



# TRANSPORTATION

## 13.1 OVERVIEW

### 13.1.1 Introduction and Analysis

Transportation is the systems and modes of conveyance of people and goods from place to place. It can be considered the major infrastructural element of an area. The different elements of the transportation system ideally need to be planned through an integrated and comprehensive process that includes land use planning. The coordinated planning of transportation facilities requires an understanding of the characteristics of the modes of conveyance and the patterns and densities of the area that they are intended to serve.

The purpose of transportation planning is to provide faster, safer, efficient and more pleasant travel, as limited by the ability to finance the cost of transportation. Because transportation systems are expensive to construct and maintain, great care and foresight are necessary when developing plans for its construction. Modern transportation planning emphasizes the total transportation system rather than isolated facilities. It considers all modes of transport which are economical in an area, as well as all types of improvements, including traffic engineering improvements.

The island is faced with an increasing demand for the development of new transportation facilities and systems. Over the past three decades, a number of major transportation projects have been completed, while many others are in the planning stage. Much of the current construction, however, is either expansion or improvement of existing systems of facilities. A sizable portion of the new construction either planned or underway is but an incremental part of a long-range program.

Since the adoption of the General Plan in 1971, the County has seen the construction of major highways, the expansion of its airport and harbor facilities and the establishment of a mass transit system. The 1970s saw the construction of the 35-mile long Queen Kaahumanu Highway (Highway 19) that provided access to the coastal areas between Kawaihae and Kailua-Kona. Since its opening in 1970, the runway and terminal facilities at the Kona International Airport at Keahole has been expanded to accommodate increased passenger traffic and international flights. The State has developed master plans for its highway, airport and harbor facilities to accommodate anticipated demands in the use of its facilities. Similarly, the State, in coordination with the County, prepared the Hawaii Long

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Range Land Transportation Plan (1998) that identified the island's major land transportation improvement needs to support the County's projected growth to the Year 2020.

Funding sources for future improvements may have to be expanded given decreasing Federal and State government capital expenditures. Traditionally, much of the funds for the major elements of the transportation system have come from these levels of government. In recent years, however, such funding has been declining and the financing of these improvements directly by the private sector may be required. These funding considerations will become more significant as the level of federal government financial support declines.

The different elements of a transportation system should be planned in conjunction with the overall land use plan of the County. To be effective, transportation planning as a "team task" requires the coordinated efforts of trained persons from a number of fields. Aside from these professionals, community participation, awareness and understanding are also vitally important.

### **13.1.2 Goals**

- (a) Provide a transportation system whereby people and goods can move efficiently, safely, comfortably and economically.
- (b) Make available a variety of modes of transportation that best meets the needs of the County.

### **13.1.3 Policies**

- (a) A framework of transportation facilities that will promote and influence desired land use shall be established by concerned agencies.
- (b) The agencies concerned with transportation systems shall provide for present traffic and future demands, including the programmed development of mass transit programs for high growth areas by both the private and public sectors.
- (c) The improvement of transportation service shall be encouraged.
- (d) Consider the provision of adequate transportation systems to enhance the economic viability of a given area.
- (e) Develop a comprehensive, islandwide multi-modal transportation plan that identifies the location and operation of automobile, mass transit, bicycle and pedestrian systems, in coordination with appropriate Federal and State agencies.
- (f) Work with various non-profit agencies to coordinate transportation opportunities.

### 13.1.4 Standards

- (a) Transportation systems shall meet the requirements of the U.S. Department of Transportation, State Department of Transportation and the County of Hawaii.
- (b) Transportation facilities and systems shall conform to the requirements of the Americans with Disabilities Act (ADA).
- (c) Transportation systems shall conform with design guidelines established by the American Association of State Highway and Transportation Officials (AASHTO)
- (d) The following sections on Roadways and Transportation Terminals are sub-elements of the overall transportation element.

## 13.2 ROADWAYS

### 13.2.1 Introduction and Analysis

The mobility of today's population is expected to increase. Population growth and increased car ownership will continue and will require additional measures for improving transportation facilities.

Roadways, as well as other elements of the transportation system, provide the connecting links between destination points.

In planning vehicular transportation, the various systems take into consideration activities or land uses that will continue to generate traffic. New major highways are expected to create new and productive land uses in appropriate locations. Roadways must be planned with other transportation elements, as all contribute to the total movement of people and goods.

The planning and design of roadways must also consider the area through which the corridor passes, the scenic vistas available, the potential for multiple uses of the right-of-way, and the impacts that may occur in the surrounding lands within the limits of feasibility and quality road design.

Roadway systems in Hawaii County are generally financed through Federal, State, and County programs. Recent funding limitations are reducing the availability of such monies. Consequently, additional sources will have to be sought to implement the needed improvements.

The County of Hawaii has 1,393 miles of public roads. This includes 394 miles of State highways and approximately 879 miles of County roads. Some of these roads do not meet present standards and require improvements. Of the approximately 879 miles of roads maintained by the County, 24 miles or 2.7 per cent are unpaved. There

### §13.2.1: Introduction and Analysis

are also drainage and flooding problems along many highways and streets, as well as traffic congestion in some areas.

There are approximately 360 miles of primary and secondary arterials within the County that provide the major intra-island route between the major urban centers of Hilo, Kailua-Kona and Waimea and the major commercial airports and harbors. Major and minor collectors total approximately 200 miles. Local streets comprise about half of the total number of miles of public roads, or approximately 600 miles.

The County-owned and maintained roads as detailed in the previous paragraph do not include the many miles of homestead roads or “paper” roads throughout the island. Under the terms of the Highways Act of 1892 and Chapter 264, Hawaii Revised Statutes (HRS), all roads existing at the time of adoption of the Highways Act were declared to be public highways. In addition, public highways include all roads, alleys, streets, ways, lanes, bikeways, and bridges laid out on paper or built by the Territorial, State or County governments since 1892. A 1999 State Attorney General opinion clarified that all public highways are County highways unless declared by Chapter 264, HRS to be under State jurisdiction. The implications of this upon the County’s ability to effectively manage its roadway systems have not yet been clearly defined. What is clear is that additional resources are needed to fairly and adequately address the added responsibility of maintaining what the Department of Public Works estimates to be anywhere from 500 to 800 miles of homestead roads, many of which are unpaved and have not been maintained for many years. Assuming that the general public will not accept a large reduction in maintenance and repair activities of the other 1,000 miles of County-owned roads, additional funding is essential to systematically integrate the maintenance of these homestead roads into the Department of Public Works maintenance program.

The major highway systems on the island are the Hawaii Belt Highway and the Māmāloha Highway, which combined, link the major towns of all districts except North Kohala. This corridor has aspects of natural beauty that have often been overlooked. To alleviate the problem of distance between east and west Hawaii, a project planned by the Federal, State and County governments would improve the commute along the narrow and winding Saddle Road (Highway 200), the only paved road serving the astronomical observatories on Mauna Kea and Mauna Loa and the Pohakuloa Training Area. This project will upgrade and modernize the Saddle Road to Federal highway design standards and address conflicts in its shared use by the general public and the military. Once completed, the one-way commute time between East and West Hawaii could be reduced by twenty to thirty minutes.

With the cooperation of various State and County agencies and citizen advisory committees, the Long Range Land Transportation Plan for the Island of Hawaii was developed in 1998 to identify the major land transportation improvement needs to support the projected growth of the County to the Year 2020. Various State and County road-

way systems located throughout the island were identified for improvement, including the reconstruction of Saddle Road (Highway 200) and the widening of Queen Kaahumanu Highway (Highway 19) to four lanes between Waikoloa Road and Kona International Airport at Keahole.

In addition to the public road systems, there are numerous private roads.

### 13.2.2 Goals

- (a) Provide a system of roadways for the safe, efficient and comfortable movement of people and goods.
- (b) Provide an integrated State and County transportation system so that new major routes will complement and encourage proposed land policies.

### 13.2.3 Policies

- (a) Encourage the programmed improvement of existing roadways by both public and private sectors.
- (b) Investigate various methods of funding road improvements, including private sector participation, to meet the growing transportation needs of the island.
- (c) Encourage the State to establish a continuous State highway system connecting the County's major airports and harbors.
- (d) Support the development of programs to identify and improve hazardous and sub-standard sections of roadway and drainage problems.
- (e) Coordinate with appropriate Federal and State agencies for the funding of transportation projects for areas of anticipated growth.
- (f) Consider the development of alternative means of transportation, such as mass transit, bicycle and pedestrian systems, as a means to increase arterial capacity.
- (g) There shall be coordinated planning of Federal, State, and County street systems to meet program goals of the other elements such as historic, recreational, environmental quality, and land use.
- (h) Provisions for on-street parking shall be incorporated into the design of street systems.
- (i) Encourage the State Department of Transportation to establish special scenic routes within and between communities.
- (j) Transportation and drainage systems shall be integrated where feasible.
- (k) Support the development of an efficient transit route between east and west Hawaii.
- (l) Adopt street design standards that accommodate, where appropriate, flexibility in the design of streets to preserve the rural character of an area and encourage a pedestrian-friendly design, including landscaping and planted medians.

#### §13.2.4: Standards

- (m) Develop minimum street standards for homestead and other currently substandard roadways that are offered for dedication to the County to ensure minimal levels of public safety.
- (n) Encourage the development of walkways, jogging, and bicycle paths within designated areas of the community.
- (o) Explore means and opportunities to enhance the shared use of the island's roadways by pedestrians and bicyclists, in coordination with appropriate government agencies and organizations.
- (p) The Bikeway Plan for the County of Hawaii (1979) shall be updated to include the development of a safe and usable bikeway system throughout the island.
- (q) Work in conjunction with the State to establish a clear agreement of the ownership and maintenance of the old homestead roads.
- (r) Develop short and long range capital improvement programs and plans for transportation that are consistent with the General Plan.

#### 13.2.4 Standards

- (a) **Primary Arterial:** Includes major highways, parkways, and primary arterials that move vehicles in large volumes and at higher speeds from one geographic area to another; highest traffic volume corridor. Designed as a limited access roadway. Primary arterials shall have a minimum right-of-way of 120 feet.
- (b) **Secondary Arterial:** A street of considerable continuity that is primarily a traffic artery between or through large areas; interconnect with and augment primary system. Designed as a limited access roadway. Secondary arterials shall have a minimum right-of-way of 80 feet.
- (c) **Major Collector:** Any street supplementary to the arterial street system that is a means of transit between this system and smaller areas; used to some extent for through traffic and to access abutting properties; collect and distribute traffic between neighborhood and arterial system. Major collectors shall have a minimum right-of-way of 60 feet.
- (d) **Local Streets-commercial/industrial:** Local streets within commercial and industrial areas shall have a minimum right-of-way of 60 feet.
- (e) **Minor Collector and Local Streets:** Minor collectors are used at times as through-streets and for access to abutting properties. The principal purpose of a local street is to provide access to property abutting the public right-of-way.
- (f) These standards shall apply to new construction. The County shall determine standards for the dedication and upgrade of existing roads.

## 13.2.5 Districts

The following is an analysis by district with reference to roadways. The brief analysis of each district is intended to bring into focus the relationship of the district to the County as a whole.

### 13.2.5.1 PUNA

#### 13.2.5.1.1 Profile

Primary routes within the Puna district are the Volcano Road (Highway 11), which provides access to Hilo and serves the upper Puna region; the Puna Road (Highway 130), serving lower Puna from Keaau to Kalapana-Kaimu; the Kapoho Road (Highway 132), from Pahoia to Kapoho; and the Puna Coast Road (Highway 137), linking Kapoho and Kalapana-Kaimu. The latter road is basically a narrow, paved cinder road. Recent upgrades have greatly improved Highway 130 from Keaau to Kalapana and Highway 11 from Hilo to Volcano. However, the majority of the roads throughout the district are inadequate by present standards. As the only two primary routes serving the district, Highway 130 and Highway 11 are congested during the work week for Hilo-bound traffic as the population in the district continues to grow. The recently completed Keaau By-Pass Highway re-directs Hilo- and Pahoia-bound traffic around the town of Keaau, avoiding the congested intersection of Volcano Highway-Keaau-Pahoia Road.

Many sections of the roads in this district have drainage systems that do not meet present standards or have sharp curves and grades without adequate sight distance. In several communities, buildings directly abut or encroach onto rights-of-way.

Most private roads in large subdivisions are cinder-surfaced and deficient in layout and construction. During the development of these large, substandard subdivisions in the 1950s and 1960s, limited attention was given to proper roadway base construction and drainage. There is also a network of private old plantation roads throughout the area.

#### 13.2.5.1.2 Courses of Action

- (a) Explore the possibility of developing a mid-level roadway to be located makai of Highway 130, beginning at Hawaiian Beaches Subdivision and extending through Hawaiian Paradise Park Subdivision with its eventual connection to Railroad Avenue in South Hilo. Consider the establishment of a bikeway along the same alignment.
- (b) Consider, in conjunction with community associations and the property owners, the use of a variety of mechanisms to provide infrastructure in non-conforming subdivisions, beginning with the major roads providing access into the more densely populated subdivisions.

## **13.2.5.2 SOUTH HILO**

### **13.2.5.2.1 Profile**

The Hawaii Belt Highway (Highway 19) is the primary traffic artery serving the district outside of Hilo. Portions of the old Mamalahoa Highway serve scattered residential areas such as Pepeekeo and Honomu. Several narrow roadways cross-connecting the Hawaii Belt Highway and the old Mamalahoa Highway serve upper homestead areas. There is also an intricate system of private, former plantation roads.

Hilo is a terminal point for the island-circling Hawaii Belt Highway. Augmenting the Hawaii Belt Highway is the trans-island Saddle Road. The Saddle Road route within the city follows major thoroughfares that are congested, narrow, and/or winding. Planning and design is currently underway to improve and partially realign Highway 200 (Saddle Road) between Kaumana in East Hawaii and its connection to the Queen Kaahumanu Highway just south of Waikoloa in West Hawaii. The extension of Puainako Street in Hilo to connect with Highway 200 is currently in its planning stages and will ultimately provide the final link in a much improved and safer trans-island connector between East and West Hawaii.

Hilo's internal circulation system provides arterial and collector streets to handle traffic moving from one part of the city to another. However, except for Komohana Street below the mauka residential sections, the majority of the traffic flow in Hilo is forced through the downtown area because of the lack of arterial connections. High traffic volume is also generated around the Hilo High and Hilo Intermediate School complexes during peak traffic hours. Kawailani and Puainako Streets also experience high traffic volumes during peak traffic hours as students arrive at the various public schools located nearby. The Keaukaha area is served by a single main road, Kalani-anaole Avenue that is vulnerable to the threat of tsunamis in this low-lying area. A portion of this road has been recently widened and improved. However, the unimproved portion remains inadequate to accommodate the existing uses in the area.

The majority of the roads throughout the district do not meet present standards. Many sections of the roads have sharp curves and grades with relatively short sight distance. There are many streets with a maximum 40-foot right-of-way that is below present standard, and many more that do not have designed pedestrian areas, or that drain poorly and lack curbs, gutters or swales. In many instances, there is no major surface drainage system to handle the increased runoff brought about as new lands are opened for construction development.

### **13.2.5.2.2 Courses of Action**

- (a) Portions of the old Mamalahoa Highway, especially those serving Pepeekeo and Honomu, should be improved to provide a secondary north-south route along the Hamakua coast.

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- (b) Major east-west collector roads between the old Mamalahoa Highway and the Belt Highway and those serving upper homestead areas should be widened and improved.
- (c) A realignment of Highway 200 (Saddle Road) from the Forest Reserve boundary on the south side of Kaumana Drive and along the north side of Puainako Street, intersecting the present Puainako alignment at Kinoole Street and continuing to the intersection of Kanoelehua Avenue should be constructed. Limited access control is recommended with intersections at the major cross arterials serving the various areas of the city.
- (d) Construct the proposed improvements and extension of Highway 200 (Saddle Road) from Kaumana Drive to the Queen Kaahumanu Highway in South Kohala.
- (e) Widen and provide curb, gutter and sidewalk improvements along Kilauea Avenue from Haihai Street to Ponahawai Street.
- (f) Widen and provide curb, gutter and sidewalk improvements along Kinoole Street from Haihai Street to Olona Street.
- (g) An extension of Puainako Street east of Kanoelehua should be the main route from the airport terminal for direct access to the business district.
- (h) Widen and improve Kekuanaoa Street from Kanoelehua Avenue to Kilauea Avenue.
- (i) Plan for the eventual closure of the Bayfront Highway and the relocation of the existing Highway 19-Pauahi Street intersection to an area in the vicinity of Ponahawai Street, in coordination with the State.
- (j) Ainako Street should extend across Kaumana Drive to meet the Mohouli extension to provide one of the major mauka cross-city connections.
- (k) Improve Akolea Road between Piihonua and Kaumana Drive and construct its extension to the upper reaches of Ainaola Drive to provide a cross-city connection between Upper Wailuku and Waiakea-Uka.
- (l) Improve Waianuenue Avenue and Kaumana Drive along their entire alignments, including the acquisition of additional rights-of-way as needed.

**13.2.5.3 NORTH HILO****13.2.5.3.1 Profile**

The primary traffic circulation system through the district is the Hawaii Belt Highway (Highway 19). A secondary system also parallel to the shoreline is the existing Mamalahoa Highway, the major link between Hilo and Honokaa before the Hawaii Belt Highway to Honokaa was completed in 1960.

The only means of access to the many small towns within this district is via the Hawaii Belt Highway, which has many sharp curves and grades with relatively short sight dis-

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tance. Several bridges along this highway are narrow. Landslides also occur along certain portions of this roadway during heavy rainfall.

In addition to the roads paralleling the seacoast, many mauka-makai roads connect the lowlands to the upper homestead and agricultural belt. Many of these roads are maintained by the County but were also maintained by the now-defunct sugar companies. Continued maintenance of these former plantation roadways is a concern that the County and the affected residents along these roadways must strive to resolve.

##### **13.2.5.3.2 Courses of Action**

- (a) Restore and maintain existing homestead roads.
- (b) Encourage the State Department of Transportation to improve those portions of the Hawaii Belt Highway at Maulua, Laupahoehoe and Kaawalii Gulches.
- (c) Encourage the State Department of Transportation to realign that portion of the Hawaii Belt Highway at Kapehu Camp.
- (d) Encourage the State to install additional passing lanes at various sections along Highway 19.

#### **13.2.5.4 HAMAKUA**

##### **13.2.5.4.1 Profile**

The Hawaii Belt Highway is the primary traffic artery connecting Hamakua to the Hilo and Kohala districts.

Realignment and widening of the secondary road through Honokaa and its continuation to Waipio Valley is complete. The pattern of circulation in Honokaa is overly dependent upon Mamane Street, the only roadway providing access through the town. There is a lack of parallel loop circulation routes and most of the local traffic is on Mamane Street or sub-streets that branch off the main street. However, because of the sloping topography and the water courses dividing Honokaa into separate areas, it is difficult to develop loop circulation systems without constructing a number of bridges.

In addition to the roads mentioned, there are several homestead roads mauka of the Hawaii Belt Highway serving the Paauilo, Pohakea, Kaapahu, Kalopa, Kaa, and Ahualoa Homestead lands. These roads, however, are narrow and in poor condition. There is also a network of private former plantation roads.

##### **13.2.5.4.2 Courses of Action**

- (a) Encourage the State to install additional passing lanes along Highway 19 at appropriate locations.

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- (b) Provide for an industrial traffic connection leading from the former sugar mill to Highway 19, separating this traffic from local traffic movement on Mamane Street.
- (c) Encourage the State to construct a scenic highway from the Waipio Valley look-out extending mauka to connect to Mud Lane at the entrance of Waimea.
- (d) Improve County maintained roads and encourage the improvement of non-county owned roads by the State of Hawaii or private landowner.
- (e) Consider alternatives in the management of Pakalana Street, such as its conveyance to the State Department of Education or its conversion to a one-way traffic pattern.
- (f) Provide a cross-town connection to Plumeria Street by extending Kamani Street.
- (g) Provide a mauka-makai connection from the Kamani Street extension to Mamane Street on the Hilo side of the elderly housing.
- (h) Eliminate the Milo Street extension on the Waipio side of Pakalana Street.

**13.2.5.5 NORTH KOHALA****13.2.5.5.1 Profile**

There are two roads leading into North Kohala, the Kohala Mountain Road and the Akoni Pule Highway. The mountain route to Kohala has sharp vertical and horizontal curves and grades with relatively short sight distance. The urban areas of this district are scattered along the main road between Hawi and Niulii, a distance of nearly seven miles. There is also an intricate system of former plantation roads.

**13.2.5.5.2 Courses of Action**

- (a) Encourage the improvement of the Kohala Mountain Road.
- (b) Encourage the improvement of that portion of the Akoni Pule Highway between the towns of Hawi to Niulii.
- (c) Improve mauka-makai county maintained homestead roads and encourage improvement of the non-county owned roads by the State of Hawaii or private subdivisions.

**13.2.5.6 SOUTH KOHALA****13.2.5.6.1 Profile**

The primary highway that runs through the town of Waimea is the Mamalahoa Highway. Recent improvements to this section of the highway have significantly improved the traffic flow through Waimea town. However, the narrow and winding sections of Mamalahoa Highway from Waimea to still require improvements. The Akoni Pule Highway extends from Kawaihae in South Kohala to the towns of Hawi, Kapaau and Niulii in North Kohala.

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Studies are on-going for the construction of a new bypass highway around the town of Waimea (Waimea Bypass) and a new road from Waimea to Kawaihae (Kawaihae Road Realignment). Construction of these transportation segments will be needed to accommodate the anticipated expansions of resort areas along the coast, commuter traffic from Hamakua and Waimea and the transportation of goods to and from the Kawaihae Harbor.

Preliminary designs for the realignment of the Saddle Road indicate that its proposed connection with the Mamalahoa Highway (Highway 190) will be located approximately 8 miles south of its current intersection or 3 miles to the south of the Mamalahoa Highway-Waikoloa Road intersection. From this intersection, the Saddle Road will continue makai along the South Kohala-North Kona District boundary to its ultimate connection with the Queen Kaahumanu Highway.

#### **13.2.5.6.2 Courses of Action**

- (a) Improve existing homestead roads.
- (b) Encourage the construction of a Waimea by-pass road from Mud Lane to Mamalahoa Highway on the Kona side of Waimea.
- (c) Encourage the construction of connector roads from the Waimea Bypass Road to the Mamalahoa Highway.
- (d) Encourage the construction of a new Waimea to Kawaihae road from Mamalahoa Highway to the Queen Ka'ahumanu Highway.
- (e) Encourage the widening of Queen Ka'ahumanu Highway as the need arises.
- (f) Support the installation of suitable bikeways and/or jogging paths.
- (g) To relieve traffic congestion through Waimea town, implement construction of a) Parker Ranch's connector road from Kamamalu Street to Mamalahoa Highway; and b) the County's extension of this road, between Mamalahoa Highway and Kawaihae Road in the vicinity of the Waimea solid waste transfer station.
- (h) Construct, at a minimum, one other paved two-lane access road out of the Ke Kumu Housing area onto Paniolo Drive.
- (i) Extend Paniolo Drive in Waikoloa north to intersect with the Kawaihae Road and the proposed Waimea-Kawaihae Road.
- (j) Provide traffic signals at the Waikoloa Road-Paniolo Drive intersection.

### **13.2.5.7 NORTH KONA**

#### **13.2.5.7.1 Profile**

The major traffic arteries serving the North Kona district are the Hawaii Belt Highway connecting Kona with South Kohala and Ka'u, the Queen Ka'ahumanu Highway, the Kuakini Highway connecting Kailua with the mauka Keauhou area, and Alii Drive

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serving the shoreline areas between Kailua and Keauhou. The latter of these systems is the only access to areas along the shoreline between Kailua and Keauhou. Mauka-makai access between the Mamalahoa Highway and the Queen Kaahumanu Highway is provided by Kaiminani Drive, Hina Lani Drive and Palani Road.

The Keahole to Kailua Development Plan was adopted by the Hawaii County Council in 1991. This development plan encompasses an area from the Kau ahupuaa near Kona International Airport at Keahole to the Keahuolu ahupuaa in Kailua-Kona, with the Mamalahoa Highway as the mauka boundary of the study area. The overall goal of the plan was to develop a mixed residential, commercial, industrial, resort and recreational community to meet the growing needs of the Kona region. In 1997, the Planning Department developed the Keahole to Kailua Development Plan-Revised Roadway Plan Implementation Strategy. This plan identified schematic roadway corridors necessary to accommodate future traffic volumes upon full build-out of the study area. Recommended roadway improvements, among others, include widening of the Queen Kaahumanu and Mamalahoa Highways and the construction of a mid-level roadway and mauka-makai connectors between the Queen Kaahumanu and Mamalahoa Highways.

Currently in its design stage, the proposed Kahului-Keauhou Parkway (formerly known as the Alii Highway) will provide another north-south arterial between its northern connection to the Queen Kaahumanu Highway at Kahului ahupuaa and its southern terminus at the Alii Drive-Kamehameha III Road intersection in Keauhou.

There is also a network of private subdivision roads with steep grades and limited sight distance.

#### 13.2.5.7.2 Courses of Action

- (a) Develop a roadway network circulation plan in cooperation with the State Department of Transportation and affected communities. Upon adoption of the plan, the plan recommendations shall be incorporated on the zone district maps.
- (b) Encourage the State to widen Queen Kaahumanu Highway as necessary to accommodate increases in traffic flows, in particular between Kona International Airport at Keahole and Kailua-Kona.
- (c) Widen Palani Road between the proposed Keanalehu (Waena) Drive and the Queen Kaahumanu Highway or construct the proposed Palani Bypass Highway.
- (d) Encourage the State to extend Kealakehe Parkway mauka to connect with the Mamalahoa Highway.
- (e) Construct the following north-south collector roadways from Palani Drive and extending north to the proposed University Drive: 1) Ane Keohokalole Highway (Mid-level Road); 2) Keanalehu (Waena Drive); and 3) Kealakaa Street.

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- (f) Construct the proposed University Drive between the Mamalahoa and Queen Kaahumanu Highways.
- (g) Widen Hina Lani Drive to four lanes between the Queen Kaahumanu Highway to the proposed Ane Keohokalole Highway.
- (h) Construct the proposed Shore Drive from the Old Kona Airport Park to the Kealakehe Drive intersection.
- (i) Construct the Kahului-Keauhou Parkway (Alii Highway) from Queen Kaahumanu Highway to Keauhou.
- (j) Construct a scenic road from Keauhou above the Kealakekua cliffs to Napoopoo.
- (k) Provide vertical connectors from Alii Drive to Kuakini Highway.
- (l) Improve that portion of the Mamalahoa Highway extending from the North Kona to the Ka'u Districts.
- (m) Support the installation of suitable bikeways and/or jogging paths.
- (n) Develop a roadway circulation plan for the area between Palani Road and Kamehameha III Road, in cooperation with the State Department of Transportation, Federal Highway Administration, and the affected communities.
- (o) Extend Lako Street to connect to Alii Drive.
- (p) Work with the State and the adjacent landowners in establishing the old railroad right-of-way as a pedestrian and bicycle right-of-way.

### 13.2.5.8 SOUTH KONA

#### 13.2.5.8.1 Profile

The Mamalahoa Highway is the only arterial roadway currently serving all of the South Kona District. Many portions of this roadway are narrow and winding. Lands mauka and makai of this roadway are served by private and County-owned collector roadways, many in poor condition.

Plans are underway for the construction of the new Mamalahoa Highway Bypass Road, which will extend the proposed Kahului-Keauhou Parkway from its terminus at Keauhou, North Kona south to the intersection of Mamalahoa Highway and Napoopoo Road in Captain Cook, South Kona, a distance of approximately five miles. Upon its completion, the combined Alii Highway and Mamalahoa Highway Bypass Road will provide a new north-south alignment from Kailua-Kona to Kealakekua, relieving traffic congestion along the existing Mamalahoa Highway between the communities of Honalo and Captain Cook. The bypass road is being constructed by the developers of the proposed 730-unit Hokuli'a agricultural subdivision as a requirement of the project's approval by the Hawaii County Council.

**13.2.5.8.2 Courses of Action**

- (a) Construct a scenic road from Keauhou above the Kealakekua cliffs to Napoopoo.
- (b) Develop a roadway network circulation plan for South Kona in cooperation with the State Department of Transportation and affected communities. Upon adoption of the plan by the County, the recommendations shall be incorporated on the zone district maps.
- (c) Construct the Mamalahoa Bypass Highway between Keauhou and Captain Cook as a Scenic Corridor, with limited access.
- (d) Improve that portion of the Mamalahoa Highway extending from the North Kona to the Ka'u Districts.
- (e) Support the installation of suitable bikeways and/or jogging paths.
- (f) Establish a Heritage Corridor on Old Mamalahoa Highway between Hualalai and Honaunau.
- (g) Improve substandard, rural roads.

**13.2.5.9 KA'U****13.2.5.9.1 Profile**

The primary highway through the Ka'u district is the Mamalahoa Highway. Certain portions of this highway system are narrow with sharp vertical and horizontal curves and relatively short sight distance. Flooding also occurs in certain areas. This district also has an intricate system of former plantation and older subdivision roads. The majority of the private roads in the large subdivisions are cinder-surfaced and/or oil-treated and lack adequate maintenance.

**13.2.5.9.2 Courses of Action**

- (a) Continue to improve Mamalahoa Highway, realigning where necessary.
- (b) Install culverts and construct drainage channels and other related improvements.
- (c) Encourage the improvement of substandard subdivision roads.
- (d) Explore alternatives and means to establish an evacuation route through Hawaiian Ocean View Estates Subdivision to Highway 11, in cooperation with the residents of Ocean View.

## **13.3 TRANSPORTATION TERMINALS: AIRPORTS & HARBORS**

### **13.3.1 Introduction and Analysis**

The principal concerns of planning for transportation terminals are location, provision of adequate transportation connections to terminals, financing and programming of improvements and services through Capital Improvement Projects, and the planning and zoning of adjacent land uses.

Although the State Department of Transportation is responsible for the actual design, construction and operation of terminals and supporting facilities, the General Plan addresses the location of these facilities in relation to the pattern of overall land uses.

Major transportation terminals in the County of Hawaii consist of harbors and airports. There are two deep draft harbors on the island, one at Hilo and another at Kawaihae. While improvements continue to be made, both harbor terminals lack adequate docking and support facilities. Water pollution is a continuing problem in the vicinity of the harbors. It is anticipated that the use of both deep draft harbors will expand substantially. Cargo volume at Kawaihae Harbor has increased significantly as the population and development in West Hawaii continues to grow. The Hawaii Commercial Harbors 2020 Master Plan was developed by the State in 1998 to guide the development, maintenance and enhancement of the island's harbor systems to ensure its efficient, safe, accessible and economical operations.

Facilities for small boats, such as launching ramps, have been developed in various parts of the County. Those that provide refuge are discussed to a limited extent in this element. For the most part, they are addressed in the Recreation element.

Air terminals that service inter-island transportation are located at Hilo, Waimea, Upolu, and Kona. The terminals at Hilo and Kona are overseas facilities. Oversea flights at the Kona International Airport at Keahole will continue to increase with the growth of resort areas in Kona and Kohala. Overseas flights through Hilo International Airport have been important to agriculture in East Hawaii. However, the facility is currently underutilized by overseas passenger carriers. The statewide need for a second gateway, especially for cargo, still exists. The proximity of Hilo's airport and harbor offer a number of opportunities for centralized distribution. Plans are currently underway to construct a new cargo facility at Hilo International Airport to centralize cargo operations at a location closer to terminal facilities.

The airstrip at Upolu Point in North Kohala is used as a general aviation field. The Waimea-Kohala airport is underutilized, but its use may increase with resort development in South Kohala. Except for small private landing strips developed to serve the former sugar plantations, there are no airfields in Puna, Ka'u or South Kona. There may be an increase in demand for airstrips and helipads stemming from the growth of

## §13.3.2: Goal

the visitor industry. The State, in coordination with the County and the affected communities, has been developing master plans for each of the four airport facilities to assess current and future demand as well as specific recommended improvements.

As population becomes more mobile and as resident and visitor populations increase, there will be a greater demand for new and expanded transportation facilities.

The following goal, policies, and standard are set forth to guide the orderly development of the County's transportation terminals and related facilities.

### 13.3.2 Goal

- (a) Provide transportation terminals and related facilities for the safe, efficient and comfortable movement of people and goods.

### 13.3.3 Policies

- (a) Encourage the programmed improvement of existing terminals, including adequate provisions for control of pollution and appropriate and adequate covered storage facilities for agricultural products.
- (b) The State Department of Transportation should continue to implement its plans for transportation terminals and related facilities to promote and influence desired land use policies.
- (c) Transportation terminals should be developed in conjunction with the different elements of the overall transportation system.
- (d) Encourage maximum use of the island's airport and harbor facilities.
- (e) Encourage the development, maintenance, and enhancement of Hilo and Kawaihae Harbors as detailed within the State's Hawaii Commercial Harbors 2020 Master Plan.
- (f) Support the State's objectives to acquire rights within the runway clear-zones, limit heights within approach zones, and restrict noise-sensitive uses within designated noise contours determined by the State.

### 13.3.4 Standards

- (a) Requirements of the State Department of Transportation.
- (b) Federal Aviation Administration standards for airport design, runway clear zones, and noise compatibility.
- (c) State Department of Land and Natural Resources Standards for small boat harbors and boat launches.

## **13.3.5 Districts**

The following is an analysis by district with reference to transportation terminals. The brief analysis of each district is intended to bring into focus the relationship of the district to the County as a whole.

### **13.3.5.1 PUNA**

#### **13.3.5.1.1 Profile**

There are several small private aircraft landing strips developed by the former sugar industry for use by "crop-dusting" single engine aircraft.

The County has purchased twenty-two acres of land on the mauka side of Isaac Hale Beach Park for the construction of additional car and boat parking areas, playgrounds, picnic and bathroom facilities to supplement the heavily used boat launching facilities at Pohoiki.

#### **13.3.5.1.2 Courses of Action**

- (a) Provide general aviation and small boat harbor facilities as the need arises.
- (b) Provide another small boat launching facility at Kapoho.

### **13.3.5.2 SOUTH HILO**

#### **13.3.5.2.1 Profile**

Hilo Harbor is one of two major, deep draft harbor facilities on the island. The present harbor has a 35-foot deep draft and three commercial piers. There is limited loading or back-up space. There also is limited land area for the expansion of harbor-oriented industrial uses. The number of cruise ship passengers visiting Hilo has increased dramatically during the 1990's and there is a need to improve the accommodations for these passengers at the harbor. The Hawaii Commercial Harbors 2020 Master Plan recognizes the limited expansion opportunities for Hilo Harbor and the need to accommodate increased cargo and passenger volumes. In addition to specifying recommended cargo yard acreages, berthing requirements and roadway improvements, the plan also recommends the construction of a passenger terminal facility at Pier 5 to accommodate the growth of cruise ship arrivals.

Within Hilo Harbor, Radio Bay has limited facilities for small boats. The State Department of Transportation also maintains small boat facilities at the mouth of the Wailoa River.

Hilo International Airport serves inter-island and occasional overseas air traffic. The airport facilities are currently underutilized. The close proximity of Hilo's airport and harbor may potentially be utilized to the County's advantage. Both transportation fa-

cilities are surrounded by or near State-owned lands that could be used for support services and facilities. Hilo is fourth to Honolulu, Barbers Point, and Kahului in the amount of cargo handled through both its airport and harbor. There may be an opportunity for the development of a centralized cargo distribution center within Hilo that could eventually alleviate congested conditions on Oahu. Such a distribution center could eventually serve other neighbor islands by distributing and marshalling cargo both from and to the mainland.

Hilo International Airport has a runway length of 9,800 feet, capable of accommodating aircraft as large as the Boeing 747. However, the current runway length imposes some take-off weight restrictions. To accommodate maximum-rated cargo payloads to the West Coast would require a runway length of up to 12,000 feet. Until such time that a major cargo facility is constructed at the Hilo International Airport, extension of the existing runway will not be needed.

**13.3.5.2.2 Courses of Action**

- (a) Under the guidance of the Federal government, the State Department of Health should enforce and strengthen present pollution regulations.
- (b) The State Department of Transportation should continue to improve facilities at Hilo Harbor to meet increased shipping activities and cruise ship passenger arrivals.
- (c) Future land uses in the vicinity of the Hilo International Airport should have an adequate open space buffer and/or be compatible with the anticipated aircraft noise exposure levels for that vicinity.
- (d) Encourage the construction of an Agricultural Processing and Packing Center at the old Hilo Airport, the planning of which shall be coordinated with future development plans for Hilo Harbor.
- (e) Encourage the construction of a centralized air cargo distribution complex at the Hilo International Airport.
- (f) Encourage development of a small boat harbor for the area.

**13.3.5.3 NORTH HILO AND HAMAKUA**

**13.3.5.3.1 Profile**

There are no air or harbor terminals in these districts. The only small boat ramp on the Hamakua Coast is located within the Laupahoehoe Point Beach Park. Although the boat ramp was improved through a joint effort of the County of Hawaii and the U. S. Army Corps of Engineers, it is inadequately protected from damage due to storm surges. Without further improvements, the ramp will continue to be hazardous for users of the facility.

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##### **13.3.5.3.2 Course of Action**

- (a) Continue to improve the small boat ramp at Laupahoehoe, extend the offshore protective structure, and provide for adequate parking.

#### **13.3.5.4 NORTH KOHALA**

##### **13.3.5.4.1 Profile**

Upolu airfield is the only air transportation facility in the district. It is used on a limited basis. The State prepared the Upolu Airport Master Plan in 1999 to forecast aviation demand at the facility to the Year 2020 and to evaluate the need for additional facility improvements. Based on forecast demand, no extension of the existing runway or expansion of terminal facilities will be required during the study period. However, it recommends the acquisition of lands adjacent to the airport for future runway and terminal expansion. The widening of the airport's existing 1.8 mile access road to a two-lane, paved road is also recommended.

##### **13.3.5.4.2 Courses of Action**

- (a) Retain Upolu airfield for general aviation use.
- (b) The State should continue to provide improvements to runway and terminal facilities at Upolu Airport, including the improvement of the airport's access road from the Akoni Pule Highway.

#### **13.3.5.5 SOUTH KOHALA**

##### **13.3.5.5.1 Profile**

There is a deep draft port and small boat harbor at Kawaihae, both of which are being further improved. Kawaihae Harbor has two commercial piers with approximately 14 acres of cargo handling and storage areas, with room for expansion as needed. Although a new perimeter breakwater was constructed at the southern end of the harbor by the Army Corps of Engineers, there is insufficient parallel docking space at the present facility. The State Department of Transportation has plans to increase small boat capacity when funding can be appropriated. The Hawaii Commercial Harbors 2020 Master Plan identifies the need for additional cargo yard space to accommodate interisland and overseas cargo as well as the construction of a passenger terminal at Pier 4.

Opened for air service in 1953, the Waimea-Kohala Airport provides commuter air service, air cargo and air ambulance service to the residents of North and South Kohala as well as Hamakua. Other users of the airport include the military, private aircraft owners and flight training schools. The State prepared the Waimea-Kohala Airport Master Plan in 1999 that forecasted aviation demand and facility needs to the Year 2020. While use of the facility by current users is expected to increase during the

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study period, commercial interisland and overseas flights will remain at the international airports in Hilo and Kona. In general, the master plan recommends various improvements and upgrades to the runway and terminal facilities to improve operating efficiencies and increase aircraft load capacity.

**13.3.5.5.2 Courses of Action**

- (a) The State Department of Transportation should continue to provide improvements to terminal and runway facilities at the Waimea-Kohala airport.
- (b) The State Department of Transportation should continue to improve harbor facilities at Kawaihae to meet increased shipping activities and cruise ship passenger arrivals.
- (c) Continue to support the Department of Land and Natural Resources in its plans to develop a small boat harbor at Kawaihae.

**13.3.5.6 NORTH AND SOUTH KONA****13.3.5.6.1 Profile**

The Kona International Airport at Keahole, which began operations in July 1970, was built in the midst of a barren lava field. The inter-island terminal has a Polynesian motif that received a design award for excellence in 1985. Direct flights from the mainland to Keahole began in 1985; direct flights from Japan began in 1996, and the number of inter-island flights have increased. Kona International Airport at Keahole is one of two principal entry points for visitors to the Big Island. In 1994, the airport runway was extended from 6,500 to 11,000 feet in length to accommodate aircraft as large as the Boeing 747.

The State developed its Keahole-Kona International Airport Master Plan in 1987 to provide a guide for the location, design and construction of future facility improvements at the airport. A Master Plan Update Study prepared in 1997 supplemented the original master plan to identify facility needs to the Year 2015. With the expansion of the visitor industry in West Hawaii, the airport has and will continue to experience growth in passenger arrivals, aircraft operations and cargo/mail activities. Annual passenger volume is anticipated to increase by 51 per cent to approximately 3.5 million in 2015. The master plan details land use, terminal improvements, access and circulation, and supporting infrastructural needs to accommodate future facility needs. Some of the improvements include an expanded air cargo facility and new overseas terminal, flight kitchen, postal facility and general aviation facilities.

Aside from the small boat harbors at Kailua, Keauhou, and Honokohau, there are no shipping terminals in the district. Improvements to Honokohau small boat harbor have been made incrementally. Cruise ships visiting Kailua-Kona currently anchor about one-third mile offshore of Kailua Bay and shuttle their passengers to Kailua-Kona Wharf. A visitor information booth is the only visitor-related accommodation provid-

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ed at the wharf. Funding for a \$3.5 million refurbishment of the Kailua-Kona Wharf was approved by the 2000 State Legislature with construction anticipated to be completed before the end of 2003.

#### **13.3.5.6.2 Courses of Action**

- (a) Future land uses in the vicinity of the Kona International Airport at Keahole should be compatible with the anticipated aircraft noise exposure levels for that vicinity.
- (b) The State Department of Transportation should continue to improve and expand Kona International Airport at Keahole in accordance with the recommendations of the Keahole-Kona International Airport Master Plan Update Study (1997).
- (c) Encourage the State to renovate the Kailua-Kona Wharf or to seek alternative facilities to accommodate the cruise ship industry.

### **13.3.5.7 KA'U**

#### **13.3.5.7.1 Profile**

There are presently no terminal facilities in Ka'u. However, there will be need for general aviation and small boat harbor facilities should growth within the district demand such facilities.

#### **13.3.5.7.2 Course of Action**

- (a) Provide for general aviation and small boat harbor facilities and launching activities as the need arises.

## **13.4 MASS TRANSIT**

### **13.4.1 Introduction and Analysis**

The County is committed to providing its residents with a public transportation system that is affordable, efficient, accessible, safe, environmentally friendly, and reliable. Mass transit systems provide residents with an alternative means of transportation to employment, services and activities. It also promotes and enhances pedestrian activities, reduces congestion, improves air quality, and increases economic development opportunities.

The County's Mass Transit Agency was created to provide mass transit service on this island. The County currently operates the Hele-On bus system with a fleet of 28 buses, each with a capacity of 33 or 45 passengers. Eleven of these buses are wheelchair accessible. Approximately 10 per cent of the cost to operate the buses is Federally funded with the remainder funded by the County. Approximately 55 per cent of the

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County's operational costs are derived from fare revenues with the remainder from general revenues.

The Hele-On provides service along the main roadways serving the major urban centers of the island. Within Hilo, there are three additional routes serving the Waiakea-Uka, Downtown Hilo, and Kaumana areas. Within the Kona District, a shuttle operates between Kailua, Keauhou and Kealahou. The Hawaii Long-Range Land Transportation Master Plan recommends that additional routes be provided to link Waimea town and the towns in North Kohala with Kailua-Kona and the resorts located along the South Kohala coast.

In addition to the Hele-On, the County also offers a shared-ride taxi service that provides door to door service within the urban areas of Hilo and Kailua-Kona. This program allows the public to purchase coupons and use the coupons instead of cash with participating taxi companies. The program allows a user to submit one coupon (at a cost of \$2) to travel up to four miles and two coupons to travel up to nine miles. The Hawaii County Economic Opportunity Council, a non-profit community action agency, supplements the County's bus services by providing bus services for the low-income, elderly, disabled, and pre-school children who attend Head Start schools.

### 13.4.2 Goal

- (a) Provide residents with a variety of public transportation systems that are affordable, efficient, accessible, safe, environmentally friendly, and reliable.

### 13.4.3 Policies

- (a) Improve the integration of transportation and land use planning in order to optimize the use, efficiency, and accessibility of existing and proposed mass transportation systems.
- (b) Support and encourage the development of alternative modes of transportation, such as enhanced bus services and bicycle paths.
- (c) Incorporate, where appropriate, bicycle routes, lanes, and paths within road rights-of-way in conformance with The Bikeway Plan for the County of Hawaii.
- (d) Provisions to enhance the mobility of minors, non-licensed adults, low-income, elderly, and people with disabilities shall be made.

### 13.4.4 Standards

- (a) American Association of State Highway and Transportation Officials (AASHTO), Guide for the Development of Bicycle Facilities.
- (b) U.S. Department of Transportation, Federal Highway Administration, Manual on Uniform Traffic Control Devices (MUTCD).

§13.4.4: Standards