

A wide-angle photograph of a street intersection. In the foreground, a white-striped crosswalk crosses the road. A blue sedan is stopped at the intersection. To the right, a red octagonal stop sign is visible. In the background, a white van is driving away, and a white sedan is on the left. The sky is blue with light clouds, and there are trees and buildings in the distance.

Mecartney Road & Island Drive Improvement Project

Transportation Commission
March 23, 2022

Agenda

1. Introduction & Background
2. Analysis & Recommendations
3. Next Steps
4. Q&A

Introduction

Evaluation of Alternatives
at Mecartney Road &
Island Drive on Bay Farm
Island

Project Team:

- *City of Alameda*: Gail Payne & Robert Vance
- *Kittelson & Associates, Inc.*: Mike Alston, RSP, EIT; Laurence Lewis, AICP; Hermanus Steyn, PE

Engagement and Outreach Update:

- Letter to properties within 1,600 feet of intersection
- Engagement via social media, community advisory, survey, virtual workshop, and key stakeholders
- Project webpage:
www.alamedaca.gov/MecartneyIsland





Safe Routes to School
Earhart (City/EBMUD)



Maitland Drive
Restriping
(City)



Doolittle Drive/Otis
Drive Resurfacing
Caltrans -- 2024



Doolittle Drive
Adaptation
Multi-jurisdictional



Veterans Court/Lagoon
Outfall Adaptation
(City)

Other Bay Farm Island Projects

City High Injury Network

The high injury corridors map is a useful tool for focusing design improvements and other roadway safety strategies to where they are likely to have the largest impact on improving safety for all users.

73% of crashes occurred along 20% of Alameda's roadways.

High Crash Intersections and High Injury Corridors - All Modes

Crash Analysis, 2009-2018 Data
City of Alameda

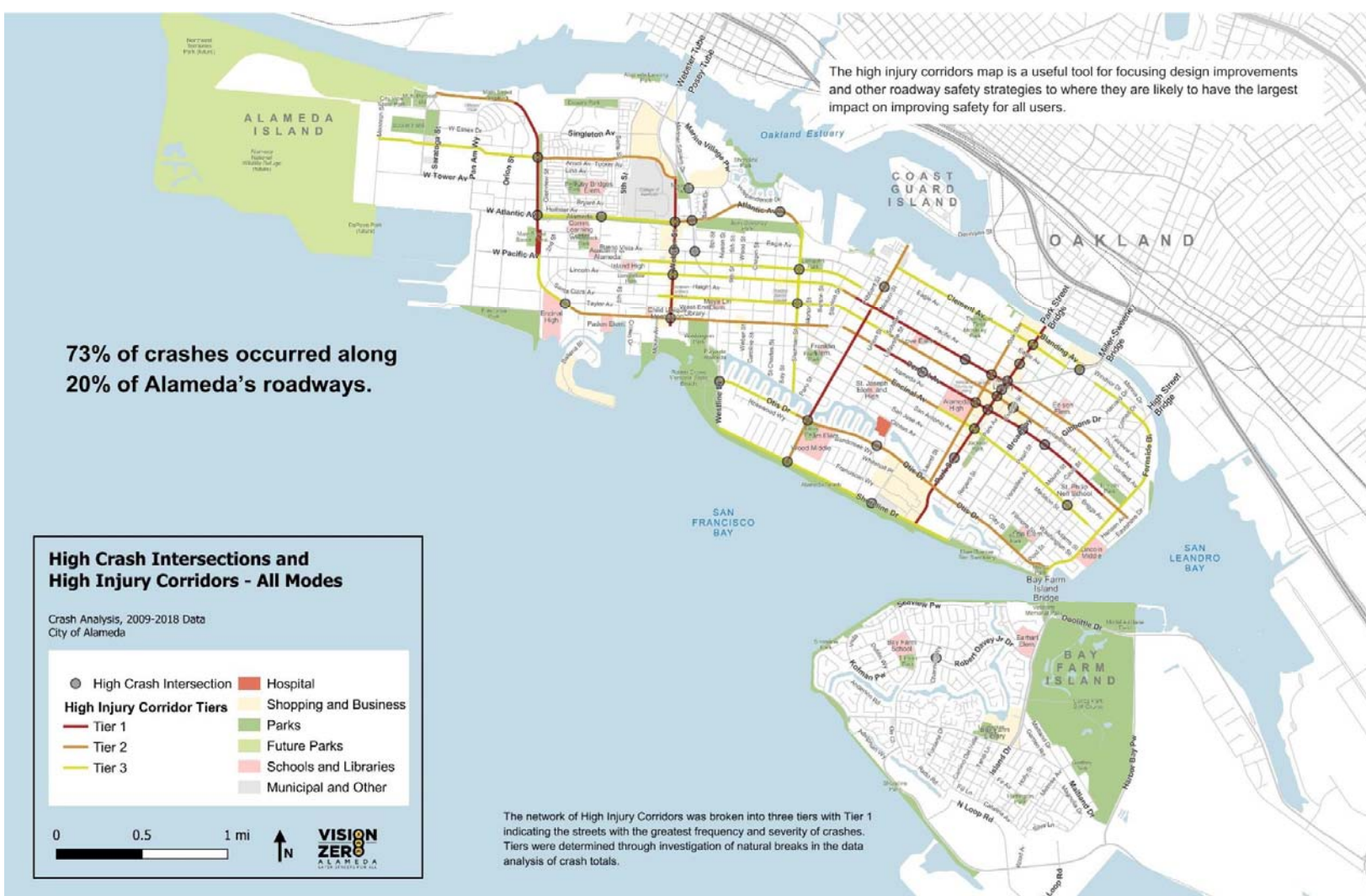
- High Crash Intersection
 - Hospital
 - Shopping and Business
 - Parks
 - Future Parks
 - Schools and Libraries
 - Municipal and Other
- High Injury Corridor Tiers**
- Tier 1
 - Tier 2
 - Tier 3

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VISION ZERO
ALAMEDA
SAFER. HEALTHIER. GREENER.

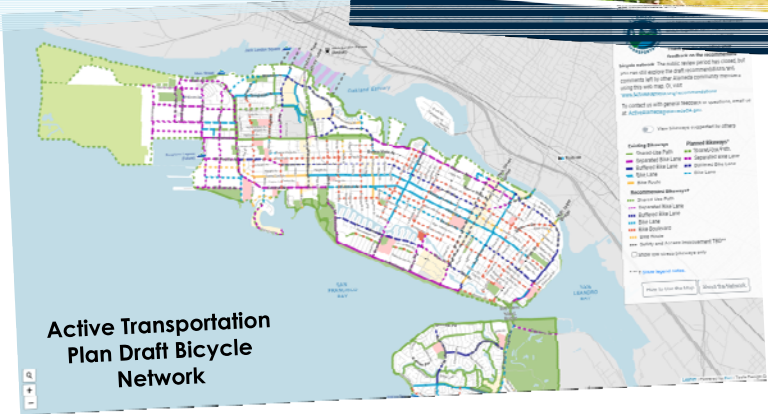
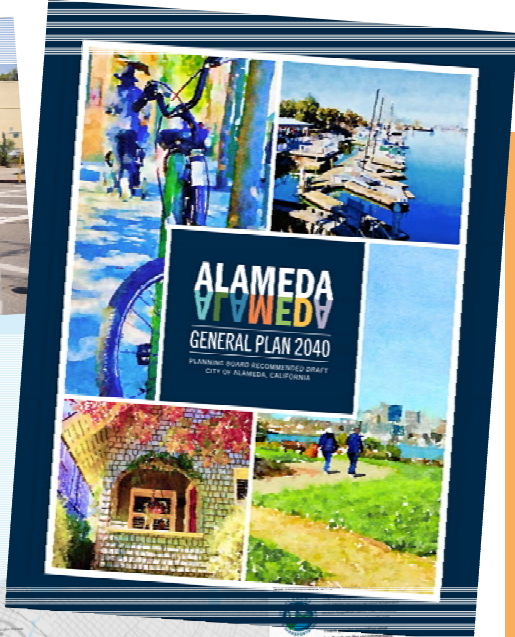
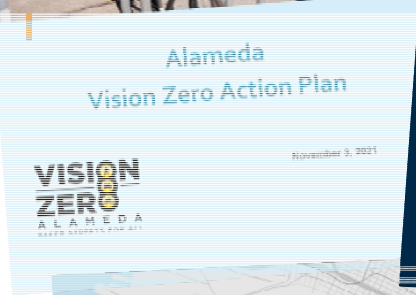
The network of High Injury Corridors was broken into three tiers with Tier 1 indicating the streets with the greatest frequency and severity of crashes. Tiers were determined through investigation of natural breaks in the data analysis of crash totals.



Other CIP Projects



Project Goals and Intended Outcomes



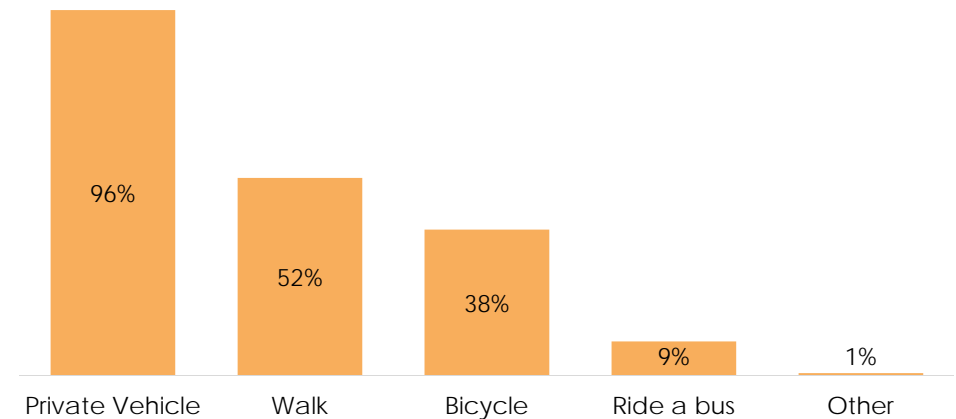
- Promote safety by prioritizing Vision Zero
- Improve mobility for all modes, including AC Transit buses and trucks
- Comply with existing policies and plans
- Provide landscaping and flood reduction opportunities
- Reduce greenhouse gas emissions

Community Feedback

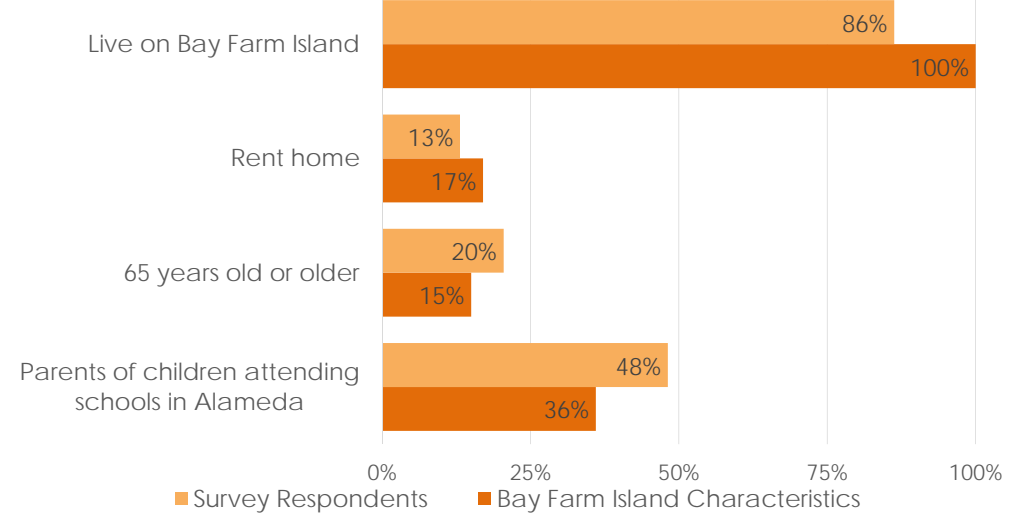
Survey Respondents

- 361 respondents
- Diversity of travel modes represented
- Respondents:
 - Majority Bay Farm Island residents
 - Higher aging population
 - Lower renter population
 - About half have students in Alameda schools

How do you Typically Use Mecartney/Island?



Survey Respondents compared to Bay Farm Island Population

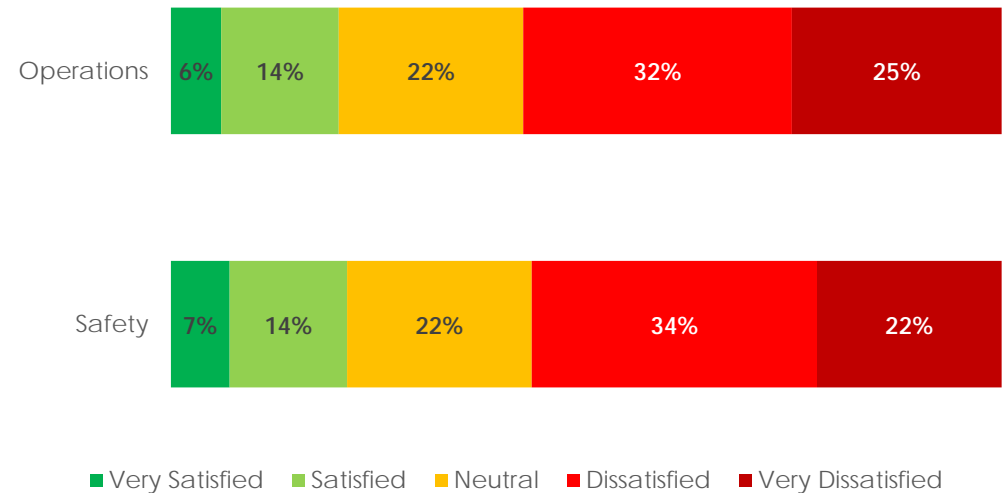


Community Feedback

Satisfaction with Mecartney/Island

- Majority of respondents are *dissatisfied* or *very dissatisfied* with operations and safety
- Many comments received regarding:
 - Safety
 - Roundabouts and signals
 - Pedestrian safety

Responses to "How satisfied are you with Mecartney/Island?"



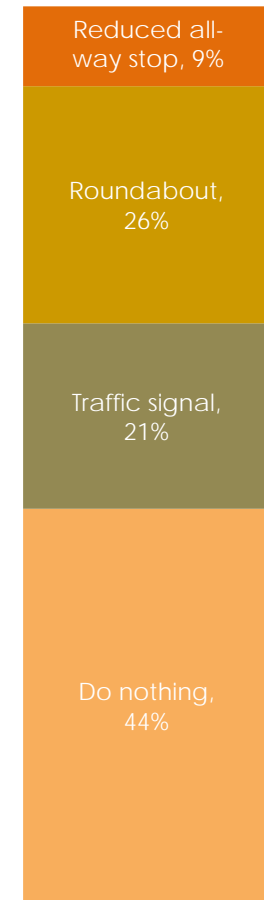
Community Feedback

When asked to rank a solution:

- Respondents were divided between a roundabout and signal
- “Do nothing” was the most frequent lowest-ranked option.



Most Preferred Option (n=348)

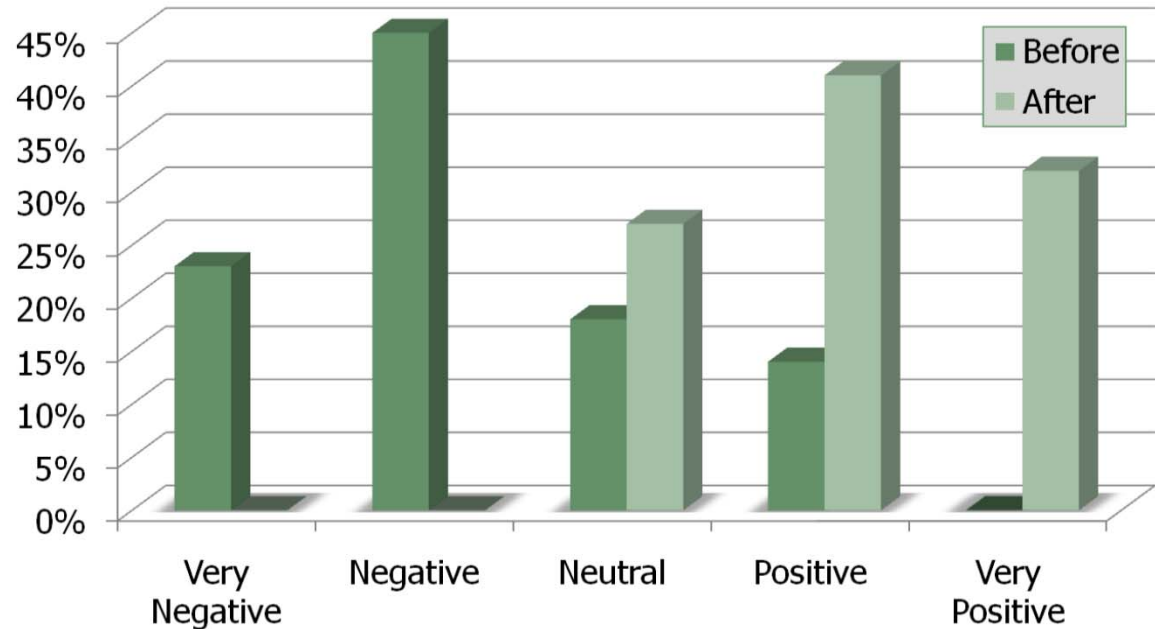


Least Preferred Option (n=348)

Evolving Opinions of Roundabouts

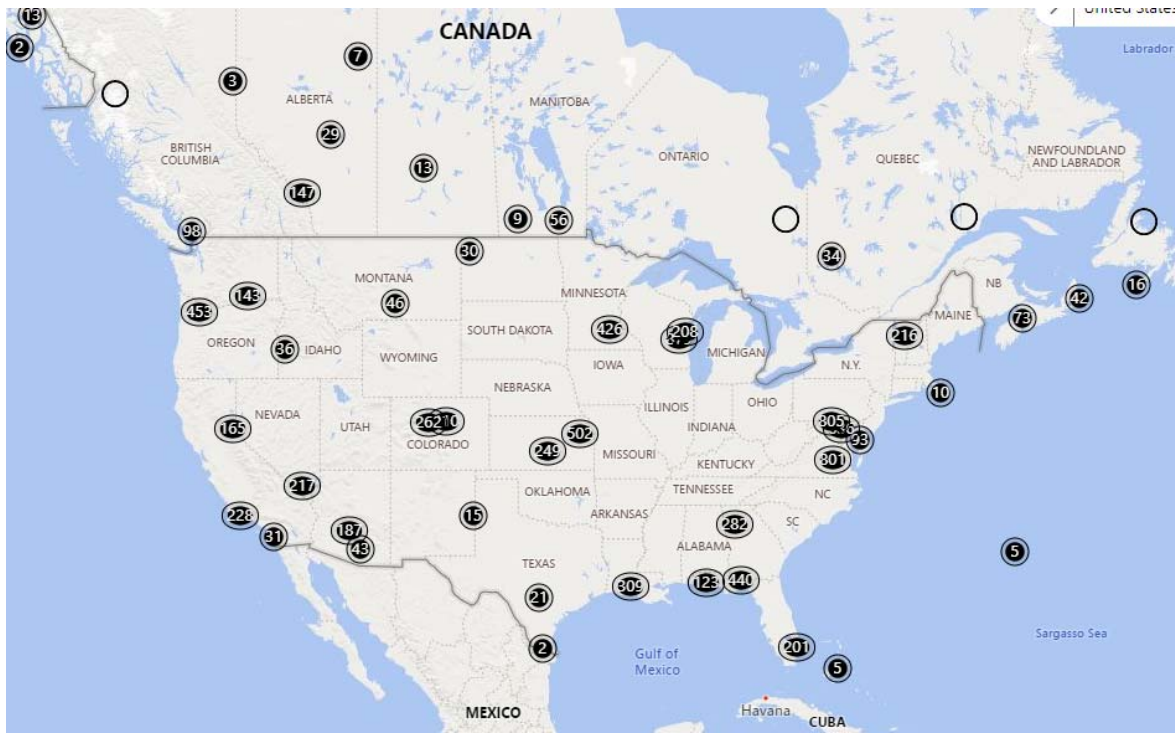
- Research has reported greater satisfaction with roundabouts after their implementation.

Public Attitude Towards Roundabouts
(Before and After Construction)



Source: NCHRP Synthesis 264 (Jacquemart)

Over 7,000 Roundabouts in US today



Source: Pennsylvania Department of Transportation



Source: Phil Demosthenes

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Evaluation Components

1. Existing Intersection & Setting

- Setting and Activity
- Safety
- Operations

2. Concept Development

- Concept Development Approach
- Preliminary concept Details

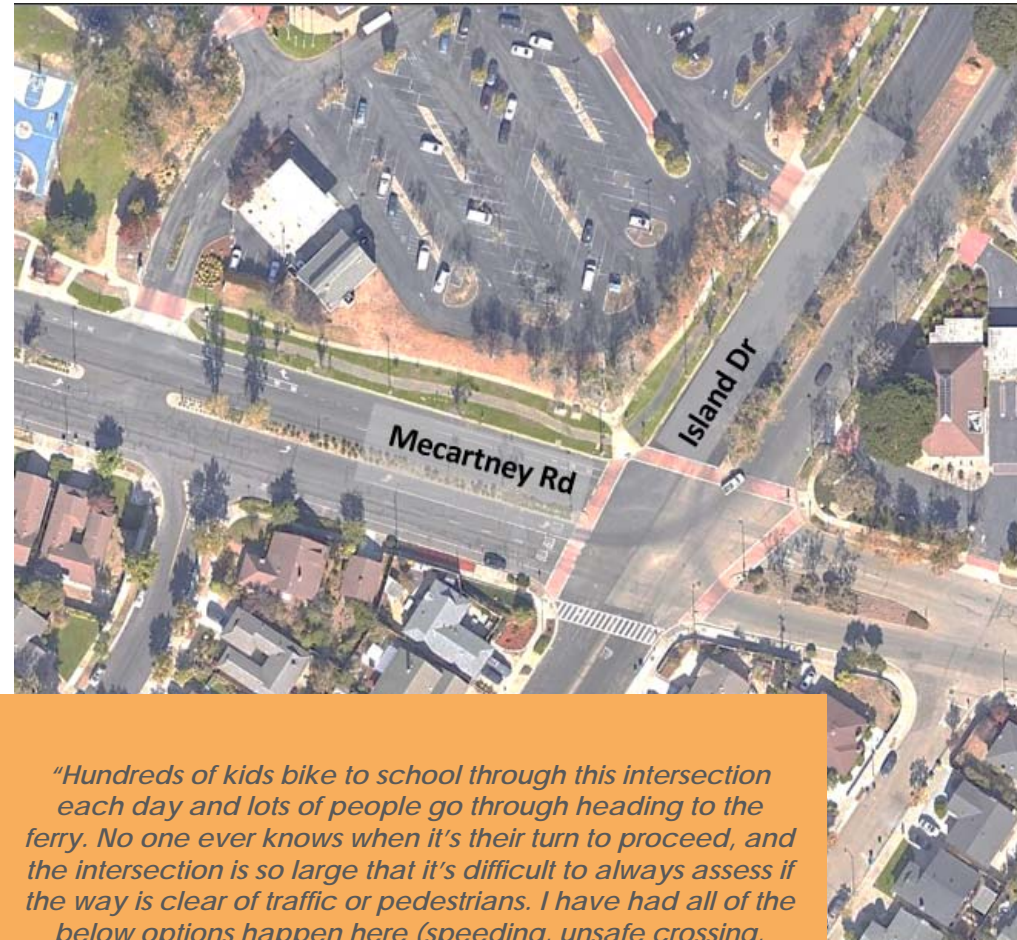
3. Compare Performance

Evaluation of:

- Safety
- Mobility
- Transit Access and Mobility

Existing Intersection & Setting

- o Large all-way stop intersection
- o Mix of commercial and residential uses at intersection
- o Multilane approaches (4 southbound lanes); long crossing distances
- o High level of bicycle riding and walking (school travel)
- o Starbucks recently opened on northeast corner
- o Evaluated intersection with pre-COVID and January 2022 traffic counts
- o Community shared issues with driver behavior, sun glare, Starbucks access, U-turns through intersection, perceived safety



"Hundreds of kids bike to school through this intersection each day and lots of people go through heading to the ferry. No one ever knows when it's their turn to proceed, and the intersection is so large that it's difficult to always assess if the way is clear of traffic or pedestrians. I have had all of the below options happen here (speeding, unsafe crossing, near miss while walking driving and biking)."

Source: See Click Fix "unsafe crossing" submittal on 9/13/2021



Safety



Motor Vehicle Operations



Pedestrian Quality of Service



Bicyclist Comfort



Truck/Design Vehicle Considerations



Transit Access and Mobility

Evaluation

Evaluation Results and Roundabout Recommendation

Evaluation Criteria	Roundabout	Signal	Reduced Footprint All-way Stop Control	No Build
Safety (Motor Vehicles)				
Safety (Pedestrians)				
Safety (Bicyclists)				
Motor Vehicle Operations				
Pedestrian Comfort and Quality of Service				
Bicyclist Comfort and Quality of Service				
Truck/Design Vehicle Considerations				
Transit Access				
Transit Mobility				

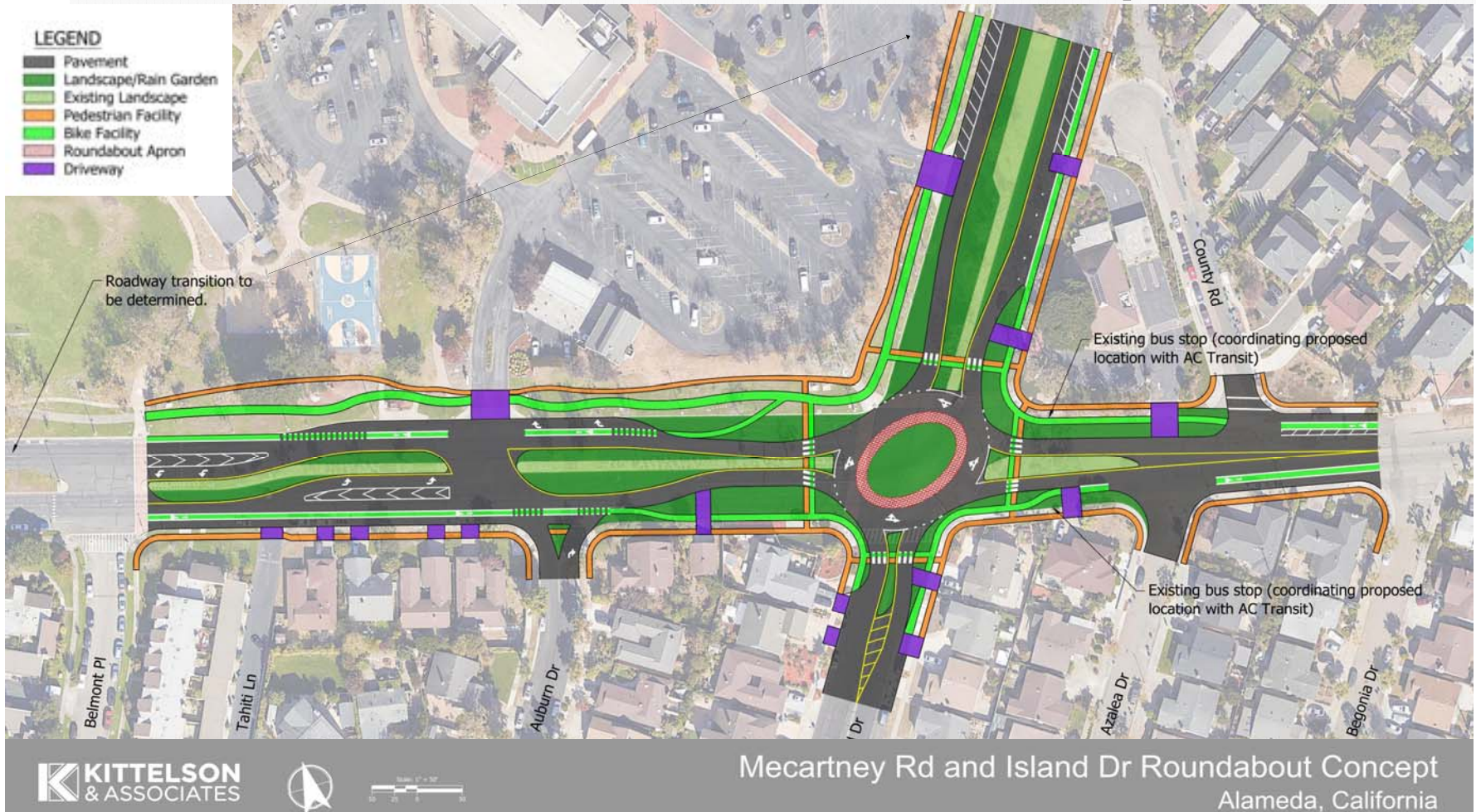
 = outperforms alternatives

Summary

Recommend advancing roundabout alternative. Summary of findings below.

Evaluation Category	Improvement
Safety and quality of service	Shorter pedestrian crossings Speed control features, Reduced conflicts between and among travel modes Provide option for bike travel on-street or in separate path with bike crossings
Improved vehicle mobility and operations	Reduced travel delay Volume-to-capacity ratio of 0.6 Resilient to future increased travel demand
Opportunities for landscaping and flood reduction	Reduced intersection footprint Flexibility in additional use of space Central island landscaping and art opportunities
Transit mobility and accessibility	Improved operations keeps buses moving Coordinating optimal stop locations with AC Transit
Site specific issues	Eliminates existing U-turn patterns Coordinating Starbucks access with Planning
Design vehicles	Serves AC Transit buses and large trucks Accommodates emergency vehicle access

Roundabout - DRAFT Concept

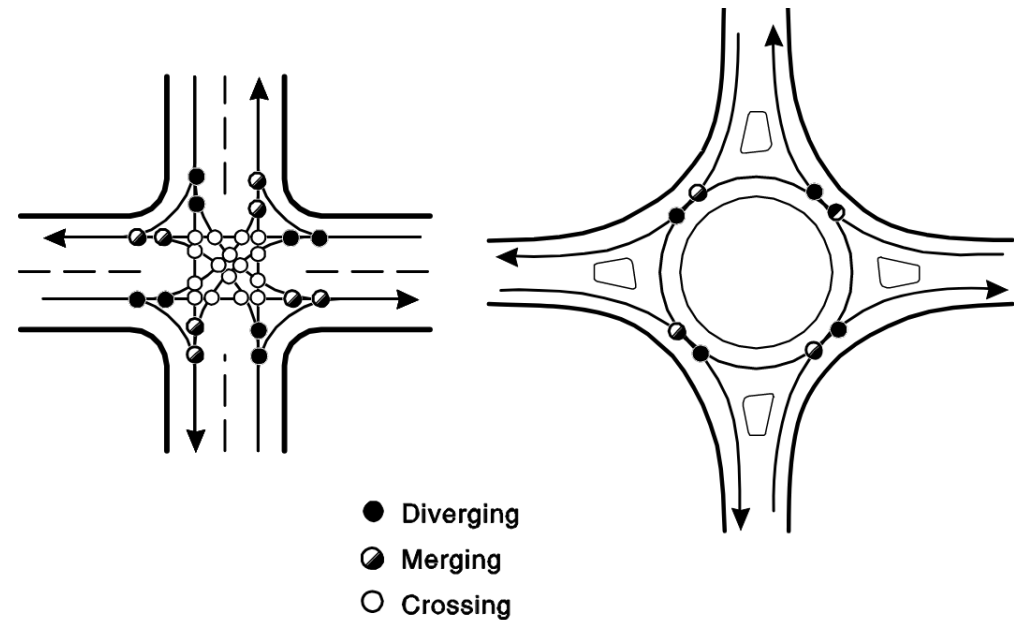


Roundabout Safety Performance

- 90-100% reduction in fatalities
- 75% reduction in injuries
- 35% reduction in total crashes
- Lack of pedestrian and bicyclist crash frequency
- Reduction in conflict number and speeds



Source: Lee Rodegerdts



Source: NCHRP Report 672

Roundabouts and Bicyclists

- **Beneficial design features:**
 - Slow vehicles to speeds compatible with bicycles
- **Considerations:**
 - Bicyclists' option of traveling as vehicle or pedestrian
 - Serve different users based on their level of comfort
 - Design manuals do not allow bicycle lanes within circulatory roadway



Source: Lee Rodegerdts

Roundabouts and Pedestrians

- **Beneficial design features:**
 - Slow vehicle speeds
 - Two-stage crossing (one direction at a time)
- **Considerations:**
 - Crosswalk alignment
 - Width of splitter island
 - Space for exiting vehicles to yield to pedestrians



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Next Steps

Request approval of concept at May 3 City Council Meeting

May 2022

Hearings

City Council Hearing

Project Design

Develop preferred concept

Late 2022 - 23

To be determined

Grants/Construction

Begin grant writing and construction on preferred alternative

1: <https://www.alamedaca.gov/Departments/Planning-Building-and-Transportation/Transportation/Mecartney-RoadIsland-Drive-Improvement-Project>



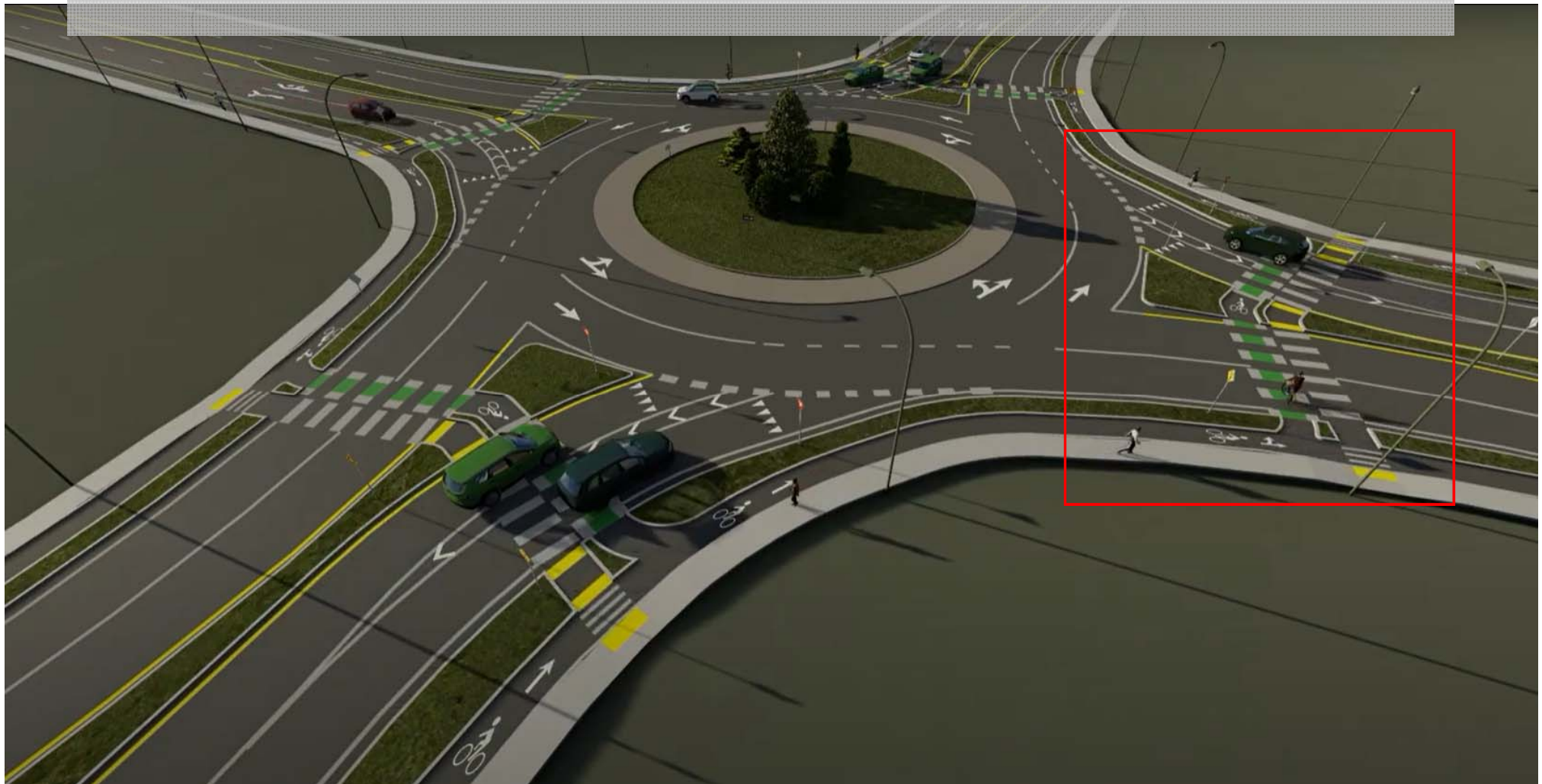
Mecartney Road & Island Drive Improvement Project

Transportation Commission

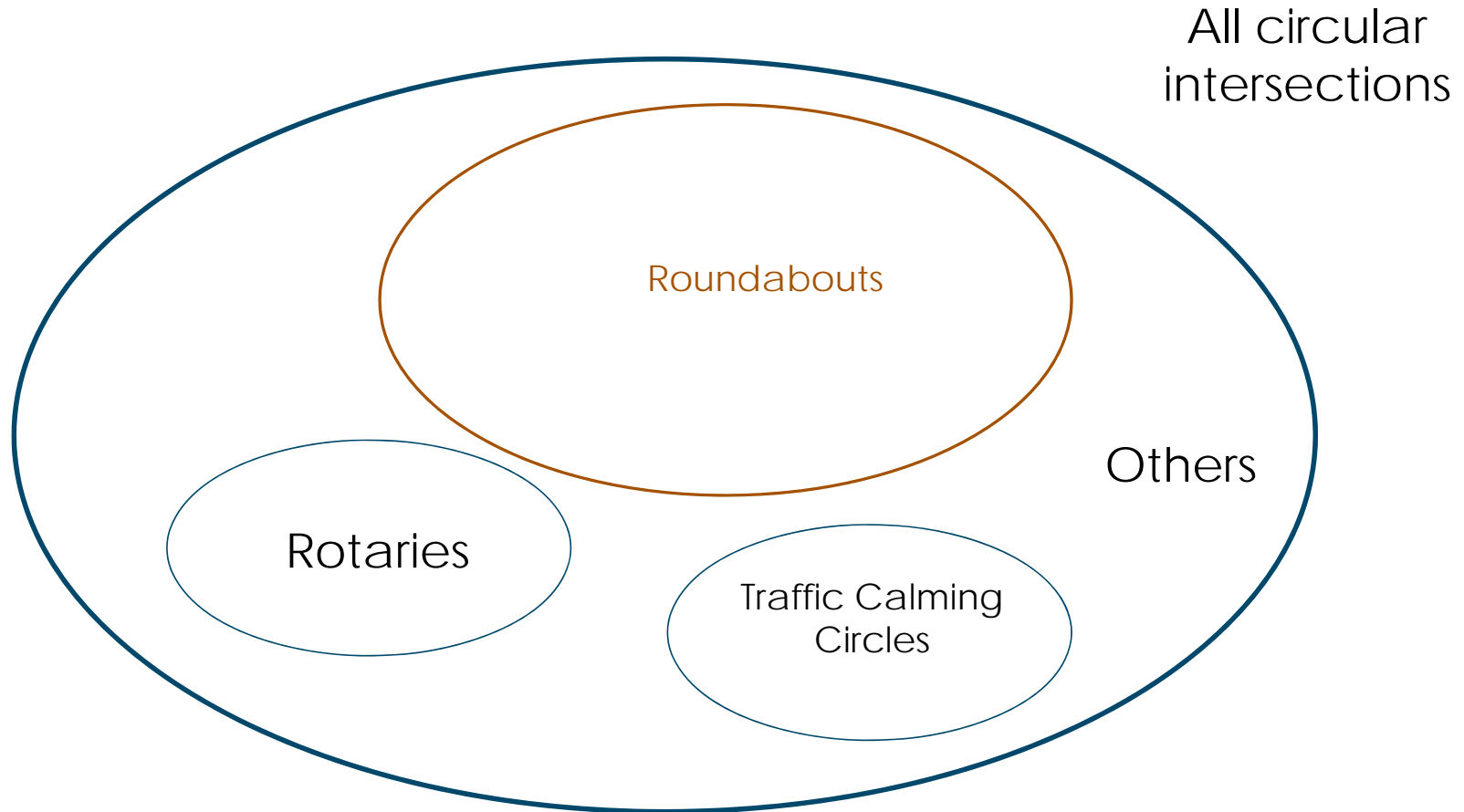
March 23, 2022

<http://www.alamedaca.gov/MecartneyIsland>

Roundabouts and Bicyclists



Types of Circular Intersections



Types of Circular Intersections



Roundabout

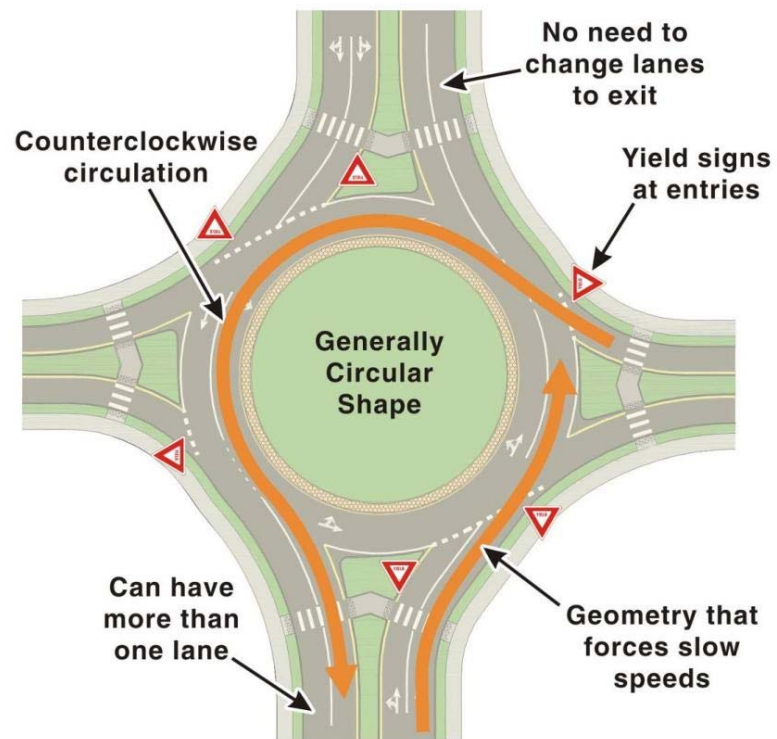
Yield-controlled to enter and includes splitter islands on approaches.



Traffic Calming Circle

May be stop-controlled or have no control (as shown). Smaller circle and no splitter islands on approaches.


What is a roundabout?



NCHRP Report 672, Exhibit 1-1

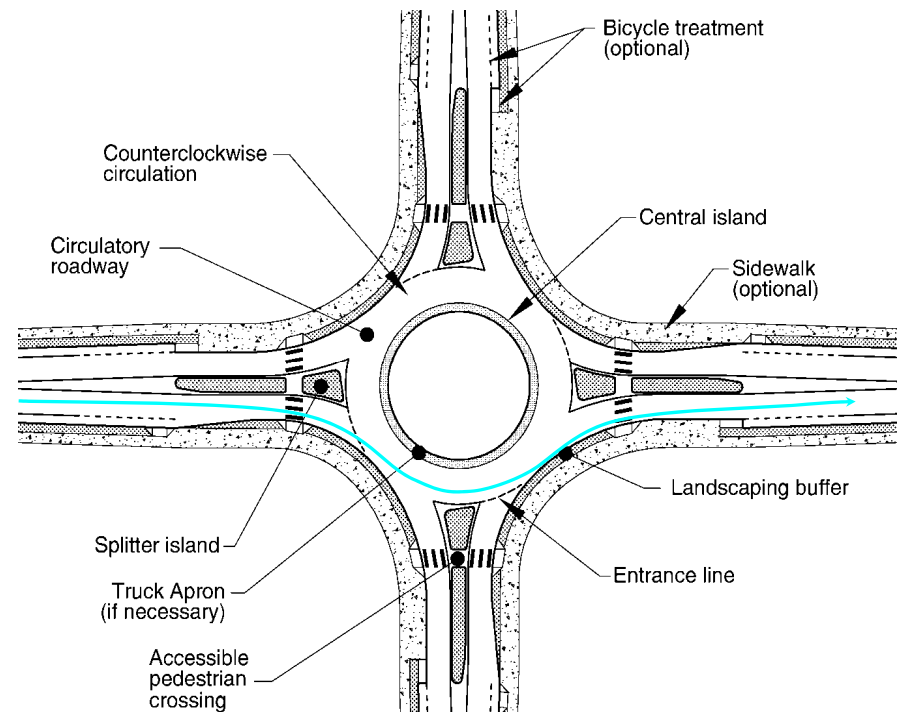


Why build roundabouts?

- 
- Roundabouts are being considered as viable or even preferred alternatives due to potential benefits:
 - Safety performance
 - Lower delay
 - Environmental benefits (emissions, fuel savings)
 - Access management
 - Operations and maintenance costs
 - Aesthetics

Vehicle Speeds: Reduced

- Geometry controls entry and circulating speeds roundabouts
 - Entry speeds at or less than:
 - 25 mph for single-lane
 - 30 mph for two-lane
 - Circulating speeds:
10 to 12mph
- Slow intersection speeds =
 - Increased time for driver reaction
 - Decreased chance for injury or fatality



Aesthetic and Green Infrastructure Opportunities



Where to Consider Roundabouts?

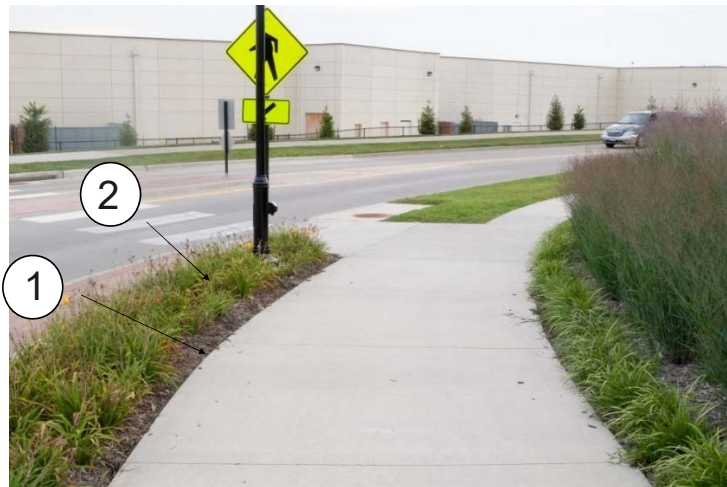
Advantageous	Potentially Challenging
<ul style="list-style-type: none">• Identified opportunity to improve safety• Long delays (Two-way or all-way stop capacity exceeded)• Closely spaced intersections• Aesthetic/gateway treatment desired• Near Schools• Unusual geometry	<ul style="list-style-type: none">• Physical or geometric constraints• Frequent large vehicles: Routes or land uses generating oversized loads• Nearby Preemption needs (e.g., nearby rail crossing)• Location along a coordinated signal network

Roundabouts and Accessibility

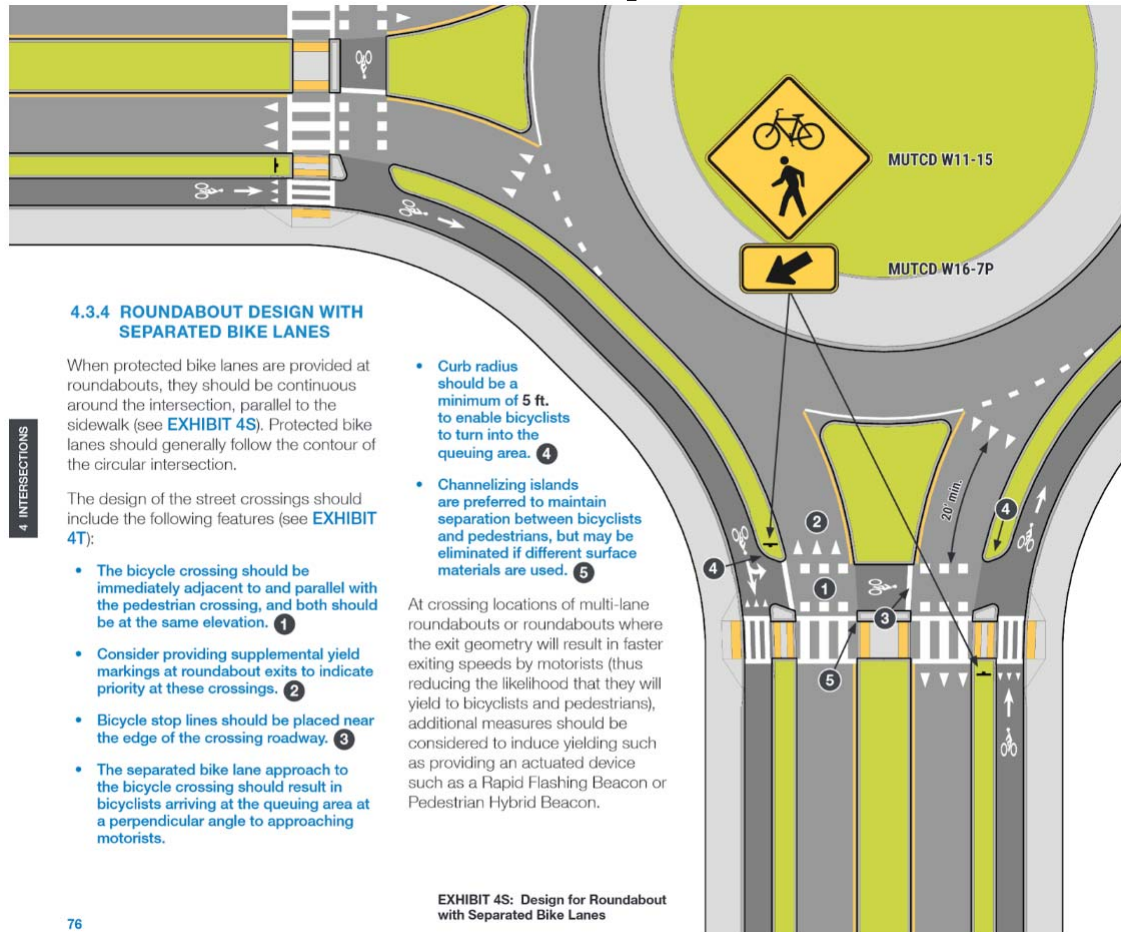
Considerations for Visually Impaired:

1. Well defined walkway edges
2. Separated walkways
3. Aligned detectable warnings
4. Perpendicular crossings
5. Contrasting crosswalk markings

Performance assessment detailed in NCHRP Report 834



Separate Bike/Ped Options



Roundabouts and Large Vehicles

- “Design” versus “accommodate” larger vehicles
- Accommodations include:
 - Truck aprons
 - Placement of landscaping
 - Reinforced curbs

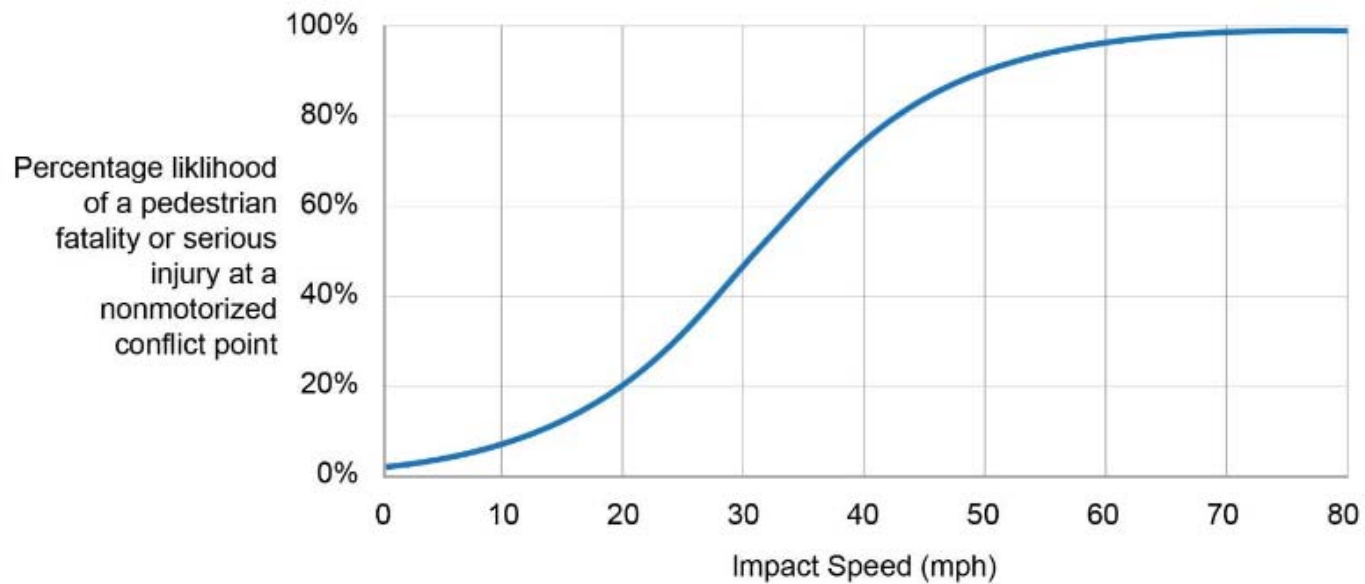


Cost Considerations

- Similar initial costs to a signal in some contexts
 - New intersection
 - When both require rebuilding an existing intersection
- Higher initial costs (i.e., construction) when replacing a signal with a roundabout
- Lower ongoing maintenance and operation costs relative to a signal
- Expected reduction in crashes can factor into life cycle costs

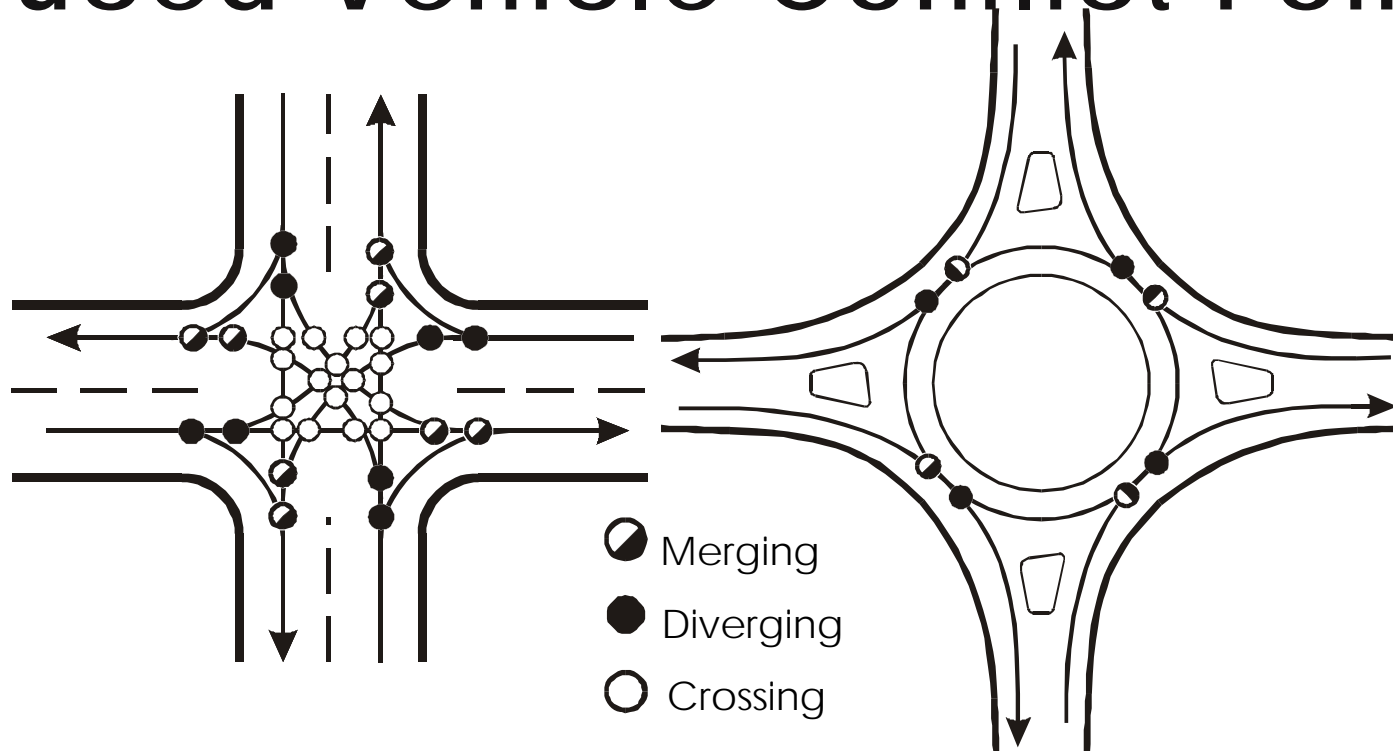
Lower speed is safer for pedestrians

Chance of pedestrian death if hit by a motor vehicle



Adapted from Porter, 2021

Reduced Vehicle Conflict Points



NCHRP Report 672, Exhibit 5-2