Traffic Safety Improvements Countywide for the area of Colossal Cave Road

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Pima County Department of Transportation

Welcomes You!

Traffic Engineering Division Staff

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Project Life Cycle

Life Cycle of the Project Development Process

Public Input

You are here

Planning/Programming
6 months

Development/Design
18 months

Construction
10 months

PIMA COUNTY TRANSPORTATION
Improvement Project Locations

Proposed safety / capacity related projects

Colossal Cave Road
Project Goals

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

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

Traffic queue on Via Rancho Del Lago
Traffic Operations

Congestion at Colossal Cave Rd at Via Ranch Del Lago
Traffic Operations

Back-up at stop sign
Traffic Operations
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

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

 ✓ 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)
**Roundabout Locations**

**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)

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

Approximately 30 Roundabouts in Arizona
Roundabout Locations

Camino Del Sol at Continental Road in Green Valley

Before: 12 crashes in five years  After: 0 crashes in five years
Frequently Asked Questions

✓ 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

Reduction in collisions

<table>
<thead>
<tr>
<th>Category</th>
<th>Reduction</th>
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</thead>
<tbody>
<tr>
<td>Overall collisions</td>
<td>37% reduction</td>
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<tr>
<td>Injury collisions</td>
<td>75% reduction</td>
</tr>
<tr>
<td>Fatality collisions</td>
<td>90% reduction</td>
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<tr>
<td>Pedestrian collisions</td>
<td>40% reduction</td>
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</tbody>
</table>

Source: Federal Highway Administration and Insurance Institute for Highway Safety (FHWA and IHS)
Conflict Points at Intersections

Vehicle conflict points:
Conventional intersection

<table>
<thead>
<tr>
<th>Conflict Types</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diverge:</td>
<td>8</td>
</tr>
<tr>
<td>Merge:</td>
<td>8</td>
</tr>
<tr>
<td>Crossing:</td>
<td>16</td>
</tr>
<tr>
<td><strong>Total:</strong></td>
<td><strong>32</strong></td>
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</table>

Vehicle conflict points:
Roundabout

<table>
<thead>
<tr>
<th>Conflict Types</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diverge:</td>
<td>4</td>
</tr>
<tr>
<td>Merge:</td>
<td>4</td>
</tr>
<tr>
<td>Crossing:</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total:</strong></td>
<td><strong>8</strong></td>
</tr>
</tbody>
</table>
Pedestrian Safety

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

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.

Tips for safely walking and biking through a roundabout

Walk around the outside; don’t cross through the middle

Ride your bike as a vehicle or walk your bike as a pedestrian

Research is ongoing on additional treatments and design considerations to address the needs of visually impaired pedestrians.
Buses

104th Street & Cactus Street in Scottsdale
Semi-Tractor Trailers
(click on image to play video)
Fire Trucks
(click on image to play video)
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

- 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

Desert Botanical Garden

YIELD

In Traffic In Cycle

PIMA COUNTY
TRANSPORTATION
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:

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

RoundaboutsUSA: www.roundaboutsusa.com

Roundabout Resources: www.roundaboutresources.org