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Traffic Safety Improvements Countywide for the area of Colossal Cave Road

April 19, 2016

Pima County Department of Transportation

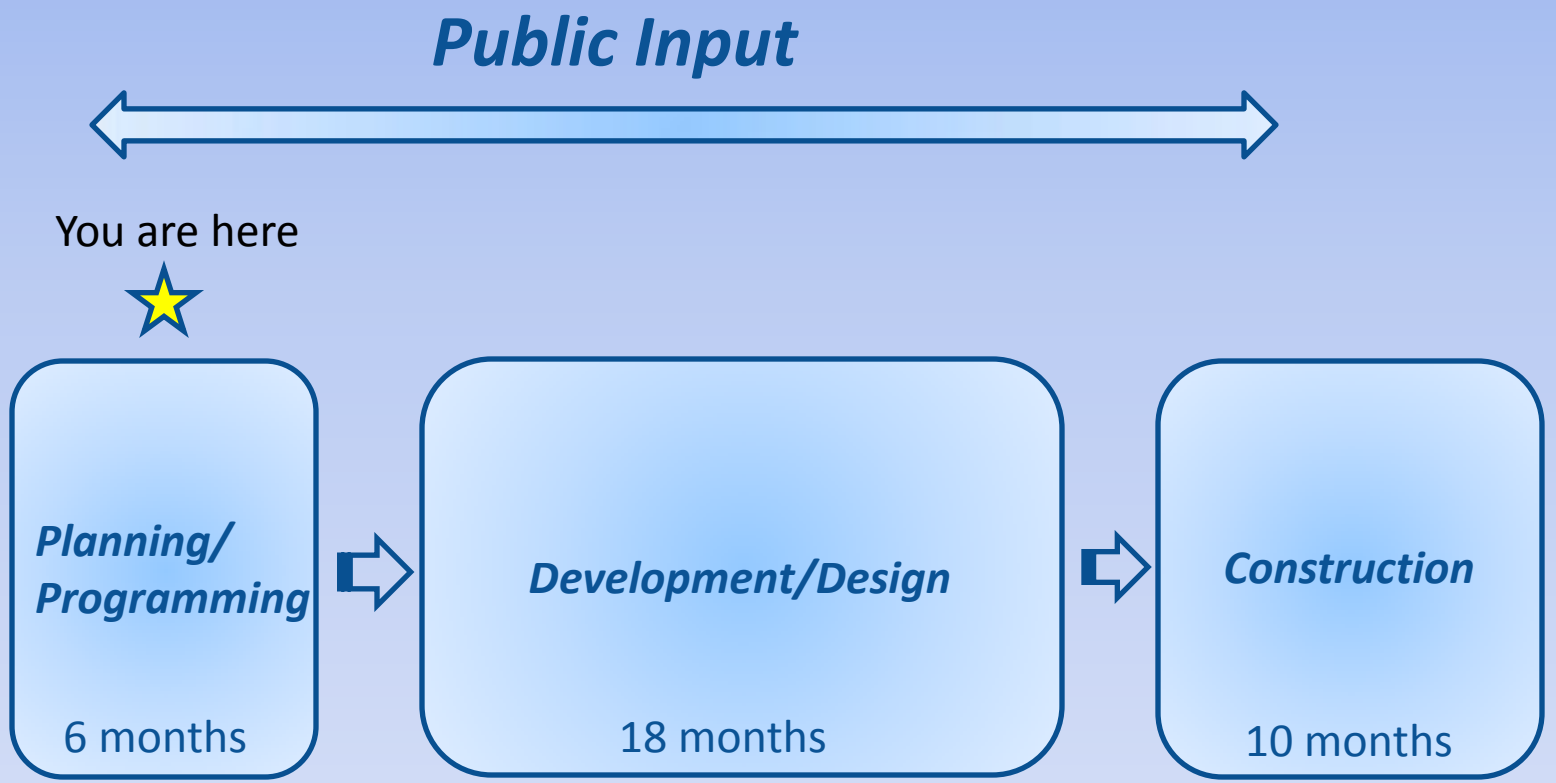
Welcomes You!

Traffic Engineering Division Staff

Steve Wilson P.E. – Civil Engineer

Hannah Olsen E.I.T. – Civil Engineering Assistant

Project Life Cycle



Life Cycle of the Project Development Process

Improvement Project Locations

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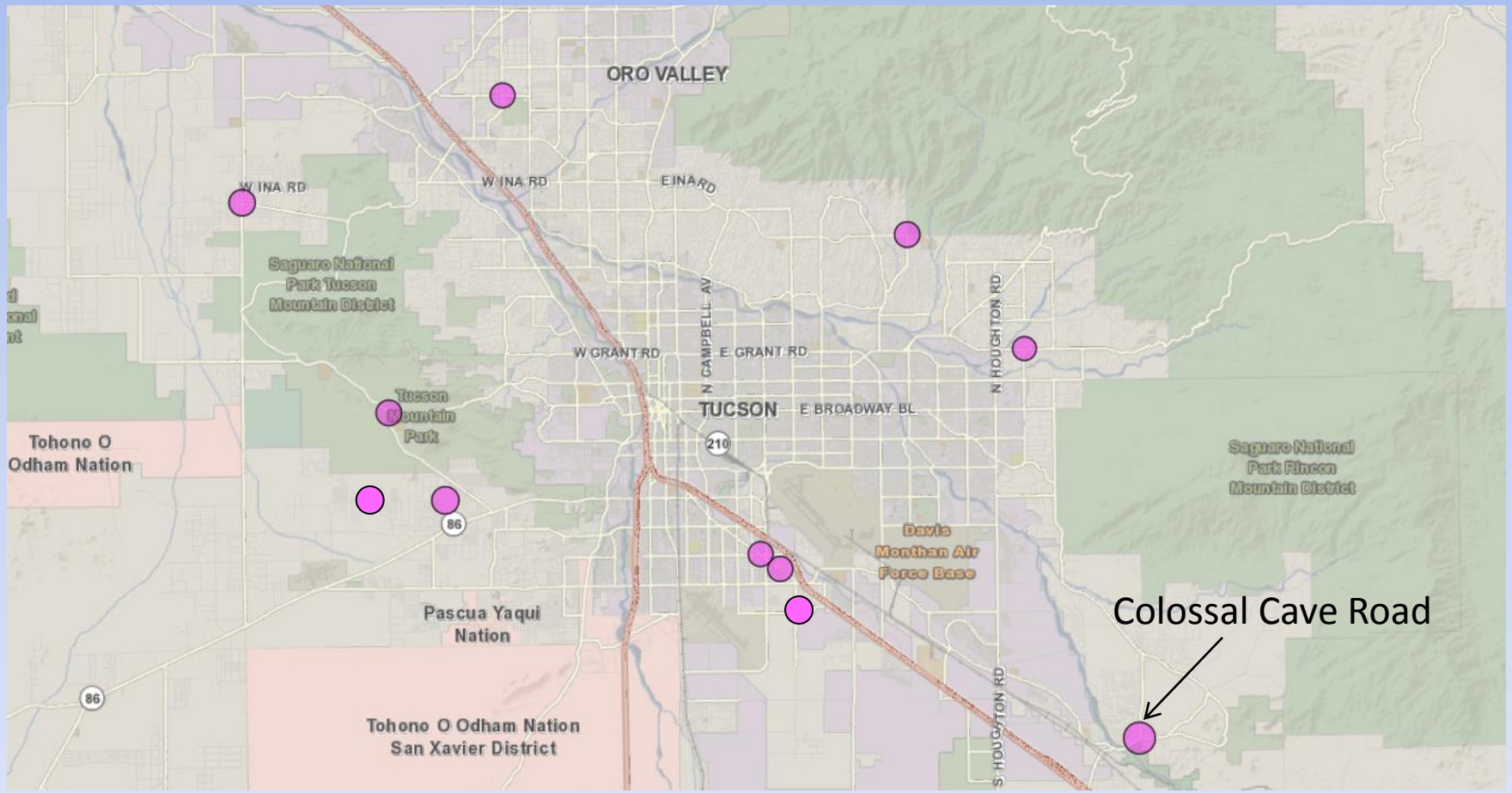
Proposed safety / capacity related projects



Project Goals

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1. Reduce the total number of crashes and reduce crash severity.
2. Improve bicycle and pedestrian safety and access
3. Improve safety by reducing traffic congestion
4. Maintain existing access to businesses and driveways
5. Analyze life-cycle costs with predictive safety methodology
6. Provide improvements based on safety benefits

Project Site

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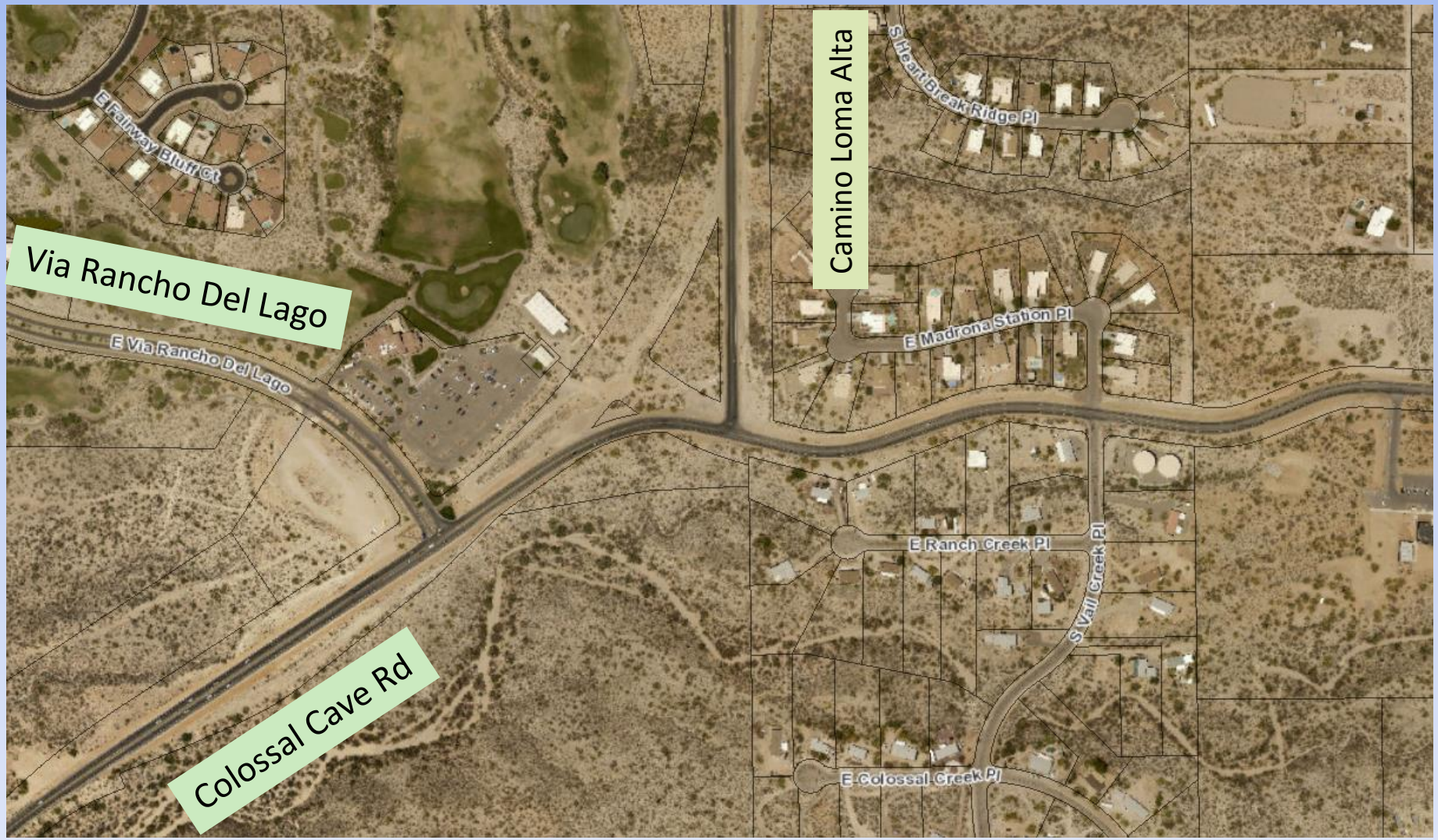
Colossal Cave Road; Rancho Del Lago to Camino Loma Alta



Traffic Operations

Colossal Cave Rd; Via Rancho Del Lago to Camino Loma Alta

Safety and Capacity related issues:

- Crash History - 6 crashes total , 2 rear-end crashes, 1 hit object 1 angle crash 2 miscellaneous crashes
- Average Daily Traffic (ADT) – 10,064 vpd Colossal Cave Rd 6,956 vpd on Camino Loma Alta and 4,778 vpd on Via Rancho Del Lago.
- Congested Area – Back-up on Via Rancho Del Lago exceeds 30 vehicles

Traffic Operations

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Traffic queue on Via Rancho Del Lago

Traffic Operations

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Congestion at Colossal Cave Rd at Via Ranch Del Lago

Traffic Operations

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Back-up at stop sign

Traffic Operations

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Camino Loma Alta at Colossal Cave Rd

Possible Solutions

Colossal Cave Road

Reasonable alternatives:

- Improve intersections at Via Rancho Del Lago and at Camino Loma Alta
- Realign Colossal Cave Road to connect with Camino Loma Alta
- Improve pedestrian access and facilities
- Improve bicycle facilities
- Add lighting at intersections

Project Site

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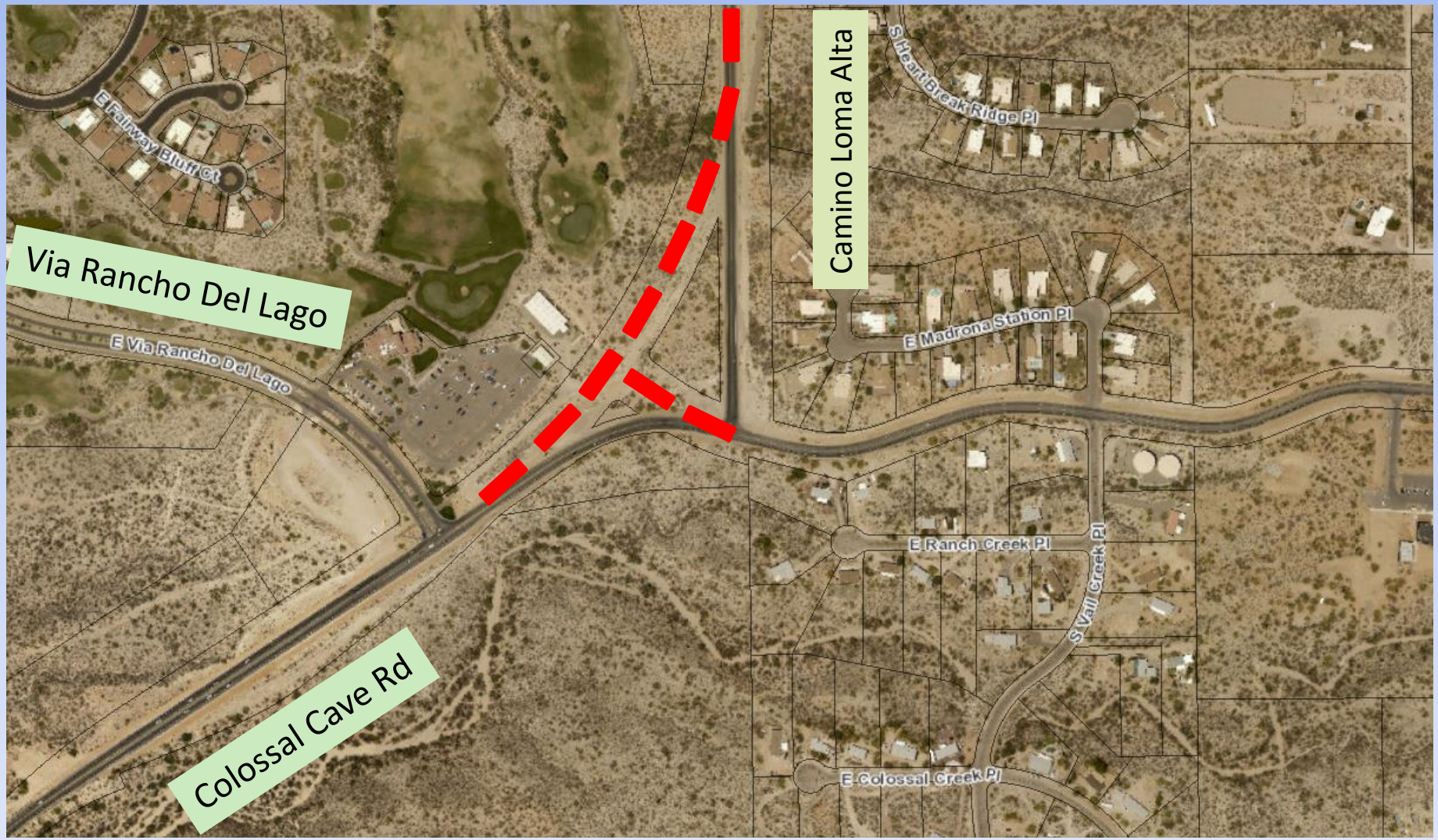
Colossal Cave Road; Rancho Del Lago to Camino Loma Alta

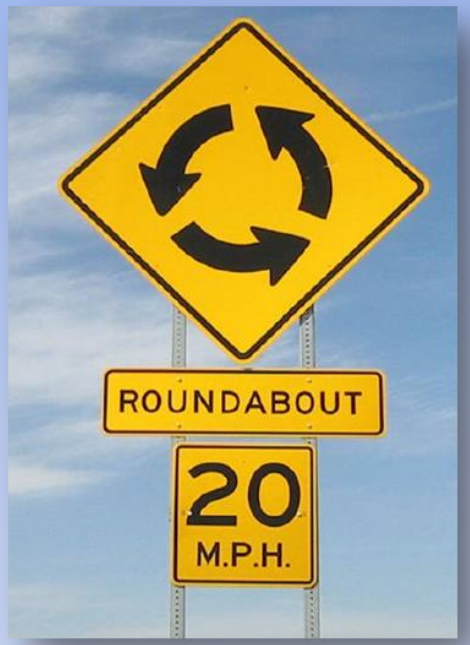


Intersection Types

Stop Control

Traffic Signals

Roundabouts



Hannah Olsen E.I.T

Modern Roundabout Example

96th Street and Cholla Street in Scottsdale

Other Circular Intersections

Neighborhood Traffic Circles

- Common in Tucson neighborhoods
- Used to slow down traffic on local streets

Rotaries

- First circular intersections in the U.S.
- Common back east
- Very large radii

Roundabouts vs. Traffic Signals

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- ✓ Fewer & Less Severe Accidents
- ✓ No Red Light Running
- ✓ Slower Speeds (operating speeds 15–23 mph)
- ✓ Improved Pedestrian Safety
- ✓ Faster Commute Travel Times
- ✓ Less Congestion and Delay
- ✓ Increased Capacity
- ✓ Aesthetics
- ✓ Reduced Air Pollution

Roundabout Conversion

(click on image to play video)

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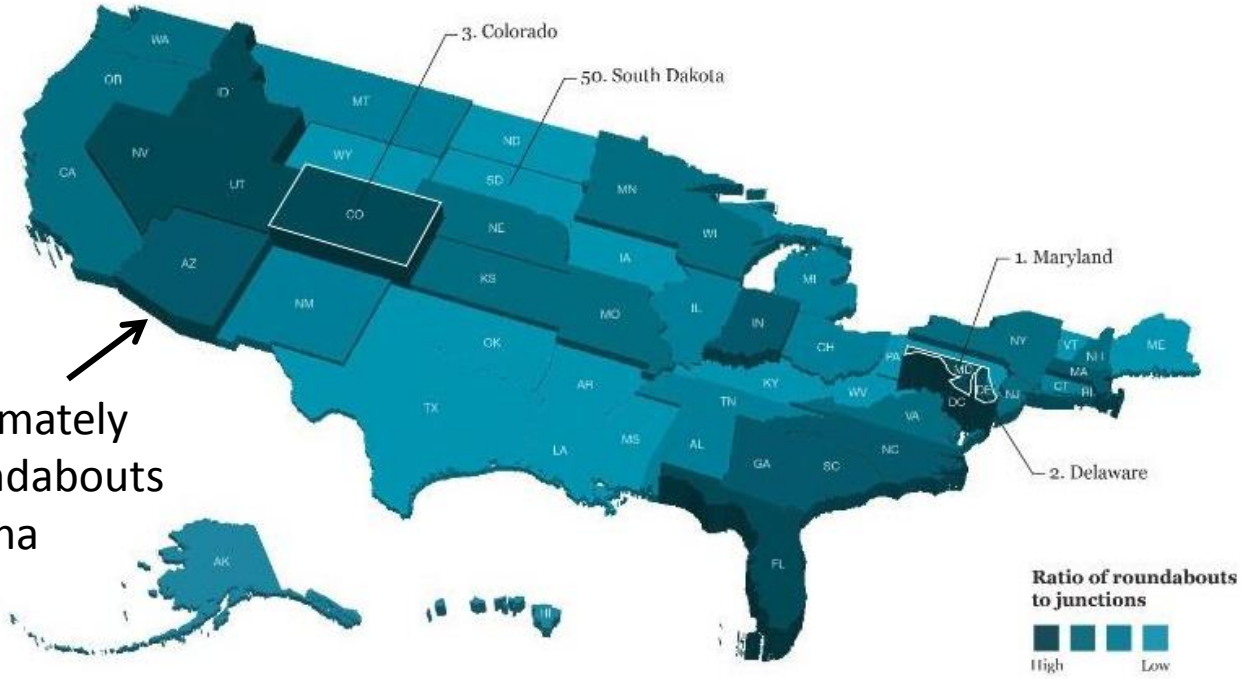
Roundabout Locations

Source: Nokia's 2014 Here Maps (Graphic by Damien Hauser with ESRI)



Approximately 30 Roundabouts in Arizona

Roundabout Locations in Pima County:

- Hardy Rd/ Calle Buena Vista (Town of Oro Valley)
- I-19 at Canoa Rd Traffic Interchange (Green Valley)
- Continental Rd/Camino Del Sol (Green Valley)

Roundabout Locations

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Camino Del Sol at Continental Road in Green Valley

Before: 12 crashes in five years

After: 0 crashes in five years

Frequently Asked Questions

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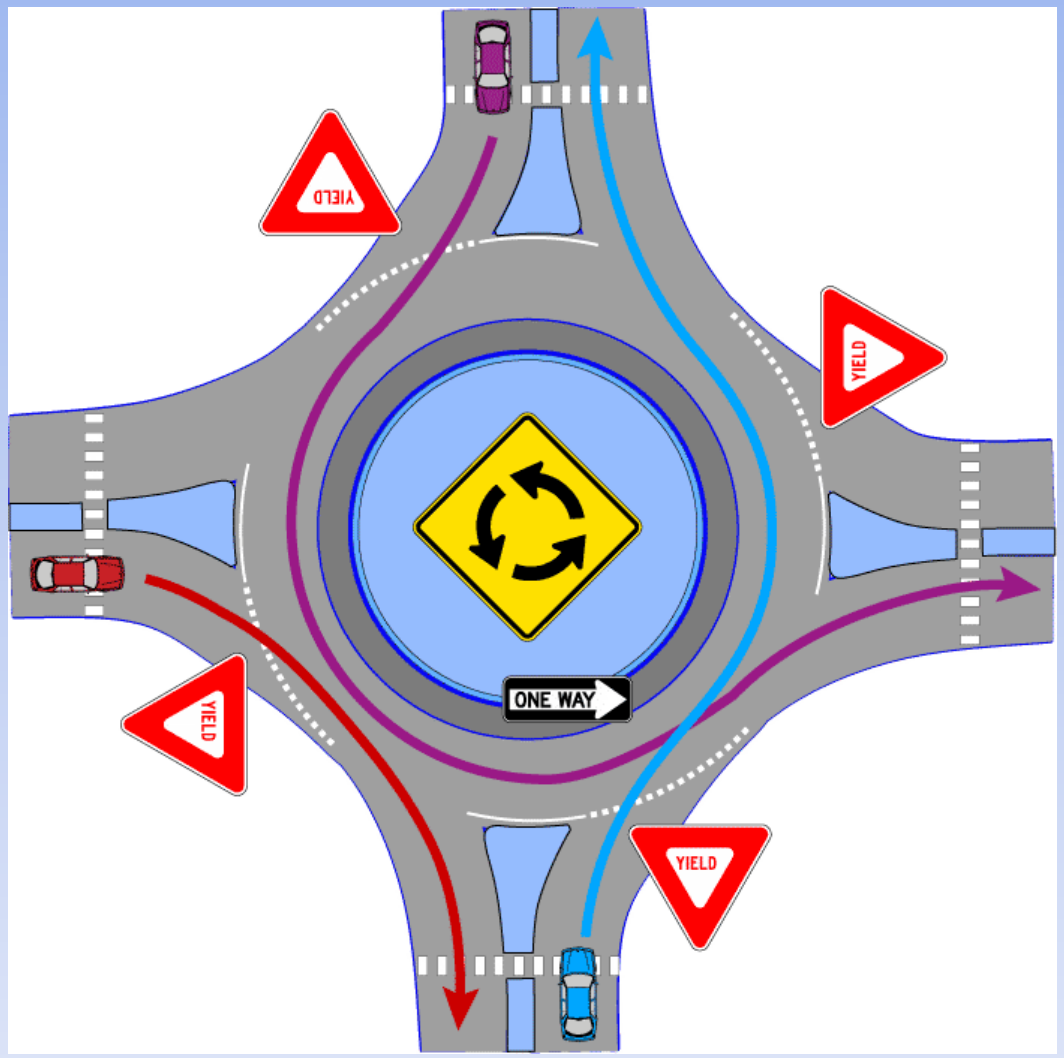
- ✓ How to Use Them
- ✓ Vehicular Safety
- ✓ Pedestrian Safety
- ✓ Bicycle Safety
- ✓ Large Trucks
- ✓ Buses
- ✓ Fire Engines
- ✓ Emergency Vehicles
- ✓ Access to Businesses
- ✓ Cost
- ✓ Aesthetics



Roundabouts and Safety

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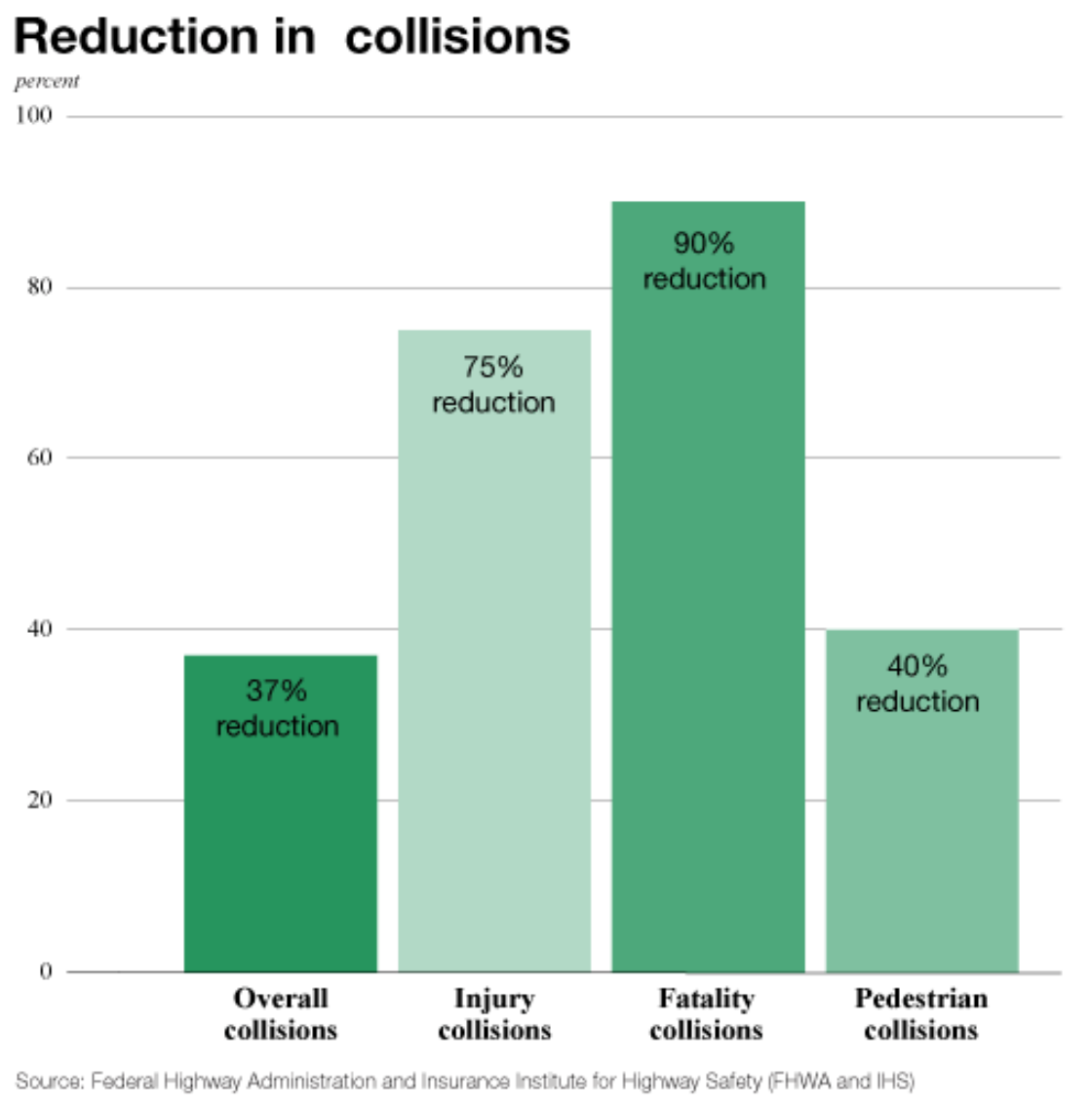

Conflict Points at Intersections

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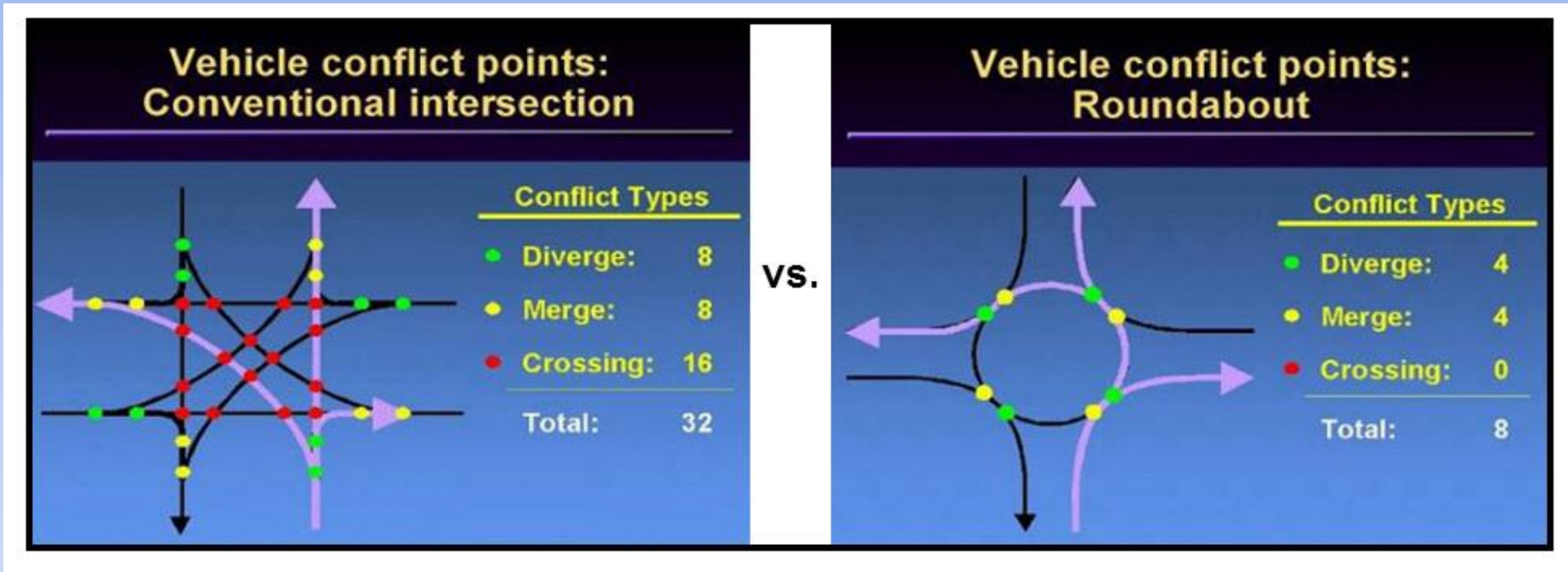

Pedestrian Safety

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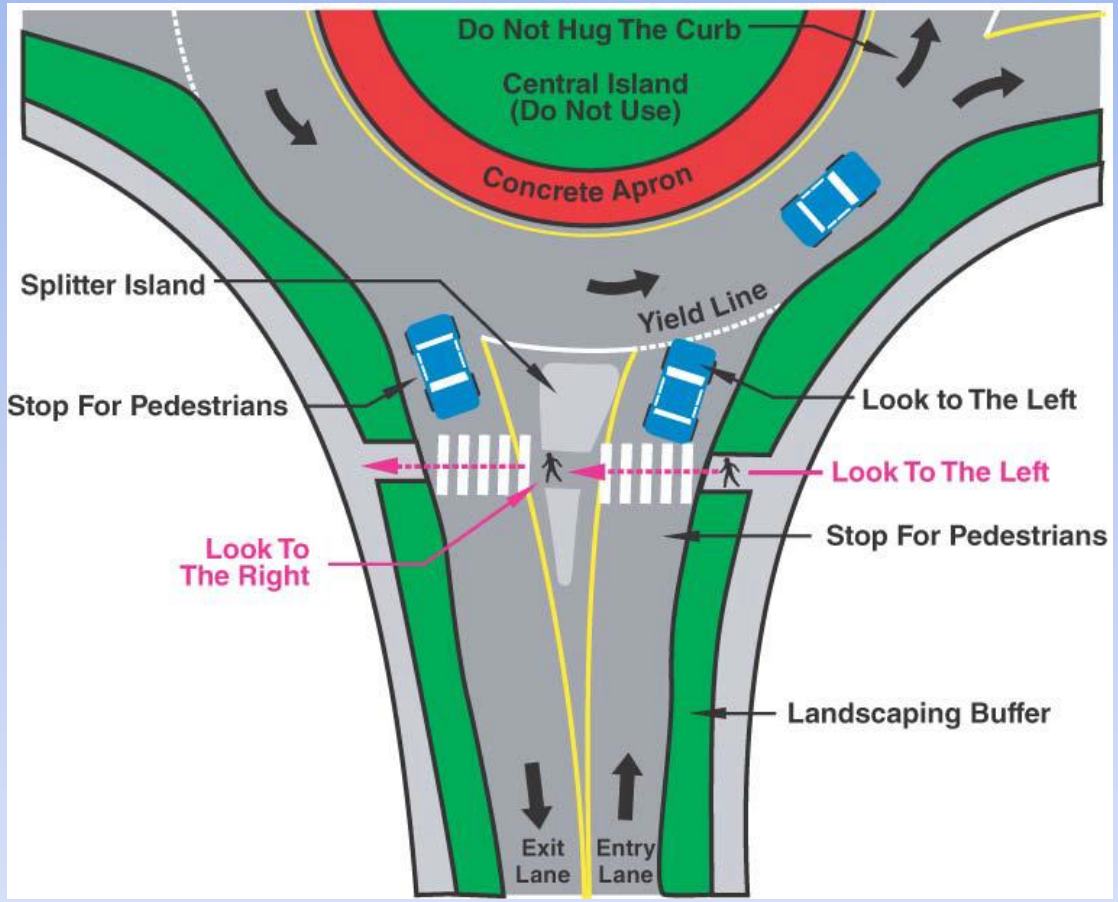
- Roundabouts are safer than signalized intersections
- Slower traffic speeds
- Two stage crossing for pedestrians
- Crosswalk set back from circulatory roadway



Bicycle Safety

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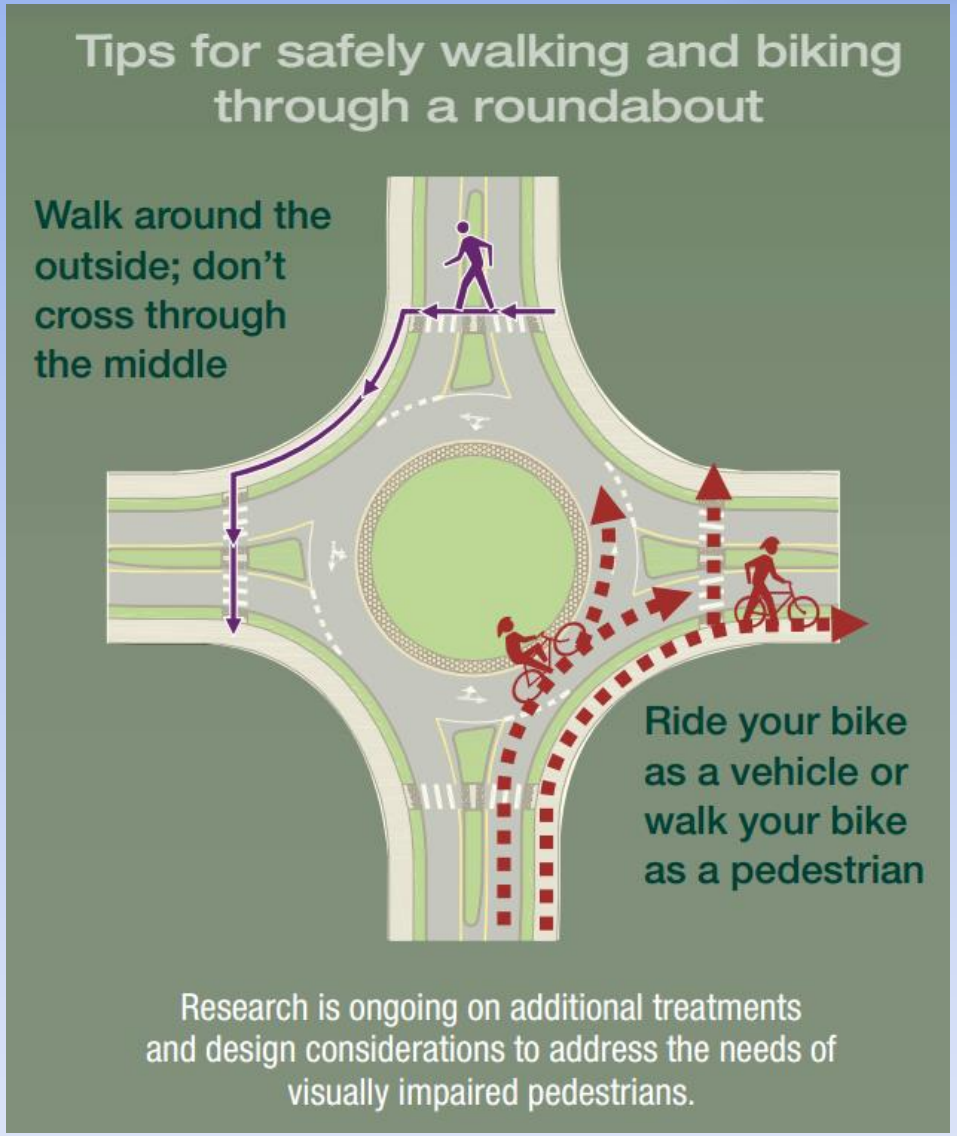
TIPS for using a Roundabout:

- Riders follow the same rules as vehicles.
- Be assertive when merging with traffic.
- Riders should travel at approximately the same speed as motorists.
- Cyclists should ride in the center of the lane, not along the curb line.
- Be sure to use proper hand signals when exiting the roundabout.



Buses

104th Street & Cactus Street in Scottsdale

Semi-Tractor Trailers

(click on image to play video)

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Fire Trucks

(click on image to play video)

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Access to Businesses

- *Most business owners agree that slower speeds and safer travel enhance business*

- *Roundabouts provide better access to businesses near the intersection than traffic signals because roundabouts do not have left-turn storage lanes with raised medians*

Roundabout Cost vs. Traffic Signals

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- *Initial capital cost about slightly higher*
- *Serviceable life 2x longer*
- *Annual equipment maintenance costs $10,500 less*
- *Safety costs significantly lower*
- ***Overall life-cycle cost ½ the life-cycle cost of a signal***

Roundabouts Landscaping

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More Information on Roundabouts

Pima County Department of Transportation website:
http://webcms.pima.gov/Transportation/Single-Lane Roundabouts

Arizona Department of Transportation website:
https://azdot.gov/about/transportation- safety/roundabouts/overview

Federal Highway Administration Roundabouts - An Informational Guide:
https://www.fhwa.dot.gov/publications/research/safety/00067/000671.pdf

NCHRP Report 672 – Roundabouts: An Informational Guide
https://*onlinepubs.trb.org/.../nchrp_rpt_672.pdf*

RoundaboutsUSA: *www.**roundaboutsusa**.com*

Roundabout Resources: *www.**roundaboutresources**.org*