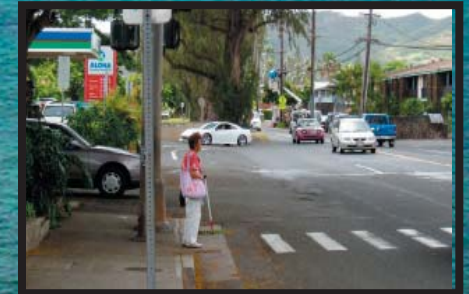


DOWNTOWN KAILUA

PEDESTRIAN ENVIRONMENT GUIDELINES

PREPARED FOR:
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AUGUST 2005





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INTRODUCTION

The Pedestrian Environment Guidelines contained within this report are designed to assist with the redevelopment of downtown Kailua in a manner consistent with several planning efforts undertaken in recent years. This plan is intended to provide Kaneohe Ranch, the City and County of Honolulu, and other interested parties with the details needed to implement the vision of the residents of Kailua for their community. Key land use and transportation planning efforts leading to the development of these guidelines include:

2000 Koolaupoko Sustainable Communities Plan

This plan for the windward coastal and valley areas of Oahu, including the urban fringe community of Kailua, was prepared to manage the region's growth so that "an undesirable spreading of development is prevented." The plan offered a coherent vision to guide all new public and private sector development within the Koolaupoko region.

The Sustainable Communities Plan recognized that the continued viability of existing commercial districts and institutions is an important part of the vision for Koolaupoko because they provide a significant number of jobs for residents within the region and play an integral part in the region's social and cultural life. However, the plan also stated that most businesses in the region are oriented to the automobile, commercial establishments are divorced from the sidewalk, and the streets and highways that front them are congested with traffic as cars enter and exit from parking lots. The plan recognized that this emphasis on automobiles as the principal means of transportation was inconsistent with other elements of the vision expressed in the Sustainable Communities Plan.

Transportation system improvements in Koolaupoko instead were recommended to be directed toward alternative travel modes, including public transit and pedestrian and bicycle facilities. Land use policy and public infrastructure investments should enhance the roles and identities of downtown Kailua as one of the region's principal town centers. As civic buildings are added, expanded or remodeled, they should be encouraged to be sited and designed in a manner which encourages pedestrian and transit access.

2004 Kailua Community Survey

Kailua is special to its residents because it has maintained its "small town feeling." In April of 2004, residents were given the opportunity to respond to a survey aimed at gaining insight on the

community's views of Kailua. The survey was reviewed and approved by Kaneohe Ranch, Kailua Chamber of Commerce, and the Kailua Urban Design Task Force. Response was high, with 2,832 surveys returned, and many suggestions were given in support of amenities and improvements that enhance Kailua's sense of community.

The importance of integrated transportation planning was echoed in the various improvements residents suggested. 93% of respondents supported the idea of better sidewalks and pedestrian access, and 91% preferred safe bicycle routes. Walkways around Kawai Nui Marsh were also suggested. Suggestions not directly related to transportation, such as the desire for more restaurants with outdoor seating, also impact transportation decisions, because the interaction between the outdoor seating and the adjacent pedestrian environment plays a large role in the success of both.

An interesting observation from the survey was that support for these facilities was not limited to a single demographic. For example, over 90% of respondents aged 18-49, and over 80% aged 50-65+ were in support of safe bicycle routes. Income was not a distinguishing factor either, as every income level had a support rate of 85-92% for safe bike routes. Support rates were even higher for improved sidewalks and pedestrian access.

Kailua's residents also responded to the issue of traffic. An overwhelming 86% of respondents agreed that there were traffic congestion problems in Kailua. This statistic is somewhat affected by location, with Enchanted Lakes residents less likely to completely agree that a traffic congestion problem existed.

2004 Community Meetings

To follow-up on the results of the community survey, Kaneohe Ranch sponsored a series of five public forums throughout 2004 to actively engage residents and key stakeholders in the planning process for redeveloping downtown Kailua, with 85 to 175 people participating in each.

Two major themes emerged from these planning charrettes:

- **Diverse community** - foster strong multi-generational families and a greater sense of community, incorporating the principles of smart growth.
- **Stewardship of the ecosystem** - preserving and improving the health of natural resources while enhancing public access.



Several sub-themes also were viewed as important:

- Residential character
- Central gathering place
- Holistic approach to planning
- Integrate transportation modes
- Historic continuity
- Safe community
- Community friendly to small business
- Lively, not crowded
- Cultural stewardship

All of these community desires for a small town sense of place can be enhanced by pedestrian-scale development and the creation of pedestrian supportive street corridors, as recommended by the planning guidelines that follow.



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BACKGROUND

Two inter-related systems of classification are used in this document: walk trip type and pedestrian environment classification.

Types of Walking Trips

- **Utilitarian Walking** - People walk for utilitarian purposes to get to destinations such as work, school or shopping. Almost all auto and transit trips involve utilitarian walking to reach the final trip destination.
- **Rambling** - People ramble as a recreational activity. They walk the dog or push a baby carriage. They jog or speed walk for exercise. They go for a walk just for the sake of going for a walk.
- **Strolling/Lingering** - In certain settings, people stroll and linger. They stand on the sidewalk and talk with others they meet. They sit on a bench and eat ice cream while watching people. They let children walk with them.

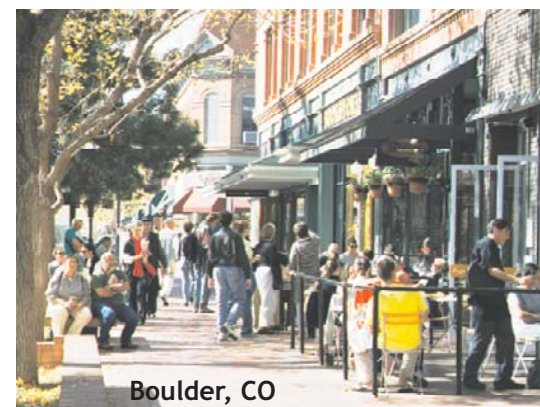
Types of Walking Environments

There are different types of pedestrian environments just as there are different reasons why people walk. Therefore, walking environments should be thought of as arrayed along a continuum of pedestrian friendliness with four classifications:

▶ “Pedestrian Places”

These are districts of limited extent, with mixed-use land development, moderate to high densities, good transit service, great streets, and extensive pedestrian accommodation in the form of sidewalks, crosswalks, and other facilities. Here people will stroll and linger past store fronts and urban landscape features, walking for both utilitarian and recreational purposes.

The acid test for qualifying a place as a pedestrian destination is the actual ongoing presence of significant numbers of people. Pedestrian Places have people moving about between multiple activities -- typically at least three highly identifiable areas such as outdoor seating, a water feature, and pedestrian-oriented shopping.



Boulder, CO



◀ “Pedestrian Supportive Environments”

These include well-designed residential and commercial neighborhoods, employment centers, parks and recreational areas. These are safe environments for walking, where sidewalks are continuous and buffered from streets, wide enough for passing and walking side by side, and where good street crossings have been provided. Land uses are either dense enough to both generate and attract utilitarian walking trips of reasonably short lengths (half mile or less), or are of the sort that will attract recreational walkers and joggers. Buildings, not parking lots, face streets.

A good test to know if an environment is Pedestrian Supportive is whether or not a parent would feel comfortable letting a child walk ahead of them with minimal supervision.



◀ “Pedestrian Tolerant Environments”

These are areas and corridors where walking is technically safe (there are continuous sidewalks and some kind of reasonably safe street crossings), but the land use patterns are such that little walking activity is likely to be generated. These include arterial street corridors, remote or rural streets and certain light industrial or warehousing areas.

Such places will only attract limited amounts of utilitarian walking, and will not appeal to recreational walkers or strollers. Tolerant environments provide pedestrian facilities, but include a very minimal level of accommodation.



◀ “Pedestrian Intolerant Environments”

This is a polite term for pedestrian hostile areas where walking is unsafe and unattractive. Examples include freeway corridors, certain industrial or extraction land uses, landfills, and major streets and roadways lacking continuous sidewalks.

A major characteristic of Intolerant environments is that they lack pedestrians, either due to a lack of pedestrian accommodations and/or dominance by automobile traffic and auto-oriented land uses.



What this Means to Downtown Kailua

Downtown Kailua has the potential to become a truly pedestrian-oriented town center that benefits its residents by adding value and identity to living in Kailua. This potential is the result of a number of special assets available in the downtown core area:

- Good access from major roadways but without any overbuilt arterials;
- Surrounding residential areas with a variety of housing types and income levels;
- Natural amenities including nearby wetlands and dramatic views; and,
- A simplified ownership pattern allowing for coordinated, coherent redevelopment.



Pedestrian activity is one of the key measures by which urban places and town centers are distinguished from suburban places. In lower-density suburban areas, some rambling may be facilitated by providing sidewalks on residential streets and multi-use pathways through open space and parks. Relatively little utilitarian walking will take place and virtually no strolling/lingering is likely to occur because land uses are segregated, parking lots are predominant, and travel distances between destinations are longer than most people are willing to walk.

By contrast, in well-planned, well-designed downtowns and mixed-use centers, pedestrians will be abundant. These pedestrians support the mixed use environment - making storefront retail feasible and adding value to both commercial and residential space. The presence of walkers and strollers enhances the walking environment: people draw people.



Successful pedestrian places host the full complement of walking types: recreational rambling, utilitarian walking and strolling/lingering along store fronts. However, town centers and suburban environments generate this kind of pedestrian activity only where there are multiple reasons to be present and where multiple activities are joined into a synergistic mix. For these reasons, creating pedestrian districts requires a complete reorientation of urban design characteristics, land use mix and transportation infrastructure in favor of pedestrians. This is feasible in only a limited number of special places. Such places become local icons that give identity to a community and its neighborhoods.

Kaneohe Ranch's goal should be to elevate all of the core area of downtown Kailua to at least "Pedestrian Supportive" status, with pockets of special "Pedestrian Places" created at key locations in large and small civic gathering spaces. Over time this beneficial influence can serve as a model for the rest of downtown Kailua, including areas under other ownership.

To achieve this goal, planning and design should address pedestrian issues at "macro-scale" and "micro-scale" levels of analysis. Macro-scale issues are concerned with the layout and organization of the area, including its streets and buildings. Micro-scale issues have to do with infrastructure design details and the layout and orientation of pedestrian places, including all three elements of the pedestrian environment: the roadway corridor, the pedestrian realm and the adjacent land uses.



MACRO ENVIRONMENT

The layout and organization of an area determines the overall feasibility of it becoming a pedestrian-oriented place. Good macro-scale characteristics are neither difficult nor expensive to achieve. However, once an area has been laid out and initial development has occurred, macro-scale characteristics are difficult to change or “undo.”

This discussion of macro-scale environment approaches the subject from the perspective of what it takes to make a pedestrian district. It is possible to have small “pockets” of pedestrian friendliness within a general setting that is not conducive to walking. However, that is not particularly relevant to creating a pedestrian-oriented downtown area in Kailua, since a few nice places within an overall Pedestrian Intolerant setting will generate little or no pedestrian activity.



PEDESTRIAN DISTRICT BOUNDARIES

Pedestrian districts are areas that include one or more Pedestrian Places in an overall Pedestrian Supportive environment. To be of significance to their communities, pedestrian districts should be of a minimum size and should incorporate a minimum mix of land uses and activities. While there can be exceptions, in general, pedestrian districts should be between 5 acres and 40 acres in extent. These limits correspond to an average radius from the center of about 250 feet (5 acres if a square) up to 660 feet (40 acres, again using a square). Of course, the area does not have to conform to a particular geometric shape. For example, the core area of downtown Boulder including the pedestrian mall is a rectangle of about 16 acres (1,200 feet by 600 feet) in size.

Places larger than 40 acres may include pedestrian districts, but will be regarded as being made up of multiple “places” rather than a single place with a single identity. At the other end of the scale, areas smaller than 5 acres may be viable as Pedestrian Places, but will not be large or varied enough to qualify as pedestrian districts.



To qualify as pedestrian district, an area should have a mix of land uses that includes at least three of the following six categories: residential, lodging, retail/restaurant, entertainment, office and public space. The retail/restaurant category is important because it will tend to shape the district identity. For example, the Cold Stone Creamery is adding identity to its section of Kailua Road. Entertainment uses can help serve this function, but cannot alone create the kind of place that would be regarded as an organic town center (except in tourist towns).

Pedestrian districts normally include one or more significant public places that are non-commercial in nature - a public plaza, a park or a pedestrian mall can each serve this function. The nature (and name) of this public space will also tend to influence how the overall district is regarded locally and regionally.

For purposes of creating Pedestrian Places, the land use mix should be more horizontal than vertical. Buildings taller than 3 or 4 stories do bring more people into the area, but a vertical land use mix tends to substitute elevators for sidewalks and is not necessary to creating a pedestrian district. Vertical mix (e.g., apartments and condos above retail) has a role to play in pedestrian districts, but sidewalk activity is created by people moving between, not within, buildings.

Within the retail/restaurant and entertainment categories (if present), there should be multiple choices allowing for synergy and critical mass. People tend to be drawn to places where at least three distinct activities are available within a 5 minute walk (1,000 feet or less). Also, pedestrian districts are strengthened by having a mix of activities that attract a variety of ages. Places that appeal both to adults and to children are stronger than places that appeal only to one or the other.



PEDESTRIAN DISTRICT RECOMMENDATIONS

1. The core area of downtown Kailua (the area bounded by Kailua Road, Hamakua Drive and Hahani Street) is just over 20 acres in extent - a little larger and squarer than the core of downtown Boulder. This is a good size for an initial pedestrian district. Kaneohe Ranch should work with the City of Honolulu to establish a “downtown Kailua pedestrian district” within the area bounded by Kailua Road, Hamakua Drive and Hahani Street, and that includes the streets (Kailua Road, Hamakua Drive and Hahani Street) and that also includes some of the parcels on the other side of these streets, as shown in the accompanying map. Over time Kaneohe Ranch should further work with the City to bring all of this area up to at least the Pedestrian Supportive standards described in Micro Environment later in this report. This will not be done overnight. It will take years of investment and redevelopment to achieve a true pedestrian district.

2. Within the “downtown Kailua pedestrian district” there should be a number of places that meet the Pedestrian Place standards described in Micro Environment. Of necessity, these will generally have to be located on Kaneohe Ranch property, as the existing layout of downtown has allocated most of the public street rights of way to vehicular use. These could generally be small - from 300 square feet in pedestrian pockets, to 3,000 square feet in a wide sidewalk along a narrow, slow street with distinctive storefronts, to a centrally-located public plaza or park of between a quarter acre and 2 acres in size.

3. Kaneohe Ranch should identify in advance where it believes Pedestrian Places can be, and should then use that knowledge to apply the micro-scale design principles set forth later in this report to create those places.

4. Finally, Kaneohe Ranch should work with the City of Honolulu to develop a perimeter signing program for the “downtown Kailua pedestrian district.” These signs, located along each of the major entry roadways, should be fairly large and should state something along the lines of:

Welcome to Downtown Kailua
A Pedestrian District
Please Drive Safely and Watch for Our Keiki and Kupuna



WALKING GRID

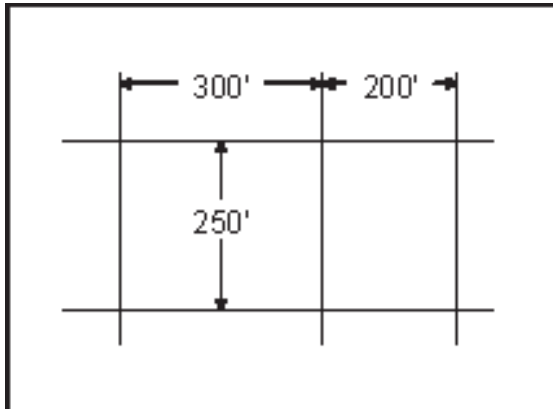


Figure 1. Grain of a Pedestrian District

Pedestrian districts work because they are made up of places that are connected with each other. This allows people to circulate between places as pedestrians, experiencing the environment and each other. Thus, good connectivity is critical to the success of pedestrian districts.

Essential to good connectivity is the “grain” of the walking network. Grain is a measure of how frequent the lateral connecting walkways and alternative parallel walkways are. For example, in the drawing at left, the network has a grain that ranges from 200 feet to 300 feet along one dimension and is 250 feet along the other dimension.

Pedestrians are sensitive to and deterred by out-of-distance travel (how far out of their way they have to walk to make a desired connection). They are also discouraged by long, unbroken walk lines. Good pedestrian environments are fine-grained, with frequent intersections and numerous alternative ways of making connections. In general, the grain of a pedestrian district should average between 250 and 330 feet. Unbroken block faces of more than 330 feet will discourage walking. Long, unbroken block faces and corridors should be avoided at all costs.

WALKING GRID RECOMMENDATIONS

1. Kaneohe Ranch should break up the “super-block” in the downtown core (the area bounded by Kailua Road, Hamakua Drive and Hahani Street) with internal streets so that the pedestrian grain is reduced to an average of between 250 and 330 feet. These can be private streets, but should be designed as city streets, not typical private drive aisles.
2. These internal streets should be low-speed vehicular streets with generous sidewalks, frequent pedestrian crossings, and (where appropriate) on-street parking. Pedestrian-only corridors would achieve the minimum required grain, but would not be as active or as safe.
3. Kaneohe Ranch should work with the City of Honolulu to ensure that there are safe pedestrian crossings along all streets within the downtown core. Crossings shall be provided at intervals of between 250 and 330 feet, depending on the situation.



NEIGHBORHOOD CONNECTIONS

Communities like Kailua can benefit significantly from having downtowns in the traditional sense of a mixed use district that people think of as being the “town center” or “downtown.” However, for this potential to be fully realized, the downtown area must be well-connected with residential neighborhoods, schools and parks. In this sense, “well-connected” means the connections are walkable - hopefully they should be Pedestrian Supportive corridors, but at a minimum they must be Pedestrian Tolerant.

Kailua’s downtown is well-located in that there are nearby residential neighborhoods, parks and schools. These should be connected by good walk corridors. To the extent that people can walk into downtown comfortably and safely, the downtown will be enhanced as a connected part of the community and as a pedestrian destination. If at least some people can walk into downtown, that increases the amount of downtown activity that can occur without increasing parking demand.



NEIGHBORHOOD CONNECTION RECOMMENDATIONS

1. Kaneohe Ranch should work to provide (in the future) a more direct pedestrian link to the high-density housing neighborhood along Aoloa Street (Koolau Vista, Windward Passage, Poinciana Manor, Gardenia Manor, etc.).
2. Kaneohe Ranch should work with the City of Honolulu to improve the walking environment along Kailua Road into the Makai neighborhoods. Efforts should also be made to improve connections between downtown Kailua and Kailua District Park and Kailua Elementary School.



DOWNTOWN STREETS

The principal infrastructure for travel by all modes - including walking - is the street network. The character of streets is one of the most important factors shaping the pedestrian environment. People will resist walking in places where streets are wide and traffic flows at high rates of speed. Instead, they will drive and then try to park as close to their destination as possible. Then they will move between local destinations - including those that are nearby - by getting back in their cars and driving, even though the walk distances are not great.

Wide streets discourage walking because they are perceived by pedestrians as being intended primarily for use by motor vehicles (often true). Because sidewalks are such a small percentage of the total public space, they are perceived as an afterthought (also true) or as a grudging response to a design requirement (true again). A phrase commonly used to describe these perceptions is “human scale” - which can refer both to wide streets and to massive architectural elements. Wide streets feel less safe because the traffic overwhelms the space and because the pedestrian is dwarfed by the street activity. Finally, to state the obvious, wide streets are more difficult for pedestrians to cross safely, so their range of movement and their connection opportunities are significantly reduced.

High speed traffic also discourages walking. Pedestrians feel threatened by fast moving vehicles and rightly so. The sheer mismatch between pedestrians moving at 2 mph and cars and trucks moving at 35 mph is felt viscerally and subconsciously by everyone, even seasoned pedestrians. Traffic speed can be mitigated somewhat by providing wide sidewalks and by using on-street parking as a buffer. However, these will only partially offset the negative impacts of high speed traffic. Clearly, traffic speeds also affect the safety and feasibility of pedestrian street crossings.

The width of streets and the average actual speed of traffic are interrelated. Wide streets encourage speeding, and posting low speed limits on wide streets is ineffective. Vehicle drivers are influenced more by the design of streets than by speed limit signs.

Generally, achieving Pedestrian Supportive environments requires limiting vehicle speeds to 30 mph or less, and true Pedestrian Places require vehicle speeds be 25 mph or less, with 15 mph to 20 mph the most desirable condition.

To the extent possible, pedestrian districts should not have one-way streets. One way streets encourage speeding because of the lack of what traffic engineers refer to as “friction” and because drivers change lanes suddenly to pass turning vehicles (something that is difficult to do on two-lane, two-way streets). One-way streets are usually more difficult for pedestrians to cross because of traffic dynamics, fewer gaps between “platoons” of vehicles (caused by traffic signals), and because speeds are higher.



DOWNTOWN STREET RECOMMENDATIONS

1. Kaneohe Ranch should design internal streets within the core super-block with narrow travel lanes (10 or 11 feet) and with on-street parking where appropriate. Speed limits on these internal private streets should be set at 15 mph. Frequent, clearly marked pedestrian crossings should be provided on all of these streets.
2. To the extent possible, one-way streets should be avoided everywhere in downtown Kailua.
3. Kaneohe Ranch should work with the City of Honolulu to avoid widening downtown public streets, and to avoid other “improvements” that would increase traffic speeds. Within and along the pedestrian district, public street posted speed limits should be no more than 25 mph.

MODAL INTEGRATION

The health of community downtowns is enhanced more by the presence of people than by the presence of motor vehicles. Certainly, both are needed for vitality.

A current trend in community development is an increased emphasis on flexibility as a key element in mobility. From the perspective of travelers, this means the availability of multiple means of mobility, all representing “real choices.” Where the mix of choices is rich, people can move around freely, traveling over distances by car and bus, and circulating within areas by walking and bicycling.

Downtown Kailua is potentially a place where all modes could come together, with major benefits to circulation and access. Kailua is served today by good levels of bus transit service and by good automobile and truck access. The walk environment in downtown today is fair, although bicycling access is more difficult and somewhat limited. For Kailua to become a truly vibrant downtown, the functionality of all of these modes should be improved - especially walking and bicycling.



Kailua

Just as important as the presence of all modes is the integration between them. Truly flexible mobility requires that travelers can move readily between modes and can use more than one mode to complete a trip. This requires that bus stops and transit centers become integral components of the circulation system, with direct sidewalk and crosswalk connections. Bicycle parking and better provision for bicycle circulation, including to and from bus stops and to and from auto parking, are also needed. Of course, the glue ultimately holding all good downtowns together is a great walking network in a Pedestrian Supportive environment.

MODAL INTEGRATION RECOMMENDATIONS

1. Kaneohe Ranch should work collaboratively with the City of Honolulu and with the bus transit staff to improve intermodal integration between bus transit and the other modes in downtown Kailua. Of particular concern should be the location and functionality of bus stops in downtown, including safety of nearby crosswalks, availability of bicycle parking, bicycle circulation, and transit signs and information. These agencies are doing a good job today, but increased emphasis is always beneficial.
2. Kaneohe Ranch should include provision for bicycle parking in planning for and design of the redevelopment of downtown and associated infrastructure.
3. The City and Kaneohe Ranch should work together to ensure safe and frequent pedestrian crossings, especially near parking facilities and bus stops.
4. Kaneohe Ranch, along with its local partners and citizens' groups, should lobby aggressively for improved bus service over time to downtown Kailua.



DELIVERY ACCESS

Good provision for delivery vehicle access would not seem to be a priority in a pedestrian plan. However, it is actually of critical importance.

Downtowns, town centers and other mixed use areas require good access and circulation by delivery vehicles. This includes parcel delivery (Federal Express, UPS, etc.) as well as freight services. In commercial districts with retail and restaurant uses, daily access by delivery vehicles, including refrigerated trucks, is essential.

The interaction between delivery vehicles and pedestrians can be uncomfortable where provision for delivery vehicles has not been given sufficient attention. Delivery vehicles can block smaller streets, can block crosswalks and sidewalks, and can present barriers to sight distance and safe pedestrian crossings of streets. The congestion and improvised traffic maneuvers associated with delivery vehicles moving about in poorly-planned areas can represent a safety risk for walkers.



DELIVERY ACCESS RECOMMENDATIONS

1. Kaneohe Ranch should carefully consider and plan for delivery vehicle access and circulation in the downtown area, including within the core area. This does not require overly wide streets or long turn radii at intersections so much as it requires that specific locations for delivery vehicle parking be identified and incorporated into design. Delivery vehicles should be able to get within 150' of secondary service entrances of retail and restaurant, with priority for establishments with more than 1,500 square feet of store space. Garbage truck access and dumpster locations should be strategically planned.

PARKING

Convenient, attractive vehicle parking is an essential element of any good pedestrian environment. While this might seem contradictory, the fact is that parked cars are one of the principal sources of pedestrians in any downtown, and this will be true in Kailua as well. Parking will be the primary means of access to the downtown. Convenient parking is inherently “intermodal” in that it enables vehicle drivers and occupants to get out of their vehicles and into the downtown environment on foot.

Kaneohe Ranch has made a significant investment in parking by building the core area parking structure. Over time this will be an important facility, supporting employee parking and other long term parking uses. Over the next several decades, it is possible that additional structured parking may be required, but in the near term, much of the additional parking needed can be provided through a combination of on-street and off-street surface spaces.

An overall theme for the management of downtown parking in Kailua should be that it is possible to Park Once here. The concept is that, within the pedestrian district, you can park once and then move around as a pedestrian. This simplifies mobility and frees people to enjoy downtown without the hassles of multiple short drives and repeated searches for parking spaces. In Park Once districts, drivers park close to the place that is the primary object of their trip and then circulate around from there, returning to their car after several storefront visits and other activities.

To support the Park Once concept, Kaneohe Ranch should disperse parking supply throughout the downtown. The dispersal of parking avoids the pockets of “negative space” associated with large surface parking lots, increases traffic efficiency by avoiding concentration of parking-related traffic, and also helps disperse pedestrians around downtown.



PARKING RECOMMENDATIONS

1. Kaneohe Ranch should maximize on-street parking throughout downtown by designing internal streets to include curb-side parking. This will provide support to storefront businesses and will serve to disperse parking. It will also improve the efficiency of traffic circulation and will benefit pedestrians by buffering sidewalks from moving traffic and by slowing traffic (traffic calming). Some of the on-street parking in downtown Kailua will actually be off-street parking from the point of view of the City because it will be on private land. Thus, while it will function like on-street parking it should be applied toward satisfying minimum parking ratios.
2. Where possible, on-street parking should be laid out in a diagonal configuration. Diagonal parking represents an efficient and functional way to provide parking close to storefronts and also increases the traffic calming benefits of curb-side parking. There are thousands of miles of diagonal, on-street parking throughout the cities of North America. Kaneohe Ranch should work with the City to overcome the City's informal (non-statutory) objections to diagonal parking.
3. Kaneohe Ranch should use the small block configuration of the downtown as it redevelops to spread surface parking around the area, avoiding large lots wherever possible as part of a conscious strategy to disperse parking supply.
4. Kaneohe Ranch should use the Park Once concept in marketing and promotion of downtown Kailua.

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MICRO ENVIRONMENT

Most pedestrian environments are largely comprised of street rights-of-way. Certainly, there will be pathways through parks and open space and short mid-block connections in downtown neighborhoods, but the principal infrastructure for walking will always be the street system.

Three distinct components of the street system, as depicted in Figure 2 and summarized following, are crucial design elements in the classification of pedestrian environments:

① The Roadway Corridor

Creating Pedestrian Supportive environments requires careful attention to the design of streets, to the allocation of space within street right-of-way, to opportunities for street crossings, and to the allocation of time at signalized intersections. In general, corridors that are pedestrian friendly have adjacent traffic volumes that are less than 20,000 vehicles per day with speeds of 30 mph or less, typically with on-street parking.

② The Pedestrian Realm

This area includes sidewalks, as well as the buffer zones on either side that separate the walkway from motor vehicle traffic and link the walkway to destinations on adjacent properties. In general, greater separation shall be provided from the street where higher vehicular travel speeds are present, and additional walkway width where more pedestrians will be using the system. Placement and design of pedestrian furnishings, transit stops and lighting are other key elements of the pedestrian realm.

③ Adjacent Land Use

Sidewalks alone do make a place into a pedestrian destination. To generate a significant pedestrian presence, land uses must be highly mixed and reasonably dense. Some combination of residential, lodging, retail, restaurant, civic and employment uses must be present within a contiguous area. Street walls (building fronts) shall be coherent but porous (numerous doorways and windows) with varied building setbacks. Buildings shall frame the street, and the street grid shall be fine-grained.

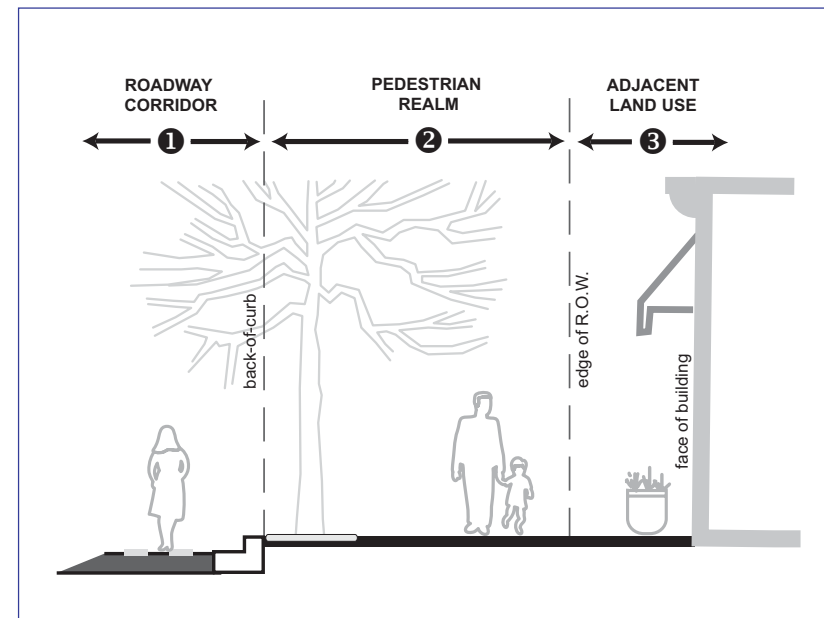
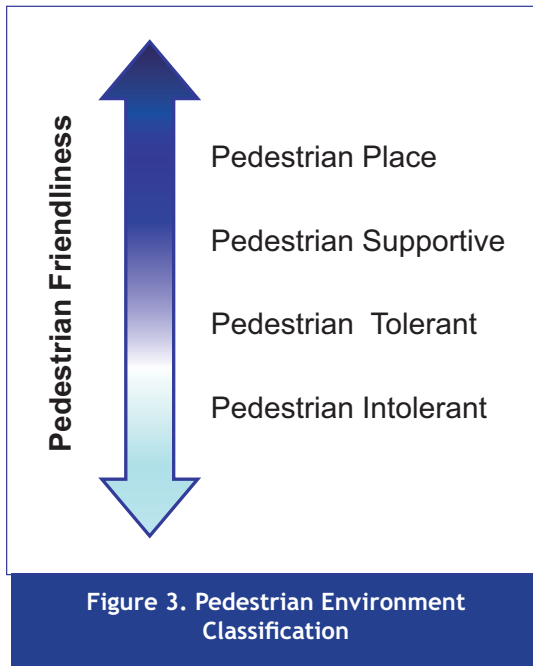


Figure 2. Components of the Pedestrian Environment



Details that Influence Pedestrian Friendliness

Multiple design elements found within these three components of the street system combine in various ways to create areas that range from Pedestrian Intolerant Environments to Pedestrian Places.

The table presented as Figure 4 on the following pages shows how the overall pedestrian-friendliness of a corridor is impacted by various parts of the:

- ❶ Roadway Corridor
- ❷ Pedestrian Realm
- ❸ Adjacent Land Use

Kailua shall use this table as a planning tool in reviewing projects to help ensure that impacts to pedestrians are considered and addressed in as many individual components as possible within a given project or corridor. The goal is to make downtown Kailua, at minimum, a Pedestrian Supportive environment. New internal street corridors may reach the level of Pedestrian Place, and/or smaller pedestrian pockets shall be developed where opportunities exist.

Specific design details of the micro environment will need to be addressed in new and re-development to make this happen. These are discussed in additional detail beginning on page 26.

*The goal is
to make all
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“Pedestrian Supportive”
with small pockets of
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created
where possible.*







					
		Pedestrian Intolerant	Pedestrian Tolerant	Pedestrian Supportive	Pedestrian Place
1 Roadway Corridor					
Physical Characteristics	<i>Vehicular Traffic</i>	Various combinations of the following characteristics create roadway corridors that discourage pedestrian use: <ul style="list-style-type: none"> • high traffic volumes (> 25,000 ADT) • high travel speeds (posted >35 mph) • Typically no on-street parking. • No bicycle lanes. 	Roadway corridors become more tolerant when traffic characteristics are: <ul style="list-style-type: none"> • moderate traffic volumes (15,000 – 25,000 ADT) • moderate travel speeds (30-35 mph) • Typically no on-street parking. • The presence of bicycle lanes helps to buffer and separate pedestrians from vehicular traffic. 	The following roadway characteristics combine to support pedestrian activity: <ul style="list-style-type: none"> • moderate volumes (typically 5,000-15,000 ADT) • slower travel speeds (25-30 mph) • Parking is provided on one or both sides of street. • The presence of bicycle lanes helps to buffer and separate pedestrians from vehicular traffic. 	The following combination is required to create public spaces that function as pedestrian destination areas: <ul style="list-style-type: none"> • low traffic volumes (< 5,000 ADT) • slow travel speeds (< 25 mph) • If a street goes through a destination area, parking may be provided on both sides of street. • Slow vehicular traffic speeds mean bicycle lanes are usually not required.
	<i>Other Roadway Lanes</i>				
	<i>Curb Type</i>	<ul style="list-style-type: none"> • No curb. 	<ul style="list-style-type: none"> • Rolled or extruded curb. 	<ul style="list-style-type: none"> • Vertical curb. 	<ul style="list-style-type: none"> • Vertical curb.
Pedestrian Crossings	<i>Delineated Street Crossings</i>	<ul style="list-style-type: none"> • No marked crosswalks provided. • Pedestrians must cross several lanes at once. • Curb radii are >30' 	<ul style="list-style-type: none"> • Marked, signed crossings with high-visibility ladder style crosswalks. • Number of lanes to cross at once is limited to 5. • Right-turn slip lanes with porkchop islands shorten crossing distances. • 30' max. curb radii 	<ul style="list-style-type: none"> • High-visibility crosswalks, potentially with use of texture, pattern and/or color. • Number of lanes to cross at once is limited to 4. • Small curb radii of 15'-25' shorten crossing distances and slow traffic. 	<ul style="list-style-type: none"> • Crossings include texture, pattern, color and/or traffic calming measures such as raised speed tables or curb extensions. • Number of lanes to cross at once is limited to 2. • Small curb radii of 5'-15' shorten crossing distances and slow traffic.
	<i>Traffic Signals</i>	<ul style="list-style-type: none"> • No signals. • Or no walk phases within signalized intersections. 	<ul style="list-style-type: none"> • Pedestrian signal indications for walk phases. • Timing allows clearance intervals for a pedestrian to cross street at average walking speeds of 3.5 - 4 ft/sec. 	<ul style="list-style-type: none"> • Pedestrian activated signals with short cycle lengths and longer walk intervals. • Timing allows elderly and slower moving pedestrians to cross street at walking speeds of 2.5 - 3 ft/sec. • Use of Leading Pedestrian Intervals (LPI) or Delayed Vehicle Green lights. 	<ul style="list-style-type: none"> • Pedestrian activated signals are oriented to give priority to pedestrian movements. • Use of LPI signals, countdown signals, or exclusive pedestrian intervals. • Alternatively, signals may not be necessary due to slow traffic speeds.
	<i>Grid/Block Length and/or Mid-Block Crossings</i>	<ul style="list-style-type: none"> • Crossing frequency is 528' - 1320' • No mid-block crossings provided. 	<ul style="list-style-type: none"> • Crossing frequency is 330' – 528' • Mid-block crossings marked and signed. 	<ul style="list-style-type: none"> • Crossing frequency is 250' – 330' • Hot response pedestrian signals. • Curb extensions or neckdowns where on-street parking is present. • Median refuge islands if >4 lanes or where center turn lanes present. 	<ul style="list-style-type: none"> • Crossing frequency is < 250' • Mid-block street crossings are an integral part of pedestrian destination zones, with priority given to pedestrian movements through design.

Figure 4.a





					
		Pedestrian Intolerant	Pedestrian Tolerant	Pedestrian Supportive	Pedestrian Place
2 Pedestrian Realm					
Physical Characteristics	<i>Sidewalk Presence</i>	<ul style="list-style-type: none"> Local streets have no sidewalks. Arterial streets have sidewalks on only one side of street. 	<ul style="list-style-type: none"> Local streets have sidewalks on only one side of street. Arterial streets have sidewalks on both sides. 	<ul style="list-style-type: none"> All streets have sidewalks provided on both sides 	<ul style="list-style-type: none"> All streets have sidewalks provided on both sides with supplemental traffic-calming measures
	<i>Sidewalk Location and Width</i>	<ul style="list-style-type: none"> Sidewalks lacking, or provided immediately back of curb. Walkway width < 5' 	<ul style="list-style-type: none"> Sidewalks provided immediately back of curb. Walkway width 5' min. 	<ul style="list-style-type: none"> Walkway separated from vehicular traffic by a 5' sidewalk planting strip. Sidewalk 6'-8' wide to accommodate passing and pairs of pedestrians walking side by side. Next to transit stops, sidewalks are 10' wide and extend to street at boarding spot. 	<ul style="list-style-type: none"> The pedestrian realm includes a sidewalk planting strip/pedestrian furnishings zone next to street, a walk/talk zone, and a shy zone next to buildings. Through walkway space 8'-10' wide; overall sidewalk width 10-30' to provide space for pedestrian amenities.
	<i>Sidewalk Planting Strip</i>	None.	None.	<ul style="list-style-type: none"> 5' minimum, ideally with overstory street trees 20'-30' on center, with clear sight distance triangles at intersections and crossings. 	<ul style="list-style-type: none"> 5' – 10' with overstory street trees in parkway planting strips, or none if tree wells and supplemental planters are provided within wide sidewalks, with clear sight distance triangles.
Pedestrian Amenities	<i>Transit Stops</i>	<ul style="list-style-type: none"> No furniture groupings provided. 	<ul style="list-style-type: none"> Benches provided at transit stops. 	<ul style="list-style-type: none"> Shelters, benches and trash receptacles provided at transit stops. 	<ul style="list-style-type: none"> Transit stops and amenities are integral in the design of pedestrian places.
	<i>Pedestrian Furnishings</i>	None.	<ul style="list-style-type: none"> No furnishings along streets not on transit routes. 	<ul style="list-style-type: none"> Pedestrian furniture groupings located intermittently along non-transit streets. Pedestrian wayfinding provided. 	<ul style="list-style-type: none"> Pedestrian furniture groupings, sculpture, drinking fountains, decorative fountains, wayfinding, etc. are located throughout.
	<i>Lighting</i>	None.	<ul style="list-style-type: none"> High angle highway lamps, such as cobra heads. 	Commercial districts have both: <ul style="list-style-type: none"> High angle lamps. Additional low angle street lamps for improved lighting at ground level. 	Pedestrian places have: <ul style="list-style-type: none"> Overall street lighting. Low placement of tungsten lamps. Additional light emitted from stores that line the street.

Figure 4.b





					
		Pedestrian Intolerant	Pedestrian Tolerant	Pedestrian Supportive	Pedestrian Place
③ Adjacent Land Use					
Physical Characteristics	<i>Mix of uses</i>	Single Use	Often single-use	Limited mixed-use	At least three distinct, complimentary uses within immediate walking distance
	<i>Building Relationship to Street</i>	<ul style="list-style-type: none"> 35' min. setbacks, with buildings often set back much farther than minimums Public space height to width ratio < 1:4 	<ul style="list-style-type: none"> 0' min. setbacks, with buildings often set back much farther than minimums Height to width ratio 1:4 – 1:2 	<ul style="list-style-type: none"> Buildings placed at maximum setbacks or build-to lines ≤ 20' Height to width ratio of 1:2 	<ul style="list-style-type: none"> Buildings placed at maximum setbacks or build-to lines 0' to 2' Height ratio of 1:2 min. and 1:1 max.
	<i>Building Design</i>	<ul style="list-style-type: none"> Buildings typically one story, < 35' ht. Height to width ratio wider than 1:10. Solid street walls with no doors and windows facing street No pedestrian protection from elements. 	<ul style="list-style-type: none"> One or two story, < 35' ht. Height to width ratio can range from 1:10 to 1:4. Solid street walls with infrequent doors and windows. No pedestrian protection from elements. 	<ul style="list-style-type: none"> Three or four stories (40' – 52' ht. except as limited by height restrictions). Height to width ratio can range from 1:4 to 1:2. Transparent window area along much of ground floor facade Awnings provided over entrances. 	<ul style="list-style-type: none"> Three- to five-stories (40' – 60' ht. except as limited by height restrictions). Height to width ratio can range from 1:4 to 1:2. Porous street frontages with frequent doors and windows. Awnings or arcades provided.
Pedestrian Access	<i>Off-Street Parking Requirements</i>	<ul style="list-style-type: none"> Large surface lots >50,000 sq. ft. located in front of buildings. 	<ul style="list-style-type: none"> Smaller surface lots located in front or on sides of buildings, not to exceed 20,000 sq. ft. in size. 	<ul style="list-style-type: none"> Surface parking required to be at rear of building, or provided above, below, or centrally contained within parking structures. 	<ul style="list-style-type: none"> Parking provided within parking structures.
	<i>Landscape Buffers and Screening</i>	<ul style="list-style-type: none"> Heavy landscape screening with hedges separating private property from street frontages. Solid walls or high privacy fences separating land uses from streets. 	<ul style="list-style-type: none"> Moderate landscape screening with breaks in landscaping for pedestrian access. Intermittent use of privacy fences to screen views but not limit pedestrian access from street. 	<ul style="list-style-type: none"> Canopy shade streets with supplemental plantings provide pedestrian scale and interest level. Low and/or open fencing to define public-private space, with frequent and well-placed access points. 	<ul style="list-style-type: none"> Urban form of Pedestrian Places requires no landscape buffering. Canopy shade streets with supplemental plantings provide pedestrian scale and interest level.
	<i>Pedestrian Access To Front Door of Buildings</i>	<ul style="list-style-type: none"> No pedestrian access provided across parking lots or through landscape buffers and/or fencing. 	<ul style="list-style-type: none"> Parking lots include internal sidewalks or walkway areas striped across pavement at spacings >250'. Likewise, infrequent access points through buffers spaced >250' 	<ul style="list-style-type: none"> Priority given to frequent and direct pedestrian access every 150'-250' through buffers and across parking lots through design treatments such as colored and textured walks, speed table driveway crossings, etc. 	<ul style="list-style-type: none"> No large parking lots, no landscape buffers, no fencing. Direct, convenient, inviting and interesting pedestrian access provided from sidewalks to adjacent buildings.

Figure 4.c

SIDEWALKS

In downtown Kailua, sidewalks need to be designed to accommodate larger volumes of pedestrian traffic and “people activities” than residential areas. Pedestrian Supportive sidewalk design, as depicted in Figure 6, shall be implemented in the town center to support the multiple functions that will make downtown the “place to be” in Kailua.

Sidewalks generally consist of three zones, as depicted in Figures 5 and 6. Micro-scale design recommendations for each of these zones include the following:

A Planter/Furniture Zone - A furnishings zone shall be provided in all retail areas with on-street parking. This zone lies between the curb and sidewalk to provide a buffer from street traffic and allow for the consolidation of elements like utilities (poles, hydrants, kiosks, etc.), street furniture (benches, signs, etc.) and street trees.

In Pedestrian Supportive areas, the furnishing zone shall be 6 feet wide on arterial and major streets, and 4 feet min. on circulation and access streets. Furnishing zones shall include the following:

- Street trees that provide shade and require minimal maintenance shall be planted in 3-foot x 3-foot tree wells spaced every 25 to 40 feet, depending on species.
- In between, a hard surface shall be provided for people to step onto when exiting parked cars.
- Benches, trash receptacles, and other street furniture shall be provided as applicable.
- Additional space will be required for transit stops, where a boarding pad 5-foot x 8-foot in size is recommended.
- Corner or mid-block curb extensions can also provide expanded space for furnishings, as long as sight distance triangles are preserved so that pedestrians and drivers can see each other at street crossing locations.

B Pedestrian Clear Zone - The pedestrian clear zone is the portion of the sidewalk that is specifically reserved for pedestrian travel. In planning pedestrian space, it is important to recognize that walking, especially strolling and lingering, is a social activity.

For any two people to walk together, 5 feet of sidewalk space is a bare minimum. For two pairs of pedestrians to meet and pass, 8 feet is needed. To meet requirements of the Americans with

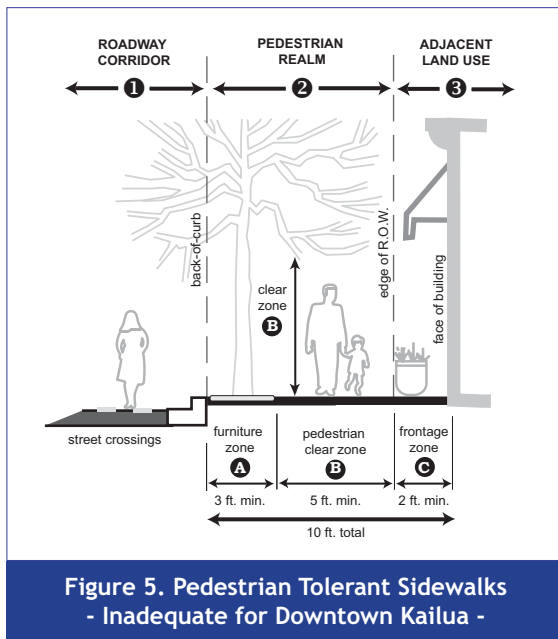


Figure 5. Pedestrian Tolerant Sidewalks
- Inadequate for Downtown Kailua -



Disabilities Act (ADA), sidewalks must be at least 4 feet wide for people using a guide dog, 5 feet to enable wheelchair users to turn around, and 6 feet to pass other wheelchairs. Thus, the following guidelines shall be followed for sidewalks in downtown Kailua:

- Sidewalks shall be built to Pedestrian Supportive standards as depicted in Figure 6.
- The recommended minimum width for downtown sidewalk clear zones is 8 feet.
- The pedestrian clear zone may meander slightly to accommodate fixed objects such as benches, walls, fences, planters, and buildings.
- The zone requires a vertical clearance free from obstructions to a height of 8 feet minimum.
- This area must be free of all obstacles, protruding objects, and any vertical obstructions hazardous to pedestrians, particularly for persons with visual impairments.
- Newspaper racks, mailboxes, benches, trash receptacles, outdoor dining, and other street furniture shall not encroach into the pedestrian clear zone. Such items shall be placed either within the sidewalk furnishing zone or an expanded building frontage zone.

In downtown, the pedestrian clear zone may be located on public right-of-way, adjacent private property, or a combination of both to provide an unobstructed 8-foot walkway for pedestrian use.

C Building Frontage Zone - Most pedestrians don't feel comfortable walking immediately adjacent to a wall or fence. At minimum, pedestrians prefer to keep at least 2 feet of "shy distance" away from a building wall. This space is called the building frontage zone, and shall be designed to:

- Provide space on the back side of sidewalks to prohibit vegetation, walls, buildings, and other objects from encroaching on the usable sidewalk space.
- Accommodate stopped or slower moving pedestrians who "window shop."
- Provide increased space and be physically separated from the pedestrian clear zone to allow for opening doors, sidewalk cafes, merchandise displays, etc. Building setbacks may vary slightly from building to building to add to the pedestrian character of the street block and provide space for activities such as outdoor dining.
- Aid people with vision impairments who use the sound of the adjacent building for orientation. The frontage zone should thus be free of protruding objects and/or any obstacles detectable by people who use long white canes for guidance.

The frontage zone adds to the walking comfort of a pedestrian, and is needed to ensure that sight lines at residential and commercial driveways are maintained. It shall be the responsibility of the adjacent property owner to ensure adequate sight triangles are maintained free from encroaching vegetation at corners.

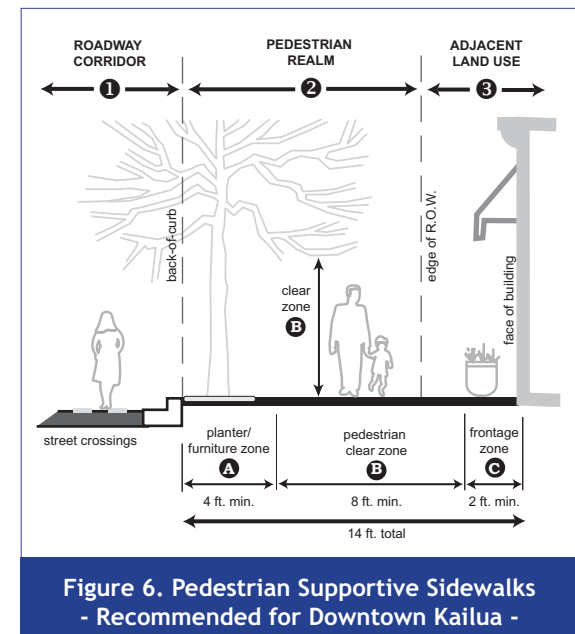


Figure 6. Pedestrian Supportive Sidewalks
- Recommended for Downtown Kailua -

	Pedestrian Tolerant Design	Pedestrian Supportive Design
Marked Crossings	Crossings may be either marked or unmarked. (Note: While marked crossings increase the visibility of the crossing area, define the space for crossing, and draw pedestrians to an appropriate crossing location, there is no legal difference between a marked or unmarked intersection crossing.)	Marked crosswalks should be considered, particularly in the following locations: <ul style="list-style-type: none"> ➤ at all open legs of signalized intersections with adjoining sidewalks ➤ at all arterial intersections in downtown and mixed-use centers, or when connecting to significant retail activity ➤ at multi-use trail crossings ➤ along school walking routes ➤ at or near important transit connections ➤ near housing for the elderly
Spacing	Crossings shall be spaced a max. of 1320' apart. (1/4 mile)	Crossings shall be spaced a max. of 528' apart (1/10 mile) and a min. of 330' (traditional city block length)
Crosswalk Pattern	Standard crosswalks (two parallel, horizontal lines)	Highly-visible Ladder Bar or Piano Bar crosswalks (with perpendicular bars spaced so that wheels of motor vehicles pass on either side of the markings to minimize maintenance). Or use colored and textured surfaces to improve aesthetics in mixed-use areas, potentially in conjunction with raised speed table crossing treatments.
Signalization Timing	Use average walking speed of 3.5 - 4.0 feet/second	Use a slower walking speed of 2.5 - 3.0 feet/second to accommodate older pedestrians and people with disabilities
Curb Radius	25' curb radius standard 30' curb radius on major streets with truck/bus traffic	5'-15' max. curb radius Smaller curb radii (up to 5' min.) may be used if on-street parking or bike lanes
Curb Ramps	Diagonal curb ramps may be permitted in the following locations if curb radii are >20' and a landing at the bottom of the ramp is positioned within the crosswalk area for both directions of travel: <ul style="list-style-type: none"> ➤ Where utilities prevent the installation of paired curb ramps ➤ At intersections that are not signalized ➤ In some residential areas where traffic volumes are very low 	Paired curb ramps recommended Diagonal ramps to be avoided whenever curb radii are <20' since moving traffic can encroach upon the landing area
Medians and Refuge Islands	Recommended for use: <ul style="list-style-type: none"> ➤ In intersections when the length of the pedestrian crossing exceeds 60 feet ➤ At intersections with complex vehicle movements or long signal phases ➤ In conjunction with uncontrolled midblock crossings 	<ul style="list-style-type: none"> ➤ Provide a median island when the length of the pedestrian crossing exceeds 48 feet ➤ Consider narrowing traffic lanes (potentially down to 10 feet) to have the added effect of slowing motor vehicle speeds at the crossing location, and shortening pedestrian crossing distances
Slip Lanes	Provide a triangular "pork chop" refuge island within the intersection when: <ul style="list-style-type: none"> ➤ Curb radii >30' are unavoidable ➤ Slip lanes can be designed based upon a compound curve design to discourage high-speed turns, while accommodating large trucks and buses 	No slip lanes allowed or needed
Curb Extensions	Typically not provided	Consider installing on streets with: <ul style="list-style-type: none"> ➤ On-street parking, especially diagonal parking ➤ Limited left-turning traffic by buses and large vehicles ➤ One-way traffic ➤ On minor streets in residential areas
Mid-Block Crossings	Use in high-activity areas only Locations being considered need to be studied carefully	Consider installing unless crossing is: <ul style="list-style-type: none"> ➤ < 300 feet from another crossing point ➤ On streets with speeds > 45 mph

Figure 7. Crossing Treatment Guidelines



STREET CROSSINGS

Crossing a street can be the most challenging part of negotiating a pedestrian circulation network. While most people can find a way to safely travel along a street, most motor vehicle crashes involving pedestrians take place when they travel across a street.

Basic pedestrian needs include being able to cross streets and roadways in safe and convenient locations. This includes crossing at both signalized and unsignalized intersections, as well as midblock. The crossing guidelines presented in Figure 7, opposite, define how the design of Kailua's street intersections shall be modified from Pedestrian Tolerant to Pedestrian Supportive to better accommodate pedestrians. The overall goal is to protect the access and safety of pedestrians while still meeting the needs of motor vehicles.

Key design considerations include:

- Providing a higher standard of marked crosswalks to encourage greater levels of walking in Pedestrian Supportive areas.
- Designing all pedestrian facilities to meet accessibility requirements of the Americans with Disabilities Act (ADA).
- Providing a street/pedestrian grid network such that the maximum spacing between crossing opportunities is 250 - 300 feet.
- Limiting number of roadway lanes and using small curb radii and/or curb extensions to minimize width of street crossings.
- Paying close attention to pedestrian needs in the design of curb ramps, curb extensions and refuge islands.

Curb Ramps

The curb ramp is the slope that allows pedestrians to make the transition in grade from a raised sidewalk to a street or driveway. Federal regulations require that public entities give priority to providing ADA accessible curb ramps serving state and local government offices, transportation facilities, public places, and employment, followed by walkways in other areas.

Curb ramps may be perpendicular, parallel, or a combination, as long as they provide adequate level landing areas at both the top and bottom of the ramp.

Good intersection design practice suggests that all pedestrians enter a crosswalk at the same point. A single diagonal curb ramp at a street corner often requires those using a wheelchair or pushing a stroller to follow a different crossing route than other pedestrians. This creates a problem with

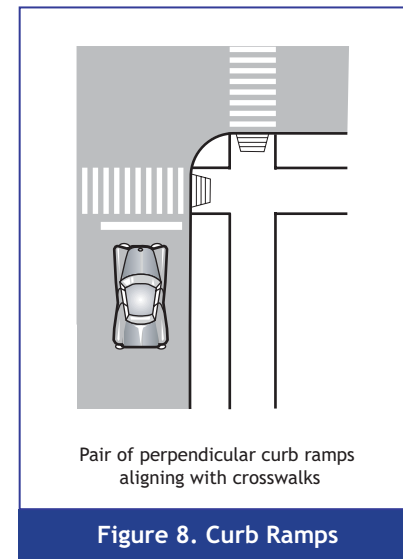


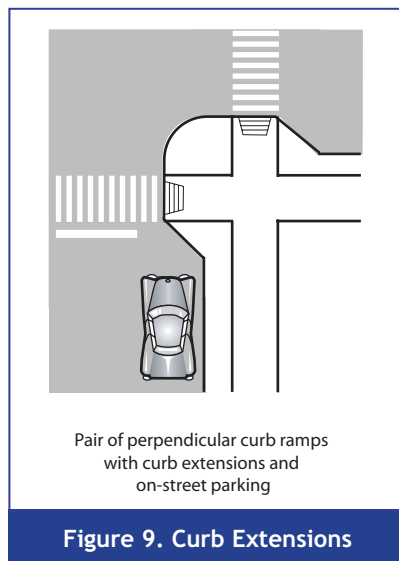
Figure 8. Curb Ramps



turning vehicles since a driver may not check for pedestrians entering a crosswalk from unexpected locations.

Therefore, downtown Kailua shall adopt a policy to enhance pedestrian safety by requiring the following:

- Paired, perpendicular curb ramps that lead directly into crosswalks. See Figure 8.
- Design of all landings, running slopes, ramp cross-slopes, transitions, side flares, and ramp surfaces per the Federal guidance contained within publication #FHWA-EP-01-027, Designing Sidewalks and Trails for Access, Part II or #FHWA-SA-03-019, Accessible Sidewalks and Street Crossings - An Information Guide.
- Whenever possible, install two perpendicular curb ramps built on a curb extension.



Curb Extensions

Curb Extensions - also known as bulbouts, neckdowns, flares, or chokers - improve visibility between pedestrians and motorists and make it easier to install perpendicular curb ramps with level landings. Curb extensions may be located at intersections or mid-block.

At intersections, extensions typically have the effect of reducing the curb radius, increasing pedestrian visibility, and reducing motorist turning speeds. Curb extensions also prevent parked cars from blocking the curb ramp and/or intersection sight lines.

Key design considerations for curb extensions include:

- Only install on streets with on-street parking. See Figure 9.
- Extensions may be designed to provide additional space for street furniture, utility infrastructure, bicycle parking, and/or street trees.
- Ensure that curb extension design facilitates adequate drainage.
- Where intersections are used by significant numbers of trucks or buses, curb extensions need to be designed to accommodate them. However, it is important to take into consideration that those vehicles should not be going at high speeds, and most can make a tight turn at slow speeds.
- It is not necessary for a roadway to be designed so that a vehicle can turn from a curb lane to a curb lane. Vehicles can often encroach into adjacent lanes safely where volumes are low and/or speeds are slow; speeds should be slower in a pedestrian supportive environment.
- On designated arterial and collector streets with existing or planned bicycle lanes, curb extensions should not extend more than 6 feet from the curb so as not to block the bike lanes.



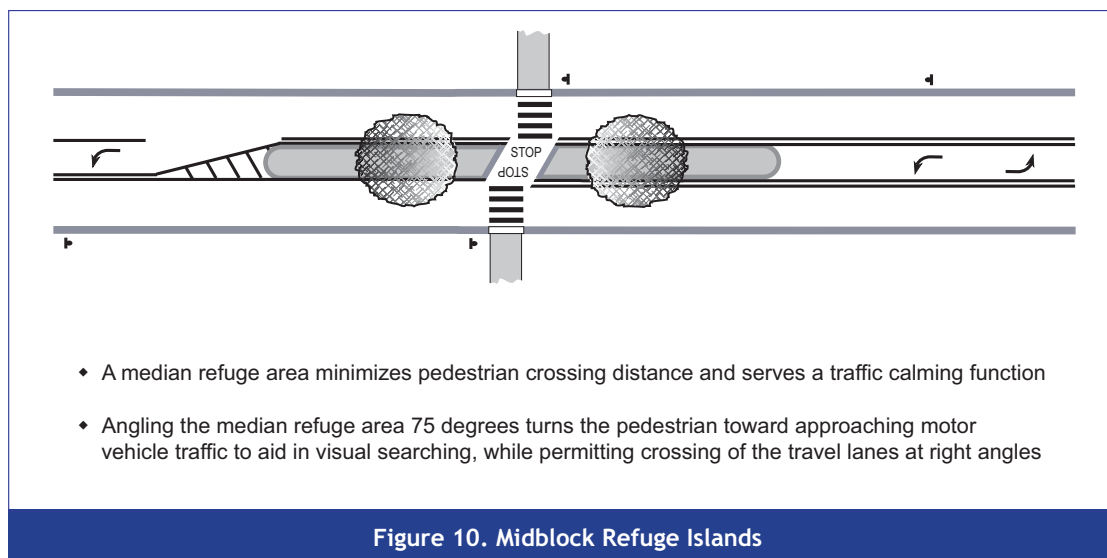
- At signalized intersections, reducing the pedestrian crossing distance will improve signal timing if the pedestrian phase controls the signal.

Midblock Refuge Islands

Medians and/or center refuge islands at midblock locations provide a waiting area for pedestrians, and eliminate the need for pedestrians to cross both directions of traffic at once, thus turning a two-way street into two one-way streets for pedestrians. They help define the pedestrian walking space, and if large enough, provide protection and refuge from motor vehicles.

Criteria to consider in the design of median refuges include:

- Make islands adequate width to hold wheelchairs, bicyclists and people with strollers outside the travel lanes.
- Curb medians (rather than painting them flush) to physically separate pedestrians and motorists.
- Install accessible curb ramps or cut-throughs across islands per ADA guidelines, at least 6 feet long and 5 feet wide to allow wheelchair users to pass each other. Or construct ramped medians with a level landing at least 5 feet by 5 feet.
- Angle the refuge 75 degrees to provide enhanced view of oncoming traffic.
- Consider planting trees in medians to narrow the long-range field of vision for motorists, but do not block sight lines of pedestrians or motorists.
- If installing medians at an intersection, extend the nose of the median beyond the crosswalk so that ramps or cut-throughs directly align with the crosswalk.
- Consider adding a pedestrian signal push button in the median where the crossing distance exceeds 60 feet, or where high numbers of elderly or people with disabilities are expected.
- Locate midblock crossings to meet the Pedestrian Supportive recommendations for a pedestrian grain of 250 - 330 feet.



SHADE

Shade is a critical component of the outdoor environment in Hawaii. downtown Kailua shall strive to provide shaded pedestrian walkways and gathering places through use of:

- Awnings
- Arcades
- Street trees

Awnings

Awnings mediate between inside and outside, between public and private, and between individual buildings and the entire block. They are private structures that often extend into and over public right-of-way, providing weather and sun protection. Awnings also contribute significantly to the urban environment by defining and sheltering pedestrian space, reducing the perceived scale of tall buildings, and focusing pedestrian views on street frontages and ground level activities.

To contribute to development of a coherent downtown environment, the placement and design of awnings should complement and unify the streetscape rather than relate only to individual buildings. High quality materials with simple, regular forms and detailing are needed to reduce visual clutter and provide visual continuity to the pedestrian realm.

Awnings are thus recommended to adhere to the following guidelines, as depicted in Figure 11:

- Height: An 8-foot min. clear zone, measured from the sidewalk to the awning underside. Awning heights will likely range from 8 to 11.5 feet, depending on height of the building's first floor and location of windows. Whenever possible, awnings should align with others on the block to help define a unified pedestrian realm.
- Length: Awnings should extend across the entire building elevation that is parallel to the street to provide continuous shade and rain protection.
- Depth: Minimum width shall be 6.5 feet.
- Distance from curb: Awnings shall stop at least 5 feet from the curb to accommodate street lights, on-street parking, and street tree plantings.
- Proportion: Awnings shall be in proportion to the overall building facade. Awnings on storefront level should not extend into the second story.
- Windows: If the building facade contains transom area, awnings shall be installed just below the transom windows. Awnings shall not be permitted on upper floor windows.

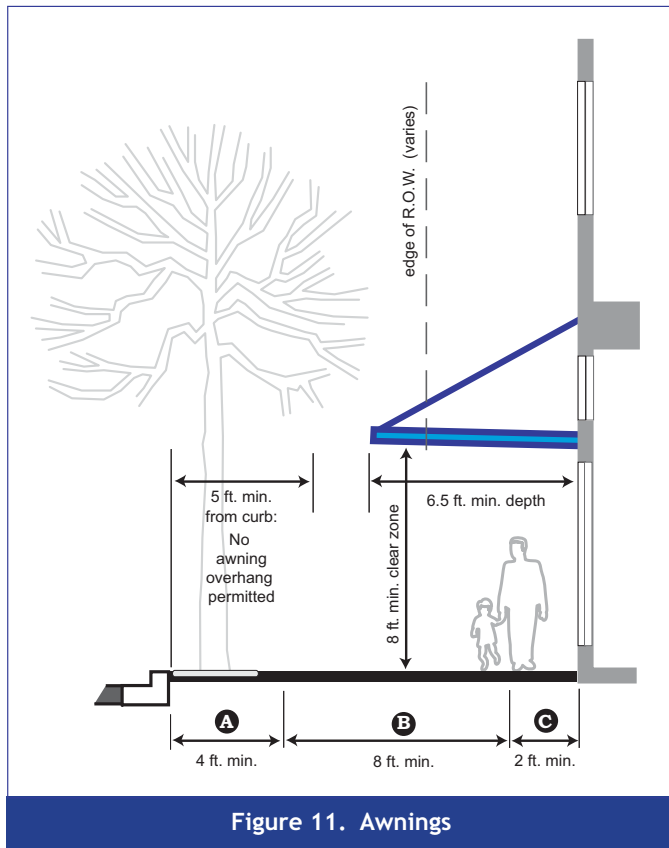


Figure 11. Awnings



- **Lighting:** Required below all awnings to supplement existing street lighting and “spill” lighting from shopfronts and other ground floor uses. Structural awnings may provide glazing or skylights of clear or lightly tinted glass (preferably patterned to mask dirt), not to exceed 1/3 of total awning width.

Arcades

Arcades, like awnings, offer pedestrians shelter from rain, heat and UV radiation. They are created when part of a building's upper floor(s) project out over the pedestrian realm. This is done by recessing the first floor of a building back from the property line to create enhanced outdoor space at street level. In this manner, pedestrians are provided a sheltered space to walk underneath the arcade, rather than within the adjacent street right-of-way. See Figure 12.

If the arcade overhang is wide, load-bearing support posts will likely be required to provide support for the projecting upper stories. This need for structural support requires additional arcade design considerations, including:

- Maintaining an 8-foot pedestrian clear zone, plus a 2-foot frontage zone, immediately adjacent to the store fronts.
- No vertical support structures shall be permitted within this 10-foot pedestrian travel area.
- Maintaining a vertical clear zone for a height of 8 feet minimum, measured to the underside of the arcade overhang.

Street Trees

Placement of canopy trees between the street and sidewalk is a final way of providing shade for pedestrians in downtown Kailua:

- Shade canopy trees shall be planted along all streets, spaced 20- to 50-foot on center, depending on species.
- Trees shall be installed in tree wells, a minimum of 3 feet x 3 feet, placed back-of-curb within the planter/furnishings zone.
- Species shall be selected that do not drop fruit, seed pots or other litter onto the sidewalk and create a maintenance problem for adjacent property owners.

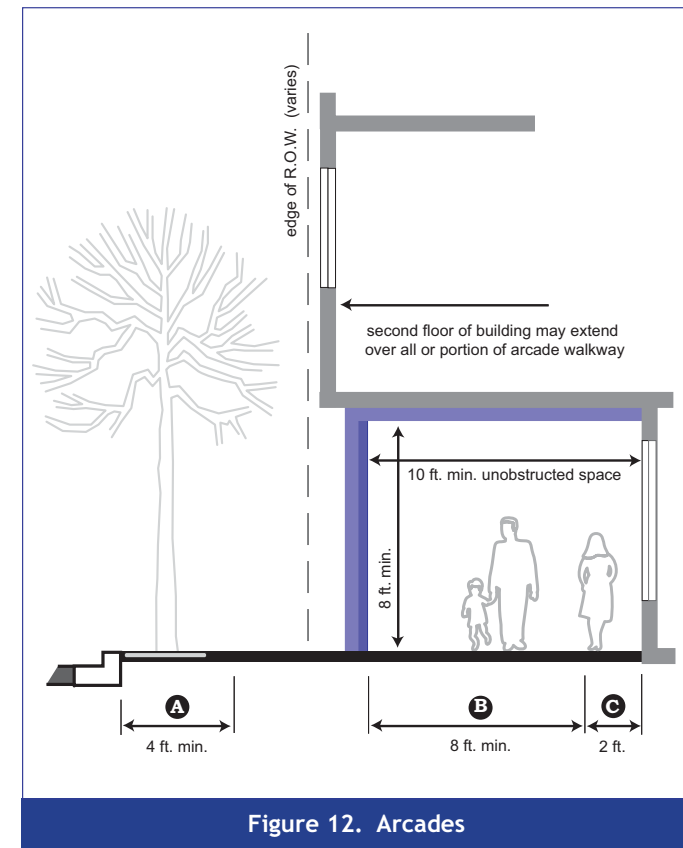


Figure 12. Arcades



Winter Park, FL

LANDSCAPING

The City and County of Honolulu requirement for a landscape screen of trees and hedges along the street frontages and property lines should *NOT* apply within downtown Kailua. Installing a 5-foot landscape strip adjacent to the street right-of-way, with a 36" high screening hedge, wall or fence, will separate pedestrians from storefronts, which is opposite of what is desired in the Kailua town center. Instead, the following landscaping guidelines shall be followed to create Pedestrian Supportive corridors:

- Sidewalks should extend to building face.
- Shade canopy trees shall be planted along all streets, spaced 20' to 50' on center, in tree wells a minimum of 9 square feet in size, located at back-of-curb.
- Variations in tree spacing may be considered to enhance plaza areas, emphasize building focal points, or avoid visually blocking retail storefront entrances and intersections.
- No other plantings shall be placed in the furnishings strip.
- Paved surfacing shall be provided in the furnishings strip between tree wells for the benefit of pedestrians loading and unloading from vehicles parked on-street.
- No screening or suburban style landscaping shall separate the sidewalk from adjacent buildings.
- Container plantings may be used to add interest to the pedestrian realm, but must be positioned so as not to block the required 8-foot pedestrian clear zone.

The City and County of Honolulu landscape standards shall be followed for providing and maintaining shade trees in internal parking lots within downtown blocks:

- 1 canopy from tree for every six stalls
- 9 square foot minimum per tree well

DRIVE AISLES

The Koolauapoko Sustainable Communities Plan recommends strengthening the pedestrian orientation of the Kailua town center by implementing a circulation plan that improves public sidewalks, links them with through-block walkways and parking lots, and expands transit services and amenities. This can be best accomplished by building a fine-grained network of collector and access streets that serve multiple modes of travel instead of parking lot drive aisles that serve automobiles only.

Internal downtown streets shall be:

- Designed to be generally consistent with local street standards.



- Designed to provide circulation and access functions for automobiles, bicycles, pedestrians and transit vehicles.
- In conformance with the stated requirements of this plan for sidewalk widths and street tree landscaping.
- Lined with storefronts and entries facing the public sidewalk.

STREET WALLS

Large, blank street walls and dull building facades do not create Pedestrian Supportive environments, but deaden the surrounding space and create an uninviting street environment. In contrast, frequent doors and windows in buildings with mixed uses create visual interest and encourage strolling and lingering activities.

The Koolau-poko Sustainable Communities Plan offers the followed guidelines which shall be followed in Kailua regarding architectural character and building massing:

- Architectural character may be varied, depending on the context, the theme, and the individual community's approved urban design guidelines for the particular center. Portions of commercial center buildings that are adjacent to or readily visible from residential areas should reflect, and be compatible with, a more residential character; or be screened from view from such areas by landscaping.
- Secondary entries to business establishments may be provided from parking areas. Development of cooperative parking agreements among neighboring businesses and landowners is encouraged.
- Avoid blank facades on portions of buildings visible from public areas by using texture, articulation, color, and fenestration to create visual interest.
- Building heights should not exceed 40 feet, with height setback transitions from street frontages, the shoreline, and adjacent residential areas.

In addition, the following downtown Kailua Pedestrian Environment Guidelines further prescribe and detail how to create Pedestrian Supportive building design. Recommendations include:

- Buildings shall be narrow and deep to provide as much visual interest along the sidewalk as possible.
- Primary building entrances shall front sidewalks and public streets, not parking lots.
- Blank stretches of wall without doorways or windows on ground level shall not exceed 25 feet.



Doors and Windows:

- Fenestration (the arrangement of doors and windows) shall allow for a high level of porosity from the adjacent walkway. Pedestrians shall be connected with the interiors of retail establishments both physically (frequent doors) and visually (frequent windows).
- Street walls must contain transparent windows or window displays comprising at least 75 percent of the area of the facade between 2 feet and 7 feet above ground level. As an alternative, street walls may provide sculptural, mosaic or bas-relief artwork comprising at least 75 percent of the same facade area.
- Glass must be clear or lightly tinted in windows, doors and displays. Because it does not provide visibility between the street and building interiors, reflective, opaque or painted glass considered to create a blank street wall and shall be prohibited.

Building Design:

- Articulation (the visual definition of buildings from bottom to top) shall create and draw attention to pedestrian-scale at street level.
- Modulation (the horizontal definition of buildings) shall be used to break up long building facades into a series of smaller components, each no longer than 25 feet along the street frontage, and no less than 8 feet. Varying setbacks of the building footprint, at least 1 foot in depth, shall be incorporated along the block length to accomplish this.
- Projecting architectural features such as bowed or bay windows, columns, recessed entrances, permanent vertical trellises with climbing plants, or similar features that provide details and distinctive shadows on building facades should be used to create both vertical articulation and horizontal modulation on building elevations throughout downtown.

SIGNS AND WAYFINDING

Systems and conventions to help motorists determine where they are and which way they want to go are well established in standard codes and manuals. Similar systems for pedestrians are also needed but are less well developed.

Kailua's existing overhead street signs and intersection street name signs are designed for motorists and are of less value to pedestrians. Similar, much of the storefront signage is more visible from the street than from the sidewalk.



Many downtowns have developed specific designs for signs and other information aides that guide and assist pedestrians with wayfinding and other information. These aids can take the form of information kiosks or location signs placed at eye level, visible from sidewalks. Some cities have embossed street names in sidewalks at intersections and used other unique means of helping people determine where they are and which they want to go next. Pedestrian signage systems are not subject to the rigid engineering criteria imposed on street signs and motorist aid signs. Cities and towns are able to design signs (color, text, logos, etc.) that are appropriate for the local setting and reflective of local character.

Kailua's downtown will be used daily by residents and workers. Visitors and tourists are also present. While it might seem that signs are only needed for "outsiders" who do not know the town, research has shown that wayfinding information is beneficial for all pedestrians, including those who "know" the downtown. It reminds people of what is available in the downtown and serves to trigger serendipitous connections. Also, Kailua residents will have the opportunity to "relearn" their downtown as new streets are built, buildings revised or erected, and new businesses arrive. Keeping downtown signage updated to reflect these changes will help with downtown vitality and will encourage walking.

Kaneohe Ranch should develop a pedestrian wayfinding system. This system should:

- Be coordinated with the City of Honolulu and with the Kailua Urban Design Task Force.
- Establish a unique design scheme (colors, text, logos, etc.) that is appropriate for Kailua.
- Include standard sign and kiosk elements that can be readily and inexpensively purchased and installed over time.

LIGHTING

Adequate levels of lighting are important to create inviting places where pedestrians feel comfortable. The following standards shall apply to downtown Kailua pedestrian walkways and plazas:

- Different types of lighting shall be used to illuminate surfaces intended for pedestrians and vehicles, as well as building entries.
 - Exterior lighting shall be used to identify and distinguish the pedestrian walkway network from car or transit circulation.
 - Low angle street lamps (such as the "Bega" luminaire design recommended by the Urban Design Guidelines for Kailua Town) shall be placed between sidewalks and public
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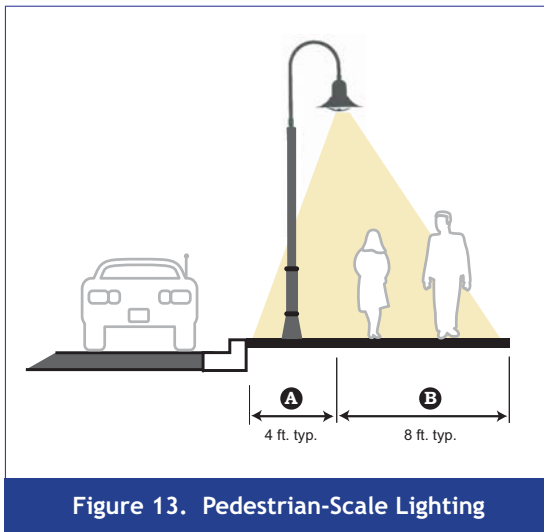


Figure 13. Pedestrian-Scale Lighting

and/or private streets, driveways or parking areas. The light fixtures shall curve toward the sidewalk to illuminate the pedestrian space, as depicted in Figure 13.

- Supplemental lighting may be required beneath awnings and arcades.
- All light fixtures shall be sited and directed to minimize glare around residences in mixed-use areas.

PEDESTRIAN POCKETS, PLAZAS AND MALLS

Special Pedestrian Places - the highest level of pedestrian environments - are desired to be created throughout downtown Kailua where opportunities exist. Successful outdoor public spaces have been proven to have four key characteristics:

1. Places are accessible.
2. People are engaged in activities.
3. The space is comfortable and has a good image.
4. Places are social space where people meet each other here and take visitors to experience.

Pedestrian pockets, plazas and malls in downtown Kailua shall therefore be designed to:

- Include three distinct, complimentary, and highly identifiable activities within immediate walking distance.
- Enhance visual and pedestrian access, including handicapped access, onto the subject property from the sidewalk.
- Contain a paved walking surface of either concrete or approved unit pavers.
- Contain on-site or building-mounted lighting which provides adequate illumination.
- Contain 2 linear feet of seating area or one individual seat per 65 square feet of area between the sidewalk and the building.
- Contain landscaping such as trees, shrubs, trellises, or potted plants.
- May not include asphalt or gravel pavement, or be located adjacent to an unscreened parking area, a chain link fence or blank building wall.



BICYCLE ACCOMMODATION

Bicycles should be accommodated in and adjacent to downtown Kailua in the following ways:

- A multi-use trail along Kawainui Stream
- Signed and striped bicycle lanes on select streets leading into downtown
- Bicycle parking facilities provided throughout downtown.

Development of a Multi-Use Recreational Trail

Kawainui Stream adjacent to downtown Kailua provides opportunity to develop a recreational trail for rambling walking and additional access into downtown. However, trails are rarely used by pedestrians only. Thus, good trails are designed to be shared-use paths for the enjoyment of multiple users - most notably bicyclists, pedestrians, in-line skaters, and other non-motorized activities.

The following basic design principles for shared-use paths ensure safety for bicyclists, and provide pedestrian accessibility per the Americans with Disability Act (ADA):

- Paved width of 10 feet, with 12 feet recommended in areas with higher user volumes.
- Minimum 2-foot graded shoulder area adjacent to both sides of trail
- Minimum 5-foot separation from the edge of the path to top of slope that is steeper than 1V:3H.
- Vertical clearance to obstructions is 8 feet minimum, 10 feet preferred.
- Grades no steeper than 5 percent recommended, with a graduated scale up to 11 percent or more for short distances.
- Separation from roadways should be a minimum of 5 feet.
- Cross slopes should not exceed 2 percent.
- Path-roadway intersections should be carefully designed to transportation standards (AASHTO, MUTCD and HDOT).

Bicycling on Kailua Streets

The internal streets within downtown Kailua will be designed to meet access and circulation needs for both vehicles and bicycles. As relatively narrow streets with slow traffic speeds, no designated bicycle lanes are needed; bicycles and cars can safely share the street.

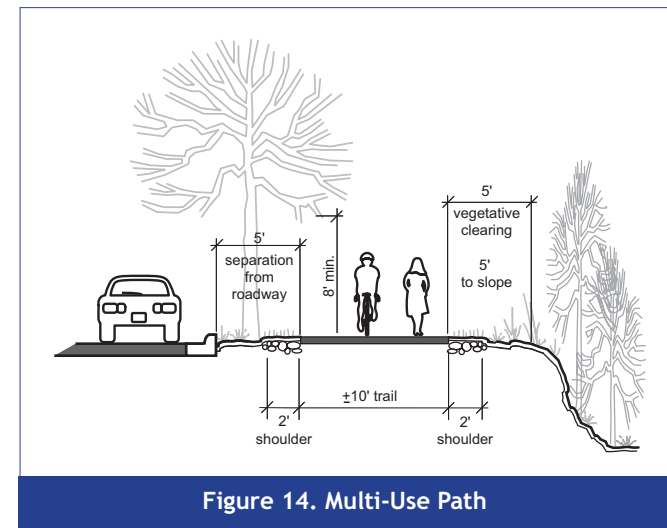


Figure 14. Multi-Use Path

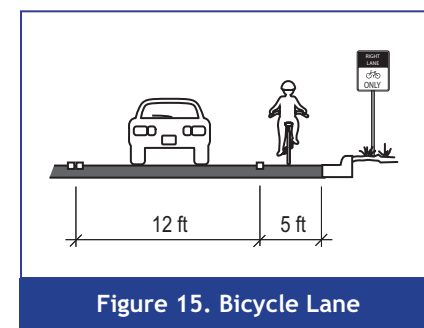


Figure 15. Bicycle Lane

However, bicycle lanes (a portion of the roadway striped and signed for bicycle use) are appropriate on arterial roadways leading into downtown since it is more difficult for bicycles and motor vehicles to share the road under heavier traffic conditions. Bicycle lanes shall be implemented according to AASHTO, MUTCD and HDOT guidelines, with a recommended minimum 5-foot width.

Bicycle Parking

A lack of secure parking may keep people from using their bicycles for basic transportation. Short-term bicycle parking should be installed throughout the downtown Kailua to meet this need.

Appropriate bicycle racks function to:

- Support the bicycle upright by its frame in two locations
- Prevent the wheel from tipping
- Allow both the frame and one wheel to be secured using standard U-shape lock

Inverted U, A, or post-and-loop bicycle racks meet these criteria. Comb, wave, toast and other wheel-bending racks that provide no support for the bicycle frame are *NOT* recommended. See Figure 16.

Parking areas need to provide easy bike access. If racks are grouped together in rows:

- Space individual racks on 30-inch centers (to allow enough room for two bicycles to be secured to each rack)
- Allow 72 inches of depth for each row of parked bicycles (the length of a bike)
- Provide aisles between rows that are at least 48 inches wide measured from tip to tip of bike tires (minimum space for a person to walk a bike)
- Provide 24 inches min. between bicycle parking racks and adjacent walls, fences and other access obstructions. See Figure 17.

Bicycle parking should be conveniently distributed throughout downtown Kailua. In general, if a building provides automobile parking, it should also provide bicycle parking.

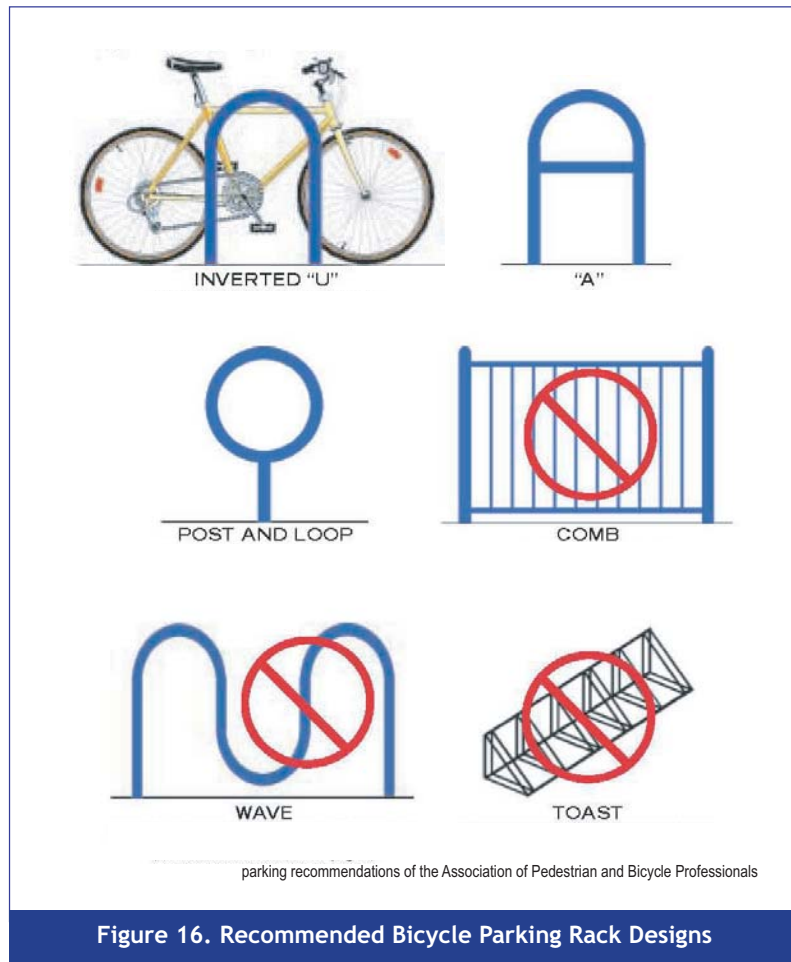


Figure 16. Recommended Bicycle Parking Rack Designs



Bicycle parking areas should be located to be:

- Clearly visible from the building entrance served
- Placed so as not to block the entrance or inhibit pedestrian flow
- As close or closer than the nearest car parking space, ideally less than 120 feet from the building entrance.

Quantities of bicycle parking shall be provided as follows:

- Initially, at least one bicycle rack shall be provided on every block face.
- Long-term, a general rule is that one bicycle parking space shall eventually be provided per ten automobile spaces.

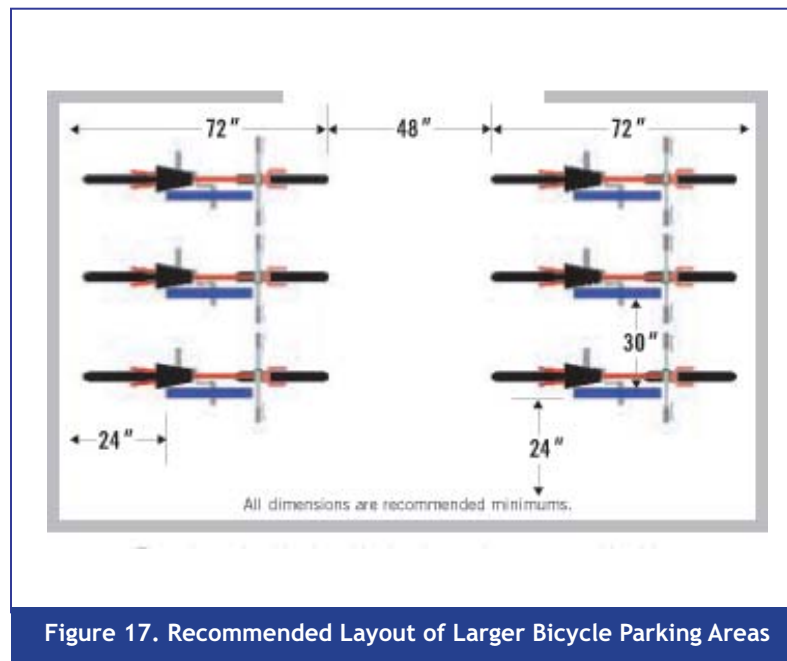


Figure 17. Recommended Layout of Larger Bicycle Parking Areas

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