ENVIRONMENTAL ASSESSMENT

FOR

HONOLULU INTERNATIONAL AIRPORT

SEPTEMBER 1989

PREPARED FOR:

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
AIRPORTS DIVISION

PREPARED BY:

KFC AIRPORTS, INC.

This Environmental Assessment becomes a federal document when evaluated and signed by the Responsible FAA Official.

_____ _____

Responsible FAA Official Date

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Section 1.0

INTRODUCTION

1.1 Background

The Honolulu International Airport Master Plan Update and Noise Compatibility Program was prepared for the Airports Division of the Hawaii State Department of Transportation under State Contract No. 19841, State Project No. AO1011-03. This is Volume 3, Environmental Assessment.

This Environmental Assessment evaluates the environmental effects of the recommended Airport Development Plan which would accommodate the forecast commercial aviation needs of the island of Oahu through the year 2005.

The assessment was prepared in accordance with Hawaii Revised Statutes, Chapter 343; State of Hawaii Environmental Quality Regulations; Federal Aviation Administration Orders 5050.4A (October 8, 1985) and 1050.1D (December 21, 1983) and Appendices.

In 1981, an Airport Master Plan was prepared for the State of Hawaii, Department of Transportation (DOT), Airports Division by Park Engineering and Peat, Marwick, Mitchell & Co. The plan consisted of an Airport Development Plan that would accommodate the forecast commercial aviation needs through the year 2000 and a related Environs Plan that would provide for airport-compatible land use in the Honolulu International Airport (HIA) environs by the year 2000. Since completion of this 1981 HIA Environs & Master Plan Study, several changes have prompted the need to update the Airport Development Plan portion of the study which deals principally with facilities. In addition, the U.S. Federal Aviation Administration has implemented a FAR Part 150 Noise Control and Compatibility Planning Program designed to standardize airport noise compatibility planning.

Accordingly, a Master Plan Update and Noise Compatibility Program was prepared as a follow-up to the 1981 study. This Volume 3 of the present study, Environmental Assessment, evaluates the probable environmental effects of the recommended Airport Development Plan, as described in Volume 1, Master Plan Update. The environmental effects related to aircraft noise and the recommended mitigation measures are described in Volume 2, FAR Part 150 Noise Compatibility Program.

1.2 Purpose and Need of Plan Components

Honolulu International Airport is a jointly owned civil air carrier and military airport. One of its major runways and several taxiways are partially located on Hickam Air Force Base. The greater part of the airfield, the air carrier terminal buildings, and general aviation facilities are owned and operated by the State of Hawaii, Department of Transportation, Airports Division.

The Master Plan Update identifies and addresses the development issues that must be dealt with at HIA in the next two decades, and develops solutions for the problems associated with those issues. The key issues are:

- Provision of more airfield capacity. As the number of aircraft operations increase (as they are forecast to do), an increase in average annual delay time for air carrier aircraft will be experienced. The objective is to provide more airfield capacity in order to prevent expensive and inconvenient delays in aircraft takeoffs and landings.

- Provision of a Hijack/Hazardous material hardstand. At present, there is no isolated aircraft parking position at HIA that is designated for use by an aircraft undergoing hijack or bomb threat or carrying hazardous cargo. The objective is to provide a hardstand on airport property that is remote from inhabited facilities and so located as to permit normal operations on the remainder of the airfield when a hazardous aircraft is parked there.

- Expansion of the Overseas Terminal. As aviation demands grows, there will be a need for additional gates and hardstands at the Overseas Terminal. The objective is to develop the new facilities at locations and at a rate that will satisfy demand in a cost effective and functionally efficient manner.

- Provision of additional gates for International Arrival aircraft. There has been a recent and substantial increase in international visitors to Hawaii, particularly from Japan and east Asia. Because all existing gates at the Overseas Terminal cannot efficiently accommodate international arrival passengers, there is a shortage of International Arrival gates during peak periods. The objective is to expeditiously provide more gates to handle international arrival passengers in an efficient and secure manner by revising existing gates at the Central Concourse.

- Provision of new Interisland facilities. The existing one story Interisland passenger terminal building is physically too small and functionally outdated. Likewise, the apron is small and overcrowded (passengers are boarded from apron level and aircraft are parked on the apron in two rows). The objective is to provide a new two story terminal with loading bridges to ensure safe operation on the ramp for passengers and aircraft. It will be necessary to relocate existing Interisland maintenance and cargo facilities to accommodate the new terminal and provide for eventual extension of the Ewa Concourse of the Overseas Terminal. The new maintenance and cargo site must be located so as to facilitate movement of aircraft to and from the Interisland Terminal apron.

- Provision of a site for construction of an airport hotel and a parking structure for more overseas parking. Studies show that a hotel located on airport property could be a significant source of revenue for the airport. An associated parking structure could provide parking for the hotel and public parking for the Overseas Terminal. The objective is to locate the hotel and parking structure so as to provide maximum convenience for passengers using the hotel as well as those parking vehicles at the Overseas Terminal.

- Provision of an additional parking structure in the passenger terminal area. Future demand for close-in parking cannot be met by the available space afforded by existing ground level lots. The objective is to provide more parking at a location in proximity to both Overseas and Interisland Terminals.

- Relocation of the North Ramp Commuter airline facility. Planned future extension of the Diamond Head Concourse will block access to the airfield from the existing commuter terminal. The objective is to relocate commuter facilities to a new site on the terminal (north) side of the airport that will permit convenient interline connections with the Overseas and Interisland terminals.

- Development of the South Ramp area. Expansion of the terminal facilities on the north side of the airport requires that space for displaced airport compatible functions be provided elsewhere. The acquisition of all land between Runway 4R-22L and Ke'ehi Lagoon for airport use is the objective along with development of the South Ramp into a well planned and integrated area for general aviation, commuter/air taxi, aircraft maintenance, air cargo and other aviation related activities.

- Improvements to the International Arrival area. Excessive delays in processing passengers through the International Arrival Area are attributed to understaffing of existing Federal Inspection Services processing stations as well as inefficiency in facility arrangement. The objective is to provide a facility capable of prompt and convenient processing of international arrival passengers in the near term given adequate Customs and Immigration Service staffing.

- Expansion of the International Arrivals building. The recently experienced growth in International visitors to Hawaii is expected to increase at a high rate for the next five year period, reaching a level that cannot be accommodated by existing International Arrivals Area even after completion of its planned improvement program. The objective is to provide adequate facilities for processing international arrival passengers promptly and conveniently in the long-term.

- Relocation and expansion of the North Ramp Airfield Rescue and Fire Fighting (ARFF) Station. It will be necessary to relocate the existing ARFF station on the terminal (north) side of the airport when the Diamond Head Concourse is extended to meet future demand for gates. In addition, the station is presently located where it is difficult to meet FAA response time requirements for equipment to reach accidents on the airfield. The objective is to relocate the existing station on the terminal (north) side of the airport so as to fully satisfy response time requirements.

- Provision of ramp service roads between the North and South Ramps and South Ramp and the Mid-Runway area. Development of the South Ramp area will result in a substantial increase in airside ground vehicle traffic between it and the North Ramp. At present, access is across active runways or via an unimproved perimeter road. The mid-runway area near the Air Traffic Control Tower for HIA is located within the Hickam Air Force Base (HAFB) boundary and can presently be reached from groundside only through HAFB security stations or across active runways. The objective is to allow airside ground vehicles to move between North and South ramps without crossing active runways, and permit groundside vehicles to reach the HIA control tower area without travelling through HAFB Security or crossing runways.

- Provision for a Police and Fire Helicopter Facility. The Honolulu Police and Fire Departments wish to establish a permanent joint use helicopter facility at Honolulu International Airport. Federal agencies (such as drug enforcement) may also use the facility. The objective is to locate the facility on the terminal (north) side of the airport in order that helicopter departure tracks will not interfere with aircraft traffic on Runways 8L-26R, 4L-22R and 4R-22L as they now tend to do with operations from temporary helipad locations on the South ramp. However, due to the development of the new International Terminal Building, in the area previously planned for the helicopter facility, it is planned to be located on land presently known as the Kapalama Military Reservation (KMR). A twenty-one acre parcel of KMR is planned to be acquired and will be ready for construction within the 1991 to 1995 time period. The KMR site fulfills the requirement that the helicopter departure tracks are to be clear of aircraft traffic from Runways 08L-26R, 04L-22R and 04R-22L.

- Expansion of the Intra-Airport Transportation System. When the Diamond Head and Ewa Concourses are extended and the new Interisland Terminal is constructed, additional intra-airport transportation services will be required to keep passenger walking distances at the airport within acceptable limits. The objective is to determine where the new services will be required and identify the design options that are available to satisfy these requirements.

- Provision of a link to the proposed Honolulu Rapid Transit System. The City and County of Honolulu is proposing to build a mass transit system to serve the Honolulu area. The objective is to locate a suitable alignment on Airport property for a link to the proposed Honolulu Rapid Transit System and describe the interface between the airport and transit system.

- Expansion of the Base Maintenance Facility. The existing Base Maintenance Facility is too small to accommodate forecast future growth of the Airport. The objective is to expand and equip the present facility to meet future growth demand.

- Acquisition of additional land for airport use. There is need for additional airport land to accommodate new Interisland maintenance and cargo facilities on the North Ramp and for development of the South Ramp area. The objective is to acquire the necessary land for these developments from the United States Air Force and General Services Administration. There is also need for airport land for the development of fuel storage facilities near the existing Sand Island Access Road fuel facility and expansion of the Passenger Terminal Area beyond 2005.

The approach to the resolution of the key issues was to first forecast and analyze air traffic demand for HIA to the year 2005, and then convert demand into facility requirements. Alternative sites and design concepts were developed to satisfy the requirements and preferred concepts integrated into a total Development Plan.

Since the Master Plan Update is an update of the 1981 Master Plan, it does not readdress development issues that were resolved in 1981 and which are still valid. Similarly, this environmental assessment is addressed only to the environmental effects of the new or changed facilities development concepts as described in Volume 1, Master Plan Update.

Section 2.0
ALTERNATIVES INCLUDING THE PROPOSED PLAN

2.1 No-Action

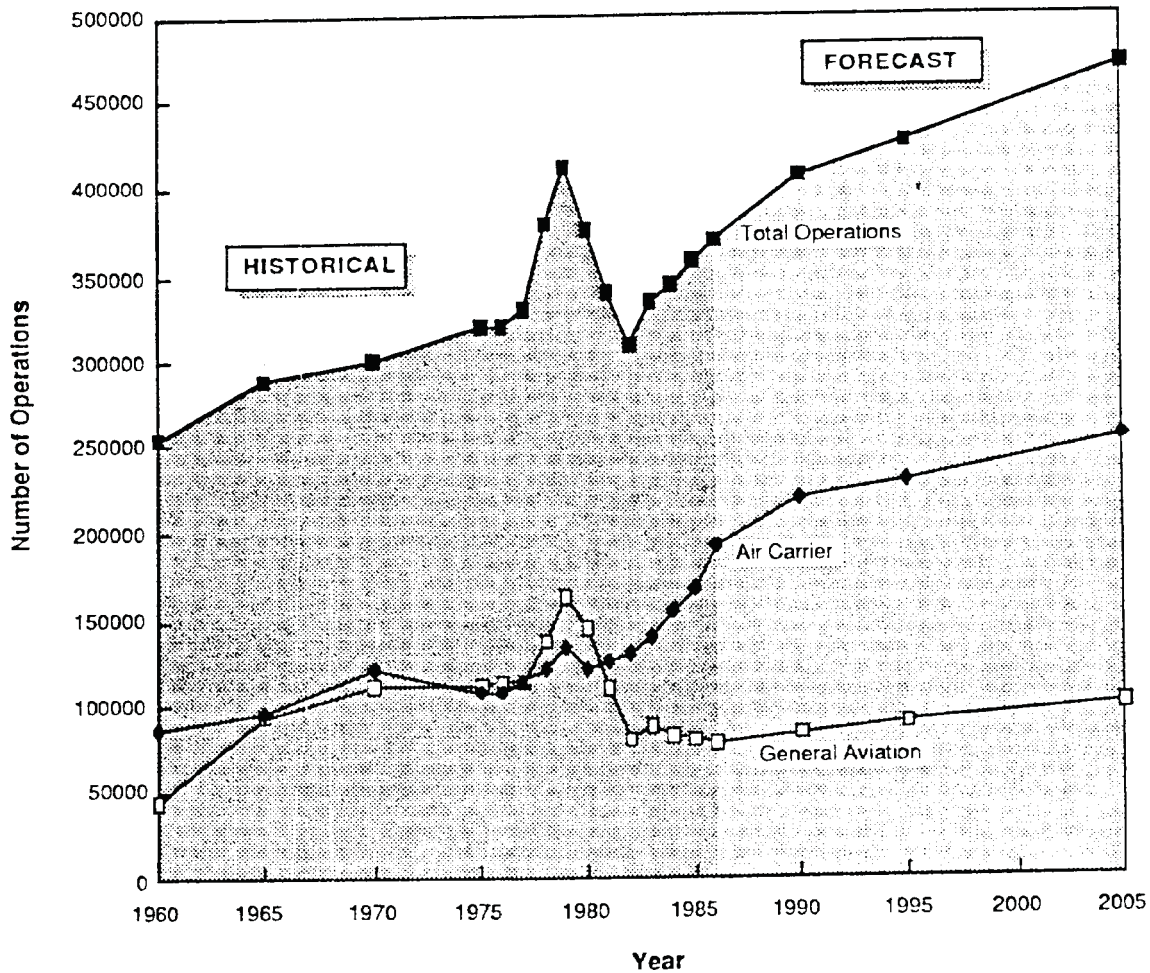
This alternative does nothing to address the facility expansion requirements necessary to meet the forecasted air traffic demand for HIA. Figure 1 shows the historical and forecasted number of passengers (enplaned and deplaned) at HIA from 1960 to 2005. The number of passengers at HIA grew from about 15 million in 1980 to about 18 million in 1986, and are forecasted to increase to almost 29 million by 2005. As shown in Figure 2, total aircraft operations (arrivals and departures) is forecasted to increase from about 370,000 in 1986 to about 470,000 by the year 2005, primarily to accommodate the increase in passengers.

Hourly and annual airfield capacity and aircraft delays were calculated assuming that current air traffic control procedures and aircraft separation standards would be in use through the year 2005. The results indicate that the demand will exceed capacity around 1990-1995 and will be significantly greater than capacity by the year 2005. The estimates of average annual delay per aircraft operation, associated with the overcapacity, shows an increase from 2.7 minutes in 1990 to 8.9 minutes by 2005. While this may not seem significant in terms of individual operations, the total annual delay in the year 2005 based on 470,000 aircraft operations amounts to 4,198,000 minutes. The peak hour delays are estimated to increase from 6.5 minutes per aircraft in 1990 to about 18 minutes per aircraft in the year 2005. These average and peak hour delays are comparable to those experienced at severely congested large hub airports on the mainland. By the year 2005, the annual cost of aircraft delays, to the airlines at HIA, is estimated to be about $100 million. Thus, the no-action alternative would result in increased congestion of existing airport facilities as passengers and aircraft operations increase, and increasing delay time and delay cost to the airlines as demand exceeds capacity.

2.2 Proposed Development Plan

The major components of the Development Plan are the airfield, passenger terminal area, airport access and parking, and the North and South Ramps which includes general aviation, airline support and airport support utilities.

Figure 3 depicts the planned land use within the airport boundary and immediate vicinity in the year 2005. The Development Plan requires no taking of additional public lands outside the present Airport boundary limits. Although negotiations are underway to acquire approximately 18 acres of Hickam Air Force Base land for location of the Interisland Aircraft Maintenance Facility, and approximately twenty-one acres of land presently occupied by the Kapalama Military Reservation for location of various airport support facilities. Land to the west of the airport boundary is Federal Government property given over to the use of Hickam Air Force Base; the Pacific Ocean borders the southern boundary; beyond the northern boundary is the H-1



KPMG Peat Marwick

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HONOLULU INTERNATIONAL AIRPORT
MASTER PLAN UPDATE AND
NOISE COMPATIBILITY PROGRAM

KFC AIRPORT, INC.
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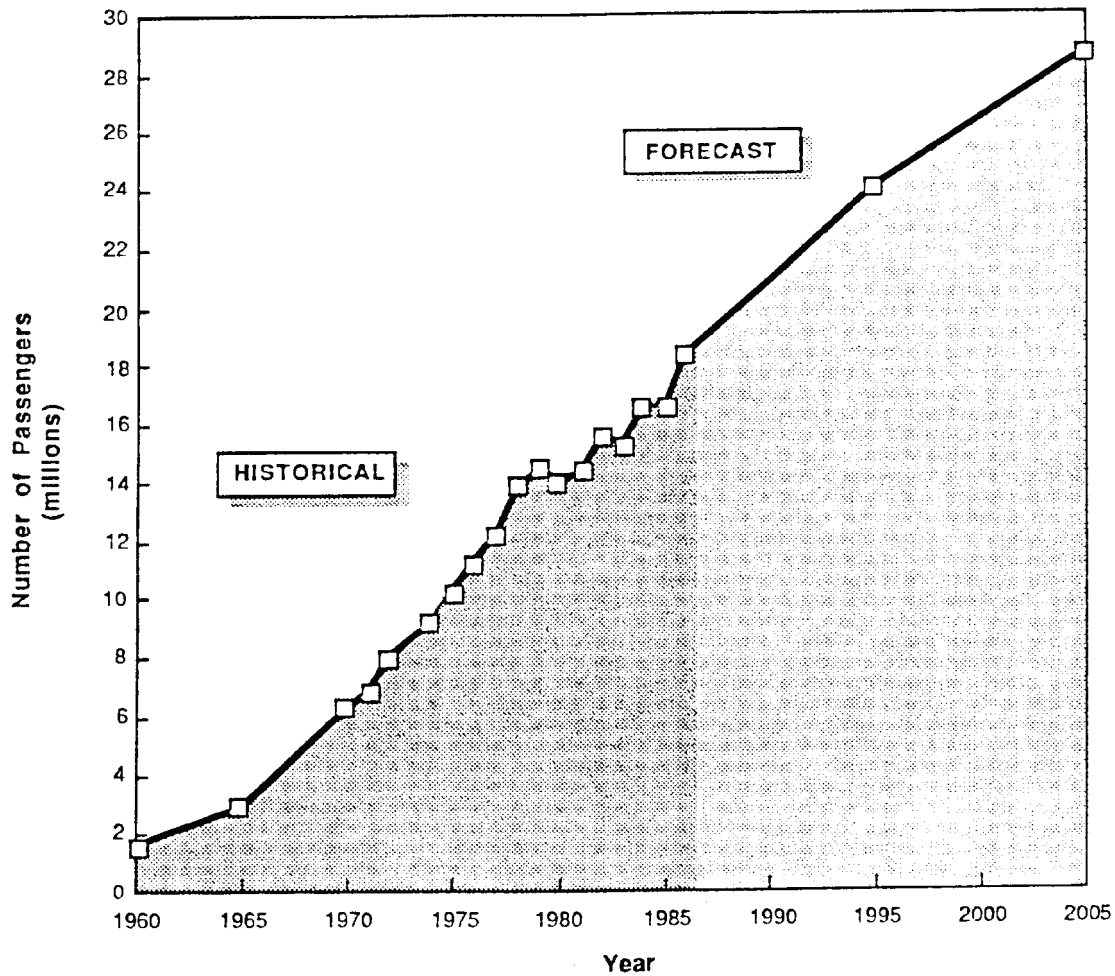
PASSENGER
FORECASTS

FIGURE
1



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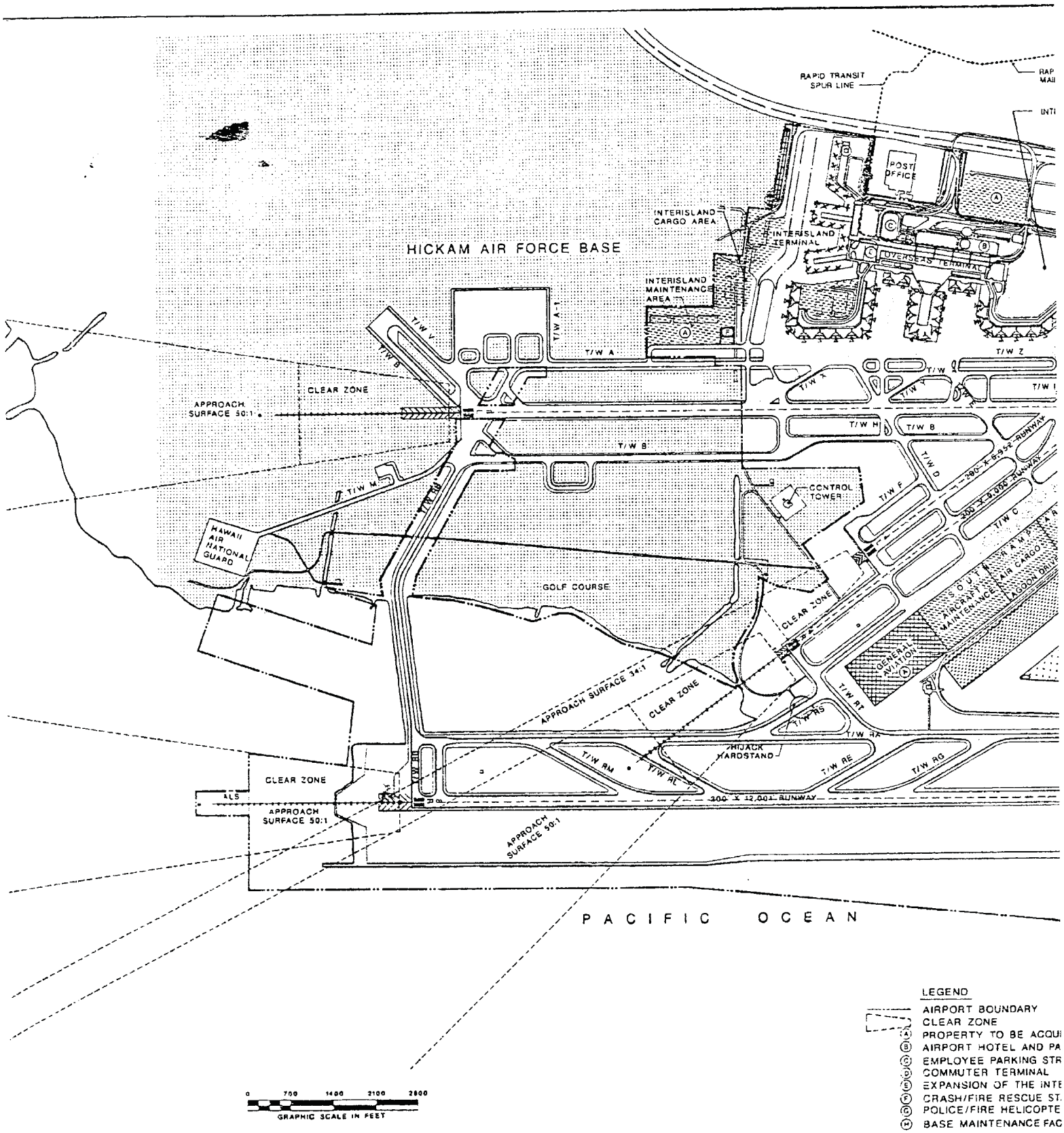
AIRCRAFT OPERATIONS

FIGURE 2



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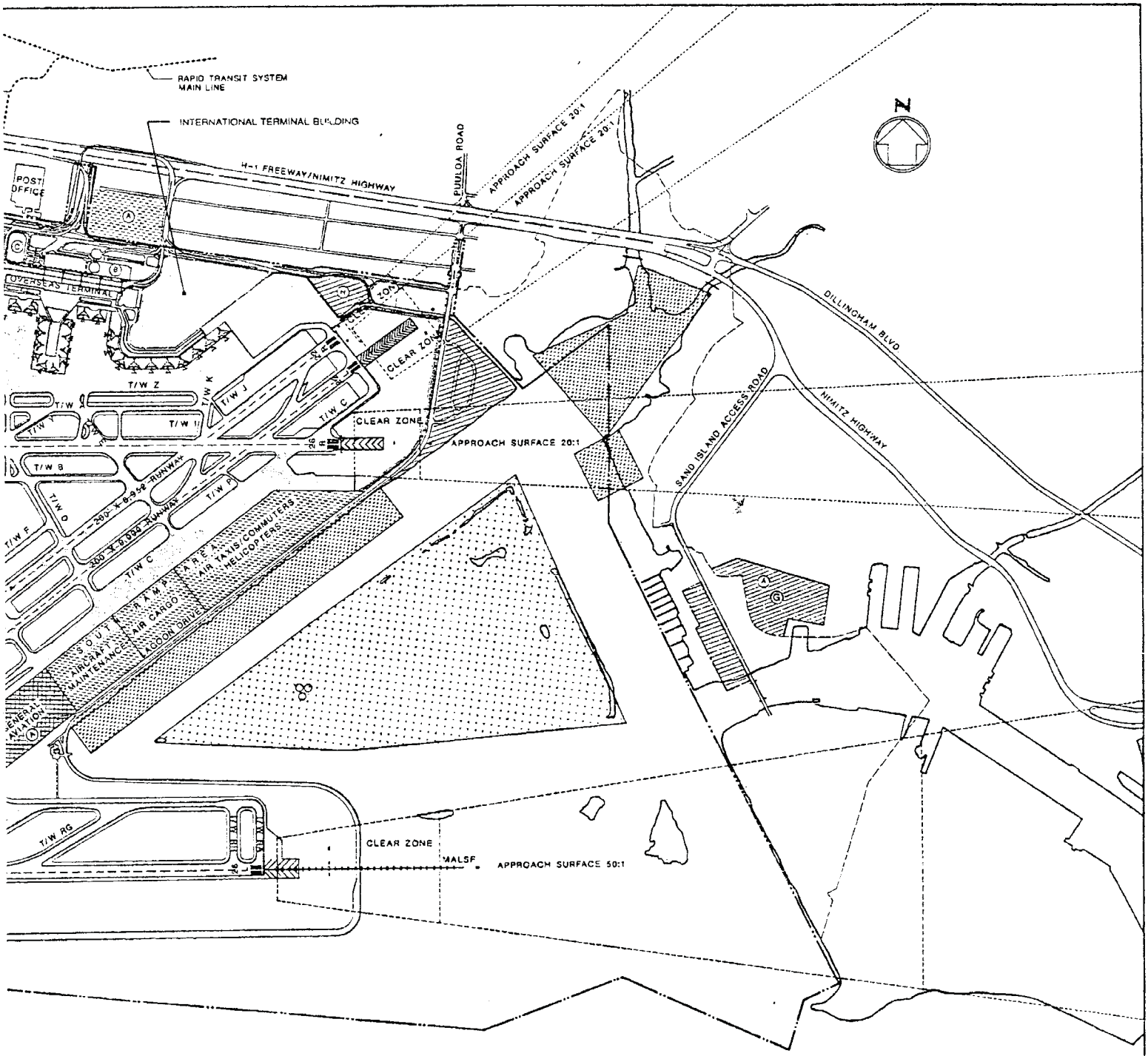


LEGEND

- AIRPORT BOUNDARY
- CLEAR ZONE
- (A) PROPERTY TO BE ACQUIRED
- (B) AIRPORT HOTEL AND PARKING STRUCTURE
- (C) EMPLOYEE PARKING STRUCTURE
- (D) COMMUTER TERMINAL
- (E) EXPANSION OF THE INTERNATIONAL ARRIVALS BUILDING
- (F) CRASH/FIRE RESCUE STATION
- (G) POLICE/FIRE HELICOPTER FACILITY
- (H) BASE MAINTENANCE FACILITY

LAND USE

- AIRFIELD
- PASSENGER TERMINAL AREA
- AIRLINE SUPPORT
- AIRPORT SUPPORT
- GENERAL AVIATION
- U.S. MILITARY PROPERTY
- OFF-AIRPORT CIVILIAN LAND USE
- POLICE/FIRE HELICOPTER FACILITY
- PROPOSED MARINAS
- RECREATION/INDUSTRIAL/COMMERCIAL USE

L AIRPORT E AND ROGRAM	KFC AIRPORT, INC. MANAGEMENT CONSULTANTS	AIRPORT DEVELOPMENT PLAN	FIGURE 3

freeway and light industrial/commercial use properties; and to the east, the airport boundary encompasses nearly the entire water area within Ke'ehi Lagoon. Land uses in the immediate vicinity of HIA are generally compatible with airport activities.

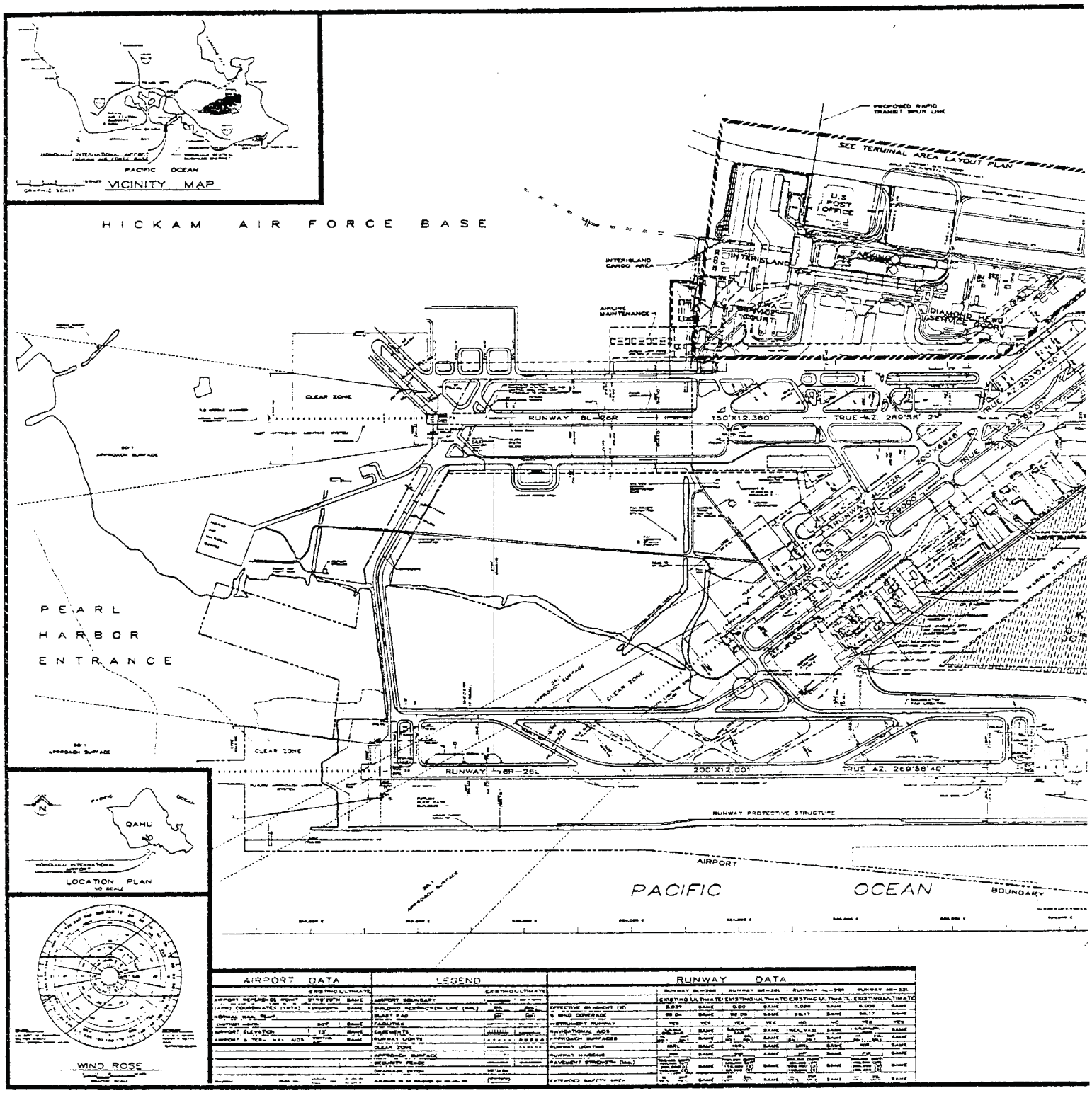
Within the airport boundary, the area to the north of Runway 8L-26R, known as the North Ramp, is used for the Passenger Terminal Complex (overseas, interisland and commuter), airline support functions (air cargo flight kitchen and maintenance), airport support functions (ground transportation), the International Terminal Building, the airport's Base Maintenance Facility and a Crash Fire Rescue Station. The South Ramp area between Runway 4R-22L and Ke'ehi Lagoon is used for general aviation and airline/airport support functions. General aviation facilities include fixed base operators, aircraft hangers, apron parking space, air taxi/commuter facilities and a heliport. Airline/ airport support facilities include aircraft maintenance, air cargo, and a variety of miscellaneous aviation compatible uses such as an aircraft technical school and an air museum. A satellite bulk fuel storage facility is also located in the South Ramp area.

The majority of Ke'ehi Lagoon is located within the airport boundary. The development of Ke'ehi Lagoon is under the control of the Airports and Harbors Divisions of the DOT. The Airports Division is responsible for development of aeronautical facilities and the prevention of any activities and developments that may interfere with the safe and efficient operation of HIA. The Harbors Division is responsible for development of marine facilities. The proposed HIA development plan requires no use of existing water areas within Ke'ehi Lagoon for aeronautical facilities. The Harbors Division is presently undertaking a study to update the 1977 Ke'ehi Lagoon Recreation Plan with the intent of developing additional marinas and recreational facilities within the lagoon. The proposed development plan for Ke'ehi Lagoon will be the subject of a separate environmental assessment.

Figures 4, 5, and 6 depict the Airport Layout Plan (ALP), Existing Terminal Area Plan, and the Approach and Clear Zone Plan, respectively. These three plans are prepared and kept current by the Airports Division of DOT. The ALP is prepared in accordance with Federal Aviation Administration (FAA) Advisory Circular 150/5070-6 and must be approved by the FAA as a prerequisite for federal funding of airport development projects and will permit only those activities and facilities which are compatible with existing and future aeronautical operations at HIA.

The changes as proposed by the updated HIA Development Plan, are listed below and are briefly described following the list.

- Realignment of Taxiways G and L.
- Construction of a Hijack/Hazardous Materials Hardstand.
- Construction of Taxiway RS.
- Expansion of the Overseas Terminal.
- Modifications of gates 17, 18 and 19 for use by International flights.



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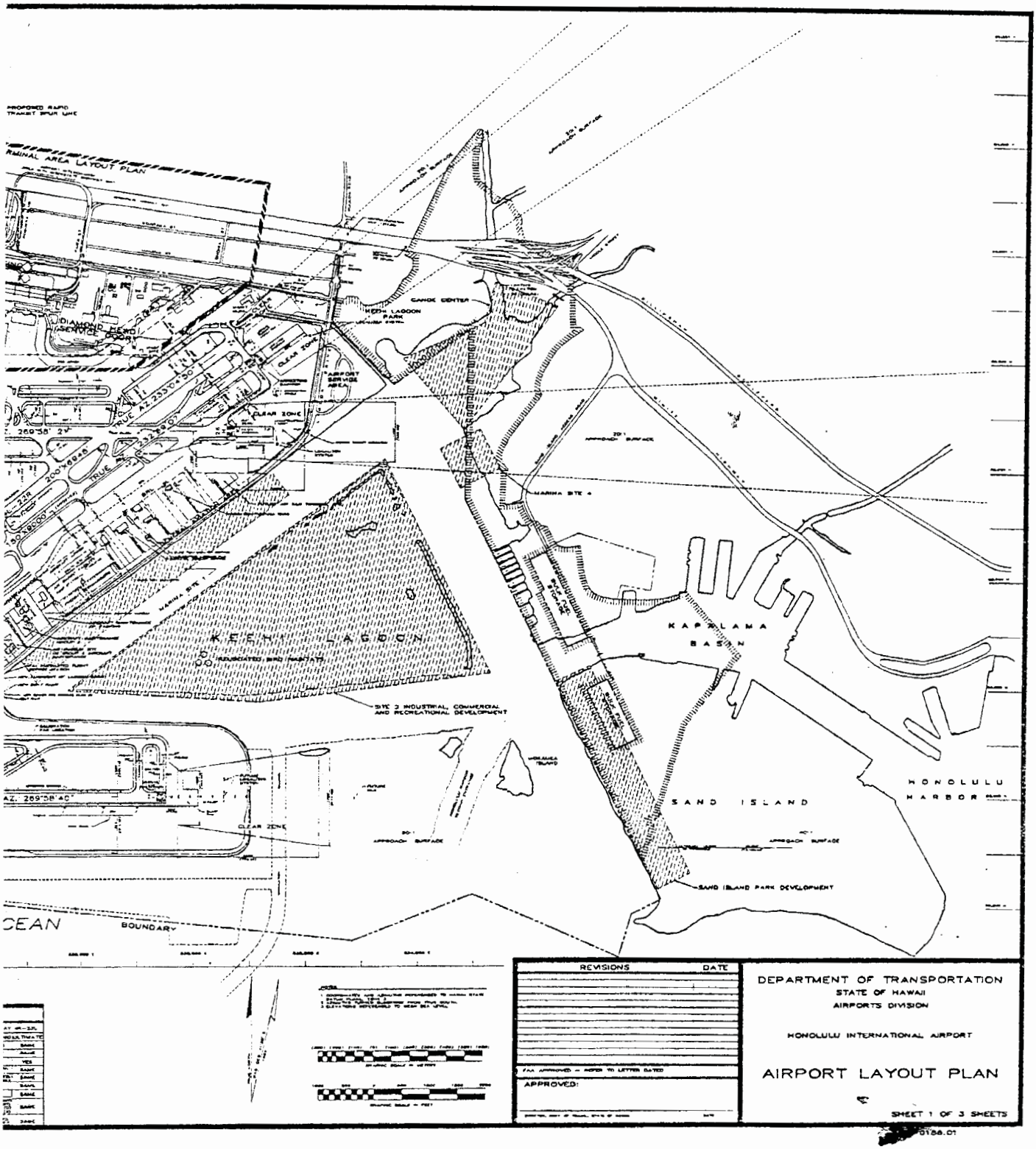
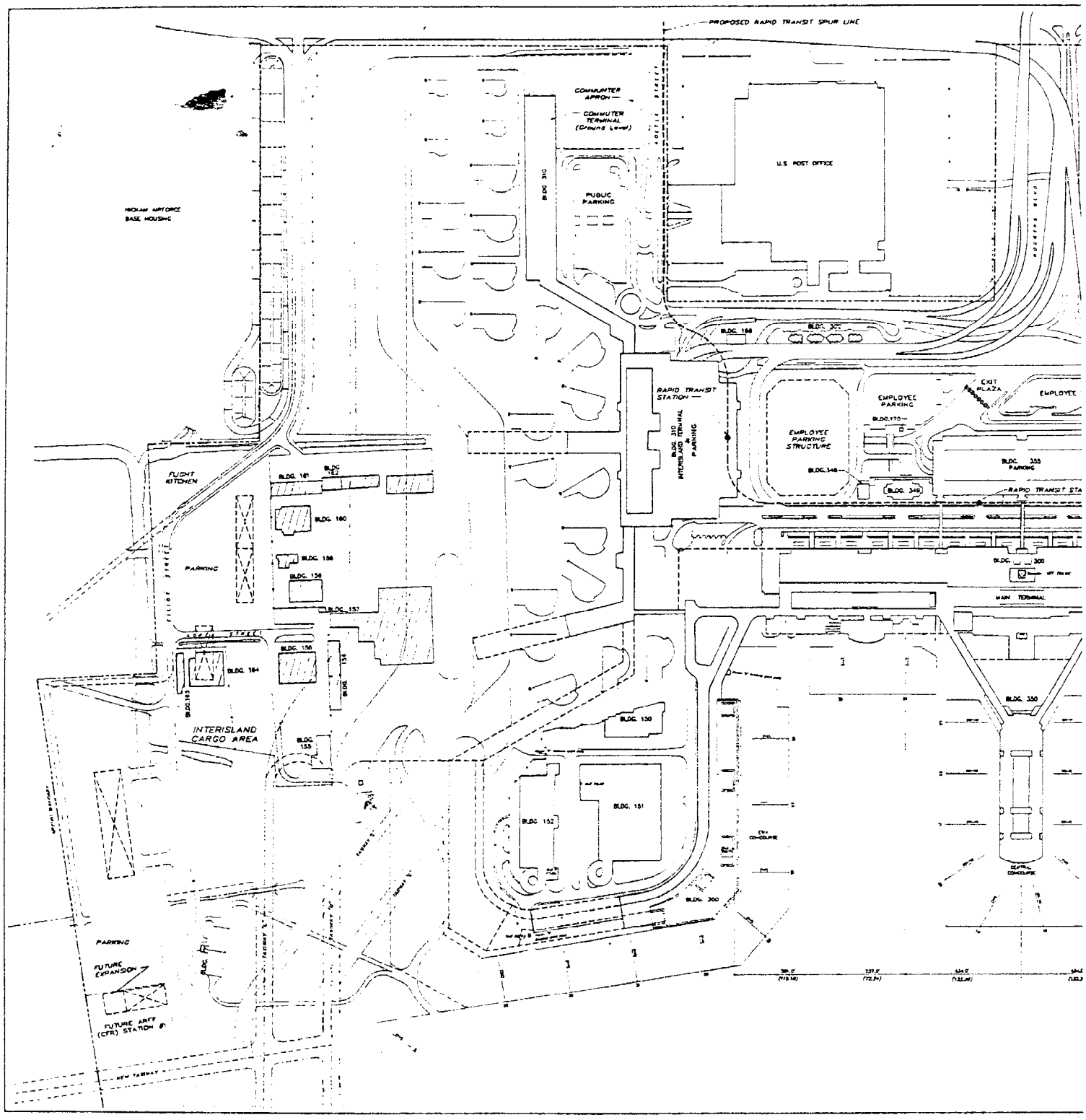


. AIRPORT E AND ROGRAM	KFC AIRPORT, INC. MANAGEMENT CONSULTANTS	AIRPORT LAYOUT PLAN	FIGURE 4



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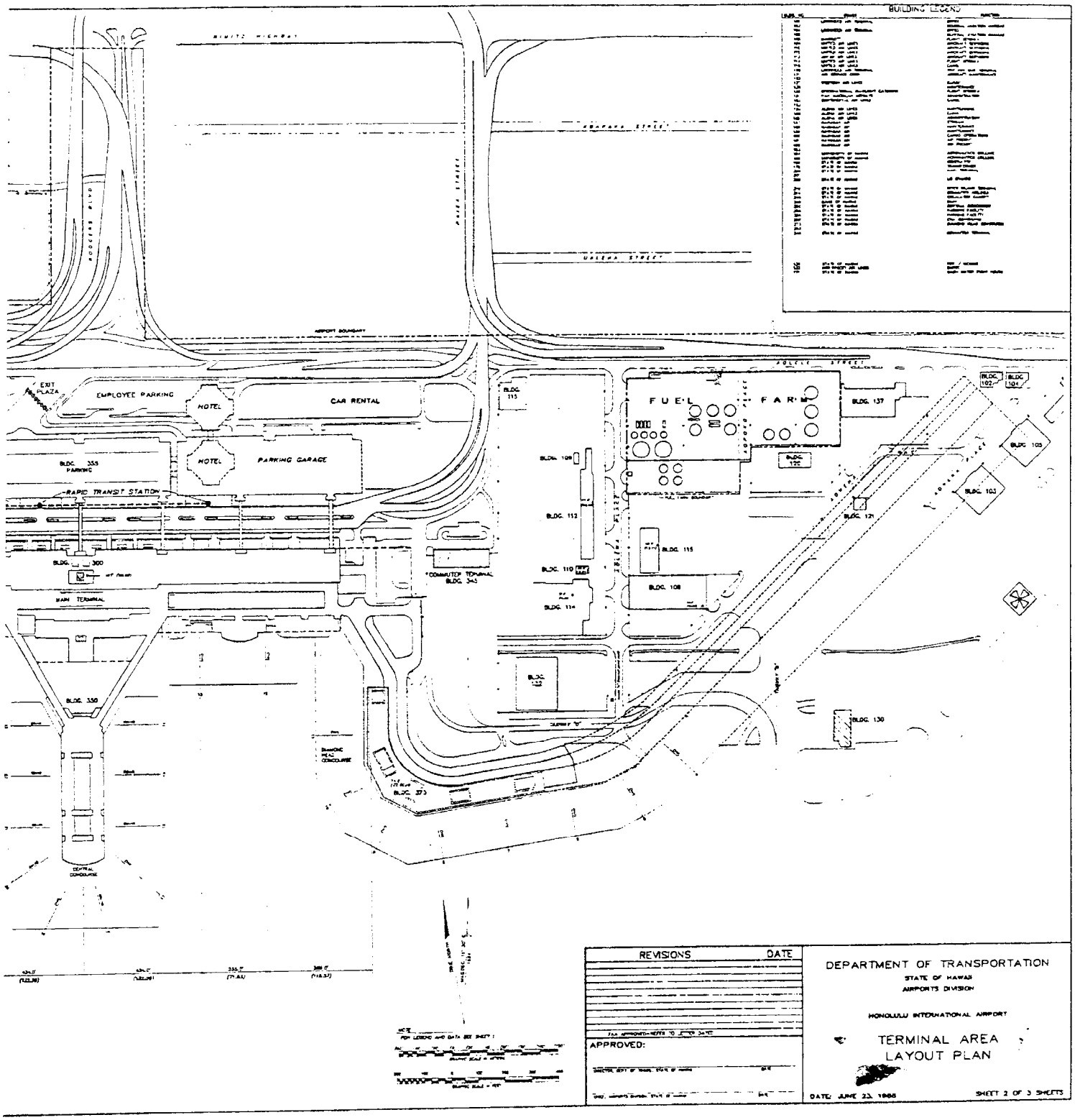

L AIRPORT
TE AND
PROGRAM

KFC AIRPORT, INC.
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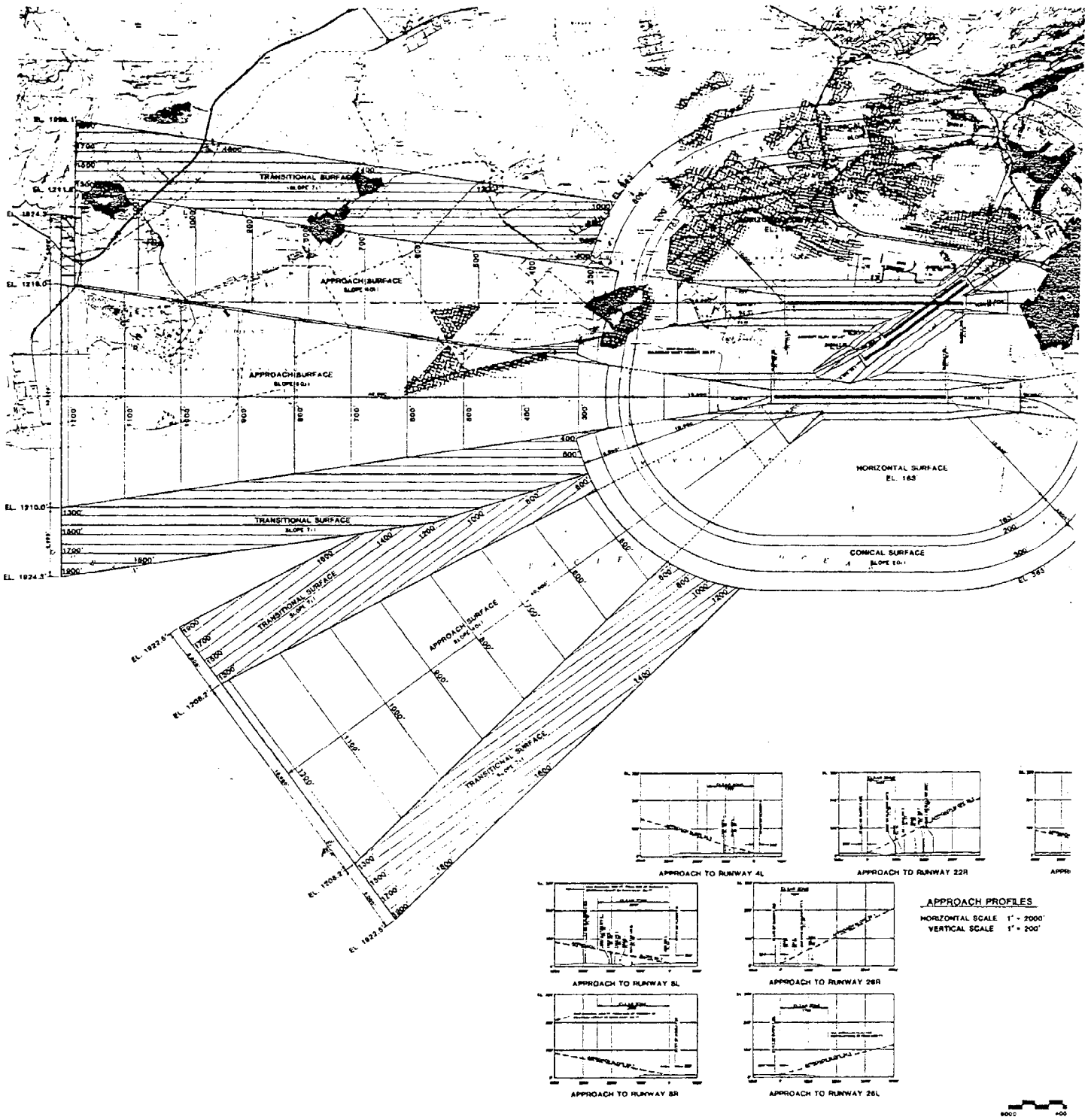
TERMINAL AREA PLAN

FIGURE
5



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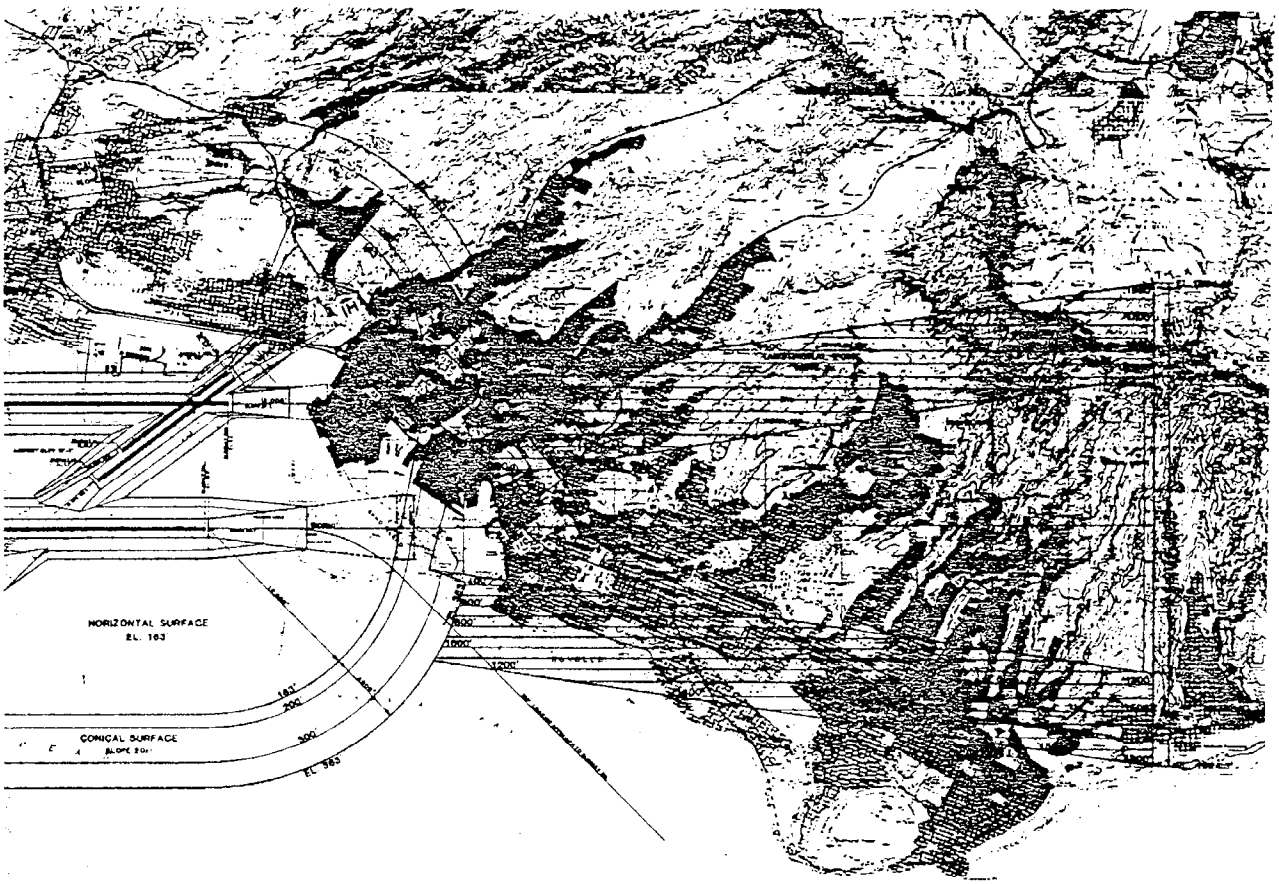
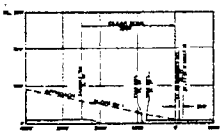
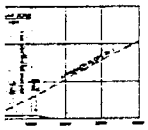


APPROACH TO RUNWAY 22R



APPROACH TO RUNWAY 4R

APPROACH TO RUNWAY 22L



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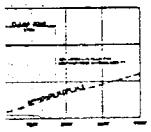

OACH TO RUNWAY 26L

APPROACH PROFILES

HORIZONTAL SCALE 1" = 2000'
VERTICAL SCALE 1" = 200'

REVISIONS	DATE

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STATE OF HAWAII
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HONOLULU INTERNATIONAL AIRPORT

APPROACH AND
CLEAR ZONE PLAN

SHEET 3 OF 3 SHEETS

L AIRPORT
E AND
ROGRAM

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APPROACH AND CLEAR
ZONE PLAN

FIGURE
6

- Construction of a new Interisland Terminal Complex.
- Construction of a new Interisland Cargo and Maintenance Area.
- Location of an Airport Hotel and Parking Structure.
- Construction of an additional Parking Structure.
- Relocation of the North Ramp Commuter Terminal.
- Development of the South Ramp Facilities which includes:
  - General Aviation facilities
  - Aircraft Maintenance facilities
  - Air Museum
  - Air Cargo facilities
  - Fixed Base Operator Lots
  - Helipad
- New International Arrivals Building.
- Relocation of ARFF Facilities.
- Construction of Ramp Service Roads.
- Construction of a Police and Fire Helicopter facility.
- Location of a Rapid Transit Spur.
- Expansion of the Base Maintenance Facility.
- Land Acquisition.

- Airfield: The 1981 Airport Master Plan concluded that the best solution for accommodating increased demand is to construct a reliever airport. These measures were reviewed as part of the Master Plan Update, with the same conclusion reached. The benefits of a general aviation reliever airport are considerable, and are summarized below.

  1. Aircraft delays at HIA would be reduced dramatically if approximately one-half of the general aviation activity projected for the Airport could be diverted to a reliever airport. In the year 2005 alone, savings in aircraft operating costs would be about $100 million.

  2. A reliever airport would reduce the concentration and amount of interaction at HIA between the slower and lighter general aviation aircraft, and the faster and heavier jet transport aircraft.

  3. A reliever airport would offset the need for costly development of additional runways at HIA through the year 2005 and beyond. Additional runways and associated runway approaches would occupy large amounts of land area needed for other essential Airport activities in the future.

In summary, the analysis proved that the benefits of a reliever airport would many times outweigh the projected cost of the facility. Construction of a reliever airport in the 1991-1995 time period is recommended. Given a reliever airport, no airfield facility development is required at HIA aside from minor improvements to taxiways and aprons.

One of the more notable taxiway improvements will be the realignment of Taxiways G and L, in the 1996 - 2005 time period, to accommodate the expansion of the Ewa Gullwing and Interisland Terminal Concourses.

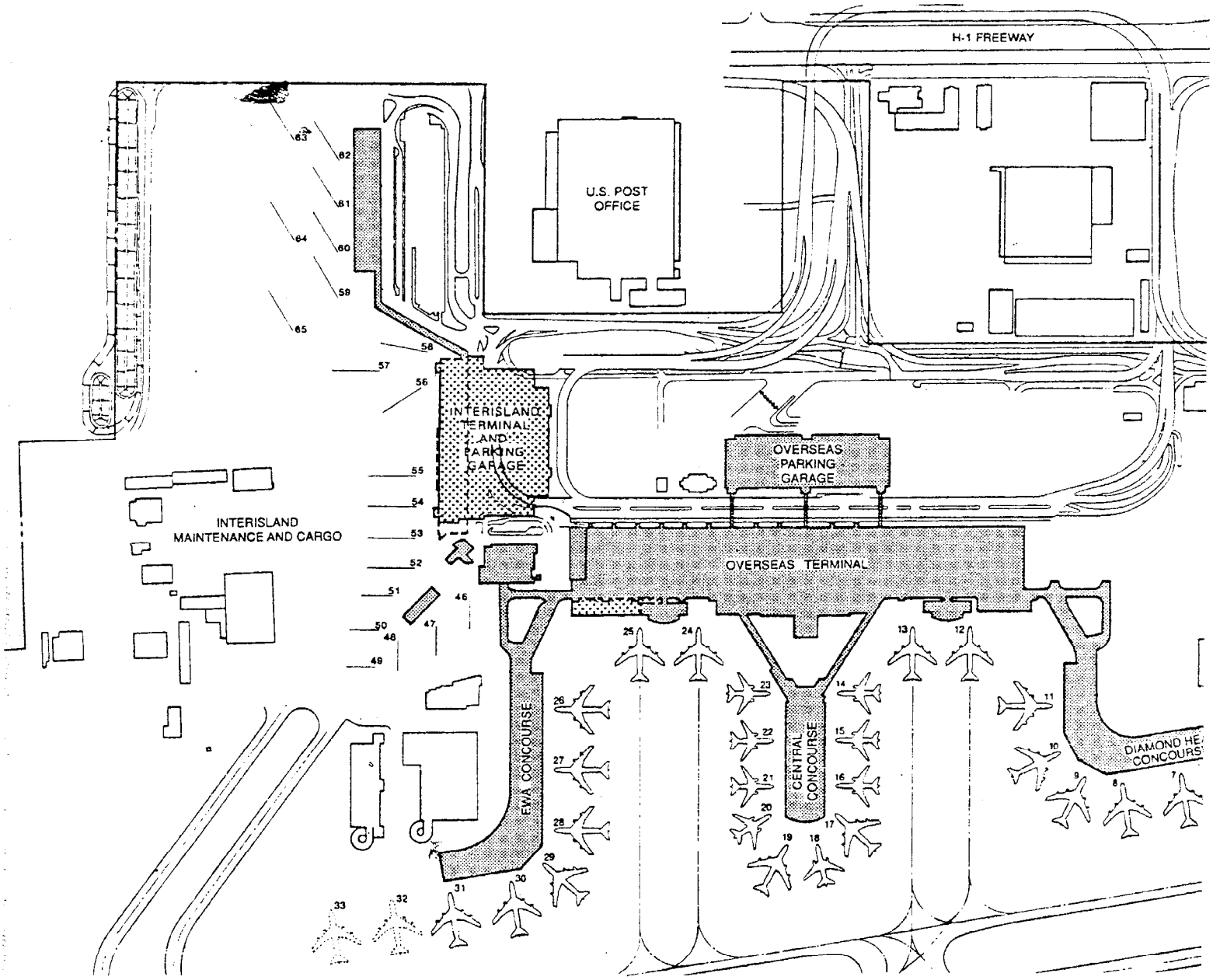
Another improvement is the construction of a Hijack/Hazardous Material Hardstand on proposed Taxiway RS. The taxiway would be constructed with a widened center portion that could accommodate a parked B747. The center of the hardstand would be 900 feet from the boundary of the General Aviation area on the South Ramp and 1,200 feet from inhabited structures.

- Overseas Terminal: The expansion of the terminal facility is planned in phases to meet the forecasted requirements to the year 2005. The phase I (1987-1990) development plan (Figure 7) requires no physical expansion of the Overseas Terminal and involves only major renovations of present under-roof space. The Phase II (1991-1995) development plan (Figure 8) requires expansion of the Overseas Terminal. The Phase III (1996-2005) development plan (Figure 9) requires significant expansion of the Ewa and Diamond Head Concourses of the Overseas Terminal.

- International Arrival Gates: In the short-term, additional gates are needed to efficiently accommodate international arrivals. All gates at the Overseas Terminal, except those at the Central Concourse, are equipped to handle international arrival passengers by wiki-wiki bus system with passenger pickup at the third gate level. This is a secure and efficient operation.

  At present, without modifications to the gates at the Central Concourse, the facility can only accommodate international arrivals by off-loading passengers on the ramp; this is an inconvenient and non-secure procedure.

  Since most international arrival aircraft are B747 size, gate 17 (B747), gate 18 (DC-10) and gate 19 (B747) are the most suitable for modification to international arrival use. A study, currently in progress, indicates that these three gates should be modified so that foreign arrival passengers can be moved, by a secure passageway, from the second to third levels of the gate. At the third level, an enclosed passageway should be constructed to allow passengers to walk to the existing wiki-wiki bus station located at the base of the "Y" on the



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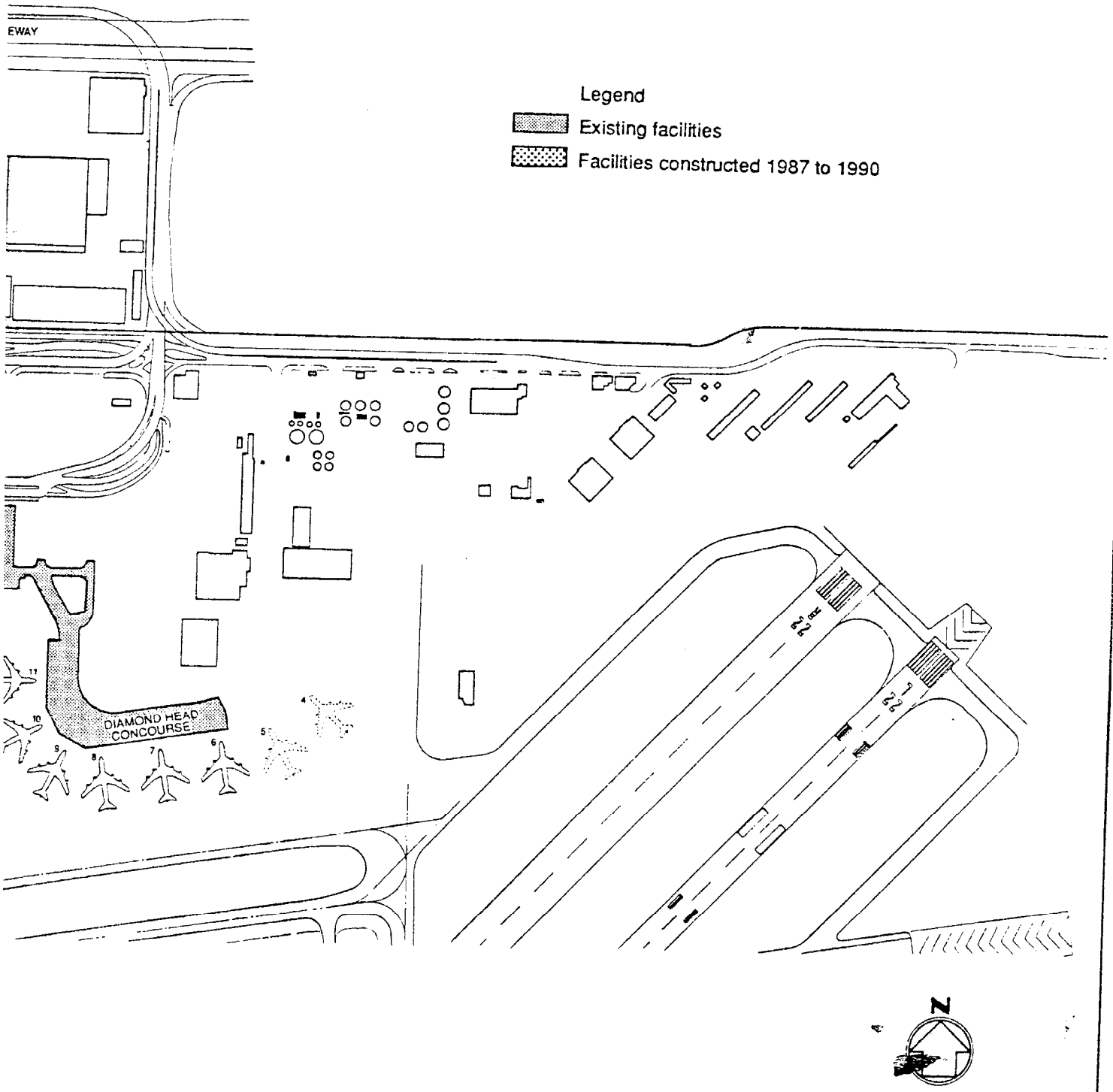

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TERMINAL AREA PLAN
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FIGURE
7

third level of the building. From there, the international arrival passengers can be bused to the International Arrivals Building for Federal Inspection System processing.

These modifications should be carried out in the 1987-1990 time period.

- Interisland Facilities: A new centralized Interisland Terminal is being developed on the existing location to meet forecasted aircraft, passenger and vehicular volumes beyond the year 2005. The new terminal will be a multi-story structure which integrates a parking structure above the passenger terminal complex.

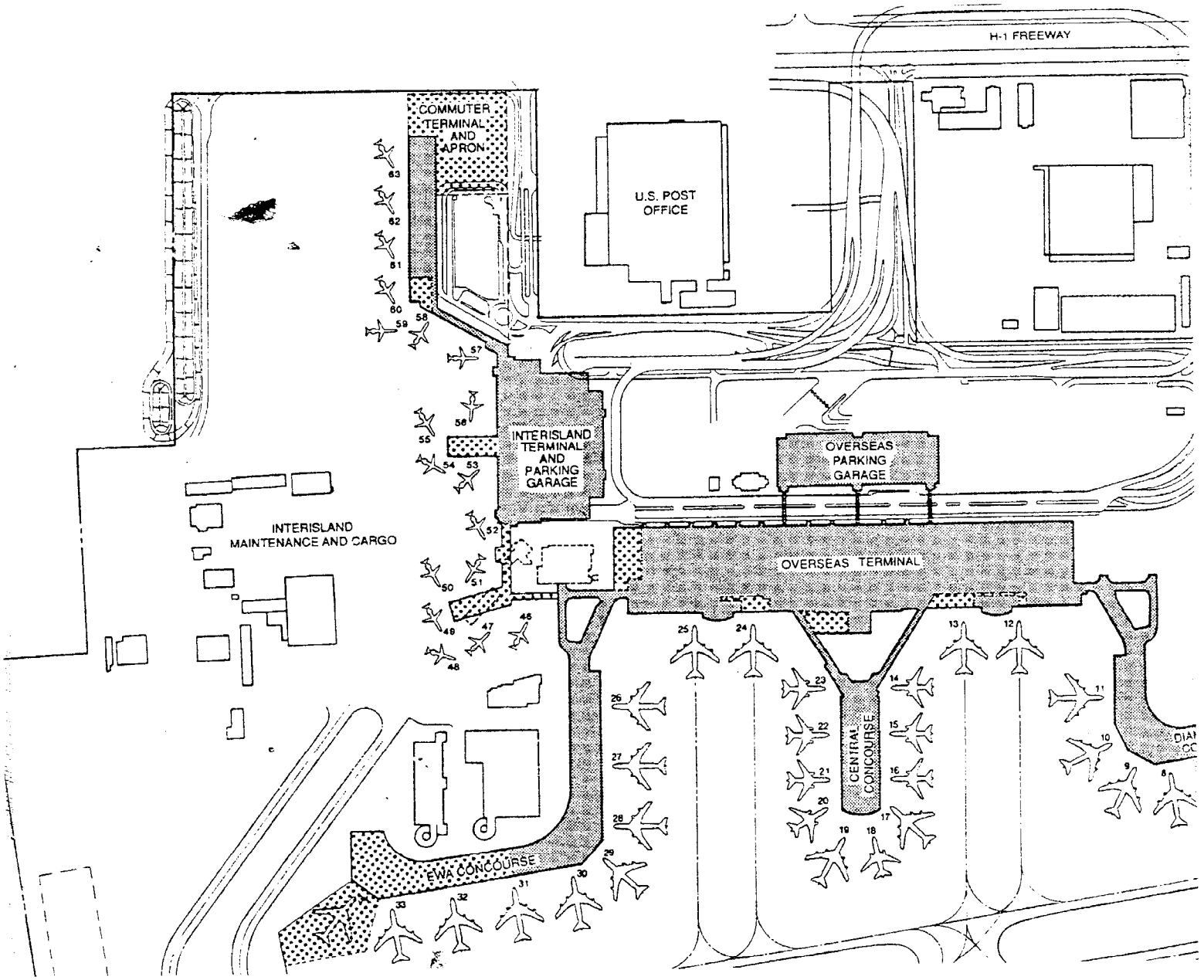
  Phase I (Figure 7) of the development plan includes the construction of an additional concourse (Terminal 3) at the Interisland Terminal; which has been recently completed. Phase II (Figure 8) requires the major expansion of the Interisland Terminal to provide a new multi-level terminal and parking structure. The existing Interisland Terminal will be abandoned and removed. In Phase III (Figure 9) shows the possible extensions to the finger concourses with all aircraft parked powered-in/ pushed-out, and all positions served by loading bridges. At this stage there will no longer be a separate Interisland terminal and gate assignments will not be restricted by the type of aircraft.

  In order to accommodate maintenance and cargo facilities for the Interisland carriers to 2005, it has been determined that approximately 26 acres of land will be required for maintenance and an additional 11 acres for cargo. The proposed site is located on Hickam Air Force Base property north of Taxiway Alpha and west of Taxiways G and L. Negotiations are underway with United States Air Force for the use of eighteen acres of Hickam Air Force Base land. This land, when combined with available HIA land will be enough for both maintenance and cargo facilities.

  However, if negotiations are unsuccessful, provisions for Interisland cargo will be made in the Ewa service court area (without an adjacent aircraft parking apron) and space will be provided for aircraft maintenance on the South Ramp.

- Airport Hotel and Parking Structure: As a result of inquiries by hotel developers, a study was performed by KFC Airport to investigate the feasibility of constructing a hotel and parking structure adjacent and connected to, the Overseas Terminal (KFC Airport, Inc., November 1987). The study focuses on a site just Diamond Head of the existing Overseas Terminal parking garage and across the frontal roadway form the Overseas Terminal.

  Hotel developers believe this to be a potentially profitable venture for them and substantial source of revenue for HIA. As presently conceived, a 350 room hotel and 2000 space parking



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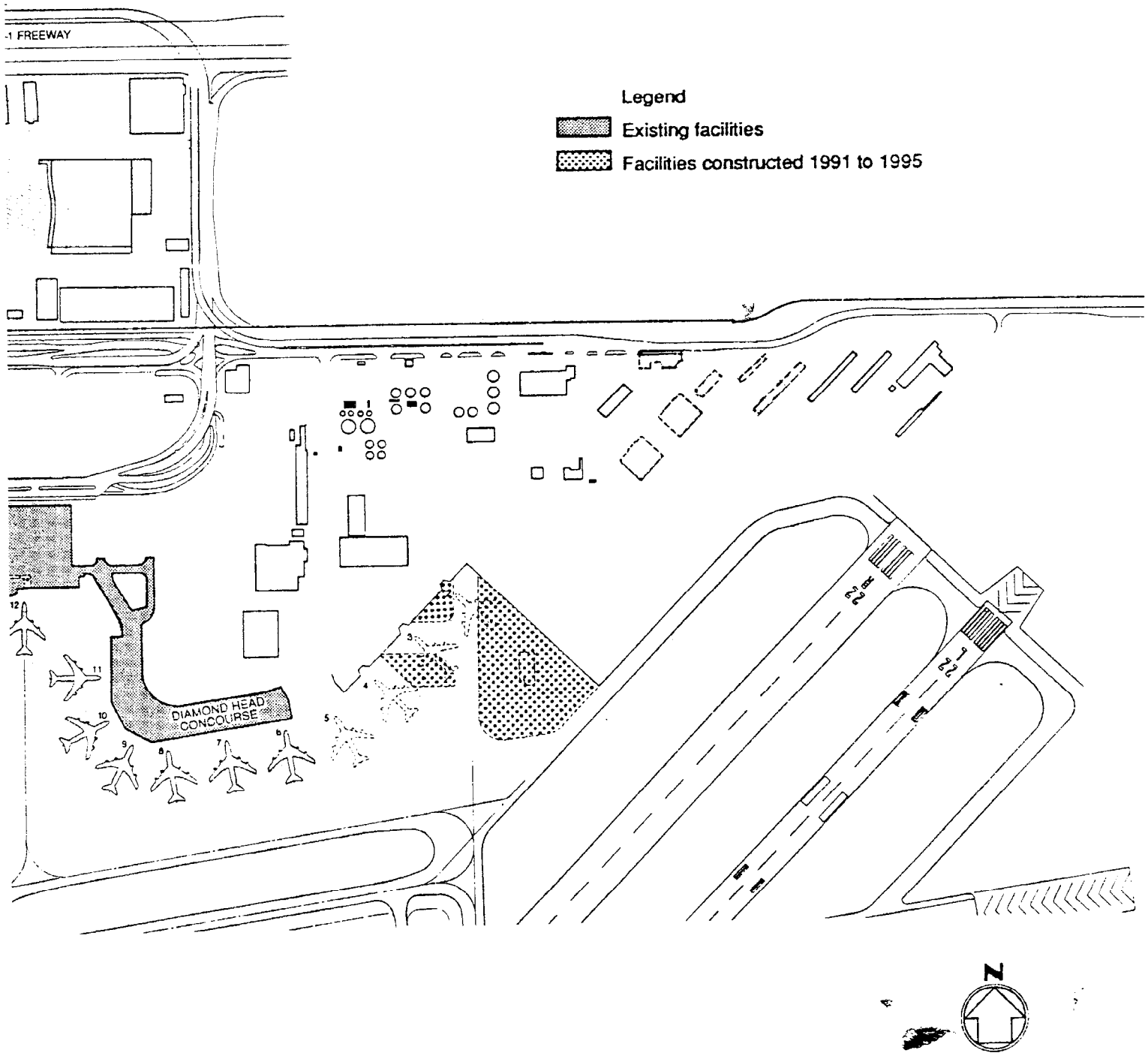
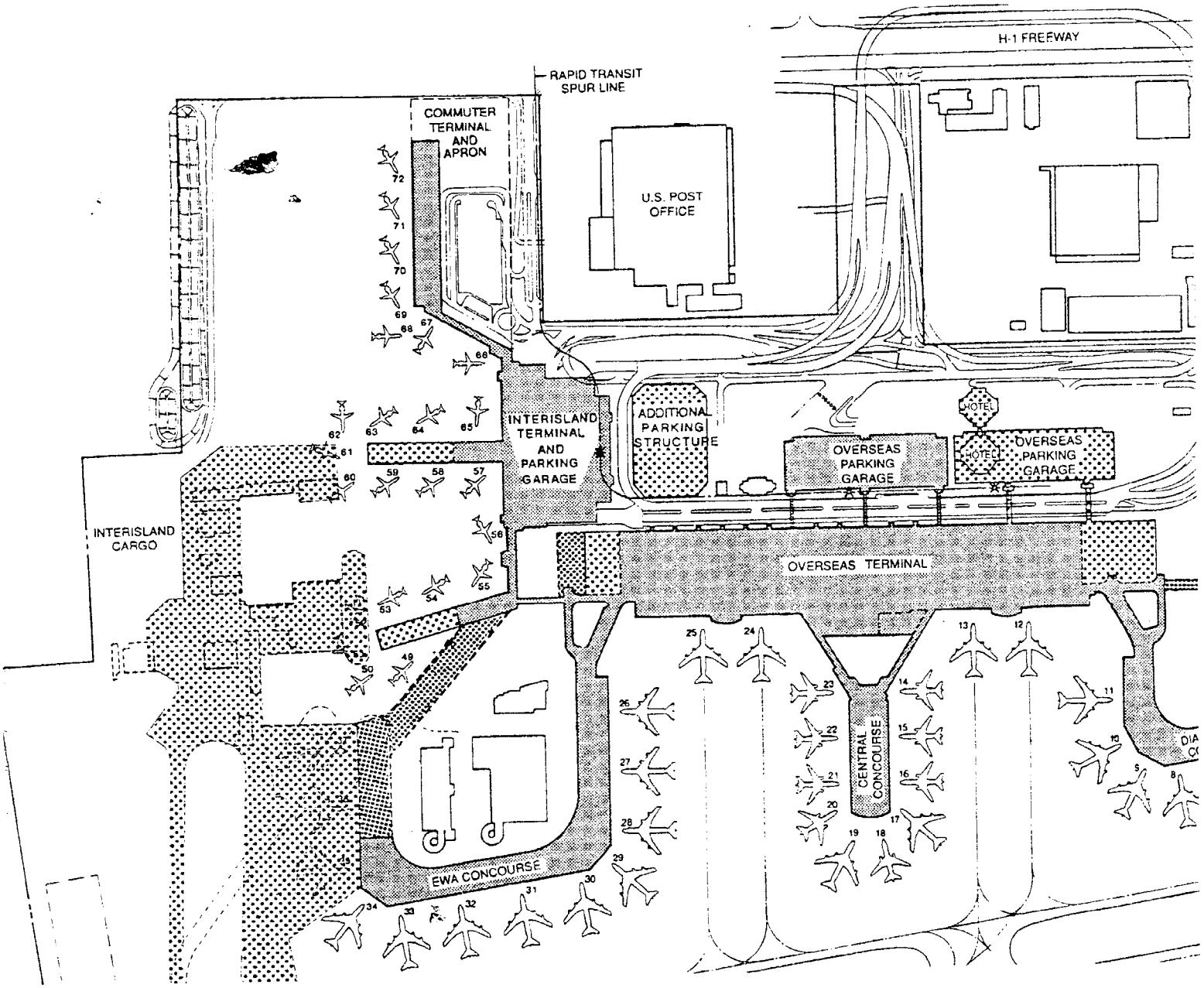


- AIRPORT E AND PROGRAM	KFC AIRPORT, INC. MANAGEMENT CONSULTANTS	TERMINAL AREA PLAN 1995	FIGURE 8



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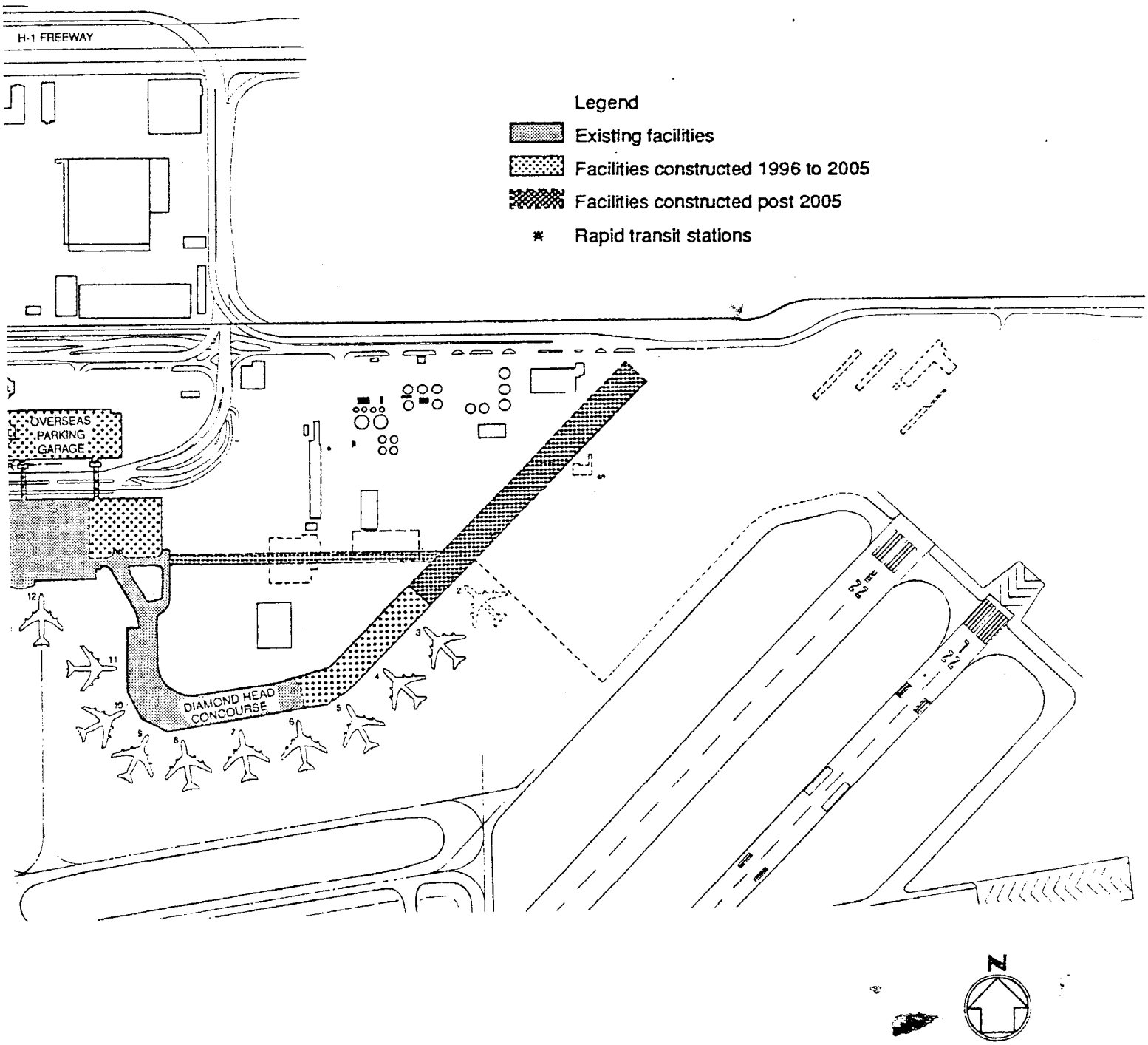

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structure would be built. The facilities would either be constructed by the Airport and the hotel leased by an operator, or jointly constructed by the Airport and a hotel developer. The 2000 space capacity of the structure would provide for public parking requirements at the Overseas Terminal well beyond 2005.

The project, which would be undertaken in the 1996-2005 time period, would be very convenient for passengers making the air/ground transportation mode transition. The hotel would be connected to the Overseas Terminal by a passenger bridge across the frontal roadway. It would incorporate a Rapid Transit System station, should that program lead to an operating system, and integral vehicle parking in the parking structure. These would provide for speedy and convenient ground transportation between the hotel and urban areas of Oahu, particularly the downtown business district and the Walkiki resort area.

- Additional Parking Structure: Projections of parking requirements show that by the 1996-2005 time period, close-in parking in the passenger terminal area will be exceeded. At that time, the ground level parking area just Ewa of the existing Overseas Parking Garage can become the site of an additional parking structure.

  A parking structure which will accommodate 2200 vehicles should be built on the site. The 2200 space capacity of the structure would accommodate requirements for close-in parking well beyond 2005.

- North Ramp Commuter Terminal: As part of Phase II, the commuter terminal will be relocated at the Interisland Expansion Terminal Number 3, once the new central Interisland terminal facilities are built. At this location, it is possible to utilize a portion of the ground level of Expansion Terminal No. 3 and the vehicle parking area on the Diamond Head side of the building for the commuter facilities. This new facility would be of similar size as the present terminal, which is considered to be large enough for the foreseeable future. At Terminal No. 3, commuter passengers can have their own processing facilities and commuter aircraft can physically be segregated from Interisland aircraft parking areas. Also, interlining between Commuter and Overseas Terminals is facilitated because of the planned connection of Interisland and Overseas Terminals with a Wiki-Wiki bus system connection on airside.

- South Ramp Development: The 1981 Master Plan gave impetus to the increased development of the South Ramp because it was apparent that the Overseas Terminal on the North Ramp needs to expand to meet forecasted demands. In order to accommodate the planned expansion, several existing North Ramp facilities which are not associated with airline support must be relocated to the South Ramp. This relocation will place all General Aviation, the technical school, and certain commuter airlines at the South Ramp. A number of alternative

arrangements for locating major facilities were considered but existing tenant leases placed a constraint on what could be done.

The proposed South Ramp plan is divided into four major functional areas with General Aviation on the west, Aircraft Maintenance and Air Cargo in the Center, and Air Taxi/Commuters/Helicopters on the east. All of these areas are located between Taxiway "C" and Lagoon Drive. The Air Taxis/Commuters/Helicopters area also fronts Runway 8L-26R on the east. None of these areas contain exclusively those designated functions because of the existing lease agreements. The South Ramp will also be designed to accommodate an aviation museum, technical school, a bulk fuel storage facility, FAA administration area, Automated Flight Service Station, and a heliport. Studies are presently underway to determine if a South Ramp commuter terminal is needed.

- International Arrival area: Requirements and alternative development concepts for the International Arrival area of the Overseas Terminal have been studied by Engineering Concepts, Inc. (1987). The objectives of the study include:
  - Obtain existing international arrival passenger data.
  - Analyze international arrival passenger characteristics and the operational processes of border clearance facilities.
  - Recommend a development plan.

  The study's recommendations to meet future short term international arrival passenger demands are to modify the ground and second floors. The number of inspection stations, baggage claim frontage, and inspection queuing area of the Customs Service and Department of Agriculture inspection area will be increased on the ground floor by relocating the offices in the makai direction and relocating the baggage claim carrousels into the area currently occupied by the offices. The customs inspection stations would remain in their existing location. The Immigration and Naturalization Service and Public Health Service inspection queuing area will be increased on the second floor by relocating the offices and inspection stations in the mauka direction.

- Expansion of the International Arrivals Building: The recent rapid increase in international arrival passengers has resulted in plans to modify the existing International Arrival Area and modify Central Concourse gates 17, 18 and 19 to accommodate demand in the near term. Predicted increases of the Japanese tourist market and expectations for opening some of the other Asian markets to Hawaii indicate foreign passenger processing facilities will be inadequate in the long-term.

Because of the urgency to meet this rapidly increasing demand, a task force has been formed to study the international arrival and departure problem. The task force has recommended that a new International Terminal Building be located within the area known as the Diamond Head Service Court. The planning and environmental impacts of this new facility will be addressed in separate studies.

- Airfield Rescue and Fire Fighting Facility Relocation: The location of the North Ramp station will be between the proposed Interisland Maintenance Facility and Taxiways G and L, which is on presently owned airport property. This location is good for crash response, has excellent and immediate access to the airfield system, and room for future expansion. Groundside access to the station is possible from Elliott Street.

- Ramp Service Roads: At present, movement of ground support equipment between north and south ramps is largely accomplished along routes that cross active runways. Other ground vehicles use an unimproved perimeter road. Development of the South Ramp Area will result in a substantial increase in vehicular traffic between the two ramps.

  The above situation can be improved by the construction of ramp service roads around the perimeters of Runways 4 and 22. The road around the ends of Runways 22L and 22R can proceed from the North Ramp near the proposed Police/Fire/Helicopter Facility to the Air Taxi/Commuter area on the South Ramp. The road around the ends of Runways 4L and 4R can proceed from the General Aviation Area on the South Ramp to the existing paved roadway system on the HAFB side of Runway 4L-22R.

  Both of these roads should have two paved lanes that will accommodate both ground support and groundside vehicular traffic. Security fencing and gates may be required on the south perimeter road to satisfy military security requirements. Construction should take place in the 1987-1990 time period.

- Police and Fire Helicopter Facility: In the Master Plan Update, October 1988, the proposed location of this facility was on the North Ramp, adjacent to the Base Maintenance facility. However, due to the location of the new International Terminal Building at this proposed site the helicopter facility has been relocated to a site which is presently part of the Kapalama Military Reservation. This parcel of land neighbors the University of Hawaii, Marine Center and is in the process of being acquired for airport use.

- Rapid Transit Link: Among the alternative alignments being considered by the Rapid Transit Development Department (City and County of Honolulu) is the main line along Salt Lake Boulevard mauka (to the north) of the airport. This offers an opportunity to link the airport

with the rapid transit system by means of a spur line. Advantages, to the Airport, for building a spur includes reduced future requirements for public and employee parking, reduced highway access congestion, and fast ground transportation service between the Airport and its main passenger origin/destination, the Waikiki resort area.

The proposed alignment, within the airport boundary, enters the airport along the Ewa boundary of the Post Office (near Aolele Street) and terminates at the Diamond Head end of the Overseas Terminal.

Consideration was also given to the alignment of the spur line in the passenger terminal area, and the number and location of transit stations at the Airport. The proposed alignment of the transit system track will be above the elevated frontal roadway which passes in front of the Interisland and Overseas Terminals. A minimum of two stations is required, one at the Interisland Terminal and one at the Overseas Terminal, although more may ultimately be desired.

At this time, this information is for "planning purposes only" since it is not certain a Rapid Transit System will be built, or if the State Department of Transportation will choose to fund a link between the main line and the Airport. The earliest time the spur line might be built is believed to be the 1996-2005 time period.

- Base Maintenance Facility: Development of the Base Maintenance Facilities has not kept pace with past facility expansion at HIA and the maintenance staff is having difficulties meeting their commitments with available resources. With the prospect of more facility expansion in the future, a study of requirements was conducted by M & E Pacific, Inc. (1986) which resulted in a development plan. The plan, now in the process of review, proposes expansion of the Base Maintenance Facility at its present location.

  The plan calls for improvements to be made in two steps; short term improvements in the period 1987-1997 and long term improvements in the period 1998-2005. Since it is planned that General Aviation facilities, now located on the North Ramp, will be relocated to the South Ramp in the 1991-1995 time period, more land will be available for Base Maintenance use when the long term improvements are made.

  The plan calls for the present under-roof area to expand from approximately 11,700 square feet to 26,700 square feet in 1997 and 37,300 square feet in 2005. Major short term improvements include a new administration building, a new landscape shop, and new labor shops plus expansion and retrofitting of existing facilities. Long term improvements include a larger baseyard and expanded warehouse. The referenced development plan includes new

site plans for both stages of facility improvements.

- Land Acquisition: Additional land is needed for airport use to meet the following requirements.

  1. Land for relocation of Interisland air cargo and aircraft maintenance facilities caused by expansion of the Interisland Terminal.

  2. Land for relocation of general aviation facilities on the North Ramp caused by expansion of the Overseas Terminal.

  3. Land for additional bulk fuel storage caused by forecast increases in aviation fuel use at the airport.

  4. Land for expansion of Terminal Area facilities beyond 2005 as all available land becomes occupied.

  Land to meet the above requirements is available as follows:

  1. An (approximate) twenty-three acre parcel of HAFB land from the U.S. Air Force.

  2. An (approximate) two acre parcel of GSA land on the South Ramp.

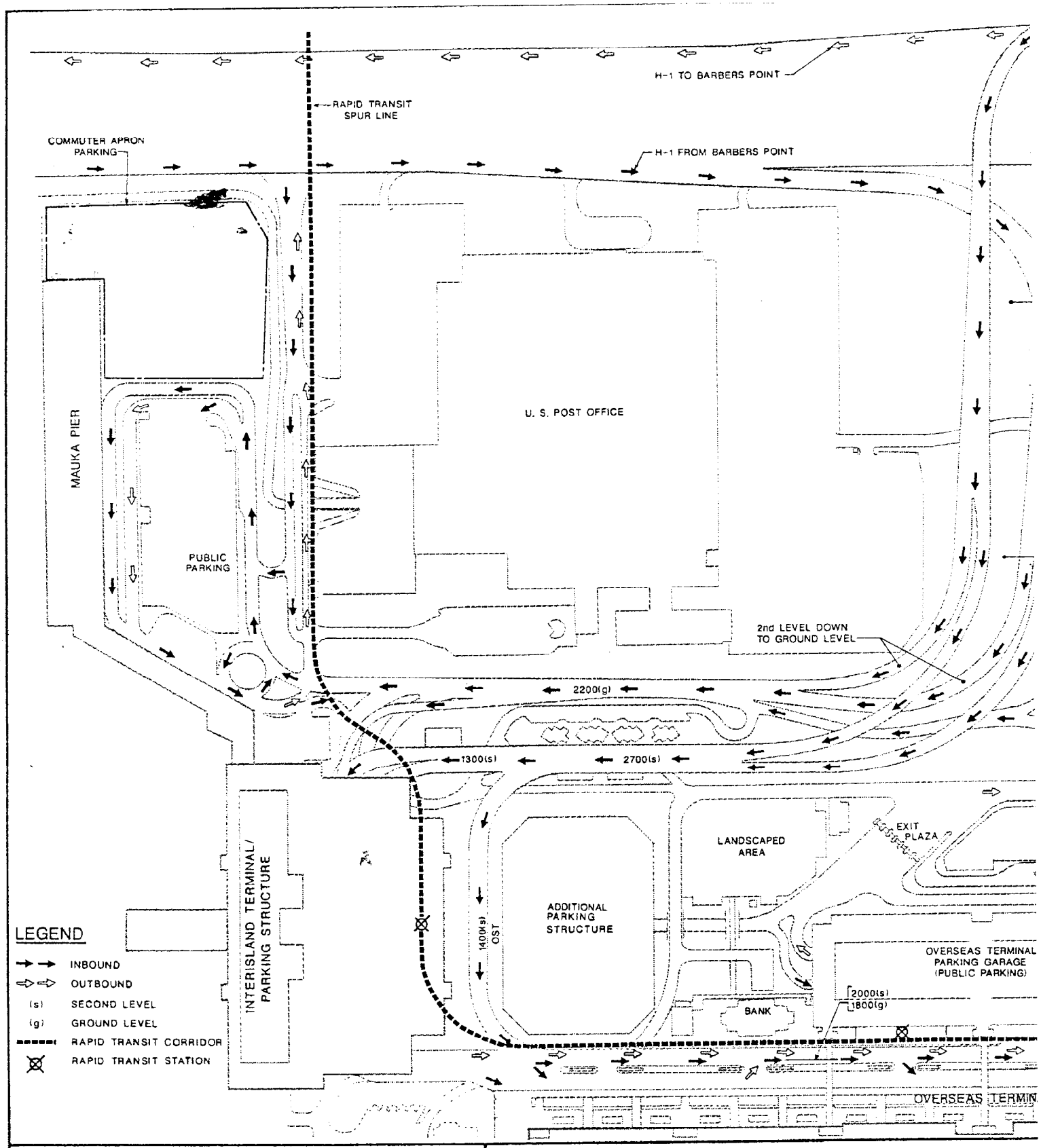
  3. An (approximate) twenty-one acre parcel of land on the existing Kapalama Military Reservation, neighboring University of Hawaii, Marine Center.

  4. The industrial land (Old Lewers and Cooke property) bounded by Aolele, Paiea and Koapaka Streets and by Rodgers Boulevard.

  The exact location of the Sand Island land and availability of the Old Lewers and Cooke property is under investigation at present.

- Utilities: No major changes in infrastructure located on airport property are required.

- Access Roadways: Only minor changes to the roadway access system to the airport are expected to be made between 1987 and 2005. However, significant changes to the interior roadways and parking facilities are planned to accommodate the increase in traffic volume. Figure 10 depicts the plan for the Terminal area roadways and parking facilities.



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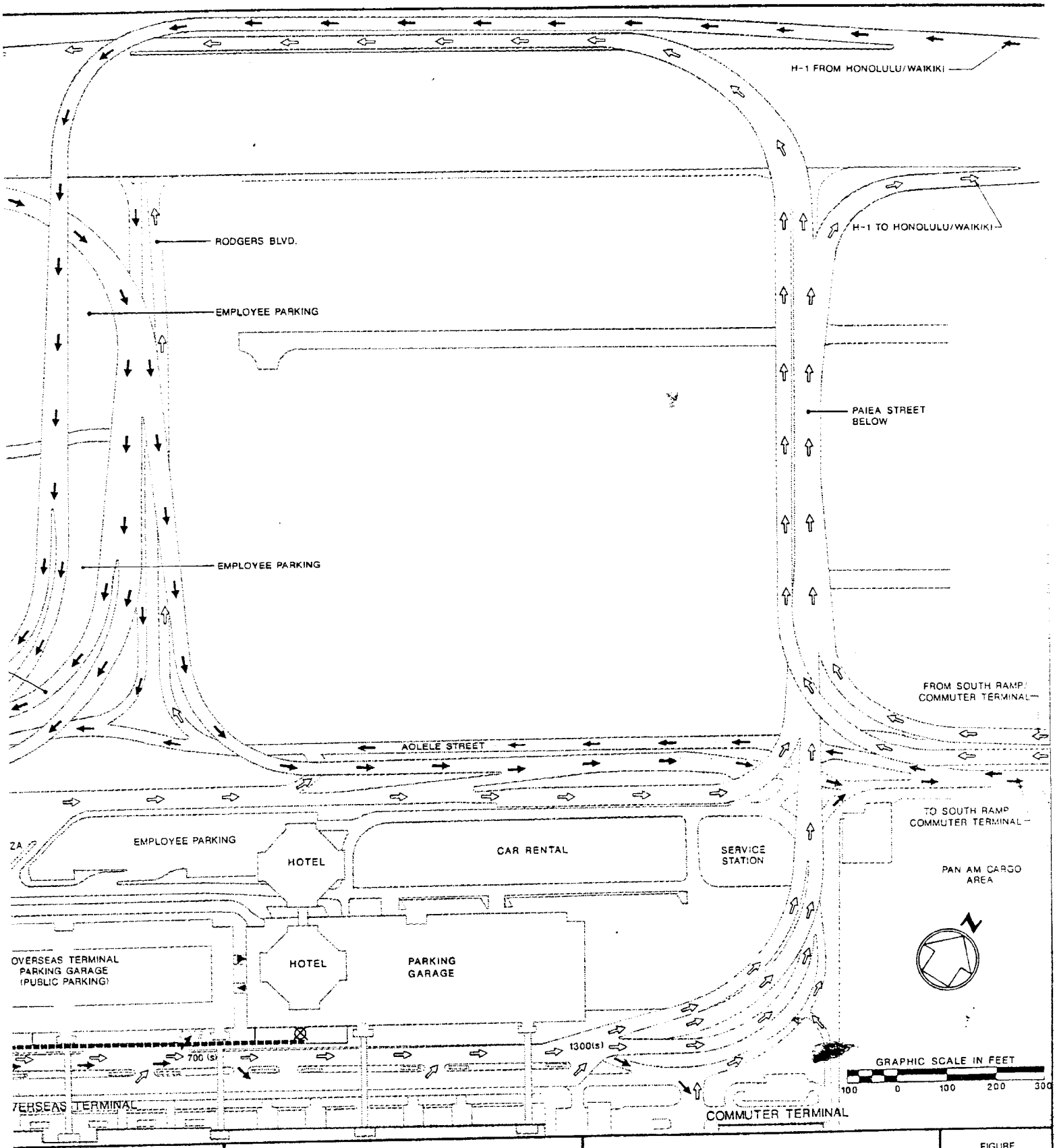

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FIGURE
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2.3 Airfield Alternatives

During the preparation of the 1981 Master Plan for the Airport, seven new runway configurations were considered in the context of long-term needs beyond the year 2000 or if a general aviation reliever airport is not developed. The following are the alternative runway configurations proposed by the 1981 Master Plan. The cost is in 1980 dollars and does not include the cost of land acquisition.

1. A new air transport runway parallel to and about 1,000 feet north of Runway 8R. Cost: $75 million.

2. Runway 4L would be extended to the southwest by as much as 4,000 feet. Cost: $40 million.

3. Construction of a new jet transport runway parallel and 700 feet northwest of Runway 4R. Cost: $75 million.

4. Construction of a new jet transport runway parallel and 2,500 feet northwest of Runway 4L. Cost: $75 million.

5. Construction of a new General Aviation runway parallel to and 2,500 feet southeast of Runway 4R, in Ke'ehi Lagoon. Cost: $23 million.

6. Extension of Runway 4L and the construction of a new jet runway parallel to and 800 feet south of Runway 8L. Cost: $55 million.

7. Construction of two new air transport runways parallel to Runways 8L and 8R. One of the new runways would be located approximately 700 feet south of Runway 8L and the other would be located 1000 feet north of Runway 8R. Cost: $128 million.

These alternatives have development costs similar to or higher than the proposed reliever airfield. However, these alternatives do not reduce the interaction between the lighter General Aviation and heavier Air Carrier aircraft, as does the proposed reliever airfield. This interaction is a major problem at HIA and will cause greater concern as aircraft operations increase. Also, these alternatives will require land area, which is needed for other airport related facilities, and would add to the existing congestion.

2.4 Aircraft Hijack/Hazardous Material Hardstand Alternatives

An alternative location for the Hijack/Hazardous Material Hardstand was next to the Hickam Air Force Base (HAFB) Live Ordinance Facility.

HAFB has a facility for parking aircraft armed with live ordinance that would meet HIA requirements for Hijack/Hazardous material parking that is located on USAF property. It is located to the south of, and accessed by Taxiway B. A request for joint use of this property parking position, or another constructed by HIA nearby, was denied by the Air Force because such use could hamper military operations.

Potentially workable sites on HIA property are few. The location of a hardstand in the water north of Taxiway RA and accessed by Taxiway RB was rejected on environmental and cost grounds.

2.5 Overseas Terminal Alternatives

The existing Overseas Terminal is functioning efficiently for HIA and due to the mature nature of the development of HIA, alternatives for further development are extremely limited. Consequently, alternatives to the development of the terminal area are not applicable.

2.6 Alternatives for Additional International Arrival Gates

The only alternative is to wait for the construction of new gates. However, given the urgent need for International Gates there are studying other alternatives, see Sections 2.13 and 2.14.

2.7 Interisland Terminal Alternatives

Alternative development concepts for an Interisland Terminal have been the subject of a series of studies by KFC Airport, Inc. culminating in a criteria document (K.F.C. Airport Inc, 1987). There were no feasible alternative sites for the new Interisland terminal and the alternatives studied by K.F.C. Airport related to alternative design concepts for a new terminal at the existing site.

2.8 Alternatives for Interisland Airline Maintenance and Cargo Facilities

One alternative location for this facility would be on the South Ramp which is not as functional as the proposed North Ramp Location. The South Ramp facility would increase the transit time of ramp vehicles between the passenger terminal apron and cargo facilities, as well as the aircraft transit time between maintenance and passenger aprons. However, if the acquisition of the Hickam land is denied, the South Ramp area will be constructed.

On the North Ramp, other suitable locations on airport property are available but they are separated from the passenger apron by the Manuwai Canal. This canal is the major drainage outlet for the entire airport area and lands mauka of the airport. In order to make the necessary land available, it would be necessary to bridge across or to divert the canal; an expensive proposition.

2.9 Airport Hotel and Parking Structure Alternatives

Alternative sites and layouts were studied by KFC Airports (November, 1987).

2.10 Parking Structure Alternatives

Alternatives to this site were not considered because of its proximity to both passenger terminals and consequently convenient access.

2.11 North Ramp Commuter Terminal Alternative Locations

In studying the alternatives for the North Ramp Commuter Terminal, one of the major constraints was that the commuter airlines preferred to maintain their present lesser security control status. They felt that routing their passengers through either the Interisland or Overseas terminal passenger processing facilities would be an unacceptable compromise of their basic business appeal to passengers. This meant that the commuter terminal facilities, however devised, must have their own passenger processing facilities, access from the groundside roadway system, and vehicular curbside and parking facilities close to the terminal.

Two major alternative locations for the Commuter Terminal were investigated thoroughly. One of the major locations is the proposed Terminal 3 location and the other was at the Overseas Terminal either between Gates 11 and 12 or 25 and 26 where gullwing concourses connect with the main terminal building. The Overseas Terminal location raises the security issue of keeping commuter passengers from mixing with sterile Overseas passengers. There is also a security requirement to segregate sterile and non-sterile aircraft on the apron. Another issue is the safety of mixing small (25,000 lbs. MGW) aircraft with large ones on the apron. This issue includes the effect of jet blast on the smaller aircraft, and the relative ease of maintaining visual contact with small aircraft from the cockpits of the larger aircraft.

The overseas terminal alternative location was unsatisfactory because the safety and security issues could not be reasonably resolved. Also, this location does not allow for independent access to and from the commuter airlines.

2.12 Alternatives for South Ramp Facilities

As stated earlier, the development of the South Ramp was proposed to allow for the expansion of the Overseas Terminal and related airline support facilities. There are no other reasonable alternatives to the recommended Development Plan.

2.13 International Arrival Area Alternatives

Requirements and alternative development concepts for the International Arrival area of the Overseas Terminal have been studied by Engineering Concepts, Inc. (1987). Due to the mature nature of the International terminal all of the alternatives were incorporated into the existing structure.

2.14 Alternatives for the Expansion of the International Arrivals Building

Alternatives for this expansion have been investigated by the task force formed to study the foreign arrival problem and a new building site located in the Diamond Head Concourse.

2.15 Airfield Rescue and Fire Fighting Facility Alternative Locations

The proposed location was the only one seriously considered for the North Ramp station. There are no other reasonable alternative locations for this facility.

2.16 Ramp Service Roads Alternatives

Due to the mature nature of the development of HIA, there are limited to the proposed service roads. Also, these roads are temporarily in-place as unpaved roads.

2.17 Police and Fire Helicopter Facility Alternative Locations

Alternative locations that were considered for the facility include one South Ramp and two North Ramp sites. The South Ramp site is least desirable because it is located between two operational runways (8L/26R and 8R/26L) and would require the helicopter flight tracks to cross active runways or flight tracks of other aircraft.

The two North Ramp sites include one adjacent to the planned new Interisland maintenance facility, and a site at the existing General Aviation Facility. Flight tracks from these sites would lead directly to most police/fire destinations in the Honolulu urban area and involve the least delay in terms of air traffic control clearance. The site near the Interisland Maintenance facility may cause helicopter overflights of and aircraft noise in the nearby Hickam Air Force Base housing or the Interisland passenger terminal. The other North Ramp site is presently planned to be occupied by the new International Terminal Building.

2.18 Rapid Transit Link Alternative Corridors

The alternative routes for the proposed spur line were investigated by Rapid Transit Development Project personnel. They include one entering airport property along Paiea Street, terminating at the Interisland Terminal, and the other entering the airport property along Rodgers Boulevard and terminating at the Diamond Head end of the Overseas Terminal. These alignments would cross the H-1 Freeway at a higher height, be longer and therefore, more expensive than the proposed alternative.

Consideration was also given to the alignment of the spur line in the passenger terminal area, and the number and location of transit stations at the Airport. The proposed elevated frontal roadway alignment which passes in front of both Interisland and Overseas Terminals is preferred as opposed to an alignment at a lower level in the parking area because of passenger walking time and distance.

2.19 Base Maintenance Facility Alternatives

With the prospect of future airline facilities expansion, a study of requirements was conducted by M & E Pacific, Inc. (1986) which resulted in a development plan. In these study, there were no other alternative sites considered for the Base Maintenance Facility.

2.20 Land Acquisition Alternatives

There are no other areas to expand the airfield other than those listed in Section 2.2.