Safety Aspects of Roundabouts
Terminology

All Circular Intersections

Rotaries

Roundabouts

Neighborhood Traffic Circles

Others
What isn’t a Modern Roundabout?

- Traffic Circle
- Rotary
- Neighborhood Circle
What is a Modern Roundabout?

- A compact circular intersection in which traffic flows counterclockwise around a center island
- Entering traffic yields
- Approaches are channelized to deflect traffic into a proper entry path
- Designed to slow the speed of vehicles
What is a Modern Roundabout?

600+ feet
**Key Features**

- Yield control
- Circulatory roadway
- Central island
- Splitter island
- Pedestrian access
- Landscaping
- Truck apron
- Signing and marking
Key Features

Vehicles yield upon entry in a modern roundabout.

No traffic control in the circulatory roadway. Movement is counter-clockwise.
Key Features

Central island deflects vehicles from a straight-line path.

Landscaping is needed as a visual element to drivers.
Key Features

Splitter islands separate, deflect, and slow traffic.

Where trucks are common, a properly designed apron may be necessary.
Pedestrian crossings must conform to ADA standards.
Proper signing and marking help drivers navigate the roundabout.
Why a Roundabout?

- Improve safety
- Reduce congestion and pollution
- Save money
- Complement other common community values
Vehicle Conflict Points

- Crossing (0)
- Diverging (4)
- Converging (4)

- Crossing (16)
- Diverging (8)
- Converging (8)
Vehicle-Pedestrian Conflict Points

Crossing (8)

Crossing (16)
**Type of Crashes**

**Typical 4-leg intersection**
- Angle
- Left turn

**Roundabout**
- Sideswipe

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[Diagram of typical 4-leg intersection showing angle and left turn crashes]

[Diagram of roundabout showing sideswipe crash]
Study Results

- Crashes
- Fatalities and Injuries
- Idling
- Stops
- Delay
Roundabouts

- No signal equipment to install, power, and maintain
- May require less right-of-way
- Less pavement may be needed
• Quieter
• Functional
• Aesthetically pleasing
Special Considerations

- Pedestrians
- Bicyclists
- Visually-impaired
Multi-Lane Roundabouts
• Higher approach speeds
• Properly designed splitter island is critical
Right-of-Way Requirements

Before

After
<table>
<thead>
<tr>
<th>Where to Consider Roundabouts</th>
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<tbody>
<tr>
<td>Intersections with high crash rates/high severity rates</td>
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<tr>
<td>Intersections with complex geometry, skewed approaches, &gt;4 approaches</td>
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<tr>
<td>Rural intersections with high-speed approaches</td>
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<tr>
<td>Freeway interchange ramp terminals</td>
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<td>Closely spaced intersections</td>
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<td>Replacement of all-way stops</td>
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<td>Replacement of signalized intersections</td>
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<td>At intersections with high left turn volumes</td>
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<td>Replacement of 2-way stops with high side-street delay</td>
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<td>Intersections with high U-turn movements</td>
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<td>Transitions from higher-speed to lower-speed areas</td>
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<td>Where aesthetics are important</td>
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<td>Where accommodating older drivers is an objective</td>
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Roundabouts in Corridors
Roundabouts in Interchanges

- Fewer queue backups
- Less bridge width possible
Roundabouts and Driveways
Roundabout Resistance

Public Attitude Towards Roundabouts
(Before and After Construction)

Source: NCHRP Synthesis 264
Keys to Success

- Proper design
- Public involvement
- Stakeholder support
For More Information

- FHWA Office of Safety
  - http://safety.fhwa.dot.gov/
- Institute of Transportation Engineers
  - http://www.ite.org/
- U.S. Access Board
  - http://www.access-board.org/
- National Cooperative Highway Research Program
  - http://www.trb.org/