lunalilo Street for fire protection. The nearest existing fire hydrant is on Lusitana Street, about 200 feet away. The Central Fire Station is located in the downtown area about a mile away. Travel time between the station and the site is about 5 minutes, or less, depending upon traffic conditions.

Police Resources: The new police station complex is located on Beretania Street within walking distance from the site. Given the one way streets in the area, it is approximately a half mile away by car and would take approximately 2 to 3 minutes, or less, to get from the site to the station by car.

Emergency Medical Services: Two major hospitals are located close to the Royal Kinau site. The Queens Medical Center is about a half mile in another direction from the police station and would take 2 to 3 minutes, or less, to get to its emergency facility. The Straub Hospital emergency facility is less than a half mile in the opposite direction from the Queens Medical Center and travel time to it is just about same as that for the Queens Medical Center.

D. Technical Characteristics

The project will construct a 12 story residential apartment building with a lower floor level and two floors of parking. The lower floor level will have the senior housing amenities, the laundry area, the electrical and mechanical rooms, a storage area, the trash collection facility, and 34 parking stalls. Another 21 parking stalls, 2 handicap stalls, and the loading stall will be available on the next level above.

A new hollow block retaining wall is to be built along the east side of the building to accommodate grade differences at that location. A new private park with chain link fencing, a hedge next to the new fence, picnic tables and barbecue facilities, landscape plantings, and

an irrigation system will be provided. The project will also modify the sidewalk areas fronting the site, replace the existing driveways with two new driveways, and provide for the necessary connections to various existing utility services.

The removal of the existing traffic island at the intersection also requires re-siting an existing utility pole with a pair of overhead street lights and an existing underground electrical box. A new wheelchair ramp is to be built at a location suitable to the Department of Transportation Services, Department of Public Works, and the Commission on Persons with Disabilities. The ramp's design will meet State and City requirements and the plans will be submitted to them for approvals prior to doing the work.

Sewer service to the project will be twofold. All residential units will be connected to an existing sewer manhole in Lunalilo Street. The lower floor level will be separately connected to an existing sewer lateral in Kinau Street. These sewer connection points have already been reviewed and approved by the City's Department of Wastewater Management (see Exhibit 3, Appendix C). Plans showing these connections will be submitted to them for approval.

Water services to the project will provide for both domestic and fire needs. The new services will be located towards the end of Lunalilo Street and connect to the existing 12-inch water main in Lunalilo Street. Besides water services, the Board of Water Supply has also asked that a new fire hydrant be provided (see Exhibit 4, Appendix C). Plans showing the water service connections and the new fire hydrant will be submitted to the Board of Water Supply for approval.

The existing drainage pattern on the site won't change. Runoff will "sheet flow" towards the yard areas and ultimately, to the road gutters and the existing catch basin near the corner of Lunalilo and Kinau Streets. No new drainage system is anticipated for the project.

The project will have two new driveways. One will connect the ground level parking deck to Lunalilo Street and the other will connect the lower floor level to Kinau Street.

E. Economic and Social Characteristics

The Royal Kinau project is estimated to cost about $12 million ($12,000,000) dollars, more or less, and includes both 48 affordable elderly rental units and 36 market units. The revenues derived from the sales of the market units will help to defray the construction cost for the elderly rental units.

It is estimated that the time needed to build the project will be between 10 to 12 months, notwithstanding inclement weather and/or other unexpected events beyond the project's control.

Except for the previously described construction in the road rights of ways, all other work will be entirely on the site. None of the project's construction is expected to physically disturb the adjoining properties.

The finished project will enhance the community and serve as another project where seniors can have a chance to acquire affordable housing. A market study previously prepared for the project found the demand for affordable elderly rentals in the metropolitan Honolulu area is strong. The demand for affordable elderly rental housing on Oahu could be as high as 1,700 units based on the waiting list method of analysis or, 1,800 units using the income analysis method. In either case, both indicate a sufficient demand for elderly rental housing units. The study further summarizes the property should be favorably received and the units rapidly absorbed by potential tenants.

F. Environmental Characteristics

The site is in an area that has been urbanized for many decades. It is bounded by a freeway off ramp exit and streets on practically all sides. For many years, the property used to be occupied by old residential

dwellings that, except for the existing rooming house, have since been demolished.

There are no streams or natural water features nearby.

The United States Department of Interior Fish and Wildlife Service has determined to the best of their knowledge, there are no endangered or threatened species directly within the project area. The Service does not regard the proposed project as being controversial or detrimental to federally listed species. Therefore, the Service believes the proposed project is not likely to adversely affect federally listed threatened or endangered species. In view of this finding, the requirements of Section 7 of the Endangered Species Act have been satisfied. However, the obligations under Section 7 of the Act must be reconsidered if new information reveals impacts of this identified action that may affect listed species or critical habitat in a manner that was not previously considered in this assessment or a new species is listed, or critical habitat determined, that may be affected by the identified action.

The Nature Conservancy of Hawaii has also indicated there are no recordings of significant flora/fauna on the site. They did say there were sightings of the endangered Hawaiian Hoary bat in the vicinity of the area - most notably at the Queens Hospital's central lawn. The response letters are attached as Exhibits 5 and 6 in Appendix C.

Based on these settings, the construction work for the Royal Kinau project is not expected to cause any significant disturbances to whatever few natural features that might be found in the area.

IV. PROJECT IMPACTS

A. Short Term or Construction Related Impacts

1. Noise

Noise from the construction equipment and the contractor's personnel will happen during the project's construction. The contractor will be expected to keep noise levels within that permitted by Title 11 of the Department of Health Administrative Rules, Chapters 42 and 43 during construction. If the generated noise exceeds the permitted levels, and the Contractor cannot reasonably reduce such noise levels, he will be expected to obtain the necessary noise permits before starting work.

Construction will be allowed only during the daytime hours and no work shall be performed at any time on Saturdays, Sundays, and Holidays without prior notice to, and receipt of approvals from, the Chief Engineer, City and County of Honolulu.

2. Water and Air

The nearest water body is the Pacific Ocean which is about a mile away. The existing drain system closest to the project is in Kinau Street and it eventually leads to the Pacific Ocean. The contractor is expected to keep the existing drain system free from pollutants. The plans will require care by the contractor to prevent foreign and toxic materials from entering the system and, that filter material, if needed, will be used. The contractor is also expected to keep the site and surrounding areas free from dust nuisance. The work will be expected to conform to the following Chapters of Title 11 of the State Department of Health Administrative Rules,

Chapter	Title
54	Water Quality Standards
55	Water Pollution Control
59	Ambient Air Quality Standards
60	Air Pollution Control

3. Odors

Odors are not expected during the construction work because no work involving cleaning out or exposing of any existing cesspools, individual wastewater system tanks, or other sources of foul odors is expected.

4. Traffic

The work to remove the existing traffic island as well as to modify the existing sidewalks, curbs, and planting areas along the project frontage and a portion of the Lunalilo and Kinau Streets intersection will be in the road right of way. Most of the work will be off of active traffic lanes and contained next to the right of way line. The contractor will be expected to provide the necessary traffic controls as contained in the traffic control plan approved by the City's Department of Transportation Services.

5. Historical

The State Historic Preservation staff has reviewed the project site and has found no historic sites at the parcel. Given the parcel's past development history, and the fact that subsurface historic deposits are unlikely at that location, the State Historic Preservation has surmised the proposed project will have "no effect" on historic sites. See Exhibit 7, Appendix C attached.

6. Flora and Fauna

The United States Department of Interior Fish and Wildlife Service has determined to the best of their knowledge, there are no endangered or threatened species directly within the project area. The Service does

not regard the proposed project as being controversial or detrimental to federally listed species. Therefore, the Service believes the proposed project is not likely to adversely affect federally listed threatened or endangered species. See Exhibit 5 in Appendix C. The Nature Conservancy of Hawaii's review of the same site also found no rare or endangered species of flora and/or fauna on the site. Their response letter is attached as Exhibit 6 in Appendix C.

Existing trees presently growing on the site are Mango, Plumeria, and Lime.

B. Long Term Impacts

1. Highways and Traffic

A Traffic Impact Analysis Report by Phillip Rowell and Associates was prepared for the project and is attached as Appendix D. It shows the new trips generated by the project will not change the existing level of service for the roads in the area and the impact on traffic on the surrounding areas will be minimal. Hence no mitigation measures by the project is planned.

The report was submitted to the City's Department of Transportation Services (DTS) for review and comment and their response was received in their letter dated December 26, 1996 which states in part, "Based on our review, we generally concur with the findings in the report." A copy of the DTS letter is included in Appendix D.

2. Drainage

Drainage for the project will continue to be surface flow to the landscape plantings in the yard areas and the new private park where most of it is expected to infiltrate into the ground. The remaining runoff will flow to the road gutters and, ultimately to the existing catch basin in Kinau Street. No new underground drainage infrastructure is planned.

3. Flora and Fauna

The United States Department of Interior Fish and Wildlife Service has determined to the best of their knowledge, there are no endangered or threatened species directly within the project area. The Service does not regard the proposed project as being controversial or detrimental to federally listed species. Therefore, the Service believes the proposed project is not likely to adversely affect federally listed *threatened or endangered species. In view of this finding, the* requirements of Section 7 of the Endangered Species Act have been satisfied. However, the obligations under Section 7 of the Act must be reconsidered if new information reveals impacts of this identified action that may affect listed species or critical habitat in a manner that was not previously considered in this assessment or a new species is listed, or critical habitat determined, that may be affected by the identified action.

The Nature Conservancy of Hawaii's review of the area finds the site to have no rare or endangered species of flora and/or fauna on it.

4. Beneficial Impact

A beneficial long term impact is, the project will provide 48 new one bedroom senior rental units to help meet the demands for affordable elderly rentals in the metropolitan area of Honolulu. The 36 market condominium units in the project also play a vital role as their sales are needed to help subsidize the affordable senior rentals.

V. PROPOSED MITIGATION MEASURES

A. Description

Section V describes mitigating measures for short term impacts generally associated with the project's construction work. Since no significant negative long term impacts are expected from the proposed Royal Kinau, no mitigating measures for long term impacts are discussed in this document.

1. Noise - The construction work will increase the noise level in the immediate area temporarily. Noise sources will be from the various pieces of equipment needed for grading the site; constructing the new building, parking levels, and the retaining wall; constructing the new private park, fencing, and installing the landscape plantings; constructing the new sidewalks, curbs, and gutters; and installing the new water and sewer services.

   To mitigate the adverse noise impacts from the work activities, the contractor will be held responsible for properly maintaining and muffling all of the equipment to keep noise levels at a minimum during the construction period. If noise levels must exceed the allowable levels as stated under Title 11 of the Administrative Rules, Department of Health, Chapter 43, Community Noise Control for Oahu, the contractor will be expected to obtain the necessary noise permits prior to starting the work. The contractor's heavy vehicles must also comply fully with Title 11 of the Administrative Rules, Department of Health, Chapter 42, Vehicular Noise Control for Oahu.

2. Air Quality - The contractor's work will generate some dust that may temporarily impact the ambient air quality in the immediate area. In keeping with Title 11 of the State Department of Health's Chapters 59 and 60, and the applicable City and County of Honolulu Ordinances, the contractor will be required to take the necessary measures to keep airborne pollutants to a minimum. Such measures would encompass

the emissions from the various construction equipment. Proper maintenance programs can be use to control the adverse impact from such equipment emissions and kept it to a minimum.

The Contractor will also be expected to erect temporary dust screens as needed along and/or around the site perimeters to further contain dust from the work to the site.

3. Water Quality - The contractor will be expected to exercise control on his lot grading operations to minimize the effects of erosion and prevent soil deposits from entering and impacting the existing drain system. Grading work will be expected to meet Title 11 of the Department of Health Administrative Rules, Chapters 54 and 55, and the current Grading Ordinance for the City and County of Honolulu.

4. Erosion Control - Erosion control measures will be provided during construction in accordance with approved construction documents. The documents will be prepared during the design phase and will be submitted to the applicable regulatory agencies for their approval. The documents will require all activities to be contained to the work areas and the work areas be kept clean. Other erosion control measures will require the contractor to plant ground cover at all areas not covered by the building(s), pavements, and walks soon after the grading for those areas are completed.

5. Traffic - The site fronts the dead end portion of Lunalilo Street and Kinau Street. Construction operations within and immediately adjacent to the site are not expected to directly impact traffic. Impacts if any, would happen when trucks and other construction related vehicles use the existing roads in the vicinity to access and haul material to and from the site. There will be some inconveniences occasionally to traffic along the construction route but the contractor will be required to keep such inconveniences to a minimum.

6. Historical - The State Historic Preservation staff has reviewed the project site and has found no historic sites at the parcel. Given the

parcel's past development history, and the fact that subsurface historic deposits are unlikely at that location, the State Historic Preservation has surmised the proposed project will have "no effect" on historic sites. See Exhibit 7, Appendix C attached.

7. Flora and Fauna - The United States Department of Interior Fish and Wildlife Service does not regard the proposed project as being controversial or detrimental to federally listed species. Therefore, the Service believes the proposed project is not likely to adversely affect federally listed threatened or endangered species. In view of this finding, the requirements of Section 7 of the Endangered Species Act have been satisfied. However, the obligations under Section 7 of the Act must be reconsidered if new information reveals impacts of this identified action that may affect listed species or critical habitat in a manner that was not previously considered in this assessment or a new species is listed, or critical habitat determined, that may be affected by the identified action. The review of the same area by the Nature Conservancy of Hawaii has confirmed there are no rare or endangered species of flora or fauna on the site.

8. Economic - The short term economic impact is jobs would be provided to the local construction industry at a time when the economy is soft. Local material suppliers and retail businesses will also be impacted as they would benefit through a multiplier effect from the increased construction activity in the area.

9. Public Health and Safety - The contractor will be expected to provide the necessary measures to assure public health and safety during the entire construction period. The construction area is to be properly secured during all non-working hours with signs, barricades, fences, and other devices as required.

10. Drainage Runoff/Pollutant Discharges/Best Management Practices - There is a potential impact of storm water discharge as associated with the construction activities on the water quality of the runoff. The contractor will be required to provide certain measures to prevent

runoff from directly entering into the existing drain structure during construction. Such measures would be a part of the approved erosion control plan and the best management practices notes. The measures would serve to control sediment-laden runoff from leaving the site. Such measures would be prepared during the design stage of the work and be submitted to the various regulatory agencies for approval. The contractor will be expected to follow the approved measures during construction.

VI. DETERMINATION

This assessment shows there should not be any significant negative effect on the surrounding environment by the work for this project and that the preparation of an Environmental Impact Statement should not be needed.

Any impacts experienced would be on a short term basis and should not be significant. Such impacts can be mitigated through the implementation of various measures and procedures to keep such impacts to a minimum. Many of the measures and/or procedures would either be developed during the design phase of the work or are already discussed in various chapters of established rules and regulations or ordinances.

Hence, a negative declaration for the Royal Kinau is issued.

VII. FINDINGS & REASONS SUPPORTING THE DETERMINATION

1. The project will not have any impact on the State Land Use Map.

2. The site is not considered important for agriculture land per the State's ALISH Map.

3. The project has "no effect" on historic sites.

4. There are no federally listed threatened or endangered species located on the site.

5. There are no rare or endangered species of flora or fauna on the site.

6. The project will not have any impact on the City's Development Plan.

7. The project is not in any Special Management Area.

8. The Federal Flood Insurance Rate Map shows the project outside the 500 year flood plain.

9. The project will not have any impact on the City's zoning.

10. Except for temporary construction impacts, the project will not have any long term adverse effects on the environment.

11. The site is currently occupied by an old two story dilapidated wood rooming house. The project will remove this old structure and replace it with a new building that will provide 48 one bedroom units for senior affordable housing and 36 one and two bedroom units for market sales.

12. The existing lot is either overgrown with weeds or just bare soil. The project's open space will be a new private park area with landscape plantings and an irrigation system.

13. The existing sidewalk areas along both site frontages are presently overgrown with weeds. The project will reconstruct the sidewalk areas fronting the project site (see plans) and plant street trees along both the dead end portion of Lunalilo Street and Kinau Street to further enhance the appearance of both frontages.

VIII. ENVIRONMENTAL ASSESSMENT REVIEW PHASE COMMENTS & RESPONSES

The Draft Environmental Assessment was published in the State Office of Environmental Quality Control's bulletin on November 23, 1996 and the 30 day public review period ended on December 23, 1996.

No comments were received during this period from anyone including the State Office of Environmental Quality Control. One comment letter was received prior to the publishing date from the City's Department of Housing and Community Development dated November 14, 1996 regarding the Draft Environmental Assessment. A copy of that letter and the response letter appears in this section of the report.

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET, 5TH FLOOR • HONOLULU, HAWAII 96813
PHONE: (808) 523-4427 • FAX: (808) 527-5498

JEREMY HARRIS
MAYOR

ROLAND D. LIBBY, JR.
DIRECTOR

ROBERT AGRES, JR.
DEPUTY DIRECTOR

November 14, 1996

Mr. Stanley Yim
Stanley Yim and Associates, Inc.
Bishop Square
Pauahi Tower, Suite 410
1001 Bishop Street
Honolulu, Hawaii 96813

Dear Mr. Yim:

SUBJECT: Royal Kinau Draft Environmental Assessment

We have reviewed your draft environmental assessment submitted to us on November 7, 1996. We request that you address the following comments and concerns in the final environmental assessment:

1. The Traffic Impact Analysis Report by Phillip Rowell and Associates should be submitted to the City's Department of Transportation Services for review and comment. DTS's comments on the traffic study should be included in the final environmental assessment.

2. The Department of Public Works' comments regarding improvements of sidewalks and curbs and gutters for Ordinance 2412 should be included in the final environmental assessment.

3. Information on the displacement of tenants of the existing rooming house on the property and a discussion of any relocation assistance to tenants should be included in the final environmental assessment.

4. Please provide a more detailed description of the project need and population served.

5. Information on the fire prevention resources, police resources, and emergency medical services should be provided in the Community Facilities and Services section of the report.

6. Although the environmental assessment discusses construction related noise impacts, a discussion of the potential impacts of ambient noise sources on project residents should be included. Such noise sources would include traffic noise from the H-1 freeway and off-ramp with mitigative actions including construction materials, building design and orientation and environmental controls also discussed.

As we discussed earlier, the Downtown and Makiki/Lower Punchbowl/Tantalus Neighborhood Boards should be updated on the status of the project, particularly the change in the target market of the project to include market rate condominiums. We recommend that you articulate to the Neighborhood Boards the rationale for the change in the project's target market.

If you have any questions, please call Rae Gee at 527-5088.

Sincerely,

Gail Kaito

GAIL M. KAITO
Chief Planner

STANLEY YIM & ASSOCIATES, INC. (Established 1971)
Bishop Square, Pacific Tower, Suite 410
1001 Bishop Street, Honolulu, Hawaii 96813
Telephone: (808) 533-1885
Facsimile: (808) 533-6127

January 8, 1997

To: Department of Housing and Community Development
Planning and Analysis Division
650 South King Street, 5th Floor
Honolulu, Hawaii 96813

Phone: 527-5088
Fax: 527-5498

Attn: Rae Gee

Subject: Royal KINAU
RESPONSES TO DHCD COMMENTS REGARDING
THE DRAFT ENVIRONMENTAL ASSESSMENT

The following responds to comments made by the Department of Housing and Community Development (DHCD) concerning the Draft Environmental Assessment for the Royal Kinau. The responses have been itemized to follow the same order as the comments in DHCD's November 14th, 1996 letter. The responses are,

1. The Traffic Impact Analysis Report by Phillip Rowell and Associates was submitted to the City's Department of Transportation Services (DTS) for review and comment. DTS's response was received in their letter dated December 26, 1996 which states in part, "Based on our review, we generally concur with the findings in the report." A copy of the DTS letter, along with this response letter, will be included in the Comments & Response Section of the Final Environmental Assessment.

2. The Department of Public Works' comments regarding improvements of sidewalks, curbs, and gutters for Ordinance 2412 have been included in the Final Environmental Assessment. A copy of the DPW December 10th 1996 letter, along with this response letter, will be included in the Comments & Response Section of the Final Environmental Assessment.

3. Tenants of the existing rooming house are presently renting on a month to month basis. They will be displaced upon commencement of work on the site for the project with no relocation assistance.

4. The project will have both market and affordable elderly rental units. The revenues derived from the sales of the market units will help to defray the cost of construction for the elderly rental units.

   A market study for the Royal Kinau was prepared by The Prudential Locations Inc. Research and Consulting Group. In it, the study found the demand for affordable elderly rentals in the metropolitan Honolulu area is strong. The

demand for affordable elderly rental housing on Oahu could be as high as 1,700 units based on the waiting list method of analysis or, 1,800 units using the income analysis method. In either case, both indicate a sufficient demand for elderly rental housing units. The report further summarizes the property should be favorably received and rapidly absorbed by potential tenants.

On the other hand, the markets units would be sold to the general populace with perhaps an inclination towards people working in the area. The site location is within walking distances to State and City offices, a major hospital complex, other medical and support facilities, the police department, and many other businesses. Hence, by virtue of its location, sales of the market units should also be favorable.

5. Information concerning the fire prevention resources, police resources, and emergency medical services will be added to the *Community Facilities and Services* Section of the Final Environmental Assessment. Such information would be
    a. Fire Prevention Resources: A new fire hydrant will be installed fronting the project site on Lunalilo Street. The nearest existing fire hydrant is on Lusitana Street, about 200 feet away. Also, even though the Central Fire Station is located in the downtown area, it is just about a mile away and would take about 5 minutes, or less, to travel from the station to the site.
    b. Police Resources: The new police station complex is located on Beretania Street within walking distance from the site. Given the one way streets in the area, it is approximately a half mile away by car and would take approximately 2 to 3 minutes, or less, to get from the site to the station.
    c. Emergency Medical Services: Two major hospitals are located close to the Royal Kinau site. The Queens Medical Center is about a half mile in another direction from the police station and would take 2 to 3 minutes, or less, to get to its emergency facility. The Straub Hospital emergency facility is less than a half mile in the opposite direction from the Queens Medical Center and travel time to it is just about same as that for the Queens Medical Center.

6. Ambient noise source impacting residents of the project would more than likely be limited to the traffic flow on the adjacent H1 Freeway. However, though the parcel abuts the freeway's right of way, it really is next to the freeway's off-ramp to Kinau Street. As such, the off-ramp's width offers a further separation of the project from the traffic flow on the freeway thereby helping to reduce the level of noise. This separation is further increased by the 10 foot building setback from the property and another few feet since the end of the building at this location is not exactly on the setback line.

    While there will be noise at times, the overall impact however, should be minimal and not all residents in the building would be affected because the building's siting is not parallel to the freeway off-ramp but perpendicular to it. The effect of ambient noise on the residents at the end of the building nearest the freeway off-ramp should also be minimal because the building's wall construction will be

of reinforced concrete, 8 inches thick. The sliding glass doors to the living and bedroom areas for these end units also help to mitigate noise when closed. Besides sliding glass doors, there are no window openings for the end units that would open towards the freeway. The remaining sides of the building are facing either existing apartment buildings or businesses whose operations do not generate ambient noises that would impact adversely on the residents of the project.

In closing, and in response to the last paragraph of your November 14th letter, the developer has written to both the Downtown and Makiki/Lower Punchbowl/Tantalus Neighborhood Boards to update them on the latest details regarding the Royal Kinau project. Copies of the developer's letters will be included in the Final Environmental Assessment.

Very truly yours,

STANLEY YIM & ASSOCIATES, INC.

Jason K.H. Yim, PE

APPENDIX A

PRELIMINARY CONSTRUCTION PLANS

(Subject to Change)

THE ROYAL KINAU

SENIOR HOUSING AND CONDOMINIUM DEVELOPMENT

PROJECT DATA

SITE INFORMATION

ADDRESS:	728 KINAU ST.
TAX MAP KEY:	2-1-40: 27
LOT AREA	20,368 S.F.

LAND USE INFORMATION

DEVELOPMENT PLAN DESIGNATION	MEDIUM DENSITY APARTMENT
ZONING	A-2 HAWAII CAPITOL SPECIAL DISTRICT-Q.M.C. PRECINCT
HEIGHT LIMIT	100'-0"
OPEN AREA	40 %
STREET SETBACK	10'-0" ALONG KINAU, LUNALILO, AND KINAU ST. OFF RAMP. (NO SIDE YARDS)
ROAD WIDENING SETBACK	NONE
EXISTING USE:	10 UNIT APARTMENT - TO BE DEMOLISHED
SURROUNDING USES:	CONDOMINIUM APARTMENTS

BUILDING INFORMATION

12 FLOORS OF APARTMENTS
- 1st TO 6th FLOORS- SR. RENTAL UNITS - 48 -1B.R. UNITS
- 7th TO 12th FLOORS_ CONDOMINUM -36 UNITS
  - 12 1 BR UNITS
  - 24 2 BR UNITS

LOWER LEVEL - SR. HOUSING AMENITIES.

PARKING - 57 STALLS

GROUND LEVEL PARKING (FROM LUNALILO)
- 23 PARKING STALLS
  - 6 REGULAR
  - 15 COMPACT
  - 2 HANDICAPPED
- 1 LOADING

LOWER LEVEL PARKING (FROM KINAU)
- 34 PARKING STALLS
  - 21 REGULAR
  - 13 COMPACT

DEVELOPMENT STANDARDS

	REQUIRED	ACTUAL
FLOOR AREA	1.507(FAR) x 20368 = 30,701.9 SF	TYP. FLOOR ENCLOSED AREAS 3315.3 SF STAIRS/BALCONY/ LANAI/ELEV 1382.5 SF TOTAL AREA PER FLOOR 4697.8 SF AREA FOR 12 FLOORS - 12 x 4697.8 = 56,363 SF AREA FOR LOWER FLOOR (PARTIAL BASEMENT) - 4,697. SF TOTAL FLOOR AREA = 61,060 SF (2.99 FAR)
OPEN SPACE	40% x 20368 = 8147.2 sf	20368- 12,752 (BLDG. FOOTPRINT & PARKING AREA) = 7,616 SF (-531SF) IF: AREA BELOW LANAI OVERHANGS ALLOWED THEN: AREA = 7,616 + 541 = 8,157 SF
PARK DEDICATION REQUIREMENT	10% x 61,067=6,107 SF	4,188 SF (-1919) PRIVATE PARK IF: INTERIOR SR., ACTIVITY AREAS ALLOWED (RECREATION AND LIBRARY) THEN: AREA = 4,188 + 1,237 = 5,425 SF
PARKING REQUIREMENT	48 SR. UNITS AT 1:4 = 12 STALLS 12 CONDO UNITS AT 1:1 = 12 STALLS 1BR UNITS @ 412 SF 24 CONDO UNITS AT 1:1.5 = 36 STALLS 2BR UNITS @ 616 SF TO 634 SF. (LUO AREA CALCULATION) GUESTS = 9 STALLS TOTAL = 69 STALLS	PROVIDED 48 SR. UNITS AT 1:4 = 12 STALLS 36 CONDO UNITS AT 1:1 = 36 STALLS GUESTS = 9 STALLS TOTAL = 57 STALLS REGULAR - 29 (INCLUDING 2 HANDICAPPED STALLS) COMPACT- 28
LOADING STALL	1 LOADING PER 20 TO 150 UNITS	1 8'-6" x 19'-0" STALL (84 DWELLING UNITS)

EXEMPTIONS

1. PROJECTION IN FRONT YARD SETBACK:
2. PARKING REQUIREMENT:
3. PARKING LOT LANDSCAPING:
4. FLOOR AREA:
5. BUILDING HEIGHT:
6. OPEN AREA:
7. BUILDING HEIGHT:
8. PARK DEDICATION
9. LOADING SPACE:
10. LANDSCAPING
11. SPECIAL DISTRIC PERMIT

INDEX TO D

– 48 –1B.R. UNITS
6 UNITS

))

LIBRARY)

EXEMPTIONS REQUESTED

1. PROJECTION IN FRONT YARD SETBACK:
EXEMPTION FROM SECTION 3.30(c), LAND USE ORDINANCE (L.U.O.), YARDS AND STREETS SETBACK STANDARDS TO PERMIT BUILDING LANAIS TO PROJECT APPROXIMATELY 36 INCHES INTO THE REQUIRED YARD ALONG THE H-1 FREEWAY OFF-RAMP.

2. PARKING REQUIREMENT:
EXEMPTION FROM SECTION 3.70-1 AND TABLE 3.1(A), L.U.O., OFF-STREET PARKING REQUIREMENTS TO ALLOW FOR 57 PARKING STALLS (12 STALLS OUT OF THE 57 STALLS WILL BE ALLOCATED TO SR. RENTAL UNIT RESIDENTS) INSTEAD OF THE 69 STALLS REQUIRED FOR MULTI- FAMILY DWELLINGS.

3. PARKING LOT LANDSCAPING:
EXEMPTION FROM SECTION 3.80(b). L.U.O. LANDSCAPING AND SCREENING TO PERMIT THE REQUIRED PARKING AREA TREES TO BE PLANTED WITHIN THE PUBLIC RIGHT-OF-WAY (ALONG THE SIDEWALK AREA ON LUNALILO STREET).

4. FLOOR AREA:
EXEMPTION FROM SECTION 5.50-1 AND TABLE 5.3(B), L.U.O., A-2 MEDIUM DENSITY APARTMENT DISTRICT DEVELOPMENT STANDARDS RELATING TO MAXIMUM DENSITY TO ALLOW A TOTAL FLOOR AREA OF 61,060 SQUARE FEET INSTEAD OF THE MAXIMUM 30,701 SQUARE FEET. THERE WILL BE A RESTRICTIVE COVENANT WHICH WILL PROHIBIT ENCLOSURE OF THE 7,945 SQUARE FEET OF LANAI SPACE.

5. BUILDING HEIGHT:
EXEMPTION FROM SECTION 5.60 AND TABLE 5.3(B), LUO APARTMENT AND APARTMENT MIXED USE DEVELOPMENT STANDARDS, TO ALLOW THE LANAIS AND STRUCTURE TO PROJECT APPROXIMATELY 77 FEET INTO THE REQUIRED HEIGHT SETBACK ALONG THE H-1 FREEWAY OFF RAMP.

6. OPEN AREA:
EXEMPTION FROM SECTION 7.30-4(c)(1), LAND USE ORDINANCE (L.U.O.), RELATING TO DESIGN GUIDELINES FOR OPEN SPACE FOR THE HAWAII CAPITAL DISTRICT TO ALLOW 37% INSTEAD OF THE REQUIRED 40% MINIMUM LOT AREA TO BE DESIGNATED FOR OPEN SPACE.

7. BUILDING HEIGHT:
EXEMPTION FROM SECTION 7.30-4(d)(1), L.U.O., RELATING TO DESIGN GUIDELINES FOR BUILDING HEIGHT TO PERMIT A BUILDING HEIGHT OF 114 FEET INSTEAD OF THE MAXIMUM 100 FEET HEIGHT LIMIT CURRENTLY PERMITTED AND FOR ROOF TOP STRUCTURES TO EXCEED 12 FT. HEIGHT LIMIT.

8. PARK DEDICATION:
EXEMPTION FROM CHAPTER 22, ARTICLE 7, REVISED ORDINANCES OF HONOLULU, RELATING TO PARK DEDICATION REQUIREMENTS TO ALLOW FOR AN AREA OF 5,425 SQUARE FEET TO BE USED FOR PARK DEDICATION, INSTEAD OF THE REQUIRED 6,107 SQUARE FEET.

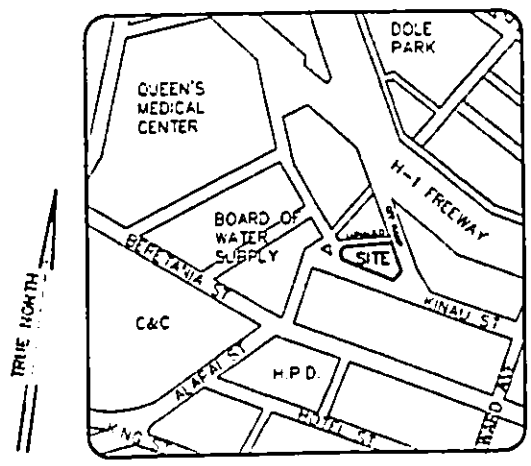
9. LOADING SPACE:
EXEMPTION FROM SECTION 3.70-12(b) , LUO RELATING TO LOADING SPACE DIMENSIONS TO PERMIT A 9FT. X 19 FT. SPACE WITH A VERTICAL CLEARANCE OF 14 FT. INSTEAD OF THE REQUIRED MINIMUM 12 FT. BY 35 FT. WITH 14FT. VERTICAL CLEARANCE.

10. LANDSCAPING
EXEMPTION FROM SECTION 3.70-4 (a) (2), LU.O., RELATING TO DESIGN CONTROLS FOR LANDSCAPING FOR THE HAWAII CAPITAL SPECIAL DISTRICT TO ALLOW FOR A 3 FT PARKING ENCROACHMENT INTO THE REQUIRED YARDS WHICH ARE NOT PERMITTED IN A SPECIAL DISTRICT.

11. SPECIAL DISTRICT PERMIT
EXEMPTION FROM SECTION 8.30- 8, L.U.O. RELATING TO SPECIAL DISTRICTS, TO EXEMPT THE PROJECT FROM FILING A MAJOR SPECIAL DISTRICT PERMIT AND RELATED FEES.

INDEX TO DRAWINGS

LOCATION MAP



REVISIONS | BY

L&M ARCHITECTS, INC.
55 S. Beretania Street
Suite 2080
Honolulu, Hawaii 96813
Telephone 536-6131
Fax 536-6133

CLARENCE T. MIYAMOTO
LICENSED PROFESSIONAL ARCHITECT
No. 1435
HAWAII, U.S.A.

TITLE SHEET

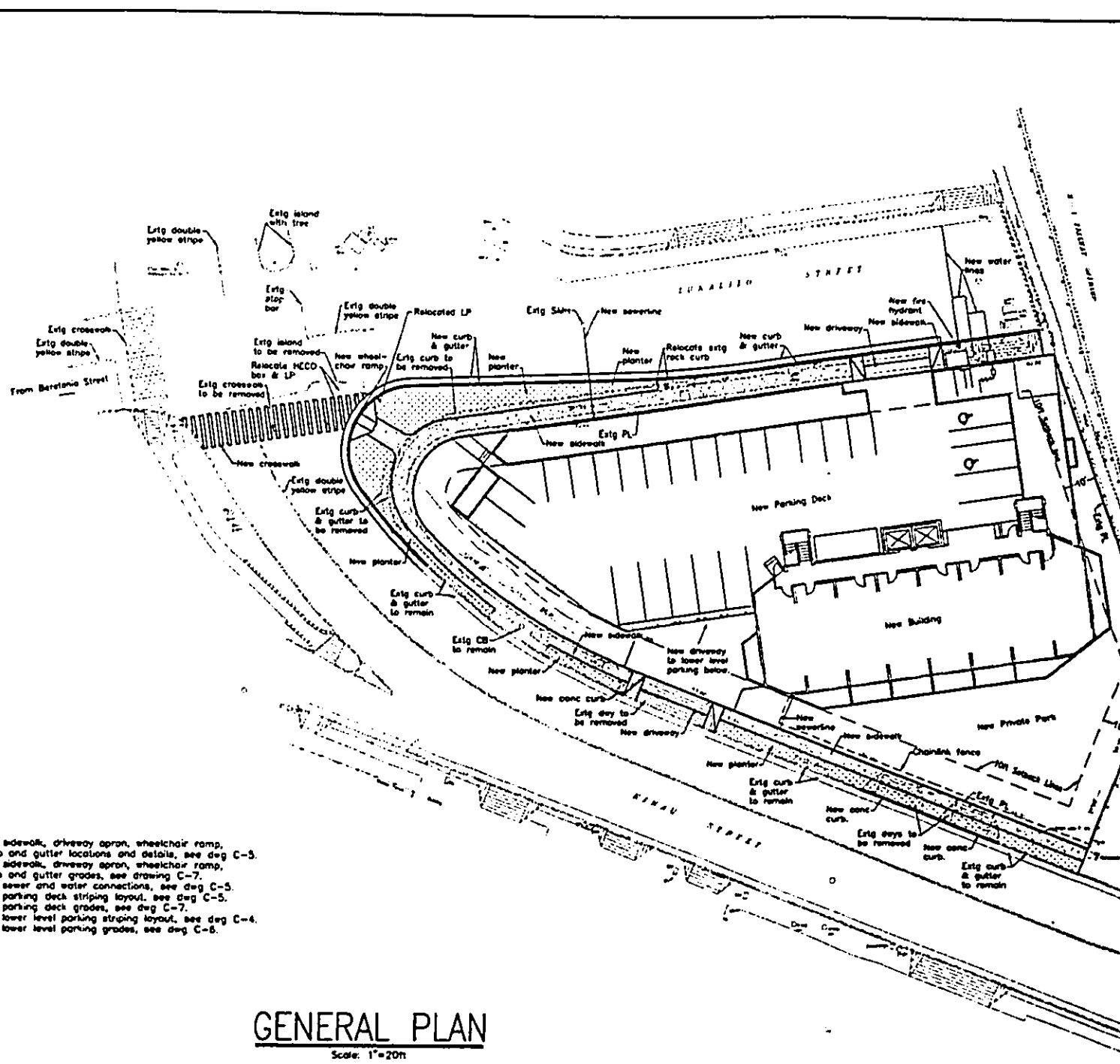
THE ROYAL KINAU

KINAU STREET
HONOLULU, HAWAII
T.M.K.: 2-1-40: 27

Date Sept 15 1987
Scale AS NOTED
Drawn
Job
Sheet 1 of 15 Sheets

LEGEND

BL	BASELINE
DWY	DRIVEWAY
EXTG	EXISTING
LAT	LATERAL
O/S	OFFSET
PL	PROPERTY LINE
SHT	SHEET
STD	STANDARD
(TYP)	TYPICAL
SVC	SERVICE
WM	WATER METER



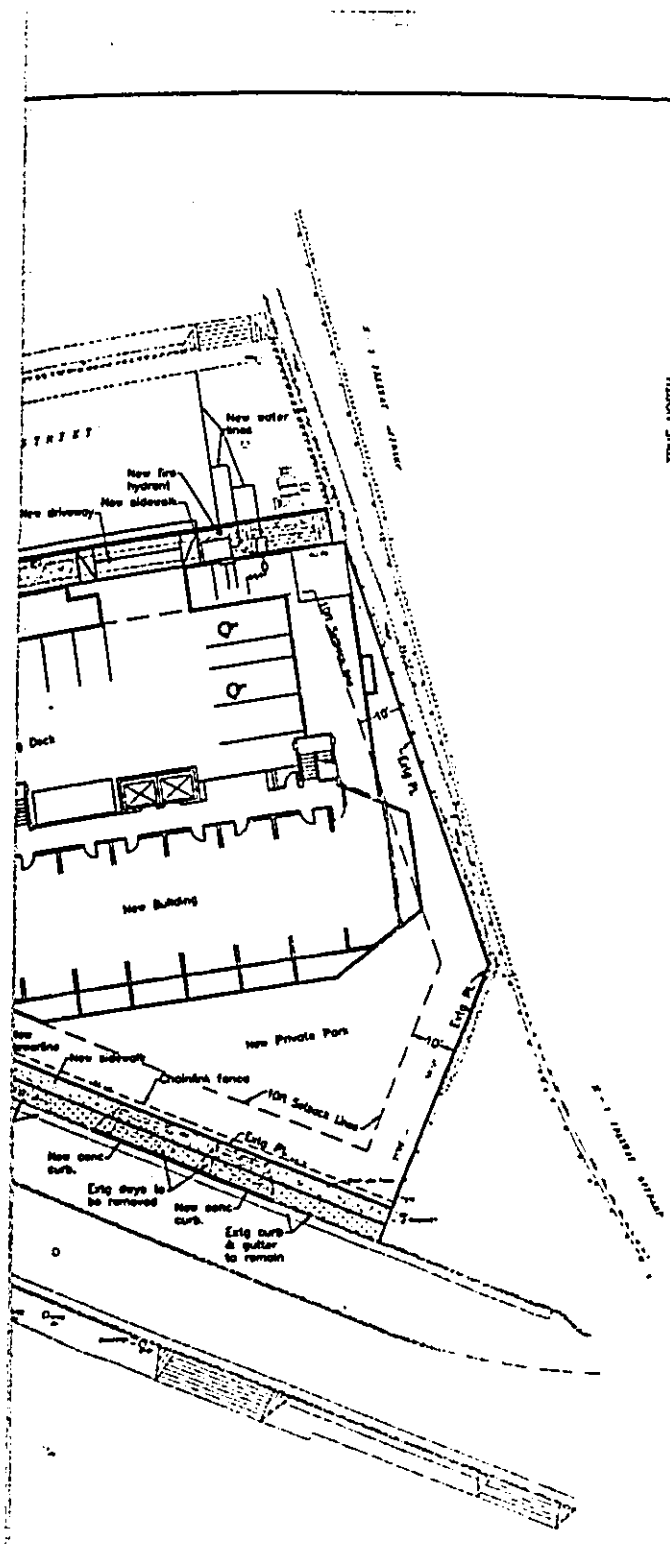
NOTES:
1. For sidewalk, driveway apron, wheelchair ramp, curb and gutter locations and details, see dwg C-5.
2. For sidewalk, driveway apron, wheelchair ramp, curb and gutter grades, see drawing C-7.
3. For sewer and water connections, see dwg C-5.
4. For parking deck striping layout, see dwg C-5.
5. For parking deck grades, see dwg C-7.
6. For lower level parking striping layout, see dwg C-4.
7. For lower level parking grades, see dwg C-8.

GENERAL PLAN

Scale: 1"=20ft

20 10 0 20 40

Scale in Feet



REVISION	DATE	DESCRIPTION	MADE BY	APPROVED

STANLEY YIM & ASSOCIATES, INC.
CONSULTING ENGINEERS
1001 BISHOP STREET, PACIFIC TOWER, SUITE 410, HONOLULU, HAWAII 96813

STANLEY G.H. YIM LICENSED PROFESSIONAL ENGINEER No. 2018C HAWAII, U.S.A.

I CERTIFY THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION
STANLEY YIM & ASSOC., INC.

ROYAL KINAU

TMK: 2-1-40:27
728 KINAU STREET, HONOLULU, HAWAII 96822

GENERAL PLAN

ENGINEER	DRAWN BY	CHECKED BY
JY	JY	SY

FILE	PROJECT	FOLDER	NO	DRAWING NO. C-2	SHEET NO. 2 OF 15 SHEETS

CONSTRUCTION NOTES (WITHIN CITY RIGHT-OF-WAY):
1. ALL CONSTRUCTION WORK SHALL BE DONE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, SEPTEMBER 1986, AND STANDARD DETAILS FOR PUBLIC WORKS CONSTRUCTION, SEPTEMBER 1984, AS AMENDED, OF THE DEPARTMENT OF PUBLIC WORKS, CITY AND COUNTY OF HONOLULU AND THE COUNTIES OF KAUAI, MAUI AND HAWAII.
2. THE UNDERGROUND PIPES, CABLES OR DUCTLINES KNOWN TO EXIST BY THE ENGINEER FROM HIS SEARCH OF RECORDS ARE INDICATED ON THE PLANS. THE CONTRACTOR SHALL VERIFY THE LOCATIONS AND DEPTHS OF THE FACILITIES AND EXERCISE PROPER CARE IN EXCAVATING IN THE AREA. WHEREVER CONNECTIONS OF NEW UTILITIES TO EXISTING UTILITIES ARE SHOWN ON THE PLANS, THE CONTRACTOR SHALL EXPOSE THE EXISTING LINES AT THE PROPOSED CONNECTIONS TO VERIFY THEIR LOCATIONS AND DEPTHS PRIOR TO EXCAVATION FOR THE NEW LINES.
3. NO CONTRACTOR SHALL PERFORM ANY TRENCHING OPERATION SO AS TO CAUSE FALLING ROCKS, SOIL OR DEBRIS IN ANY FOR TO FALL, SLIDE OR FLOW ONTO ADJOINING PROPERTIES, STREETS OR NATURAL WATERCOURSES. SHOULD SUCH VIOLATION OCCUR, THE COSTS INCURRED FOR ANY REMEDIAL ACTION BY THE CHIEF ENGINEER SHALL BE PAYABLE BY THE CONTRACTOR.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONFORMANCE WITH THE APPLICABLE PROVISIONS OF CHAPTER 54, WATER QUALITY STANDARDS, AND CHAPTER 55, WATER POLLUTION CONTROL OF TITLE 11, ADMINISTRATIVE RULES OF THE STATE DEPARTMENT OF HEALTH.
5. THE CONTRACTOR SHALL NOTIFY THE CONSTRUCTION SECTION, DIVISION OF ENGINEERING, DEPARTMENT OF PUBLIC WORKS AT 527-6311 TO ARRANGE FOR INSPECTIONAL SERVICES AND SUBMIT THREE (3) SETS OF APPROVED CONSTRUCTION PLANS SEVEN (7) DAYS PRIOR TO COMMENCEMENT OF CONSTRUCTION WORK.

CONSTRUCTION NOTES (GENERAL):
1. THE CONTRACTOR SHALL PERFORM APPLICABLE CONSTRUCTION WORK ALL IN ACCORDANCE WITH THE "STANDARD DETAILS FOR PUBLIC WORKS CONSTRUCTION", DATED SEPTEMBER 1984, AS AMENDED, AND THE "STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION", DATED SEPTEMBER 1986, OF THE DEPARTMENT OF PUBLIC WORKS, CITY AND COUNTY OF HONOLULU AND THE REVISED ORDINANCES OF HONOLULU, 1990, AS AMENDED
2. VERIFY AND CHECK ALL DIMENSIONS AND DETAILS SHOWN ON THE DRAWINGS PRIOR TO THE START OF CONSTRUCTION. ANY DISCREPANCY SHALL BE IMMEDIATELY BROUGHT TO THE ATTENTION OF THE ENGINEER FOR CLARIFICATION.
3. ALL EXISTING UTILITIES WHETHER OR NOT SHOWN ON THE PLANS SHALL BE PROTECTED AT ALL TIMES BY THE CONTRACTOR DURING CONSTRUCTION AND ANY DAMAGE TO THEM SHALL BE REPAIRED AND PAID FOR BY THE CONTRACTOR.
4. THE CONTRACTOR SHALL NOTIFY ALL AGENCIES TO VERIFY THE ACTUAL LOCATION OF ALL UTILITIES IN THE PROJECT AREA PRIOR TO EXCAVATING. THE CONTRACTOR SHALL COORDINATE ALL WORK.
5. WHEN TRENCH EXCAVATION IS ADJACENT TO OR UNDER EXISTING STRUCTURES OR FACILITIES, THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROPERLY SHEETING AND BRACING THE EXCAVATION AND STABILIZING THE EXISTING GROUND TO RENDER IT SAFE AND SECURE FROM POSSIBLE SLIDES, CAVE-INS, AND SETTLEMENT, AND FOR PROPERLY SUPPORTING EXISTING STRUCTURES AND FACILITIES WITH BEAMS, STRUTS OR UNDERPINNING TO FULLY PROTECT THEM FROM DAMAGE.
6. ALL WORK CALLED FOR ON THE PLANS AND NOT ITEMIZED IN THE PROPOSAL AND ALL WORK NOT CALLED FOR BUT REQUIRED FOR THE CONSTRUCTION OF THIS PROJECT SHALL BE CONSIDERED INCIDENTAL TO UNCLASSIFIED TRENCH EXCAVATION.
7. THE CONTRACTOR SHALL RESTORE TO THEIR ORIGINAL CONDITION ALL IMPROVEMENTS DAMAGED AS A RESULT OF CONSTRUCTION, INCLUDING PAVEMENTS, EMBANKMENTS, CURBS, SIGNS, LANDSCAPING, STRUCTURES, UTILITIES, WALLS, FENCES, ETC., UNLESS PROVIDED FOR SPECIFICALLY IN THE PROPOSAL. DEMOLITION AND RESTORATION OF EXISTING ITEMS SHALL BE INCIDENTAL AND INCLUDED WITHIN THE AMOUNT PAID FOR UNCLASSIFIED TRENCH EXCAVATION.
8. THE CONTRACTOR SHALL OBSERVE AND COMPLY WITH THE ADMINISTRATIVE RULES OF THE DEPARTMENT OF HEALTH REGARDING NOISE CONTROL FOR OAHU.
9. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONFORMANCE WITH THE APPLICABLE PROVISIONS OF CHAPTER 54, WATER QUALITY STANDARDS, AND CHAPTER 55, WATER POLLUTION CONTROL, OF TITLE 11, ADMINISTRATIVE RULES OF THE STATE DEPARTMENT OF HEALTH.

TRAFFIC NOTES:
1. A PERMIT SHALL BE OBTAINED FROM THE DEPARTMENT OF TRANSPORTATION SERVICES BEFORE WORK ON ANY PORTION OF A PUBLIC STREET BEGINS.
2. THE CONTRACTOR SHALL PROVIDE, INSTALL, AND MAINTAIN ALL NECESSARY SIGNS AND OTHER PROTECTIVE FACILITIES, WHICH SHALL CONFORM WITH THE "HAWAII ADMINISTRATION RULES GOVERNING THE USE OF TRAFFIC CONTROL DEVICES AT WORK SITES ON OR ADJACENT TO PUBLIC STREETS AND HIGHWAYS" ADOPTED BY THE DIRECTOR OF TRANSPORTATION, AND THE CURRENT FEDERAL HIGHWAY ADMINISTRATION'S "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS, PART VI - TRAFFIC CONTROLS FOR STREET AND HIGHWAY CONSTRUCTION AND MAINTENANCE OPERATIONS".
3. WORK ON ANY CITY STREET AREA MAY BE PERFORMED ONLY BETWEEN THE HOURS OF 8:30 A.M. TO 3:30 P.M. UNLESS OTHERWISE PERMITTED BY THE DEPARTMENT OF TRANSPORTATION SERVICES.
4. DURING NON-WORKING HOURS, ALL LANES SHALL BE OPEN AND ALL EXCAVATIONS ON THE ROADWAY SHALL BE COVERED WITH A SAFE NON-SKID BRIDGING MATERIAL.
5. WHERE PEDESTRIAN WALKWAYS EXIST, THEY SHALL BE MAINTAINED IN PASSABLE CONDITION OR OTHER FACILITIES FOR PEDESTRIANS SHALL BE PROVIDED. PASSAGE BETWEEN WALKWAYS AT INTERSECTION SHALL LIKEWISE BE PROVIDED.
6. AS REQUIRED BY THE DEPARTMENT OF TRANSPORTATION SERVICES, THE CONTRACTOR SHALL PROVIDE OFF-DUTY POLICE OFFICERS TO CONTROL THE FLOW OF TRAFFIC.
7. DRIVEWAYS SHALL BE KEPT OPEN UNLESS THE OWNERS OF THE PROPERTY USING THESE RIGHTS-OF-WAY ARE OTHERWISE PROVIDED FOR SATISFACTORILY.
8. THE CONTRACTOR SHALL REFERENCE, TO THE APPROVAL OF THE DEPARTMENT OF TRANSPORTATION SERVICES, ALL EXISTING TRAFFIC SIGN, POSTS AND PAVEMENT MARKINGS PRIOR TO THE COMMENCEMENT OF CONSTRUCTION. THE CONTRACTOR SHALL REPLACE OR REPAIR ALL TRAFFIC SIGNS, POSTS, AND PAVEMENT MARKINGS DISTURBED BY HIS ACTIVITIES. THE CONTRACTOR SHALL NOTIFY THE DEPARTMENT OF TRANSPORTATION SERVICES AT 523-4029 ONE (1) WEEK PRIOR TO ANY WORK TO BE DONE ON SIGNS, POSTS AND PAVEMENT MARKINGS.
9. NO MATERIAL AND/OR EQUIPMENT SHALL BE STOCKPILED OR OTHERWISE STORED WITHIN STREET RIGHTS-OF-WAY EXCEPT AT LOCATIONS DESIGNATED IN WRITING AND APPROVED BY THE DEPARTMENT OF TRANSPORTATION SERVICES.

HONOLULU PUBLIC TRANSIT AUTHORITY NOTE:
1. THE CONTRACTOR SHALL NOTIFY OAHU TRANSIT SERVICES, INC., (OTS) ED SNIFFEN (848-4571) OR LOWELL TOM (848-4578), TWO WEEKS PRIOR TO CONSTRUCTION, INFORMING THEM OF LOCATION, SCOPE OF WORK, PROPOSED CLOSURE OF ANY STREET OR TRAFFIC LANES, AND THE NEED TO RELOCATE ANY BUS STOP.

GRADING NOTES:
1. ALL GRADING WORK SHALL BE DONE IN ACCORDANCE WITH CHAPTER 14, ARTICLES 13, 14, 15 AND 16, AS RELATED TO GRADING, SOIL EROSION AND SEDIMENT CONTROL, OF THE REVISED ORDINANCES OF HONOLULU, 1990, AS AMENDED, AND SOILS REPORT BY SOILS INTERNATIONAL DATED JUNE 29, 1995.
2. NO CONTRACTOR SHALL PERFORM ANY GRADING OPERATION SO AS TO CAUSE FALLING ROCKS, SOIL OR DEBRIS IN ANY FORM TO FALL, SLIDE OR FLOW ONTO ADJOINING PROPERTIES, STREETS OR NATURAL WATERCOURSES. SHOULD SUCH VIOLATIONS OCCUR, THE COSTS INCURRED FOR ANY REMEDIAL ACTION BY THE CHIEF ENGINEER SHALL BE PAYABLE BY THE CONTRACTOR.
3. THE CONTRACTOR, AT HIS OWN EXPENSE, SHALL KEEP THE PROJECT AREA AND SURROUNDING AREA FREE FROM DUST NUISANCE. THE WORK SHALL BE IN CONFORMANCE WITH THE AIR POLLUTION CONTROL STANDARDS CONTAINED IN CHAPTER 11-60, "AIR POLLUTION CONTROL"
4. THE UNDERGROUND PIPES, CABLES OR DUCTLINES KNOWN TO EXIST BY THE ENGINEER FROM HIS SEARCH OF RECORDS ARE INDICATED ON THE PLANS. THE CONTRACTOR SHALL VERIFY THE LOCATIONS AND DEPTHS OF THE FACILITIES AND EXERCISE PROPER CARE IN EXCAVATING IN THE AREA. WHEREVER CONNECTIONS OF NEW UTILITIES ARE SHOWN ON THE PLANS, THE CONTRACTOR SHALL EXPOSE THE EXISTING LINES AT THE PROPOSED CONNECTIONS TO VERIFY THEIR LOCATIONS AND DEPTHS PRIOR TO EXCAVATION FOR THE NEW LINES.
5. *ADEQUATE PROVISIONS SHALL BE MADE TO PREVENT SURFACE WATERS FROM DAMAGING* THE CUT FACE OF AN EXCAVATION OR THE SLOPED SURFACES OF A FILL. FURTHERMORE, ADEQUATE PROVISIONS SHALL BE MADE TO PREVENT SEDIMENT-LADEN RUNOFF FROM LEAVING THE SITE.
6. ALL SLOPES AND EXPOSED AREAS SHALL BE SODDED OR PLANTED AS SOON AS FINAL GRADES HAVE BEEN ESTABLISHED. PLANTING SHALL NOT BE DELAYED UNTIL ALL GRADING WORK HAS BEEN COMPLETED. GRADING TO FINAL GRADE SHALL BE CONTINUOUS, AND ANY AREA WITHIN WHICH WORK HAS BEEN INTERRUPTED OR DELAYED SHALL BE PLANTED
7. FILLS ON SLOPES STEEPER THAN 5:1 SHALL BE KEYED.
8. THE CITY SHALL BE INFORMED OF THE LOCATION OF THE BORROW/DISPOSAL SITE FOR THE PROJECT WHEN THE APPLICATION FOR A GRADING PERMIT IS MADE. THE BORROW/DISPOSAL SITE MUST ALSO FULFILL THE REQUIREMENTS OF THE GRADING ORDINANCE.
9. NO GRADING WORK SHALL BE DONE ON SATURDAYS, SUNDAYS AND HOLIDAYS AT ANY TIME WITHOUT PRIOR NOTICE TO THE CHIEF ENGINEER, PROVIDED SUCH GRADING WORK IS ALSO IN CONFORMANCE WITH HAWAII ADMINISTRATIVE RULES, CHAPTER 11-43, "COMMUNITY NOISE CONTROL FOR OAHU"
10. THE LIMITS OF THE AREA TO BE GRADED SHALL BE FLAGGED BEFORE THE COMMENCEMENT OF THE GRADING WORK.
11. ALL GRADING OPERATIONS SHALL BE PERFORMED IN CONFORMANCE WITH THE APPLICABLE PROVISIONS OF THE WATER POLLUTION CONTROL AND WATER QUALITY STANDARDS CONTAINED IN HAWAII ADMINISTRATIVE RULES, CHAPTER 11-55, "WATER POLLUTION CONTROL" AND CHAPTER 11-54, "WATER QUALITY STANDARDS" AND IF APPLICABLE, THE NPDES PERMIT FOR THE PROJECT.
12. WHERE APPLICABLE AND FEASIBLE THE MEASURES TO CONTROL EROSION AND OTHER POLLUTANTS SHALL BE IN PLACE BEFORE ANY EARTH MOVING PHASE OF THE GRADING IS INITIATED.
13. TEMPORARY EROSION CONTROLS SHALL NOT BE REMOVED BEFORE PERMANENT EROSION CONTROLS ARE IN-PLACE AND ESTABLISHED.
14. IF THE GRADING WORK INVOLVES CONTAMINATED SOIL, THEN ALL GRADING WORK SHALL BE DONE IN CONFORMANCE WITH APPLICABLE STATE AND FEDERAL REQUIREMENTS.
15. NON-COMPLIANCE TO ANY OF THE ABOVE REQUIREMENTS SHALL MEAN IMMEDIATE SUSPENSION OF ALL WORK, AND REMEDIAL WORK SHOULD COMMENCE IMMEDIATELY. ALL COST INCURRED SHALL BE BILLED TO THE PERMITTEE. FURTHERMORE, VIOLATORS SHALL BE SUBJECTED TO ADMINISTRATIVE, CIVIL AND/OR CRIMINAL PENALTIES.

WATER NOTES:
1. UNLESS OTHERWISE SPECIFIED, ALL MATERIALS AND FACILITIES AND APPURTENANCES SHALL BE IN ACC OF HONOLULU BOARD OF WATER SUPPLY'S "WATER 1985, AND THE "APPROVED MATERIAL LIST AND ST CONSTRUCTION", VOLUME 2, DATED 1985. THE "WA CONTROL STANDARDS", VOLUME 3, DATED 1991, A AND ADDITIONS
2. NUTS AND BOLTS FOR FLANGED CONNECTIONS WITH OR STAINLESS STEEL EXCEPT COUPLING ADAPTERS "MAYARI" (BETHLEHEM STEEL) MAY BE USED. FLA BOX MAY USE "COR-TEN" OR "MAYARI" TYPE NUTS
3. TEST PRESSURE SHALL BE ONE OF THE FOLLOWIN
   A. PREVAILING LINE PRESSURE, JOINTS LEFT FOR LEAKS PRIOR TO BACKFILL
   B. 150 PSI.
4. THE CONTRACTOR SHALL CHLORINATE THE ENTIRE FITTING WITH DISINFECTION SOLUTION OF 5 OUNCE WITH 10 GALLONS OF WATER. (FOR CONNECTION
5. THE PROJECT SHALL PAY THE APPLICABLE WATER SERVICE CHARGE AND FOR THE METER WHICH WIL
6. THE CONTRACTOR SHALL NOTIFY BWS PLANNING A SECTION ONE WEEK PRIOR TO COMMENCING WORK
7. AFTER INSTALLATION OF TAPPING SLEEVE AND VAL OPERATIONS, THE ASSEMBLY SHALL BE TESTED AT
8. ALL PLANS APPROVED BY THE BOARD OF WATER ADEQUACY OF THE WATER SUPPLY.
9. BOARD OF WATER SUPPLY APPROVAL OF THESE P COMMITMENT. AVAILABILITY OF WATER WILL BE DE PRESENTED TO THE DEPARTMENT. WATER COMMIT OF THE WATER SYSTEM AT THAT TIME. SHOULD THE WATER COMMITMENT WILL BE EFFECTIVE WHEN BUILDING PERMIT FROM THE BUILDING DEPARMENT CANCELLED IN THE EVENT THE BUILDING PERMIT
10. THE PROJECT SHALL BE SUBJECT TO THE BOARD CONTROL REQUIREMENTS PRIOR TO ISSUANCE OF
11. THE INSTALLATION, CHLORINATION AND TESTING OF THE METER SHALL NOT BE THE RESPONSIBILITY
12. THE CONTRACTOR SHALL BE RESPONSIBLE FOR T DURING CONSTRUCTION. THE CONTRACTOR SHALL EXCAVATING BEHIND WATER LINES, TEES AND BEN OF WATER LINE MOVEMENT DUE TO REMOVAL OF EXISTING REACTION BLOCKS. THE CONTRACTOR S NECESSARY TO PROTECT THE WATER LINES, SUCH BLOCKS (WITH BWS APPROVAL) AND/OR MODIFYIN
13. PRIOR TO INSTALLATION, THE CONTRACTOR SHALL WATER SUPPLY, THE MANUFACTURER'S CERTIFICAT DUCTILE) FITTINGS FOR THE PROJECT CONFORM STANDARDS, DATED 1985.
14. POLYGON SHAPE FOR MECHANICAL JOINT GLANDS SHALL BE "STRAIGHT-SIDED" OR AN APPROVED E
15. THE WATER METER WILL NOT BE ISSUED UNTIL T INSTALLED.
16. THE CONTRACTOR/DEVELOPER SHALL OBTAIN AN AND/OR DEWATERING. A COPY OF THE PERMIT S WATER SUPPLY, PLANNING AND ENGINEERING DIV
17. THE EXISTENCE AND LOCATION OF UNDERGROUND THE PLANS WERE OBTAINED FROM THE LATEST A GUARANTEED AND OTHER OBSTACLES MAY POSSI OF THE CONSTRUCTION WORK. THE CONTRACTO UTILITIES ARE SHOWN ON THE PLANS, NONE EXI RESPONSIBLE FOR, AND SHALL PAY FOR, ALL DA FROM HIS/HER WORK.
18. THE CONTRACTOR SHALL NOTIFY ALL AGENCIES A COMMENCING EXCAVATION WORK AND HAVE EACH UTILITY LINES THAT WILL BE AFFECTED BY THE FULLY RESPONSIBLE FOR, AND SHALL PAY FOR, PROTECTION OF THE EXISTING UTILITIES & STRU
19. THE CONTRACTOR SHALL NOTIFY THE BOARD OF TO COMMENCING WORK ON THE NEW WATER SYS
20. ALL ASPHALTIC CONCRETE AND/OR CONCRETE P PIPELINE OR ANY WATER SYSTEM INSTALLATION S WIDTH PRIOR TO REPAVING.
21. PAYMENT FOR RESTORATION OF DRIVEWAYS, CUR BUT SHALL BE INCLUDED IN THE UNIT PRICES
22. EXISTING UTILITIES CROSSING THE WATER MAIN A RELOCATED FOR THE CONTRACTOR'S CONVENIEN A MINIMUM PERIOD OF TIME AND SHALL BE DON WITH THE APPROVAL OF THE ENGINEER.
23. THE BRIDGE DECKS FOR TEMPORARY BRIDGE IN PAVEMENT OR SIDEWALK. NO BUMPS OR ELEVA
24. ALL WATER MAIN TRENCHES SHALL BE BACKFILL 1.2.2. TRENCH BACKFILL, OF THE "WATER SYSTE OF TRENCH BACKFILL SHALL MEET APPLICABLE SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCT COUNTIES OF THE STATE OF HAWAII.
25. THE CONTRACTOR SHALL BE RESPONSIBLE FOR TO SAFEGUARD PUBLIC HEALTH AND ENVIRONME OF HEALTH REQUIREMENTS.
26. SHOULD MAJOR TREE ROOTS 2" AND GREATER ROOTS SHALL BE CUT AND SEALED WITH ASPHA
27. ALL SALVAGE MATERIALS SHALL BE CLEANED, R CORPORATION YARD.
28. ALL WATER MAINS AND APPURTENANCES INCLUD CONNECTIONS SHALL BE SUBJECTED TO A HYDR CONTRACTOR IN THE PRESENCE OF THE BOARD
29. RE-APPROVAL SHALL BE REQUIRED IF THIS PR PERIOD OF TWO YEARS.

FLOW REQUIREMENTS:

	F.U.
DOMESTIC	537.
IRRIGATION*	
TOTAL	

*Irrigation will be done during off peak hours.

APPR

CHIEF, DIV
(FOR GRA

CHIEF, TR
(FOR CON

WATER NOTES:

1. UNLESS OTHERWISE SPECIFIED, ALL MATERIALS AND CONSTRUCTION OF WATER SYSTEM FACILITIES AND APPURTENANCES SHALL BE IN ACCORDANCE WITH THE CITY AND COUNTY OF HONOLULU BOARD OF WATER SUPPLY'S "WATER SYSTEM STANDARDS", VOLUME 1, 1985, AND THE "APPROVED MATERIAL LIST AND STANDARD DETAILS FOR WATER SYSTEM CONSTRUCTION", VOLUME 2, DATED 1985, THE "WATER SYSTEM EXTERNAL CORROSION CONTROL STANDARDS", VOLUME 3, DATED 1991, AND ALL SUBSEQUENT AMENDMENTS AND ADDITIONS
2. NUTS AND BOLTS FOR FLANGED CONNECTIONS WITHIN METER BOXES SHALL BE BRONZE OR STAINLESS STEEL EXCEPT COUPLING ADAPTERS WHERE "COR-TEN" (U.S. STEEL) OR "MAYARI" (BETHLEHEM STEEL) MAY BE USED. FLANGED CONNECTIONS OUTSIDE OF METER BOX MAY USE "COR-TEN" OR "MAYARI" TYPE NUTS AND BOLTS
3. TEST PRESSURE SHALL BE ONE OF THE FOLLOWING
   A. PREVAILING LINE PRESSURE, JOINTS LEFT EXPOSED FOR 24 HOURS TO CHECK FOR LEAKS PRIOR TO BACKFILL
   B. 150 PSI.
4. THE CONTRACTOR SHALL CHLORINATE THE ENTIRE INSIDE SURFACE OF EACH PIPE AND FITTING WITH DISINFECTION SOLUTION OF 5 OUNCES OF SODIUM HYPOCHLORITE MIXED WITH 10 GALLONS OF WATER. (FOR CONNECTION ONLY)
5. THE PROJECT SHALL PAY THE APPLICABLE WATER SYSTEM FACILITIES AND/OR ONE-TIME SERVICE CHARGE AND FOR THE METER WHICH WILL BE FURNISHED AND INSTALLED BY BWS.
6. THE CONTRACTOR SHALL NOTIFY BWS PLANNING AND ENGINEERING DIVISION, CONSTRUCTION SECTION ONE WEEK PRIOR TO COMMENCING WORK ON THE WATER SYSTEM.
7. AFTER INSTALLATION OF TAPPING SLEEVE AND VALVE PRIOR TO ACTUAL TAPPING OPERATIONS, THE ASSEMBLY SHALL BE TESTED AT 150 PSI ON BOTH SIDES OF THE VALVE.
8. ALL PLANS APPROVED BY THE BOARD OF WATER SUPPLY ARE BASED SOLELY ON THE ADEQUACY OF THE WATER SUPPLY.
9. BOARD OF WATER SUPPLY APPROVAL OF THESE PLANS DOES NOT CONSTITUTE A WATER COMMITMENT. AVAILABILITY OF WATER WILL BE DETERMINED WHEN BUILDING PERMIT IS PRESENTED TO THE DEPARTMENT. WATER COMMITMENT WILL DEPEND UPON THE STATUS OF THE WATER SYSTEM AT THAT TIME. SHOULD WATER SERVICE BE MADE AVAILABLE, THE WATER COMMITMENT WILL BE EFFECTIVE WHEN THE PROJECT RECEIVES AN APPROVED BUILDING PERMIT FROM THE BUILDING DEPARMENT. ALL WATER COMMITMENTS WILL BE CANCELLED IN THE EVENT THE BUILDING PERMIT IS CANCELLED.
10. THE PROJECT SHALL BE SUBJECT TO THE BOARD OF WATER SUPPLY'S CROSS-CONNECTION CONTROL REQUIREMENTS PRIOR TO ISSUANCE OF THE BUILDING PERMIT.
11. THE INSTALLATION, CHLORINATION AND TESTING OF THE WATER MAIN AND FACILITIES AFTER THE METER SHALL NOT BE THE RESPONSIBILITY OF THE BOARD OF WATER SUPPLY.
12. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL WATER LINES DURING CONSTRUCTION. THE CONTRACTOR SHALL BE ESPECIALLY CAREFUL WHEN EXCAVATING BEHIND WATER LINES, TEES AND BENDS WHEREVER THERE IS A POSSIBILITY OF WATER LINE MOVEMENT DUE TO REMOVAL OF THE SUPPORTING EARTH BEYOND THE EXISTING REACTION BLOCKS. THE CONTRACTOR SHALL TAKE WHATEVER MEASURE NECESSARY TO PROTECT THE WATER LINES, SUCH AS CONSTRUCTING SPECIAL REACTION BLOCKS (WITH BWS APPROVAL) AND/OR MODIFYING THE CONSTRUCTION METHOD.
13. PRIOR TO INSTALLATION, THE CONTRACTOR SHALL SUBMIT FOR APPROVAL BY BOARD OF WATER SUPPLY, THE MANUFACTURER'S CERTIFICATION THAT ALL CAST IRON (GRAY OR DUCTILE) FITTINGS FOR THE PROJECT CONFORM IN ALL RESPECTS TO THE WATER SYSTEM STANDARDS, DATED 1985.
14. POLYGON SHAPE FOR MECHANICAL JOINT GLANDS AS DESCRIBED IN AWWA STANDARD C111 SHALL BE "STRAIGHT-SIDED" OR AN APPROVED EQUAL ON A JOB TO JOB BASIS.
15. THE WATER METER WILL NOT BE ISSUED UNTIL THE BACKFLOW PREVENTION DEVICE IS INSTALLED.
16. THE CONTRACTOR/DEVELOPER SHALL OBTAIN AN NPDES PERMIT PRIOR TO CHLORINATION AND/OR DEWATERING. A COPY OF THE PERMIT SHALL BE SUBMITTED TO THE BOARD OF WATER SUPPLY, PLANNING AND ENGINEERING DIVISION, CONSTRUCTION SECTION.
17. THE EXISTENCE AND LOCATION OF UNDERGROUND UTILITIES AND STRUCTURES AS SHOWN ON THE PLANS WERE OBTAINED FROM THE LATEST AVAILABLE DATA. THEIR ACCURACY IS NOT GUARANTEED AND OTHER OBSTACLES MAY POSSIBLY BE ENCOUNTERED DURING THE COURSE OF THE CONSTRUCTION WORK. THE CONTRACTOR SHALL NOT ASSUME THAT WHERE NO UTILITIES ARE SHOWN ON THE PLANS, NONE EXIST. THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR, AND SHALL PAY FOR, ALL DAMAGES TO THE EXISTING UTILITIES RESULTING FROM HIS/HER WORK.
18. THE CONTRACTOR SHALL NOTIFY ALL AGENCIES AND UTILITY COMPANIES PRIOR TO COMMENCING EXCAVATION WORK AND HAVE EACH OF THEM LOCATE THEIR RESPECTIVE UTILITY LINES THAT WILL BE AFFECTED BY THE WORK. THE CONTRACTOR SHALL BE HELD FULLY RESPONSIBLE FOR, AND SHALL PAY FOR, ALL DAMAGES TO AND THE MAINTENANCE & PROTECTION OF THE EXISTING UTILITIES & STRUCTURES.
19. THE CONTRACTOR SHALL NOTIFY THE BOARD OF WATER SUPPLY IN WRITING ONE WEEK PRIOR TO COMMENCING WORK ON THE NEW WATER SYSTEM.
20. ALL ASPHALTIC CONCRETE AND/OR CONCRETE PAVEMENTS TO BE TRENCHED FOR THE NEW PIPELINE OR ANY WATER SYSTEM INSTALLATION SHALL BE "SAW-CUT" TO THE REQUIRED WIDTH PRIOR TO REPAVING.
21. PAYMENT FOR RESTORATION OF DRIVEWAYS, CURBS, AND GUTTERS WILL NOT BE MADE DIRECTLY BUT SHALL BE INCLUDED IN THE UNIT PRICES BID IN THE VARIOUS ITEMS OF THE BID.
22. EXISTING UTILITIES CROSSING THE WATER MAIN ARE TO REMAIN IN SERVICE AND IN PLACE. IF RELOCATED FOR THE CONTRACTOR'S CONVENIENCE, INTERRUPTION OF SERVICE SHALL BE FOR A MINIMUM PERIOD OF TIME AND SHALL BE DONE AT THE CONTRACTOR'S EXPENSE AND ONLY WITH THE APPROVAL OF THE ENGINEER.
23. THE BRIDGE DECKS FOR TEMPORARY BRIDGE INSTALLATIONS SHALL BE FLUSH WITH ADJOINING PAVEMENT OR SIDEWALK. NO BUMPS OR ELEVATED BRIDGE DECKS WILL BE ALLOWED
24. ALL WATER MAIN TRENCHES SHALL BE BACKFILLED AS CALLED FOR UNDER PART III, SECTION 1.2.2, TRENCH BACKFILL, OF THE "WATER SYSTEM STANDARDS", DATED 1985. COMPACTION OF TRENCH BACKFILL SHALL MEET APPLICABLE REQUIREMENTS OF "THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION " DATED SEPTEMBER 1956, OF THE COUNTIES OF THE STATE OF HAWAII.
25. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROPER DISPOSAL OF CHLORINATED WATER TO SAFEGUARD PUBLIC HEALTH AND ENVIRONMENT IN ACCORDANCE WITH APPLICABLE BOARD OF HEALTH REQUIREMENTS.
26. SHOULD MAJOR TREE ROOTS 2" AND GREATER ENCOUNTERED DURING CONSTRUCTION, THESE ROOTS SHALL BE CUT AND SEALED WITH ASPHALTIC PAINT.
27. ALL SALVAGE MATERIALS SHALL BE CLEANED, REPAINTED AND DELIVERED TO THE KALIHI BWS CORPORATION YARD.
28. ALL WATER MAINS AND APPURTENANCES INCLUDING SERVICE LATERALS AND SERVICE CONNECTIONS SHALL BE SUBJECTED TO A HYDROSTATIC TEST PRESSURE OF _____ PSI BY THE CONTRACTOR IN THE PRESENCE OF THE BOARD OF WATER SUPPLY'S INSPECTOR.
29. RE-APPROVAL SHALL BE REQUIRED IF THIS PROJECT IS NOT UNDER CONSTRUCTION WITHIN A PERIOD OF TWO YEARS.

FLOW REQUIREMENTS:

	F.U.	GPM	GPD
DOMESTIC	537.6	131.0	3930
IRRIGATION*			
TOTAL			

*Irrigation will be done during off peak hours.

HAWAIIAN ELECTRIC COMPANY (HECO) NOTES

1. LOCATION OF HECO FACILITIES
   THE LOCATION OF HECO'S OVERHEAD AND UNDERGROUND FACILITIES SHOWN ON THE PLANS ARE FROM EXISTING RECORDS WITH VARYING DEGREES OF ACCURACY AND ARE NOT GUARANTEED AS SHOWN. THE CONTRACTOR SHALL EXERCISE EXTREME CAUTION WHENEVER CONSTRUCTION CROSSES OR IS IN CLOSE PROXIMITY OF UNDERGROUND LINES AND SHALL MAINTAIN ADEQUATE CLEARANCE WHEN OPERATING EQUIPMENT WITHIN OR UNDER ANY OVERHEAD LINES.
2. COMPLIANCE WITH DOSH
   THE CONTRACTOR SHALL COMPLY WITH THE STATE OF HAWAII'S OCCUPATIONAL SAFETY AND HEALTH LAW (DOSH).
3. EXCAVATION PERMIT
   THE CONTRACTOR SHALL OBTAIN AN EXCAVATION PERMIT FROM HECO'S MAPPING AND RECORDS DIVISION LOCATED AT 820 WARD AVENUE, 4TH FLOOR, TWO WEEKS PRIOR TO STARTING CONSTRUCTION. PLEASE REFER TO HECO'S REQUEST NUMBER AT THAT TIME.
4. UNDERGROUND LINES
   FOR VERIFICATION OF UNDERGROUND LINES OR FOR ASSISTANCE IN SUPPORTING AND PROTECTING THESE LINES, THE CONTRACTOR SHALL CALL HECO'S UNDERGROUND DIVISION AT 543-7345 A MINIMUM OF 72 HOURS IN ADVANCE.
5. EXCAVATIONS
   WHEN TRENCH EXCAVATION IS ADJACENT TO OR BENEATH HECO'S EXISTING STRUCTURES OR FACILITIES, THE CONTRACTOR IS RESPONSIBLE FOR:
   A. SHEETING AND BRACING THE EXCAVATION TO PREVENT SLIDES, CAVE-INS, AND SETTLEMENTS.
   B. PROTECTING EXISTING STRUCTURES OR FACILITIES WITH BEAMS, STRUTS, OR UNDER-PINNINGS
6. RELOCATION OF HECO FACILITIES
   ANY WORK REQUIRED TO RELOCATE HECO FACILITIES SHALL BE DONE BY HECO AND THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL COORDINATION, AND FOR POSSIBLE COSTS IF APPLICABLE.
7. TEMPORARY RELOCATION OF HECO FACILITIES
   SHOULD IT BECOME NECESSARY TO TEMPORARILY RELOCATE ANY OF HECO FACILITIES TO ENABLE THE CONTRACTOR TO PERFORM THE WORK IN A SAFE AND EXPEDITIOUS MANNER IN FULFILLING THE CONTRACT OBLIGATIONS, THESE TEMPORARY RELOCATIONS WILL BE DONE BY HECO, OR BY THE CONTRACTOR UNDER HECO'S SUPERVISION, WITH ALL COSTS BORNE BY THE CONTRACTOR.
8. DAMAGE TO HECO FACILITIES
   ANY DAMAGE TO HECO'S FACILITIES SHALL BE REPORTED IMMEDIATELY BY THE CONTRACTOR TO HECO'S TROUBLE DISPATCHER AT PH. 543-7874.
9. LIABILITY FOR DAMAGES TO HECO FACILITIES
   ALL HECO OVERHEAD AND UNDERGROUND FACILITIES SHALL BE PROTECTED AT ALL TIMES BY THE CONTRACTOR DURING CONSTRUCTION. COSTS FOR DAMAGES TO HECO FACILITIES SHALL BE BORNE BY THE CONTRACTOR. THIS REPAIR WORK SHALL BE DONE BY HECO, OR BY THE CONTRACTOR UNDER HECO'S SUPERVISION.
10. INDEMNITY
    THE CONTRACTOR SHALL INDEMNIFY, DEFEND AND HOLD HARMLESS HECO FROM AND AGAINST ALL LOSSES, DAMAGES, CLAIMS AND ACTIONS, ALL EXPENSES INCIDENTAL TO SUCH LOSSES, DAMAGES, CLAIMS OR ACTION, BASED UPON OR ARISING OUT OF DAMAGE TO PROPERTY OR INJURIES TO PERSONS, OR OTHER TORTIOUS ACTS CAUSED OR CONTRIBUTED TO BY CONTRACTOR OR ANYONE ACTING UNDER ITS DIRECTION OR CONTROL OR ON ITS BEHALF; PROVIDED CONTRACTOR'S INDEMNITY SHALL NOT BE APPLICABLE TO ANY LIABILITY UPON THE SOLE NEGLIGENCE OF HECO.

HAWAIIAN TELEPHONE COMPANY (HTCO) NOTES:

1. THE CONTRACTOR SHALL EXERCISE EXTREME CAUTION WHEN THE EXCAVATION AND CONSTRUCTION CROSSES OR IS CLOSE TO EXISTING UNDERGROUND TELEPHONE AND SIGNAL CABLE FACILITIES AND MAINTAIN ADEQUATE CLEARANCE FOR HIS/HER EQUIPMENT WHILE WORKING CLOSE TO AND/OR UNDER THE OVERHEAD FACILITIES. ANY DAMAGE TO THE EXISTING UNDERGROUND OR OVERHEAD FACILITIES SHALL BE REPAIRED BY HTCO AND PAID FOR BY THE CONTRACTOR.
2. SHOULD IT BECOME NECESSARY, ANY WORK REQUIRED TO RELOCATE UNDERGROUND OR OVERHEAD FACILITIES SHALL BE DONE BY HTCO AND PAID FOR BY THE CONTRACTOR. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL COORDINATION.
3. CONTRACTOR SHALL OBTAIN EXCAVATION PERMIT FROM HTCO RECORDS SECTION AT 3239 UALENA STREET AT LEAST 2 WEEKS PRIOR TO START OF CONSTRUCTION.
4. CONTRACTOR SHALL CONTACT HTCO INSPECTOR AT 834-6382 A MINIMUM OF 72 HOURS PRIOR TO START OF WORK.
5. SHOULD FIELD CONDITIONS AND CONSTRUCTION PROCEDURES REQUIRE THAT UTILITY POLES BE BRACED, THE CONTRACTOR SHALL CONTACT HTCO INSPECTORS FOR POLE BRACING INSTRUCTION AT LEAST 72 HOURS IN ADVANCE.
6. CONTRACTOR SHALL REPORT ANY DAMAGES OF HTCO FACILITIES TO HTCO CABLE DISPATCH CENTER, TELEPHONE #546-5963.

PUBLIC HEALTH AND SAFETY AND CONVENIENCE NOTES:

1. THE CONTRACTOR SHALL OBSERVE AND COMPLY WITH ALL FEDERAL, STATE AND LOCAL LAWS REQUIRED FOR THE PROTECTION OF PUBLIC HEALTH AND SAFETY AND ENVIRONMENTAL QUALITY.
2. THE CONTRACTOR, AT HIS OWN EXPENSE, SHALL KEEP THE PROJECT AND ITS SURROUNDING AREAS FREE FROM DUST NUISANCE. THE WORK SHALL BE IN CONFORMANCE WITH THE AIR POLLUTION CONTROL STANDARDS AND REGULATIONS OF THE STATE DEPARTMENT OF HEALTH. THE CITY MAY REQUIRE SUPPLEMENTARY MEASURES AS NECESSARY.
3. NO CONTRACTOR SHALL PERFORM ANY GRADING OPERATION SO AS TO CAUSE FALLING ROCKS, SOIL OR DEBRIS IN ANY FORM TO FALL, SLIDE OR FLOW ONTO ADJOINING PROPERTIES, STREETS OR NATURAL WATERCOURSES. SHOULD SUCH VIOLATIONS OCCUR, THE COSTS INCURRED FOR ANY REMEDIAL ACTION BY THE CHIEF ENGINEER SHALL BE PAYABLE BY THE CONTRACTOR.
4. THE CONTRACTOR SHALL PROVIDE, INSTALL AND MAINTAIN ALL NECESSARY SIGNS, LIGHTS, FLARES, BARRICADES, MARKERS, CONES, AND OTHER PROTECTIVE FACILITIES AND SHALL TAKE ALL NECESSARY PRECAUTIONS FOR THE PROTECTION, CONVENIENCE AND SAFETY OF THE PUBLIC. THE CONTRACTOR SHALL APPLY FOR A CONSTRUCTION PERMIT WITH A NOISE POLLUTION CONTROL PLAN.
5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY SEWAGE SPILLS CAUSED DURING CONSTRUCTION. THE CONTRACTOR SHALL NOTIFY THE STATE DEPARTMENT OF HEALTH AND UTILIZE APPROPRIATE SAMPLING AND ANALYZING PROCEDURES.

APPROVED BY:

_____ DATE
CHIEF, DIVISION OF ENGINEERING, DEPT OF PUBLIC WORKS
(FOR GRADING AND CONSTRUCTION WITHIN CITY RIGHT OF WAY ONLY)

_____ DATE
CHIEF, TRANSPORTATION MANAGEMENT DIVISION, DTS
(FOR CONSTRUCTION WITHIN CITY RIGHT OF WAY ONLY)

STANLEY C.H. YIM REGISTERED PROFESSIONAL ENGINEER No. 3018C HAWAII, U.S.A.

I CERTIFY THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION
STANLEY YIM & ASSOC., INC.

REVISION	DATE	DESCRIPTION	MADE BY	APPROVED

STANLEY YIM & ASSOCIATES, INC.
CONSULTING ENGINEERS
1001 BISHOP STREET, PACIFIC TOWER, SUITE 410, HONOLULU, HAWAII 96813

ROYAL KINAU

TMK: 2-1-40:27

728 KINAU STREET, HONOLULU, HAWAII 96822

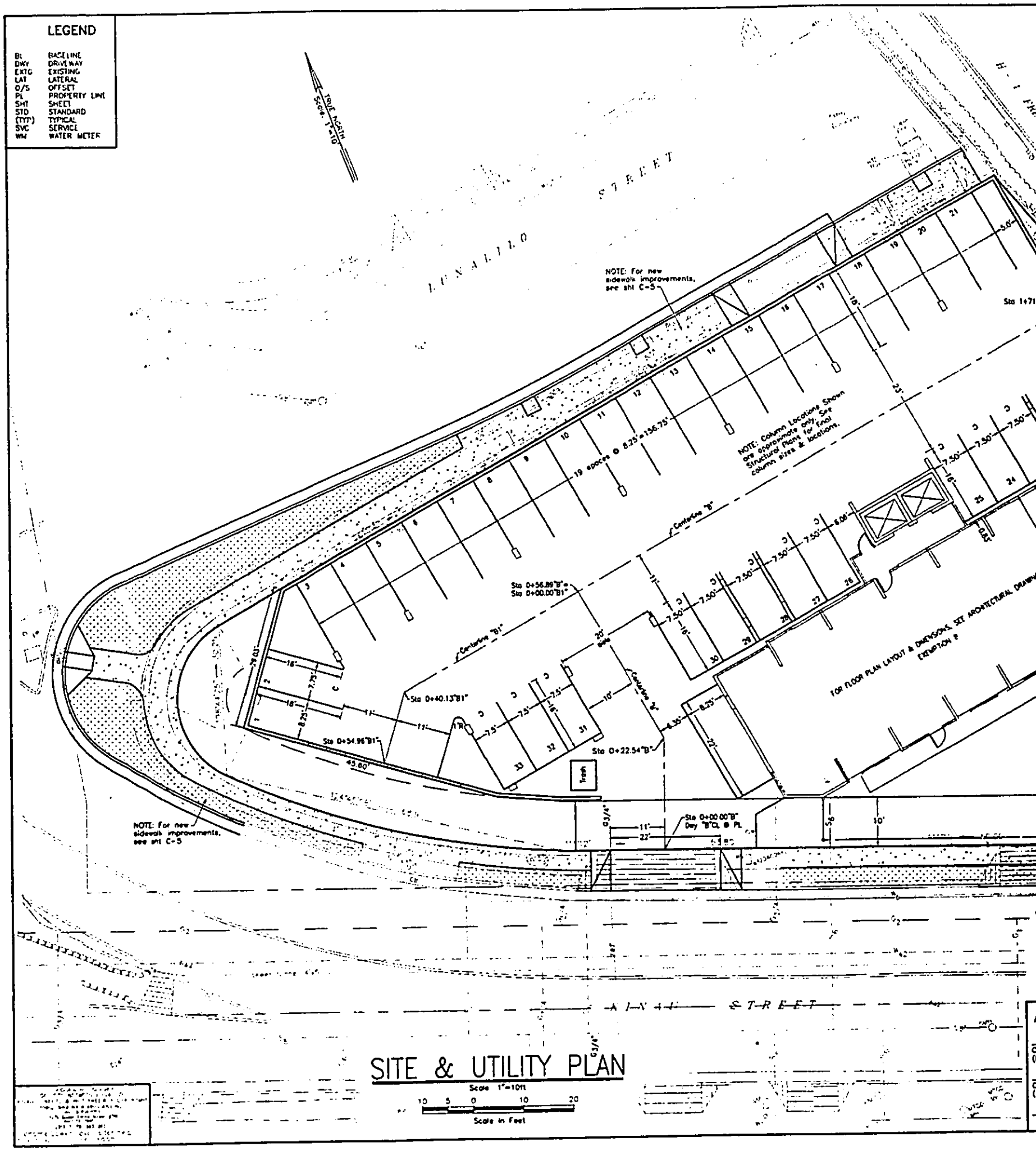
NOTES

ENGINEER _____ DRAWN BY _____ CHECKED BY _____

FILE _____ PROJECT _____ FOLDER _____ NO _____ DRAWING NO C-3 SHEET NO 3 OF 15 SHEETS

LEGEND

BL	BASELINE
DWY	DRIVEWAY
EXTG	EXISTING
LAT	LATERAL
O/S	OFFSET
PL	PROPERTY LINE
SHT	SHEET
STD	STANDARD
(TYP)	TYPICAL
SVC	SERVICE
WM	WATER METER

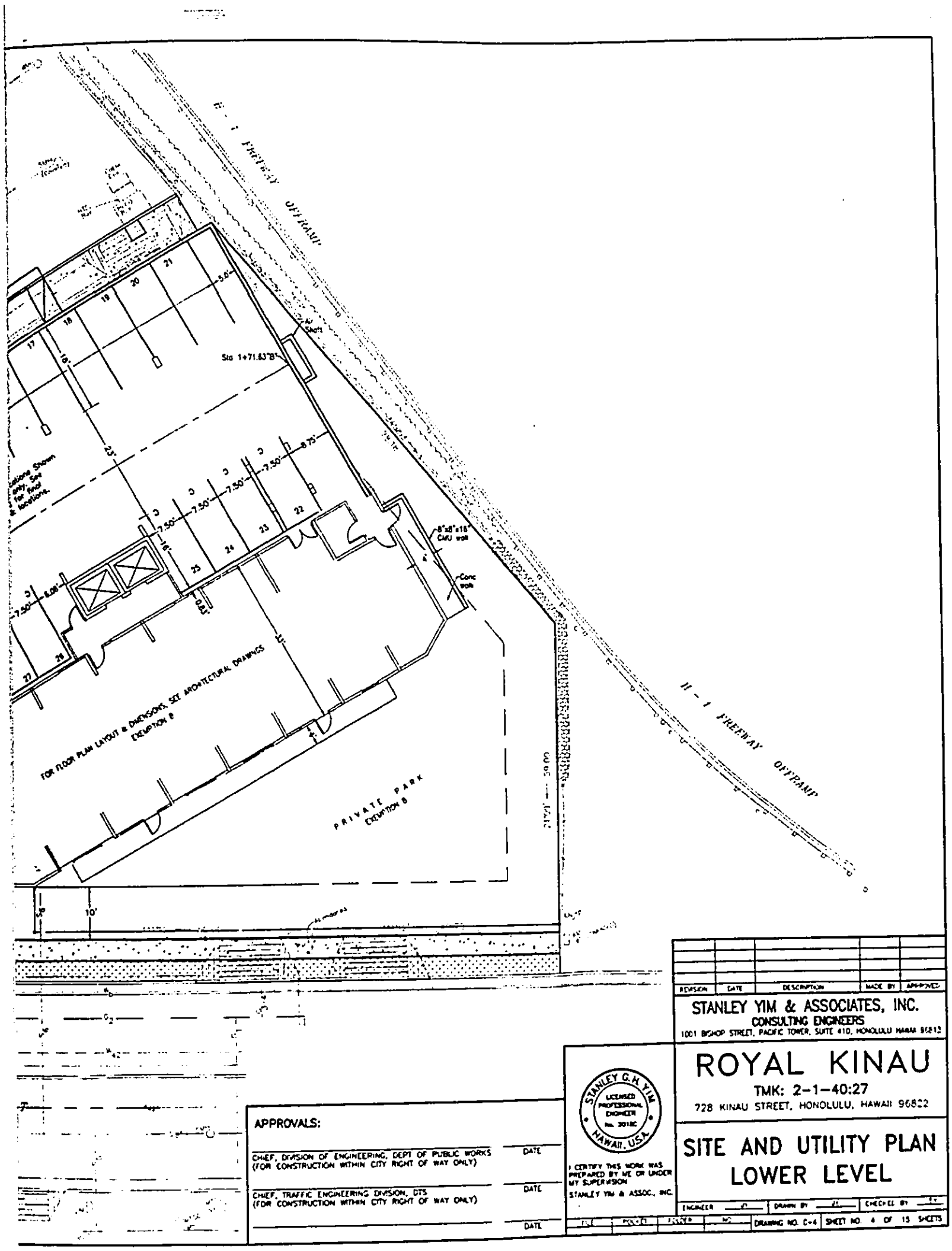


SITE & UTILITY PLAN

Scale 1"=10'

10 5 0 10 20

Scale in Feet



REVISION	DATE	DESCRIPTION	MADE BY	APPROVED

STANLEY YIM & ASSOCIATES, INC.
CONSULTING ENGINEERS
1001 BISHOP STREET, PACIFIC TOWER, SUITE 410, HONOLULU HAWAII 96813

ROYAL KINAU

TMK: 2-1-40:27
728 KINAU STREET, HONOLULU, HAWAII 96822

SITE AND UTILITY PLAN LOWER LEVEL

APPROVALS:

CHIEF, DIVISION OF ENGINEERING, DEPT OF PUBLIC WORKS (FOR CONSTRUCTION WITHIN CITY RIGHT OF WAY ONLY) — DATE

CHIEF, TRAFFIC ENGINEERING DIVISION, DTS (FOR CONSTRUCTION WITHIN CITY RIGHT OF WAY ONLY) — DATE

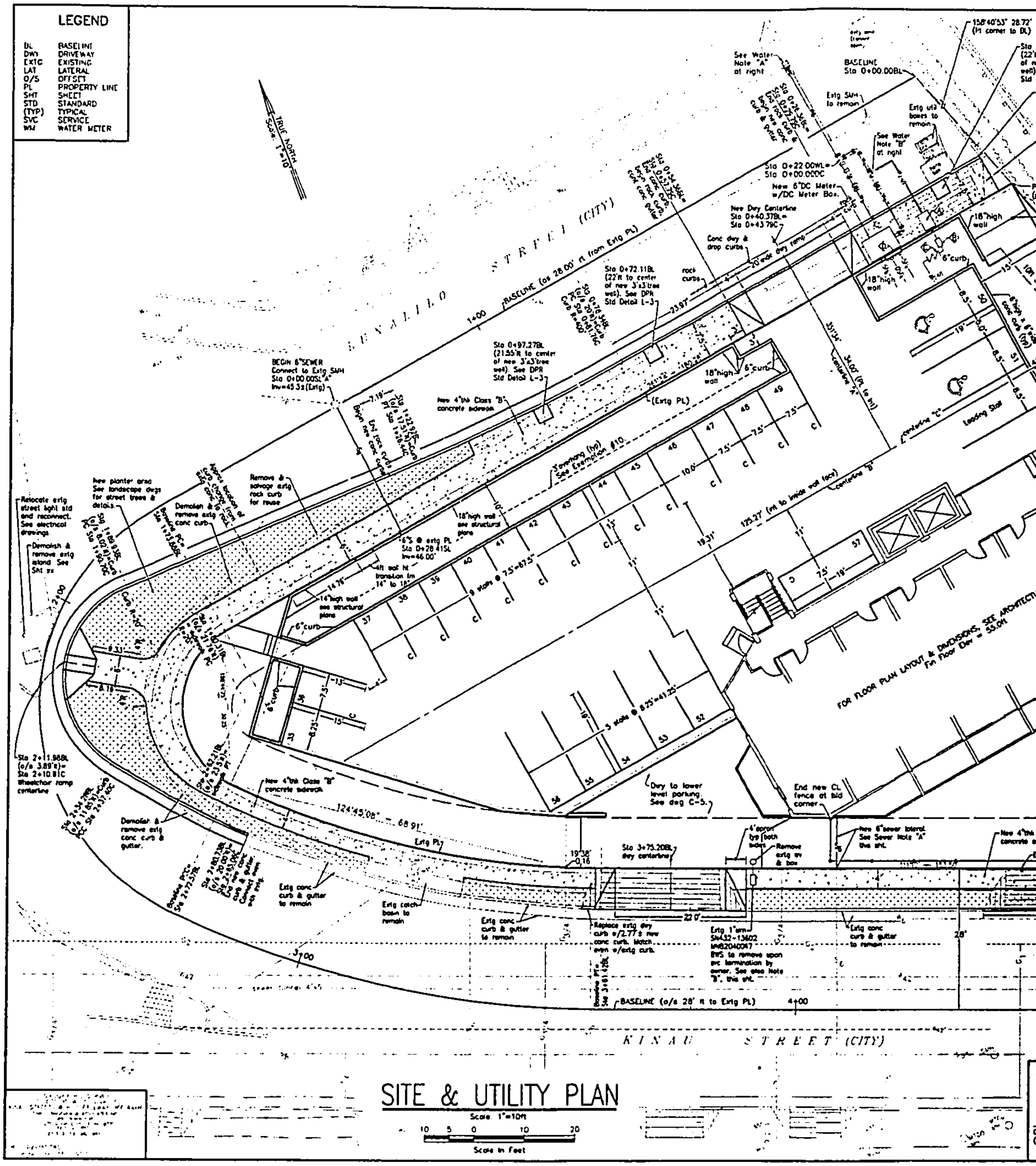
DATE

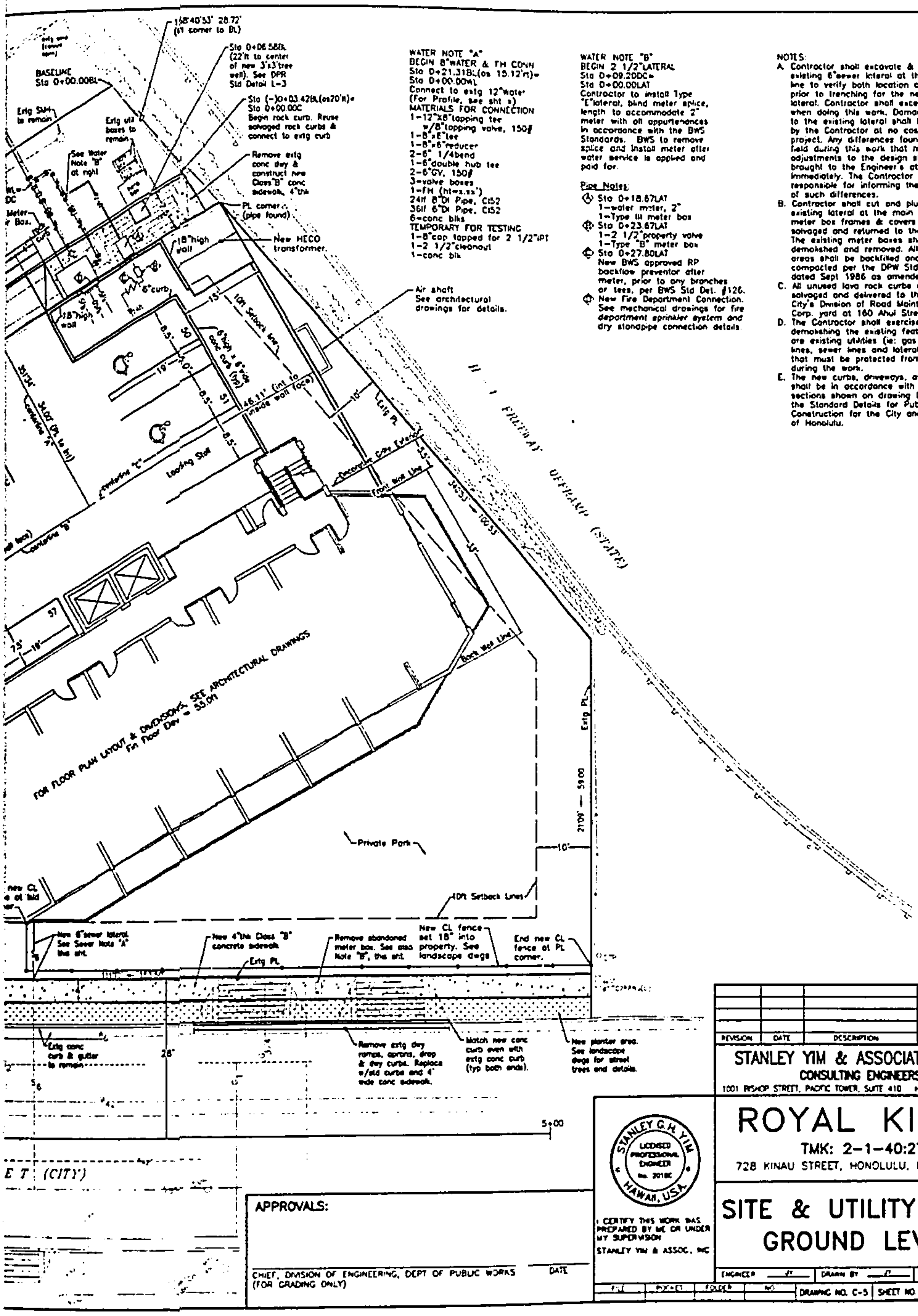
STANLEY G.H. YIM LICENSED PROFESSIONAL ENGINEER No. 3018C HAWAII, U.S.A.

I CERTIFY THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION
STANLEY YIM & ASSOC., INC.

ENGINEER ___ DRAWN BY ___ CHECKED BY ___

DRAWING NO. C-4 SHEET NO. 4 OF 15 SHEETS


LEGEND
BL BASELINE
DWY DRIVEWAY
EXTG EXISTING
LAT LATERAL
O/S OFFSET
PL PROPERTY LINE
SHT SHEET
STD STANDARD
(TYP) TYPICAL
SVC SERVICE
WM WATER METER
TRUE NORTH
Scale: 1"=10'
STREET (CITY)
KINAU STREET (CITY)
Loading Stall
FOR FLOOR PLAN LAYOUT & DIMENSIONS, SEE ARCHITECTURAL
Fin Floor Elev = 55.0ft
SITE & UTILITY PLAN
Scale: 1"=10ft
Scale in Feet



WATER NOTE "A"
BEGIN 8"WATER & FH CONN
Sta 0+21.31BL(os 15.12'rt)=
Sta 0+00.00WL
Connect to extg 12"water
(For Profile, see sht x)
MATERIALS FOR CONNECTION
1-12"X8"tapping tee w/8"tapping valve, 150#
1-8"x6"tee
1-8"x6"reducer
2-6" 1/4bend
1-6"double hub tee
2-6"GV, 150#
3-valve boxes
1-FH (ht=x.xx')
24lf 8"DI Pipe, Cl52
36lf 6"DI Pipe, Cl52
6-conc blks
TEMPORARY FOR TESTING
1-8"cap tapped for 2 1/2"IPT
1-2 1/2"cleanout
1-conc blk

WATER NOTE "B"
BEGIN 2 1/2"LATERAL
Sta 0+09.20DC=
Sta 0+00.00LAT
Contractor to install Type "E"lateral, blind meter splice, length to accommodate 2" meter with all appurtenances in accordance with the BWS Standards. BWS to remove splice and install meter after water service is applied and paid for.

Pipe Notes:

(A) Sta 0+18.67LAT
1-water meter, 2"
1-Type III meter box
(B) Sta 0+23.67LAT
1-2 1/2"property valve
1-Type "B" meter box
(C) Sta 0+27.80LAT
New BWS approved RP backflow preventor after meter, prior to any branches or tees, per BWS Std Det. #126.
(D) New Fire Department Connection. See mechanical drawings for fire department sprinkler system and dry standpipe connection details.

NOTES:

A. Contractor shall excavate & expose existing 6"sewer lateral at the property line to verify both location and invert prior to trenching for the new 6"sewer lateral. Contractor shall excercise care when doing this work. Damages sustained to the existing lateral shall be repaired by the Contractor at no cost to the project. Any differences found in the field during this work that may require adjustments to the design shall be brought to the Engineer's attention immediately. The Contractor shall be responsible for informing the Engineer of such differences.
B. Contractor shall cut and plug the existing lateral at the main. The existing meter box frames & covers shall be salvaged and returned to the BWS. The existing meter boxes shall be demolished and removed. All affected areas shall be backfilled and properly compacted per the DPW Std Specs dated Sept 1986 as amended.
C. All unused lava rock curbs shall be salvaged and delivered to the City's Division of Road Maintenance Corp. yard at 160 Ahui Street.
D. The Contractor shall exercise caution in demolishing the existing features. There are existing utilities (ie: gas lines, water lines, sewer lines and laterals, etc.) that must be protected from damage during the work.
E. The new curbs, driveways, and sidewalks shall be in accordance with the typical sections shown on drawing C-8, and the Standard Details for Public Works Construction for the City and County of Honolulu.

APPROVALS:

CHIEF, DIVISION OF ENGINEERING, DEPT OF PUBLIC WORKS (FOR GRADING ONLY) DATE

REVISION	DATE	DESCRIPTION	MADE BY	APPROVED

STANLEY YIM & ASSOCIATES, INC.
CONSULTING ENGINEERS
1001 BISHOP STREET, PACIFIC TOWER, SUITE 410 HONOLULU HAWAII 96813

STANLEY G.H. YIM LICENSED PROFESSIONAL ENGINEER No. 2018C HAWAII, U.S.A.

I CERTIFY THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION
STANLEY YIM & ASSOC. INC

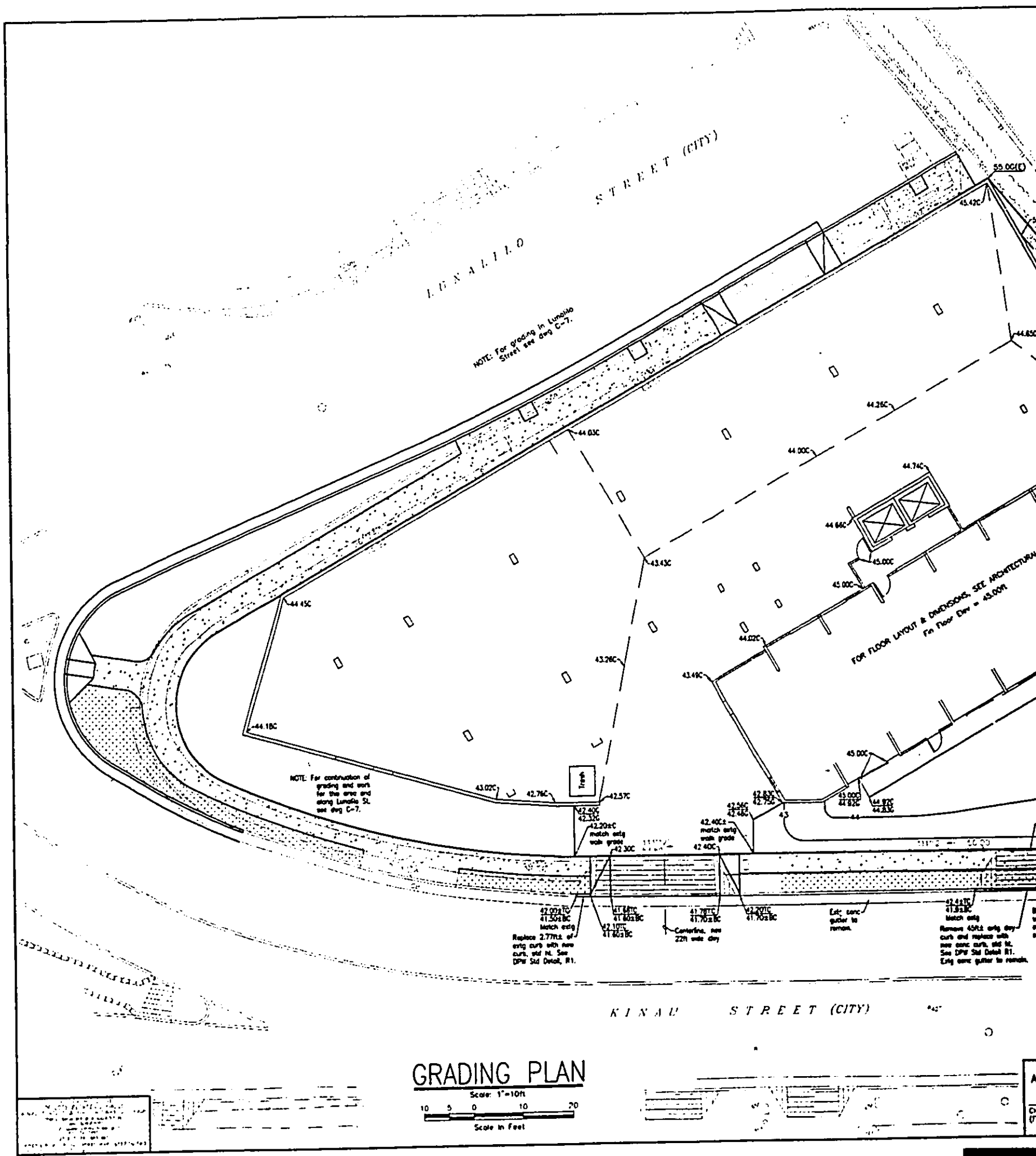
ROYAL KINAU

TMK: 2-1-40:27
728 KINAU STREET, HONOLULU, HAWAII 96822

SITE & UTILITY PLAN GROUND LEVEL

ENGINEER ... DRAWN BY ... CHECKED BY SY

DRAWING NO. C-5 | SHEET NO. 5 OF 13 SHEETS

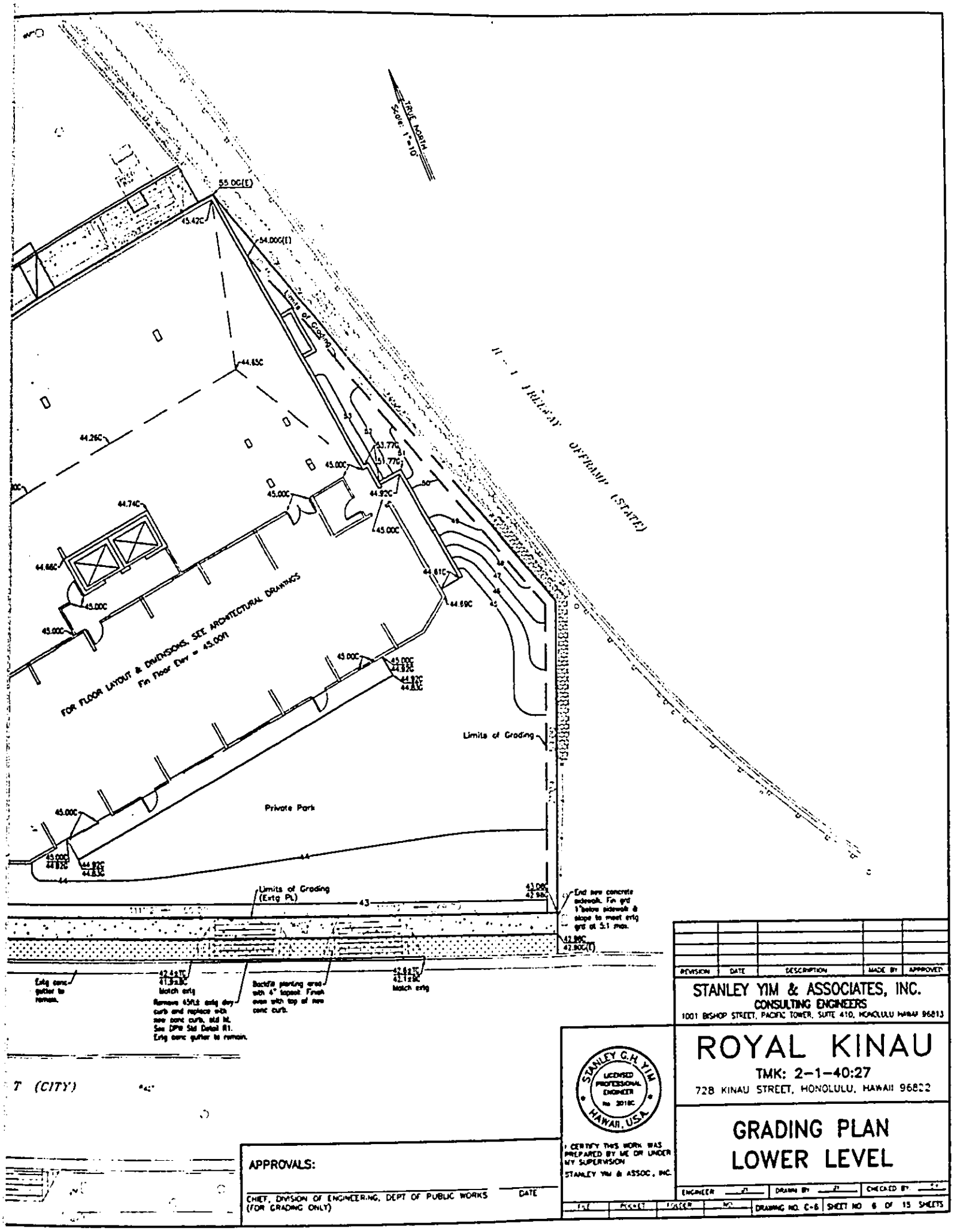


GRADING PLAN

Scale: 1"=10ft

10 5 0 10 20

Scale in Feet



APPROVALS:

CHIEF, DIVISION OF ENGINEERING, DEPT OF PUBLIC WORKS (FOR GRADING ONLY) — DATE

STANLEY G.H. YIM LICENSED PROFESSIONAL ENGINEER No. 2018C HAWAII, U.S.A.

I CERTIFY THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

STANLEY YIM & ASSOC., INC.

REVISION	DATE	DESCRIPTION	MADE BY	APPROVED

STANLEY YIM & ASSOCIATES, INC.
CONSULTING ENGINEERS
1001 BISHOP STREET, PACIFIC TOWER, SUITE 410, HONOLULU HAWAII 96813

ROYAL KINAU

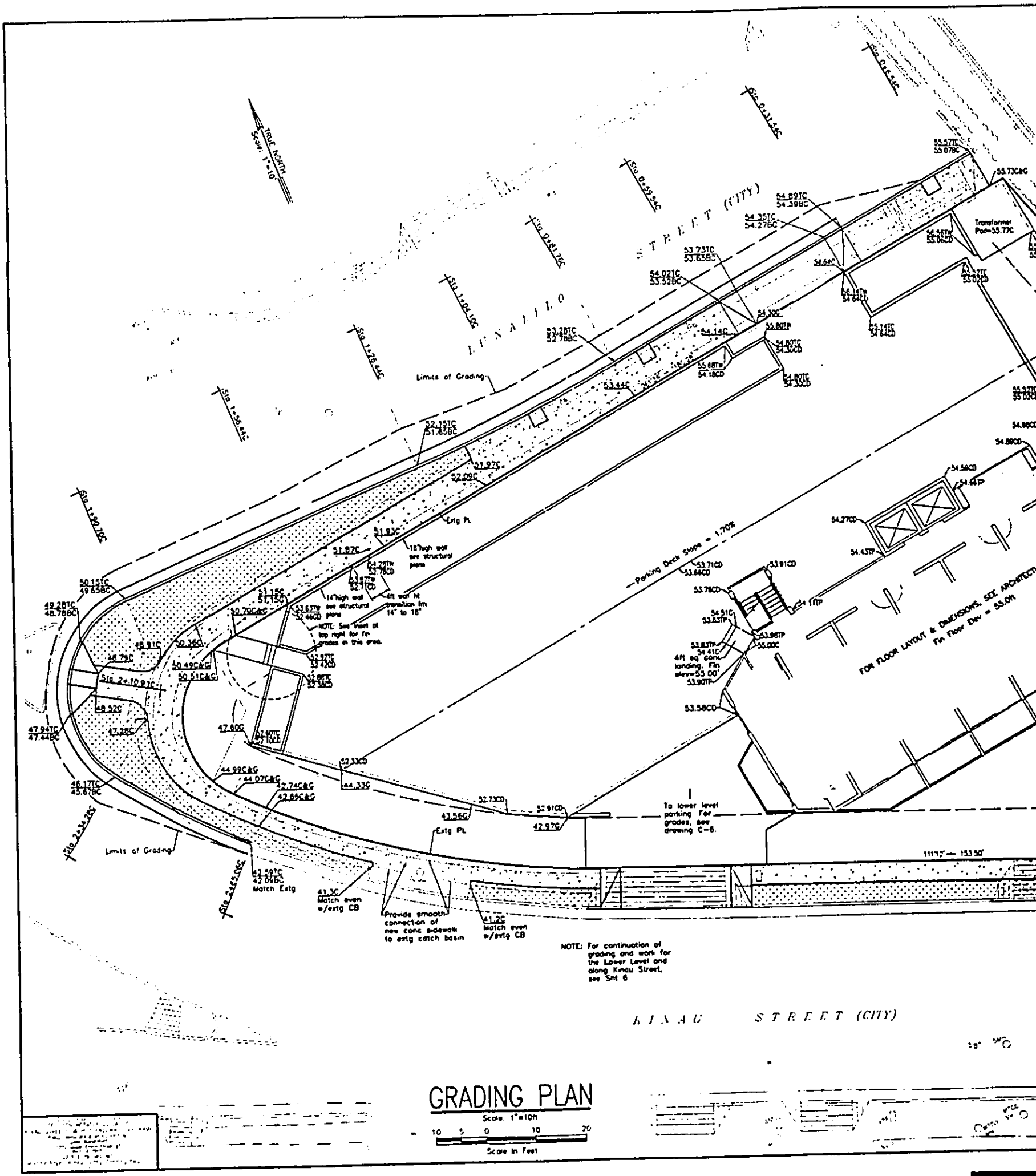
TMK: 2-1-40:27

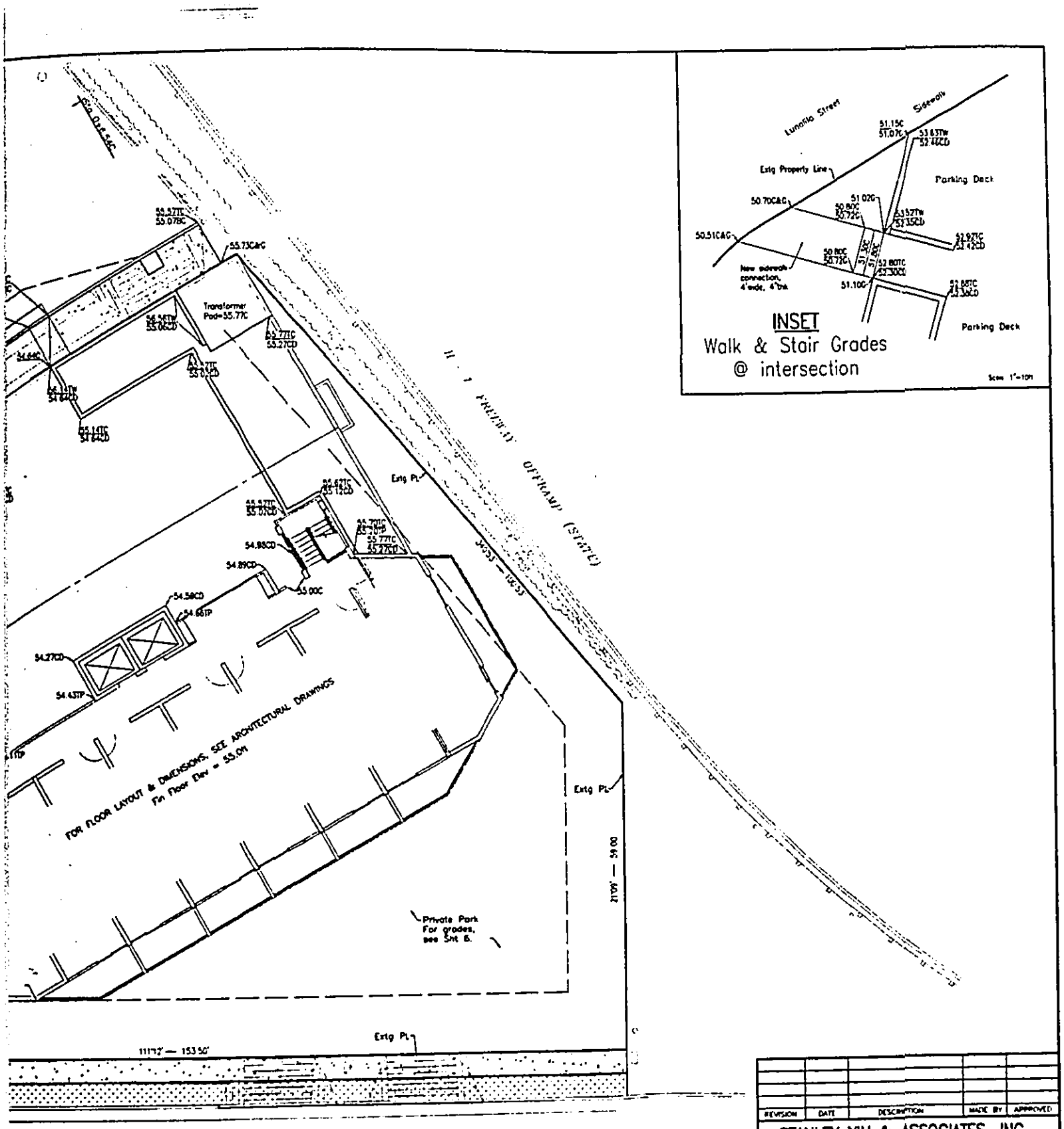
728 KINAU STREET, HONOLULU, HAWAII 96822

GRADING PLAN
LOWER LEVEL

ENGINEER — DRAWN BY — CHECKED BY

FILE | PROJECT | FOLDER | NO. | DRAWING NO. C-6 | SHEET NO 6 OF 15 SHEETS


TRUE NORTH
Scale: 1"=10'
Limits of Grading
Limits of Grading
Estg PL
Estg PL
Parking Deck Slope = 1.70%
To lower level parking. For grades, see drawing C-6.
NOTE: See insert at top right for fin grades in this area.
NOTE: For continuation of grading and work for the Lower Level and along Kinau Street, see Sht 6
Provide smooth connection of new conc sidewalk to estg catch basin
Match Estg
Match even w/estg CB
Match even w/estg CB
18" high wall see structural plans
14" high wall see structural plans
4ft min ht transition frm 14" to 18"
4ft sq conc landing. Fin elev=55.00'
Transformer Pad=55.77C
FOR FLOOR LAYOUT & DIMENSIONS, SEE ARCHITECT
Fin Floor Elev = 55.00
KINAU STREET (CITY)
KINAU STREET (CITY)
GRADING PLAN
Scale 1"=10ft
10 5 0 10 20
Scale in Feet



REVISION	DATE	DESCRIPTION	MADE BY	APPROVED

STANLEY YIM & ASSOCIATES, INC.
CONSULTING ENGINEERS
1001 BISHOP STREET, PACIFIC TOWER SUITE 410 HONOLULU HAWAII 96813

APPROVALS:

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STANLEY YIM & ASSOC., INC.

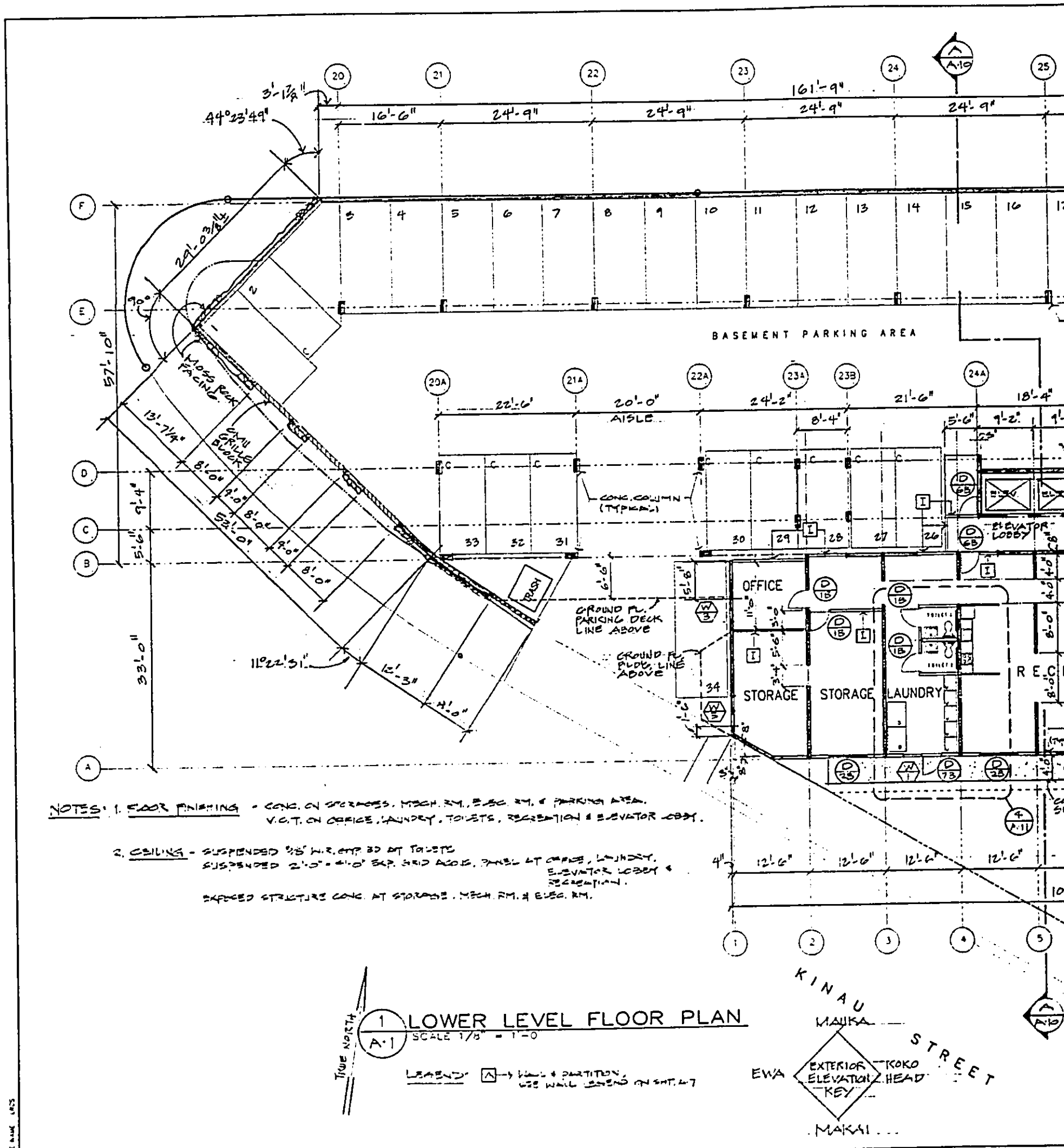
ROYAL KINAU

TMK: 2-1-40:27
728 KINAU STREET, HONOLULU, HAWAII 96822

GRADING PLAN GROUND LEVEL

ENGINEER	DRAWN BY	CHECKED BY

FILE	PROJECT	FOLDER	NO.	DRAWING NO. C-7	SHEET NO 7 OF 15 SHEETS



NOTES: 1. FLOOR FINISHING - CONC. ON STORAGES, MECH. RM., ELEC. RM. & PARKING AREA.
V.C.T. ON OFFICE, LAUNDRY, TOILETS, RECREATION & ELEVATOR LOBBY.

2. CEILING - SUSPENDED 5/8" W.R. GYP. BD AT TOILETS
SUSPENDED 2'-0" x 4'-0" EXP. GRID ACOUS. PANEL AT OFFICE, LAUNDRY, ELEVATOR LOBBY & RECREATION.
EXPOSED STRUCTURE CONC. AT STORAGES, MECH. RM. & ELEC. RM.

1 / A-1 LOWER LEVEL FLOOR PLAN

SCALE 1/8" = 1'-0

LEGEND: [A] → WALL & PARTITION, SEE WALL LEGEND ON SHT. A-7

THE ROYAL KINAU

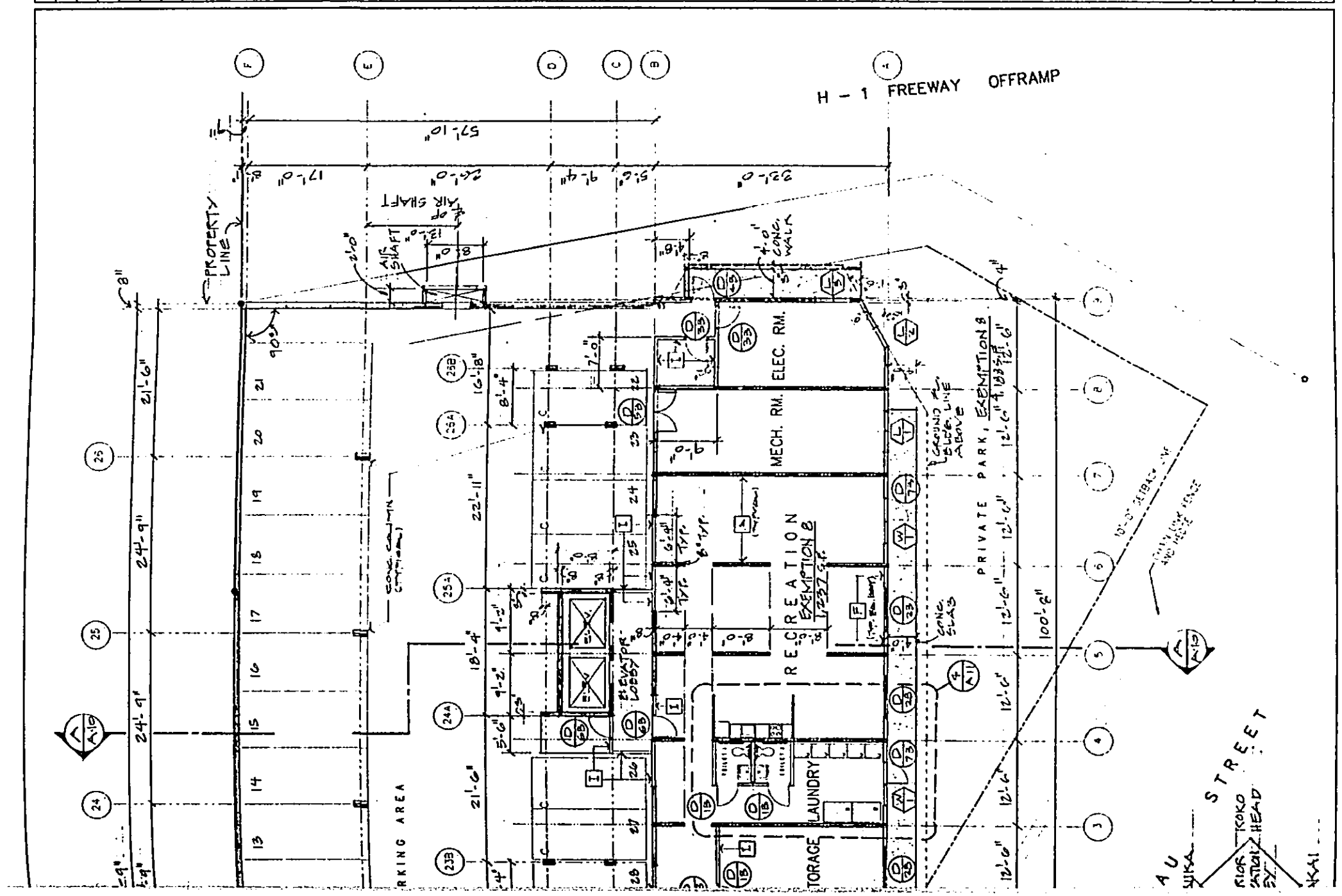
KINAU STREET
HONOLULU, HAWAII
T.M.K.: 2-1-40: 27

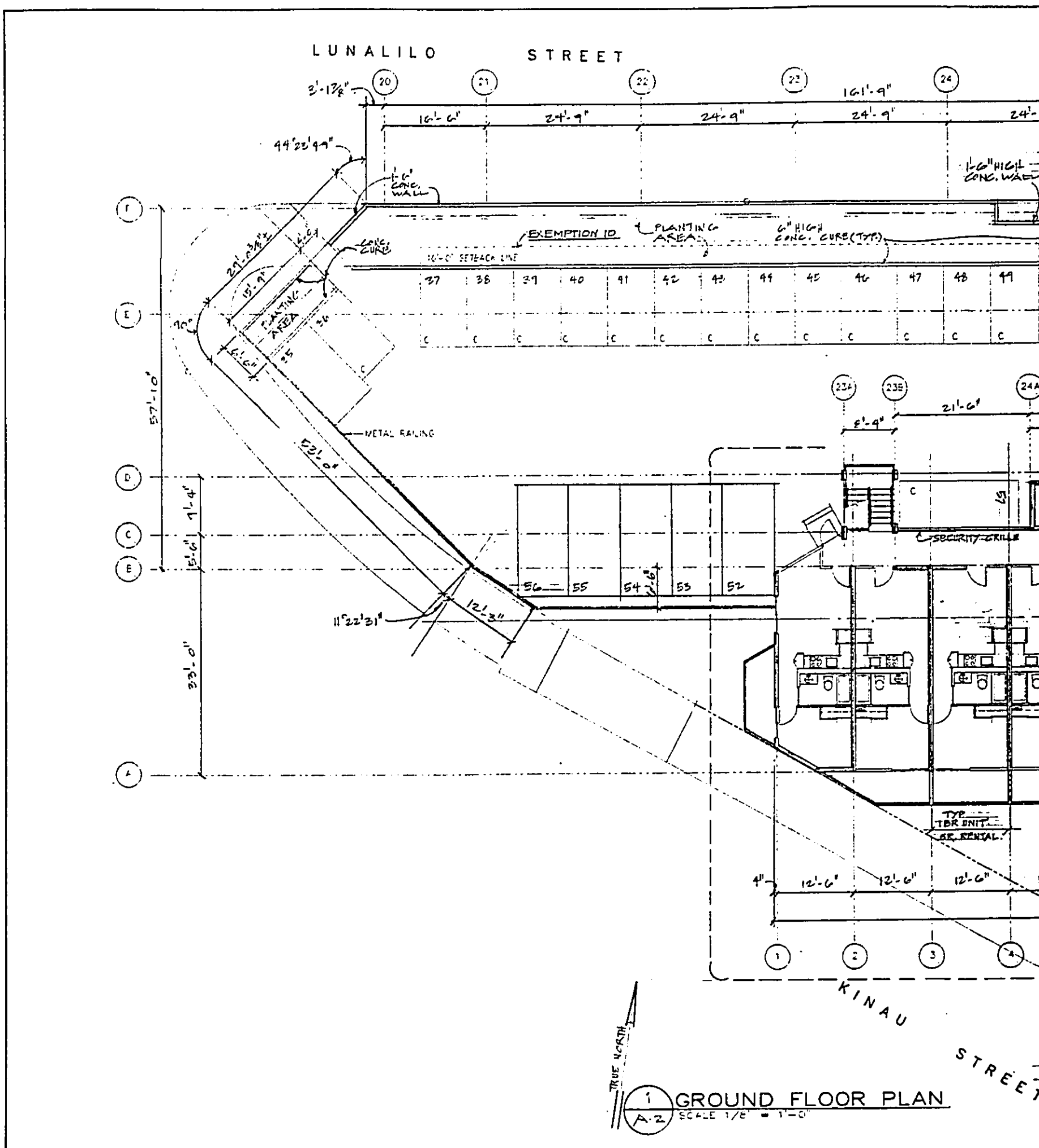
DATE JAN. 15, 1997

SCALE AS NOTED

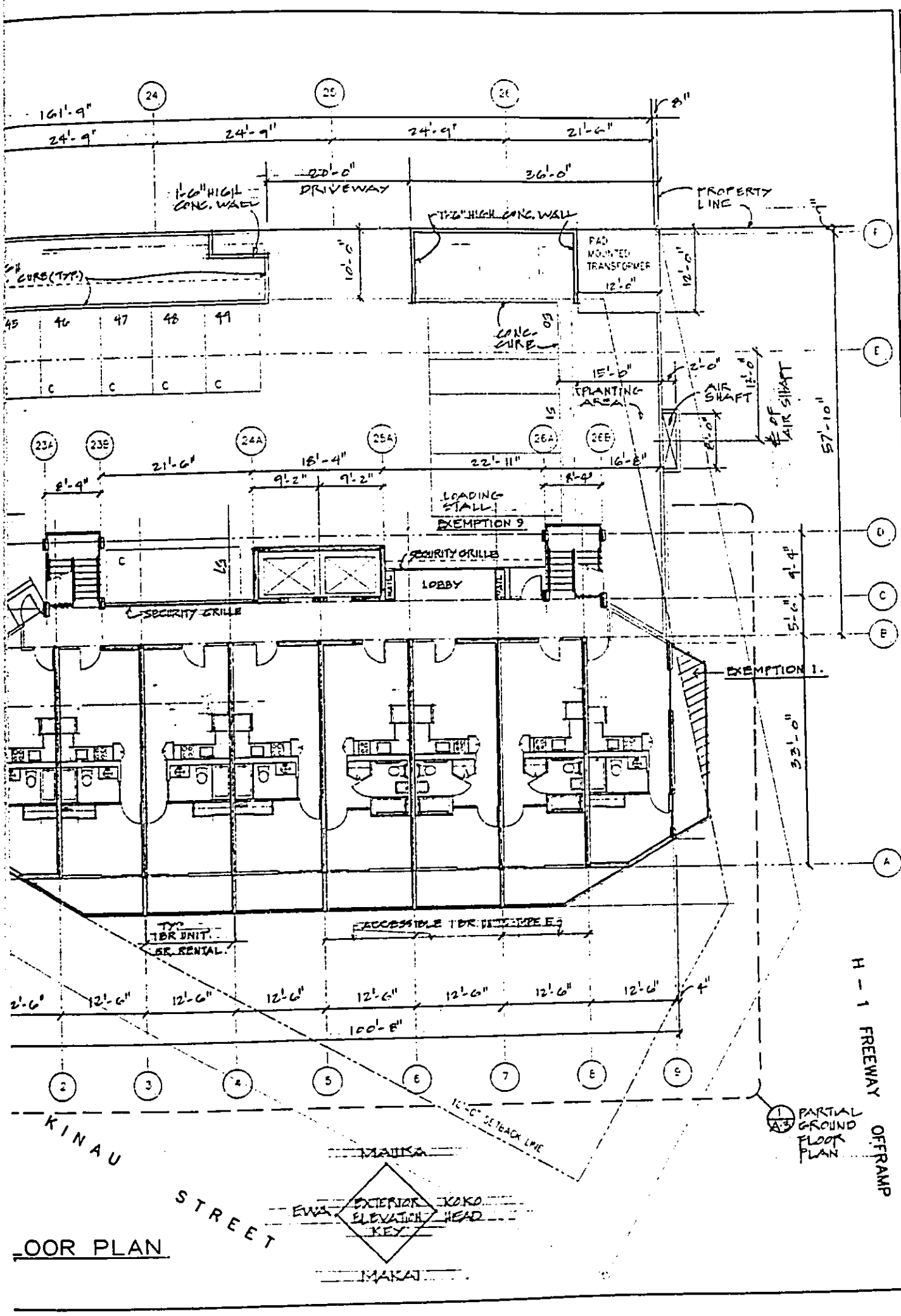
LOWER LEVEL FLOOR PLAN

REVISIONS BY





1 / A-2 GROUND FLOOR PLAN
SCALE 1/8" = 1'-0"



REVISIONS	BY

L&V ARCHITECTS, INC.
55 S. Beretania Street
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Telephone 524-6121
Fax 524-6122

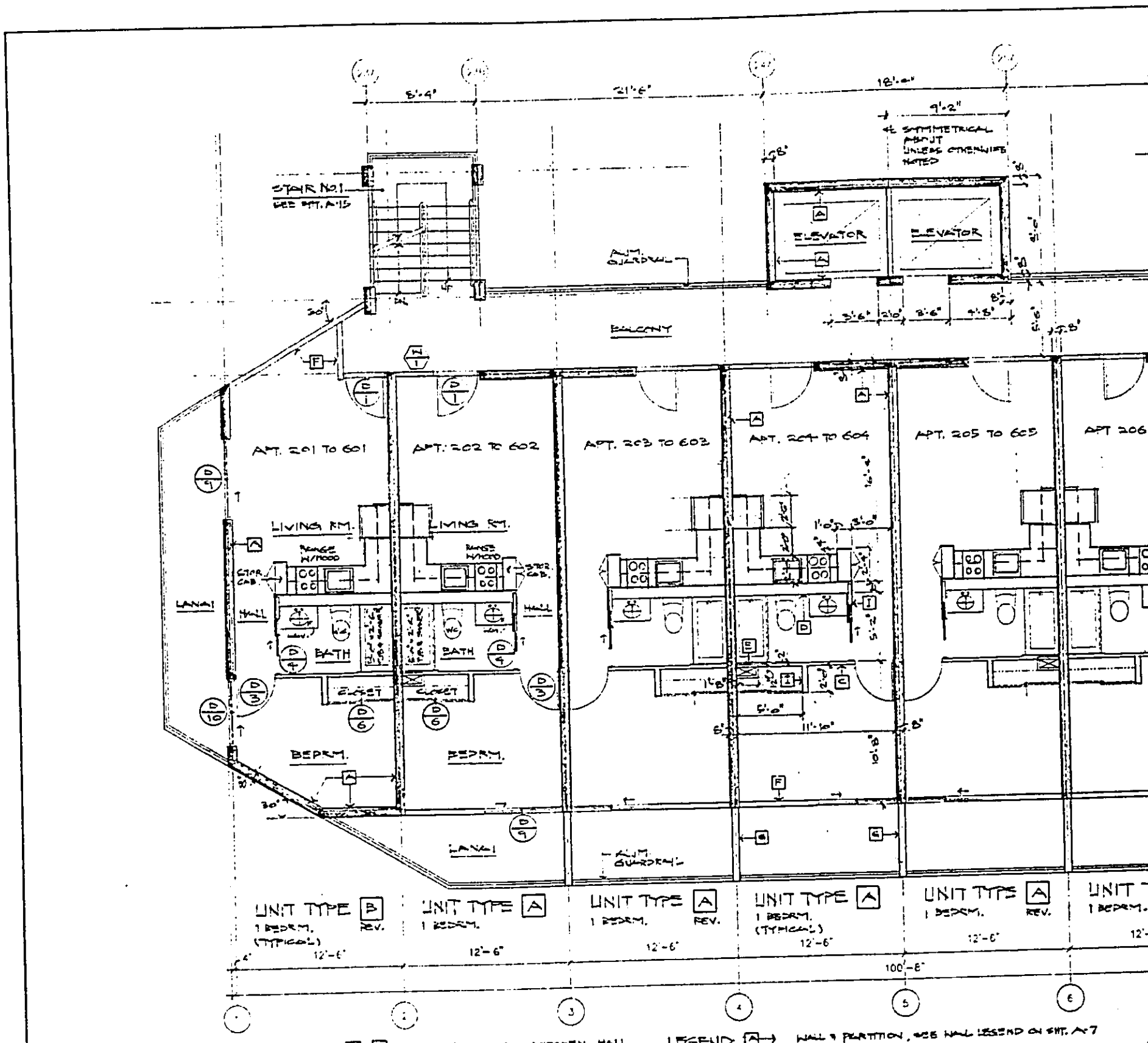
CLARENCE T. MIYAMOTO
LICENSED PROFESSIONAL ARCHITECT
No. 1635
HAWAII, U.S.A.

GROUND FLOOR PLAN

THE ROYAL KINAU

KINAU STREET
HONOLULU, HAWAII
T.M.K.: 2-1-40: 27

Date JAN 15, 1997
Scale AS NOTED
Drawn L.L.
Job
Sheet 6
Of 15 Sheets

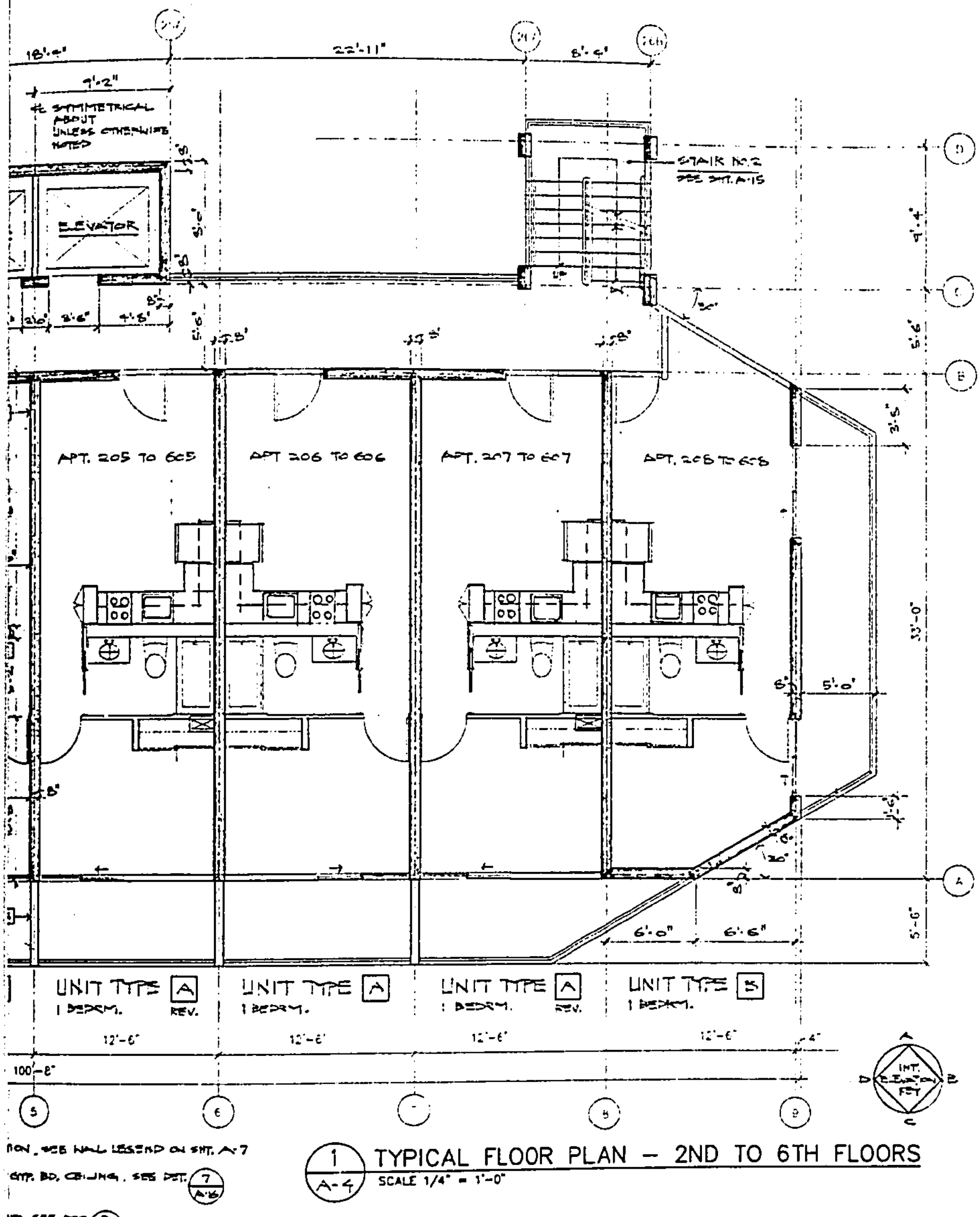


NOTES: 1. FINISH FLOORING : UNIT TYPE A & B VCT ON LIVING RM., KITCHEN, HALL, BATH, CLOSET & BEDRM.
WATERPROOF DECKCOATING ON ALL LANAI, BALCONY & STAIR.

2 INTERIOR ELEVATION : UNIT TYPE A & B, SEE SHT A-11
REV. BATH & HALL, SEE SHT. A-12

3. CEILING: ALL UNITS TO BE SPRAYED W/ACOUS. FINS.
GYP. BD. CEILING IN BATH / KITCHEN TO BE PAINTED.

LEGEND: WALL & PARTITION, SEE WALL LEGEND ON SHT. A-7
SUSPENDED GYP. BD. CEILING, SEE DET. 7/A-15
GYP. BD. SOFFIT, SEE DET. B/A-16



1 / A-4 TYPICAL FLOOR PLAN – 2ND TO 6TH FLOORS

SCALE 1/4" = 1'-0"

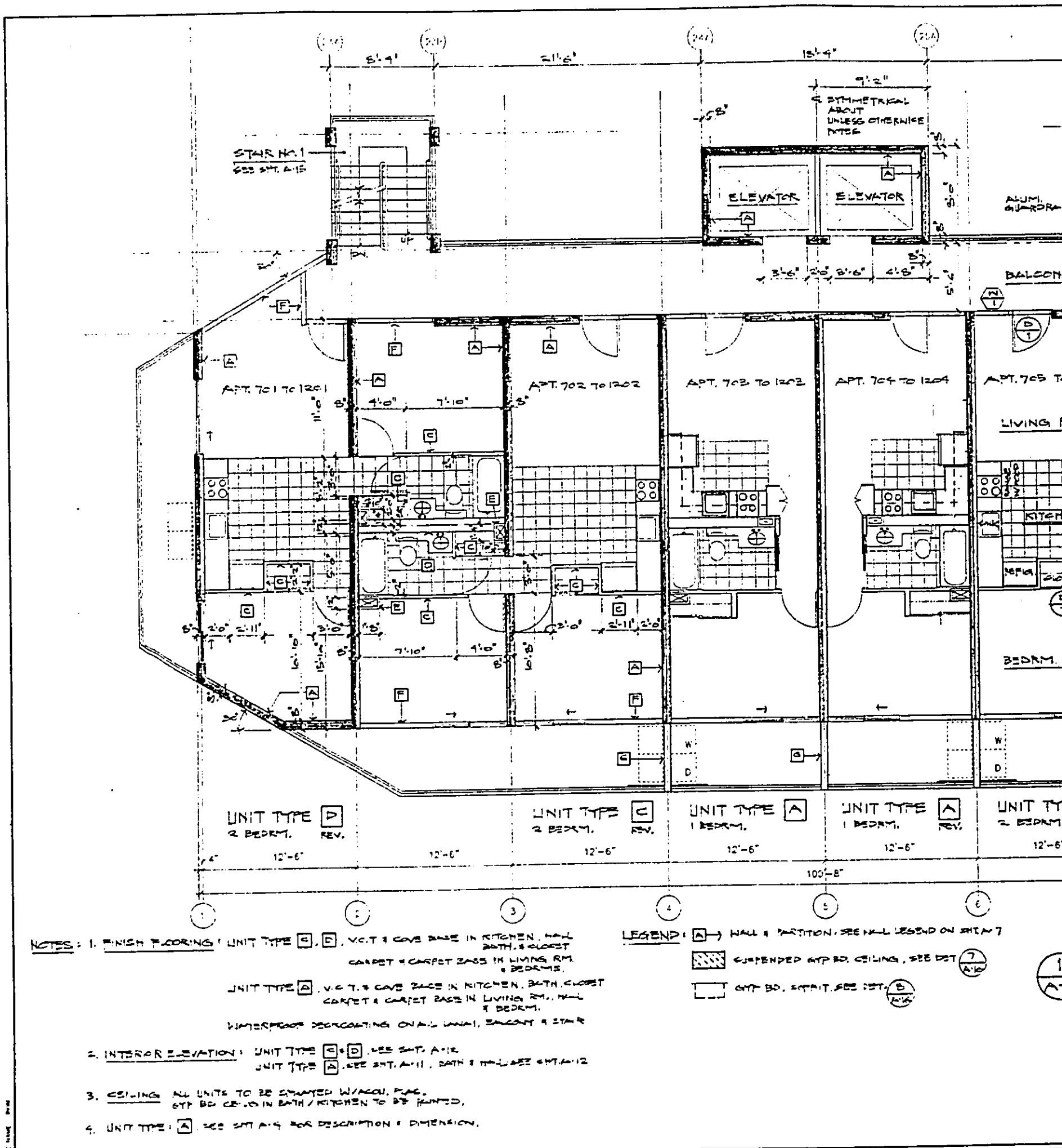
REVISIONS	BY

TYPICAL FLOOR PLAN - 2ND TO 6TH FLOORS

THE ROYAL KINAU

KINAU STREET
HONOLULU, HAWAII
T.M.K.: 2-1-40: 27

Date JAN 15, 1997
Scale AS NOTED
Drawn D.T.
Sheet 10
Of 15 Sheets



NOTES: 1. FINISH FLOORING: UNIT TYPE C, D, V.C.T & COVE BASE IN KITCHEN, HALL, BATH. & CLOSET
CARPET & CARPET BASE IN LIVING RM. & BEDRMS.

UNIT TYPE D, V.C.T. & COVE BASE IN KITCHEN, BATH, CLOSET
CARPET & CARPET BASE IN LIVING RM., HALL & BEDRM.

WATERPROOF DECKCOATING ON ALL LANAI, BALCONY & STAIR

2. INTERIOR ELEVATION: UNIT TYPE C & D, SEE SHT. A-10
UNIT TYPE A, SEE SHT. A-11, BATH & HALL SEE SHT. A-12

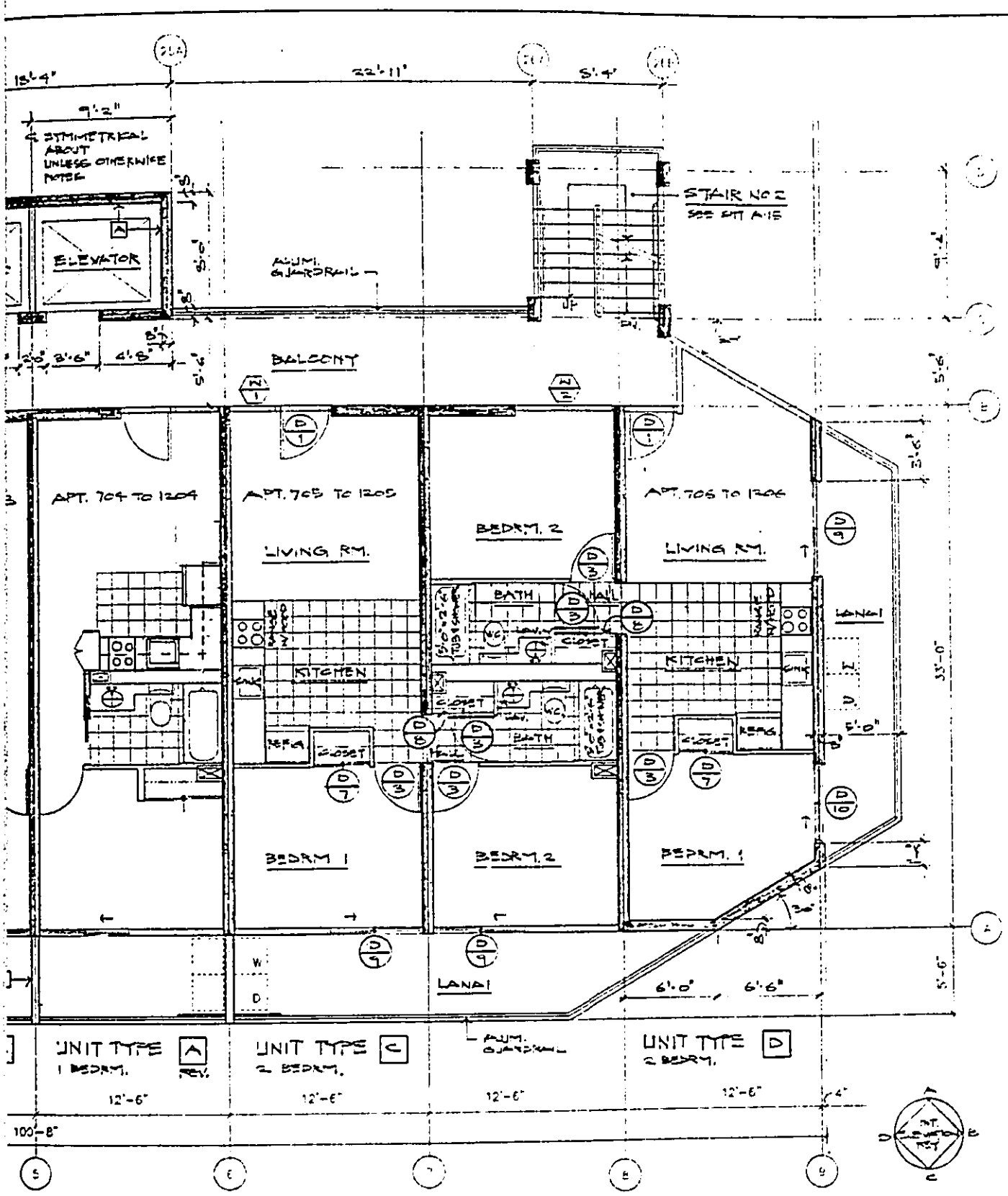
3. CEILING: ALL UNITS TO BE STIPPLED W/ACOU. FINISH.
GYP BD. CEILING IN BATH / KITCHEN TO BE PAINTED.

4. UNIT TYPE: A, SEE SHT. A-9 FOR DESCRIPTION & DIMENSION.

LEGEND: A → WALL & PARTITION, SEE WALL LEGEND ON SHT. A-7

SUSPENDED GYP BD. CEILING, SEE DET. 7/A-16

GYP BD. SOFFIT, SEE DET. B/A-16



1/A-5 TYPICAL FLOOR PLAN – 7TH TO 12TH FLOORS
SCALE 1/4" = 1'-0"

REVISIONS	BY

L&V ARCHITECTS, INC.

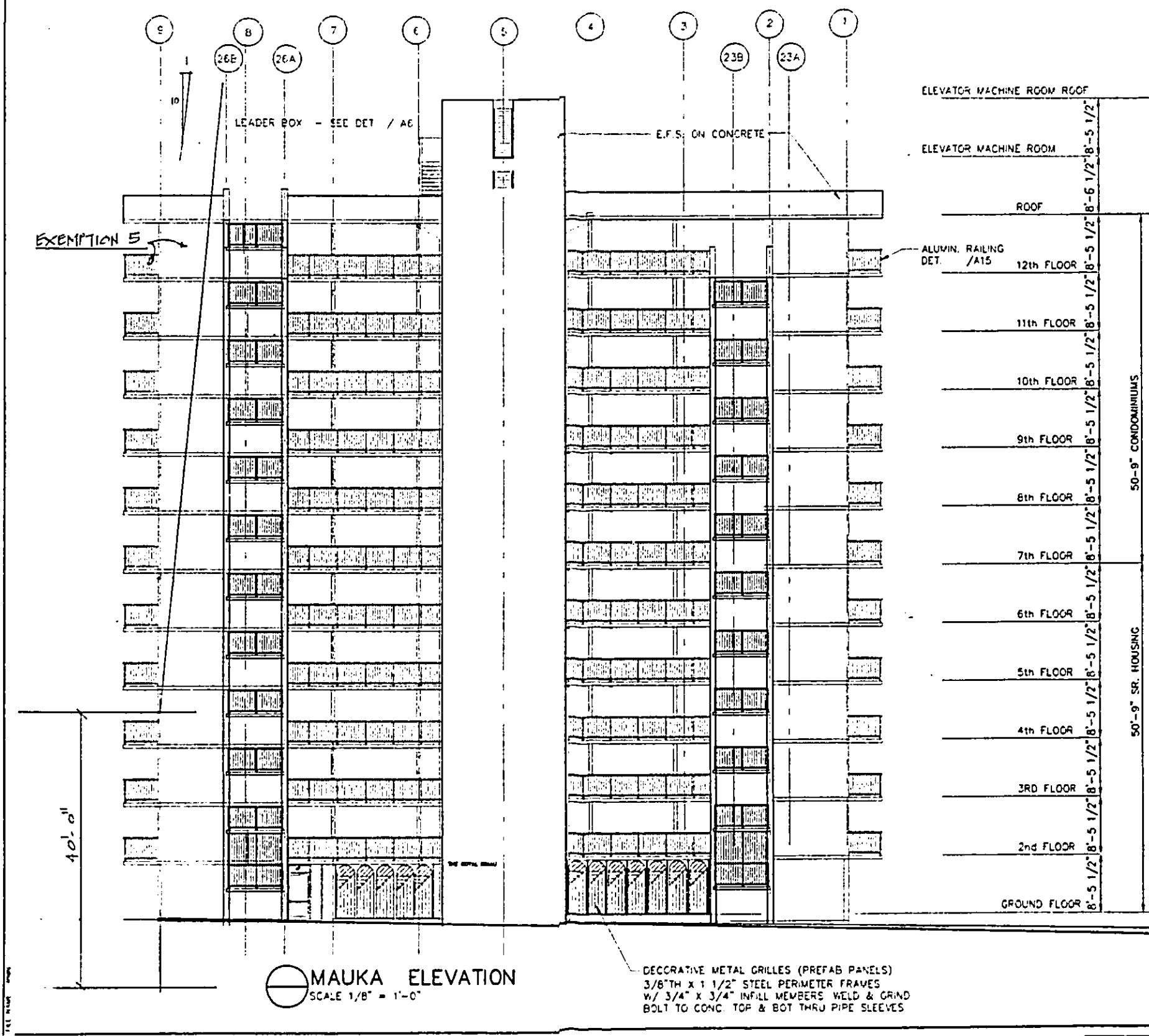
CLARENCE T. MIYAMOTO LICENSED PROFESSIONAL ARCHITECT No. 1635 HAWAII, U.S.A.

TYPICAL FLOOR PLAN 7TH. TO 12TH. FLOOR

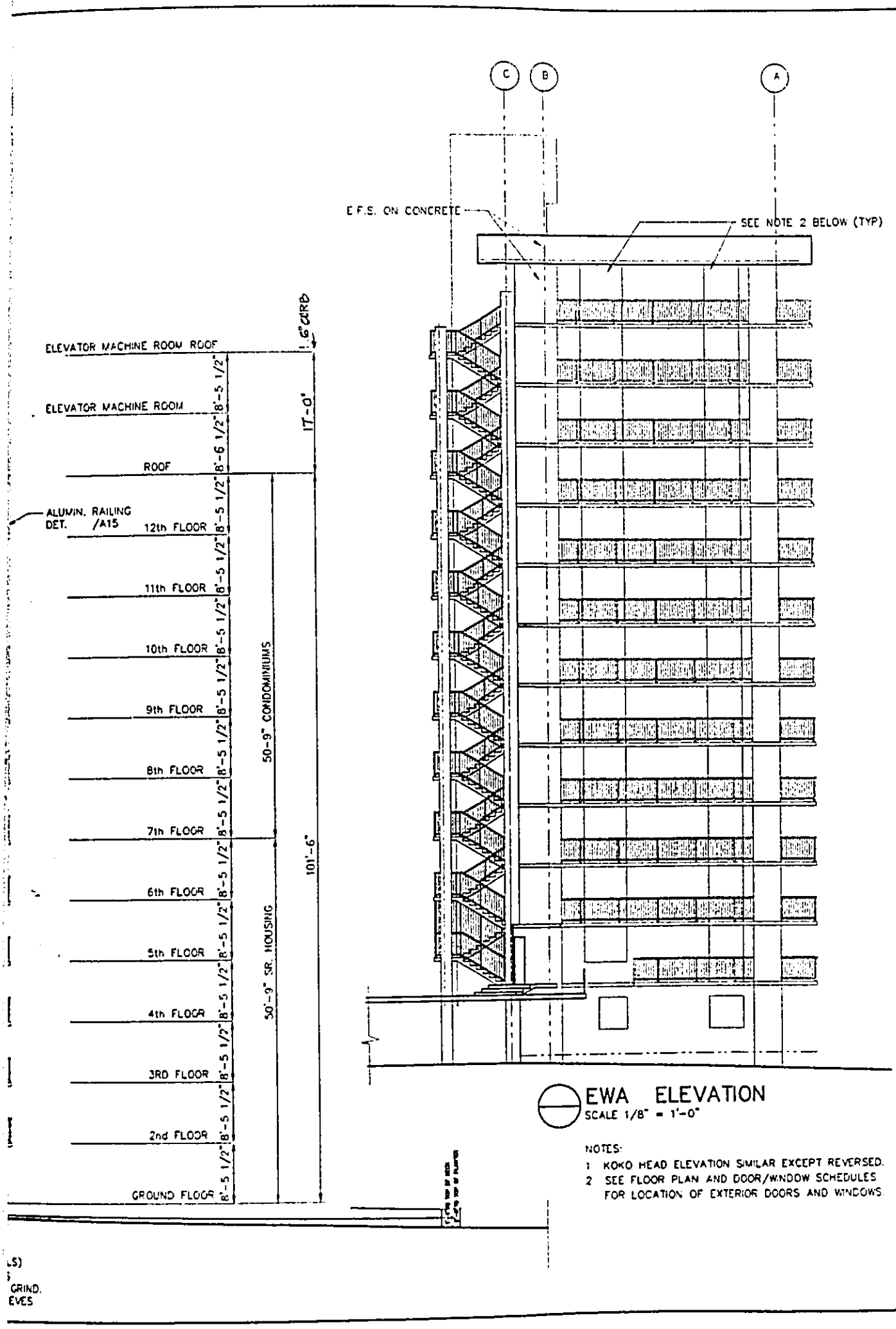
THE ROYAL KINAU

KINAU STREET
HONOLULU, HAWAII
T.M.K.: 2-1-40: 27

Date JAN 15, 1997
Scale AS NOTED
Drawn E. T.
Job
Sheet 11
of 15 Sheets



MAUKA ELEVATION
SCALE 1/8" = 1'-0"



EWA ELEVATION
SCALE 1/8" = 1'-0"

NOTES:
1 KOKO HEAD ELEVATION SIMILAR EXCEPT REVERSED.
2 SEE FLOOR PLAN AND DOOR/WINDOW SCHEDULES FOR LOCATION OF EXTERIOR DOORS AND WINDOWS.

REVISIONS	BY

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Fax 536-6133

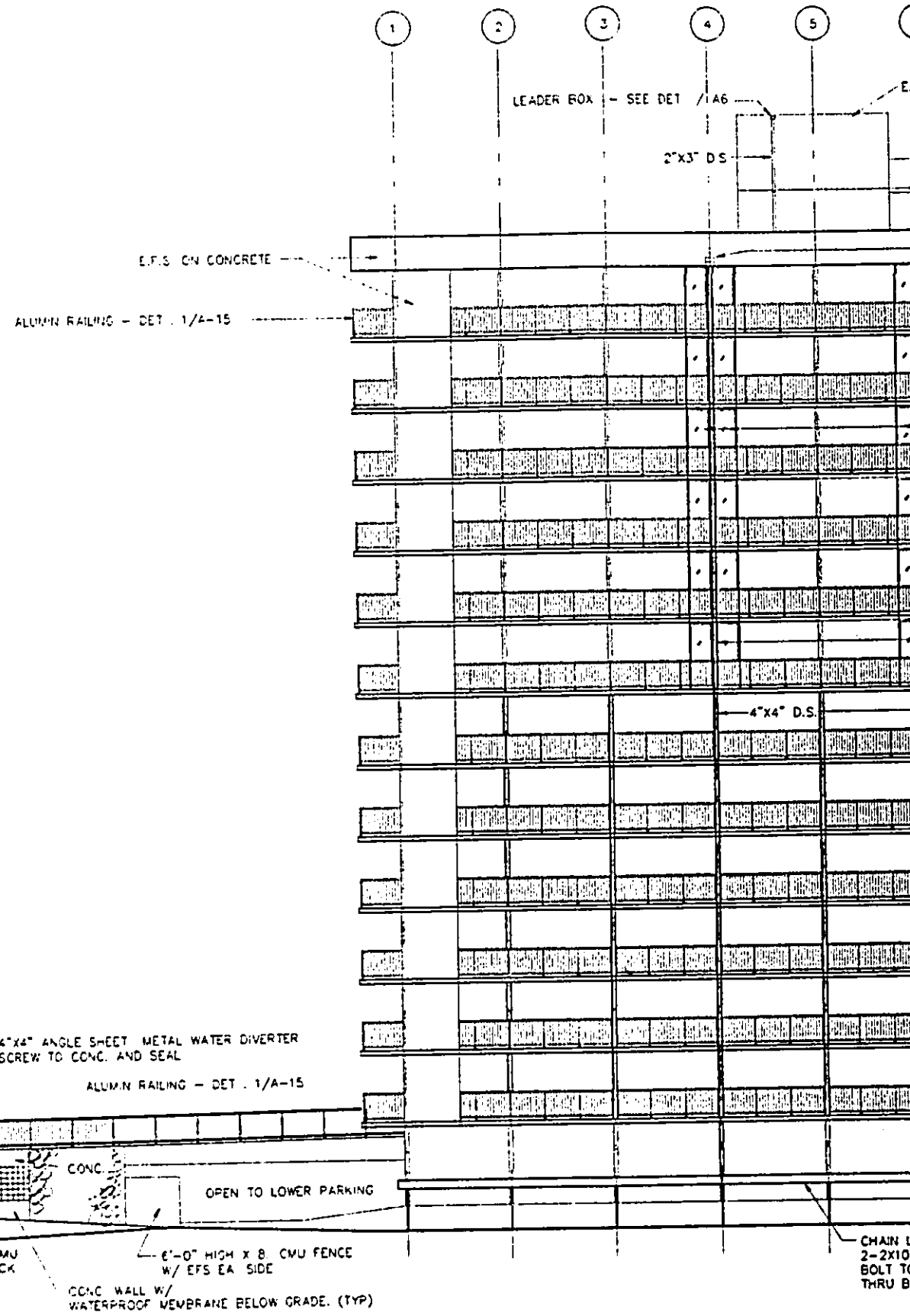
CLARENCE T. UYEHARA
LICENSED PROFESSIONAL ARCHITECT
No. 1635
HAWAII, U.S.A.

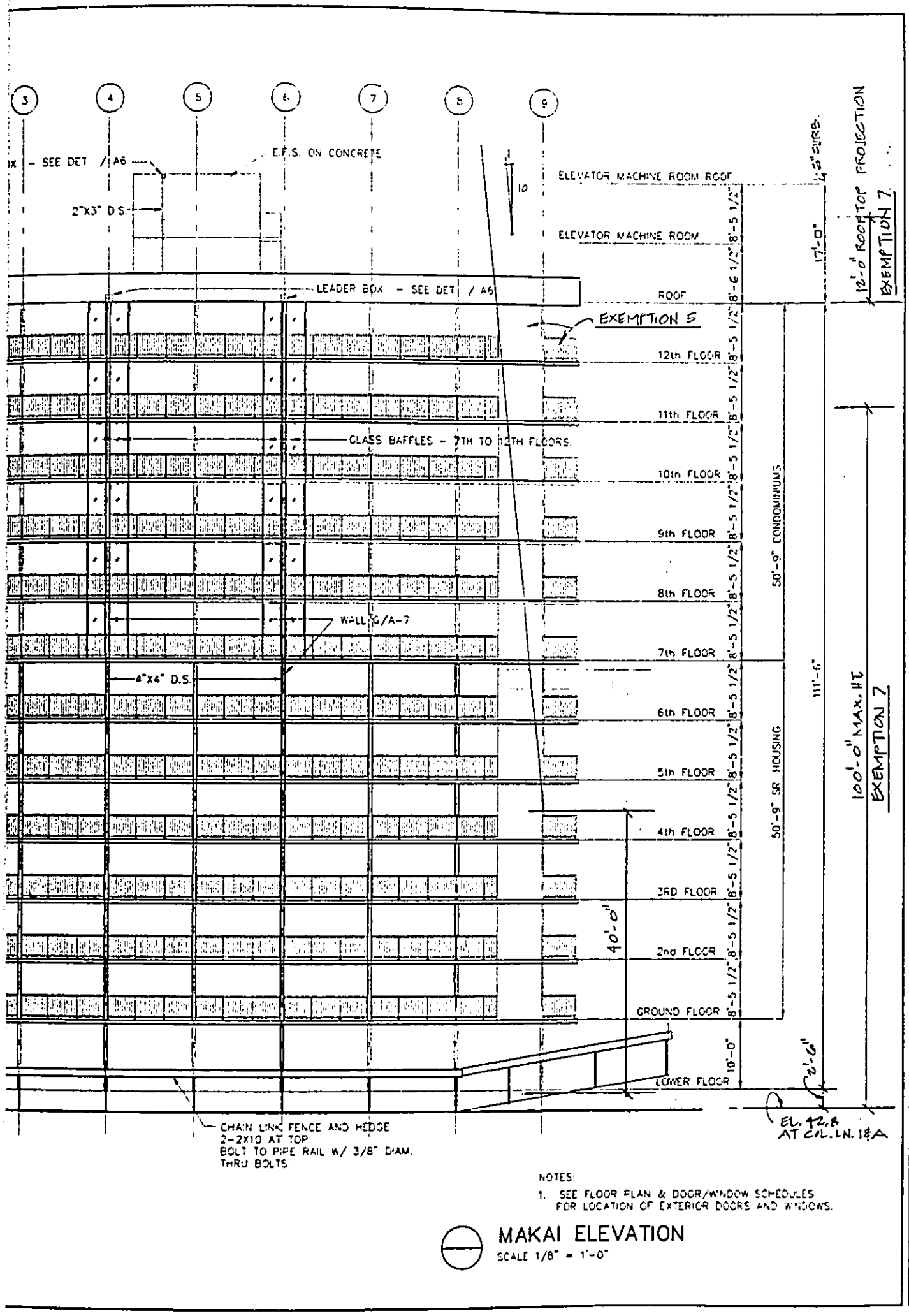
EXTERIOR ELEVATIONS

THE ROYAL KINAU

KINAU STREET
HONOLULU, HAWAII
T.M.K.: 2-1-40: 27

Date JAN 15, 1997
Scale AS NOTED
Drawn
Job
Sheet 12
Of 15 Sheets


1
2
3
4
5
LEADER BOX - SEE DET 1/A6
2"X3" D.S.
E.F.S. ON CONCRETE
ALUMIN RAILING - DET. 1/A-15
4"X4" D.S.
4"X4" ANGLE SHEET METAL WATER DIVERTER
SCREW TO CONC. AND SEAL
ALUMIN RAILING - DET. 1/A-15
CONC.
OPEN TO LOWER PARKING
ROCK FACING
8"X8"X8" CMU
GRILLE BLOCK
6'-0" HIGH x 8. CMU FENCE
W/ EFS EA SIDE
CONC WALL W/
WATERPROOF MEMBRANE BELOW GRADE. (TYP)



NOTES:

1. SEE FLOOR PLAN & DOOR/WINDOW SCHEDULES FOR LOCATION OF EXTERIOR DOORS AND WINDOWS.

MAKAI ELEVATION

SCALE 1/8" = 1'-0"

REVISIONS	BY

L&M ARCHITECTS, INC.

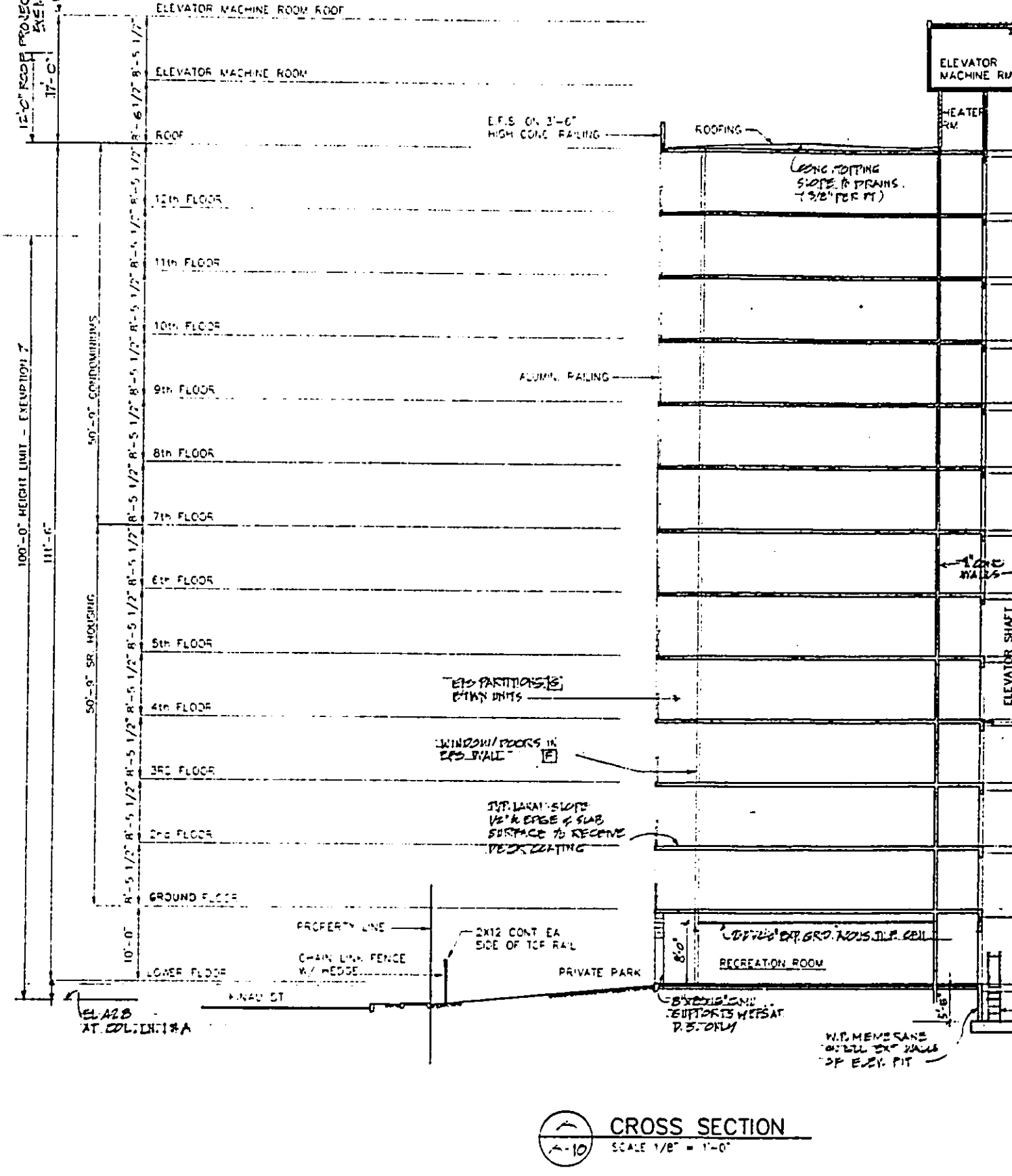
CLARENCE T. MIYAMOTO
LICENSED PROFESSIONAL ARCHITECT
No. 1635
HAWAII, U.S.A.

EXTERIOR ELEVATION

THE ROYAL KINAU

KINAU STREET
HONOLULU, HAWAII
T.M.K.: 2-1-40: 27

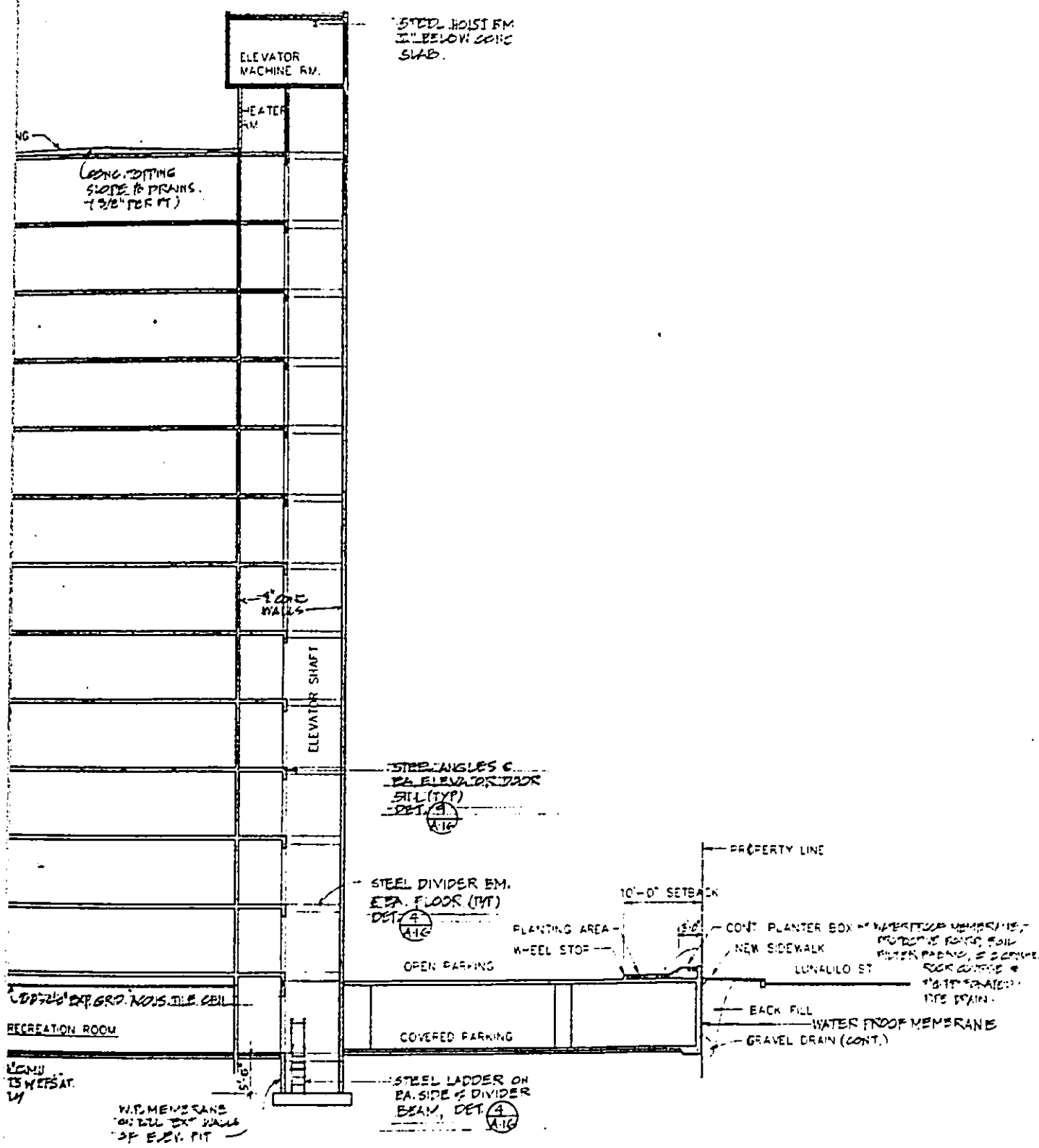
Date JAN 15, 1997
Scale AS NOTED
Drawn
Job
Sheet 13 of 15 Sheets



CROSS SECTION

A-10

SCALE 1/8" = 1'-0"



CTION

REVISIONS	BY

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Fax 536-6133

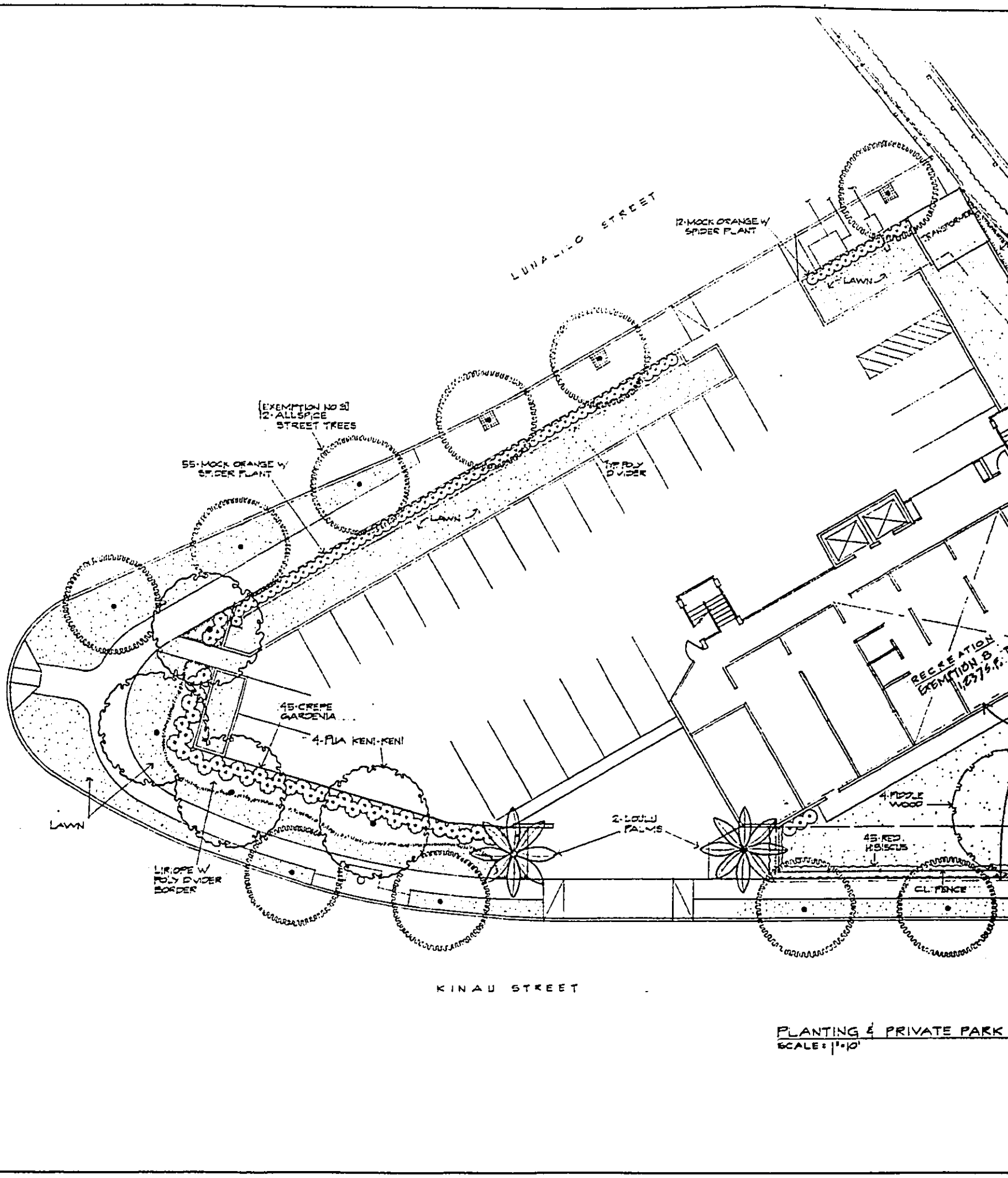
CLARENCE T. MIYAMOTO
LICENSED PROFESSIONAL ARCHITECT
No. 1835
HAWAII, U.S.A.

BUILDING SECTION

THE ROYAL KINAU

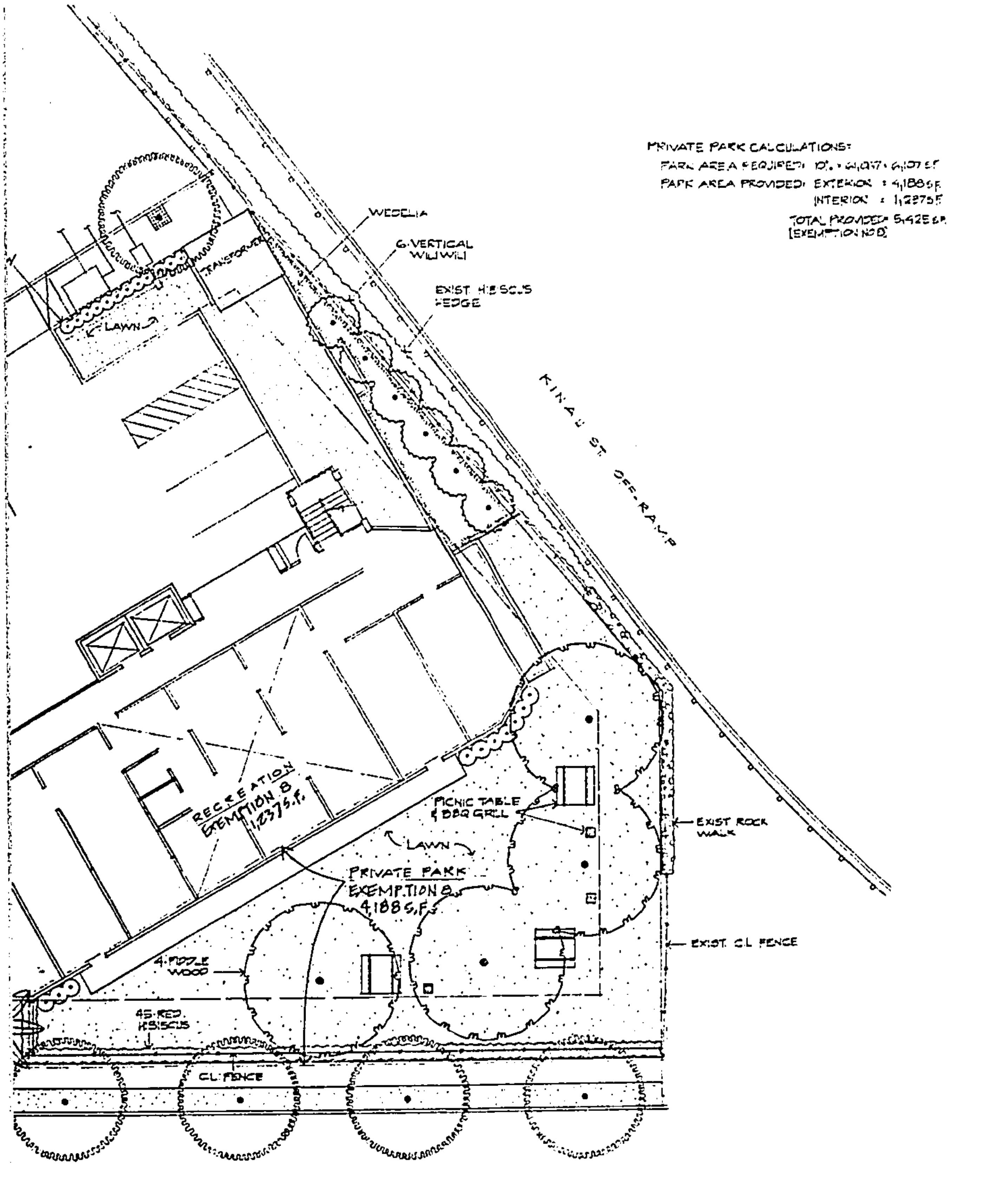
KINAU STREET
HONOLULU, HAWAII
T.M.K.: 2-1-40: 27

Date JAN. 15, 1997
Scale AS NOTED
Drawn C.T.
A2
Sheet 16
of 15 Sheets



PLANTING & PRIVATE PARK
SCALE: 1"=10'

5 OCT '96



PLANTING & PRIVATE PARK PLAN
SCALE: 1"=10'

REVISIONS	BY

L&M ARCHITECTS, INC.
10 S. Beretania Street
Suite 2000
Honolulu, Hawaii 96813
Telephone 536-0121
Fax 536-0133

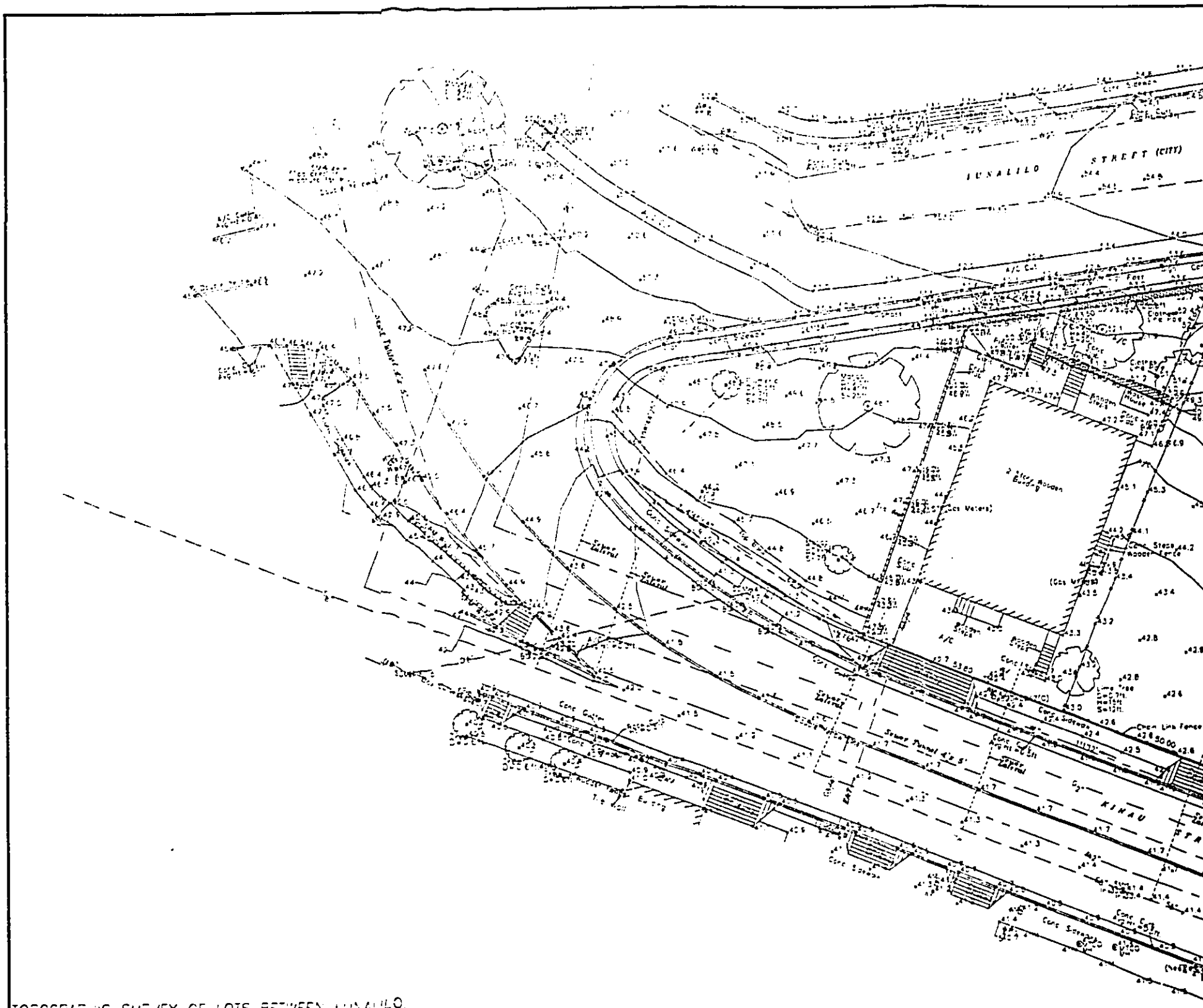
KELVIN K. F. LAU
LICENSED PROFESSIONAL LANDSCAPE ARCHITECT
No. 2904
HAWAII, U.S.A.

ROYAL KINAU CONDOMINIUM
KINAU STREET
HONOLULU, HAWAII
T.M.K.: 2-1-40: 27

Date
Scale AS NOTED
Drawn
Job
Sheet 15
of 15 Sheets

APPENDIX B

SITE TOPOGRAPHIC MAP



TOPOGRAPHIC SURVEY OF LOTS BETWEEN LUNALILO,
KINAU STREETS & H-1 FREEWAY OFF RAMP
at Honolulu, Oahu, Hawaii
TMK: 2-1-40: 27

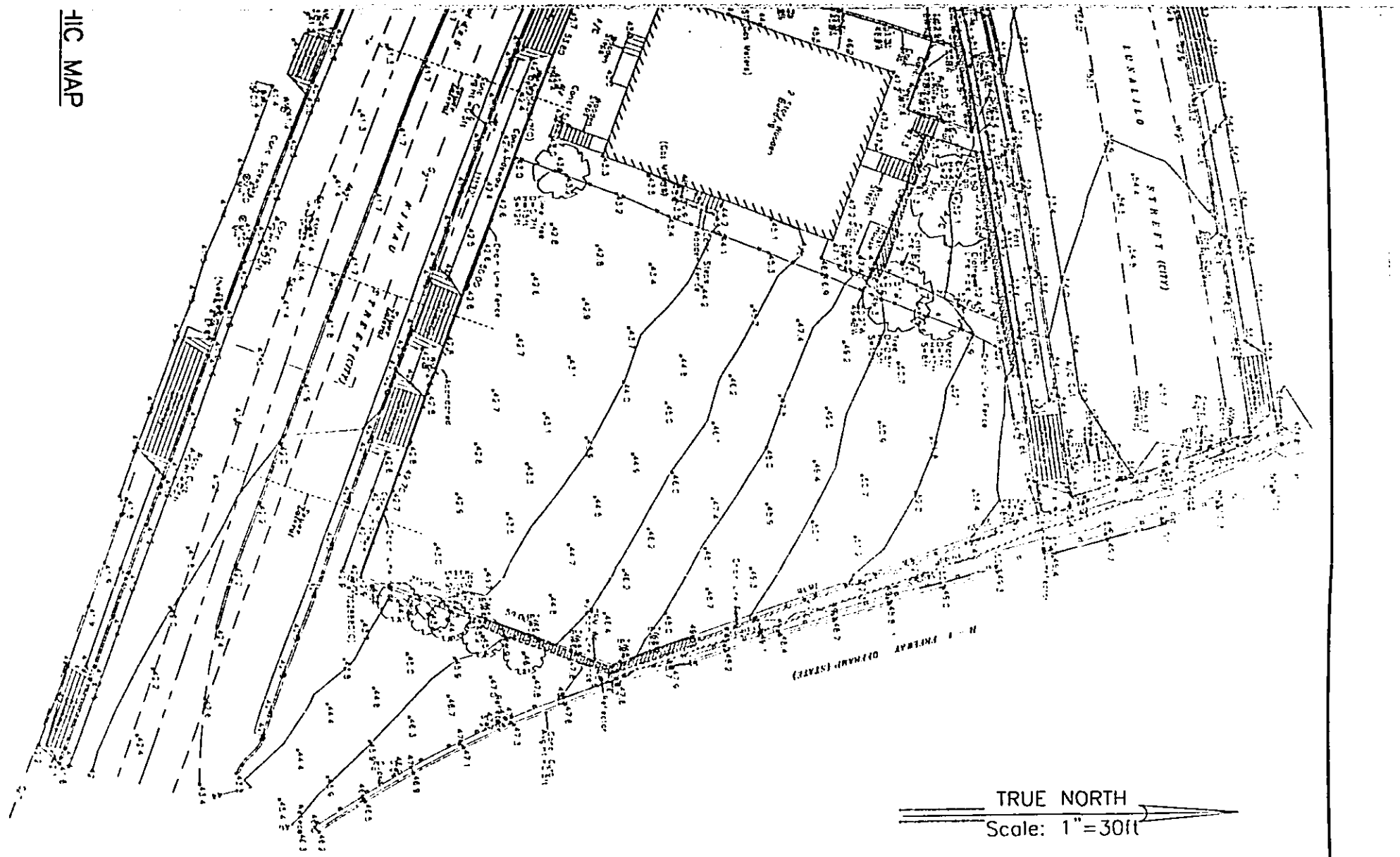
Notes:
1. A water lines taken from Board of Water Supply waterline easements.
2. A gas lines taken from Oasco, Inc. gas line easements.
3. A sewer lines and elevations taken from City & County Dept. of Wastewater Management sewer easements.
4. All utility lines are approximate only.

Honolulu, Hawaii
23°3-3" FB: 983, 985
Filename: EXTOPO.DWG
Plot Date: October 11, 1996

EXISTING TOPOGRAPHIC MAP

Scale: 1"=30ft

TOPOGRAPHIC MAP



APPENDIX C

AGENCY & NEIGHBORHOOD BOARD MATERIAL

Exhibit 1	State Department of Transportation Letter
Exhibit 2	City's Design Advisory Committee's Comment Letter
Exhibit 3	City's Department of Wastewater Management's Letter
Exhibit 4	City's Board of Water Supply's Letter
Exhibit 5	US Department of the Interior, Fish & Wildlife Letter
Exhibit 6	The Nature Conservancy of Hawaii Letter
Exhibit 7	State Historic Preservation Letter
Exhibit 8	Minutes of the Makiki/Lower Punchbowl/Tantalus Neighborhood Board No. 10 dated November 18, 1995
Exhibit 9	Minutes of the Downtown Neighborhood Board No. 13 dated November 2, 1995
Exhibit 10	WCW Corporation Letter dated November 18, 1996 advising Neighborhood Board No. 10 of the amendments to the project from that initially presented to them in October 1995
Exhibit 11	WCW Corporation Letter dated November 18, 1996 advising Neighborhood Board No. 13 of the amendments to the project from that initially presented to them in October 1995
Exhibit 12	City's Department of Land Utilization Review Letter

BENJAMIN J. CAYETANO
GOVERNOR

KAZU HAYASHIDA
DIRECTOR

DEPUTY DIRECTORS
JERRY M. MATSUDA
GLENN M. OKIMOTO

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

IN REPLY REFER TO:

AUG 6 1996

HWY-T
2.1401

Mr. Stanley G. H. Yim
Stanley Yim and Associates, Inc.
Bishop Square, Pacific Tower, Suite 410
1001 Bishop Street
Honolulu, Hawaii 96813

Dear Mr. Yim:

Thank you for your letter of July 12, 1996, regarding the construction of a right turn lane off the eastbound H-1 Kinau Street off-ramp.

We have investigated the project site and conclude that a right turn lane off of the Kinau off-ramp will not be constructed in the future. Construction of the right-turn lane will further increase the volume of vehicles on the Kinau off-ramp which ultimately would cause back-up of vehicles on the ramp, possibly into the H-1 freeway.

Very truly yours,

KAZU HAYASHIDA
Director of Transportation

RECEIVED
AUG 8 1996
STANLEY YIM & ASSOC., INC.
Time

WCW

DEPARTMENT OF LAND UTILIZATION
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET
HONOLULU, HAWAII 96813 • (808) 523-4432

JEREMY HARRIS
MAYOR

PATRICK T. ONISHI
DIRECTOR

LORETTA K.C. CHEE
DEPUTY DIRECTOR

(PS)

May 7, 1996

MEMORANDUM

TO: ROLAND D. LIBBY, JR., DIRECTOR
DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT

FROM: PATRICK T. ONISHI, DIRECTOR
DEPARTMENT OF LAND UTILIZATION

SUBJECT: ROYAL KINAU
728 KINAU STREET
TAX MAP KEY 2-1-40: 27, 28, 39 AND 52

This is a follow-up to our memo to you dated October 18, 1995 regarding our comments to the above-referenced project which will be requesting City Council approval under Chapter 201E, Hawaii Revised Statutes (HRS).

The applicant submitted revised plans to our department on January 8, 1996 (see attached), and the proposal was brought before the Design Advisory Committee (DAC) on April 3, 1996. The DAC recommended to support the proposal with the recommendation that additional canopy form trees be provided in the required yards (particularly at the apex), in the street rights-of-way, and within the proposed park.

In addition, they also recommended against the proposed terra cotta colored roofing and bronze painted walls, and suggested a greenish colored roofing and light beige painted walls. The DAC emphasized that their comments for this project are specific to the 201E proposal and should not be construed as an approval should this proposal come under a normal review process.

We concur with the DAC and have no objections to the revised proposal given compliance with the above recommendations. This memo shall supersede Items 2, 8, 9 and 10 of our October 18, 1995 memo to your department.

Should you have any questions, please contact Adrian Siu-Li of our staff at 527-5072.

PATRICK T. ONISHI
Director of Land Utilization

PTO:st
Attach.

cc: WCW Corporation
Jo Paul Rognstad

kinau.pbs

DEPARTMENT OF WASTEWATER MANAGEMENT
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET
HONOLULU, HAWAII 96813

JEREMY HARRIS
MAYOR

FELIX B. LIMTIACO
DIRECTOR

CHERYL K. OKUMA-SEPE
DEPUTY DIRECTOR

In reply refer to:
WPC 96-89

July 1, 1996

Mr. Jason K. H. Yim, P.E.
Stanley Yim & Associates, Inc.
2850 Paa Street, Suite 200
Honolulu, Hawaii 96819

Dear Mr. Yim:

Subject: **Kinau Condos**
728 Kinau Street
Tax Map Key: 2-1-040: 027,028,029 & 052

Please refer to your June 21, 1996, letter regarding your request to connect the proposed Kinau Condos to the existing 8-inch sewer line in Lunalilo Street rather than to the sewer tunnel drop manhole (as referenced in our WPC 96-83 letter).

Your request is granted. The municipal sewer system is available and adequate to accommodate the proposed 84-unit condominium. This project is liable for payment of a wastewater system facility charge (WSFC) and the charge will be based on the prevailing rate at the time of payment.

If you have any questions, please call Mr. Dennis Nishimura at 527-6091.

Very truly yours,

Cheryl K. Okuma-Sepe

FELIX B. LIMTIACO
Director

RECEIVED
JUL 10 1996
STANLEY YIM & ASSOC., INC.
Time

DEPARTMENT OF WASTEWATER MANAGEMENT
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET
HONOLULU, HAWAII 96813

JEREMY HARRIS
MAYOR

FELIX B. LIMTIACO
DIRECTOR

CHERYL K. OKUMA-SEPE
DEPUTY DIRECTOR

In reply refer to:
WPC 96-83

June 19, 1996

Mr. Jason K. H. Yim, P.E.
Stanley Yim and Associates, Inc.
2850 Paa Street, Suite 200
Honolulu, Hawaii 96819

Dear Mr. Yim:

Subject: **Kinau Condos**
728 Kinau Street
Tax Map Key: 2-1-040: 027, 028, 029 and 052

Please refer to your June 7, 1996, letter regarding the subject matter. The municipal sewer system is available and adequate to accommodate the proposed 84-unit condominium. Attached is your copy of the approved Application for Sewer Connection.

We have no objection to your request to connect one unit and the laundry (in the basement) to one of the existing sewer laterals. However, the remaining 83 units shall connect directly to the existing sewer tunnel manhole at the corner of Lusitana, Kinau and Lunalilo Streets.

This project is liable for payment of a wastewater system facility charge (WSFC). The WSFC will be based on the prevailing rate at the time of payment.

If you have any questions, please call Dennis Nishimura at 527-6091.

Very truly yours,

Cheryl K. Okuma-Sepe

FELIX B. LIMTIACO
Director

Attachment

5718/8

City and County of Honolulu
DEPARTMENT OF WASTEWATER MANAGEMENT

SEWER CONNECTION APPLICATION
(Allow at least 2 weeks processing time)

6/14/96

PART A – TO BE FILLED BY APPLICANT *(Please Print Legibly)*

RECEIVED JUN 20 1996 STANLEY YIM & ASSOC., INC. Time

1. Project Name: Royal Kinau
2. Address: 728 Kinau Street
3. Tax Map Key: 2-1-40:27, 28, 29, 52
4. Development (*Type*): PD-H [ ] Cluster [ ] Apt. [x] Subdiv. [ ] Other [x] 201 E If Commercial, Area =
5. Total Number of Units Proposed: 84 *(provide breakdown below)*
   Studio ___ 1 Bdrm. 60 2 Bdrm. 24 3 Bdrm. ___ 4 Bdrm. ___
   Other
6. Sewer Connection Work Desired: *(Give length, size, depth, etc.)*
   Connect to existing six inch sewer lateral and existing sewer tunnel manhole as indicated in the attached letter.
7. Approximate Date of Connection: January 2, 1997
8. Number & Type of Existing Structures on Property: 2 story wooden apartment building with 12 units (1 bedroom per unit)
   Indicate Number of Structures: Remain ___ Demolished 1
9. Remarks:
10. Information Provided By:
    Name: Jason Yim Date: June 7, 1996
    Firm: Stanley Yim and Associates, Inc. Phone: 833-7313
    Mailing Address: 2850 Paa Street, Suite 200 Honolulu, Hawaii 96819
    (Street / City, State / Zip Code)

PART B – TO BE FILLED BY THE CITY

1. Current Zoning: A-2 General Plan
2. Sewer System: Adequate [✓] Inadequate [ ] Unavailable [ ]
   Other: Provided connection is made to the sewer tunnel manhole corner of Lusitana, Lunalilo and Kinau Streets.
3. Charges:
   a. Sewer Assessment ___ times ___ (Rate / Area (sq. ft.)) .... $
   * b. Wastewater System Facility Charge: .... $
   c. Other (new laterals, etc.): .... $
   TOTAL CHARGES (estimated) = $
4. Remarks: * WSFC shall apply. Currently, the charge is $1146.00 per ESDU.
5. Application:
   Approved: C. Saavedra Jr. Date: 6/14/96
   Valid 2-years after approval date. Construction plans shall be completed & approved within this 2-year period. Construction shall commence within 1-year after approval of plans.

   Not Approved: ___ Date: ___

BOARD OF WATER SUPPLY

CITY AND COUNTY OF HONOLULU
630 SOUTH BERETANIA STREET
HONOLULU, HAWAII 96843
PHONE (808) 527-6180
FAX (808) 533-2714

June 24, 1996

Mr. Jason K. H. Yim
Stanley Yim & Associates, Inc.
2850 Paa Street, Suite 200
Honolulu, Hawaii 96819

Dear Mr. Yim:

Subject: Your Letter of June 7, 1996 Regarding the Proposed Royal Kinau Project, TMK: 2-1-40: 27, 28, 29 and 52

Thank you for your letter regarding the revisions to the proposed Royal Kinau development.

The revisions to the amount of units and floors for the proposed Royal Kinau project will not affect or change our comments dated July 26, 1995.

If you have any questions, please contact Joe Kaakua at 527-6123.

Very truly yours,

FOR RAYMOND H. SATO
Manager and Chief Engineer

BOARD OF WATER SUPPLY

CITY AND COUNTY OF HONOLULU

630 SOUTH BERETANIA STREET

HONOLULU, HAWAII 96843

July 26, 1995

Mr. Jason K.H. Yim
Stanley Yim & Associates, Inc.
2850 Paa Street, Suite 200
Honolulu, Hawaii 96819

Dear Mr. Yim:

Subject: Your Letter of July 10, 1995 Regarding the Proposed Royal Kinau Condominium, TMK: 2-1-40: 27, 28, 29 and 52

Thank you for your letter regarding the proposed 10 story condominium building.

The existing water system cannot provide adequate fire protection as required by our water system standards. Our standards require a fire hydrant to be located within 125 linear feet (l.f.) of the site. The nearest fire hydrant is located approximately 200 l.f. away; therefore, the developer will be required to install the necessary water system improvements to upgrade the fire protection in accordance with our water system standards. The construction drawings should be submitted for our review and approval.

The availability of water will be confirmed when the building permit is submitted for our review and approval. If the development plan requires action by the Department of Land Utilization, the plan should be approved by that department before we take action on the proposed development. When water is made available, the applicant will be required to pay our Water System Facilities Charges for resource development, transmission, and daily storage.

If a three-inch or larger meter is required, the construction drawings showing the installation of the meter should be submitted for our review and approval.

We no longer conduct fire flow tests on fire hydrants. We have suspended this practice as a water conservation measure.

You may, however, use the following calculated data for the 12-inch main on Lunalilo Street or the 6-inch main on Kinau Street to which the water meter for the subject property is connected.

	12-inch	6-inch
Static Pressure	52 psi	54 psi
Residual Pressure	20 psi	20 psi
Flow	4,000 gpm	2,000 gpm

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

Attached is a map showing the approximate location of the point of calculation on the 12-inch and 6-inch mains.

If you have any questions, please contact Joseph Kaakua at 527-6123.

Very truly yours,

RAYMOND H. SATO
Manager and Chief Engineer

Attachment

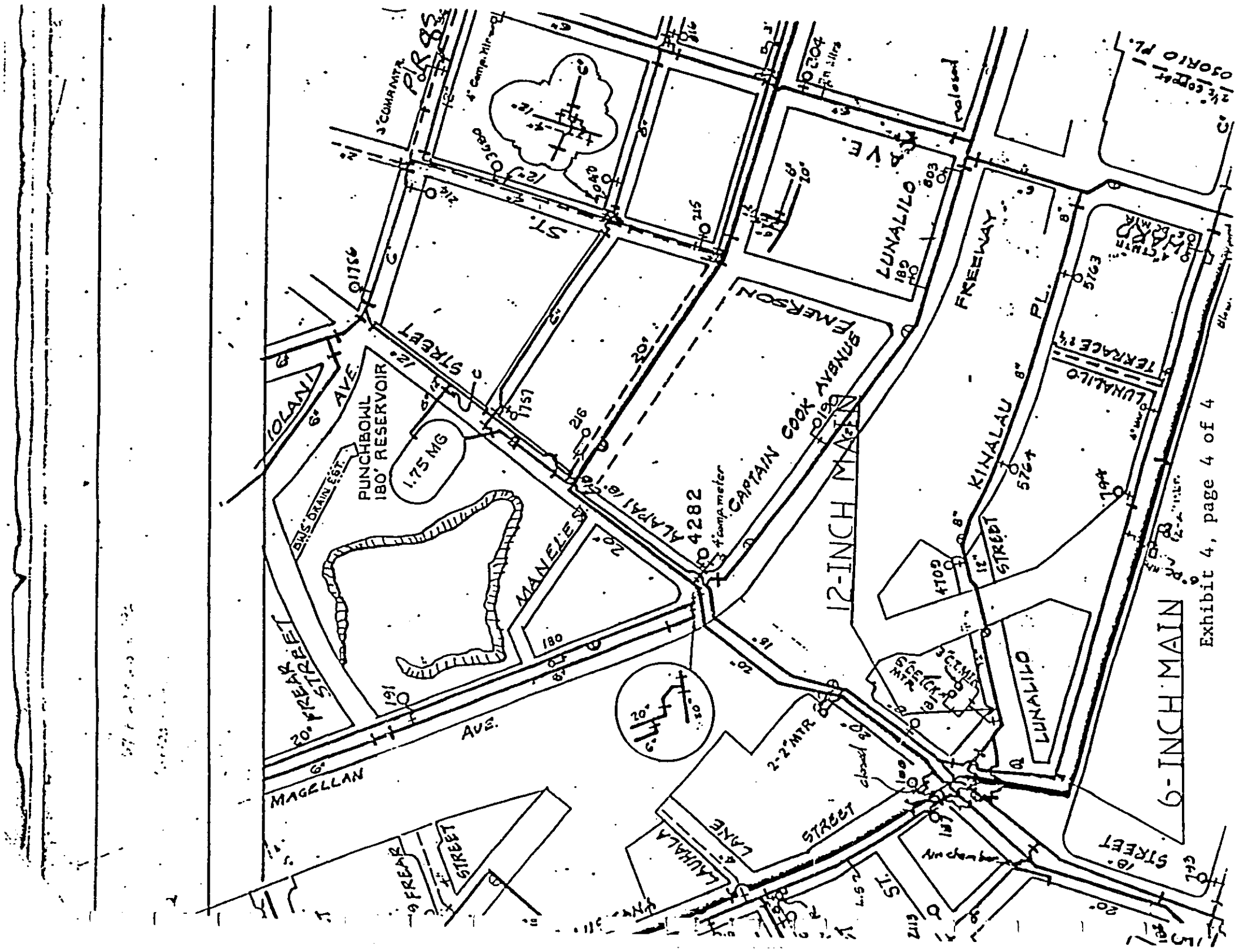


Exhibit 4, page 4 of 4

United States Department of the Interior

FISH AND WILDLIFE SERVICE
PACIFIC ISLANDS ECOREGION
300 ALA MOANA BOULEVARD, ROOM 3108
BOX 50088
HONOLULU, HAWAII 96850
PHONE: (808) 541-3441 FAX: (808) 541-3470

NOV 5 1996

In Reply Refer To: MSS

Mr. Jason K.H. Yim, P.E.
Stanley Yim & Associates, Inc.
1001 Bishop Street
Honolulu, Hawaii 90813

Post-it® Fax Note 7671	Date 11-5-96	# of pages ▸ 1
To Jason K.H. Yim P.E.	From Brooks Harper	
Co./Dept. 1	Co.	
Phone #	Phone #	
Fax # 808-533-6127	Fax # 808-541-3470	

Dear Mr. Yim:

The U.S. Fish and Wildlife Service (Service) has received your fax of October 15, 1996 requesting comments on the proposal to construct the Royal Kinau apartment building. The Service has reviewed the map provided with your request and pertinent information in our files. To the best of our knowledge, there are no endangered or threatened species directly within the project area. The Service does not regard the proposed construction of the twelve story apartment building as controversial or detrimental to federally listed species. Therefore, the Service believes that the proposed action is not likely to adversely affect federally listed threatened or endangered species. In view of this, we believe that requirements of section 7 of the Endangered Species Act (Act) have been satisfied. However, obligations under section 7 of the Act must be reconsidered, if: 1) new information reveals impacts of this identified action that may affect listed species or critical habitat in a manner that was not previously considered in this assessment; or 3) a new species is listed or critical habitat determined that may be affected by the identified action.

If you have any questions or concerns about this letter please feel free to contact me or Program Leader for Interagency Cooperation, Ms. Margo Stahl, at 808/541-3441.

Sincerely,

for Donald Crabbe
Brooks Harper
Field Supervisor

The Nature Conservancy of Hawaii

1116 SMITH STREET •SUITE 201• HONOLULU, HAWAII •96817• PH: (808) 537-4508 •FAX (808) 545-2019

TO: Jason Yim
COMPANY: Stanley Yim & Associates, Inc.
DATE: October 16, 1996
FROM: Roy Kam
FAX: (808) 545-2019

FAX #: 533-6127
TEL #: 533-1885
PAGES: 1 of 4

TEL: (808) 537-4508

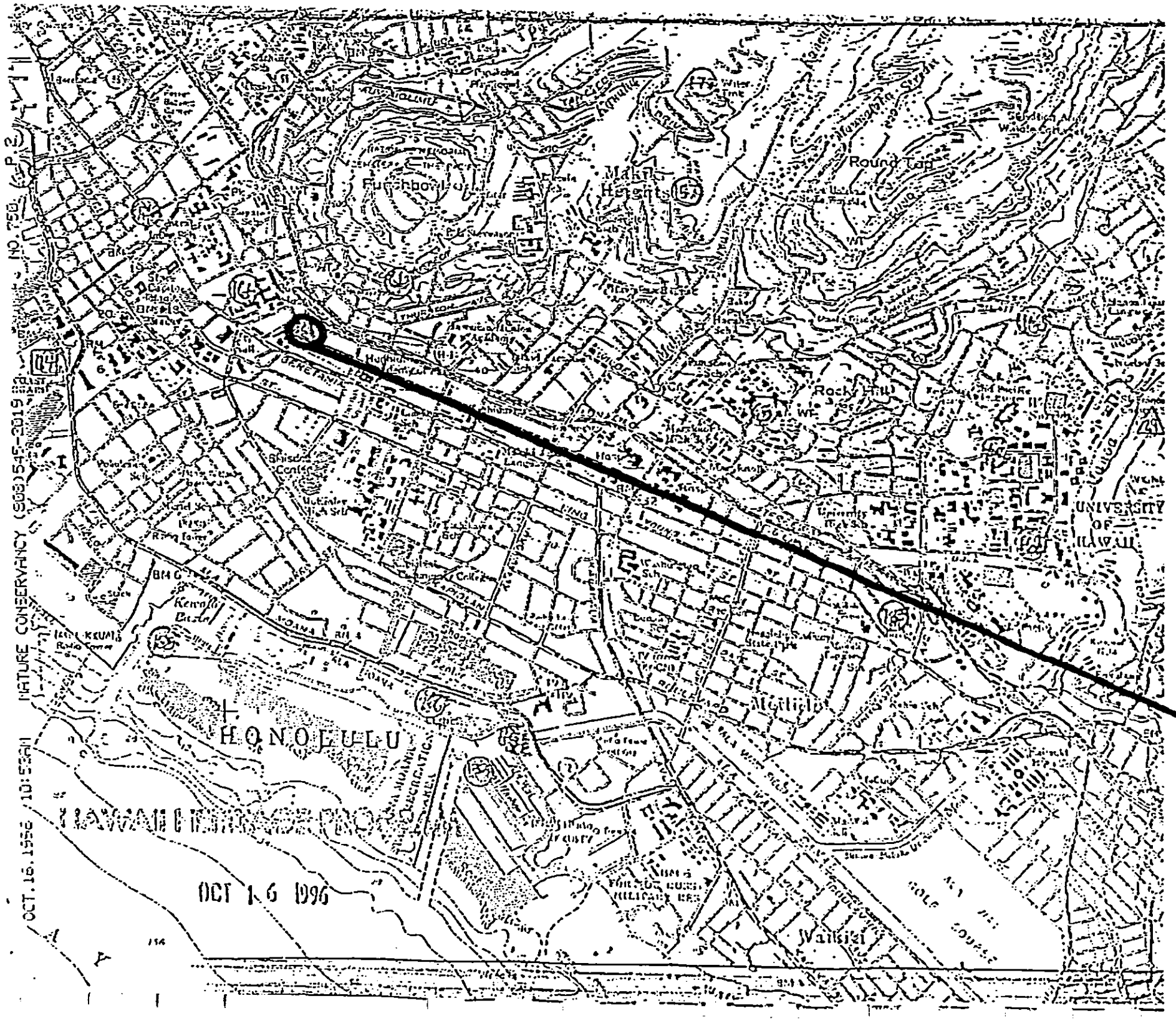
SUBJECT: Parcel 2-1-40:27

Attached is a copy of our Heritage map for your project area. There have been no recordings within the site, although there have been recordings of the listed endangered Hawaiian Hoary Bat in the vicinity of the area. You may want to note that within your report. A record of the sighting is attached for your reference.

Sincerely,

Roy Kam
Database Coordinator
Hawaii Natural Heritage Program

P.S. You may also want to check our web page located at http://www.aloha.net/~hinhp
The site has lists of species and natural communities that we track and their rarity ranking and federal status.



10/16/96

HAWAII HERITAGE PROGRAM
ELEMENT OCCURRENCE RECORD

EOCODE: AMACC05031*236

ISLANDCODE: OA PRECISION: S

QUADNAME: HONOLULU MAP REFERENCE (DOT)#: 164 TENTEN: 4,6

NAME: LASIURUS CINEREUS SEMOTUS

COMNAME: 'OPE'APE'A, HAWAIIAN HOARY BAT

GRANK: G5T2 SRANK: S2.2 FED. STATUS: LE STATE STATUS: LE

FIRST OBSERVATION: 1990-??-?? LAST OBSERVATION: 1990-11-30

DIRECTIONS: /HONOLULU, QUEEN'S MEDICAL CENTER [HOSPITAL]/ 1301 PUNCHBOWL ST CENTRAL COURTYARD LAWN BETWEEN CAFETERIA AND KAMEHAMEHA WING (U92FAW04)

HABITAT-
GENDESC:

EODATA: 1 VISUAL BY P. CRAVENER AT 9:00 PM 1990-11-30 (U92FAW04).

COMMENTS: RELIABLITY OF OBSERVER UNKNOWN. THERE ARE ALWAYS BATS FLYING ABOVE THE CENTRAL LAWN AT QMC AFTER DARK.

BESTSOURCE: DIVISION OF FORESTRY AND WILDLIFE. 1992. COLLECTION OF REPORTS OF HAWAIIAN BAT SIGHTINGS, UNPUBLISHED.

SOURCECODE: U92FAW04HIUS

CITATION: Division of Forestry and Wildlife. 1992. Collection of Reports of Hawaiian Bat Sightings. Unpublished.

LAST REVISED: 93-04-19

Notice

The Nature Conservancy's Hawaii Natural Heritage Program database is dependent on the research and observations of many scientists and individuals. In most cases this information is not the result of comprehensive site-specific field surveys, and is not confirmed by the Heritage staff. Many areas in Hawaii have never been thoroughly surveyed, and new plants and animals are still being discovered. Database information should never be regarded as final statements or substituted for on-site surveys required for environmental assessments. Data provided by the Heritage Program do not represent a position taken by The Nature Conservancy of Hawaii. Heritage information is only for the intended use of the individual or organization who requested it. It may not be distributed in any way without the consent of the Hawaii Natural Heritage Program.

Please cite the Heritage Program and primary sources in all documentation and reports.

Hawaii Natural Heritage Program, 1116 Smith St. Suite 201, Honolulu, HI 96817

BENJAMIN J. CAYETANO
GOVERNOR OF HAWAII

STATE OF HAWAII

DEPARTMENT OF LAND AND NATURAL RESOURCES

STATE HISTORIC PRESERVATION DIVISION
33 SOUTH KING STREET, 6TH FLOOR
HONOLULU, HAWAII 96813

MICHAEL D. WILSON, CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES

DEPUTY
GILBERT COLOMA-AGARAN

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

October 31, 1996

Jason K.H. Yim
Stanley Yim & Associates, Inc.
Bishop Square, Pacific Tower, Suite 410
1001 Bishop Street
Honolulu, Hawaii 96813

LOG NO: 18387
DOC NO: 9610TD09

Dear Mr. Yim:

SUBJECT: Chapter 6E-42 Review--Royal Kinau Environmental Assessment
Honolulu, Kona, O`ahu
TMK: 2-1-40:27

Thank you for the opportunity to review this proposed project, which will construct a twelve-story apartment building at a previously developed parcel. A review of our records shows that there are no known historic sites at this parcel. Given the parcel's past development history, and the fact that subsurface historic deposits are unlikely at this location, we believe the proposed project will have "no effect" on historic sites.

If you have any questions please call Tom Dye at 587-0014.

Aloha,

DON HIBBARD, Administrator
State Historic Preservation Division

TD:jk

RECEIVED
NOV 1 1996
STANLEY YIM & ASSOC., INC.
Time

MAKIKI/LOWER PUNCHBOWL/TANTALUS NEIGHBORHOOD BOARD NO. 10

c/o NEIGHBORHOOD COMMISSION • CITY HALL, ROOM 400 • HONOLULU, HAWAII 96813

REGULAR MEETING AGENDA

THURSDAY, NOVEMBER 16, 1995
MAKIKI DISTRICT PARK
ARTS AND CRAFTS BUILDING
1527 KEEAUMOKU STREET
7:15 P.M.

I. CALL TO ORDER

II. COMMUNITY CONCERNS

A. HONOLULU FIRE AND POLICE DEPARTMENTS
B. DEPARTMENT OF PARKS AND RECREATION
C. NETWORK OF NEIGHBORHOOD BOARDS AND NEIGHBORHOOD COMMISSION
D. ELECTED OFFICIALS
E. MAYOR'S OFFICE
F. RESIDENTS' CONCERNS

III. APPROVAL OF MINUTES FOR THE OCTOBER 19, 1995 REGULAR MEETING

IV. TREASURER'S REPORT

V. UNFINISHED BUSINESS

A. MAKIKI/TANTALUS RECREATION AREA
B. PAWAA SUPERBLOCK UPDATE
C. RENOVATION OF LIBRARY AND ADMINISTRATION BUILDINGS AT MAKIKI DISTRICT PARK
D. THEFTS FROM AUTOS ON ROUNDTOP AND TANTALUS DRIVES
E. MAUKA AND MAKAI BOUND TRAFFIC ON STREETS SUCH AS KALAKAUA AVENUE AND McCULLY STREET
F. KE ALA HOKU, VISIONING PROCESS UPDATE
G. ACTION REGARDING PET PEEVES

IV. NEW BUSINESS

A. CONSTRUCTION ON MOTT SMITH DRIVE, NEAR NEHOA STREET

VII. COMMITTEE REPORTS

A. PLANNING AND ZONING
B. TRANSPORTATION
C. NEWSLETTER
D. HEALTH AND SAFETY

IX. ANNOUNCEMENTS

X. ADJOURNMENT

ANY DISABLED PERSON REQUIRING SPECIAL ASSISTANCE SHOULD CONTACT
THE NEIGHBORHOOD COMMISSION OFFICE, 523-4768, FOR DETAILS

MINUTES OF REGULAR MEETING
OCTOBER 19, 1995
MAIKIKI DISTRICT PARK
ARTS AND CRAFTS BUILDING

CALL TO ORDER: The meeting was called to order by Chair John Steelquist at 7:15 p.m. A quorum was present.

MEMBERS PRESENT: John Bigay, Herbert Chun, David Fasi, Penny Hueh, Margaret Murchie, John Steelquist, Alfred Connolley, Edward Fujioka, Kyle Greenwood, Mary Hopkins, Larry Meacham, Clifford Murooka, Richard Stancliff, Helen Meyers, Norma Jean Nicholl, Michael Shiroma, Susan Lai Young.

MEMBERS ABSENT: None.

GUESTS: Wellington Wong (WCW Corp.), Alvin Wong (WCW Corp.), James Remedios (Mayor's Office representative), Senator Carol Fukunaga, Glenda Simao, Walter Simao, Jr., Sandra Ohara (Neighborhood Commission), Linda "Fritz" McKenzie (Neighborhood Commission), Marilyn Aguilar (Councilmember Jon Yoshimura's Office), Stephen Cook (Councilmember Andy Mirikitani's Office), Councilmember Andy Mirikitani, Corinne Ching (Representative Quentin Kawananakoa's Office), Philmond Lee (Representative Terry Yoshinaga's Office), H. Louise Esselstyn (T.J. Mahoney), G. Ralston, Tyler Ralston, Frank Fasi, Capt. Susan Dowsett (HPD), Sgt. Damaine Hasegawa (HPD), Officer Avery Choy (HPD), Bert Koide (Department of Parks and Recreation), Dean Chu (Neighborhood Commission Office staff).

MAYORS TEAM - Mayor Jeremy Harris, Charles Swanson (Department of Transportation Services), Ray Sato (Board of Water Supply), Victor Guillermo (Finance Department), Malcolm Tom (Budget Department), Salvatore Lanzilotti (Department of Human Resources), Deputy Chief Harold Kawasaki (HPD), Alvin Au (Department of Parks and Recreation), George Tamashiro (Building Department), Howard Takara (Honolulu Public Transit Authority), Cheryl Okuma-Sapa (Department of Waste Water Management), Cheryl Soon (Planning Department), Battalion Chief Charles Wasaman (Honolulu Fire Department), Patrick Onishi (Department of Land Utilization, Darwin Hamamoto (Department of Public Works), Carol Costa (Office of Information and Complaint).

COMMUNITY CONCERNS:

HONOLULU POLICE DEPARTMENT - Officer Avery Choy reported statistics for the past month show there were five robberies, 25 burglaries, 62 thefts, 55 thefts from vehicles, 31 auto thefts, 132 assaults, 12 threatenings, 10 harassments, 20 property damages, 110 motor vehicle accidents, and eight family disputes.

Questions, answers and comments followed:

1. Dissatisfaction from a resident was expressed at existing efforts to deal with a rash of burglaries. Something more than the community establishing a Neighborhood Security Watch Program and the Department's Crime Reduction Unit's efforts are desired and would be appreciated.

2. A resident expressed concern about burglaries and what a burgler might do if confronted by him or injured on his property. Discussion ensued regarding the preventative aspects of using motion detection lights and alarms.

Officer Choy was thanked for her report.

HONOLULU FIRE DEPARTMENT - Battalion Chief Wasaman reported during the past month the Makiki Station's responses included three structure fires in the area.

There were no questions and Wasaman was thanked for his report.

DEPARTMENT OF PARKS AND RECREATION - Bert Koide, from Makiki District Park, reported the following:

1. New benches have been installed in Makiki District Park.

   There was no funding for pedestrian walkway lighting at this time. Additional Capital Improvement Project funds will have to be appropriated for this project.

There were no questions and Koide was thanked for his report.

NETWORK OF NEIGHBORHOOD BOARDS - No report.

NEIGHBORHOOD COMMISSION - Commissioner Sandra Ohara reported the following:

1. The Commission holds its regular monthly meetings on the the second Tuesday of each month in the Personnel Department Conference Room.

2. The City Corporation Counsel is working on the legal status of the Network of Neighborhood Boards.

3. The Commission is working on holding more training programs for Neighborhood Board members.

Commission Chair Linda McKenzie, reported the following:

1. The Commission is working on providing services the Network provided to the Boards so that they may do their jobs better.

2. She testified before a City Council Committee about the work of the Commission.

Ohara and McKenzie were thanked for attending the meeting.

ELECTED OFFICIALS:

SENATOR CAROL FUKUNAGA - Senator Fukunaga reported that Oahu urban core legislators met recently with Neighborhood Board representatives and discussed a variety of concerns including: crime and personal safety issues. To try and help address these types of concerns, she has urged the Governor to release the State's share of funding for a new Honolulu Police Department communications system.

Senator Fukunaga was thanked for attending the meeting.

REPRESENTATIVE QUENTIN KAWANANAKOA - No report.

REPRESENTATIVE TERRY YOSHINAGA - Philmund Lee, from Representative Yoshinaga's Office, reported the following:

Work is being done with the Kokua Council for Senior Citizens on various concerns, educating the community on the impacts of the new convention center, and probate reform for the next session of the legislature.

Lee was thanked for attending the meeting.

COUNCILMEMBER JON YOSHIMURA'S OFFICE - Marilyn Aguilar, from Councilmember Yoshimura's Office, distributed the newsletter and added there will be a dinner meeting with his Council District Neighborhood Board members on November 14, at NBC, 6:30 p.m.

Aguilar was thanked for attending the meeting.

COUNCILMEMBER ANDY MIRIKITANI - Stephen Cook, from Councilmember Mirikitani's Office, distributed the monthly report and highlighted the following:

1. The Adopt-A-Stream program is in operation.

2. Real Time Captioning of broadcasted City Council and Committee meetings is now being done.

Cook was thanked for attending the meeting.

COMMUNITY CONCERNS: Mayor Jeremy Harris and members of his team answered questions that included:

ABANDONED SHOPPING CARTS - A resident reported that the use of systems that charge customers for the use of carts does not seem to deter their subsequent abandonment in Makiki. Stores also take a long time to pick up abandoned carts when called to retrieve them. Efforts with stores and industry representatives have been ineffective. Mayor Harris will followup with the industry representatives.

HEDGE NEAR INTERSECTION OF ALAPAI AND PROSPECT STREETS - A resident reported that a hedge in a City owned right-of-way, but maintained by the abutting property owner, is creating a safety hazard by providing a place for persons to hide. The City is aware of the situation, wants to trim the hedge, but if it does, the abutting property owner threatened to stop maintaining the area. Mayor Harris will followup with a site check following the meeting.

ROLLERBLADING ON CITY STREETS, SIDEWALKS, ETC. - A resident suggested that this laws restricting skating on public streets, sidewalks, etc. be repealed. Mayor Harris reported he has urged the police department to use discretion in enforcement, noting complaints have been received - particularly from pedestrians who feel some skaters are a hazard to them.

ENFORCEMENT OF PROPERTY DAMAGE FROM GRAFFITI - A resident expressed frustration with the damage caused by graffiti and suggested that the persons responsible and/or their parents should be held responsible for cleanup. Mayor Harris noted his frustrations with the justice system to make this possible. The case involving damage to a building at Ala Moana Park for instance, would have taken too long for the justice system to resolve and have the guilty persons do the cleanup, so the Mayor's Team did the job.

CURFEW FOR JUVENILES - There is a curfew law in effect and it is enforced.

LAWS TO RESTRICT EXOTIC ANIMALS PERFORMANCES - A resident noted that the incident involving the rampeging elephant from a circus performance at Blaisdell Arena was over a year ago and bills to protect to prevent a repeat of this incident, introduced by the City Council are still in committee. There were no details on the status of such bills as to when they might be discussed further in committee meetings.

HAZARDOUS TURNS - In response to a concern by a resident, Charles Swanson, Director of the Department of Transportation Services, will followup on concerns that the U-turn from Kaaumoku Street to Lunalilo Street and the H-1; and the right-turn from Kinau Street to Kaaumoku Street are hazardous.

PROHIBITION ON DISCHARGE OF CAR WASH WATER INTO STORM DRAINS - Several persons expressed concern about laws prohibiting washing of cars where the water drains into storm drains. Mayor Harris and Darwin Hamamoto, Deputy Director, Department of Public Works, reported the federal government has required such laws, and local laws have been in effect for about a year. Anything but rainwater draining into municipal storm drains contributes to Non Point Source Pollution. Violators have been fined, though compliance is preferred.

The City has taken steps such as street cleaning, education - meetings with agricultural chemical users, condominium managers, storm drain stenciling, and television ads, as part of dealing with this problem.

It is legal for a condominium, for instance, to drain car wash water into landscaped areas of its property.

Relaxing the law, to allow school car washes for instance, was suggested by former Mayor Fasi.

FAST TRACKING DEVELOPMENT ON CITY OWNED PROPERTY - Mayor Harris reported the City is working to spur the construction industry by making various parcels of unneeded City property available for private sector companies to develop. The private sector would make proposals for use of the properties and then develop the property with their own resources. This will create thousands of jobs and pump a billion dollars into the local economy. The City would not develop the properties itself. Board member Fasi questioned the City's ability to achieve this goal as planned.

REINVENTING GOVERNMENT COMMITTEES - Mayor Harris reported two committees are at work and followup will be done with persons interested in serving on these committees.

PRESENTATION:

MAYORS TEAM: Mayor Harris explained that he and members of his team, the directors or deputy directors of the various departments come to the community to listen to and address concerns, their goal is to improve government service. The representatives from various City departments introduced themselves and briefly described their departments' work.

Additional questions discussed included:

MAKIKI DISTRICT PARK - Alvin Au reported the design contract has been awarded for the renovation of the library and administration building. There is no funding for lighting at this time.

PARK DEDICATION FEE - Developers can pay a park dedication fee in lieu of providing land for a park to comply with the Park Dedication Ordinance for their projects. The fee stays in a fund to be used in the same area as the developers' project.

For instance, there is $13 million in the fund for the Downtown area. Park projects in this area include Ala Park ballfields, park at Smith and Beretania Street, and Kamamalu Park. These projects are in the design phase.

SPEED HUMPS TO REDUCE SPEEDING - Charles Swanson reported speed humps, which are wider and lower than speed bumps, are being tested in Kailua to determine their effectiveness in reducing speeding. Requests have been received for 44 sites to have the humps installed.

ROAD REPAIRS ON NEHOA AND SPENCER STREETS - Darwin Hamamoto, Deputy Director, Department of Public Works, reported reconstruction projects are in progress on sections of Nehoa Street for $841,000 are to be completed by February 23, 1996, and on sections of Spencer Street for $597,000 are to be completed by January 9, 1996. Reconstruction involves excavation of sections of the street to rebuilt the underlying roadbed. Resurfacing follows, and contractors may be ahead of schedule.

SEWER IMPROVEMENTS IN MAKIKI HEIGHTS - Cheryl Okumu-Sepe, Deputy Director, Department of Wastewater Management, reported projects in this area are not scheduled until beyond 1997.

STREET WIDENING IN MAKIKI HEIGHTS - It was noted a number of streets do not have shoulders and need improvement. Hamamoto reported there are no such projects scheduled this year, followup will be done on when work on these streets is scheduled.

ALA MOANA PARK, SHOWERS AND RESTROOMS - Au reported more outdoor showers will be built, but the number of new indoor showers facilities will not be increased. New restrooms also are designed to meet Americans with Disabilies Act requirements.

HAZARDOUS DRIVING, CARS WITH SAFETY PROBLEMS - Deputy Police Chief Kawasaki reported hazardous driving, safety problems, etc. can be reported to the Police Department. They will try to identify, then send a letter to the registered owner of the car about the citizen's report of hazardous driving, safety problem, etc.

Mayor Harris invited Board members to attend his Cabinet meetings and the Council of Neighborhood Board Chairs meeting is scheduled for November 21.

Everyone was thanked for their participation in this portion of the meeting.

APPROVAL OF MINUTES FOR THE AUGUST 17, 1995 REGULAR MEETING - The minutes were approved as distributed.

APPROVAL OF MEMORANDUM FOR THE RECORD OF THE SEPTEMBER 21, 1995 MEETING - The following correction was made:

Page 1, add Richard Stancliff to Members Present, remove from Members Absent.

The minutes were approved as corrected.

TREASURERS REPORT: Nicholl reported the following for the month of September 1995, Operating Account balance is $1124.86 and the Publicity Account balance is $3319.00.

UNFINISHED BUSINESS:

MATLOCK HOUSE - M. Louise Esselstyn reported the open house on October 2 was a success, and thanked everyone who came. The next open house is scheduled for mid-December. Presently there are 18 residents in the home. Management and the citizens advisory committee have worked out problems between the operation of the house and surrounding residents.

MAKIKI/TANTALUS RECREATION AREA - Chair Steelquist reported the State Department of Land and Natural Resources review is still in progress at this time.

PAWAA SUPERBLOCK UPDATE - No report.

RENOVATION OF LIBRARY AND ADMINISTRATION BUILDINGS AT MAKIKI DISTRICT PARK - Previously updated during Community Concerns and Mayor's Team portion of the meeting.

CONSTRUCTION OF ROYAL KINAU ELDERLY CITIZENS APARTMENTS AT 728 KINAU STREET - ROYAL KINAU LOW-INCOME ELDERLY RENTAL PROJECT - Alvin and Wellington Wong, of WCW Corporation, addressed the Board to solicit input for their 201-E application for zoning exemptions. They showed a model and reviewed plans to build a 96-unit project targeted for senior citizen tenants on a 20,000 sq. ft. parcel at 728 Kinau Street, just one block mauka of the police station. The parcel is presently occupied by a rooming house with tenants on month-to-month leases.

They are seeking exemptions from the Land Use Ordinance, including the Capital Special Design District to develop the project including:

1. To add an additional floor, 12 instead of 11.

2. To reduce the size of the required loading zone.

3. To provide only 75 parking stalls for 96 units, instead of the required 115 stalls.

4. Increase the floor area density.

These exemptions are needed to make the project economically feasible.

Questions, answers and comments followed:

1. Qualified residents will have to be over age 62, and earn a maximum of $26,000 per year for a maximum of two persons per unit.

2. The additional floor will accommodate units formerly planned for the basement. This will provide more space in the basement for recreational and congregate meeting space.

3. There will be eight, one-bedroom, one-bathroom units per floor, with approximately 500 sq. ft. including a 100 sq. ft. lanai.

4. City and State officials report there is a need for this type of housing. A private market study by the owners is also in progress.

5. Concern was expressed about whether or not the target age and income group will get the units, or whether displacees from government projects and the mentally or physically disabled will get preference for the units.

6. State and federal tax credits are being sought. This will require meeting Housing and Urban Development requirements for regular reports on the occupants qualifications. If an occupant does not meet the qualifications, tax credits must be reimbursed.

7. A partnership is planned for a private, non-profit organization to manage the building and eventually own it after 30 years.

8. This project will be privately funded.

9. The project will be deed restricted to senior citizens residents only.

Nicholl moved and Meechem seconded that the Board supports the project as presented in plans provided to the Board with deed restrictions to limit occupancy based on age and income level.

Discussion followed including the need for building security at this location. Wong reported that the project also includes a six-foot high perimeter wall, gates to the parking lots, and lobby security. The plans are not final, have not been approved by either the City agencies or the City Council, but only minor modifications are expected.

The motion carried unanimously.

ACTION ON PET PEEVES - Stancliff suggested, and will schedule a meeting with committee chairs to coordinate work on the pet peeves, some returned lists apply to several different committees for action.

NEW BUSINESS:

THEFTS FROM AUTOS ON ROUNDTOP AND TANTALUS DRIVES - Deferred to next month's meeting.

MAUKA AND MAKAI BOUND TRAFFIC ON STREETS SUCH AS KALAKAUA AVENUE AND McCULLY STREET - Deferred to the next meeting.

KE ALA HOKU VISIONING PROCESS UPDATE - Chair Steelquist provided a brief background on this long range planning project which began with input from high school students. The next meeting is scheduled for November 11. Interested persons may see the Chair for details.

CITY'S CLEAN STREAM PROGRAM - Deferred.

COMMITTEE REPORTS:

TRANSPORTATION - Stancliff reported newsletter some forms with pet peeves for several different committees will be circulated at the meeting noted earlier.

NEWSLETTER - The consensus was that the Board do another newsletter. Articles should be submitted to Chun.

HEALTH AND SAFETY - No report.

PLANNING AND ZONING - No report. Shiroma urged Councilmembers to continue research whether the Land Use Ordinace should more definitively include or exclude Matlock House type transitional housing as a Conditional Use inthe Apartment zoning districts.

ANNOUNCEMENTS: Chair Steelquist made correspondence received available for interested persons to review.

Several Board members spoke positively about the open house at Matlock House earlier this month which was very informative.

ADJOURNMENT: The meeting was adjourned at 9:44 p.m.

Submitted by,

Dean Chu
Neighborhood Assistant

MAIKIKI/LOWER PUNCHBOWL/TANTALUS NEIGHBORHOOD BOARD NO. 10
c/o NEIGHBORHOOD COMMISSION OFFICE
CITY HALL 4TH FLOOR
HONOLULU, HAWAII 96813-3014

ALVIN WONG

DOWNTOWN NEIGHBORHOOD BOARD NO. 13

c/o NEIGHBORHOOD COMMISSION • CITY HALL, ROOM 400 • HONOLULU, HAWAII 96813

REGULAR MEETING AGENDA
THURSDAY, NOVEMBER 2, 1995
PAUAHI COMMUNITY CENTER
171 N. PAUAHI STREET
7:00 PM - 9:30 PM

I. CALL TO ORDER

II. INTRODUCTION OF BOARD MEMBERS

III. REPORTS AND CONCERNS (3 minutes each)

A. Honolulu Fire Department
B. Honolulu Police Department
   1) Drug and Prostitution problems on Kukui Street.
C. Community Policing
D. Elected Officials
E. Hawaii Community Development Authority
F. Public Concerns

IV. OLD BUSINESS

V. NEW BUSINESS

A. Noise complaint concerning the First Night Festival. (10 minutes)

B. Mid-Block Cross walk adjacent to exit from First Hawaiian Tower Parking lot. Concern has been expressed that Drivers exiting the parking lot are not paying attention to pedestrians (5 minutes)

C. City Council Resolution 95-212. This resolution requests that the Governor release funding to update the Honolulu Police Department's communication system. (10 minutes)

D. Request by the River of Life Mission to hold a Thanksgiving Block Party for the Homeless. This would extend along Pauahi Street from Maunakea Street to River Street and be from 8 am to 4 pm. (20 minutes)

E. Council Bill 110. This is a bill for an ordinance prohibiting the sale and consumption of intoxicating liquors in public places. (20 minutes)

REGULAR MEETING AGENDA
THURSDAY, NOVEMBER 2, 1995
PAUAHI COMMUNITY CENTER
171 N. PAUAHI STREET
7:00 PM - 9:30 PM

VI. APPROVAL OF MINUTES FOR September 7, 1995 REGULAR BOARD MEETING

VII. COMMITTEE REPORTS, RECOMMENDATIONS AND ACTION

A. Chair's Report (Dennis Chun)
B. Treasurer's Report (Linda Martell)
C. State Affairs (Tom Smyth)
D. City Affairs (Lynn Matusow)
E. Economic Development and Planning (Gloria Wong)
F. Public Safety (Dan Harrison)
G. Neighborhood Commission (Lynne Matusow)
H. Newsletter (Linda Martel)

VIII. ANNOUNCEMENTS

A. Special Neighborhood Board meeting to be held on November 14, 1995. This meeting will deal with the Proposed Federal Detention Center and the recently released Draft Environmental Impact Statement.

IX. ADJOURNMENT

Any person wishing to contact the committee chairs should call the Neighborhood Commission at 527-5578.

ANY DISABLED PERSON REQUIRING SPECIAL ASSISTANCE SHOULD PHONE THE NEIGHBORHOOD COMMISSION OFFICE AT 523-4815

DOWNTOWN NEIGHBORHOOD BOARD NO. 13

c/o NEIGHBORHOOD COMMISSION • CITY HALL, ROOM 400 • HONOLULU, HAWAII 96813

SPECIAL MEETING AGENDA
TUESDAY, NOVEMBER 14, 1995
COMMUNITY MEETING ROOM, THIRD FLOOR
ALOHA TOWER MARKET PLACE
(ASK AT CONCIERGE DESK FOR DIRECTIONS)
7:00 PM - 9:30 PM

I. CALL TO ORDER.

II. INTRODUCTION OF BOARD MEMBERS

III. DRAFT ENVIRONMENTAL IMPACT STATEMENT ON THE PROPOSED FEDERAL DETENTION CENTER WHICH IDENTIFIES TWO PREFERRED ALTERNATIVE SITES - FORT ARMSTRONG AND ELLIOTT STREET WHICH IS NEAR THE AIRPORT

A. PRESENTATION BY MR. DAVID DORWORTH OF THE FEDERAL BUREAU OF PRISONS.

B. COMMUNITY INPUT.

IV. ANNOUNCEMENTS

IX. ADJOURNMENT

ANY DISABLED PERSON REQUIRING SPECIAL ASSISTANCE SHOULD PHONE THE NEIGHBORHOOD COMMISSION OFFICE AT 523-4815.

THERE IS A CITY PARKING LOT LOCATED AT HARBOR COURT.
ENTRANCE IS LOCATED OFF BETHEL STREET.

REGULAR MEETING MINUTES
OCTOBER 5, 1995
PAUAHI RECREATION CENTER

CALL TO ORDER: Meeting was called to order by Chair Dennis Chun at 7:00 p.m. A quorum was present.

MEMBERS PRESENT: Alvin Au, Dennis Chun, Dan Harrison, Patrick Keller, Linda Martell, Tom Smyth, Gloria Wong.

MEMBERS ABSENT: Christine Brown, Lynne Matusow.

GUESTS: Hal Daggett (Komeya Apartments), Ray Rudie, C. Weist, Lorraine Nakano (Honolulu Retirement Program), Lane Brink, Lloyd Wong, Monica Borden (RSC), Adele Young, Stan Perry, Representative Ken Hiraki, Sandi Shibata (Royal Elementary School), Paul Dyers, Tom Grossi (Honolulu Police Department), Adele Oshiro (Downtown/Chinatown Citizen Patrol), Thomas Hinkle (Hale Pauahi), Sharon Black (Honolulu Police Department, Project Outreach), Alvin Wong (WCW Corp.), Wellington Wong (WCW Corp), Sally Erickson (Safe Haven), Bill Nakamoto (OCCFNS), Marlyn Aguilar (Councilmember Jon Yoshimura's Office), Councilmember Jon Yoshimura, Captain Davis (Honolulu Fire Department), Minerva R. Remigio (Neighborhood Commission Office).

Board members introduced themselves.

REPORTS AND CONCERNS
HONOLULU FIRE DEPARTMENT
Captain Davis reported that the Central Fire Station responded to 28 alarms (13 fire, 15 medical). The Fire Station is currently working on their CPT training classes and bringing their instructors up to speed.

HONOLULU POLICE DEPARTMENT
Officer Tom Grossi reported the following statistics for the month of September 1995: 29 burglaries; 4 thefts from person; 18 auto thefts; 242 other thefts; 7 robberies; 29 assaults; 5 sex assaults; and 8 family offenses.

Several residents in audience spoke of concerns. Grossi asked to meet with these individuals to properly address their concerns.

ELECTED OFFICIALS
SENATOR ROD TAM
Senator Rod Tam could not attend the Board meeting and submitted his monthly report. Report is on file with the Board.

REPRESENTATIVE KEN HIRAKI
Representative Ken Hiraki reported that the legislative session will begin on the third week of January 1996. With the Board's assistance, three bills were passed during the last session. Early preparation in drafting bills was a key factor in getting bills passed.

Comments, concerns, and responses followed:

- Chair Chun informed everyone that he has written a letter to the Governor and Department of Public Safety in support of the proposed use of Texas prison space to house prisoners from Hawaii. Several residents expressed support for this proposal. Chun commented that the Downtown/Chinatown area has seen and suffered from the results of the policy of releasing criminals back to the streets without doing time for their crimes. This proposal would offer some hope to address the growing crime problem in a meaningful way.

Representative Hiraki introduced Principal Sandy Shibata of Royal Elementary School who addressed problems the school is experiencing with the homeless.

COUNCILMEMBER YOSHIMURA

Councilmember Yoshimura distributed his monthly newsletter and reported the following:

- Proposal to relocate open market at Aala Park to Mother Waldren Park.
- Received concerns from residents from the Harbor Square Complex regarding First Night's Activities. Concerns include amplified music and noise. Councilmember Yoshimura suggested that the Board may want to consider discussing First Night's activities at the Board's November or December meeting.
- Based on Yoshimura's conversation with Dona Hanaike, Department of Parks & Recreation Director, Yoshimura stated that Hanaike had an impression that the community wanted an enclosed gym or basketball court on the site. Yoshimura suggested that the Board contact Dona Hanaike and clarify whether or not this is what the community wanted.
- Neal Blaisdell Exhibition Hall was rededicated on Tuesday, September 5, 1995. Community can make use of the Pikake Room with the scheduling of seminars and wedding receptions. Yoshimura will be arranging a dinner reception for Neighborhood Board members within his district. Date of reception will be announced.
- Yoshimura would be glad to set up a tour and viewing of Hawaii Theatre for Board members.

Yoshimura thanked the Board for their continued efforts within the Downtown area and reflected the Board's activities within the past year: establishing a Citizen Patrol; the Chinatown Clean-Up; Closure of the Golden Star; Tearing down the walls at Smith/Beretania streets; and involvement with the Safe Haven Project.

MAYOR'S REPRESENTATIVE

Mayor's Representative Alvin Au distributed the Mayor's Newsletter and the Department of Parks & Recreation Monthly Calendar.

Comments, concerns, and responses followed:

- Request was made for litter containers at bus stop located on Ala Moana Boulevard fronting the U.S. Immigration Office.

HAWAII COMMUNITY DEVELOPMENT AUTHORITY - No report as a representative was not present.

REQUEST TO CLOSE KAMAMALU PARK FROM 10:30 PM TO 5:30 AM

At the Board's September 7, 1995 Board meeting, a request as made to post closure signs at Kamamalu Park from 10:30 pm to 5:30 am in light of recent concerns regarding homelessness and

drug dealing at the park pavilion.

Board member Harrison met with principals of neighboring schools and the Nuuanu YMCA to seek input regarding this situation. A staff member from the Department of Parks & Recreation visited the park to assess the situation. Board member Au reported that installing an iron gate at the comfort station will cost a sizeable amount of money and recommended the Board request park closure during the hours of 10:30 pm to 5:30 am and have the Police Department enforce park rules.

Keller moved and Martell seconded that the Downtown Neighborhood Board No. 13 write a letter to Department of Parks & Recreation requesting to close Kamamalu Park from 10:30 pm to 5:30 am. Motion carried, 6-1. Nay: Wong.

PRESENTATION BY HPD PROJECT OUTREACH

Sharon Black of the Honolulu Police Department Community Project made a presentation regarding facility designation/availability for MH1 homeless (involuntary detainment).

The problem of the noncompliant mentally ill homeless is having a devastating economic and social impact on the Downtown community. It is causing businesses to close, Hawaii's tax base to diminish, turning off tourists and local citizens from Downtown's historic location and is using up valuable law enforcement resources that could be better directed at other serious crime problems.

Harrison moved and Keller seconded that the Downtown Neighborhood Board No. 13 send a letter to the State Department of Health calling the state to use all facilities meeting the criteria for mentally ill treatment facilities, including but not limited to Kahi Mohala. Motion carried unanimously, 7-0.

PRESENTATION BY WCW CORP

Alvin Wong And Wellington Wong of WCW Corp distributed brief documentation and made a presentation regarding the Royal Kinau Project. The project site located at 728 Kinau Street is comprised of four parcels that creates a 20,368 square foot, triangular lot bounded by Kinau Street, Lunalilo Street and the east-bound Kinau Street H-1 off-ramp.

The proposed project is a new 11-story, 94-unit apartment building consisting of two levels of parking and 11 floors of dwelling units. The residential levels contain 8-one bedroom units per floor and 6 additional units in the basement. Two elevators will service the all concrete and masonry building. Plans require request for exemptions on design.

The proposed 94-unit apartment complex will be developed for low income elderly rental. All of the available units in the proposed project will be made available to households earning annual incomes which do not exceed 60% of the median income for the City and County of Honolulu.

Comments, concerns, and responses followed:

- Concerns were raised from an audience member who resides near the proposed project area. WCW Corp will make arrangements to meet with residents residing near the proposed project area.

REQUEST TO TEAR DOWN THE WALLS AND REMOVE THE BENCHES FROM KAMALI'I PARK

Residents of Kukui Plaza and Captain Davis of the Central Fire Station have expressed concerns about the homeless situation and more importantly, about the drug dealing that has been observed in the park.

Department of Parks & Recreation Deputy Director Alvin Au has taken a personal tour with his staff. Benches within the park are in poor condition and will be removed. However, Au stated that retaining walls surrounding the park need to be kept. Presently, Kamali'i Park is closed during the hours of 10:00 pm to 5:00 am. The Police Department will be requested to enforce the closure times of the park.

The Board tabled the issue but requested that a representative from the Department of Parks and Recreation meet with the Kukui Plaza tenants group and also with Captain Davis of the Honolulu Fire Department. The purpose of the proposed meeting would be to review the situation and see if there is any action the Board or community can take to address the situation.

PLANS FOR FUTURE USE OF PAUAHI RECREATION CENTER
Department of Parks & Recreaion will handle the issue internally.

APPROVAL OF MINUTES FOR SEPTEMBER 7, 1995 REGULAR BOARD MEETING
The Board made the following corrections:

Page 1, under Honolulu Police Department, 2nd line, delete [auto] and add other.

Page 2, under Downtown/Chinatown Citizen Patrol, 2nd paragraph, 2nd line delete [for those interested in creating a community walk].

Page 6, under Economic Development and Planning, add 3rd paragraph reading: Board members Matusow and Wong will be representing the Downtown Neighborhood Board regarding the Primary Urban Development Plan.

The minutes were approved as corrected.

COMMITTEE REPORTS, RECOMMENDATIONS AND ACTION
CHAIR'S REPORT
Chair Chun reported on the Downtown street cleaning.

TREASURER'S REPORT
Treasurer Martell reported for the closing date of August 1995:

	Operating Account	Publicity Account
Balance:	$ 1,220.42	$ 1,383.00
Current Expenses:	$ 53.62	$ 0.00
Balance-To-Date:	$ 1,166.80	$ 1,383.00

The report was filed subject to audit.

ECONOMIC DEVELOPMENT AND PLANNING
Chair Wong provided an update on the following:

- Remain in contact with the Department of Health regarding rats;
- Proposed internship with Hawaii Pacific University that would utilize students to interpret in various areas was an opportunity lost.

PUBLIC SAFETY
Chair Harrison reported a concern regarding the intersection of Merchant/Queen Street. Drivers appear to speeding at an estimated speed of 40 mph and not stopping for crossing pedestrians. Request will be made to the Honolulu Police Department to monitor the area.

NEWSLETTER
Chair Martell reported that she is currently working on putting together the Board's newsletter, invited submittals from Board members and will give a progress report at the next Board meeting.

There were no other committee reports.

ANNOUNCEMENTS
- A Chinatown Parade celebrating the 84th Anniversary of "DOUBLE TEN" and honoring founder Dr. Sun Yat Sen is scheduled for October 7, 1995, 2:00 p.m. Parade will begin on Maunakea Street and will culminate at the end of Aala Street. The Downtown Neighborhood Board was invited to the banquet and parade. Lloyd Wong requested a count of board members attending the banquet be taken so that a table could be reserved. The Board was polled on their participation and Mr. Wong took the tally so arrangements could be made.
- Downtown Neighborhood Board Committees and Chairs:

City Affairs:	Lynne Matusow
State Affairs:	Tom Smyth
Economic Development and Planning:	Gloria Wong
Public Safety:	Dan Harrison
Newsletter:	Linda Martell

Any person wishing to contact the committee chairs should contact the Neighborhood Commission Office at 527-5578.

ADJOURNMENT
There being no objections, the meeting was adjourned at 9:45 p.m.

Submitted by,

Minerva R. Remigio
Neighborhood Assistant

WCW Corporation

1816 Makiki Street
Honolulu, Hawaii 96822
telephone (808) 949-7246
facsimile (808) 949-6FAX

November 18, 1996

Neighborhood Board No. 10
c/o Neighborhood Commission
City Hall, Room 400
Honolulu, Hawaii 96813

Dear Neighborhood Board Members:

RE: ROYAL KINAU PROJECT

On October 15, 1995, we presented to your Neighborhood Board our proposal for the construction of the above referenced project. While the project is pending approval by the City Council for exemptions pursuant to Chapter 201E, there have been a number of amendments that should be noted. These amendments are as follows:

1. The total number of units has been reduced from 96 to 85 units (84 residents and 1 manager studio).

2. While it was initially stated that all units would be for affordable senior rentals, the mix of units now include 48 one-bedroom units for affordable senior rentals and 36 market condominium units. The primary reason for this change is due to development economics. To make the project feasible, profits generated from the sale of the market units will be needed to subsidize the affordable senior rentals. Hence, the current proposal contains a blend of both affordable senior rental and market condominium units.

3. The number of parking stalls has been reduced from 75 to 55. It should be noted that a Traffic Impact Analysis Report, completed by Phillip Rowell and Associates, dated November 4, 1996, stated the following: "Traffic related impacts at the study intersections are minimal and no mitigation measure are required. All intersections should operate at better than acceptable levels-of-service upon completion of the project without significant roadway improvements."

Notwithstanding the foregoing amendments, the building envelope and design remains basically the same as previously presented. With your continued support, we hope to move forward and anticipate the start of construction in early 1997.

Sincerely,

Alvin Wong

cc: Rae Gee, Department of Housing and Community Development
Stanley Yim, Stanley Yim and Associates, Inc.

WCW Corporation

1816 Makiki Street
Honolulu, Hawaii 96822
telephone (808) 949-7246
facsimile (808) 949-6FAX

November 18, 1996

COPY

Neighborhood Board No. 13
c/o Neighborhood Commission
City Hall, Room 400
Honolulu, Hawaii 96813

Dear Neighborhood Board Members:

RE: ROYAL KINAU PROJECT

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Notwithstanding the foregoing amendments, the building envelope and design remains basically the same as previously presented. With your continued support, we hope to move forward and anticipate the start of construction in early 1997.

Sincerely,

Alvin Wong

cc: Rae Gee, Department of Housing and Community Development
Stanley Yim, Stanley Yim and Associates, Inc.

DEPARTMENT OF LAND UTILIZATION
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET, 7TH FLOOR • HONOLULU, HAWAII 96813
PHONE: (808) 523-4414 • FAX: (808) 527-6743

JEREMY HARRIS
MAYOR

PATRICK T. ONISHI
DIRECTOR

LORETTA K.C. CHEE
DEPUTY DIRECTOR

(AS)

January 21, 1997

RECEIVED
JAN 25 1997
STANLEY YIM & ASSOC., INC.
Time ____

Mr. Jason K.H. Yim
Stanley Yim and Associates, Inc.
Bishop Square, Pacific Tower, Suite 410
1001 Bishop Street
Honolulu, Hawaii 96813

Dear Mr. Yim:

Tax Map Key 2-1-040: 027
Royal Kinau 201E

This is in response to your faxed letter dated January 15, 1997 regarding the number of parking spaces to be provided for the above-referenced project. In our November 16, 1996 letter to the Department of Housing and Community Development, we stated that we would prefer a total of at least 66 parking spaces for the project. This included 12 spaces for the senior rental, 48 for the market units, five for the guests and one for the manager. Subsequently, you have revised the plan to instead provide a total of 57 spaces, which include 12 for the senior rental, 36 for the market units, and nine for the guests. We understand from staff's earlier meeting with the architect that the parking stall which was allotted for the manager is no longer needed because the person will no longer reside within the project.

Pursuant to your current proposal, we will now accept a parking ratio of 1:1 for the market units on the basis that the project is near the core of downtown Honolulu, which is generally zoned BMX-4 Central Business Mixed Use District. The off-street parking requirement for the BMX-4 district is one space per unit.

Should you have any questions, you may contact Adrian Siu-Li of our staff at 527-5072.

Very truly yours,

PATRICK T. ONISHI
Director of Land Utilization

PTO:fm
cc: Department of Housing &
Community Development (Rae Gee)
yim.aps

APPENDIX D

City's Department of Transportation Services Review Letter dated December 26,1996 generally concurring with the findings in the Traffic Impact Analysis Report

Traffic Impact Analysis Report

DEPARTMENT OF TRANSPORTATION SERVICES
CITY AND COUNTY OF HONOLULU
PACIFIC PARK PLAZA • 711 KAPIOLANI BOULEVARD, SUITE 1200 • HONOLULU, HAWAII 96813
PHONE: (808) 523-4529 • FAX: (808) 523-4730

JEREMY HARRIS
MAYOR

CHARLES O. SWANSON
DIRECTOR

TMD-5390 (LW)
PR1.398

December 26, 1996

Mr. Jason K. H. Yim, PE
Stanley Yim & Associates, Inc.
Bishop Square, Pacific Tower, Suite 410
1001 Bishop Street
Honolulu, Hawaii 96813

Dear Mr. Yim:

Subject: Royal Kinau
Traffic Impact Analysis Report (TIAR)
TMK: 2-1-40: 27

This is in response to your letter dated November 18, 1996, requesting our review of the subject TIAR.

Based on our review, we generally concur with the findings in the report. However, the developer should be aware of the frontage improvements needed to support the project.

Should you have any questions, please contact Lance Watanabe of my staff at 523-4199.

Respectfully,

for CHARLES O. SWANSON
Director

TRAFFIC IMPACT ANALYSIS REPORT

ROYAL KINAU

IN HONOLULU, HAWAI'I

Prepared For

STANLEY YIM & ASSOCIATES, INC.
Honolulu, Hawai'i

Prepared By

Phillip Rowell and Associates
47-273 'D' Hui Iwa Street
Kaneohe, Hawai'i 96744
Tel: *808*-239-8206 Fax: *808*-239-4175
Email: prowell@aloha.net

January 24, 1997

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Executive Summary

The site of proposed project is located on a triangular parcel bounded by Kinau Street along the south, Lunalilo Street on the west, and the H1 off-ramp on the northeast. The site is currently occupied by an apartment building.

The proposed project will consist of 48 elderly apartments and 36 residential apartments. The total number of units is 84. The number of parking spaces is summarized in Table ES-1.

Table ES-1 Summary of Parking Plan

Level	Standard Stalls	Compact Stalls	Handicap Stalls	Total	Loading Zones
Ground	6	15	2	23	1
Lower	21	13	0	34	0
Total	27	28	2	57	1
Per Cent	47%	49%	4%	100%	

The trip generation analysis determined that the project will generate 15 trips during the morning peak hour and 19 trips during that afternoon peak hour. These trips were distributed based on the available approach and departure routes to and from the project.

The level-of-service analysis was performed using procedures outlined in the 1994 *Highway Capacity Manual.* The results of the LOS analysis are summarized in Tables ES-2 and ES-3.

Table ES-2 Level-of-Service Analysis for Signalized Intersections[3]

Intersection	AM Peak Hour				PM Peak Hour			
	Without Project		With Project		Without Project		With Project	
	V/C[1]	LoS[2]	V/C[1]	LoS[2]	V/C[1]	LoS[2]	V/C[1]	LoS[2]
Ward Avenue at Kinau Street	0.805	D	0.806	D	0.976	E	0.977	E
Alapai Street at Beretania Street	0.839	D	0.841	D	0.854	D	0.856	D

NOTES:
(1) V/C = Volume-to-Capacity Ratio
(2) LoS = Level-of-Service
(3) Level-of-Service calculated using planning method described in *Highway Capacity Manual.*

Table ES-3 Level-of-Service Analysis for Unsignalized Intersections

Approach & Movement	Weekday AM Peak Hour		Weekday PM Peak Hour	
	Without Project	With Project	Without Project	With Project
	LOS	LOS	LOS	LOS
Lusitania Street at Lunalilo Street	A	A	A	A
Lusitania Street at Alapai Street	A	A	A	A
Kinau Street at H1 Off-ramp	A	A	A	A
Lusitania Street at Lauhala Street	A	A	A	A

NOTES:
(1) V/C = Volume-to-Capacity Ratio
(2) LoS = Level-of-Service
(3) Level-of-Service calculated using planning method described in *Highway Capacity Manual.*

The intersection of Ward Avenue at Kinau Street will operate at LOS D during the morning peak hour and E during the afternoon peak hour. The intersection of Alapai Street at Beretania Street will operate at LOS D during both peak periods. However, the volume-to-capacity ratio changes less than the 0.020 for the impact to be considered significant and therefore no mitigation is

required. All other signalized intersections will operate at LOS D during both peak hours. The unsignalized intersections are expected to operate at LOS A without and with the project.

Traffic related impacts at the study intersections are minimal and no mitigation measure are required. All intersections should operate at better than acceptable levels-of-service upon completion of the project without significant roadway improvements. The major intersections are expected to operate at LOS D or E without the project. In conclusion, this project will have an insignificant impact on the levels-of-service at the study intersections because of the small number of trips generated by the project.

1. INTRODUCTION

Phillip Rowell and Associates has been retained by Stanley Yim & Associates, Inc. to prepare a Traffic Impact Analysis Report (TIAR) for a proposed elderly housing and apartment project to be located in the northeast quadrant of the intersection of Kinau Street at Lusitania Street in Honolulu, Hawai'i.

The following report has been prepared to describe the traffic characteristics of the project and likely impacts to the adjacent roadway network. This introductory chapter discusses the location of the project, the proposed development, and the study methodology.

Project Location and Description

The location of the proposed project shown on Figure 1. The project is located on a triangular parcel bounded by Kinau Street along the south, Lunalilo Street on the west, and the H1 off-ramp on the northeast. The site is currently occupied by an apartment building.

The proposed project will consist of 48 elderly apartments and 36 residential apartments. The total number of units is 84. Parking will be located on two levels. There will be 23 parking spaces on the ground level. These spaces will have access and egress via Lunalilo Street. The lower level will have 34 spaces and will have access and egress via Kinau Street. In addition to the 57 spaces noted above, one loading zone will be located on the ground level.

The number of parking spaces on each level is summarized in Table 1.

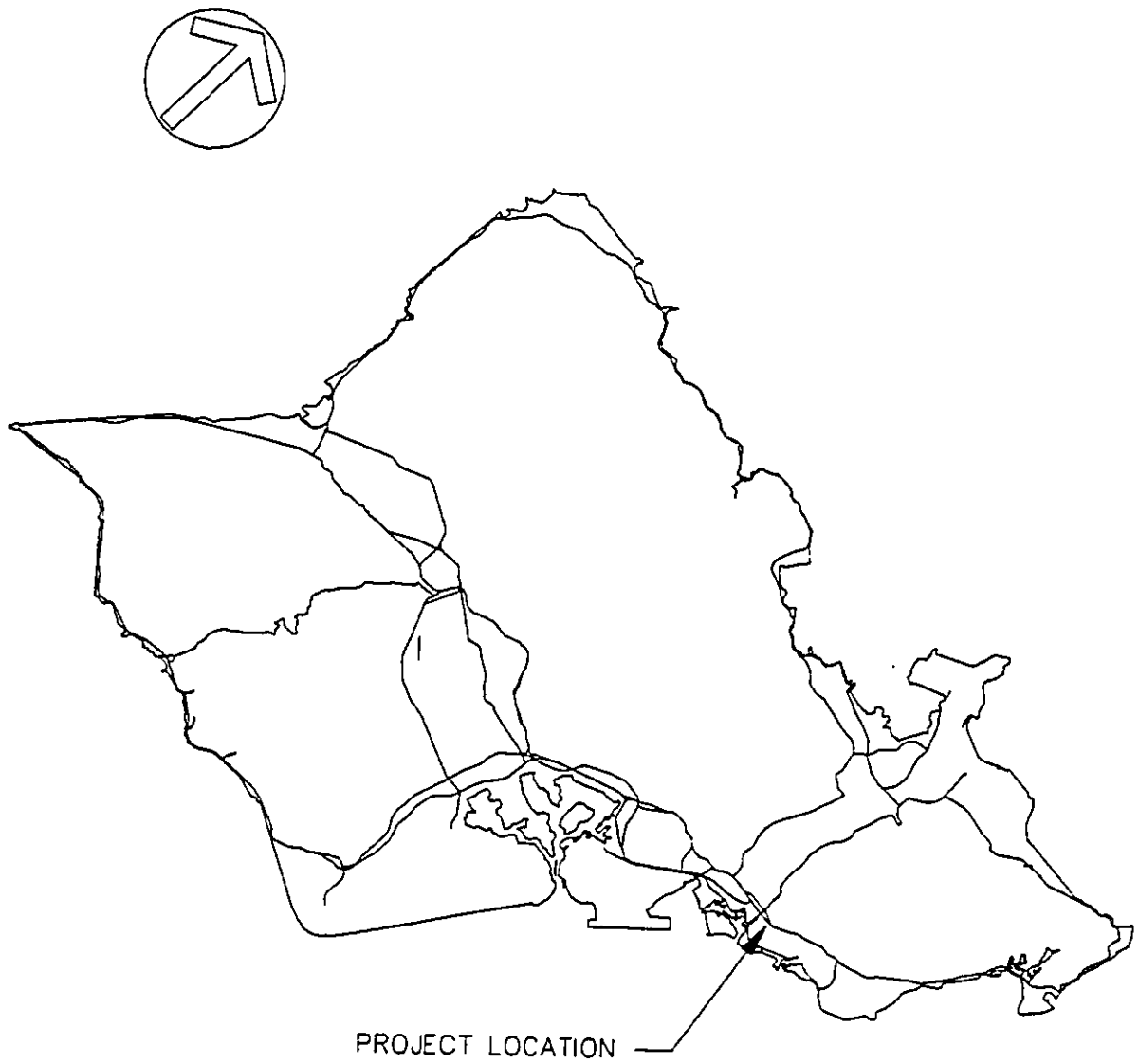


Figure 1

Location Map

Table 1 Summary of Parking Plan

Level	Standard Stalls	Compact Stalls	Handicap Stalls	Total	Loading Zones
Ground	6	15	2	23	1
Lower	21	13	0	34	0
Total	27	28	2	57	1
Per Cent	47%	49%	4%	100%	

Study Methodology and Order of Presentation

In order to conduct this traffic study, a number of tasks were performed. These tasks are discussed in the following paragraphs.

1. *Analysis of Existing Traffic Conditions*

Existing traffic volumes at the study intersections were determined from traffic counts performed in October 1996 specifically for this study. Intersection configurations and traffic signal information were also collected in the field at the time of the traffic counts.

Using the data collected, existing traffic operating conditions in the vicinity of the project were determined. The methodology described in the 1994 *Highway Capacity Manual* (HCM) was used to determine the level-of-service (LoS) at the study intersections.

Existing traffic conditions, the LoS concept and the results of the LoS analysis for existing conditions is presented in Chapter 2.

2. *Determination of Cumulative Traffic Projections*

The year 2001 was used as the design year. This does not necessarily represent the project completion date. It represents occupancy for purposes of conducting the impact analysis. Cumulative traffic conditions are defined as future traffic conditions without the proposed project. A description of the process used to estimate 2001 cumulative traffic volumes and the resulting cumulative traffic projections is presented in Chapter 3.

3. *Analysis of Project-Related Traffic Impacts*

The next step in the traffic analysis was to estimate the peak-hour traffic that would be generated by the proposed development. This was done using standard trip generation rates published by the Institute of Transportation Engineers.

These trips were distributed based on the available approach and departure routes. The project-related traffic was then superimposed on 2001 cumulative traffic volumes at the subject intersections. The HCM methodology was used again to conduct a LoS analysis for cumulative plus project conditions. The results of this analysis were compared to 2001 cumulative conditions to determine the impacts of this project.

The 2001 cumulative plus project traffic projections are presented in Chapter 4. The analysis of the project-related impacts and the conclusions of the analyses are presented in Chapter 5.

2. ANALYSIS OF EXISTING CONDITIONS

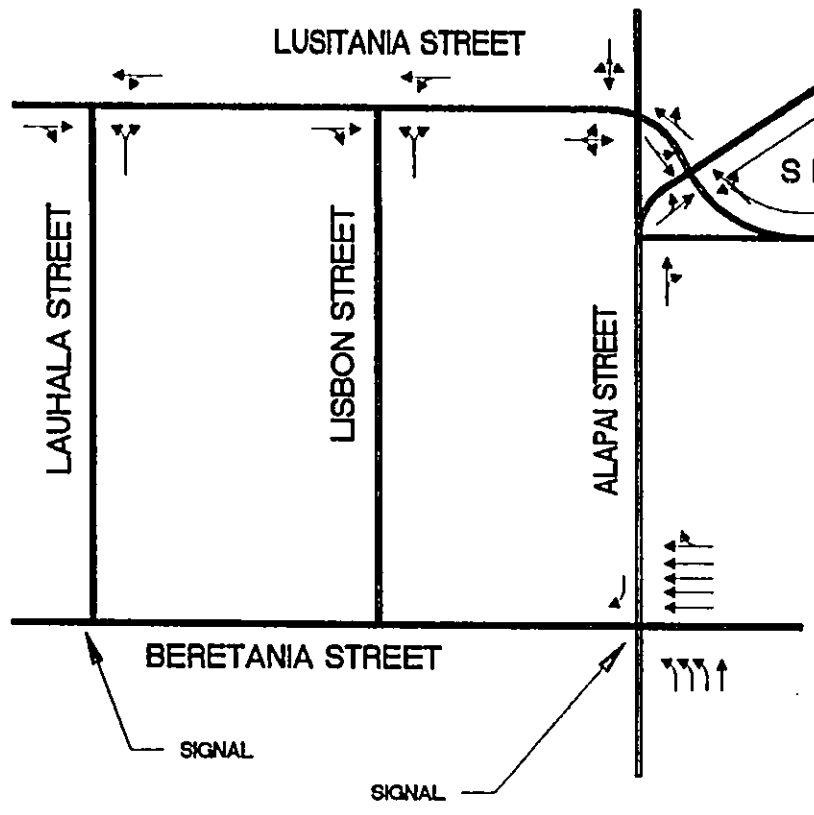
This chapter presents the existing traffic conditions and volumes on the roadways adjacent to the proposed project. The level-of-service concept and the results of the level-of-service analysis for existing conditions is also presented. The purpose of this analysis is to establish the base conditions for the determination of the impacts of the project which are described in a subsequent chapter.

Description of Existing Streets and Intersection Controls

The intersections analyzed and existing lane configurations are shown on Figure 2. Photographs of the roadways in the area are presented as Appendix A.

The intersections of Kinau Street at Ward Avenue and Alapai Street at Beretania Street are controlled by traffic signals. The signals are two phased.

The intersections of Alapai Street at Kinau Street, Kinau Street at H1 Off-Ramp and Lusitania Street at Lauhala Street are controlled by STOP signs.



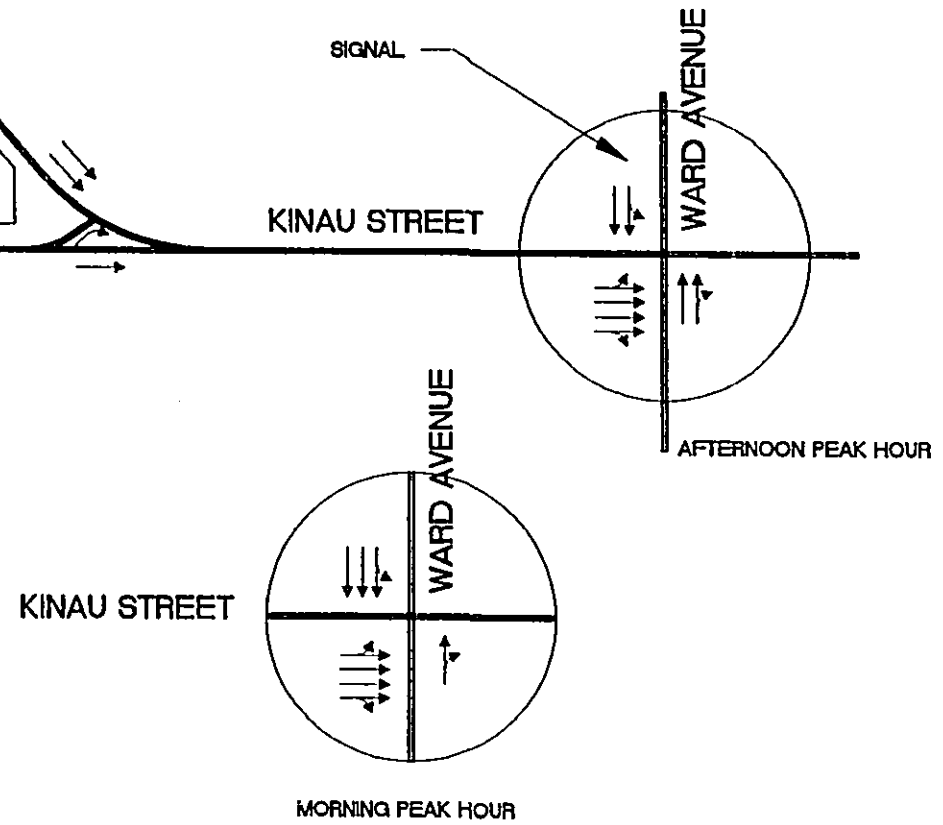


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Figure 2

Existing Roadway Network

Existing Peak Hour Traffic Volumes

Morning and afternoon peak hour traffic volumes were obtained from traffic counts conducted for this study in October 1996.

A count of the number of buses and large vehicles was performed concurrently with the traffic counts. This survey determined that approximately 10% of the vehicles along Alapai Street are buses or other large vehicles. Since there is a higher than average percentage of large vehicles in the traffic stream, the traffic volumes must be converted to passenger car units to perform the LoS calculation presented later in this report. The expansion factor is 1.1 per the 1994 *Highway Capacity Manual.*

The peak hour traffic volumes in passenger car units at the study intersections and along the streets in the study area is shown in Figure 3.

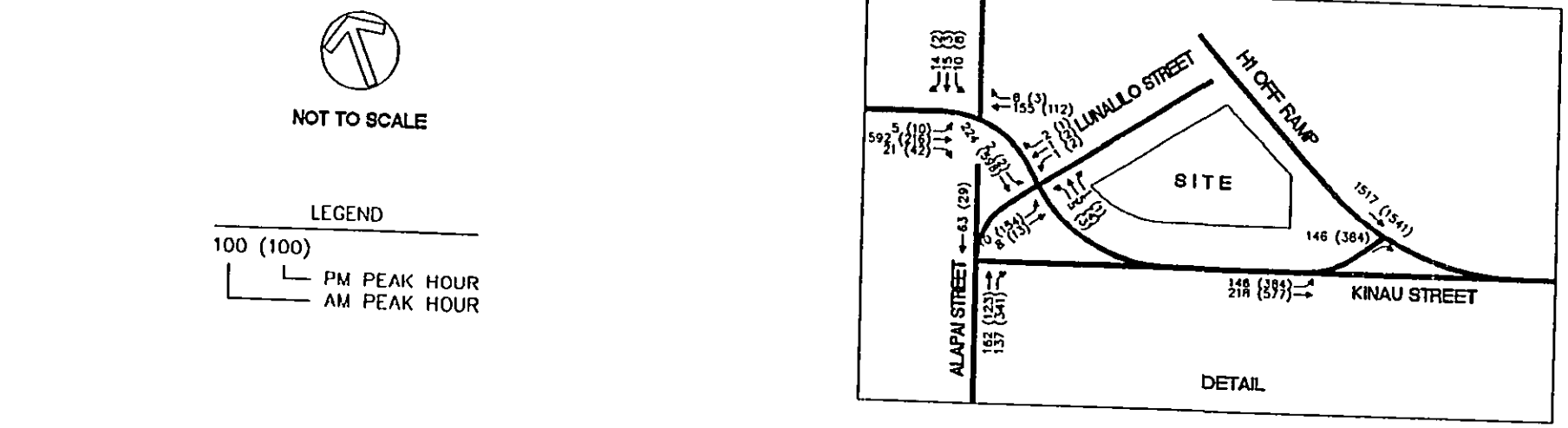
Level-of-Service Concept

Signalized Intersections

The planning method described in the *1994 Highway Capacity Manual* (HCM) was used to analyze the operating efficiency of the signalized intersections adjacent to the study site. This method involves the calculation of a volume-to-capacity (V/C) ratio which is related to a level-of-service. A maximum intersection capacity based on the number of phases was used for the V/C calculations.

"Level-of-Service" is a term which denotes any of an infinite number of combinations of traffic operating conditions that may occur on a given lane or roadway when it is subjected to various traffic volumes. Level-of-service (LoS) is a qualitative measure of the effect of a number of factors which include space, speed, travel time, traffic interruptions, freedom to maneuver, safety, driving comfort and convenience.

There are six levels-of-service, A through F, which relate to the driving conditions from best to worst, respectively. The characteristics of traffic operations for each level-of-service are summarized in Table 2. In general, LoS A represents free-flow conditions with no congestion. LoS F, on the other hand, represents severe congestion with stop-and-go conditions. Level-of-service D is typically considered acceptable for peak hour conditions in urban areas.



Phillip Rowell and Associates

Figure 3

Existing Peak Hour Traffic Volumes

Table 2 Level-of-Service Definitions for Signalized Intersections[1]

Level of Service	Interpretation	Volume-to-Capacity Ratio[2]	Stopped Delay (Seconds)
A, B	Uncongested operations; all vehicles clear in a single cycle.	0.000-0.700	<15.0
C	Light congestion; occasional backups on critical approaches	0.701-0.800	15.1-25.0
D	Congestion on critical approaches but *intersection functional*. Vehicles must wait through more than one cycle during short periods. No long standing lines formed.	0.801-0.900	25.1-40.0
E	Severe congestion with some standing lines on critical approaches. Blockage of intersection may occur if signal does not provide protected turning movements.	0.901-1.000	40.1-60.0
F	Total breakdown with stop-and-go operation	>1.001	>60.0

Notes:
(1) Source: *Highway Capacity Manual*, 1994.
(2) This is the ratio of the calculated critical volume to Level-of-Service E Capacity.

Corresponding to each level-of-service shown in the table is a volume/capacity ratio. This is the ratio of either existing or projected traffic volumes to the capacity of the intersection. Capacity is defined as the maximum number of vehicles that can be accommodated by the roadway during a specified period of time. The capacity of a particular roadway is dependent upon its physical characteristics such as the number of lanes, the operational characteristics of the roadway (one-way, two-way, turn prohibitions, bus stops, etc.), the type of traffic using the roadway (trucks, buses, etc.) and turning movements.

Unsignalized Intersections

Like signalized intersections, the operating conditions of intersections controlled by stop signs can be classified by a level-of-service from A to F. However, the method for determining level-of-service for unsignalized intersections is based on the use of gaps in traffic on the major street by vehicles crossing or turning through that stream. Specifically, the capacity of the controlled legs of an intersection is based on two factors: 1) the distribution of gaps in the major street traffic stream, and 2) driver judgement in selecting gaps through which to execute a desired maneuver. The criteria for level-of-service at an unsignalized intersection is therefore based on delay of each turning movement. Table 3 summarizes the definitions for level-of-service and the corresponding delay. A subsequent calculation to determine an overall LoS was made, and these results are presented in tables to summarize traffic conditions using parameters similar to those used for *signalized intersections.*

Table 3 Level-of-Service Definitions for Unsignalized Intersections(1)

Level-of-Service	Expected Delay to Minor Street Traffic	Delay (Seconds)
A	Little of no delay	>5
B	Short traffic delays	5.1 to 10.0
C	Average traffic delays	10.1 to 20.0
D	Long traffic delays	20.1 to 30.0
E	Very long traffic delays	30.1 to 45.0
F	See note (2) below	>45.1

Notes:
(1) Source: *Highway Capacity Manual*, 1994.
(2) When demand volume exceeds the capacity of the lane, extreme delays will be encountered with queuing which may cause severe congestion affecting other traffic movements in the intersection. This condition usually warrants improvement of the intersection.

Existing Level-of-Service Analysis

The signalized intersections were analyzed using the signalized level-of-service (LoS) planning method. Results of these analyses are shown in Table 4. The calculated level-of-service were confirmed by field observations.

The signalized intersections operate at Level-of-Service D or better during the morning and afternoon peak hours, which is acceptable.

Table 4 Existing Level-of-Service Analysis for Signalized Intersections[3][4]

Intersection	AM Peak Hour		PM Peak Hour	
	V/C[1]	LoS[2]	V/C[1]	LoS[2]
Ward Avenue at Kinau Street	0.738	C	0.893	D
Alapai Street at Beretania Street	0.759	C	0.774	C

NOTES:
(1) V/C = Volume-to-Capacity Ratio
(2) LoS = Level-of-Service
(3) Level-of-Service calculated using planning method described in *Highway Capacity Manual.*
(4) For calculations, see Appendix C.

The results of the Level-of-Service analysis for the unsignalized intersections are summarized in Table 5. All of unsignalized intersections have minimal delay and operate at LOS 'A'.

Table 5 Existing Level-of-Service Analysis for Unsignalized Intersections[1]

Intersection	Weekday AM Peak Hour	Weekday PM Peak Hour
	Level of Service	Level of Service
Lusitania Street at Lunalilo Street	A	A
Lusitania Street at Alapai Street	A	A
Kinau Street at H1 Off-Ramp	A	A
Lusitania Street at Lauhala Street	A	A

NOTE:
(1) For calculations, see Appendix C.

Field Observations

During collection of traffic data and roadway geometrics, the following observations were recorded:

1. Traffic waiting to make right turns from southbound Ward Avenue to westbound Beretania Street periodically back up north of Kinau Street during both the morning and afternoon peak hours. This back up blocks the right lane of eastbound Kinau Street several times during the peak hour.

2. Traffic in the right lane of Beretania Street also backs up from Punchbowl Street to the intersection of Beretania Street at Alapai Street.

3. The queue waiting to merge with traffic along the H1 Off-ramp extends along Kinau Street from the Off-ramp to Lunalilo Street periodically during the afternoon peak hour.

3. PROJECTED CUMULATIVE TRAFFIC CONDITIONS

The purpose of this chapter is to discuss the assumptions and data used to estimate 2001 cumulative project traffic conditions. Cumulative traffic conditions are defined as the traffic conditions resulting from background growth and related projects.

Future traffic growth consist of two components. The first is ambient background growth that is a result of regional growth and cannot be attributed to a specific project. The second component is estimated traffic that will be generated by other development projects in the vicinity of the proposed project.

Background Traffic Growth Rate

The background growth rate of traffic in the study area was estimated from traffic projections provided in the Waikiki Regional Traffic Impact Study prepared by Kaku Associates in 1995. This study provided as estimate of future trip ends produced outside of Waikiki and for Oahu as a total for the year 2005. The study estimated that peak hour trip ends would increase 10% from 1995 to 2005, or 1% per year. Analysis of historical traffic counts performed on H1 indicate that a 1% per year growth rate may be conservative for the short term analysis performed for this study. Therefore, existing (1996) peak hour traffic volumes were expanded by a more conservative 2.0% per year for five years to estimate 2001 background growth between 1996 and 2001.

Related Project Generated Traffic

The second component in estimating cumulative traffic volumes is the traffic generated by other proposed projects in the vicinity. Related projects are defined as those projects that are under construction or have been approved for construction by the City and would significantly impact traffic in the study area.

It was determined that the expansion factors used to estimate background traffic growth from 1996 to 2001 would include any related projects in the vicinity. It was further determined that there are no specific plans for any projects within the immediate study area that would specifically impact the study intersections in the time frame of this project.

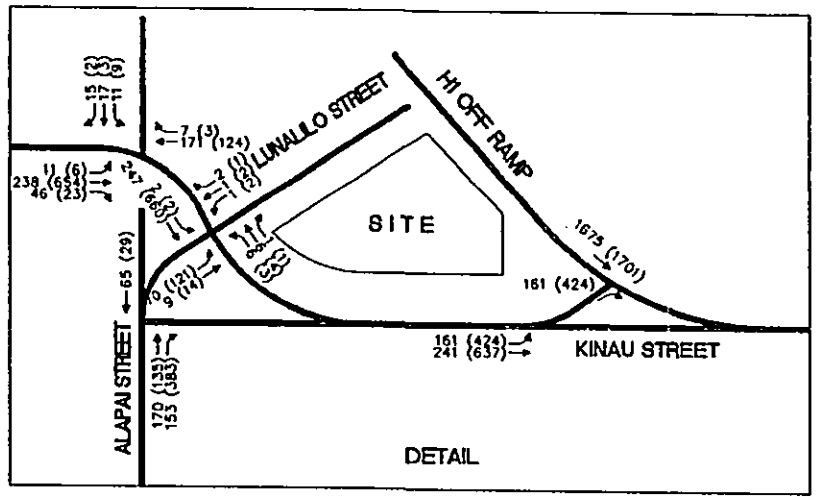
2001 Cumulative Traffic Volumes

Estimated 2001 cumulative traffic volumes are calculated by applying the background growth rate to existing traffic volumes and adding trips generated by related projects. The resulting 2001 cumulative peak hour traffic projections are shown in Figure 4.

NOT TO SCALE

LEGEND

100 (100)
- PM PEAK HOUR
- AM PEAK HOUR



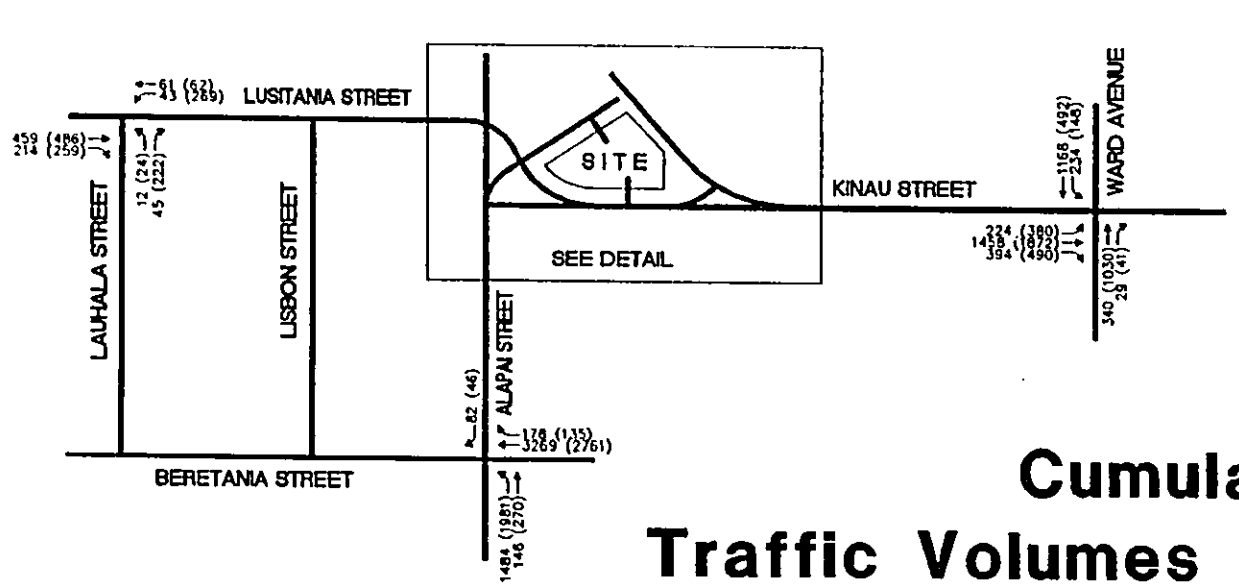


Figure 4

Cumulative Peak Hour Traffic Volumes Without Project

4. PROJECT-RELATED TRAFFIC CONDITIONS

This chapter discusses the methodology used to identify the traffic-related impacts of the proposed project. Generally, the process involves the determination of weekday and peak-hour trips that would be generated by the proposed project, distribution and assignment of these trips on the approach and departure routes, and finally, determination of the levels-of-service at affected intersections subsequent to implementation of the project.

Trip Generation

Future traffic volumes generated by the project were determined using trip generation equations contained in *Trip Generation*, Fifth Edition, prepared by the Institute of Transportation Engineers. The trip generation analysis and the resulting daily and peak hour volumes are summarized in Table 6.

Trip Distribution

The project-related trips were distributed along the anticipated approach routes to the project site. This information was obtained from previously conducted traffic studies in the area, which have been generally accepted by the reviewing agencies.

The approach and departure distributions are shown as percentages in Figure 5.

Table 6 Trip Generation Calculations

Period	Elderly Apartments Trips Per Unit[1]	Elderly Apartments Trips	Residential Apartments Trips Per Unit[1]	Residential Apartments Trips	Total Project Trips
Number of Units	48 Units		36 Units		
AM Peak Hour of Generator					
Total	0.06	3	0.34	12	15
% Inbound	50	2	22	3	5
% Outbound	50	1	78	9	10
PM Peak Hour of Generator					
Total	0.11	5	0.40	14	19
% Inbound	53	3	62	9	12
% Outbound	47	2	38	5	7

Notes:
(1) Source: Institute of Transportation Engineers, *Trip Generation*, Fifth Edition, 1991

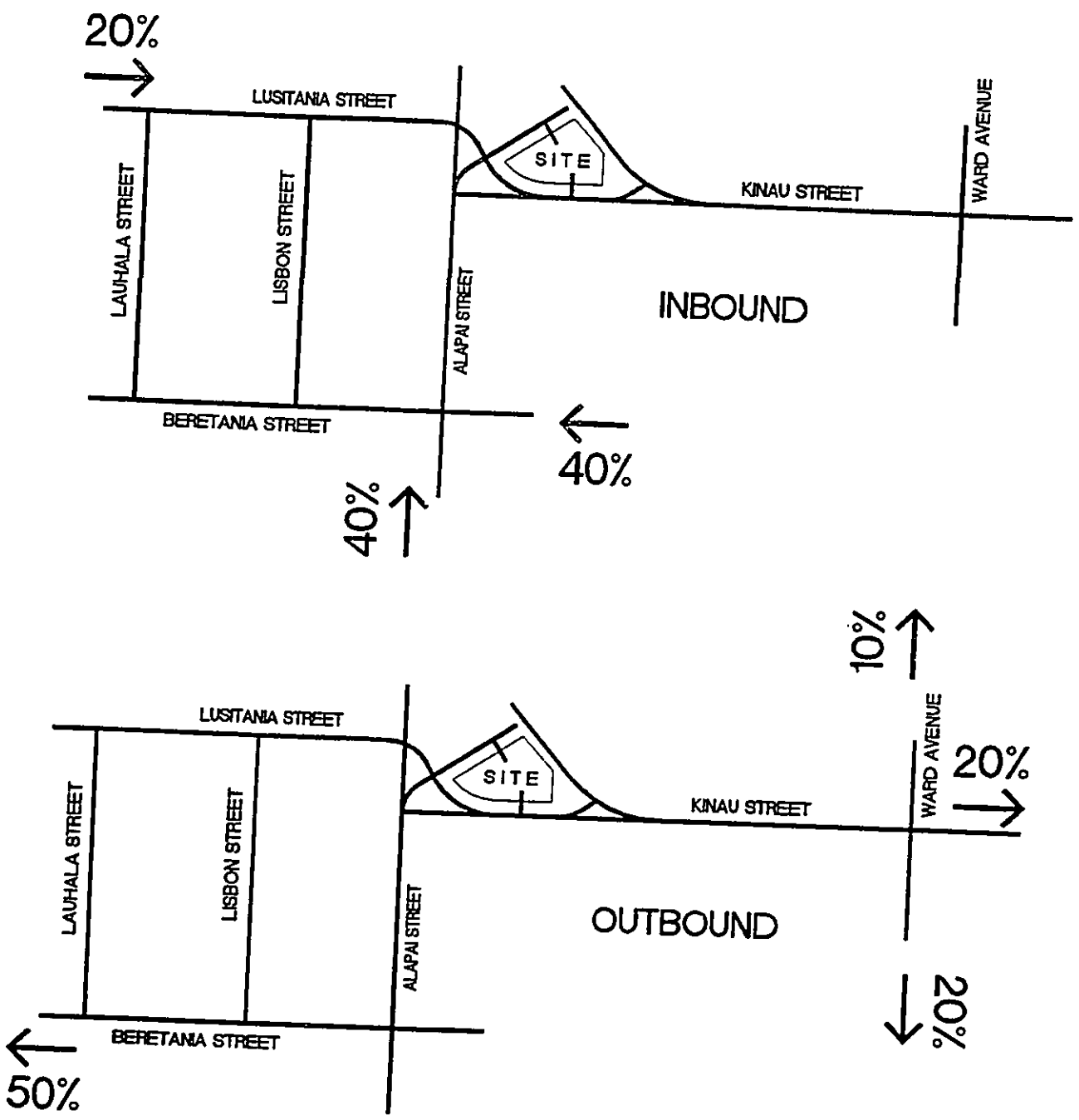


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Figure 5

Trip Distribution

Trip Assignment

Using the trip generation and trip distribution previously discussed, project-related traffic was assigned to the various traffic movements at the intersections studied. Figure 6 presents the project related traffic volumes for the total project.

2001 Cumulative Plus Project Peak Hour Traffic Volumes

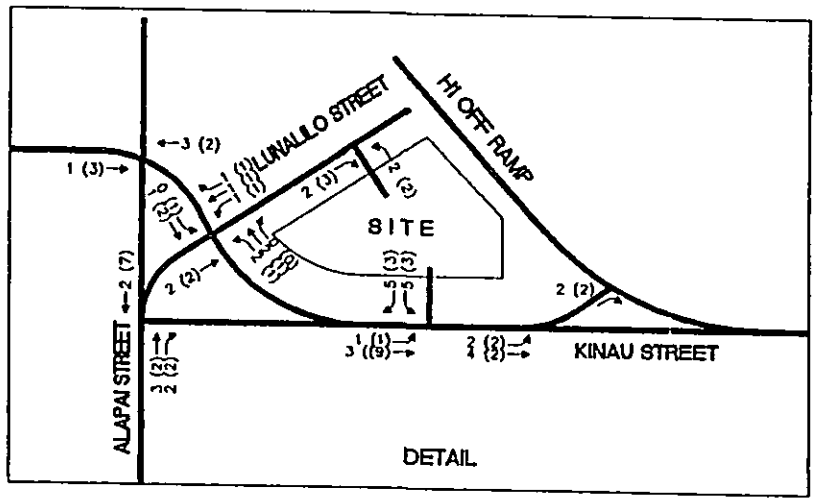
Future traffic volumes with the project were determined by superimposing the project-generated traffic on the 2001 cumulative traffic volumes presented in Chapter 3. The resulting peak hour traffic volumes for 2001 cumulative plus project are shown for the peak hours on Figure 7.

The traffic projection worksheets are presented as Appendix B.

NOT TO SCALE

LEGEND

100 (100)
- PM PEAK HOUR
- AM PEAK HOUR



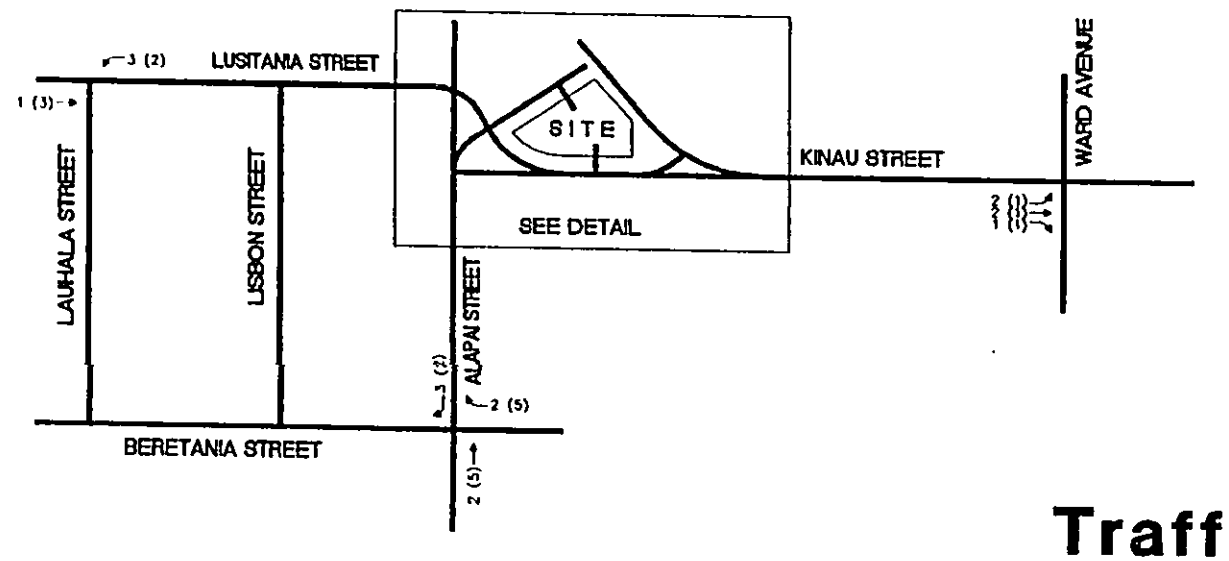


Figure 6

Traffic Assignments

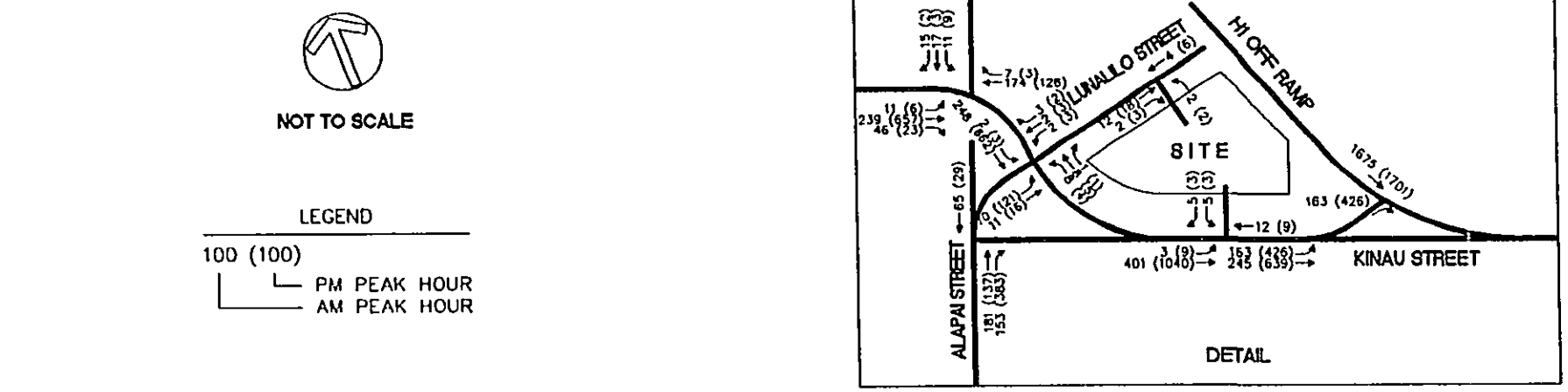


Figure 7

2001 Cumulative Plus Project Peak Hour Traffic Volumes

5. CONCLUSIONS AND RECOMMENDATIONS

The purpose of this chapter is to present the results of the level-of-service analysis, which identifies the project-related impacts. In addition, any mitigation measures necessary and feasible are identified and other access, egress and circulation issues are discussed.

Definition of Significant Impacts

Criteria for determining if a project has a significant traffic impact for which mitigation measures must be investigated have been established based on traffic impact study guidelines used in other traffic studies. Generally, the criteria are as follows: if the level-of-service (LOS) without the project is E or F and the volume/capacity (V/C) ratio changes less than 0.020, the project's traffic impacts are considered insignificant. However, if the V/C ratio change is greater than 0.020, then mitigation measures which will reduce the V/C ratio change to less than 0.020 must be identified. If the LOS with the project is D or better, then no mitigation measures need to be identified.

The above criteria has been used in the traffic impact studies for the Hawaii Convention Center and the Waikiki Regional Traffic Impact Study prepared for the City and County of Honolulu Department of Transportation Service and therefore has been used for this study.

Project Related Traffic Impacts and Mitigation Measures

The level-of-service analysis for 2001 are summarized in Tables 7 and 8. During the afternoon peak hour, the intersection of Ward Avenue at Kinau Street will operate at LOS E without or with the project. The intersection will operate at LOS D during the morning peak hour without or with the project. The intersection of Alapai Street at Beretania Street will operate at LOS D during both peak hours. However, the volume-to-capacity ratio changes less than the 0.020 for the impact to be considered significant and therefore no mitigation is required.

Table 7 Level-of-Service Analysis for Signalized Intersections[3]

Intersection	AM Peak Hour				PM Peak Hour			
	Without Project		With Project		Without Project		With Project	
	V/C[1]	LoS[2]	V/C[1]	LoS[2]	V/C[1]	LoS[2]	V/C[1]	LoS[2]
Ward Avenue at Kinau Street	0.805	D	0.806	D	0.976	E	0.977	E
Alapai Street at Beretania Street	0.839	D	0.841	D	0.854	D	0.856	D

NOTES:
(1) V/C = Volume-to-Capacity Ratio
(2) LoS = Level-of-Service
(3) Level-of-Service calculated using planning method described in *Highway Capacity Manual* and presented as Appendix C.

All unsignalized intersections will operate at LOS A during the peak hours. The calculations provided in Appendix C indicate that some movements will operate at LOS C but the overall intersection will operate at A.

Conclusions and Summary

Traffic related impacts at the study intersections are minimal and no mitigation measure are required. All intersections should operate at better than acceptable levels-of-service upon completion of the project without significant roadway improvements. The major intersections are expected to operate at LOS D or E without or with the project. In conclusion, this project will have an insignificant impact on the levels-of-service at the study intersections because of the small number of trips generated by the project.

APPENDIX A

PHOTOGRAPHS OF STUDY INTERSECTIONS

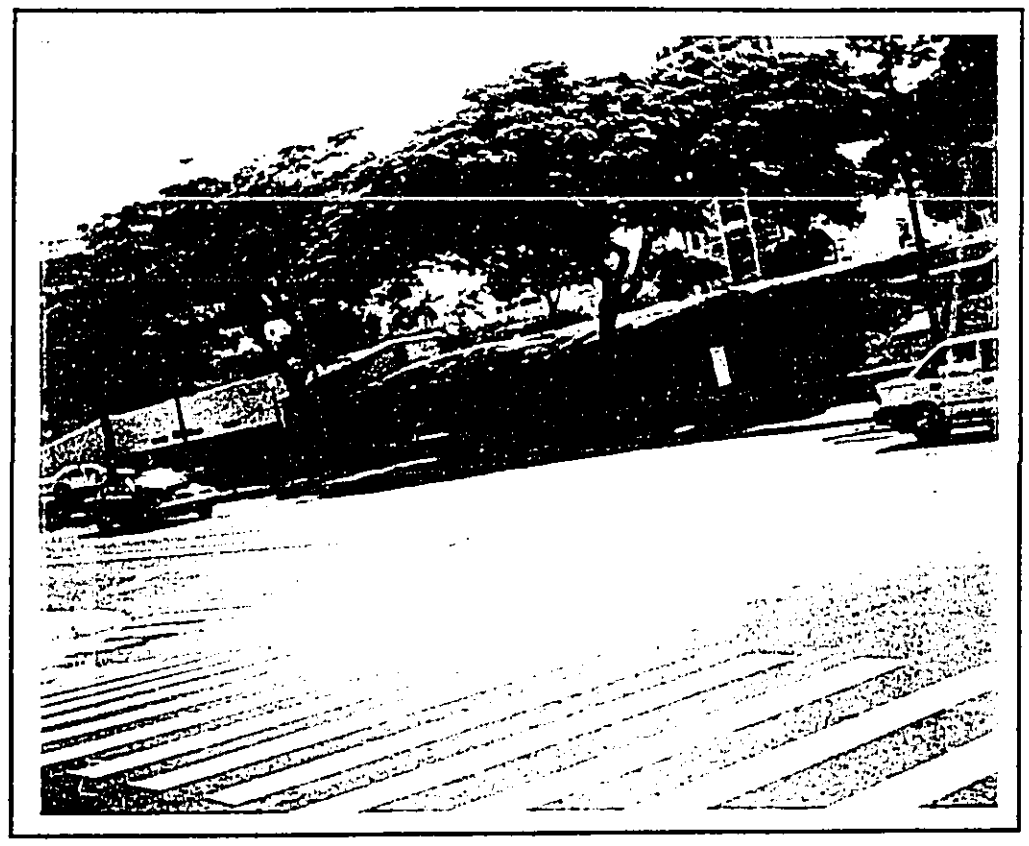


Figure A-1 Looking east along Beretania Street from the west side of Alapai Street.

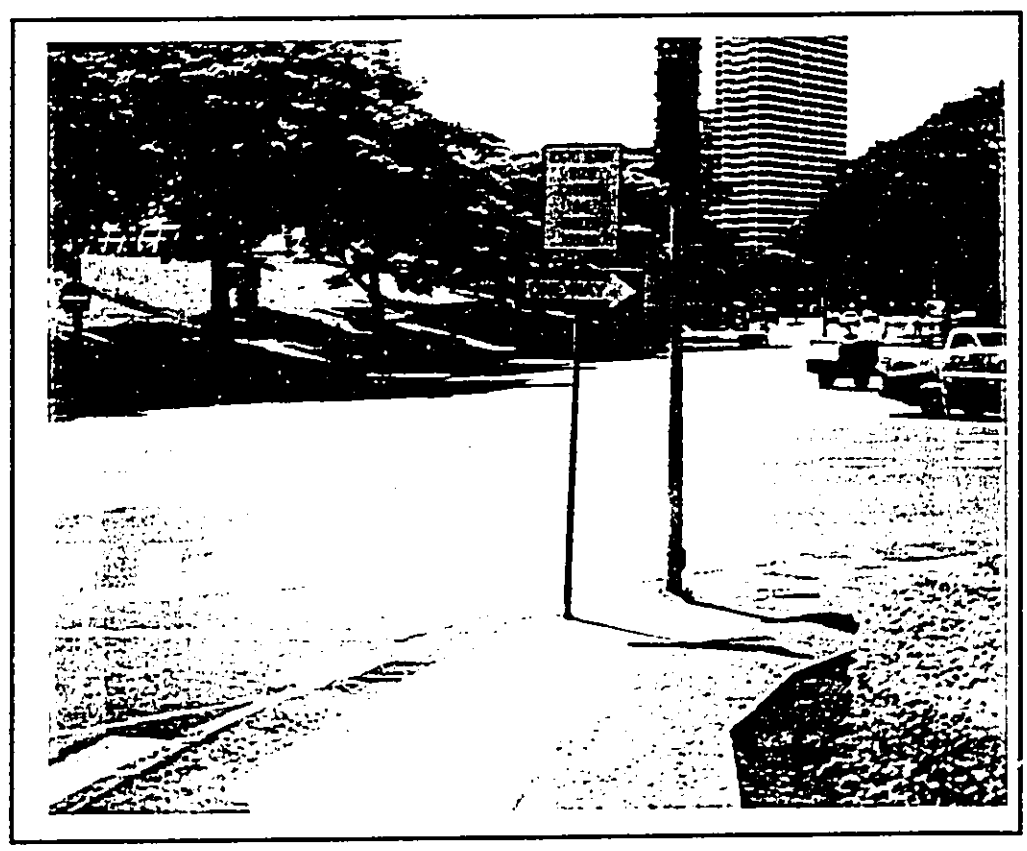


Figure A-2 Looking south along Alapai Street from north side of Beretania Street.

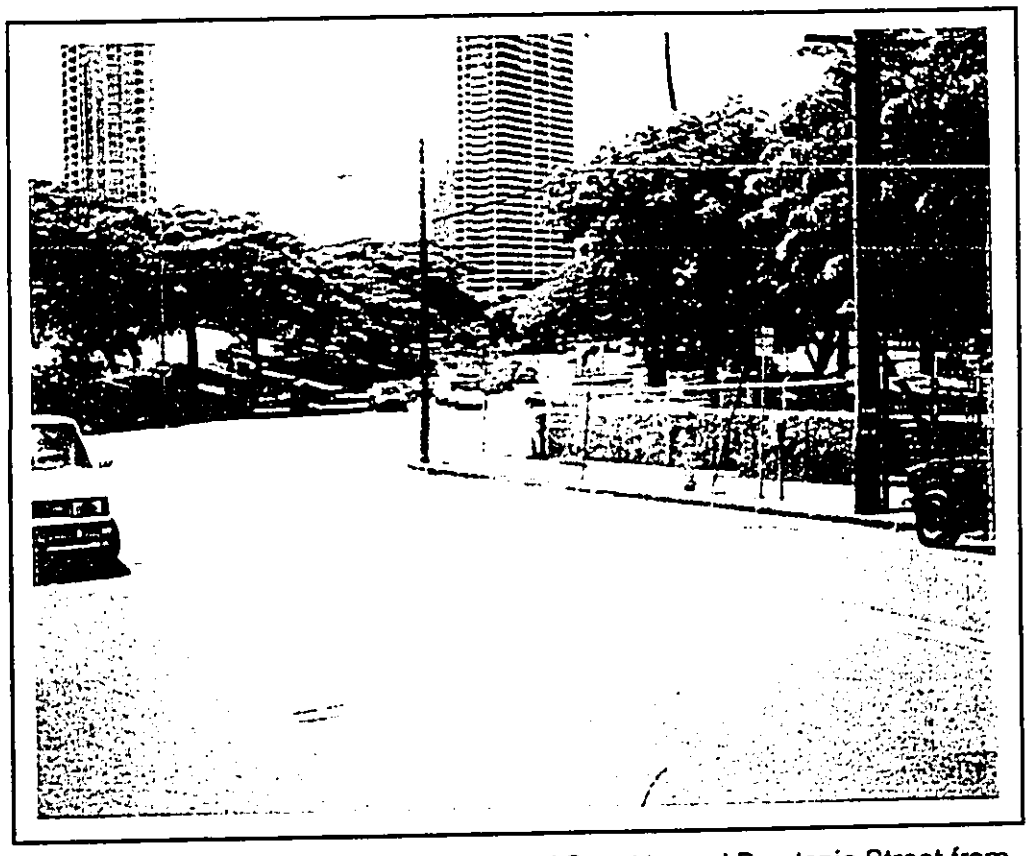


Figure A-3 Looking south along Alapai Street toward Beretania Street from Kinau Street.

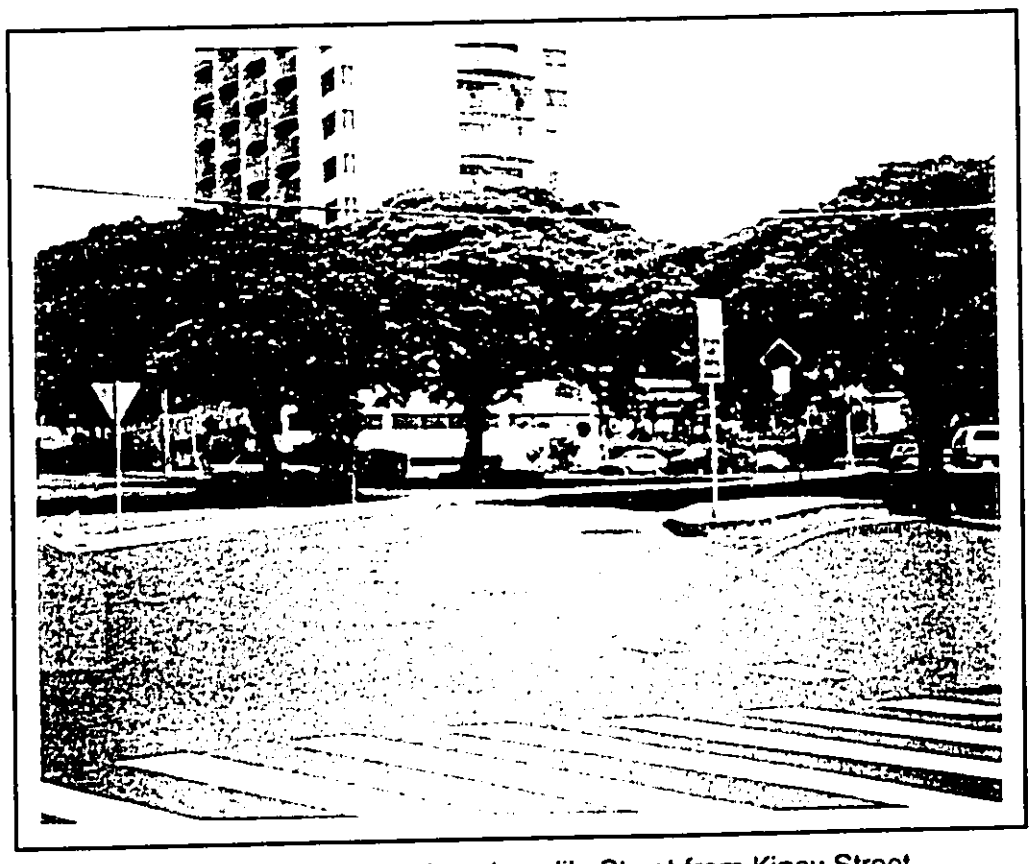


Figure A-4 Looking north along Lunalilo Street from Kinau Street.

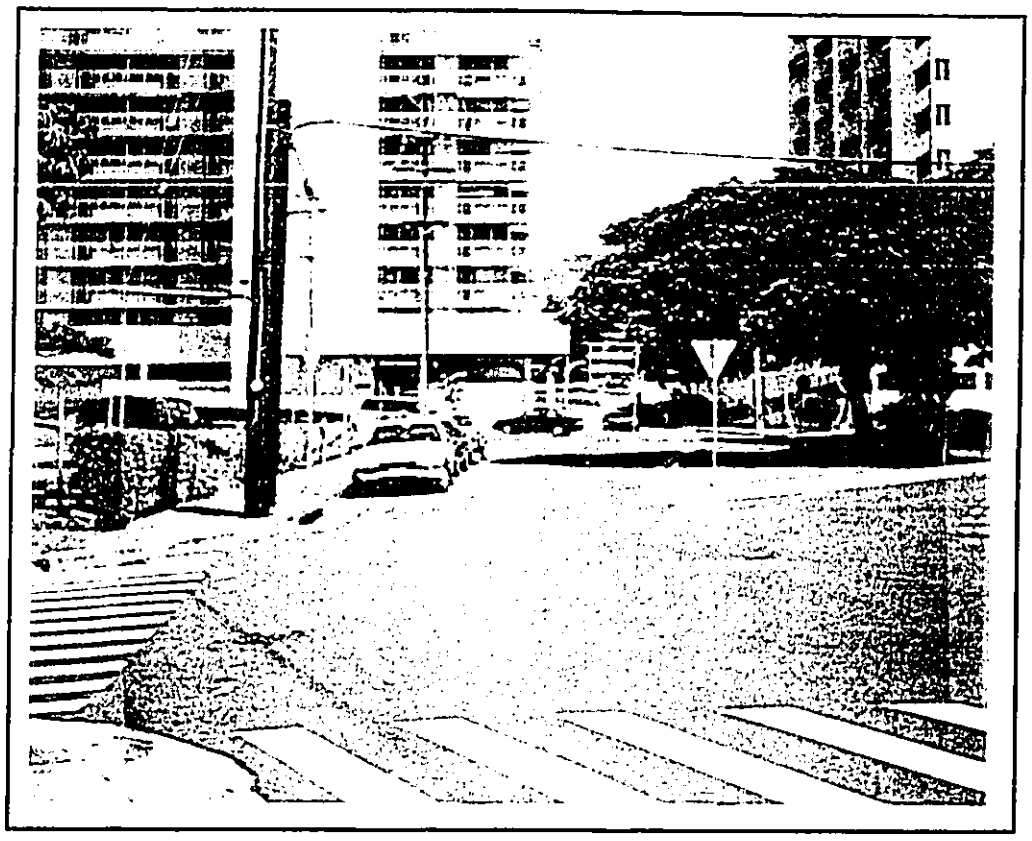


Figure A-5 Looking north along Alapai Street from Kinau Street.

Figure A-6 Looking north along Lunalilo Street from Lusitania Street.

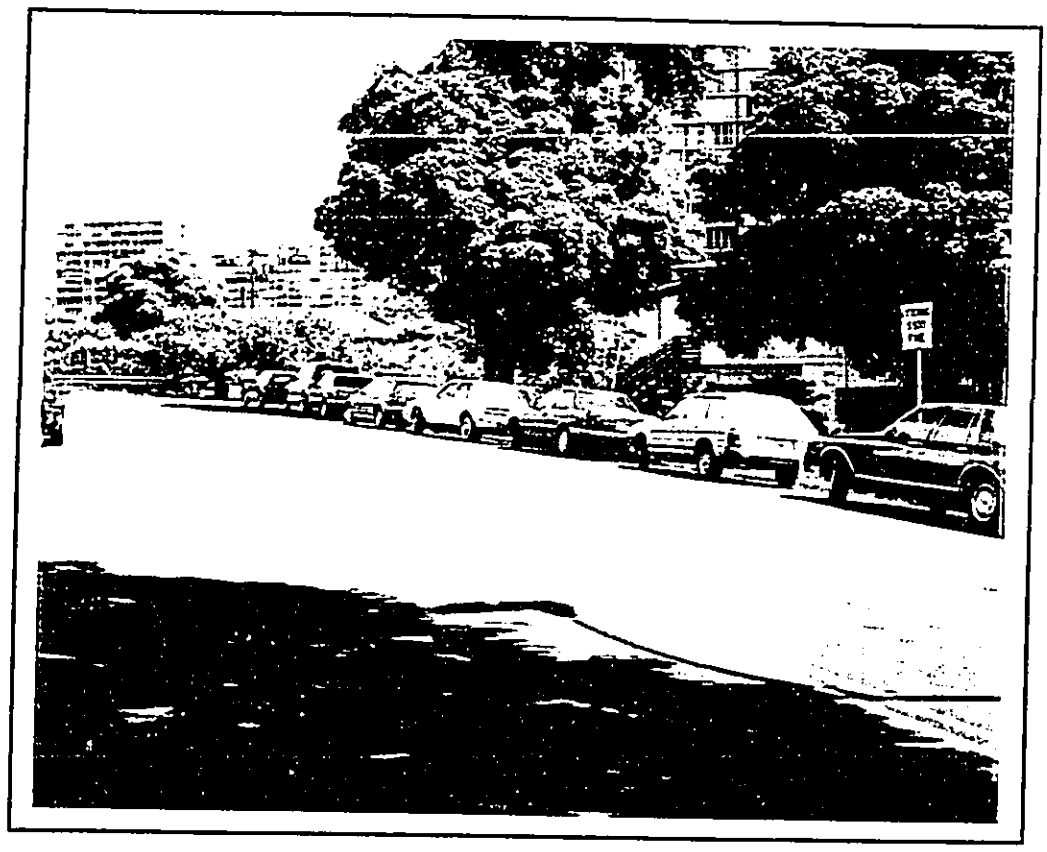


Figure A-7 Looking north along Lunalilo Street adjacent to site.

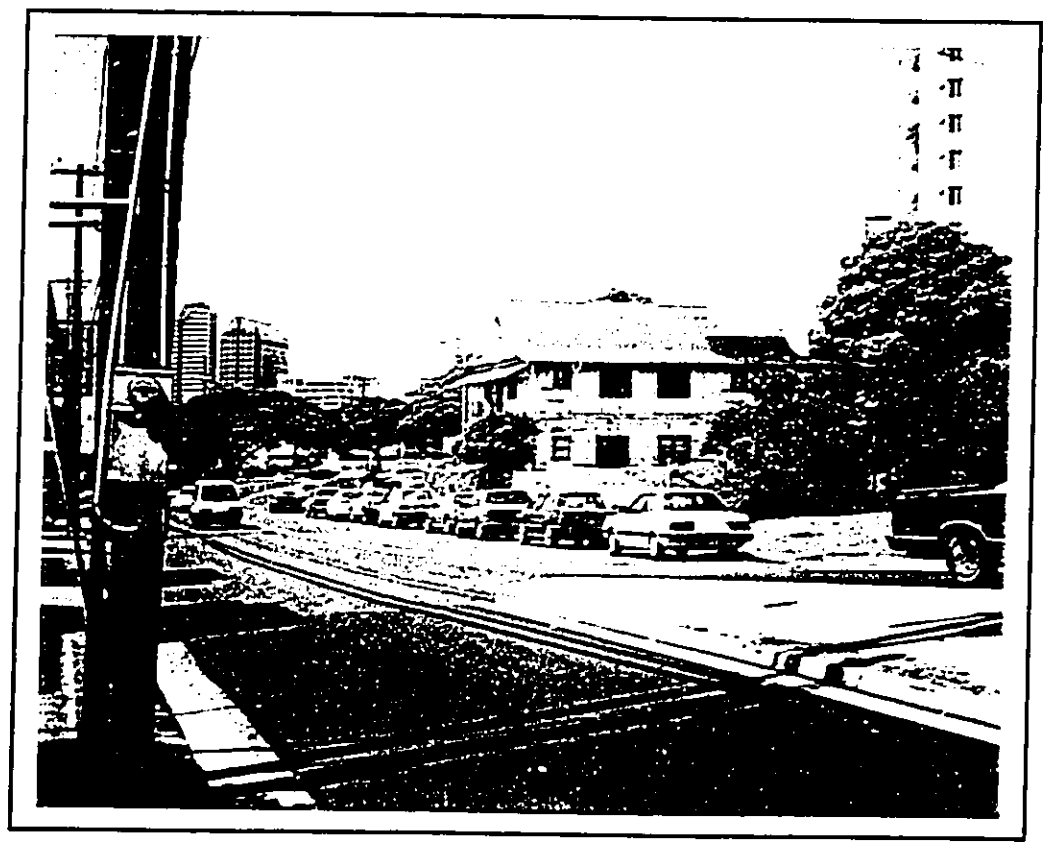


Figure A-8 Looking west along Kinau Street toward project site.

Figure A-9 Looking east along Kinau Street toward H1 Off-ramp and Ward Avenue.

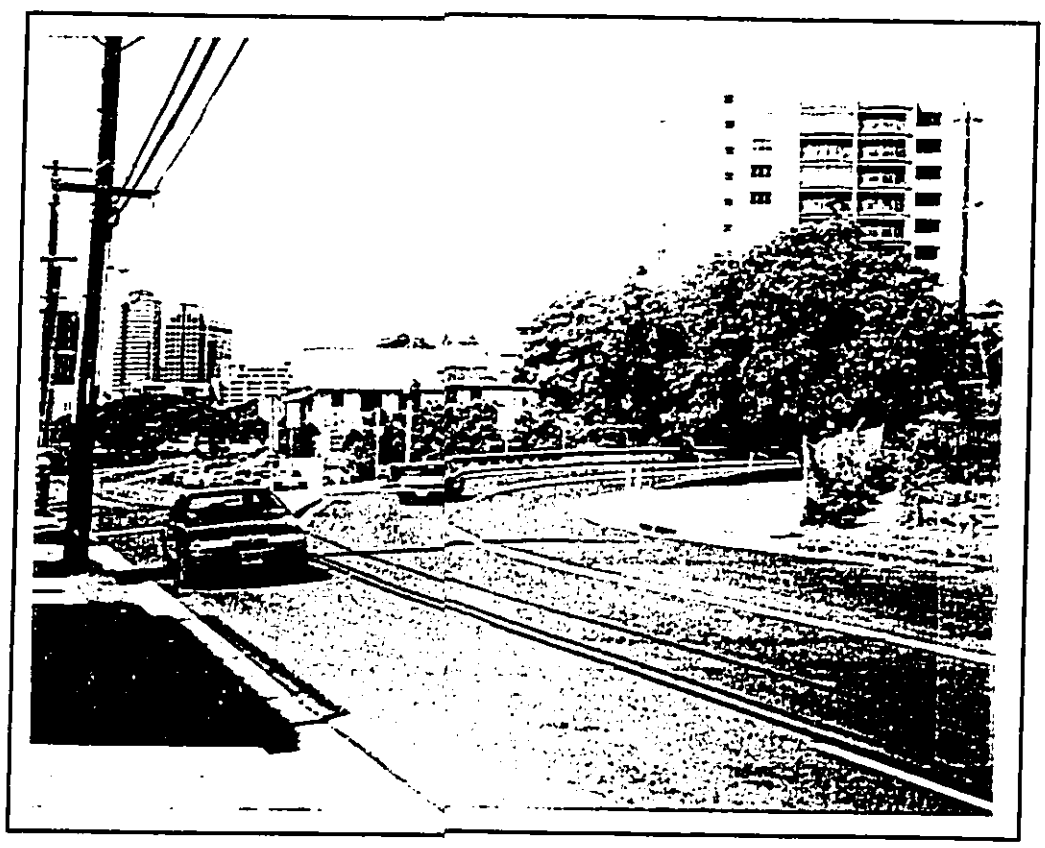


Figure A-10 H1 Off-ramp from Kinau Street.

Figure A-11 Looking west along Kinau Street from Ward Avenue.

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Streets: (N-S) Lunalilo Street (E-W) Lusitania Street
Major Street Direction.... EW
Length of Time Analyzed... 15 (min)
Analyst..... PJR
Date of Analysis..... 11/3/96
Other Information.....Cumulative Plus Project AM Peak Hour
Two-way Stop-controlled Intersection

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	> 1	0	0	> 1	1	0	> 1	0	0	> 1	< 0
Stop/Yield			N			N						
Volumes	2	248		8	8	1	170	11		2	2	3
PHF	.9	.9		.9	.9	.9	.9	.9		.9	.9	.9
Grade		0			0			0			0	
MC's (%)												
SU/RV's (%)												
CV's (%)												
PCE's	1.10			1.10			1.10	1.10		1.10	1.10	1.10

Adjustment Factors

Vehicle Maneuver	Critical Gap (tg)	Follow-up Time (tf)
Left Turn Major Road	5.00	2.10
Right Turn Minor Road	5.50	2.60
Through Traffic Minor Road	6.00	3.30
Left Turn Minor Road	6.50	3.40

Worksheet for TWSC Intersection

Step 1: RT from Minor Street	NB	SB
Conflicting Flows: (vph)		6
Potential Capacity: (pcph)		1375
Movement Capacity: (pcph)		1375
Prob. of Queue-Free State:		1.00

Step 2: LT from Major Street	WB	EB
Conflicting Flows: (vph)	736	7
Potential Capacity: (pcph)	764	1701
Movement Capacity: (pcph)	764	1701
Prob. of Queue-Free State:	0.99	1.00
TH Saturation Flow Rate: (pcphpl)	1700	1700
Major LT Shared Lane Prob. of Queue-Free State:	0.99	1.00

Step 3: TH from Minor Street	NB	SB
Conflicting Flows: (vph)	750	749
Potential Capacity: (pcph)	441	441
Capacity Adjustment Factor due to Impeding Movements	0.99	0.99
Movement Capacity: (pcph)	437	437
Prob. of Queue-Free State:	0.95	0.99

Step 4: LT from Minor Street	NB	SB
Conflicting Flows: (vph)	752	758
Potential Capacity: (pcph)	388	385
Major LT, Minor TH Impedance Factor:	0.98	0.95
Adjusted Impedance Factor:	0.99	0.96
Capacity Adjustment Factor due to Impeding Movements	0.99	0.96
Movement Capacity: (pcph)	383	369

Intersection Performance Summary

Movement		Flow Rate (pcph)	Move Cap (pcph)		Shared Cap (pcph)	Avg. Total Delay (sec/veh)	95% Queue Length (veh)	LOS	Approach Delay (sec/veh)
NB	L	147	383	>	389	16.0	2.1	C	
NB	T	20	437	>					16.0
SB	L	3	369	>					
SB	T	3	437	>	486	7.5	0.0	B	7.5
SB	R	2	1375	>					
EB	L	3	1701			2.1	0.0	A	0.0
WB	L	4	764			4.7	0.0	A	1.9

Intersection Delay = 2.8 sec/veh

Part 5
LEVEL-OF-SERVICE CALCULATIONS
Royal Kinau Apartments TIAR
November 1996

INTERSECTION NO 4
INTERSECTION OF Alapai Street at S. Beretania Street

CAPACITY INPUTS		Appr & Mvt	Existing: Appr Lanes	Existing: Capacity	Existing: Volumes AM	Existing: Volumes PM	Existing: V/C Ratios AM	Existing: V/C Ratios PM	Cumulative Peak Hour: Appr Lanes	Cumulative Peak Hour: Capacity	Cumulative Peak Hour: Volumes AM	Cumulative Peak Hour: Volumes PM	Cumulative Peak Hour: V/C Ratios AM	Cumulative Peak Hour: V/C Ratios PM	Cumulative Plus Poject: Appr Lanes	Cumulative Plus Poject: Capacity	Cumulative Plus Poject: Volumes AM	Cumulative Plus Poject: Volumes PM	Cumulative Plus Poject: V/C Ratios AM	Cumulative Plus Poject: V/C Ratios PM
THRU Lane Capacity (vph):	1500	N- RT	1	1500	74	42	0.044	0.025	1	1500	82	46	0.049	0.028	1	1500	85	48	0.051	0.029
LEFT Lane Capacity (vph):	1500	TH	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DBL LT PENALTY (%):	10	LT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CYCLE LENGTH (secs):	120	E- RT	0	0	181	122	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AMBER (% of cycle):	0	TH	5	7500	2961	2501	0	0	0	0	178	135	0	0	0	0	0	0	0	0
NORTH RTOR (%):	10	LT	0	0	0	0	0.416	0.35	5	7500	3269	2761	0.46	0.386	5	7500	3269	2761	0.46	0.387
EAST RTOR (%):	10	S- RT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SOUTH RTOR (%):	10	TH	1	1500	132	245	0.088	0.163	0	0	0	0	0	0	0	0	0	0	0	0
WEST RTOR (%):	10	LT	3	4500	1344	1794	0.299	0.399	1	1500	146	270	0.097	0.18	1	1500	148	275	0.099	0.183
		W- RT	0	0	0	0	0	0	3	4500	1484	1981	0.33	0.44	3	4500	1484	1981	0.33	0.44
		TH	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		LT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		N-S(1):					0.343	0.424					0.379	0.468					0.381	0.469
		N-S(2):					0.068	0.163					0.097	0.180					0.099	0.183
		E-W(1):					0.416	0.350					0.460	0.386					0.460	0.387
		E-W(2):					0.000	0.000					0.000	0.000					0.000	0.000
		V/C:					0.759	0.774					0.839	0.854					0.841	0.856
		AMBER:					0.000	0.000					0.000	0.000					0.000	0.000
		ADJUSTMENTS					0.759	0.774					0.839	0.854					0.841	0.856
							C	C					D	D					D	D

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Major Street Direction.... EW
Length of Time Analyzed... 15 (min)
Analyst..... PJR
Date of Analysis..... 11/3/96
Other Information.....Cumulative Plus Project PM Peak Hour
Two-way Stop-controlled Intersection

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	> 1	0	0	> 1	1	0	> 1	0	0	> 1	< 0
Stop/Yield			N			N						
Volumes	3	662		4	5	1	121	16		3	3	2
PHF	.9	.9		.9	.9	.9	.9	.9		.9	.9	.9
Grade		0			0			0			0	
MC's (%)												
SU/RV's (%)												
CV's (%)												
PCE's	1.10			1.10			1.10	1.10		1.10	1.10	1.10

Adjustment Factors

Vehicle Maneuver	Critical Gap (tg)	Follow-up Time (tf)
Left Turn Major Road	5.00	2.10
Right Turn Minor Road	5.50	2.60
Through Traffic Minor Road	6.00	3.30
Left Turn Minor Road	6.50	3.40

Worksheet for TWSC Intersection

Step 1: RT from Minor Street	NB	SB
Conflicting Flows: (vph)		9
Potential Capacity: (pcph)		1370
Movement Capacity: (pcph)		1370
Prob. of Queue-Free State:		1.00
Step 2: LT from Major Street	**WB**	**EB**
Conflicting Flows: (vph)	276	10
Potential Capacity: (pcph)	1266	1696
Movement Capacity: (pcph)	1266	1696
Prob. of Queue-Free State:	0.99	1.00
TH Saturation Flow Rate: (pcphpl)	1700	1700
Major LT Shared Lane Prob. of Queue-Free State:	0.99	1.00
Step 3: TH from Minor Street	**NB**	**SB**
Conflicting Flows: (vph)	297	296
Potential Capacity: (pcph)	762	763
Capacity Adjustment Factor due to Impeding Movements	0.99	0.99
Movement Capacity: (pcph)	755	756
Prob. of Queue-Free State:	0.98	1.00
Step 4: LT from Minor Street	**NB**	**SB**
Conflicting Flows: (vph)	298	302
Potential Capacity: (pcph)	712	708
Major LT, Minor TH Impedance Factor:	0.99	0.97
Adjusted Impedance Factor:	0.99	0.98
Capacity Adjustment Factor due to Impeding Movements	0.99	0.98
Movement Capacity: (pcph)	704	694

Intersection Performance Summary

Movement	Flow Rate (pcph)	Move Cap (pcph)	Shared Cap (pcph)	Avg. Total Delay (sec/veh)	95% Queue Length (veh)	LOS	Approach Delay (sec/veh)
NB L	208	704 >	707	7.4	1.5	B	
NB T	13	755 >					7.4
SB L	2	694 >					
SB T	2	756 >	907	4.0	0.0	A	4.0
SB R	3	1370 >					
EB L	2	1696		2.1	0.0	A	0.0
WB L	10	1266		2.9	0.0	A	1.3

Intersection Delay = 3.1 sec/veh

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Major Street Direction.... EW
Length of Time Analyzed... 15 (min)
Analyst.,..... PJR
Date of Analysis..... 11/3/96
Other Information.....Cumulative PM Peak Hour
Two-way Stop-controlled Intersection

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	> 1	0	0	> 1	1	0	> 1	0	0	> 1	< 0
Stop/Yield			N			N						
Volumes	2	660		3	4	1	121	14		2	2	1
PHF	.9	.9		.9	.9	.9	.9	.9		.9	.9	.9
Grade		0			0			0			0	
MC's (%)												
SU/RV's (%)												
CV's (%)												
PCE's	1.10			1.10			1.10	1.10		1.10	1.10	1.10

Adjustment Factors

Vehicle Maneuver	Critical Gap (tg)	Follow-up Time (tf)
Left Turn Major Road	5.00	2.10
Right Turn Minor Road	5.50	2.60
Through Traffic Minor Road	6.00	3.30
Left Turn Minor Road	6.50	3.40

Worksheet for TWSC Intersection

Step 1: RT from Minor Street	NB	SB
Conflicting Flows: (vph)		4
Potential Capacity: (pcph)		1378
Movement Capacity: (pcph)		1378
Prob. of Queue-Free State:		1.00

Step 2: LT from Major Street	WB	EB
Conflicting Flows: (vph)	733	5
Potential Capacity: (pcph)	767	1705
Movement Capacity: (pcph)	767	1705
Prob. of Queue-Free State:	1.00	1.00
TH Saturation Flow Rate: (pcphpl)	1700	1700
Major LT Shared Lane Prob. of Queue-Free State:	1.00	1.00

Step 3: TH from Minor Street	NB	SB
Conflicting Flows: (vph)	743	742
Potential Capacity: (pcph)	445	445
Capacity Adjustment Factor due to Impeding Movements	0.99	0.99
Movement Capacity: (pcph)	442	442
Prob. of Queue-Free State:	0.96	1.00

Step 4: LT from Minor Street	NB	SB
Conflicting Flows: (vph)	744	750
Potential Capacity: (pcph)	393	390
Major LT, Minor TH Impedance Factor:	0.99	0.95
Adjusted Impedance Factor:	0.99	0.96
Capacity Adjustment Factor due to Impeding Movements	0.99	0.96
Movement Capacity: (pcph)	390	376

Intersection Performance Summary

Movement		Flow Rate (pcph)	Move Cap (pcph)		Shared Cap (pcph)	Avg. Total Delay (sec/veh)	95% Queue Length (veh)	LOS	Approach Delay (sec/veh)
NB	L	147	390	>	395	15.5	2.1	C	
NB	T	18	442	>					15.5
SB	L	2	376	>					
SB	T	2	442	>	473	7.7	0.0	B	7.7
SB	R	1	1378	>					
EB	L	2	1705			2.1	0.0	A	0.0
WB	L	3	767			4.7	0.0	A	1.8

Intersection Delay = 2.7 sec/veh

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Major Street Direction.... EW
Length of Time Analyzed... 15 (min)
Analyst..... PJR
Date of Analysis..... 11/3/96
Other Information.....Cumulative AM Peak Hour
Two-way Stop-controlled Intersection

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	> 1	0	0	> 1	1	0	> 1	0	0	> 1	< 0
Stop/Yield			N			N						
Volumes	2	247		6	6	1	170	9		1	1	2
PHF	.9	.9		.9	.9	.9	.9	.9		.9	.9	.9
Grade		0			0			0			0	
MC's (%)												
SU/RV's (%)												
CV's (%)												
PCE's	1.10			1.10			1.10	1.10		1.10	1.10	1.10

Adjustment Factors

Vehicle Maneuver	Critical Gap (tg)	Follow-up Time (tf)
Left Turn Major Road	5.00	2.10
Right Turn Minor Road	5.50	2.60
Through Traffic Minor Road	6.00	3.30
Left Turn Minor Road	6.50	3.40

Worksheet for TWSC Intersection

Step 1: RT from Minor Street	NB	SB
Conflicting Flows: (vph)		7
Potential Capacity: (pcph)		1373
Movement Capacity: (pcph)		1373
Prob. of Queue-Free State:		1.00

Step 2: LT from Major Street	WB	EB
Conflicting Flows: (vph)	274	8
Potential Capacity: (pcph)	1269	1699
Movement Capacity: (pcph)	1269	1699
Prob. of Queue-Free State:	0.99	1.00
TH Saturation Flow Rate: (pcphpl)	1700	1700
Major LT Shared Lane Prob. of Queue-Free State:	0.99	1.00

Step 3: TH from Minor Street	NB	SB
Conflicting Flows: (vph)	291	290
Potential Capacity: (pcph)	768	768
Capacity Adjustment Factor due to Impeding Movements	0.99	0.99
Movement Capacity: (pcph)	762	762
Prob. of Queue-Free State:	0.99	1.00

Step 4: LT from Minor Street	NB	SB
Conflicting Flows: (vph)	292	296
Potential Capacity: (pcph)	717	714
Major LT, Minor TH Impedance Factor:	0.99	0.98
Adjusted Impedance Factor:	0.99	0.98
Capacity Adjustment Factor due to Impeding Movements	0.99	0.98
Movement Capacity: (pcph)	711	702

Intersection Performance Summary

Movement		Flow Rate (pcph)	Move Cap (pcph)	Shared Cap (pcph)	Avg. Total Delay (sec/veh)	95% Queue Length (veh)	LOS	Approach Delay (sec/veh)
NB	L	208	711 >	713	7.3	1.4	B	
NB	T	11	762 >					7.3
SB	L	1	702 >					
SB	T	1	762 >	954	3.8	0.0	A	3.8
SB	R	2	1373 >					
EB	L	2	1699		2.1	0.0	A	0.0
WB	L	8	1269		2.9	0.0	A	1.3

Intersection Delay = 3.0 sec/veh

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Major Street Direction.... EW
Length of Time Analyzed... 15 (min)
Analyst..... PJR
Date of Analysis..... 11/3/96
Other Information.....Existing PM Peak Hour
Two-way Stop-controlled Intersection

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	> 1	0	0	> 1	1	0	> 1	0	0	> 1	< 0
Stop/Yield			N			N						
Volumes	2	598		3	4	1	110	13		2	2	1
PHF	.9	.9		.9	.9	.9	.9	.9		.9	.9	.9
Grade		0			0			0			0	
MC's (%)												
SU/RV's (%)												
CV's (%)												
PCE's	1.10			1.10			1.10	1.10		1.10	1.10	1.10

Adjustment Factors

Vehicle Maneuver	Critical Gap (tg)	Follow-up Time (tf)
Left Turn Major Road	5.00	2.10
Right Turn Minor Road	5.50	2.60
Through Traffic Minor Road	6.00	3.30
Left Turn Minor Road	6.50	3.40

Worksheet for TWSC Intersection

Step 1: RT from Minor Street	NB	SB
Conflicting Flows: (vph)		4
Potential Capacity: (pcph)		1378
Movement Capacity: (pcph)		1378
Prob. of Queue-Free State:		1.00

Step 2: LT from Major Street	WB	EB
Conflicting Flows: (vph)	664	5
Potential Capacity: (pcph)	827	1705
Movement Capacity: (pcph)	827	1705
Prob. of Queue-Free State:	1.00	1.00
TH Saturation Flow Rate: (pcphpl)	1700	1700
Major LT Shared Lane Prob. of Queue-Free State:	1.00	1.00

Step 3: TH from Minor Street	NB	SB
Conflicting Flows: (vph)	674	673
Potential Capacity: (pcph)	483	484
Capacity Adjustment Factor due to Impeding Movements	0.99	0.99
Movement Capacity: (pcph)	480	481
Prob. of Queue-Free State:	0.97	1.00

Step 4: LT from Minor Street	NB	SB
Conflicting Flows: (vph)	674	680
Potential Capacity: (pcph)	431	428
Major LT, Minor TH Impedance Factor:	0.99	0.96
Adjusted Impedance Factor:	0.99	0.97
Capacity Adjustment Factor due to Impeding Movements	0.99	0.97
Movement Capacity: (pcph)	428	416

Intersection Performance Summary

Movement		Flow Rate (pcph)	Move Cap (pcph)		Shared Cap (pcph)	Avg. Total Delay (sec/veh)	95% Queue Length (veh)	LOS	Approach Delay (sec/veh)
NB	L	134	428	>	433	12.6	1.6	C	
NB	T	15	480	>					12.6
SB	L	2	416	>					
SB	T	2	481	>	516	7.0	0.0	B	7.0
SB	R	1	1378	>					
EB	L	2	1705			2.1	0.0	A	0.0
WB	L	3	827			4.4	0.0	A	1.6

Intersection Delay = 2.2 sec/veh

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Major Street Direction.... EW
Length of Time Analyzed... 15 (min)
Analyst..... PJR
Date of Analysis..... 11/3/96
Other Information.....Existing AM Peak Hour
Two-way Stop-controlled Intersection

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	> 1	0	0	> 1	1	0	> 1	0	0	> 1	< 0
Stop/Yield			N			N						
Volumes	2	224		5	5	1	154	8		1	1	2
PHF	.9	.9		.9	.9	.9	.9	.9		.9	.9	.9
Grade		0			0			0			0	
MC's (%)												
SU/RV's (%)												
CV's (%)												
PCE's	1.10			1.10			1.10	1.10		1.10	1.10	1.10

Adjustment Factors

Vehicle Maneuver	Critical Gap (tg)	Follow-up Time (tf)
Left Turn Major Road	5.00	2.10
Right Turn Minor Road	5.50	2.60
Through Traffic Minor Road	6.00	3.30
Left Turn Minor Road	6.50	3.40

Worksheet for TWSC Intersection

Step 1: RT from Minor Street	NB	SB
Conflicting Flows: (vph)		6
Potential Capacity: (pcph)		1375
Movement Capacity: (pcph)		1375
Prob. of Queue-Free State:		1.00

Step 2: LT from Major Street	WB	EB
Conflicting Flows: (vph)	249	7
Potential Capacity: (pcph)	1304	1701
Movement Capacity: (pcph)	1304	1701
Prob. of Queue-Free State:	0.99	1.00
TH Saturation Flow Rate: (pcphpl)	1700	1700
Major LT Shared Lane Prob. of Queue-Free State:	0.99	1.00

Step 3: TH from Minor Street	NB	SB
Conflicting Flows: (vph)	264	263
Potential Capacity: (pcph)	793	794
Capacity Adjustment Factor due to Impeding Movements	0.99	0.99
Movement Capacity: (pcph)	788	789
Prob. of Queue-Free State:	0.99	1.00

Step 4: LT from Minor Street	NB	SB
Conflicting Flows: (vph)	264	268
Potential Capacity: (pcph)	745	741
Major LT, Minor TH Impedance Factor:	0.99	0.98
Adjusted Impedance Factor:	0.99	0.99
Capacity Adjustment Factor due to Impeding Movements	0.99	0.99
Movement Capacity: (pcph)	739	730

Intersection Performance Summary

Movement	Flow Rate (pcph)	Move Cap (pcph)	Shared Cap (pcph)	Avg. Total Delay (sec/veh)	95% Queue Length (veh)	LOS	Approach Delay (sec/veh)
NB L	188	739 >	741	6.6	1.2	B	
NB T	10	788 >					6.6
SB L	1	730 >					
SB T	1	789 >	978	3.7	0.0	A	3.7
SB R	2	1375 >					
EB L	2	1701		2.1	0.0	A	0.0
WB L	7	1304		2.8	0.0	A	1.3

Intersection Delay = 2.7 sec/veh

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Streets: (N-S) Alapai Street (E-W) Lusitania Street
Major Street Direction.... EW
Length of Time Analyzed... 60 (min)
Analyst..... PJR
Date of Analysis..... 11/3/96
Other Information.....Cumulative Plus Project PM Peak Hour
Two-way Stop-controlled Intersection

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	> 1	< 0	0	1	< 0	0	0	0	0	> 1	< 0
Stop/Yield			N			N						
Volumes	6	657	23		126	3				9	3	2
PHF	.9	.9	.9		.9	.9				.9	.9	.9
Grade		0			0						0	
MC's (%)												
SU/RV's (%)												
CV's (%)												
PCE's	1.10									1.10	1.10	1.10

Adjustment Factors

Vehicle Maneuver	Critical Gap (tg)	Follow-up Time (tf)
Left Turn Major Road	5.00	2.10
Right Turn Minor Road	5.50	2.60
Through Traffic Minor Road	6.00	3.30
Left Turn Minor Road	6.50	3.40

Worksheet for TWSC Intersection

Step 1: RT from Minor Street	NB	SB
Conflicting Flows: (vph)		142
Potential Capacity: (pcph)		1173
Movement Capacity: (pcph)		1173
Prob. of Queue-Free State:		1.00

Step 2: LT from Major Street	WB	EB
Conflicting Flows: (vph)		143
Potential Capacity: (pcph)		1465
Movement Capacity: (pcph)		1465
Prob. of Queue-Free State:		0.99
TH Saturation Flow Rate: (pcphpl)		1700
RT Saturation Flow Rate: (pcphpl)		1700
Major LT Shared Lane Prob. of Queue-Free State:		0.99

Step 3: TH from Minor Street	NB	SB
Conflicting Flows: (vph)		904
Potential Capacity: (pcph)		366
Capacity Adjustment Factor due to Impeding Movements		0.99
Movement Capacity: (pcph)		362
Prob. of Queue-Free State:		0.99

Step 4: LT from Minor Street	NB	SB
Conflicting Flows: (vph)		892
Potential Capacity: (pcph)		322
Major LT, Minor TH Impedance Factor:		0.99
Adjusted Impedance Factor:		0.99
Capacity Adjustment Factor due to Impeding Movements		0.99
Movement Capacity: (pcph)		319

Intersection Performance Summary

Movement		Flow Rate (pcph)	Move Cap (pcph)	Shared Cap (pcph)	Avg. Total Delay (sec/veh)	95% Queue Length (veh)	LOS	Approach Delay (sec/veh)
SB	L	11	319 >					
SB	T	3	362 >	360	10.5	0.0	C	10.5
SB	R	2	1173 >					
EB	L	8	1465		2.5	0.0	A	0.0

Intersection Delay = 0.2 sec/veh

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Major Street Direction.... EW
Length of Time Analyzed... 60 (min)
Analyst..... PJR
Date of Analysis..... 11/3/96
Other Information.....Cumulative Plus Project AM Peak Hour
Two-way Stop-controlled Intersection

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	> 1	< 0	0	1	< 0	0	0	0	0	> 1	< 0
Stop/Yield			N			N						
Volumes	11	239	46		174	7				11	17	15
PHF	.9	.9	.9		.9	.9				.9	.9	.9
Grade		0			0						0	
MC's (%)												
SU/RV's (%)												
CV's (%)												
PCE's	1.10									1.10	1.10	1.10

Adjustment Factors

Vehicle Maneuver	Critical Gap (tg)	Follow-up Time (tf)
Left Turn Major Road	5.00	2.10
Right Turn Minor Road	5.50	2.60
Through Traffic Minor Road	6.00	3.30
Left Turn Minor Road	6.50	3.40

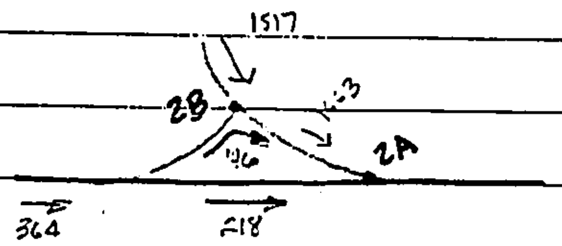
Worksheet for TWSC Intersection

Step 1: RT from Minor Street	NB	SB
Conflicting Flows: (vph)		197
Potential Capacity: (pcph)		1100
Movement Capacity: (pcph)		1100
Prob. of Queue-Free State:		0.98

Step 2: LT from Major Street	WB	EB
Conflicting Flows: (vph)		201
Potential Capacity: (pcph)		1375
Movement Capacity: (pcph)		1375
Prob. of Queue-Free State:		0.99
TH Saturation Flow Rate: (pcphpl)		1700
RT Saturation Flow Rate: (pcphpl)		1700
Major LT Shared Lane Prob. of Queue-Free State:		0.99

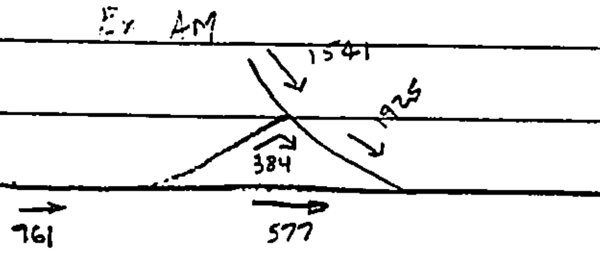
Step 3: TH from Minor Street	NB	SB
Conflicting Flows: (vph)		526
Potential Capacity: (pcph)		578
Capacity Adjustment Factor due to Impeding Movements		0.99
Movement Capacity: (pcph)		571
Prob. of Queue-Free State:		0.96

Step 4: LT from Minor Street	NB	SB
Conflicting Flows: (vph)		500
Potential Capacity: (pcph)		544
Major LT, Minor TH Impedance Factor:		0.99
Adjusted Impedance Factor:		0.99
Capacity Adjustment Factor due to Impeding Movements		0.99
Movement Capacity: (pcph)		538



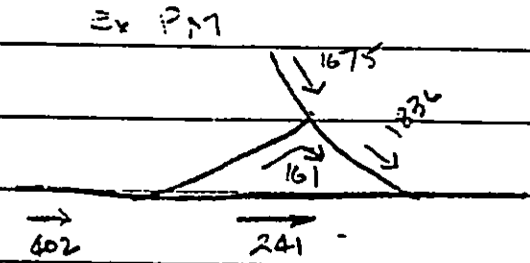
	2A	2B
Rt	3.2 A	3.0 A
I/S	0.4 A	0.3 A

Ex AM



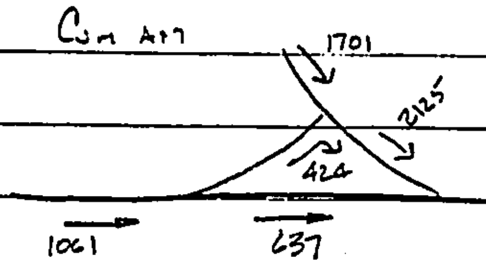
Rt	5.3	3.9
I/S	1.2	0.8

Ex PM



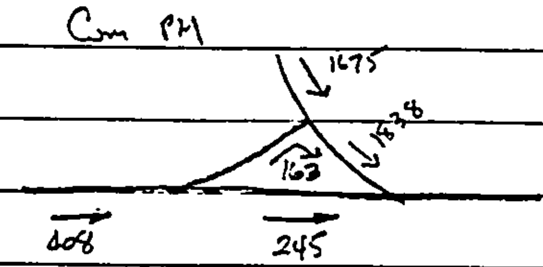
Rt =	3.3	3.0
I/S =	0.4	0.3

Cum AM



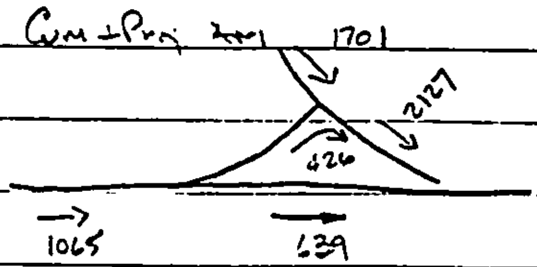
Rt =	5.9	4.2
I/S =	1.4	0.8

Cum PM



Rt =	3.3	3.0
I/S =	0.4	0.3

Cum + Proj AM



Rt =	5.9	4.2
I/S =	1.4	0.8

Cum + Proj PM

Intersection Performance Summary

Movement		Flow Rate (pcph)	Move Cap (pcph)	Shared Cap (pcph)	Avg. Total Delay (sec/veh)	95% Queue Length (veh)	LOS	Approach Delay (sec/veh)
SB	L	13	538 >					
SB	T	21	571 >	678	5.8	0.2	B	5.8
SB	R	19	1100 >					
EB	L	13	1375		2.6	0.0	A	0.1

Intersection Delay = 0.5 sec/veh

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Streets: (N-S) Alapai Street (E-W) Lusitania Street
Major Street Direction.... EW
Length of Time Analyzed... 60 (min)
Analyst..... PJR
Date of Analysis..... 11/3/96
Other Information.....Cumulative PM Peak Hour
Two-way Stop-controlled Intersection

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	> 1	< 0	0	1	< 0	0	0	0	0	> 1	< 0
Stop/Yield			N			N						
Volumes	6	654	6		124	3				9	3	2
PHF	.9	.9	.9		.9	.9				.9	.9	.9
Grade		0			0						0	
MC's (%)												
SU/RV's (%)												
CV's (%)												
PCE's	1.10									1.10	1.10	1.10

Adjustment Factors

Vehicle Maneuver	Critical Gap (tg)	Follow-up Time (tf)
Left Turn Major Road	5.00	2.10
Right Turn Minor Road	5.50	2.60
Through Traffic Minor Road	6.00	3.30
Left Turn Minor Road	6.50	3.40

Worksheet for TWSC Intersection

Step 1: RT from Minor Street	NB	SB
Conflicting Flows: (vph)		140
Potential Capacity: (pcph)		1176
Movement Capacity: (pcph)		1176
Prob. of Queue-Free State:		1.00

Step 2: LT from Major Street	WB	EB
Conflicting Flows: (vph)		141
Potential Capacity: (pcph)		1469
Movement Capacity: (pcph)		1469
Prob. of Queue-Free State:		0.99
TH Saturation Flow Rate: (pcphpl)		1700
RT Saturation Flow Rate: (pcphpl)		1700
Major LT Shared Lane Prob. of Queue-Free State:		0.99

Step 3: TH from Minor Street	NB	SB
Conflicting Flows: (vph)		880
Potential Capacity: (pcph)		377
Capacity Adjustment Factor due to Impeding Movements		0.99
Movement Capacity: (pcph)		373
Prob. of Queue-Free State:		0.99

Step 4: LT from Minor Street	NB	SB
Conflicting Flows: (vph)		877
Potential Capacity: (pcph)		329
Major LT, Minor TH Impedance Factor:		0.99
Adjusted Impedance Factor:		0.99
Capacity Adjustment Factor due to Impeding Movements		0.99
Movement Capacity: (pcph)		326

Intersection Performance Summary

Movement	Flow Rate (pcph)	Move Cap (pcph)	Shared Cap (pcph)	Avg. Total Delay (sec/veh)	95% Queue Length (veh)	LOS	Approach Delay (sec/veh)
SB L	11	326 >					
SB T	3	373 >	368	10.2	0.0	C	10.2
SB R	2	1176 >					
EB L	8	1469		2.5	0.0	A	0.0

Intersection Delay = 0.2 sec/veh

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Streets: (N-S) Alapai Street (E-W) Lusitania Street
Major Street Direction.... EW
Length of Time Analyzed... 60 (min)
Analyst..... PJR
Date of Analysis..... 11/3/96
Other Information.....Cumulative AM Peak Hour
Two-way Stop-controlled Intersection

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	> 1	< 0	0	1	< 0	0	0	0	0	> 1	< 0
Stop/Yield			N			N						
Volumes	11	238	46		171	7				11	17	15
PHF	.9	.9	.9		.9	.9				.9	.9	.9
Grade		0			0						0	
MC's (%)												
SU/RV's (%)												
CV's (%)												
PCE's	1.10									1.10	1.10	1.10

Adjustment Factors

Vehicle Maneuver	Critical Gap (tg)	Follow-up Time (tf)
Left Turn Major Road	5.00	2.10
Right Turn Minor Road	5.50	2.60
Through Traffic Minor Road	6.00	3.30
Left Turn Minor Road	6.50	3.40

Worksheet for TWSC Intersection

Step 1: RT from Minor Street	NB	SB
Conflicting Flows: (vph)		194
Potential Capacity: (pcph)		1104
Movement Capacity: (pcph)		1104
Prob. of Queue-Free State:		0.98

Step 2: LT from Major Street	WB	EB
Conflicting Flows: (vph)		198
Potential Capacity: (pcph)		1380
Movement Capacity: (pcph)		1380
Prob. of Queue-Free State:		0.99
TH Saturation Flow Rate: (pcphpl)		1700
RT Saturation Flow Rate: (pcphpl)		1700
Major LT Shared Lane Prob. of Queue-Free State:		0.99

Step 3: TH from Minor Street	NB	SB
Conflicting Flows: (vph)		521
Potential Capacity: (pcph)		581
Capacity Adjustment Factor due to Impeding Movements		0.99
Movement Capacity: (pcph)		574
Prob. of Queue-Free State:		0.96

Step 4: LT from Minor Street	NB	SB
Conflicting Flows: (vph)		496
Potential Capacity: (pcph)		547
Major LT, Minor TH Impedance Factor:		0.99
Adjusted Impedance Factor:		0.99
Capacity Adjustment Factor due to Impeding Movements		0.99
Movement Capacity: (pcph)		541

Intersection Performance Summary

Movement		Flow Rate (pcph)	Move Cap (pcph)	Shared Cap (pcph)	Avg. Total Delay (sec/veh)	95% Queue Length (veh)	LOS	Approach Delay (sec/veh)
SB	L	13	541 >					
SB	T	21	574 >	681	5.7	0.2	B	5.7
SB	R	19	1104 >					
EB	L	13	1380		2.6	0.0	A	0.1

Intersection Delay = 0.5 sec/veh

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Streets: (N-S) Alapai Street (E-W) Lusitania Street
Major Street Direction.... EW
Length of Time Analyzed... 60 (min)
Analyst..... PJR
Date of Analysis..... 11/3/96
Other Information.....Existing PM Peak Hour
Two-way Stop-controlled Intersection

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	> 1	< 0	0	1	< 0	0	0	0	0	> 1	< 0
Stop/Yield			N			N						
Volumes	5	592	21		112	3				8	3	2
PHF	.9	.9	.9		.9	.9				.9	.9	.9
Grade		0			0						0	
MC's (%)												
SU/RV's (%)												
CV's (%)												
PCE's	1.10									1.10	1.10	1.10

Adjustment Factors

Vehicle Maneuver	Critical Gap (tg)	Follow-up Time (tf)
Left Turn Major Road	5.00	2.10
Right Turn Minor Road	5.50	2.60
Through Traffic Minor Road	6.00	3.30
Left Turn Minor Road	6.50	3.40

Worksheet for TWSC Intersection

Step 1: RT from Minor Street	NB	SB
Conflicting Flows: (vph)		126
Potential Capacity: (pcph)		1195
Movement Capacity: (pcph)		1195
Prob. of Queue-Free State:		1.00

Step 2: LT from Major Street	WB	EB
Conflicting Flows: (vph)		127
Potential Capacity: (pcph)		1491
Movement Capacity: (pcph)		1491
Prob. of Queue-Free State:		1.00
TH Saturation Flow Rate: (pcphpl)		1700
RT Saturation Flow Rate: (pcphpl)		1700
Major LT Shared Lane Prob. of Queue-Free State:		0.99

Step 3: TH from Minor Street	NB	SB
Conflicting Flows: (vph)		812
Potential Capacity: (pcph)		409
Capacity Adjustment Factor due to Impeding Movements		0.99
Movement Capacity: (pcph)		406
Prob. of Queue-Free State:		0.99

Step 4: LT from Minor Street	NB	SB
Conflicting Flows: (vph)		801
Potential Capacity: (pcph)		364
Major LT, Minor TH Impedance Factor:		0.99
Adjusted Impedance Factor:		0.99
Capacity Adjustment Factor due to Impeding Movements		0.99
Movement Capacity: (pcph)		361

Intersection Performance Summary

Movement		Flow Rate (pcph)	Move Cap (pcph)	Shared Cap (pcph)	Avg. Total Delay (sec/veh)	95% Queue Length (veh)	LOS	Approach Delay (sec/veh)
SB	L	10	361 >					
SB	T	3	406 >	408	9.2	0.0	B	9.2
SB	R	2	1195 >					
EB	L	7	1491		2.4	0.0	A	0.0

Intersection Delay = 0.2 sec/veh

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Streets: (N-S) Alapai Street (E-W) Lusitania Street
Major Street Direction.... EW
Length of Time Analyzed... 60 (min)
Analyst..... PJR
Date of Analysis..... 11/3/96
Other Information.....Existing AM Peak Hour
Two-way Stop-controlled Intersection

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	> 1	< 0	0	1	< 0	0	0	0	0	> 1	< 0
Stop/Yield			N			N						
Volumes	10	216	42		155	6				10	15	14
PHF	.9	.9	.9		.9	.9				.9	.9	.9
Grade		0			0						0	
MC's (%)												
SU/RV's (%)												
CV's (%)												
PCE's	1.10									1.10	1.10	1.10

Adjustment Factors

Vehicle Maneuver	Critical Gap (tg)	Follow-up Time (tf)
Left Turn Major Road	5.00	2.10
Right Turn Minor Road	5.50	2.60
Through Traffic Minor Road	6.00	3.30
Left Turn Minor Road	6.50	3.40

Worksheet for TWSC Intersection

Step 1: RT from Minor Street	NB	SB
Conflicting Flows: (vph)		176
Potential Capacity: (pcph)		1128
Movement Capacity: (pcph)		1128
Prob. of Queue-Free State:		0.98

Step 2: LT from Major Street	WB	EB
Conflicting Flows: (vph)		179
Potential Capacity: (pcph)		1409
Movement Capacity: (pcph)		1409
Prob. of Queue-Free State:		0.99
TH Saturation Flow Rate: (pcphpl)		1700
RT Saturation Flow Rate: (pcphpl)		1700
Major LT Shared Lane Prob. of Queue-Free State:		0.99

Step 3: TH from Minor Street	NB	SB
Conflicting Flows: (vph)		474
Potential Capacity: (pcph)		615
Capacity Adjustment Factor due to Impeding Movements		0.99
Movement Capacity: (pcph)		609
Prob. of Queue-Free State:		0.97

Step 4: LT from Minor Street	NB	SB
Conflicting Flows: (vph)		450
Potential Capacity: (pcph)		581
Major LT, Minor TH Impedance Factor:		0.99
Adjusted Impedance Factor:		0.99
Capacity Adjustment Factor due to Impeding Movements		0.99
Movement Capacity: (pcph)		575

Intersection Performance Summary

Movement		Flow Rate (pcph)	Move Cap (pcph)		Shared Cap (pcph)	Avg. Total Delay (sec/veh)	95% Queue Length (veh)	LOS	Approach Delay (sec/veh)
SB	L	12	575	>					
SB	T	19	609	>	720	5.4	0.1	B	5.4
SB	R	18	1128	>					
EB	L	12	1409			2.6	0.0	A	0.1

Intersection Delay = 0.5 sec/veh

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Streets: (N-S) Lauhala Street (E-W) Lusitania Street
Major Street Direction.... EW
Length of Time Analyzed... 15 (min)
Analyst..... PJR
Date of Analysis..... 11/2/96
Other Information.....Existing AM Peak Hour
Two-way Stop-controlled Intersection

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1 <	0	0	> 1	0	0	> 1	< 0	0	0	0
Stop/Yield			N			N						
Volumes		416	194	39	55		11	0	41			
PHF		.9	.9	.9	.9		.9	.9	.9			
Grade		0			0			0				
MC's (%)												
SU/RV's (%)												
CV's (%)												
PCE's				1.10			1.10	1.10	1.10			

Adjustment Factors

Vehicle Maneuver	Critical Gap (tg)	Follow-up Time (tf)
Left Turn Major Road	5.00	2.10
Right Turn Minor Road	5.50	2.60
Through Traffic Minor Road	6.00	3.30
Left Turn Minor Road	6.50	3.40

Worksheet for TWSC Intersection

Step 1: RT from Minor Street	NB	SB
Conflicting Flows: (vph)	570	
Potential Capacity: (pcph)	712	
Movement Capacity: (pcph)	712	
Prob. of Queue-Free State:	0.93	

Step 2: LT from Major Street	WB	EB
Conflicting Flows: (vph)	678	
Potential Capacity: (pcph)	815	
Movement Capacity: (pcph)	815	
Prob. of Queue-Free State:	0.94	
TH Saturation Flow Rate: (pcphpl)	1700	
RT Saturation Flow Rate: (pcphpl)		
Major LT Shared Lane Prob. of Queue-Free State:	0.94	

Step 3: TH from Minor Street	NB	SB
Conflicting Flows: (vph)	674	
Potential Capacity: (pcph)	483	
Capacity Adjustment Factor due to Impeding Movements	0.94	
Movement Capacity: (pcph)	454	
Prob. of Queue-Free State:	1.00	

Step 4: LT from Minor Street	NB	SB
Conflicting Flows: (vph)	674	
Potential Capacity: (pcph)	431	
Major LT, Minor TH Impedance Factor:	0.94	
Adjusted Impedance Factor:	0.94	
Capacity Adjustment Factor due to Impeding Movements	0.94	
Movement Capacity: (pcph)	405	

Intersection Performance Summary

Movement		Flow Rate (pcph)	Move Cap (pcph)	Shared Cap (pcph)	Avg. Total Delay (sec/veh)	95% Queue Length (veh)	LOS	Approach Delay (sec/veh)
NB	L	13	405 >					
NB	T	0	454 >	617	6.5	0.3	B	6.5
NB	R	51	712 >					
WB	L	47	815		4.7	0.0	A	1.9

Intersection Delay = 0.7 sec/veh

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Ph: (904) 392-0378

Streets: (N-S) Lauhala Street (E-W) Lusitania Street
Major Street Direction.... EW
Length of Time Analyzed... 15 (min)
Analyst..... PJR
Date of Analysis..... 11/2/96
Other Information.....Existing PM Peak Hour
Two-way Stop-controlled Intersection

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	< 0	0	> 1	0	0	> 1	< 0	0	0	0
Stop/Yield			N			N						
Volumes		440	235	244	56		22	0	201			
PHF		.9	.9	.9	.9		.9	.9	.9			
Grade		0			0			0				
MC's (%)												
SU/RV's (%)												
CV's (%)												
PCE's				1.10			1.10	1.10	1.10			

Adjustment Factors

Vehicle Maneuver	Critical Gap (tg)	Follow-up Time (tf)
Left Turn Major Road	5.00	2.10
Right Turn Minor Road	5.50	2.60
Through Traffic Minor Road	6.00	3.30
Left Turn Minor Road	6.50	3.40

Worksheet for TWSC Intersection

Step 1: RT from Minor Street	NB	SB
Conflicting Flows: (vph)	620	
Potential Capacity: (pcph)	672	
Movement Capacity: (pcph)	672	
Prob. of Queue-Free State:	0.64	

Step 2: LT from Major Street	WB	EB
Conflicting Flows: (vph)	750	
Potential Capacity: (pcph)	753	
Movement Capacity: (pcph)	753	
Prob. of Queue-Free State:	0.60	
TH Saturation Flow Rate: (pcphpl)	1700	
RT Saturation Flow Rate: (pcphpl)		
Major LT Shared Lane Prob. of Queue-Free State:	0.59	

Step 3: TH from Minor Street	NB	SB
Conflicting Flows: (vph)	952	
Potential Capacity: (pcph)	345	
Capacity Adjustment Factor due to Impeding Movements	0.59	
Movement Capacity: (pcph)	203	
Prob. of Queue-Free State:	1.00	

Step 4: LT from Minor Street	NB	SB
Conflicting Flows: (vph)	952	
Potential Capacity: (pcph)	298	
Major LT, Minor TH Impedance Factor:	0.59	
Adjusted Impedance Factor:	0.59	
Capacity Adjustment Factor due to Impeding Movements	0.59	
Movement Capacity: (pcph)	176	

Intersection Performance Summary

Movement	Flow Rate (pcph)	Move Cap (pcph)	Shared Cap (pcph)	Avg. Total Delay (sec/veh)	95% Queue Length (veh)	LOS	Approach Delay (sec/veh)
NB L	26	176 >					
NB T	0	203 >	529	13.7	2.9	C	13.7
NB R	245	672 >					
WB L	298	753		7.9	2.0	B	6.4

Intersection Delay = 4.2 sec/veh

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Streets: (N-S) Lauhala Street (E-W) Lusitania Street
Major Street Direction.... EW
Length of Time Analyzed... 15 (min)
Analyst..... PJR
Date of Analysis..... 11/2/96
Other Information.....Cumulative AM Peak Hour
Two-way Stop-controlled Intersection

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1 <	0	0 >	1	0	0 >	1 <	0	0	0	0
Stop/Yield			N			N						
Volumes		459	214	43	61		12	0	45			
PHF		.9	.9	.9	.9		.9	.9	.9			
Grade		0			0			0				
MC's (%)												
SU/RV's (%)												
CV's (%)												
PCE's				1.10			1.10	1.10	1.10			

Adjustment Factors

Vehicle Maneuver	Critical Gap (tg)	Follow-up Time (tf)
Left Turn Major Road	5.00	2.10
Right Turn Minor Road	5.50	2.60
Through Traffic Minor Road	6.00	3.30
Left Turn Minor Road	6.50	3.40

Worksheet for TWSC Intersection

Step 1: RT from Minor Street	NB	SB
Conflicting Flows: (vph)	629	
Potential Capacity: (pcph)	665	
Movement Capacity: (pcph)	665	
Prob. of Queue-Free State:	0.92	

Step 2: LT from Major Street	WB	EB
Conflicting Flows: (vph)	748	
Potential Capacity: (pcph)	754	
Movement Capacity: (pcph)	754	
Prob. of Queue-Free State:	0.93	
TH Saturation Flow Rate: (pcphpl)	1700	
RT Saturation Flow Rate: (pcphpl)		
Major LT Shared Lane Prob. of Queue-Free State:	0.93	

Step 3: TH from Minor Street	NB	SB
Conflicting Flows: (vph)	745	
Potential Capacity: (pcph)	443	
Capacity Adjustment Factor due to Impeding Movements	0.93	
Movement Capacity: (pcph)	411	
Prob. of Queue-Free State:	1.00	

Step 4: LT from Minor Street	NB	SB
Conflicting Flows: (vph)	745	
Potential Capacity: (pcph)	392	
Major LT, Minor TH Impedance Factor:	0.93	
Adjusted Impedance Factor:	0.93	
Capacity Adjustment Factor due to Impeding Movements	0.93	
Movement Capacity: (pcph)	363	

Intersection Performance Summary

Movement		Flow Rate (pcph)	Move Cap (pcph)	Shared Cap (pcph)	Avg. Total Delay (sec/veh)	95% Queue Length (veh)	LOS	Approach Delay (sec/veh)
NB	L	14	363 >					
NB	T	0	411 >	569	7.2	0.4	B	7.2
NB	R	55	665 >					
WB	L	53	754		5.1	0.1	B	2.1

Intersection Delay = 0.8 sec/veh

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Major Street Direction.... EW
Length of Time Analyzed... 15 (min)
Analyst..... PJR
Date of Analysis..... 11/2/96
Other Information.....Cumulative PM Peak Hour
Two-way Stop-controlled Intersection

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1 <	0	0	> 1	0	0	> 1	< 0	0	0	0
Stop/Yield			N			N						
Volumes		486	259	269	62		24	0	222			
PHF		.9	.9	.9	.9		.9	.9	.9			
Grade		0			0			0				
MC's (%)												
SU/RV's (%)												
CV's (%)												
PCE's				1.10			1.10	1.10	1.10			

Adjustment Factors

Vehicle Maneuver	Critical Gap (tg)	Follow-up Time (tf)
Left Turn Major Road	5.00	2.10
Right Turn Minor Road	5.50	2.60
Through Traffic Minor Road	6.00	3.30
Left Turn Minor Road	6.50	3.40

Worksheet for TWSC Intersection

Step 1: RT from Minor Street	NB	SB
Conflicting Flows: (vph)	684	
Potential Capacity: (pcph)	623	
Movement Capacity: (pcph)	623	
Prob. of Queue-Free State:	0.56	

Step 2: LT from Major Street	WB	EB
Conflicting Flows: (vph)	828	
Potential Capacity: (pcph)	691	
Movement Capacity: (pcph)	691	
Prob. of Queue-Free State:	0.52	
TH Saturation Flow Rate: (pcphpl)	1700	
RT Saturation Flow Rate: (pcphpl)		
Major LT Shared Lane Prob. of Queue-Free State:	0.50	

Step 3: TH from Minor Street	NB	SB
Conflicting Flows: (vph)	1052	
Potential Capacity: (pcph)	306	
Capacity Adjustment Factor due to Impeding Movements	0.50	
Movement Capacity: (pcph)	154	
Prob. of Queue-Free State:	1.00	

Step 4: LT from Minor Street	NB	SB
Conflicting Flows: (vph)	1052	
Potential Capacity: (pcph)	260	
Major LT, Minor TH Impedance Factor:	0.50	
Adjusted Impedance Factor:	0.50	
Capacity Adjustment Factor due to Impeding Movements	0.50	
Movement Capacity: (pcph)	131	

Intersection Performance Summary

Movement		Flow Rate (pcph)	Move Cap (pcph)	Shared Cap (pcph)	Avg. Total Delay (sec/veh)	95% Queue Length (veh)	LOS	Approach Delay (sec/veh)
NB	L	30	131 >					
NB	T	0	154 >	454	22.3	4.6	D	22.3
NB	R	272	623 >					
WB	L	329	691		9.9	2.7	B	8.0

Intersection Delay = 6.2 sec/veh

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Major Street Direction.... EW
Length of Time Analyzed... 15 (min)
Analyst..... PJR
Date of Analysis..... 11/2/96
Other Information.....Cumulative Plus Project AM Peak Hour
Two-way Stop-controlled Intersection

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1 < 0		0 > 1		0	0 > 1		< 0	0	0	0
Stop/Yield			N			N						
Volumes		459	214	43	61		12	0	45			
PHF		.9	.9	.9	.9		.9	.9	.9			
Grade		0			0			0				
MC's (%)												
SU/RV's (%)												
CV's (%)												
PCE's				1.10			1.10	1.10	1.10			

Adjustment Factors

Vehicle Maneuver	Critical Gap (tg)	Follow-up Time (tf)
Left Turn Major Road	5.00	2.10
Right Turn Minor Road	5.50	2.60
Through Traffic Minor Road	6.00	3.30
Left Turn Minor Road	6.50	3.40

Worksheet for TWSC Intersection

Step 1: RT from Minor Street	NB	SB
Conflicting Flows: (vph)	629	
Potential Capacity: (pcph)	665	
Movement Capacity: (pcph)	665	
Prob. of Queue-Free State:	0.92	

Step 2: LT from Major Street	WB	EB
Conflicting Flows: (vph)	748	
Potential Capacity: (pcph)	754	
Movement Capacity: (pcph)	754	
Prob. of Queue-Free State:	0.93	
TH Saturation Flow Rate: (pcphpl)	1700	
RT Saturation Flow Rate: (pcphpl)		
Major LT Shared Lane Prob. of Queue-Free State:	0.93	

Step 3: TH from Minor Street	NB	SB
Conflicting Flows: (vph)	745	
Potential Capacity: (pcph)	443	
Capacity Adjustment Factor due to Impeding Movements	0.93	
Movement Capacity: (pcph)	411	
Prob. of Queue-Free State:	1.00	

Step 4: LT from Minor Street	NB	SB
Conflicting Flows: (vph)	745	
Potential Capacity: (pcph)	392	
Major LT, Minor TH Impedance Factor:	0.93	
Adjusted Impedance Factor:	0.93	
Capacity Adjustment Factor due to Impeding Movements	0.93	
Movement Capacity: (pcph)	363	

Intersection Performance Summary

Movement	Flow Rate (pcph)	Move Cap (pcph)	Shared Cap (pcph)	Avg. Total Delay (sec/veh)	95% Queue Length (veh)	LOS	Approach Delay (sec/veh)
NB L	14	363 >					
NB T	0	411 >	569	7.2	0.4	B	7.2
NB R	55	665 >					
WB L	53	754		5.1	0.1	B	2.1

Intersection Delay = 0.8 sec/veh

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Streets: (N-S) Lauhala Street (E-W) Lusitania Street
Major Street Direction.... EW
Length of Time Analyzed... 15 (min)
Analyst..... PJR
Date of Analysis..... 11/2/96
Other Information.....Cumulative Plus Project PM Peak Hour
Two-way Stop-controlled Intersection

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1 <	0	0	> 1	0	0	> 1	< 0	0	0	0
Stop/Yield			N			N						
Volumes		489	259	269	62		24	0	222			
PHF		.9	.9	.9	.9		.9	.9	.9			
Grade		0			0			0				
MC's (%)												
SU/RV's (%)												
CV's (%)												
PCE's				1.10			1.10	1.10	1.10			

Adjustment Factors

Vehicle Maneuver	Critical Gap (tg)	Follow-up Time (tf)
Left Turn Major Road	5.00	2.10
Right Turn Minor Road	5.50	2.60
Through Traffic Minor Road	6.00	3.30
Left Turn Minor Road	6.50	3.40

Worksheet for TWSC Intersection

Step 1: RT from Minor Street	NB	SB
Conflicting Flows: (vph)	687	
Potential Capacity: (pcph)	621	
Movement Capacity: (pcph)	621	
Prob. of Queue-Free State:	0.56	

Step 2: LT from Major Street	WB	EB
Conflicting Flows: (vph)	831	
Potential Capacity: (pcph)	689	
Movement Capacity: (pcph)	689	
Prob. of Queue-Free State:	0.52	
TH Saturation Flow Rate: (pcphpl)	1700	
RT Saturation Flow Rate: (pcphpl)		
Major LT Shared Lane Prob. of Queue-Free State:	0.50	

Step 3: TH from Minor Street	NB	SB
Conflicting Flows: (vph)	1055	
Potential Capacity: (pcph)	305	
Capacity Adjustment Factor due to Impeding Movements	0.50	
Movement Capacity: (pcph)	153	
Prob. of Queue-Free State:	1.00	

Step 4: LT from Minor Street	NB	SB
Conflicting Flows: (vph)	1055	
Potential Capacity: (pcph)	259	
Major LT, Minor TH Impedance Factor:	0.50	
Adjusted Impedance Factor:	0.50	
Capacity Adjustment Factor due to Impeding Movements	0.50	
Movement Capacity: (pcph)	130	

Intersection Performance Summary

Movement		Flow Rate (pcph)	Move Cap (pcph)	Shared Cap (pcph)	Avg. Total Delay (sec/veh)	95% Queue Length (veh)	LOS	Approach Delay (sec/veh)
NB	L	30	130 >					
NB	T	0	153 >	452	22.6	4.6	D	22.6
NB	R	272	621 >					
WB	L	329	689		9.9	2.7	B	8.1

Intersection Delay = 6.2 sec/veh

APPENDIX B

TRAFFIC ASSIGNMENT WORKSHEETS

Part 4

TRIP ASSIGNMENT WORKSHEET

Royal Kinau Apartments TIAR
November 1996

INTERSECTION NO 1
INTERSECTION OF Lusitania Street at Kinau Street

No	Approach & Mvt	Existing (pce) AM	Existing (pce) PM	2001 Cumulative AM	2001 Cumulative PM	Project Trips: Elderly Housing % In	Elderly Housing %Out	Elderly Housing AM	Elderly Housing PM	Apartments % In	Apartments %Out	Apartments AM	Apartments PM	Total AM	Total PM	2001 Cumulative Plus Project AM	2001 Cumulative Plus Project PM
1	N- RT	16	3	18	3		25%	1	1			0	0	1	1	19	4
2	TH	16	5	18	6		25%	1	1			0	0	1	1	19	7
3	LT	11	10	12	11		50%	1	1			0	0	1	1	13	12
4	E- RT	1	1	1	1			0	0			0	0	0	0	1	1
5	TH	5	4	6	4			0	0		25%	2	1	2	1	8	5
6	LT	5	3	6	3			0	0		25%	2	1	2	1	8	4
7	S- RT	137	341	151	376			0	0	80%		2	7	2	7	153	383
8	TH	8	13	9	14	80%		2	2			0	0	2	2	11	16
9	LT	162	110	179	121			0	0			0	0	0	0	179	121
10	W- RT	42	21	46	23			0	0			0	0	0	0	46	23
11	TH	216	592	238	654			0	0	20%		1	2	1	2	239	656
12	LT	10	5	11	6	20%		0	1			0	0	0	1	11	7
TOTAL		629	1108	695	1222			5	6			7	11	12	17	707	1239
		0.264 A	0.603 B	0.291 A	0.666 B											0.294 A	0.672 B
Approach Totals																	
From North		43	18	48	20			3	3			0	0	3	3	51	23
From East		11	8	13	8			0	0			4	2	4	2	17	10
From South		307	464	339	511			2	2			2	7	4	9	343	520
From West		268	618	295	683			0	1			1	2	1	3	296	686
Total		629	1108	695	1222			5	6			7	11	12	17	707	1239
Departure Totals																	
To North		19	19	21	21			2	3			0	0	2	3	23	24
To East		364	943	401	1041			1	1			3	9	4	10	405	1051
To South		63	29	70	32			1	1			2	1	3	2	73	34
To West		183	117	203	128			1	1			2	1	3	2	206	130
Total		629	1108	695	1222			5	6			7	11	12	17	707	1239
Leg Totals																	
North		62	37	69	41			5	6			0	0	5	6	74	47
East		375	951	414	1049			1	1			7	11	8	12	422	1061
South		370	493	409	543			3	3			4	8	7	11	416	554
West		451	735	498	811			1	2			3	3	4	5	502	816
Total		1258	2216	1390	2444			10	12			14	22	24	34	1414	2478

Part 4

TRIP ASSIGNMENT WORKSHEET

Royal Kinau Apartments TIAR
November 1996

INTERSECTION NO 2
INTERSECTION OF Kinau Street at H1 Off-ramp to Kinau Street

No	Approach & Mvt	Existing (pce) AM	Existing (pce) PM	2001 Cumulative AM	2001 Cumulative PM	Project Trips: Elderly Housing % In	Elderly Housing %Out	Elderly Housing AM	Elderly Housing PM	Apartments % In	Apartments %Out	Apartments AM	Apartments PM	Total AM	Total PM	2001 Cumulative Plus Project AM	2001 Cumulative Plus Project PM
1	N- RT	0	0	0	0			0	0			0	0	0	0	0	0
2	TH	0	0	0	0			0	0			0	0	0	0	0	0
3	LT	0	0	0	0			0	0			0	0	0	0	0	0
4	E- RT	0	0	0	0			0	0			0	0	0	0	0	0
5	TH	0	0	0	0			0	0			0	0	0	0	0	0
6	LT	0	0	0	0			0	0			0	0	0	0	0	0
7	S- RT	364	961	402	1061	50%		1	1	50%		5	3	6	4	408	1065
8	TH	0	0	0	0			0	0			0	0	0	0	0	0
9	LT	6	0	7	0			0	0			0	0	0	0	7	0
10	W- RT	0	0	0	0			0	0			0	0	0	0	0	0
11	TH	1517	1541	1675	1701			0	0			0	0	0	0	1675	1701
12	LT	0	0	0	0			0	0			0	0	0	0	0	0
TOTAL		1887	2502	2084	2762			1	1			5	3	6	4	2090	2766
		0.724 C	1.091 F	0.799 C	1.204 F											0.803 D	1.206 F

Approach Totals

From North	0	0	0	0	0	0	0	0	0	0	0	0	0
From East	0	0	0	0	0	0	0	0	0	0	0	0	0
From South	370	961	409	1061	1	1	5	3	6	4	415	1065
From West	1517	1541	1675	1701	0	0	0	0	0	0	1675	1701
Total	1887	2502	2084	2762	1	1	5	3	6	4	2090	2766

Departure Totals

To North	0	0	0	0	0	0	0	0	0	0	0	0	0
To East	1881	2502	2077	2762	1	1	5	3	6	4	2083	2766
To South	0	0	0	0	0	0	0	0	0	0	0	0
To West	6	0	7	0	0	0	0	0	0	0	7	0
Total	1887	2502	2084	2762	1	1	5	3	6	4	2090	2766

Leg Totals

North	0	0	0	0	0	0	0	0	0	0	0	0	0
East	1881	2502	2077	2762	1	1	5	3	6	4	2083	2766
South	370	961	409	1061	1	1	5	3	6	4	415	1065
West	1523	1541	1682	1701	0	0	0	0	0	0	1682	1701
Total	3774	5004	4168	5524	2	2	10	6	12	8	4180	5532

Part 4

TRIP ASSIGNMENT WORKSHEET

Royal Kinau Apartments TIAR
November 1996

INTERSECTION NO 3
INTERSECTION OF Ward Avenue at Kinau Street

No	Approach & Mvt	Existing (pce) AM	Existing (pce) PM	2001 Cumulative AM	2001 Cumulative PM	Project Trips: Elderly Housing % In	Elderly Housing %Out	Elderly Housing AM	Elderly Housing PM	Apartments % In	Apartments %Out	Apartments AM	Apartments PM	Total AM	Total PM	2001 Cumulative Plus Project AM	2001 Cumulative Plus Project PM
1	N- RT		0	0	0			0	0			0	0	0	0	0	0
2	TH	1058	446	1168	492			0	0			0	0	0	0	1168	492
3	LT	212	134	234	148			0	0			0	0	0	0	234	148
4	E- RT	0	0	0	0			0	0			0	0	0	0	0	0
5	TH	0	0	0	0			0	0			0	0	0	0	0	0
6	LT	0	0	0	0			0	0			0	0	0	0	0	0
7	S- RT	26	37	29	41			0	0			0	0	0	0	29	41
8	TH	308	933	340	1030			0	0			0	0	0	0	340	1030
9	LT	0	0	0	0			0	0			0	0	0	0	0	0
10	W- RT	357	444	394	490	20%		0	0	20%		2	1	2	1	396	491
11	TH	1321	1714	1458	1892	20%		0	0	20%		2	1	2	1	1460	1893
12	LT	203	344	224	380	10%		0	0	10%		1	1	1	1	225	381
TOTAL		3485	4052	3847	4473			0	0			5	3	5	3	3852	4476
		0.738 C	1.24 F	0.805 D	1.358 F											0.806 D	1.359 F
Approach Totals																	
From North		1270	580	1402	640			0	0			0	0	0	0	1402	640
From East		0	0	0	0			0	0			0	0	0	0	0	0
From South		334	970	369	1071			0	0			0	0	0	0	369	1071
From West		1881	2502	2076	2762			0	0			5	3	5	3	2081	2765
Total		3485	4052	3847	4473			0	0			5	3	5	3	3852	4476
Departure Totals																	
To North		511	1277	564	1410			0	0			1	1	1	1	565	1411
To East		1559	1885	1721	2081			0	0			2	1	2	1	1723	2082
To South		1415	890	1562	982			0	0			2	1	2	1	1564	983
To West		0	0	0	0			0	0			0	0	0	0	0	0
Total		3485	4052	3847	4473			0	0			5	3	5	3	3852	4476
Leg Totals																	
North		1781	1857	1966	2050			0	0			1	1	1	1	1967	2051
East		1559	1885	1721	2081			0	0			2	1	2	1	1723	2082
South		1749	1860	1931	2053			0	0			2	1	2	1	1933	2054
West		1881	2502	2076	2762			0	0			5	3	5	3	2081	2765
Total		6970	8104	7694	8946			0	0			10	6	10	6	7704	8952

Part 4

TRIP ASSIGNMENT WORKSHEET

Royal Kinau Apartments TIAR

November 1996

INTERSECTION NO 4

INTERSECTION OF Alapai Street at S. Beretania Street

No	Approach & Mvt	Existing (pce) AM	Existing (pce) PM	2001 Cumulative AM	2001 Cumulative PM	Project Trips: Elderly Housing % In	Elderly Housing %Out	Elderly Housing AM	Elderly Housing PM	Apartments % In	Apartments %Out	Apartments AM	Apartments PM	Total AM	Total PM	2001 Cumulative Plus Project AM	2001 Cumulative Plus Project PM
1	N- RT	74	42	82	46		25%	1	1		25%	2	1	3	2	85	48
2	TH	0	0	0	0			0	0			0	0	0	0	0	0
3	LT	0	0	0	0			0	0			0	0	0	0	0	0
4	E- RT	161	122	178	135	40%		1	1	40%		1	4	2	5	180	140
5	TH	2961	2501	3269	2761			0	0			0	0	0	0	3269	2761
6	LT	0	0	0	0			0	0			0	0	0	0	0	0
7	S- RT	0	0	0	0			0	0			0	0	0	0	0	0
8	TH	132	245	146	270	40%		1	1	40%		1	4	2	5	148	275
9	LT	1344	1794	1484	1981			0	0			0	0	0	0	1484	1981
10	W- RT	0	0	0	0			0	0			0	0	0	0	0	0
11	TH	0	0	0	0			0	0			0	0	0	0	0	0
12	LT	0	0	0	0			0	0			0	0	0	0	0	0
TOTAL		4672	4704	5159	5193			3	3			4	9	7	12	5166	5205
		0.759 C	0.774 C	0.839 D	0.854 D											0.841 D	0.856 D
Approach Totals																	
From North		74	42	82	46			1	1			2	1	3	2	85	48
From East		3122	2623	3447	2896			1	1			1	4	2	5	3449	2901
From South		1476	2039	1630	2251			1	1			1	4	2	5	1632	2256
From West		0	0	0	0			0	0			0	0	0	0	0	0
Total		4672	4704	5159	5193			3	3			4	9	7	12	5166	5205
Departure Totals																	
To North		293	367	324	405			2	2			2	8	4	10	328	415
To East		0	0	0	0			0	0			0	0	0	0	0	0
To South		0	0	0	0			0	0			0	0	0	0	0	0
To West		4379	4337	4835	4788			1	1			2	1	3	2	4838	4790
Total		4672	4704	5159	5193			3	3			4	9	7	12	5166	5205
Leg Totals																	
North		367	409	406	451			3	3			4	9	7	12	413	463
East		3122	2623	3447	2896			1	1			1	4	2	5	3449	2901
South		1476	2039	1630	2251			1	1			1	4	2	5	1632	2256
West		4379	4337	4835	4788			1	1			2	1	3	2	4838	4790
Total		9344	9408	10318	10386			6	6			8	18	14	24	10332	10410

Part 4

TRIP ASSIGNMENT WORKSHEET

Royal Kinau Apartments TIAR
November 1996

INTERSECTION NO 5
INTERSECTION OF Lusitania Street at Lauhala Street

No	Approach & Mvt	Existing (pce) AM	Existing (pce) PM	2001 Cumulative AM	2001 Cumulative PM	Project Trips: Elderly Housing % In	Elderly Housing %Out	Elderly Housing AM	Elderly Housing PM	Apartments % In	Apartments %Out	Apartments AM	Apartments PM	Total AM	Total PM	2001 Cumulative Plus Project AM	2001 Cumulative Plus Project PM
1	N- RT	0	0	0	0			0	0			0	0	0	0	0	0
2	TH	0	0	0	0			0	0			0	0	0	0	0	0
3	LT	0	0	0	0			0	0			0	0	0	0	0	0
4	E- RT	0	0	0	0			0	0			0	0	0	0	0	0
5	TH	55	56	61	62			0	0			0	0	0	0	61	62
6	LT	39	244	43	269		25%	1	1		25%	2	1	3	2	46	271
7	S- RT	41	201	45	222			0	0			0	0	0	0	45	222
8	TH	0	0	0	0			0	0			0	0	0	0	0	0
9	LT	11	22	12	24			0	0			0	0	0	0	12	24
10	W- RT	194	235	214	259			0	0			0	0	0	0	214	259
11	TH	416	440	459	486	20%		0	1	20%		1	2	1	3	460	489
12	LT	0	0	0	0			0	0			0	0	0	0	0	0
TOTAL		756	1198	834	1322			1	2			3	3	4	5	838	1327
		0.442 A	0.599 A	0.487 A	0.661 B											0.487 A	0.663 B

Approach Totals

From North	0	0	0	0		0	0		0	0	0	0	0	0
From East	94	300	104	331		1	1		2	1	3	2	107	333
From South	52	223	57	246		0	0		0	0	0	0	57	246
From West	610	675	673	745		0	1		1	2	1	3	674	748
Total	756	1198	834	1322		1	2		3	3	4	5	838	1327
Departure Totals														
To North	0	0	0	0		0	0		0	0	0	0	0	0
To East	457	641	504	708		0	1		1	2	1	3	505	711
To South	233	479	257	528		1	1		2	1	3	2	260	530
To West	66	78	73	86		0	0		0	0	0	0	73	86
Total	756	1198	834	1322		1	2		3	3	4	5	838	1327
Leg Totals														
North	0	0	0	0		0	0		0	0	0	0	0	0
East	551	941	608	1039		1	2		3	3	4	5	612	1044
South	285	702	314	774		1	1		2	1	3	2	317	776
West	676	753	746	831		0	1		1	2	1	3	747	834
Total	1512	2396	1668	2644		2	4		6	6	8	10	1676	2654

Part 4

TRIP ASSIGNMENT WORKSHEET

Royal Kinau Apartments TIAR
November 1996

INTERSECTION NO 6
INTERSECTION OF Kinau Street at Drive 'A'

No	Approach & Mvt	Existing (pce) AM	Existing (pce) PM	2001 Cumulative AM	2001 Cumulative PM	Project Trips: Elderly Housing % In	Elderly Housing %Out	Elderly Housing AM	Elderly Housing PM	Apartments % In	Apartments %Out	Apartments AM	Apartments PM	Total AM	Total PM	2001 Cumulative Plus Project AM	2001 Cumulative Plus Project PM
1	N- RT	0	0	0	0			0	0		50%	5	3	5	3	5	3
2	TH	0	0	0	0			0	0			0	0	0	0	0	0
3	LT	0	0	0	0			0	0		50%	5	3	5	3	5	3
4	E- RT	0	0	0	0			0	0			0	0	0	0	0	0
5	TH	0	0	0	0			0	0			0	0	0	0	0	0
6	LT	0	0	0	0			0	0			0	0	0	0	0	0
7	S- RT	0	0	0	0			0	0			0	0	0	0	0	0
8	TH	0	0	0	0			0	0			0	0	0	0	0	0
9	LT	0	0	0	0			0	0			0	0	0	0	0	0
10	W- RT	0	0	0	0			0	0			0	0	0	0	0	0
11	TH	364	961	402	1061	50%		1	1			0	0	1	1	403	1062
12	LT	0	0	0	0			0	0	100%		3	9	3	9	3	9
TOTAL		364	961	402	1061			1	1			13	15	14	16	416	1077
		0.243 A	0.641 B	0.268 A	0.707 C											0.278 A	0.718 C

Approach Totals														
From North	0	0	0	0		0	0		10	6	10	6	10	6
From East	0	0	0	0		0	0		0	0	0	0	0	0
From South	0	0	0	0		0	0		0	0	0	0	0	0
From West	364	961	402	1061		1	1		3	9	4	10	406	1071
Total	364	961	402	1061		1	1		13	15	14	16	416	1077
Departure Totals														
To North	0	0	0	0		0	0		3	9	3	9	3	9
To East	364	961	402	1061		1	1		5	3	6	4	408	1065
To South	0	0	0	0		0	0		0	0	0	0	0	0
To West	0	0	0	0		0	0		5	3	5	3	5	3
Total	364	961	402	1061		1	1		13	15	14	16	416	1077
Leg Totals														
North	0	0	0	0		0	0		13	15	13	15	13	15
East	364	961	402	1061		1	1		5	3	6	4	408	1065
South	0	0	0	0		0	0		0	0	0	0	0	0
West	364	961	402	1061		1	1		8	12	9	13	411	1074
Total	728	1922	804	2122		2	2		26	30	28	32	832	2154

Part 4

TRIP ASSIGNMENT WORKSHEET

Royal Kinau Apartments TIAR
November 1996

INTERSECTION NO 7
INTERSECTION OF Lunalilo Street at Drive 'B'

No	Approach & Mvt	Existing (pce) AM	Existing (pce) PM	2001 Cumulative AM	2001 Cumulative PM	Project Trips: Elderly Housing % In	Elderly Housing %Out	Elderly Housing AM	Elderly Housing PM	Apartments % In	Apartments %Out	Apartments AM	Apartments PM	Total AM	Total PM	2001 Cumulative Plus Project AM	2001 Cumulative Plus Project PM
1	N- RT	0	0	0	0			0	0			0	0	0	0	0	0
2	TH	43	18	47	20			0	0			0	0	0	0	47	20
3	LT	0	0	0	0			0	0			0	0	0	0	0	0
4	E- RT	0	0	0	0			0	0			0	0	0	0	0	0
5	TH	0	0	0	0			0	0			0	0	0	0	0	0
6	LT	0	0	0	0		100%	2	2			0	0	2	2	2	2
7	S- RT	0	0	0	0	100%		2	3			0	0	2	3	2	3
8	TH	19	19	21	21			0	0			0	0	0	0	21	21
9	LT	0	0	0	0			0	0			0	0	0	0	0	0
10	W- RT	0	0	0	0			0	0			0	0	0	0	0	0
11	TH	0	0	0	0			0	0			0	0	0	0	0	0
12	LT	0	0	0	0			0	0			0	0	0	0	0	0
TOTAL		62	37	68	41			4	5			0	0	4	5	72	46
		0.029 A	0.013 A	0.031 A	0.014 A											0.031 A	0.016 A
Approach Totals																	
From North		43	18	47	20			0	0			0	0	0	0	47	20
From East		0	0	0	0			2	2			0	0	2	2	2	2
From South		19	19	21	21			2	3			0	0	2	3	23	24
From West		0	0	0	0			0	0			0	0	0	0	0	0
Total		62	37	68	41			4	5			0	0	4	5	72	46
Departure Totals																	
To North		19	19	21	21			0	0			0	0	0	0	21	21
To East		0	0	0	0			2	3			0	0	2	3	2	3
To South		43	18	47	20			2	2			0	0	2	2	49	22
To West		0	0	0	0			0	0			0	0	0	0	0	0
Total		62	37	68	41			4	5			0	0	4	5	72	46
Leg Totals																	
North		62	37	68	41			0	0			0	0	0	0	68	41
East		0	0	0	0			4	5			0	0	4	5	4	5
South		62	37	68	41			4	5			0	0	4	5	72	46
West		0	0	0	0			0	0			0	0	0	0	0	0
Total		124	74	136	82			8	10			0	0	8	10	144	92

APPENDIX C

LEVEL-OF-SERVICE CALCULATIONS

Part 5
LEVEL-OF-SERVICE CALCULATIONS
Royal Kinau Apartments TIAR
November 1996

INTERSECTION NO 3
INTERSECTION OF Ward Avenue at Kinau Street (AM)

CAPACITY INPUTS	
THRU Lane Capacity (vph)	1400
LEFT Lane Capacity (vph)	1400
DBL LT PENALTY (%)	10
CYCLE LENGTH (secs)	120
AMBER (% of cycle)	10
NORTH RTOR (%)	10
EAST RTOR (%)	10
SOUTH RTOR (%)	10
WEST RTOR (%)	10

	Existing						Cumulative Peak Hour						Cumulative Plus Poject					
				Volumes		V/C Ratios				Volumes		V/C Ratios				Volumes		V/C Ratios
Appr & Mvt	Appr Lanes	Capacity	AM	PM	AM	PM	Appr Lanes	Capacity	AM	PM	AM	PM	Appr Lanes	Capacity	AM	PM	AM	PM
N- RT	0	0		0	0		0	0	0	0	0		0	0	0	0	0	
TH	3	4200	1058	446	0 302		3	4200	1168	492	0 334		3	4200	1168	492	0 334	
LT	0	0	212	134	0		0	0	234	148	0		0	0	234	148	0	
E- RT	0	0	0	0	0		0	0	0	0	0		0	0	0	0	0	
TH	0	0	0	0	0		0	0	0	0	0		0	0	0	0	0	
LT	0	0	0	0	0		0	0	0	0	0		0	0	0	0	0	
S- RT	0	0	26	37	0		0	0	29	41	0		0	0	29	41	0	
TH	1	1400	308	933	0 239		1	1400	340	1030	0 264		1	1400	340	1030	0 264	
LT	0	0	0	0	0		0	0	0	0	0		0	0	0	0	0	
W- RT	0	0	357	444	0		0	0	394	490	0		0	0	396	491	0	
TH	4	5600	1321	1714	0 336		4	5600	1458	1892	0 371		4	5600	1460	1893	0 372	
LT	0	0	203	344	0		0	0	224	380	0		0	0	225	381	0	
N-S(1)					0 302						0 334						0 334	
N-S(2)					0 239						0 264						0 264	
E-W(1)					0 000						0 000						0 000	
E-W(2)					0 336						0 371						0 372	
V/C					0 638						0 705						0 706	
AMBER					0 100						0 100						0 100	
ADJUSTMENTS					0 738						0 805						0 806	
					C						D						D	

Part 5
LEVEL-OF-SERVICE CALCULATIONS
Royal Kinau Apartments TIAR
November 1996

INTERSECTION NO 3
INTERSECTION OF Ward Avenue at Kinau Street (PM)

CAPACITY INPUTS		Appr & Mvt	Existing: Appr Lanes	Existing: Capacity	Existing: Volumes AM	Existing: Volumes PM	Existing: V/C Ratios AM	Existing: V/C Ratios PM	Cumulative Peak Hour: Appr Lanes	Cumulative Peak Hour: Capacity	Cumulative Peak Hour: Volumes AM	Cumulative Peak Hour: Volumes PM	Cumulative Peak Hour: V/C Ratios AM	Cumulative Peak Hour: V/C Ratios PM	Cumulative Plus Poject: Appr Lanes	Cumulative Plus Poject: Capacity	Cumulative Plus Poject: Volumes AM	Cumulative Plus Poject: Volumes PM	Cumulative Plus Poject: V/C Ratios AM	Cumulative Plus Poject: V/C Ratios PM
THRU Lane Capacity (vph)	1400	N- RT	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0
LEFT Lane Capacity (vph)	1400	TH	2	2800	1058	446		0 207	2	2800	1168	492		0 229	2	2800	1168	492		0 229
DBL LT PENALTY (%)	10	LT	0	0	212	134		0	0	0	234	148		0	0	0	234	148		0
CYCLE LENGTH (secs)	120	E- RT	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0
AMBER (% of cycle)	10	TH	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0
NORTH RTOR (%)	10	LT	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0
EAST RTOR (%)	10	S- RT	0	0	26	37		0	0	0	29	41		0	0	0	29	41		0
SOUTH RTOR (%)	10	TH	2	2800	308	933		0 346	2	2800	340	1030		0 383	2	2800	340	1030		0 383
WEST RTOR (%)	10	LT	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0
		W- RT	0	0	357	444		0	0	0	394	490		0	0	0	396	491		0
		TH	4	5600	1321	1714		0 447	4	5600	1458	1892		0 493	4	5600	1460	1893		0 494
		LT	0	0	203	344		0	0	0	224	380		0	0	0	225	381		0
		N-S(1)						0 207						0 229						0 229
		N-S(2)						0 346						0 383						0 383
		E-W(1)						0 000						0 000						0 000
		E-W(2)						0 447						0 493						0 494
		V/C						0 793						0 876						0 877
		AMBER						0 100						0 100						0 100
		ADJUSTMENTS						0 893 D						0 976 E						0 977 E