INTERSECTION IMPROVEMENTS
AT KAHEKILI HIGHWAY

KAMEHAMEHAMA HIGHWAY,
PROJ. NO. NH-083-1(082)

State of Hawaii,
Department of Transportation
Highways Division
TOPICS

• Project Location
• Purpose and Need
• Design
• Benefits
• Construction
• Schedule and Cost
The project site consists of the intersection of Kamehameha Highway and Kahekili Highway in Kahaluu. Construction and staging would occur within the current highway right-of-way.
PURPOSE OF THE PROJECT

The project is being proposed to improve safety, reduce conflicts with left turns, and provide more efficient traffic operations at the intersection and along the highway.
THE CONCEPT

This project proposes to reconfigure the intersection of Kamehameha Highway and Kahekili Highway from a T-intersection to a roundabout. The proposed project would include:

- Construction of a circular lane around a raised and landscaped center with pedestrian and bicycle facilities,
- Construction of low retaining walls, landscaping
- Bringing lighting up to current standards
- Relocation of utility poles
- Installation of new guard rails, and
- Roadway restriping.
USING THE ROUNDBABOUT

1. Through traffic
2. Right turn
3. U-Turn and return the way you came
4. Left turn

The roundabout will support large vehicles, such as tractor trailers, buses, and emergency vehicles (WB-62 minimum).
**CONCEPT**
For Safer and More Efficient Traffic Operations

**DESIGN ELEMENTS**
- Speed limits will remain the same on approach but naturally slower through the roundabout
- Bus stops will be repositioned
- Additional signage & lighting
- Designated crosswalks
- ADA accessible
- Accommodates large vehicles
- Allows bicyclists options to traverse the intersection

**Average Daily Traffic (ADT)**
- Kahekili Hwy – 15,000 vehicles per day
- Kamehameha Hwy – 5,300 vehicles per day

**Lefthand Turn Conflicts with Current Intersection**
- Kahekili Hwy – 1,200 vehicles per day
- Kamehameha Hwy – 1,500 vehicles per day
OTHER ROUNDABOUTS AND TRAFFIC CIRCLES

- Ulupuni St & Uluhala St in Kailua (approx. 60 ft diameter)
- Luluku Rd & Apapane St in Kaneohe (approx. 70 ft diameter)
- Ala Ilima & Likini St in Salt Lake (approx. 90 ft diameter)
- Proposed Roundabout (approx. 135 ft diameter)
OTHER SIMILAR ROUNDABOUTS

Mailihuna Rd & Kuhio Hwy in Kapaa

<table>
<thead>
<tr>
<th>Diameter</th>
<th>120 Feet</th>
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</thead>
<tbody>
<tr>
<td>Mainline Traffic Volume (Kuhio Hwy)</td>
<td>14,500 Vehicles</td>
</tr>
<tr>
<td>Side Street Traffic Volume (Mailihuna Road)</td>
<td>4,500 Vehicles</td>
</tr>
</tbody>
</table>

Pahoa Bypass & Keaau-Pahoa Rd in Pahoa

<table>
<thead>
<tr>
<th>Diameter</th>
<th>138 Feet</th>
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</thead>
<tbody>
<tr>
<td>Mainline Traffic Volume (Pahoa Bypass)</td>
<td>16,900 Vehicles</td>
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</tbody>
</table>

To date HDOT has observed 100% reduction in crashes resulting in fatalities or serious injuries where roundabouts were constructed.
According to the Federal Highway Administration (FHWA), roundabouts help with:

- **Traffic Safety** – reduced crossing operations and fewer conflict points
- **Operational Efficiency** – lower overall delay and 30% improved throughput as compared to signalized and all-way stop intersections.
- **Pedestrian Safety** – A reduction in through traffic speeds improves pedestrian safety. Raised median refuge areas will allow pedestrians and cyclists to focus on one traffic stream at a time while crossing.

**ROUNDABOUT**

**PROS**
- Reduces total number of crashes by 35-47% since there are fewer conflict points\(^1\)
- Reduces injury crashes by 72-80% (T-bone accidents are far less likely)\(^1\)
- No idle time waiting for traffic lights
- Lower wait times for turns to and from side roads
- Lower maintenance cost

**CONS**
- Requires more land
- Less familiar to many of the public

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**SIGNALIZED INTERSECTION**

**PROS**
- More familiar to more people
- Timing of lights can be adjusted

**CONS**
- Higher risk of crashes
- Head-on crashes are more likely
- Higher maintenance costs ~12-15k annually, full signal replacement every 20-25 years ($1m+)

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\(^1\) Insurance Institute for Highway Safety and Highway Loss Data Institute website: https://www.iihs.org/topics/roundabouts
Bus stops will be repositioned. HDOT is working with the City to provide shelters at all three bus stops.
ACCESS ALTERNATIVES FOR BIKING AND WALKING

- **Ride your bike as a vehicle either on the road or on the shared use paths**
- **Walk your bike as a pedestrian**
- **Walk around the outside; don’t cross through the middle.**
CONSTRUCTION
CONSIDERATIONS

- Traffic delays may occur during construction. Temporary traffic controls will be implemented in phases to maintain traffic flow throughout construction.
- There will be construction noise.
- Night work will be utilized during construction.
- Storm Water BMP measures will be implemented.
- Access to surrounding businesses will be maintained.
- Bus stops will be temporarily repositioned.
CONSTRUCTION COST

- Both State and Federal funding will be utilized to complete the construction
- The project is anticipated to cost $5.4 million

<table>
<thead>
<tr>
<th>Improvement</th>
<th>Roundabout</th>
<th>Traffic Signal</th>
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</thead>
<tbody>
<tr>
<td>Pavement Construction/Reconstruction</td>
<td>$ 1,900,000</td>
<td>$ 700,000</td>
</tr>
<tr>
<td>Sidewalks and Bicycle Facilities</td>
<td>$ 900,000</td>
<td>$ 900,000</td>
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<tr>
<td>Utility Adjustments and Drainage Improvements</td>
<td>$ 500,000</td>
<td>$ 500,000</td>
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<tr>
<td>Miscellaneous Construction Activities</td>
<td>$ 1,400,000</td>
<td>$ 1,500,000</td>
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<tr>
<td>Grade Adjustment Walls Guardrail Relocations</td>
<td>$ 700,000</td>
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<tr>
<td>Traffic Signal System with Interconnectivity</td>
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<td>$ 1,000,000</td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>$ 5,400,000</strong></td>
<td><strong>$ 4,600,000</strong></td>
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CONSTRUCTION SCHEDULE

- The project will be advertised for construction in August 2022
- The anticipated start date for construction is January 2023, with an 18-month construction period, ending June 2024.

<table>
<thead>
<tr>
<th>Estimate Timeframe</th>
<th>Project Phase / Activities</th>
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<tbody>
<tr>
<td>January – February 2023</td>
<td>Project Initiation</td>
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<tr>
<td>March – May 2023</td>
<td>Street Light Relocation</td>
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<tr>
<td>June – September 2023</td>
<td>Northern side construction, Waterline Relocation, Drainage, Sidewalks, Bus stop</td>
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<tr>
<td>January – February 2024</td>
<td>Southwest side construction, Sidewalk, Guardrail</td>
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<tr>
<td>March – April 2024</td>
<td>Median work</td>
</tr>
<tr>
<td>May – June 2024</td>
<td>Final Paving, Striping and Landscaping</td>
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State Project Manager: Andy Hirano, andrew.j.hirano@hawaii.gov
Design Consultant: WSP USA Inc., Joe Salvador