

Kihei Roundabout

Piilani Highway Intersection Improvements

Vicinity of Kulanihakoi Street

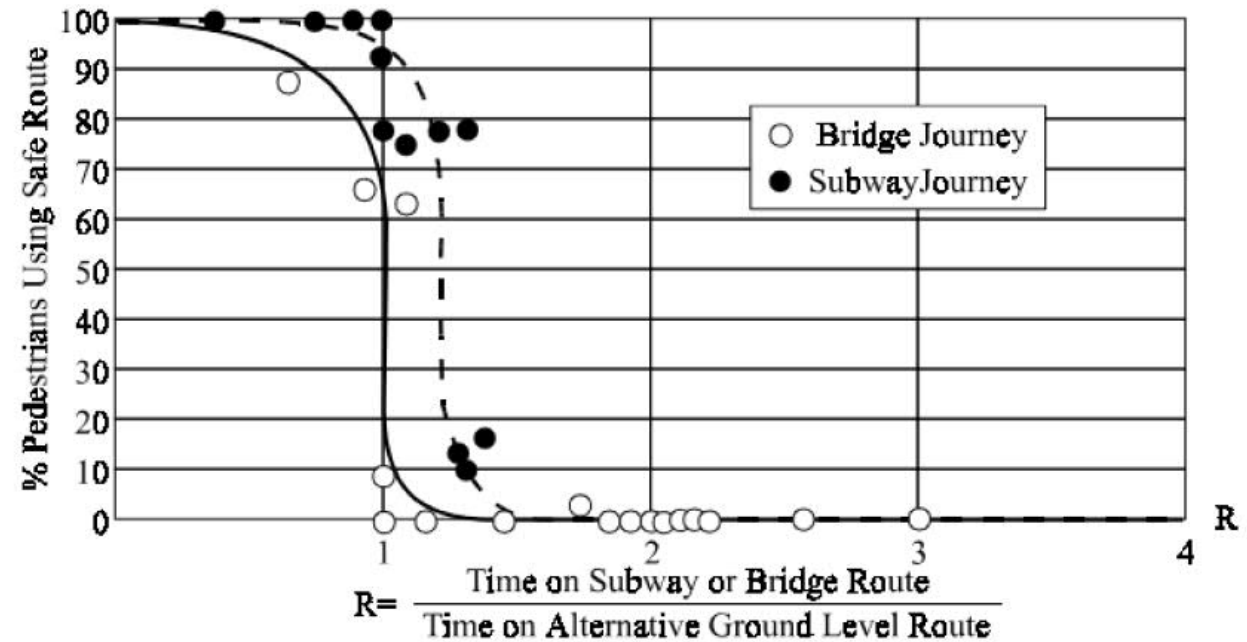
Project Number HWY-02-17

Project Background and HDOT's History with Roundabouts

- ▶ Pre-2006: HDOT considered roundabouts not appropriate for State roadways.
- ▶ February 2007: First roundabout (single-lane, 4-legged) constructed at Kapaa Bypass Road and Olohena Road in Kapaa, Kauai.
- ▶ December 2008: HDOT adopted policy and guidelines accepting roundabouts as an alternative intersection configuration.
- ▶ December 2016: Completed single-lane 3-legged roundabout at Keaau-Pahoa Road and Old Government Road in Keaau, Hawaii Island.
- ▶ On-going Construction Projects:
 - ▶ Single-lane 3-legged roundabout at Keaau-Pahoa Road and Ainaloa Boulevard in Keaau, Hawaii Island.
 - ▶ Single-lane 3-legged roundabout at Kuhio Highway and Mailihuna Road in Kapaa, Kauai.
- ▶ Projects Currently Under Design:
 - ▶ Single-lane 3-legged roundabout at Kahekili Hwy and Kamehameha Hwy. in Kahaluu, Oahu. Est. completion - May 2023.
 - ▶ Two single-lane 3-legged roundabouts at Keaau-Pahoa Road / Makuu Drive and Keaau-Pahoa Road / Orchidland Drive in Keaau, Hawaii Island.
 - ▶ Two-lane 4-legged roundabout at Piilani Highway and Kulanihakoi Street / Kihei High School in Piilani, Maui.

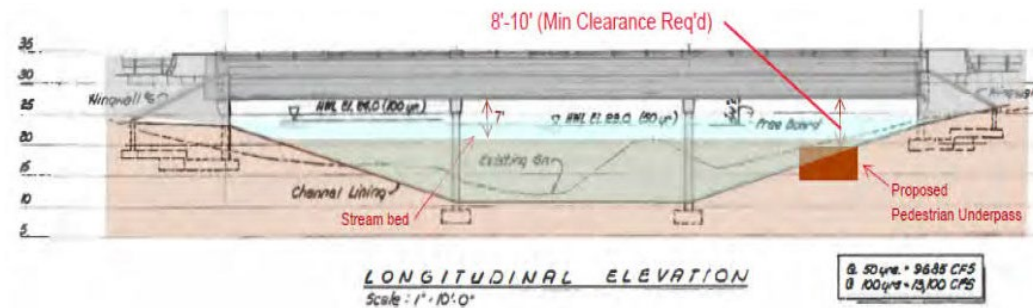
Overpass/Underpass Use Data

- ▶ Texas Transportation Institute study found that virtually no one will use a pedestrian overpass if it takes 25% longer to cross compared to crossing at grade.
- ▶ Using an overpass at this location will take 1.8 times longer with stairs and 5.8 times longer with ramps compared to an at-grade crossing.
- ▶ Using an underpass at Kulanihakoi Gulch or Waipuilani Gulch will take over 15 times longer compared to an at-grade crossing.
- ▶ Pedestrians prefer to limit walking distance and will often take usual shortcuts to save even a few steps and seconds of time.



Existing Bridges Adjacent to Kihei High School

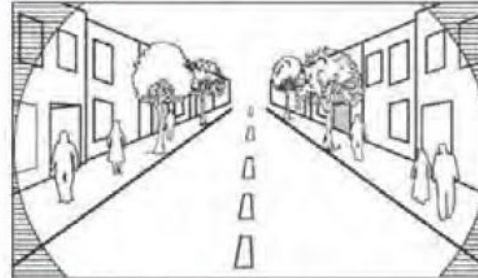
- ▶ FEMA map analysis makai of the Kulanihakoī Gulch bridge shows the 100-year floodplain is wider than the bridge. A proposed pedestrian underpass will be built in the 100-year floodplain area or footprint.
- ▶ Kulanihakoī Gulch as built (1978) provides a 7' clearance between the stream bed and underside of the bridge. This vertical clearance is not sufficient for bicycle and pedestrian clearance of 8'-10' and to provide capacity for a 100-year storm.
- ▶ No FEMA map analysis for Waipuilani Gulch. However, it is likely similar to Kulanihakoī Gulch since the gulches are in close proximity that serve the same watershed.



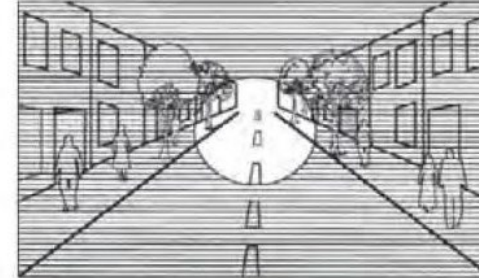
Safety Considerations

- ▶ According to the American Association of State Highway Transportation Officials Highway Safety Manual roundabouts reduce the types of crashes where people are seriously hurt or killed by 78-82% when compared to conventional stop-controlled and signalized intersections.
- ▶ Federal Highway Administration and Insurance Institute for Highway Safety studies show that properly designed roundabouts result in a 37% reduction in overall collisions, a 40% reduction in pedestrian collisions, and a 90% reduction in fatalities over more traditional signalized and stop-controlled intersections.
- ▶ In addition to lowering vehicle speeds, roundabouts make intersections safer for pedestrians of all ages by minimizing conflicts, eliminating crashes caused by drivers disregarding traffic signals and stop signs, and minimizing pedestrian exposure to traffic by enabling people to cross narrow travel lanes that are separated by a median refuge at each approach.

WHY SPEED MATTERS

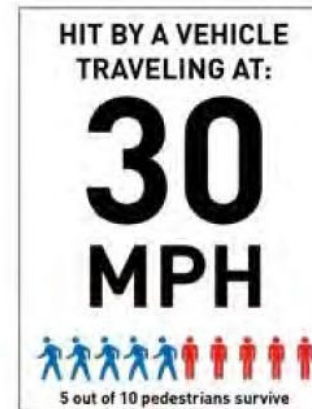
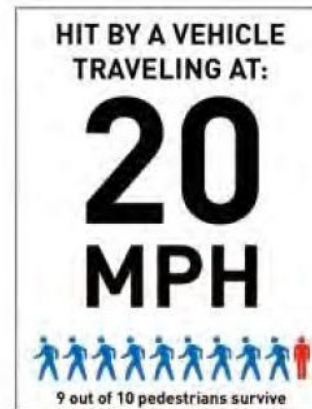


Field of vision at 15 MPH



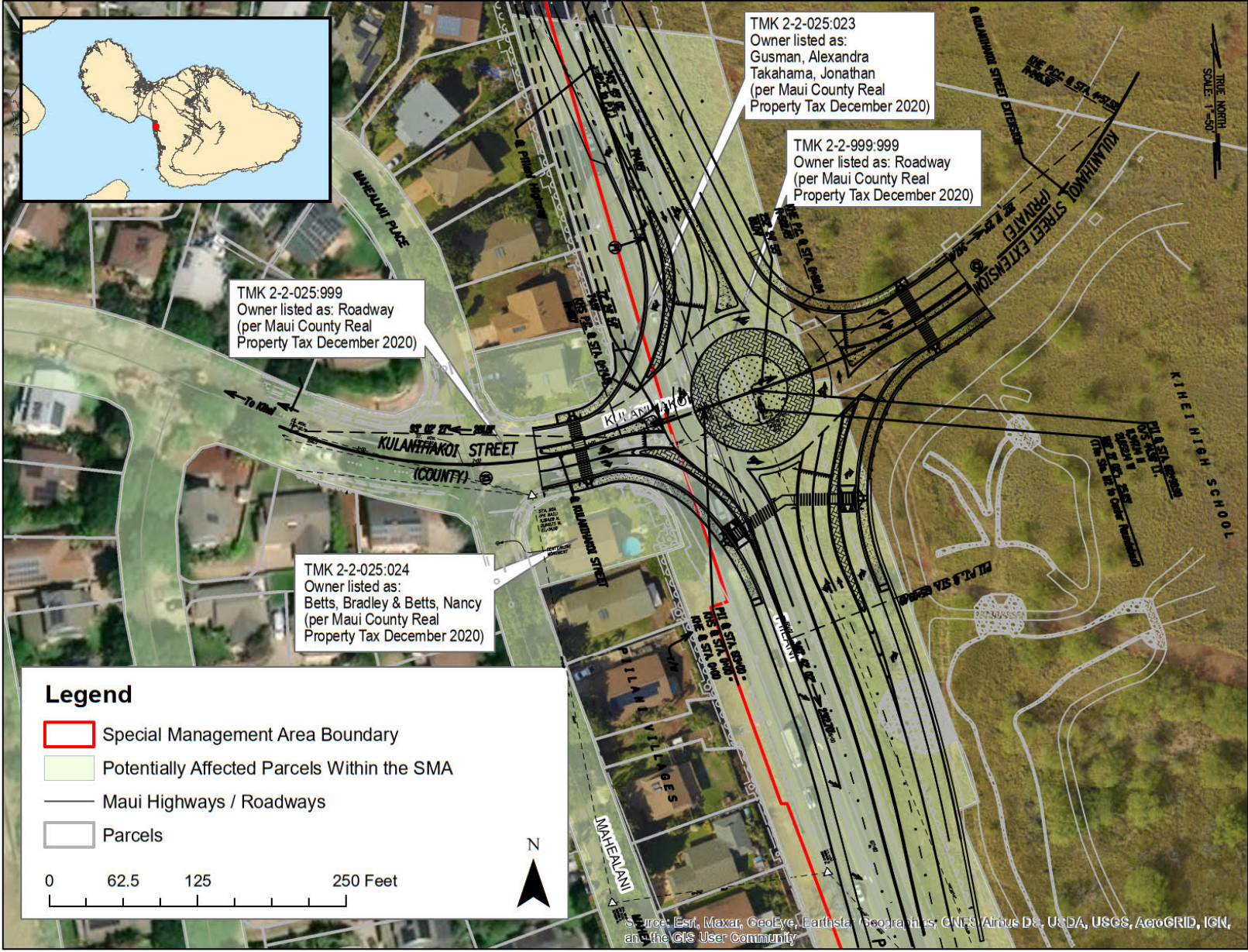
Field of vision at 30 to 40 MPH

A driver's field of vision increases as speed decreases. At lower speeds, drivers can see more of their surroundings and have more time to see and react to potential hazards.



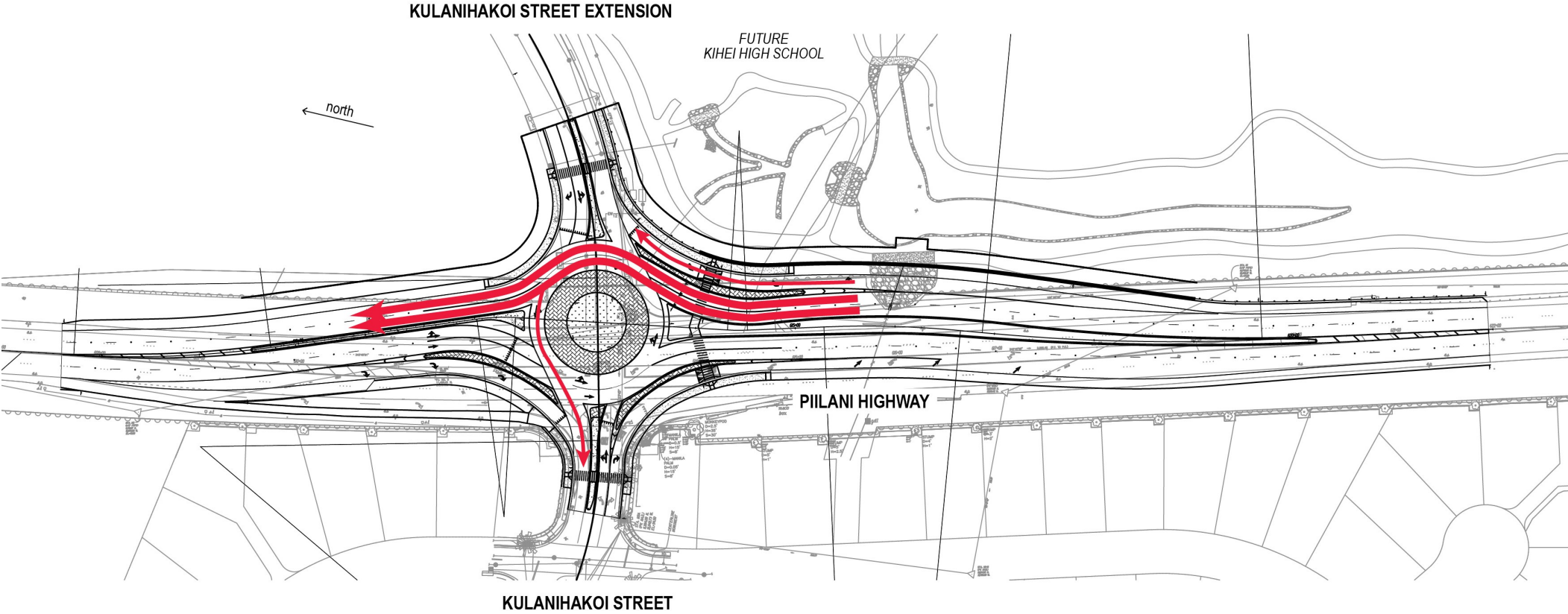
Speed is especially lethal for vulnerable users like pedestrians and people biking. The risk of injury and death increases as speed increases.

Proposed Roundabout

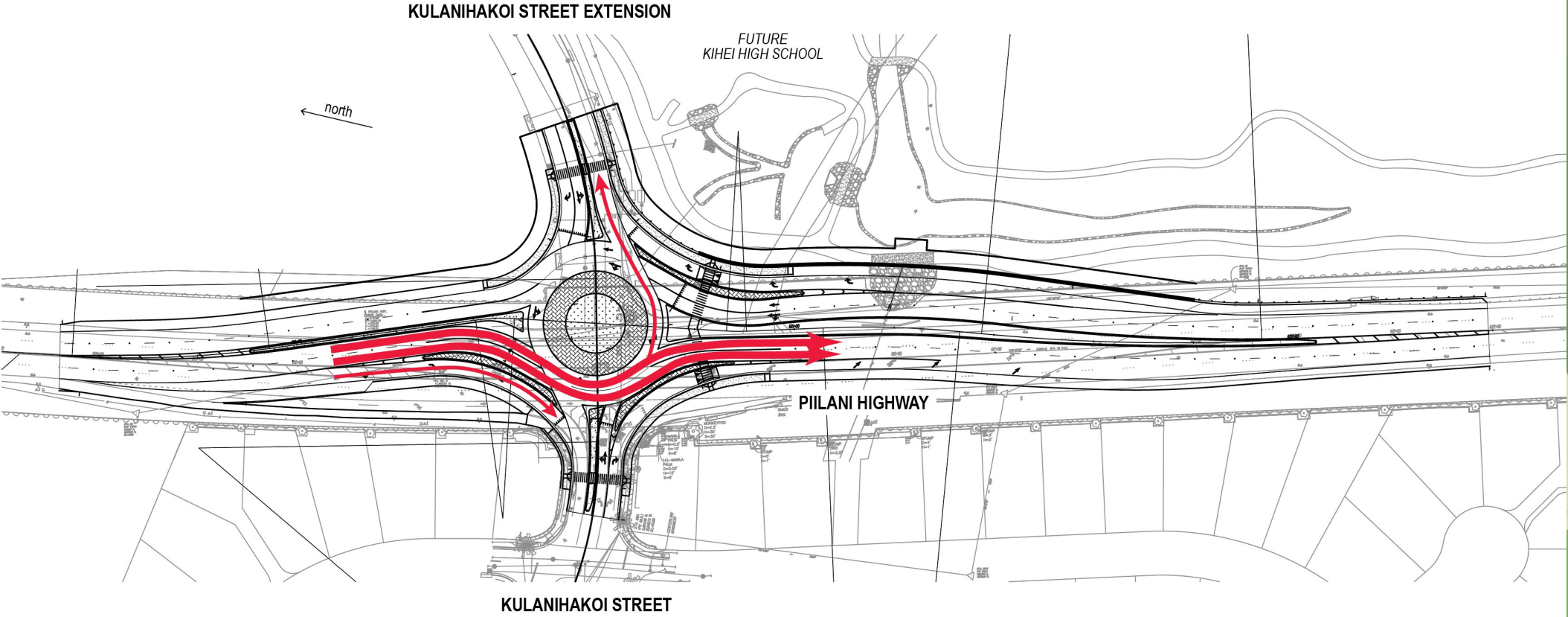


Source: Esri, Maxar, GeoEye, Earthstar, Geographic, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

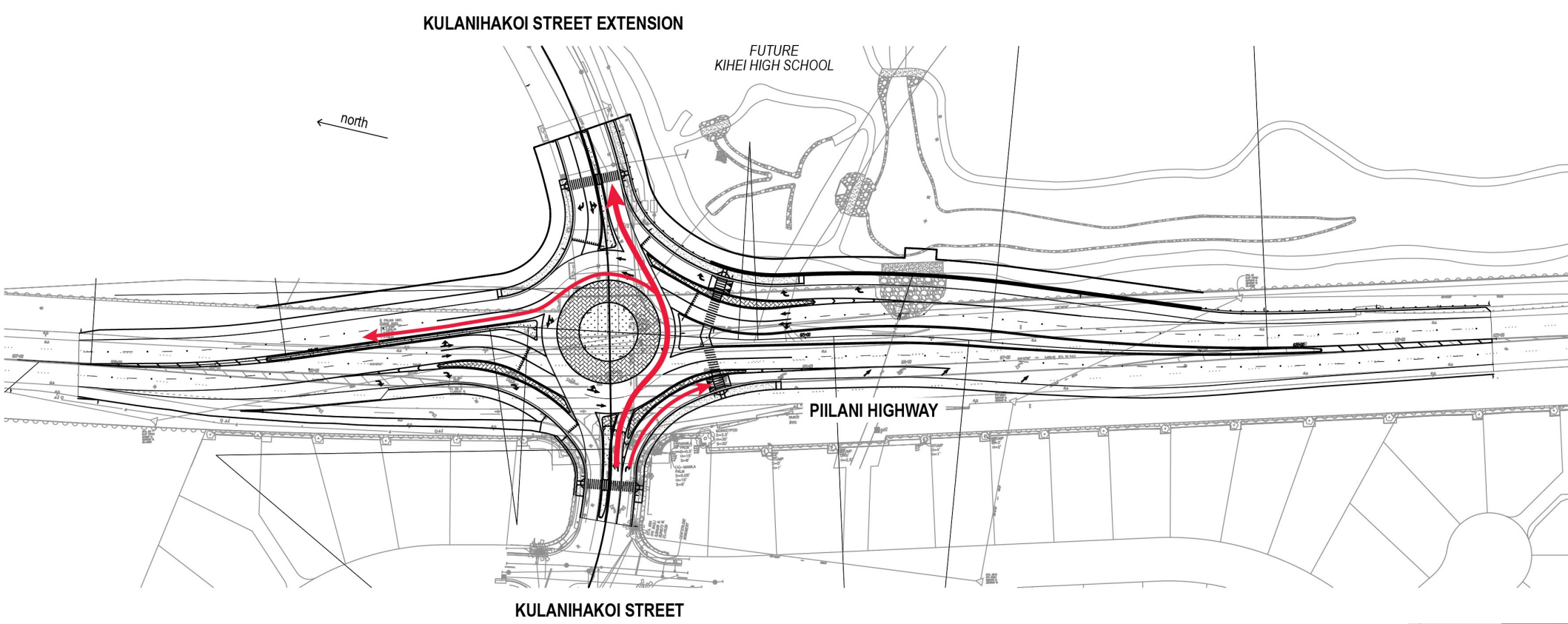
Roundabout Traffic Flow - Northbound



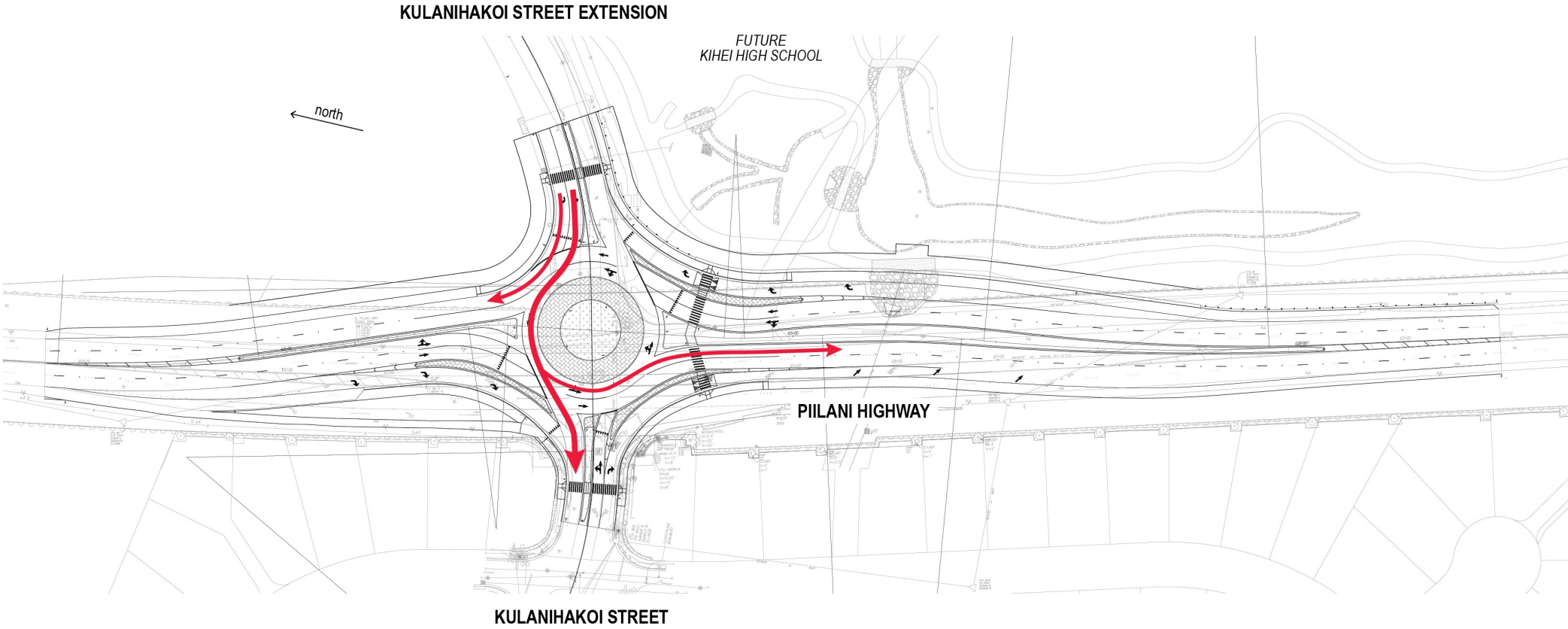
Roundabout Traffic Flow - Southbound



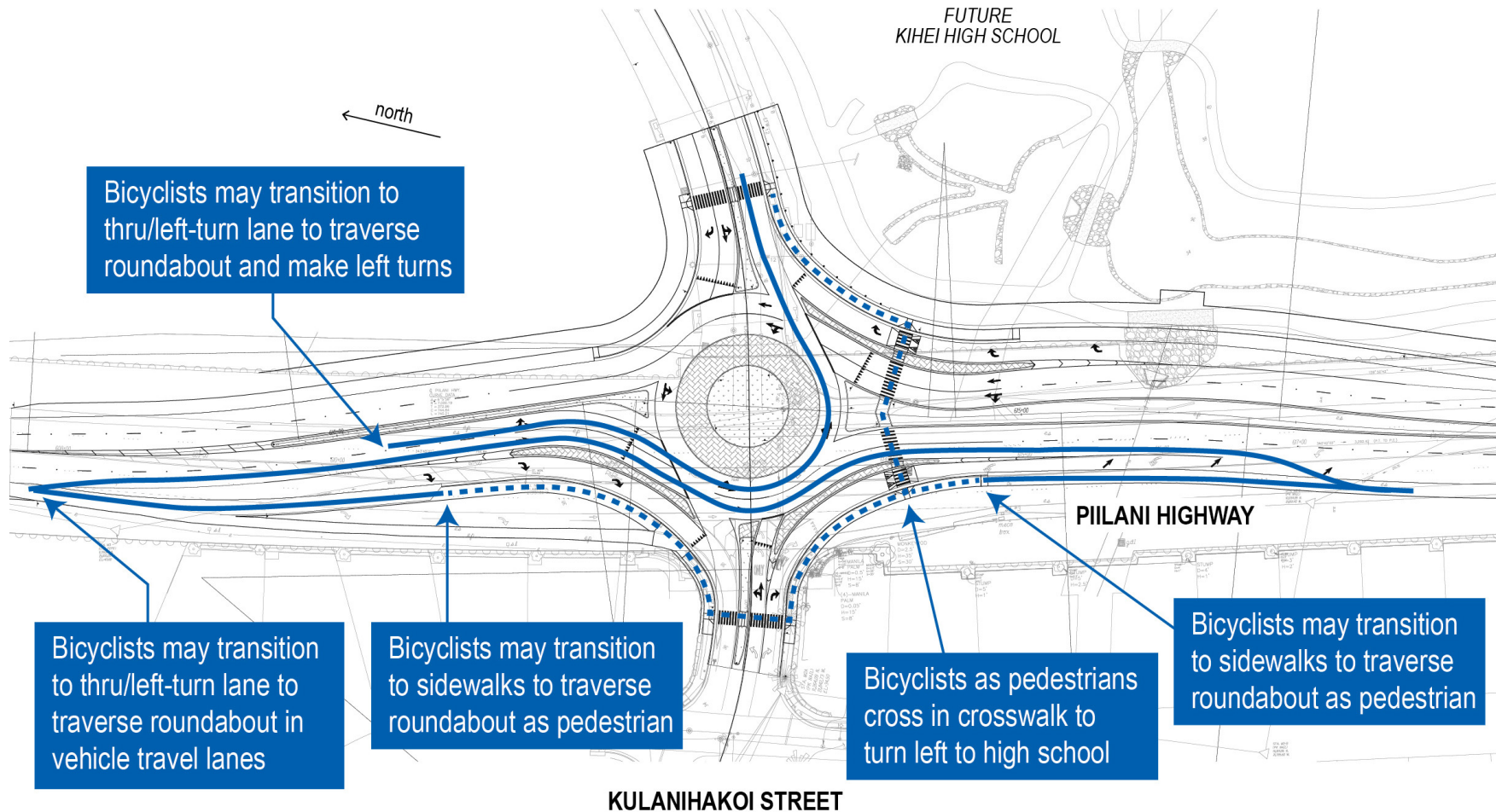
Roundabout Traffic Flow - Eastbound



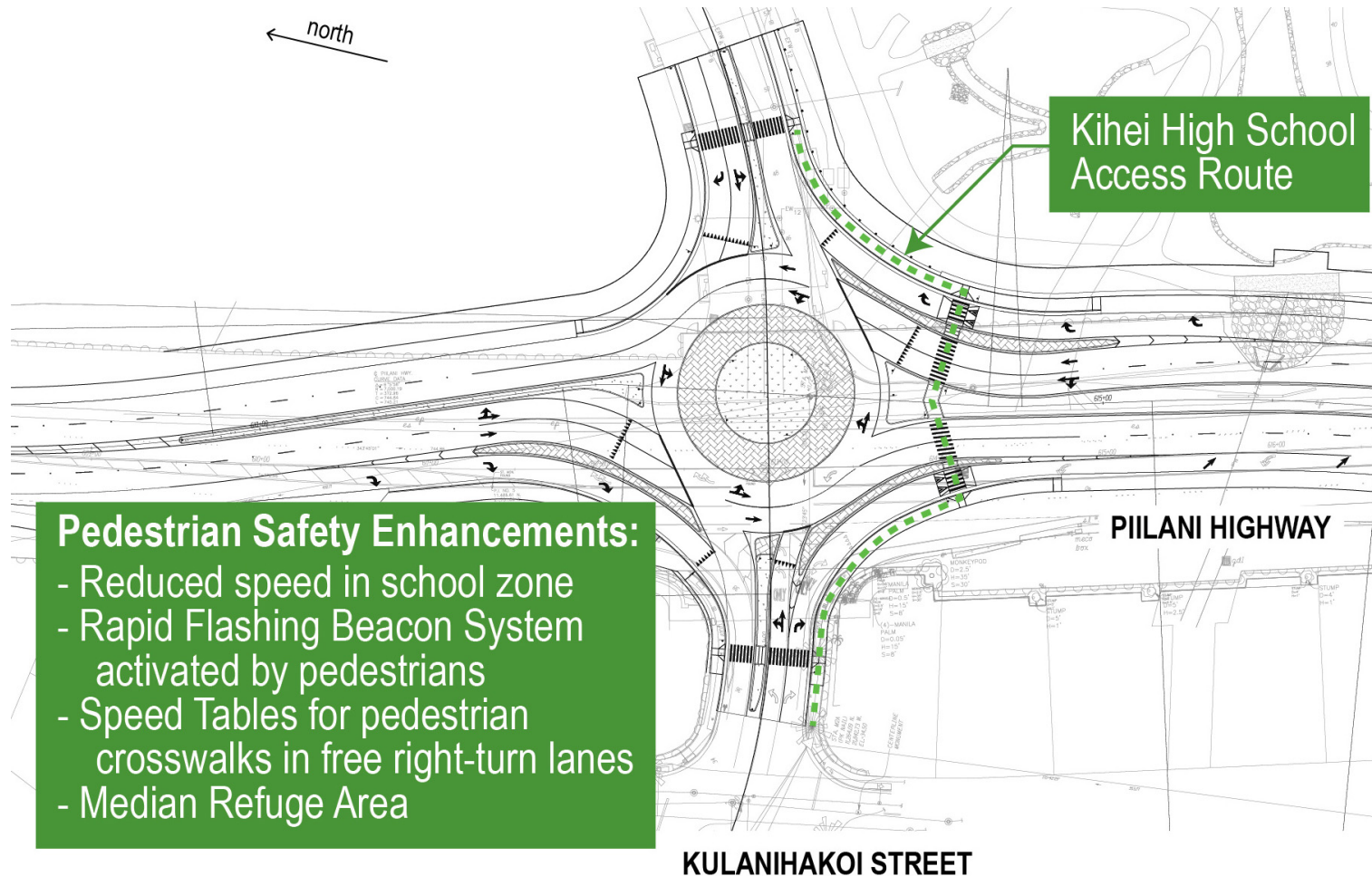
Roundabout Traffic Flow - Westbound



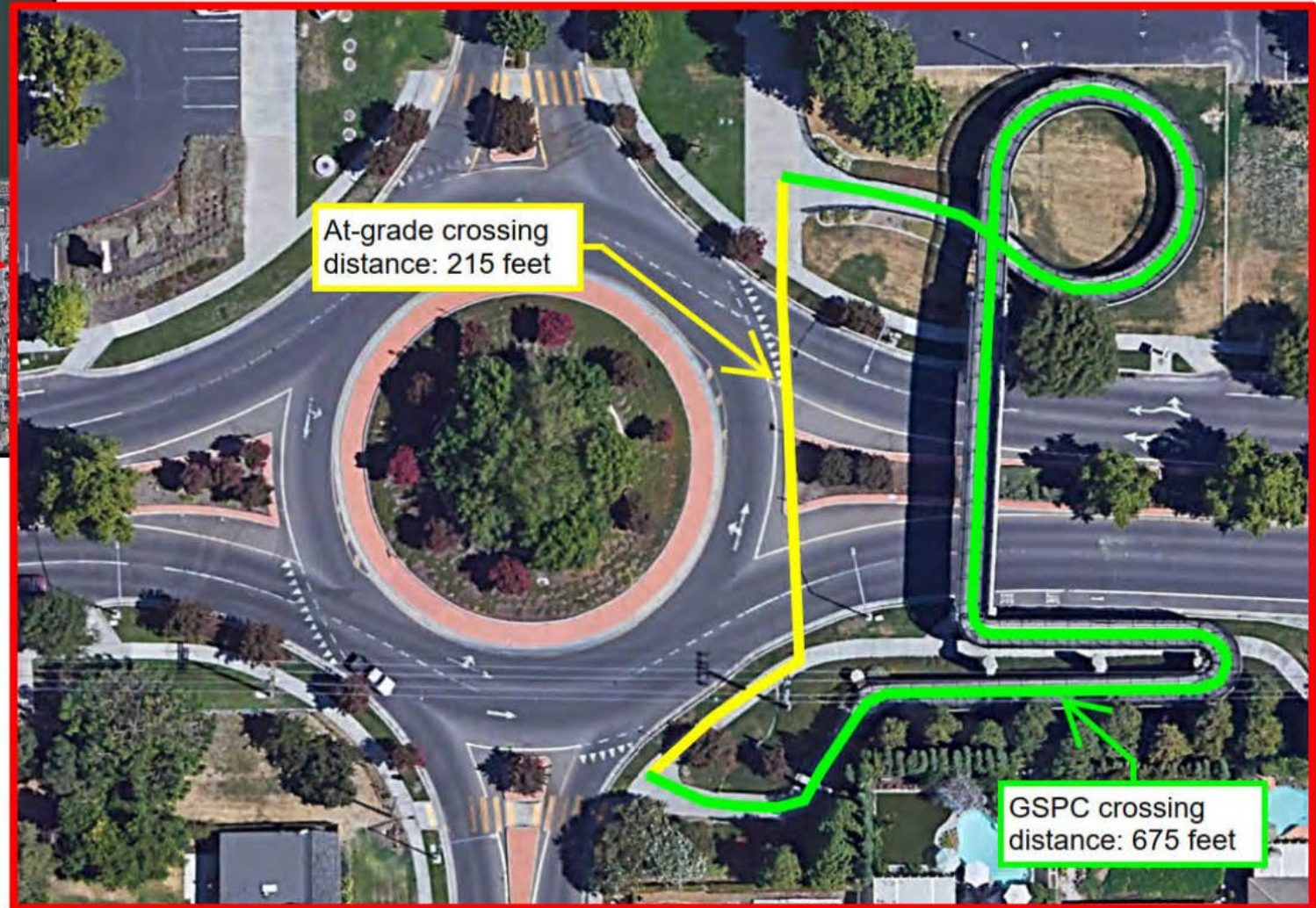
Bicycle User Accommodations at the Proposed Roundabout



Pedestrian User Accommodations at the Proposed Roundabout



Modesto Roundabout / GSPC Example



Safety Issues:

- Out-of-direction travel discourages use of GSPC
- Students observed crossing at-grade without benefit of signs, markings, defined path
- Motorists unaware that pedestrians may be present

Construction of the New Roundabout

- ▶ There will be temporary construction impacts regarding lane restrictions and shifting, noise, dust, and access changes.
- ▶ Construction is anticipated to take 12 months and be completed by June 2022.
- ▶ The roundabout will result in a much smoother and safer operation patterns.
- ▶ The project would create a new bicycle route / continuation of an existing bicycle route at the roundabout.
- ▶ The roundabout will create a safe pedestrian crossing for students attending the new Kihei High School.
- ▶ There will be systems put in place that will be intended to do the following:
 - ▶ Slow traffic
 - ▶ Alert drivers to pedestrians in the area