

**Community Workshop I
Meeting Notes**

March 18, 2009

**EAST KAPOLEI NEIGHBORHOOD
TOD PLAN**

City and County of Honolulu

The following is a brief summary of the comments and notes from the Community Workshop I for the East Kapolei Neighborhood TOD Plan held on March 18, 2009. Workshop I focused on presentation of the Refined Alternatives for the Ho'opili, UHWO and East Kapolei transit stations.

- What is the anticipated % of overall affordable housing from the overall?

1. Bonnie's Table 1

- Alternative A: Greenways
 - Concern regarding sound – need setback between rail and buildings
 - Safety and security along greenway paths
 - Maintenance of the greenbelt areas – private or public (government)
 - How financially feasible is this? Who will pay?
- Alternative B: Integration
 - Vibration if train running through buildings
 - Safety and security
- UHWO Station
 - 5 minute immediate access via bikes to the campus and contiguous walking paths
 - Very green and sustainable
 - Should have services (i.e. doctor's offices, pharmacy, grocery store, convenience shopping, etc.)
 - Ground floor retail
 - Day care and senior adult care
- General Comments
 - Incorporate green design into all stations
 - Water, energy and electricity
 - Incorporate tax incentives for green buildings
 - Open space for walking and biking – doesn't have to be all "green"

2. Kathy's Table 2

- Prefer Greenway plan - meandering path and utilization of space under transit alignment
- Consider underground station at UHWO
- Prefer alignment through building
- UHWO Station should be fitness and health related (24 hours) with a mix of commercial establishments benefiting UHWO students
- Day care center at park and ride site at Kroc Center
- Some public access to preservation parcel adjacent to Kroc Center
 - Could be utilized as a botanical garden

- Multi-modal transportation access to stations, shops and other gathering places (i.e. para-transit)
- Integrate greenway system with existing railroad (OR&L) for future developments at Ko Olina (Disney)

3. Adam's Table

- Trains will run every 3 minutes during peak times
 - It will take approximately 40 minutes to get downtown
- Want "stuff" when train arrives
- Existing plans are a starting point
- Parking for Makakilo
- Make sure roads can handle capacity
- Circulator buses are important
- Love integration, especially across North-South Road
- Need education so people become used to walking
 - Relaxing on trains
 - What will building heights be?
- Park and rides in surrounding areas
 - How do you get in and out of the park and rides?
- North-South Road Street Section
 - 6 lanes plus drainage
- Why isn't the new shopping center (DeBartolo) on the rail line?

4. Tim's Table

- Provide enough parking at the opening of transit service
- Is this consistent with the Ewa Development Plan Update?
- Need Ewa Beach bus circulator to reach the stations
- Need more parking
- Need facilities at stations
- Overall preference to Alternative A: Greenways
- Overall preference to pedestrian oriented retailing
- Why two park and rides at UHWO? Why not just have one? This is confusing.
 - Kroc Center park and ride will be developable in the future when it is no longer the end of the line.
 - Accommodate transit users who drive to the station not just future development and pedestrians
- Critical to have functional and elegant pedestrian overpasses over North-South Road to connect the two projects.
 - Place day care and senior care facilities near stations
- Like the small dispersed parks

**Community Workshop 2
Meeting Notes**

**EAST KAPOLEI NEIGHBORHOOD
TOD PLAN**

July 15, 2009

City and County of Honolulu

The following is a brief summary of the comments and notes from Community Workshop for the East Kapolei Neighborhood TOD Plan held on July 15, 2009. Workshop 2 focused on presentation of the Preferred Alternatives for the Ho'opili, UHWO and East Kapolei transit stations.

VMWP showed a PowerPoint on the Preferred Alternatives followed by general questions and comments from Workshop participants. Notes from this meeting are summarized as follows:

Community participants responded well to the following Plan Principles:

- Create gathering places.
 - Develop unique transit identities/destinations.
 - Promote a wide variety of housing choices.
 - Enable live, work, play, and learn urban environments.
1. Since this is the end of the line, will there be a rail yard?
 - a. No rail maintenance yards are planned for this area.
 2. We like the greenway idea, will there be a conflict between pedestrians and bicyclists on the path?
 - a. The focused and detailed design of the greenway should be looked at in greater detail following the TOD Neighborhood Plan process to ensure adequate width and safety for walkers and bicyclists
 3. Who will develop the areas around UHWO station
 - a. The Ewa side of North/South Road would be developed either by the UHWO or sold to another developer. The Diamond Head side of North/South road would be developed by D.R. Horton and DLNR which owns property mauka of Campus Drive.
 - b. This isn't a plan by the City to force a certain type of development, this gives the tools and the vision for future development.
 4. What are the challenges of elevated rail versus at-grade
 - a. Challenges include how buildings relate to it. At the same time, it presents opportunities such as the greenway beneath the rail.
 - b. Getting people up to the station has to be safe, friendly and easy to do. Seamless transitions between the ground and station platforms will be very important
 - c. VMWP has looked at the concept of accessing stations directly from adjacent buildings.

5. What elements of the Plan do you like the most?
 - a. Community really likes the greenway concept. This could be a very strong regional connection and help to tie together the whole area.
 - b. Community really likes the small neighborhood parks and informal shaded seating areas that can encourage positive contact between neighbors. This helps to accommodate the principle of "Creating Gathering Places"

**Task Force Meeting #5
Meeting Notes**

**EAST KAPOLEI NEIGHBORHOOD
TOD PLAN**

February 18, 2010

City and County of Honolulu

The following is a brief summary of the comments and notes from Task Force Meeting #5 for the East Kapolei Neighborhood TOD Plan held on February 18, 2010. Meeting #5 focused on presentation of the Draft Neighborhood TOD Plan focusing on the areas surrounding the Ho'opili, UHWO and East Kapolei transit stations.

VMWP showed a PowerPoint on the Draft Plan followed by general questions and comments from Workshop participants. Notes from this meeting are summarized as follows:

- 24 community task force members were in attendance for this Meeting.
- There were questions on parking locations in relation to stations. Attendees wanted to make sure that parking was well located for park and ride users, without disturbing neighborhood form around the stations.
- Attendees were very interested in the greenway concept, especially how it would be designed and detailed for both pedestrians and bicyclists.
- Attendees want to see mixed use buildings with ground floor uses near the stations.
- The pedestrian bridge at North South Road is an important gateway feature for the area and should be iconic nature.
- There was interest in how surface parking transitions overtime as the project matures into a series of urban neighborhoods. Land banking with surface parking lots will provide important future building sites if they are correctly designed and laid out.
- The community health benefits related to being able to walk are very important to the development of these new neighborhoods.
- The East Kapolei is the beginning of the transit line, not the end of the line.
- The connectivity of buses to the stations will be very important for the success of transit.
- It would be great to play up the sustainable elements of the plan, possibly adding PV roof tops/ wind generation to the renderings.

- An idea to improve the future landscape was to start a tree farm now so that when the development is built, trees will be closer to maturity.
- Attendees liked the phasing diagrams showing the evolution of a typical parking block within the development.
- A challenge with the TOD Zone will be maintenance of parks and open spaces.
- In regards to parks, small parks, at least within Ho'opili, will typically remain private; the large parks are likely to be public.
- Attendees agreed that proposed building heights are good around the stations.
- Attendees noted that the neighborhood of Waihewah, above Mililani was a good example of old urbanism in Hawaii.
- Attendees are very excited about transit and TOD and can't wait to see it get started.

**Task Force Meeting 4
Meeting Notes**

**EAST KAPOLEI NEIGHBORHOOD
TOD PLAN**

May 26, 2009

City and County of Honolulu

The following is a brief summary of the comments and notes from the Task Force Meeting 4 for the East Kapolei Neighborhood TOD Plan held on March 26, 2009. Meeting 4 focused on presentation of the Preferred Alternatives for the Ho'opili, UHWO and East Kapolei transit stations.

VMWP showed a PowerPoint on the updated draft plan. They explained/ elaborated on the graphics and task force members provided their thoughts/questions. Notes from this meeting are summarized as follows:

- Task force members responded well to the following Plan Principles:
 - Create gathering places.
 - Develop unique transit identities/destinations.
 - Promote a wide variety of housing choices.
 - Enable live, work, play, and learn urban environments.
- Member thought that mini parks should be connected into the neighborhoods, no so much the transit stations.
- Buses and stops need to be located near the stations, with circulator buses bringing people to the stations.
- Dog parks are needed and should be incorporated into the neighborhoods.
- With or without rail, we need to create great neighborhoods. Rail is a great amenity.
- Q: Where will you allow parking for the cars that are driving?
 - A: There will be about 1,000 parking spaces at the UHWO station.
 - There will be about 900 more near the East Kapolei station.
- DPP is looking at the zoning in a ¼ & ½ mile radius.
- Station designs may include the following themes:
 - UHWO – past & future / cultural & historical
 - Ewa – fishing watering hole
- Murals should:
 - Educate the history of the place.
 - Soften the blow of development.
 - Honor what came before you.
- TOD areas need to have connections: to land, to place, to agricultural uses

- This project is proposing great neighborhoods
- Below grade parking with landscaped open space above would be ideal.
- Each station should relate to what's surrounding it
- Residents will embrace "their" local stations with a sense of ownership, and pride.
- Next meeting
 - Possibly in July at the DHHL's Hale Pono`i.
 - Consider holding workshop at the Carpenters Training Center behind Costco in Campbell Industrial Park.



Ho'opili Task Force Meeting Agenda

East Kapolei Neighborhood-TOD Plan
Community Workshop No. 2

Minutes from the January 14, 2009 meeting.

Status Report on Ho'opili:

The Final EIS was accepted by the State LUC in September 2008 and the LUC petition was accepted for processing in October 2008. The first LUC hearing on the petition is tentatively scheduled for February 2009.

Purpose of Workshop:

The East Kapolei Neighborhood Transit Oriented Development Planning process is intended to identify some of the planning issues for the three transit stations proposed in the East Kapolei Region. The process will be similar to the process used for the two stations in Waipahu.

Role of the City, Department of Planning and Permitting:

The City DPP is participating and providing some oversight of the process in this planning effort. The goal is to insure that the end product is usable for the City as it develops the Neighborhood and TOD plans for the stations.

Workshop 1: What we heard; TOD Plan Areas; East Kapolei Station Issues and Opportunities

VMWP provided an overview of the planning process and a summary of what was discussed at Workshop 1. VMWP then described the inclusion of the East Kapolei Station (Kroc Center) into the Neighborhood TOD Plan Process along with the issues and opportunities around that station.

Neighborhood TOD Plan Principals:

VMWP discussed the seven TOD Plan Principles that were created as a result of Workshop 1 and provided photos and examples from the UH Architecture studio relating to each Plan Principal.

Draft Station Area Alternatives:

VMWP presented the three Alternatives for each station area. The Alternatives were organized into the following frameworks:

Alternative A: Greenway
Alternative B: Centers
Alternative C: Integration

Discussion and Feedback:

Following the presentation of the three Draft Station Area Alternatives, VMWP led a discussion and feedback session that focused on modification of the Plan Principles along with positive and negative elements of the Alternatives. The following feedback was received from the Task Force:

- Ideas
 - Consider the use of pedestrian-only streets in certain locations
 - Subgrade parking with open space above would be attractive in the station areas
 - Compared to the Waipahu Station Areas, the East Kapolei Station areas will be "blank slates"
 - It would be ideal to get about half of Fort Weaver Road commuters onto transit
 - It will be necessary for a strong bus circulator system to feed into the transit stations
 - Some attendees would like to see less parking and more TOD development at the stations
 - Parking will probably be necessary at all stations in the short term
 - The City will only be providing "plain vanilla" stations
 - What is the timeframe for the buildout of station areas?
 - Would it be possible to have underground stations along North/South Road? This would make it easier to access both sides
 - Interim planning is necessary to address changes at the station areas as time goes on
 - Transit parking should be multi-purpose and incorporate adjoining commercial areas if possible
- Neighborhood TOD Planning Principles
 - The principle of "connections" should also incorporate the connection to the host culture and the past. It should also reflect the significance to "place"
- East Kapolei Station
 - The open space shown at the East Kapolei Station is an endangered species area and is off-limits to any public access. This won't be re-evaluated for another 20 years
 - The East Kapolei Station will be regional in nature, but will not have the opportunity for much TOD development
 - The Kroc Center will be a major anchor for this station area and a regional draw.
 - Shuttle bus/transit should be focused on this station
 - The East Kapolei Station will not ultimately be the end of the line. It will need to transition from a terminus stop to more of a local stop. The need for a large park and ride will likely go away

- Is it better to put a park and ride in Kalaeloa now and shuttle riders to the East Kapolei Station?
- Sewer infrastructure may be a limiting factor in greater densities around the East Kapolei Station
- Streets around the East Kapolei Station and access from North/South Road need to be adequate for drivers and busses
- Where will the bus pull-ins be located near this station?
- Is there a possibility for shared parking with the Kroc Center?
- The Debartelo site may be more conducive to a transit station than the Kroc Center area. Maybe the City should consider relocating the station
- How much acreage is necessary for a park and ride site at East Kapolei Station?
 - The City is looking for a 12 acre site
- What is the timeline for completion of the DHHL school site?
 - Heidi Meeker from the DOE responds: DOE is placing a higher priority on opening a middle school in Ewa (over East Kapolei). As currently programmed, the middle school in East Kapolei would not open until 2013, which she estimates would require starting construction in 2011, and then working backwards, making a funding request to the Legislature in 2010. Apparently, DOE is submitting a funding request package to the Legislature next week (1/26).
- UHWO Station
 - The UHWO ground breaking/blessing was today (Jan 17)
 - The timing of the transit opening should coincide with UHWO to make sure that the anchor is in place to generate ridership
 - The UHWO Station will be a major regional destination
 - DLNR would prefer to not see high density residential uses within their property, unless it is designated as affordable housing. They are more open to office, retail or other commercial uses.
 - Representatives from UHWO noted that they would like to see the UHWO and Ho'opili development integrated/connected
 - How much acreage is necessary for a park and ride site at UHWO?
 - The City is looking for two 5-acre sites
- Alternatives
 - Meeting attendees agreed that Alternatives A and C should be combined and are the most attractive

The meeting ended with the next meeting being scheduled for late March, 2009. Workshop 3 will be open to the wider Ewa / East Kapolei communities and will be held in a larger venue.

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**TRANSIT ORIENTED DEVELOPMENT, EAST KAPOLEI:
OVERVIEW MARKET ANALYSIS AND ECONOMIC IMPACTS**

Decision Analysts Hawai'i, Inc.
January 2009

1. INTRODUCTION

a. Purpose

— This report provides an overview of the market for planned development in East Kapolei, and the economic benefits and impacts of this development.

b. East Kapolei Projects

- The East Kapolei projects addressed in the analysis include:
 - Ho`opili
 - University of Hawai'i-West O`ahu (UHWO)
 - Department of Hawaiian Home Lands (DHHL), East Kapolei
- Each of these projects will be served by a transit station.

2. LOCATIONAL AND OTHER ADVANTAGES FOR DEVELOPMENT

a. Central Location and Access to Other Communities

- East Kapolei is centrally located within the existing and planned urban area of `Ewa, Waipahu and Kunia.
- East Kapolei businesses and residents will have good access to other `Ewa communities, Central O`ahu, downtown Honolulu, Leeward O`ahu, the North Shore, and Windward O`ahu via Farrington Hwy, The North-South Road, Kapolei Parkway, Renton Road, Fort Weaver Road, Kamehameha Hwy, Kunia Road, and the H-1, H-2, H-3 Freeways.
- The transit system will improve access to communities between the City of Kapolei and downtown Honolulu, and to Honolulu International Airport.
- East Kapolei is an excellent location for:

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- Residents who work in `Ewa as well as residents who commute to jobs in Honolulu, and Central O`ahu.
- Students who attend UHWO.
- Retail stores and office complexes that serve `Ewa and surrounding communities.
- Light industrial companies that serve island-wide markets (e.g., construction, manufacturing and warehousing).

b. University of Hawai'i –West O`ahu

- At full development, UHWO will host a large number of resident and commuting students, faculty and staff.
- To varying degrees, all will shop in nearby stores.
- Many will desire housing near UHWO.

c. St. Francis Medical Center – West

- The Ho`opili Station is near St. Francis Medical Center – West, making Ho`opili an attractive location for physicians' who which to have their offices near a major medical facility.

d. Bus Service to the Transit Stations

- Bus service to the transit stations will draw commuters from nearby communities, and these commuters will also become potential customers for businesses near the stations.

e. Vacant Land

- Since the land is currently vacant, there will be no costs related to demolishing existing structures, upgrading infrastructure, or relocating existing families and businesses.

f. Land Ownership

- Each of the projects addressed in this analysis has a single landowner. Thus, land does not have to be assembled to accommodate planned development.

g. Master-Planned Projects

- The three projects will be developed according to individual master plans which, in turn, are being coordinated with the overall master plan for `Ewa.

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- As a result of these four master plans, development will be balanced in terms of the numbers of new residents; the number, types and prices of homes; the number and types of jobs; the amount of commercial and industrial development; and supporting transportation and other infrastructure improvements.

3. PLANNED DEVELOPMENT

a. Homes (number)	<u>MF</u>	<u>SF</u>	<u>Total</u>
— Ho`opili	6,650	5,100	11,750
— UHWO	3,676	365	4,040
— DHHL	<u>1,300</u>	<u>1,350</u>	<u>2,650</u>
— Total	11,626	6,815	18,440

- For comparison, Mililani had 9,289 homes in 2000.

b. UHWO

- A campus and facilities to accommodate about 7,600 students, including about 2,280 (30%) resident students.
- For comparison, UH Manoa, UH Hilo, and Hawai`i Pacific University report current enrollments of 20,357, 3,507 and 8,200 students, respectively.

c. Commercial Space (1,000 sq. ft.)

— Ho`opili	up to 2,960
— UHWO	843
— DHHL	<u>1,500</u>
— Total	up to 5,303

- For comparison, Pearl Ridge Shopping Center and Ala Moana Shopping Center have about 1.2 million sq. ft. and 2.1 million sq. ft. of commercial space, respectively.

d. Industrial Space, Ho`opili

— Acreage	40
— 1,000 sq. ft.	800

- For comparison, Mill Town Center in Waipahu, the Mililani Technology Park (Phase I), and the Gentry Business Park have about 37 acres, 101 acres, and 122 acres, respectively.

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4. ABSORPTION RATES

a. Homes

- Development of the new homes within the three East Kapolei projects over a 20-year period will require an average absorption rate of about 920 new homes per year (18,440 new homes ÷ 20 years).
- This amounts to about 23% of the 4,000 or so new homes projected annually for O`ahu for the 2010-to-2030 period.

b. Commercial Space

- Development of the new commercial space within the three projects over a 20-year period will require an average absorption rate of about 265,000 sq. ft. per year (5,303,000 sq. ft. ÷ 20 years).
- Other developers in `Ewa propose to supply an additional 270,000 sq. ft. of commercial space per year (about 5.4 million sq. ft. over 20 years). Thus, the potential supply could total about 535,000 sq. ft. of commercial space per year (about 10.7 million sq. ft. over 20 years).
- However, the projected demand is about 310,000 sq. ft. per year (about 6.2 million sq. ft. over 20 years).
- In view of the projected demand for commercial space in `Ewa and the potential supply from competing projections, the planned commercial space in East Kapolei could require more than 30 years to be absorbed (10.7 million sq. ft. ÷ 310,000 sq. ft. per year).

c. Industrial Space

- Development of the new industrial space near the three East Kapolei transit stations over a 20-year period will require absorption at about 2 acres per year (40 acres ÷ 20 years).
- This amounts to less than 9% of the projected demand of about 22.5 acres per year (450 acres over 20 years).
- A portion of the demand is likely to come from industrial activities that will be displaced by residential and commercial development near transit stations in Waipahu and other areas.

5. CHARACTERISTICS OF RESIDENTIAL DEVELOPMENT

a. Median Resale Home Prices (8/08 to 10/08)

	<u>MF Price</u>	<u>SF Price</u>
— `Ewa	\$333,500	\$467,000
— Mililani	\$299,000	\$582,000
— Pearl City/Aiea	\$298,000	\$627,000
— All O`ahu	\$320,000	\$620,000

— As indicated, median prices for multi-family homes are high compared to those of nearby areas and to all of O`ahu, while prices for single-family homes are low.

b. Existing and Anticipated Types of New Homes

- The new homes in East Kapolei are expected to offer a wide selection of sizes, amenities and prices.
 - Multi-family homes are likely to range from small studio apartments for singles to 3-bedroom/2-bath units for larger families.
 - Single-family homes are likely to have 3 or 4 bedrooms and 2 or 3 bathrooms.
 - Prices and rents are expected to range from affordable to moderate levels.

c. Anticipated Market Prices of New Multi-family Homes in East Kapolei

	<u>Low</u>	<u>Median</u>	<u>High</u>
— 1 bedroom, 1 bath, 500 sq. ft.	\$220,000	\$250,000	\$290,000
— 2 bedrooms, 1 bath, 700 sq. ft.	\$260,000	\$290,000	\$330,000
— 2 bedrooms, 2 baths, 900 sq. ft.	\$310,000	\$340,000	\$390,000
— 3 bedrooms, 2 baths, 1,100 sq. ft.	\$350,000	\$380,000	\$430,000

— These prices are consistent with new multi-family homes in the region.

— Because of the advantages of living near a transit station, homes near transit stations are expected to command prices and rents about 10% to 20% higher than similar homes that are not near the stations.

— At the same time, building costs and prices of homes near transit stations can be reduced by having less parking than is typically provided.

d. Anticipated Prices of New Single-family Homes in East Kapolei

	<u>Low</u>	<u>Median</u>	<u>High</u>
— 3 bedrooms, 2 baths, 1,200 sq. ft.	\$400,000	\$500,000	\$600,000
— 4 bedrooms, 3 baths, 1,400 sq. ft.	\$500,000	\$600,000	\$700,000

— These prices are consistent with new single-family homes in the region.

e. Types of Households

- The future mix of housing types near the transit stations is expected to be more diverse than is currently the case for typical developments in `Ewa. The new households are expected to include:
 - College-age students (singles, roommates, couples)
 - Young couples, with and without children
 - Established families, with and without children
 - Retirees (singles and couples)
 - Families at various income levels (low, moderate, high, etc.)
 - Families with various types of workers (entry level, unskilled laborers, skilled laborers, administrators, managers, professionals, etc.)

f. Affordability Benefit of Transit

- Many residents living near the transit stations may reduce the number of cars they would normally own and operate—possibly owning one car instead of two.
- A portion of their resulting savings in transportation costs can be applied to servicing their mortgage or paying rent on a home that may be larger and have more amenities than they would otherwise be able to afford.

g. Housing Affordability Requirements and Practices

- For changes in zoning, the City requires that 10% of the homes in new projects be affordable to families earning 80% or less of median income, and another 20% of the homes must be affordable to families earning 81% to 120% of median income. The remaining 70% of the homes may be sold or rented at market prices.
- UH provides student housing at affordable rents.
- DHHL provides land and infrastructure improvements at a cost of \$1 per year to homesteaders. Thus, homesteaders pay for construction of their

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homes, but not for their land, the infrastructure improvements, the financing costs for land and infrastructure, marketing costs, and developer profits.

— These requirements and practices will result in the following increase in the supply of affordable housing:

- Ho`opili (30% of all units supplied by Ho`opili) 3,525
- UHWO, student housing (30%) 1,231
- DHHL (100%) 2,650
- Total (40%) 7,406

h. HUD Affordable Guidelines, Honolulu (2007)

Percentage of Median Family Income

	<u>80%</u>	<u>100%</u>	<u>120%</u>
— Income for:			
• Family of 2	\$47,700	\$58,800	\$70,560
• Family of 3	\$53,650	\$66,150	\$79,380
• Family of 4	\$59,600	\$73,500	\$88,200
• Family of 5	\$64,350	\$79,380	\$95,260
— Sale price of home for:			
• Family of 2	\$232,600	\$286,700	\$344,100
• Family of 3	\$261,600	\$322,600	\$387,100
• Family of 4	\$290,600	\$358,400	\$430,100
• Family of 5	\$313,800	\$387,100	\$464,500
— Monthly rent (including utilities) for:			
• 1-bedroom unit, family of 2	\$894	\$1,102	\$1,322
• 2-bedroom unit, family of 3	\$1,207	\$1,488	\$1,786
• 2-bedroom unit, family of 4	\$1,341	\$1,653	\$1,984
• 3-bedroom unit, family of 5	\$1,673	\$2,064	\$2,476

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i. Units Affordable for Low-Income Families

- For low-income families (i.e., income below 80% of median income), government assistance may be required to help families to afford housing in East Kapolei, or government assistance may be required to provide affordable housing for these families.
- Government programs to help low-income families afford housing payments include rent vouchers to renters and low-interest loans to buyers.
- Government programs to increase the supply of homes at below-market rents and purchase prices include government-built housing, land and/or grants to organizations to build homes, low-interest construction loans, and tax credits for supplying below-market housing.

j. Gentrification

- Once the transit system nears completion, demand for homes near the transit stations will increase. In turn, this higher demand could result in the rents and prices of homes being bid up to somewhat higher levels. In the process, some renters could be displaced if they cannot pay the higher prices, and some homeowners may choose to take advantage of the higher prices by selling their homes and moving to some other neighborhood. In short, some gentrification may occur in the future.
- Owners of homes that increase in value due to their proximity to the transit stations will realize corresponding increases in family wealth. These increases in home values will far exceed the present value of the additional property taxes on the homes. If a family chooses to sell their property, they will have more equity which they can then use toward a down payment on a home elsewhere. Under the circumstances, it can be presumed that these homeowners will be better off financially due to the higher property values attributable to a nearby transit station.
- Displaced renters will need to find affordable housing elsewhere. This could include City-mandated affordable homes in new residential projects that will require a zoning change. As mentioned above, about 10% of the units will have to be affordable for families earning 80% or less of median income, while another 20% will have to be affordable for families earning 81% to 120% of median income. Over 50,000 homes are planned for `Ewa and Central O`ahu, of which 15,000 homes (30%) will have to be priced to meet affordability requirements.

k. Upscale Homes

- Development of expensive upscale homes (costing over \$1 million) near the East Kapolei transit stations, or future renovating of homes to upscale homes, is not expected. Instead, upscale homes will be built in nearby Ocean Pointe, Kapolei West, Makaiwa Hills, and Ko 'Olina. These projects will offer large homes with high-quality features, ocean or golf-course views, an assortment of recreational amenities, and good access to fine restaurants and shopping centers. East Kapolei residential projects will not be competitive in this upscale market.

6. ECONOMIC BENEFITS AND IMPACTS, EAST KAPOLEI

a. Population

- At full development, the homes in East Kapolei will provide housing for about 55,000 residents, based on an average of 2.8 residents per multi-family home and 3.3 residents single-family home, respectively.

b. Workforce

- The employed workforce in these homes will number about 24,800 workers, based on 45% of the resident population.

c. Employment

- At full development, East Kapolei will provide considerable employment in `Ewa:

	<u>Jobs</u>
• Commercial (2 jobs per 1,000 sq. ft.)	10,600
• Industrial (1.5 jobs per 1,000 sq. ft.)	1,200
• UHWO (faculty and staff)	<u>1,040</u>
• Total	11,640

- For comparison, in 2005 employers provided about 27,600 jobs in `Ewa.
- The new retail, office, industrial and university jobs are expected to range from entry-level positions requiring few skills and providing incomes of less than \$25,000 per year, to management and highly skilled professional jobs paying over \$100,000 per year.

d. Growth Impacts

- The East Kapolei projects will affect the location of residential, commercial and industrial development on O`ahu, but they will not significantly affect the amount of island-wide development.

e. Transportation

- For East Kapolei residents, transportation benefits of the transit system will include:
 - Better access to jobs at employment centers located near transit stations.
 - Faster rush-hour commutes.
 - Increased mobility for residents who may not drive or have access to a vehicle.
 - Reduced expenditures on transportation and parking fees for families who can reduce vehicle ownership and/or use.
 - Reduced energy consumption for transportation.
- For students commuting to UHWO via the transit system, reduced expenditures on transportation and parking fees.

f. Housing

- Housing benefits and impacts will include:
 - A wide choice of multi-family and single-family homes at competitive and affordable prices.
 - Somewhat higher housing values and rents near the transit stations. The higher prices will reflect higher demand in response to the locational advantages. However, home prices can be reduced by building fewer parking stalls than would normally be the case.

g. Commercial and Industrial

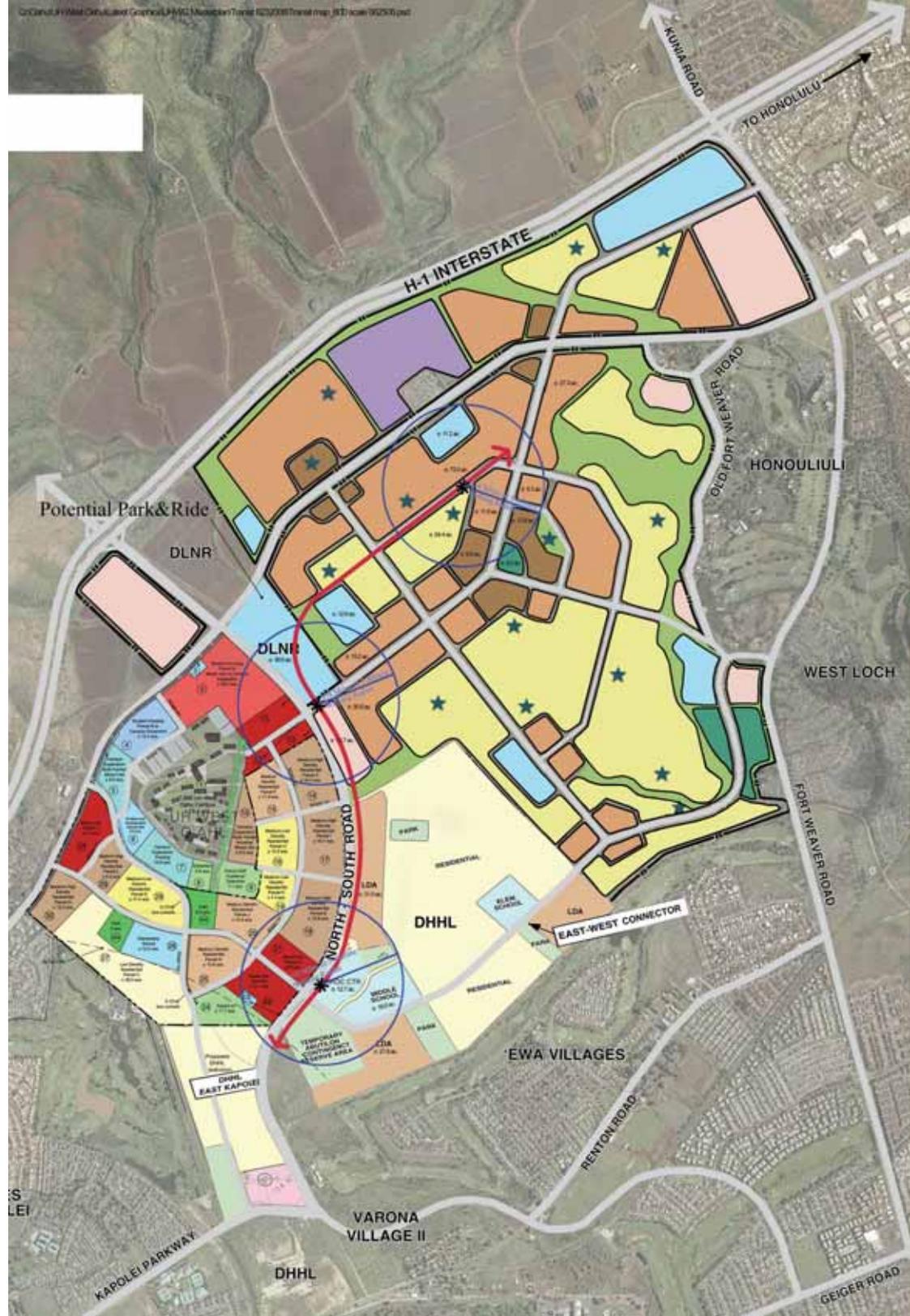
- Benefits of commercial development near the transit stations will include a broader choice of goods, restaurants and services in East Kapolei, including:
 - Convenience and specialty stores catering to residents in East Kapolei, `Ewa, and nearby districts.
 - Fast food, ethnic, gourmet and other restaurants.

PRELIMINARY DRAFT

- Specialized medical doctors, dentists, veterinarians, accountants, attorneys, personal-service providers, etc.
- Other economic benefits and impacts will include:
 - Increased sales for stores and restaurants catering to residents in East Kapolei, `Ewa and nearby districts.
 - Higher rents in response to higher sales, and increased demand for commercial and industrial space.

h. Fiscal Impact

- Infrastructure Improvements
 - Developers in `Ewa provide or pay their fair shares of most infrastructure improvements required to accommodate development. Such improvements include interior roads, highways, freeway interchanges, water-source development, water delivery systems, collector sewers and trunks, wastewater treatment plants, water drainage systems, improved land for parks and schools, and school improvements.
- Government Services
 - At full development, the cost of providing government services to the three East Honolulu projects is expected to be lower than is typical for O`ahu communities because the infrastructure will be new and sized appropriately, and the development will be compact. Compact development contributes to lower expenditures for police and fire services, and for maintaining roads, water lines, and sewer lines.



Transportation and Circulation Analysis

Technical Memorandum

East Kapolei Neighborhood TOD Plan

March 15, 2009

Prepared by

Weslin Consulting Services, Inc.

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I. Introduction

The East Kapolei Transit-Oriented Development (TOD) neighborhood planning process has produced two refined station area alternatives: A - Greenways and B - Integration. This technical memorandum provides a transportation and circulation analysis of those refined alternatives.

Both refined alternatives involve the same three Honolulu High Capacity Transit Corridor Project (HHCTCP) stations: 1) Ho'opili, 2) University of Hawaii at West Oahu (UHWO) and 3) East Kapolei. The success of TOD at each station can be greatly impacted by the quality of transportation access to and within the TOD influence area. This influence area is normally considered to be the land within one-quarter mile of a station, about 63 acres.

Access barriers, modal conflict points, circuitous pathways and other poor multi-modal transportation circulation network design and land development factors can negatively impact the size of the TOD influence area. These negative factors are sometimes the unavoidable consequence of existing conditions that cannot be cost-effectively removed or redeveloped. Such negative factors can shrink the TOD influence area to just hundreds of feet from the rail station with a positive influence on only a few acres.

Properly designed multi-modal access pathways that avoid modal conflict points can positively impact the size of the TOD influence area. These positive factors are most achievable when designing TOD neighborhoods with minimal existing conditions that must be removed or redeveloped. Alternative transportation mode networks with unimpeded, direct links to rail stations will create quick access times attracting more pedestrians and cyclists, increasing market share for those access modes. People are actively looking for options to the automobile. Such positive factors can expand the TOD influence area to one-half mile radius or more from the rail station involving 500 acres or more.

One of the objectives of this technical memorandum is to provide a transportation and circulation analysis offering more opportunities to expand the TOD influence area to the maximum extent possible. Each of the primary transportation access mode categories and networks are presented with possible beneficial design features. The three primary transportation access mode categories are: 1) general purpose vehicle traffic, 2) public transportation, and 3) alternative transportation components.

This technical memorandum considers innovative transportation elements associated with TODs and how those elements apply to the East Kapolei Neighborhood TOD Plan. Available strategies for creating the type of transportation environment desired is identified in publications such as the Transportation Research Board's Transit Cooperative Research Program Report 100, *Transit Capacity and Quality of Service Manual* (2003); the Institute of Transportation Engineer's *Context Sensitive Solutions in Designing Major Urban Thoroughfares for Walkable Communities* (2005); the American Association of State Highway and Transportation Official's *Guide for the Planning, Design and Operation of Pedestrian Facilities* (2004) and *Guide for Achieving Flexibility in Highway Design* (2004); and, the American Planning Association's *Best Practices Manual on Complete Streets* (unpublished).

II. Refined Alternative A - Greenways

Refined Alternative A, Greenways, creates an open space system with an alternative transportation mode circulation network. Greenways and neighborhood mini parks are defining open space features of Refined Alternative A. Local developments are woven together with neighborhood greenway, streetscape and transportation infrastructure amenities for residents and visitors.

Mixed-use buildings with four to six stories would adjoin the Ho'opili transit station. The TOD influence area within ¼ mile of the Ho'opili station contains approximately 2,300 dwelling units along with 308,000 square feet of commercial/office/retail space.

Mixed-use buildings adjacent to the UHWO station would be six to eight stories in height on the Ho'opili side of the station and four to five stories high on the UHWO side of the station. These heights reflect the regional nature of the station influence area and respond to the high-volume, fast-moving vehicle movement along North-South Road.

The UHWO station TOD influence area includes two pedestrian-oriented, active-retail, main streets. One is a block Diamondhead of the North-South Road and the other is one block away in the opposite direction toward UHWO. High density mixed use buildings up to eight stories in height would adjoin these active retail areas. At full build-out it is anticipated that the area within ¼ mile of the UHWO Station could contain approximately 2,400 dwelling units along with 509,000 square feet of commercial/office/retail space.

At the East Kapolei station residential development makai of the Kroc Center would be two to four stories tall. At full build-out it is anticipated that the area within ¼ mile of the East Kapolei station could contain approximately 990 dwelling units along with 83,000 square feet of commercial/office/retail space.

The HHCTCP DEIS (page 2-25) identifies 900 parking spaces with a pedestrian connection to the East Kapolei station. This pedestrian movement should be able to avoid any modal conflicts. The vast majority of this commuter traffic to the East Kapolei station park and ride lot involves workers with their home located far outside of the East Kapolei TOD influence area, predominately from locations in the Ewa communities makai of the station. These commuter vehicles will access the parking lot from outside the East Kapolei TOD neighborhood plan influence area and it is unlikely any modal conflicts will exist with the active retail and high density mixed use areas suggested in Refined Alternative A.

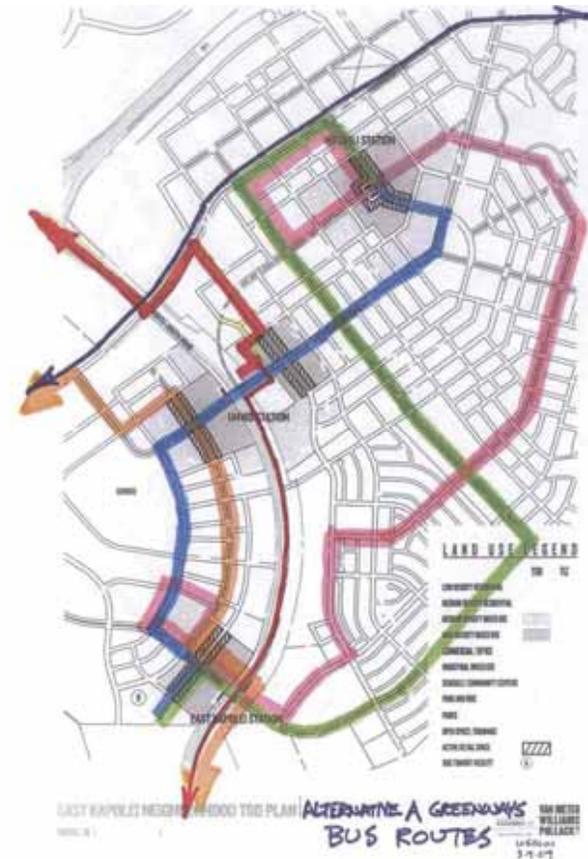
Refined Alternative A includes a vast network of local roads connecting to the regional vehicle network. Intersections between the local roads and the regional network are limited and give priority to general purpose vehicle traffic. Modal priority changes elsewhere, especially in close proximity to each station. Highest modal priority shifts away from vehicles in favor of the other two modal categories: public transportation and alternative transportation components.

2. Public Transportation Network

The regional transit network configuration included in the HHCTC DEIS remains unchanged in Refined Alternative A. The rail guideway alignment, station locations and regional bus routes have been the subject of extensive technical analysis and the intent of Refined Alternative A is to be fully consistent with the results of the EIS and preliminary engineering process including any mitigations that may be required.

Refined Alternative A includes a comprehensive public transportation system including a network of community circulators connecting to the stations, regional bus routes and to each other at transit centers. These transit centers will be adjacent to transit plazas located at all three stations. These plazas will be active gathering places, used primarily by riders for coming and going to the rail stations and buses including the following community circulators:

- Green – Operates along a route starting at the East Kapolei transit center and ending at the Ho’opili transit center. Service will be every fifteen minutes in peak periods, thirty minutes at other times. Service operates every day and starts at 5:00 a.m. and ends at 10:00 pm. The route serves both low and medium density residential areas.



- Pink – Operates along a route starting at the East Kapolei transit center and ending at the Ho’opili transit center. Service will be every fifteen minutes in peak periods, thirty minutes at other times. Service operates every day and starts at 5:00 a.m. and ends at 10:00 p.m. The route serves predominately low density residential areas.
- Blue – Operates along a route starting at the East Kapolei transit center and ending at the Ho’opili transit center via a stop at the UHWO station transit center. Service will be every fifteen minutes in peak periods and predominately fifteen minutes at other times as well. Service operates every day and starts at 5:00 a.m. and ends at 10:00 p.m. The route operates along the boundary of UHWO and Campus Drive.

These three East Kapolei community circulators will be operated with smaller vehicles and could be powered with electric propulsion to emphasize quiet, slow and unobtrusive operation through neighborhoods. The TIARs propose a number of Transportation Demand Management (TDM) strategies to reduce general purpose vehicle traffic including transit subsidies by offering a discounted monthly pass to residents and employees. If these monthly pass subsidy programs are brokered through a single sponsor, then leverage will exist to link the number of passes sold with the amount of transit service provided by the City and County of Honolulu. It is believed sufficient numbers of transit passes can be credited to warrant the level of service represented by the three community circulators as described.

Other express and local bus routes will be passing through East Kapolei and represent either existing routes, redeployments of existing services or increases in service of existing services. As such, these routes can be expected to be implemented by the City and County of Honolulu regardless of TDM programs initiated by others. These other routes are represented by the dark blue, red and orange lines on the sketch “Alternative A Greenways Bus Routes”.

In Refined Alternative A, the Ho’opili station area will have the identity of a “local, mixed use village”. The area surrounding the Ho’opili Station will be a neighborhood center as well as destination on both the rail line and the greenway. Likewise, it will be a hub for the three community circulator routes, but none of the express or local bus routes operated using larger buses. Consequently, Ho’opili will have a unique and very appealing tranquil transit environment. The only buses operating in the immediate TOD influence area will be the smaller, quieter, low impact vehicles. They will traverse directly through the Ho’opili transit station TOD influence area.

The UHWO station will be integrated into the greenway in Refined Alternative A. It will include an elevated crossing of the North-South Road and a crossing of Campus Drive. The UHWO station area will have the identity of a “regional gateway”. The area surrounding the UHWO Station will be a destination for people from all over Oahu including students, workers, shoppers and residents.

UHWO is one of the rail line’s major peak-period, commuter-oriented stations. In addition to vehicles seeking one of the 1,000 available parking spaces, dozens of express and local buses will be delivering thousands of commuters by bus in the morning. This is in addition to the arrivals of the community circulators delivering local area commuters to the UHWO station. The HHCTCP DEIS (page 3-33) projects that about 80% of all transit boardings will still be made by bus and the UHWO station should reflect this proportion of transit activity amongst the public transportation modes.

The East Kapolei Station will have the identity of a “community use” station. It will draw ridership from users of the Kroc center and will serve as a bus transfer area and park and ride location. The East Kapolei Transit Station will also have a connection to the transit greenway along North-South Road. This station will include an elevated crossing of both North-South and East-West Roads.

3. Alternative Transportation Component Network

Refined Alternative A combines the greenway corridor with a green streets program to provide a functional trunk and branch core alternative transportation network for all trip purposes, not just recreational activity. The greenway corridor’s primary alternative transportation pathway directly connects the Ho’opili, UHWO and East Kapolei stations and active retail centers surrounding the stations.

The cross-section of the primary alternative transportation pathway varies from 24 to 36 feet wide. The width of the primary alternative transportation pathway is composed of a set of three, clearly-differentiated, alternative transportation mode traffic lanes in each direction. Each lane has a different width, purpose and surface composition.

The outside lanes of the pathway are for slow travelers (up to 4 mph). These travelers include walkers, people with strollers and non-motorized wheelchairs. It is composed of a permeable, mildly-coarse surface. The width of each outside lane varies between four and eight feet with the greater widths occurring in close proximity to higher density land uses where higher use is expected.

The middle lanes of the pathway in each direction are for faster travelers (5 to 10 mph). Users include joggers, slow cyclists and motorized wheelchairs, but no other motorized personal mobility devices. These lanes have a permeable, less-coarse colored asphalt surface. The width varies between four and six feet with the greater widths occurring in close proximity to higher density land uses where higher use of the pathway is expected.

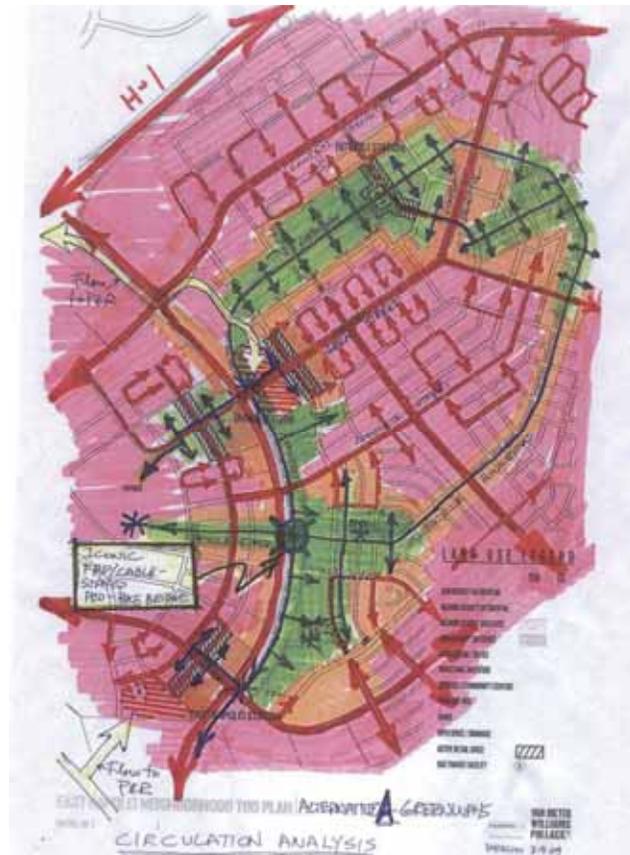
The inside lanes (10 to 20 mph) are smooth, colored concrete surfaces for fast cyclists, Segways and other personal electric mobility devices but not golf carts or other multiple seat electric vehicles. No fossil fuel powered or piston-driven vehicles would use any part of the pathway, just manual or battery powered personal mobility devices. The width of each lane would be four feet in all locations.

Secondary transportation pathways with less sophisticated design treatments branch from the green corridor to serve parks, schools, community centers and office buildings. The secondary transportation pathways connect with bicycle lanes and sidewalks to provide access to low residential areas.

The green corridor's primary alternative transportation pathway will traverse both fully grade-separated and restricted access right-of-way treatments. The fully grade-separated right-of-way between the East Kapolei station and the UHWO station is achieved by taking advantage of the parallel drainage canal. The primary alternative transportation pathway will avoid traffic intersection modal conflicts because it will be underneath the roadway crossings.

The restricted access right-of-way between the UHWO and Ho'opili stations along the elevated rail guideway will cross over neighborhood streets between the boundaries of adjoining traffic cells. Emergency traffic, bus routes, bicyclists and pedestrians can move freely between traffic cells, but general purpose vehicle traffic cannot. This green streets program approach is used to decrease use of personal vehicles for short trips and increase personal safety, especially for local residents using alternative transportation modes.

General purpose vehicle traffic can circulate into and out of the traffic cells, but cannot circulate directly into an adjoining traffic cell. Vehicle traffic flow into and out of traffic restricted areas is depicted diagrammatically on the circulation analysis graphic on the next page. Pink shaded areas in the circulation analysis graphic represent vehicle-oriented development areas and the red lines illustrate the flow of vehicles to access local land uses. Orange shaded areas represent transitions from vehicle-oriented to vehicle-restricted areas. These transition areas would include traffic calming measures designed to slow and divert traffic away from the green shaded or vehicle restricted areas.



Traffic restricted areas would still permit vehicle access by residents or local business into a parking space destination, but vehicles would not be able to pass from an orange shaded area, through a green shaded area and into the next orange shaded area. This approach reduces multi-modal traffic conflict points and increases traffic safety. Vehicles must circumnavigate to an outer roadway and follow an out-of-direction path to access a neighboring traffic cell. Consequently, it is more expeditious to walk or cycle to a neighboring traffic cell. Examples of traffic cells are provided in the attachments to this technical memorandum.

Some of the traffic cells include home zones. Home zones are a type of traffic cell application restricting vehicle activity to local access and limiting vehicular speeds to a walking pace. These low-speed neighborhood streets are ubiquitously situated on either side of the primary alternative transportation pathway. They are a vital component of the green streets concept. Examples of home zones are included in the attachments.

The primary alternative transportation pathway along the green corridor parallels the Diamondhead side of the North-South Road. Trip destinations along the East side of the primary alternative transportation pathway will be accessed by a series of secondary pathways. These links form part of a trunk and branch pathway network. The physical width of the North-South Road and the drainage canal make such branches impossible for trip destination on the West side of the North-South Road if the personal safety of the pathway users is a priority consideration.

Using general purpose vehicle traffic bridges over the drainage canal intersecting with the North-South Road would be extraordinarily unsafe at the intersections for anyone not in a vehicle themselves. A non-vehicular bridge allowing a secondary branch of the primary alternative transportation pathway to cross over the North-South Road and the drainage canal is proposed to remedy this safety concern. This bridge is designed with the same cross-sectional design specifications as the primary alternative transportation pathway.

The non-vehicular bridge over the drainage canal and North-South Road would be much more than a typical bulky concrete pedestrian bridge. The alternative transportation pathway bridge could be an iconic cable-stayed structure supporting a light-weight deck composed of fiber-reinforced-polymers. The attachments include examples of such bridges.

A 3,000 foot long bicycle street connects the edge of the UHWO campus to the bridge. The same bicycle street design standard is continued on the Diamondhead side of the bridge for about 3,000 feet until it transitions into a bicycle boulevard. The Refined Alternative A circulation analysis graphic highlights a continuous, bicycle priority loop about six miles in length with the green corridor section as its dominant feature.

The green corridor and its prominent alternative transportation mode pathway acts as the backbone for the green streets concept. Destinations such as five mini parks, two elementary schools and the Kroc Center will all be highly accessible without the need for a personal vehicle using well-defined, properly-designed safe routes.

The primary alternative transportation pathway features allow greater regional bike and pedestrian access to the communities surrounding the transit stations. The access will be for all trip purposes: recreation, work, school and shopping. High quality, exclusive and reserved right-of-way infrastructure is designed to give visible traffic treatment priority to cyclists.

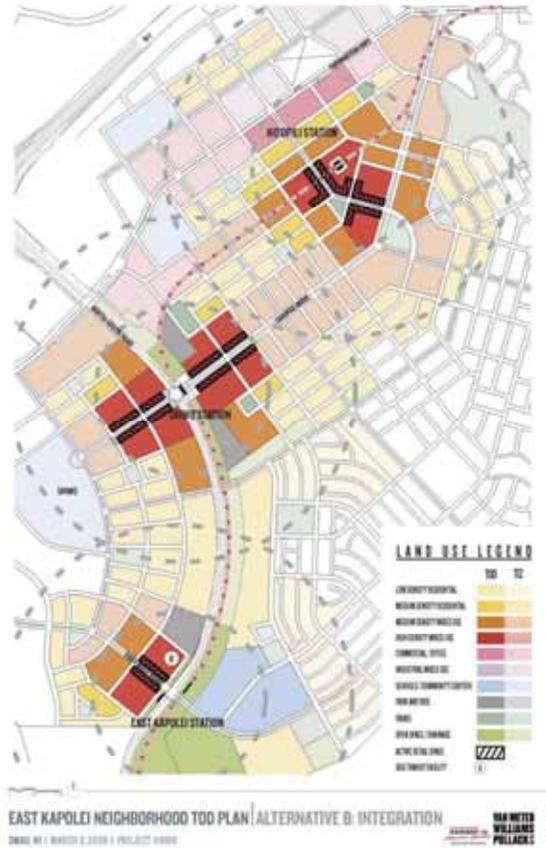
III. Refined Alternative B - Integration

Refined Alternative B, Greenways, focuses on the development of strong mixed-use centers at the transit stations. The TOD influence area is expanded to strengthen the attractiveness of the mixed-use centers by placing a higher priority on public transportation and alternative mode components in more areas than in Alternative A. Refined Alternative B includes higher intensity centers and development at transit stations.

Alternative B is more node-based in nature as compared to Alternative A's more linear-based development. The Ho'opili station should include mixed use buildings between six to eight stories in height directly adjacent to station. Areas further than one block from the station should include residential buildings between two to four stories in height. The TOD influence area within ¼ mile of the Ho'opili Station contains approximately 2,400 dwelling units along with 399,000 square feet of commercial/office/retail space.

The UHWO station includes mixed use buildings between eight to twelve stories with some buildings between four and six stories in height further away from the station. At full build-out it is anticipated that the TOD influence area within ¼ mile of the UHWO station could contain approximately 3,000 dwelling units along with 526,000 square feet of commercial/office/retail space.

The East Kapolei station TOD influence area includes four to six stories mixed use buildings on the blocks immediately adjacent to North-South Road on the UHWO side. Two to four story residential buildings are located a block in from North-South Road. Residential development makai of the Kroc Center is two to four stories. At full build-out it is anticipated that the area within ¼ mile of the East Kapolei station could contain approximately 950 dwelling units along with 85,000 square feet of commercial/office/retail space.



Access to the East Kapolei and UHWO TOD influence areas is expanded by placing important emphasis on connections across North-South Road for pedestrians and bicyclists. Though pedestrian overpasses are included in Alternative A, Alternative B recognizes the need to make them "special" places that become unique elements in both the UHWO and East Kapolei station areas.

The pedestrian overpasses must be open to the public to provide a safe and convenient connection from UHWO to the transit stations. In this Alternative, there will be a large number of pedestrians needing to cross North-South Road. Without a public overpass, this will be impossible. In Refined Alternative B, extra design features and funds must be put into overpasses to ensure the seamless transitions and connections across North-South Road.

Bicyclist will also be given a higher priority in Alternative B by using the iconic alternative transportation bridge concept used in Alternative A between the East Kapolei and UHWO stations and applying it two additional locations. One is across the drainage canal and North-South Road about 2,400 feet mauka of the UHWO station. The other is across Farrington Highway about 3,200 feet from the Ho'opili station.

The rail line in Refined Alternative B is routed through the middle of large mixed-use, multi-family and commercial blocks. The primary alternative transportation pathway presented in Alternative A becomes the trunk of a greatly expanded network involving both an inner and an outer loop system connecting all major activity nodes with the rail stations.

Refined Alternative B embodies and strengthens the creation of genuinely transit centered communities. This requires meticulous attention to all alternative access modes, but to different degrees at a function of each station's very different theme and functional classification. These themes are: 1) Ho'opili – a local, mixed use village, 2) UHWO – a regional gateway, and 3) East Kapolei – community use.

Ho'opili is the local, mixed use village. It is the one station on the HHCTCP line not located along a major vehicle dominated street. It is not next to a major intersection with many traffic conflict points as our most other stations. The Ho'opili TOD influence area can be developed as the safest place to live on Oahu. Refined Alternative B offers a transportation network to achieve this goal for Ho'opili.

UHWO is the regional gateway. It is one of the few stations on the HHCTCP line that serves as a multi-purpose gateway. It is a regional change-of-mode gateway for commuters. It is also a regional educational transportation gateway for students and faculty. The UHWO TOD influence area can be developed to take advantage of the economic vitality created by these major travel movements together with other alternative

transportation mode travel linkages. Refined Alternative B offers a transportation network to serve these multiple travel flows efficiently.

East Kapolei is a community use station. It is a regional change-of-mode station with great potential as a special destination station. Refined Alternative B offers a transportation network that balances the regional function of the station with its community use theme.

Refined Alternative B optimizes transit oriented development benefits by avoiding suburban-oriented, vehicle-driven traffic design approaches and standards. Refined Alternative B is not limited to typical suburban standards for parking and excessive general purpose vehicle traffic road access practices that are excessive for development around transit and can undermine the area's alternative access and egress mode potential.

Refined Alternative B offers a strong mix of alternative transportation modes. This human-scale activity generates a vibrant assortment of people going about their business at many hours of the day. This type of activity provides a pleasant overall setting when the alternative transportation mode linkages have connected the regional transit line with both adjacent land uses and those within a longer than normal access distance from the station. The access mode travel times are reasonable, often allowing one to travel twice the distance or more in the same amount of time. Access pathways are not impeded with points of conflict at intersections with general purpose vehicle traffic. This reduces travel time while increasing personal safety.

Refined Alternative B represents a transit corridor that offers a series of stations properly classified and planned to work harmoniously with one another. Refined Alternative B is designed such that one can live near one station, work near another, and shop at a third, with transit making possible the connections among all three, but not having to use transit or a vehicle to quickly get from one place to another.

1. General Purpose Vehicle Traffic Network

The regional road network configuration included in the Ho'opili and UHWO Transportation Impact Analysis Reports (TIARs) remains unchanged in Refined Alternative B, as it was with Alternative A. The intent of both refined alternatives is to be fully consistent with the results for those previous traffic analyses that included construction of the HHCTCP, or the "With Transit Corridor" conditions. The result of implementing the East Kapolei TOD plan using Refined Alternative B would likely be to significantly reduce those impacts identified in the TIARs and the consequential mitigations that may otherwise be required more so than under Alternative A.

The peak-direction, peak-period surge of park and ride commuters remains the one exception to the expectation that general purpose vehicle traffic impacts would be reduced. The HHCTCP DEIS (page 2-26) identifies 1,000 parking spaces divided evenly on either side of Campus Drive. The morning home-to-work trip movements are more likely to create modal conflicts with vehicles entering the parking lots and vehicle drivers and passengers who become pedestrians in Refined Alternative B versus A. The evening work-to-home trip movements are likely to create comparable conflicts with pedestrians and cyclists involved in school and shopping trips. The orientation of the active retail center along Campus Drive and the intent to make this a pedestrian-friendly street is in conflict with having the street flanked by two equally sized major surface lots.

The HHCTCP DEIS park-and-ride surface lots might be best considered as temporary. The East Kapolei TOD Neighborhood Plan Refined Alternative B illustrates these initial parking facility locations behind the high density-mixed use areas along Campus Drive. However, the ultimate master plan should consider more sophisticated options involving shared parking in structures. Parking structures should be designed so that they can be wrapped with retail uses on the ground floor and shared with adjacent development. Parking for the HHCTCP should be concentrated mauka of Campus Drive to route access vehicle flow away from Campus Drive. Directing where rail passengers park versus patrons of retail will need to be controlled through regulatory and pricing measures. Therefore, it will be best if all parking within the UHWO TOD, and perhaps the other TOD influence areas, be managed by a locally controlled transportation management association.

The HHCTCP DEIS (page 2-25) identifies 900 parking spaces with a pedestrian connection to the East Kapolei station. This pedestrian movement should be able to avoid any modal conflicts whether placed as proposed in the HHCTCP DEIS or as placed in Refined Alternative B. The vast majority of the commuter traffic to the East Kapolei station park and ride lot involves workers with their home located far outside of the East Kapolei TOD influence area, predominately from locations in the Ewa communities makai of the station. These commuter vehicles will access the parking lot from outside the East Kapolei TOD neighborhood plan influence area via the North-South Road and it is unlikely any modal conflicts will exist with the active retail and high density mixed use areas suggested in Refined Alternative B.

Refined Alternative B includes a vast network of local roads connecting to the regional general purpose vehicle traffic network. Intersections between the local roads and the regional network are limited and give priority to general purpose vehicle traffic. Modal priority changes elsewhere, especially in close proximity to each station and to a geographically larger extent in Refined Alternative B as opposed to Refined Alternative A. Highest modal priority shifts away from vehicles in favor of the other two modal categories: public transportation and alternative transportation components.

The TIARs propose a number of Transportation Demand Management (TDM) strategies to reduce general purpose vehicle traffic including transit subsidies by offering a discounted monthly pass to residents and employees. If these monthly pass subsidy programs are brokered through a single sponsor such as the proposed transportation management association, then leverage will exist to link the number of passes sold with the amount of transit service provided by the City and County of Honolulu. It is believed sufficient numbers of transit passes can be credited to warrant the level of service represented by the three community circulators as described.

Other express and local bus routes will be passing through East Kapolei and represent either existing routes, redeployments of existing services or increases in service of existing services. As such, these routes can be expected to be implemented by the City and County of Honolulu regardless of TDM programs initiated by others. These other routes are represented by the dark blue, red and orange lines on the sketch "Alternative B Integration Bus Routes".

In Refined Alternative B, the Ho'opili station area will have the identity of a "local, mixed use village". The area surrounding the Ho'opili Station will be a neighborhood center as well as destination on both the rail line and the greenway. Likewise, it will be a hub for the three community circulator routes operated with smaller, quieter vehicles; but, none of the express or local bus routes using larger buses will enter the ¼ mile radius TOD influence area. This makes the Ho'opili station unique amongst all other stations.

The Ho'opili TOD influence area will have a unique and very appealing tranquil transit environment. The prevalent ambiance will be startling – a high level of multi-modal access, but minimal transportation related noise. The only buses operating in the immediate TOD influence area will be the smaller, quieter, low impact vehicles. They will traverse through the Ho'opili transit station TOD influence area unobtrusively passing by shops and eateries.

The UHWO station will be integrated into the greenway in Refined Alternative B. It will include an elevated pedestrian crossing of the North-South Road and a crossing of Campus Drive. Bicycles will be offered other crossing locations as identified in the next section. The UHWO station area will have the identity of a "regional gateway". The area surrounding the UHWO Station will be a destination for people from all over Oahu including students, workers, shoppers and residents.

UHWO is one of the rail line's major peak-period, commuter-oriented stations. In addition to vehicles seeking one of the 1,000 available parking spaces, dozens of express and local buses will be delivering thousands of commuters by bus in the morning. This is in addition to the arrivals of the community circulators delivering local area commuters to the UHWO station.

The HHCTCP DEIS (page 3-33) projects that about 80% of all transit boardings will still be made by bus. The UHWO station in Refined Alternative B reflects this proportion of transit activity amongst the public transportation modes.

The East Kapolei Station will have the identity of a "community use" station. It will draw ridership from users of the Kroc center and will serve as a bus transfer area and park and ride location. The East Kapolei Transit Station will also have a connection to the transit greenway along North-South Road. This station will include an elevated pedestrian crossing of both North-South and East-West Roads.

3. Alternative Transportation Component Network

Refined Alternative B combines the greenway corridor concept included in Alternative A with an expanded green streets program to provide a functional and larger trunk and branch core alternative transportation network for all trip purposes, not just recreational activity. The greenway corridor's primary alternative transportation pathway directly connects the Ho'opili, UHWO and East Kapolei stations and active retail centers surrounding the stations.

The cross-section of the primary alternative transportation pathway varies from 24 to 36 feet wide as in Refined Alternative A. The width of the primary alternative transportation pathway is composed of the same three, clearly-differentiated, alternative transportation mode traffic lanes in each direction as described in Refined Alternative A.

Secondary transportation pathways with less sophisticated design treatments branch from the green corridor to serve parks, schools, community centers and office buildings. This network is more comprehensive in Refined Alternative B than it was in Refined Alternative A. It involves both an inner and an outer loop of pedestrian and bicycle priority street applications and intersection treatments. The secondary transportation pathways in Refined Alternative B connect with bicycle lanes and sidewalks to provide access to a larger number of low residential areas than in Refined Alternative A.

Refined Alternative B retains the green corridor's primary alternative transportation pathway traversing both fully grade-separated and restricted access right-of-way treatments. The restricted access right-of-way between the UHWO and Ho'opili stations along the elevated rail guideway will cross over neighborhood streets between the boundaries of adjoining traffic cells. Emergency traffic, bus routes, bicyclists and pedestrians can move freely between traffic cells, but general purpose vehicle traffic cannot.

The green streets program approach is used to decrease use of personal vehicles for short trips and increase personal safety, especially for local residents using alternative transportation modes. Refined Alternative B puts a greater emphasis on personal safety by enlarging the green streets program as compared to Refined Alternative A.

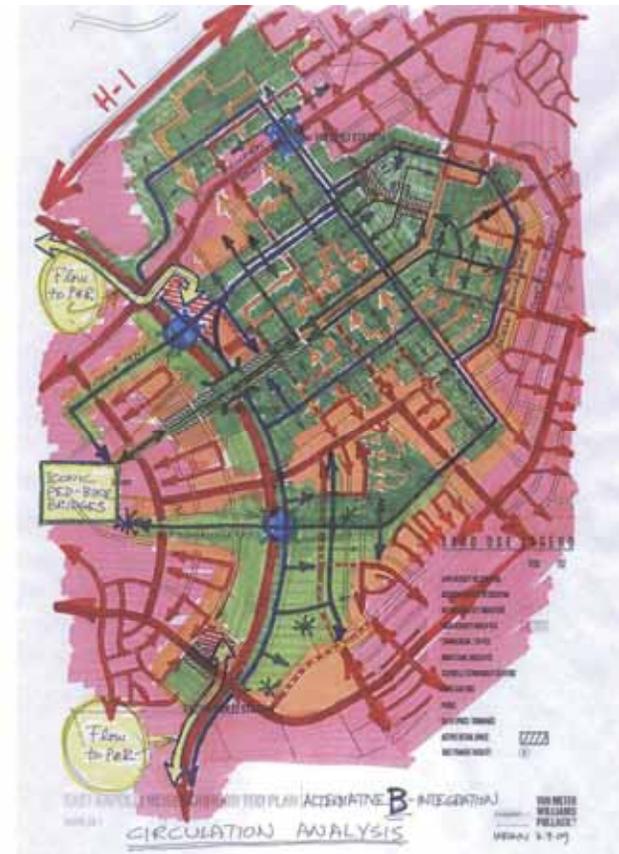
General purpose vehicle traffic can circulate into and out of the traffic cells, but cannot circulate directly into an adjoining traffic cell. Vehicle traffic flow into and out of traffic restricted areas is depicted diagrammatically on the circulation analysis graphic on the next page. Pink shaded areas in the circulation analysis graphic represent vehicle-oriented development areas and the red lines illustrate the flow of vehicles to access local land uses. Orange shaded areas represent transitions from vehicle-oriented to vehicle-restricted areas. These transition areas would include traffic calming measures designed to slow and divert traffic away from the green shaded or vehicle restricted areas.

Traffic restricted areas would still permit vehicle access by residents or local business into a parking space destination, but vehicles would not be able to pass from an orange shaded area, through a green shaded area and into the next orange shaded area. This approach reduces multi-modal traffic conflict points and increases traffic safety. Vehicles must circumnavigate to an outer roadway and follow an out-of-direction path to access a neighboring traffic cell. Consequently, it is more expeditious to walk or cycle to a neighboring traffic cell. Examples of traffic cells are provided in the attachments to this technical memorandum.

More home zones are included in Refined Alternative B as compared to Refined Alternative A. Home zones are a type of traffic cell application restricting vehicle activity to local access and limiting vehicular speeds to a walking pace. These low-speed neighborhood streets are ubiquitously situated on either side of the primary alternative transportation pathway. They are a vital component of the green streets concept. Examples of home zones are included in the attachments.

The non-vehicular bridge allowing a secondary branch of the primary alternative transportation pathway to cross over the North-South Road and the drainage canal to remedy the safety concerns created by the high-volume, high-speed North-South Road included in Refined Alternative A is also included in Refined Alternative B. This bridge is designed with the same cross-sectional design specifications as the primary alternative transportation pathway.

A 3,000 foot long bicycle street connects the edge of the UHWO campus to the bridge. The same bicycle street design standard is continued on the Diamondhead side of the bridge for about 5,000 feet until it intersects a major local street. Pedestrians and cyclists are given traffic signal priority at this intersection with their own crossing lanes. The bicycle route becomes a cycle track for about 12,000 feet.



A parallel pedestrian pathway is located next to the cycle track. Other cycle tracks, a bicycle street, a bicycle boulevard, pedestrian pathways, a pedestrian-bicycle promenade and other alternative mode street treatments intersect this major mauka-makai alignment. Collectively, these features form a large network of street treatments designed to give priority to alternative transportation modes. The Refined Alternative B circulation analysis graphic depicts this large network with the green corridor section as one of many dominant features.

The green corridor and its prominent alternative transportation mode pathway acts as one of five backbones for the green streets concept in Refined Alternative B. Destinations such as mini parks, elementary schools and the Kroc Center will all be highly accessible without the need for a personal vehicle using well-defined, properly-designed safe routes.

The primary alternative transportation pathway features allow greater regional bike and pedestrian access to the communities surrounding the transit stations. The access will be for all trip purposes: recreation, work, school and shopping. High quality, exclusive and reserved right-of-way infrastructure is designed to give visible traffic treatment priority to cyclists. The one alternative transportation pathway bridge featured in both refined alternatives across the North-South Road will have two additional such bridges in Refined Alternative B.

One alternative transportation pathway bridge is across the drainage canal and North-South Road about 2,400 feet mauka of the UHWO station. The other is across Farrington Highway about 3,200 feet from the Ho'opili station. These bridges are integral parts of the alternative transportation pathway network and serve to greatly expand the TOD influence area by encouraging local residents living greater than ¼ mile away from a rail station to use non-vehicular access to ride the rail line. Residents will find the alternative transportation pathway network so convenient and fast for accessing the station that they will become increasingly likely to use the pathways into the station's adjacent retail and mixed use areas for other trip purposes; thereby, effectively, increasing the size of the TOD influence area.

Alternative transportation components in Refined Alternative B include a number of variable street design concepts informing the vehicle driver they are entering a different environment than that to which they have become accustomed. Context sensitive design is suggested along Farrington Highway and complete street approaches on roads immediately adjacent to transition areas. Campus Drive is thought to be much different in Refined Alternative B as compared to Refined Alternative A. It is more of a Great Street in Refined Alternative A featuring uninhibited vehicle accessibility whereas Refined Alternative B presents this street as more of a promenade, perhaps even being closed on weekends for parades and community festivals as is Kalakaua Avenue in Waikiki many times during the year.

Transportation and Circulation Analysis

Attachments

East Kapolei Neighborhood TOD Plan

All photographs in this attachment were taken by Wes Frysztacki, Weslin Consulting Services, Inc. with a few exception where noted. Reuse of any kind is strictly prohibited without prior written authorization.

Example Of Traffic Cells In London



Traffic cells are widely observed in Europe but contradict common U.S. auto-connectivity design techniques. All of these examples are from London and illustrate the following traffic cell boundary applications: two closed streets diverting vehicles, congestion charging invoked in the central zone, a restricted neighborhood traffic only zone and prohibiting vehicle access into a residential area in an adaptive wharf area reuse district (clockwise from the top right).



Example Of Traffic Cells In Canada



Traffic cells are used systematically in the Vancouver residential area to retrofit a traditional street grid network. Google earth aerials depict street closures just west of the central business district along Pendrell just west of the central business district along Pendrell at Bidwell (top left) and Bute (top right). Diverters are designed to allow pedestrian and bicycle traffic, but not vehicles.



Example Of Traffic Cells In Europe

Traffic Cells of various types in Brussels, Gouda, Bonn, Eindhoven and Strasbourg (clockwise starting from the top right). Traffic cells or zones are widely observed in Europe but contradict common U.S. auto-connectivity design techniques. The broad traffic cell concept involves a variety of site specific applications such as central cells, transition plazas, pedestrianized zones and home zones.



Example Of Central Cells In Europe



Central Cells in Prague, Koln, Brugge, Brussels and Krakow (clockwise starting from the top left).

Prague excludes all motorized vehicles including tourist buses. Tour groups use the metro. (top left)

The Koln central cell was a complicated intersection designed to give priority to vehicles forty years ago. The pedestrianized plaza has been continuously expanded. Today, the metro is underneath the plaza. (middle right)

The Krakow and Brussels central zones include popular historic districts. (middle row)

A cycle track and bus lane travel along a park, an integral part of the central cell in Brugge. (bottom)



Examples Of Transition Plazas In Europe



Transition Plazas located in Amsterdam, Bonn and at Amsterdam's new World Trade Center in Zuid (counterclockwise starting from the top left corner). The picture to the right is of the exit from the bike station. The escalator below is just for cyclists who are retrieving their cycle from storage located under the transition plaza located in the center of the World Trade Center.



Examples Of Home Zones In Europe

A **Home Zone** (also known as a **Woonerf Zone**) at the central square in Baden-Baden. Buses and pedestrians mingle with no traffic control signals or pavement markings. Transit vehicles must proceed through the zone at the speed of pedestrians who have the right-of-way. The use of this approach is increasing in Europe. This traffic treatment allows pedestrian friendly design treatments to flourish.



Sweden



Poland



Netherlands



Examples Of Home Zones In Europe




Spain

Austria

Germany



The Methleys (in Chapel Allerton, Leeds, England) **Home Zone** was established in 2002. The picture (retrieved from the Methleys web page) offers an excellent contrast between traditional vehicle-oriented street design (top half) with on-street parking and conversion to a vehicle-restricted design (bottom half).

Example Of Cycle Tracks In Europe






The examples of Cycle Tracks in Copenhagen, Leiden, Eindhoven and Freiburg (clockwise starting from top left).

Example Of Bicycle Pathways In Honolulu



Several excellent examples of bicycle pathways exist near Waipahu in the vicinity of the Waikele Shopping Center along Paiwa and Lumiaina Streets and along the Pearl Harbor Bike Path.



Example Of Bicycle Streets In Europe



Bicycle Streets exist in many European cities. These examples are from Brugge, Amsterdam, Hannover, Strasbourg and Zurich (in clockwise order starting with the picture at the top left). Cyclists have the right of way, but must abide by traffic signals designed explicitly for cyclists.



Example Of Pedestrian And Bicycle Only Bridges In Dublin

The massive Docklands redevelopment area in Dublin is divided by River Liffey. The primary transportation connection between the predominately mixed use residential construction projects is a pedestrian bridge, shown to the right.



Four of the last five bridges built in Dublin (across the River Liffey) are pedestrian and bicycle only bridges.

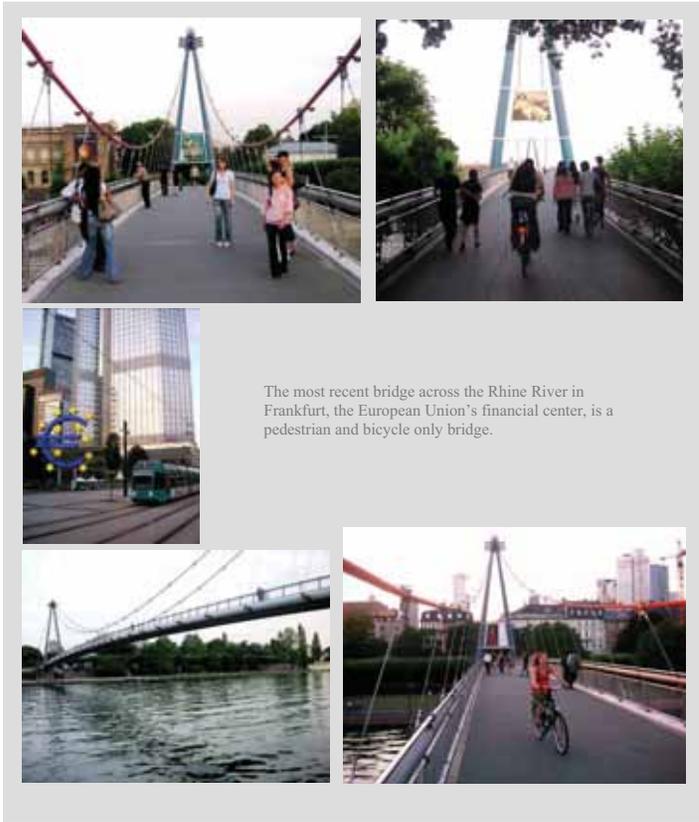


Example Of Pedestrian and Bicycle Only Bridges In Omaha

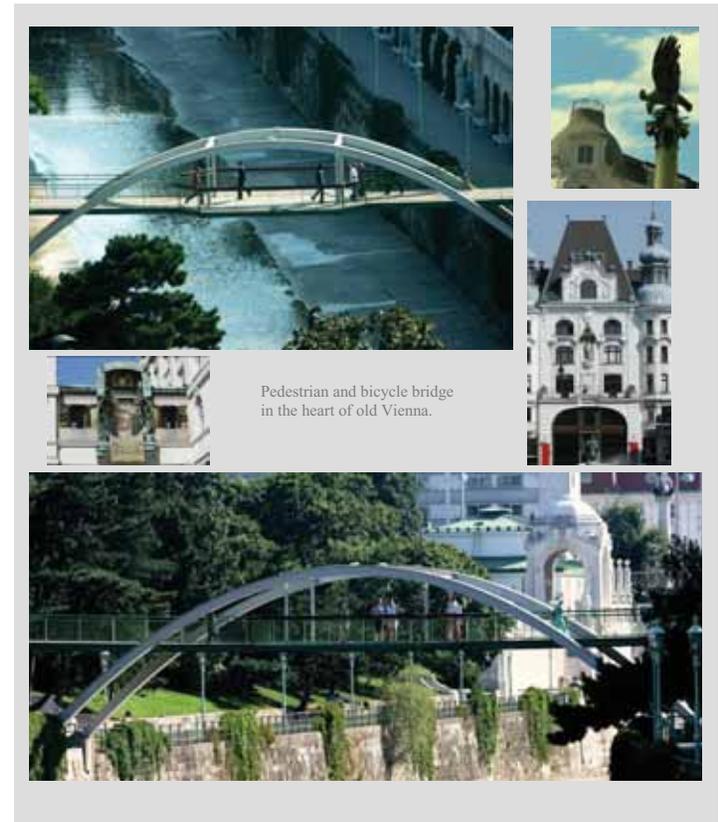
The most recent bridge across the Missouri River is a pedestrian and bicycle only bridge in Omaha funded by a special Federal program for such projects. The access created by the bridge will be used by major mixed use development projects being constructed on both sides of the river.



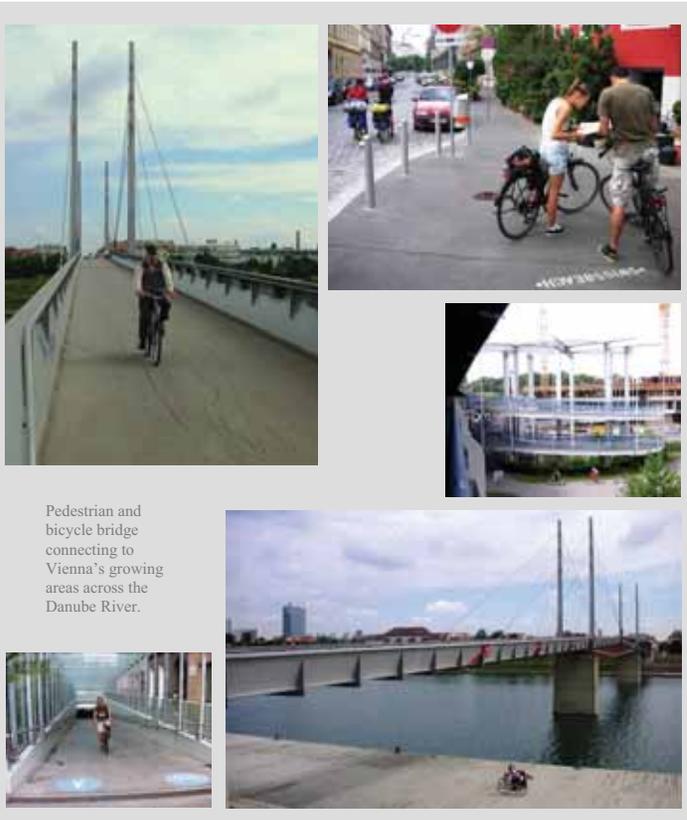
Example Of Pedestrian and Bicycle Only Bridges In Frankfurt



Example Of Pedestrian and Bicycle Only Bridges In Vienna



Example Of Pedestrian and Bicycle Only Bridges In Vienna



Pedestrian and bicycle bridge connecting to Vienna's growing areas across the Danube River.

Example Of Pedestrian Only Bridges In London and Paris

The Millennium Bridge across the Thames River pictured to the right as shown in the May 2008 issue of Civil Engineering is the most recent bridge in London. The Millennium Bridge is London's first pedestrian only crossing of the Thames. The bridge connects St. Paul's Cathedral with the regenerating London Borough of Southwark.



The Passerelle Leopold-Sedar Senghor across the Seine is pictured to the right and below. This is one of three pedestrian only bridges in central Paris. It connects the Tuileries Gardens with the d'Orsay museum.



Example Of Pedestrian and Bicycle Only Bridge In Redding

The Sundial Bridge at Turtle Bay in Redding, California.

Photographs retrieved from American Trails website.

