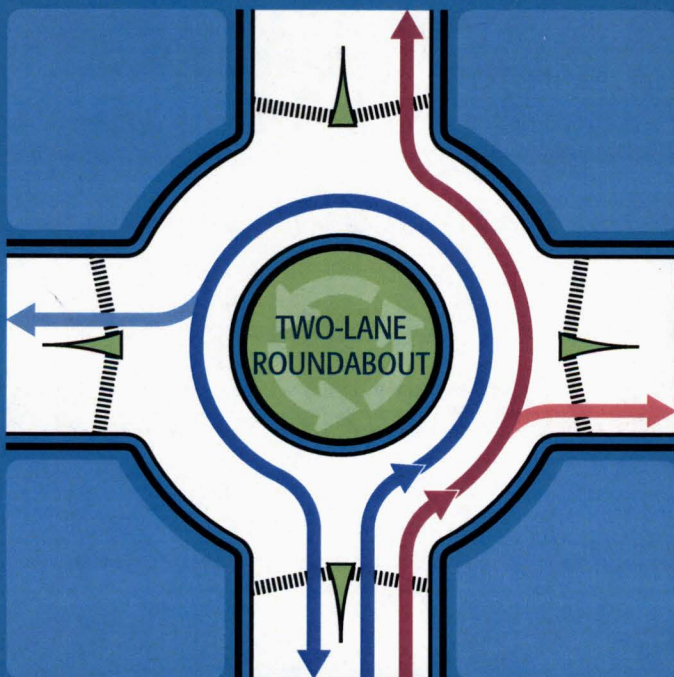
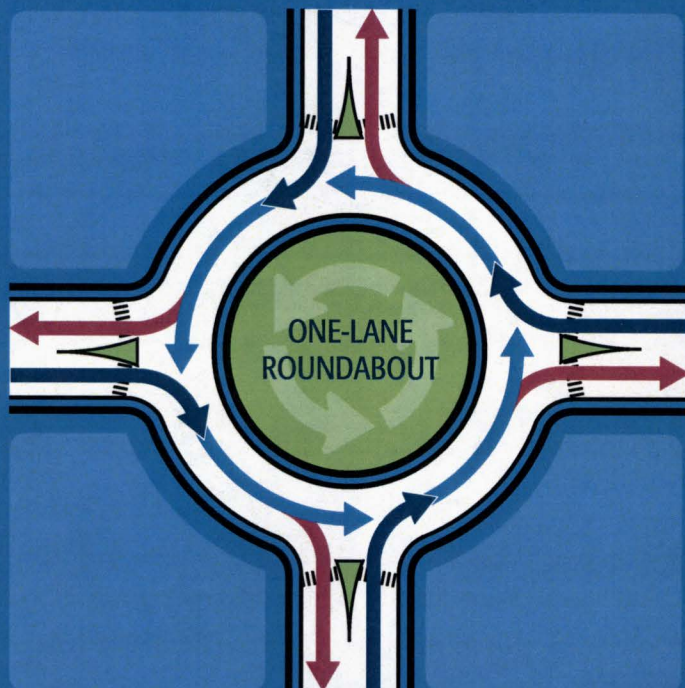


# ROUNDBABOUTS

## What?

A roundabout is a one-way, circular intersection that uses signs to guide motorists around them. They do not have traffic signals. Roundabouts have safe crossings for pedestrians and bicyclists.



## Roundabout Rules of the Road

Slow down



Choose lane according to exit

Yield to traffic in roundabout



Do not pass in roundabout



Be alert for pedestrians and bicyclists



Allow emergency vehicles to pass





# ROUNABOUTS FICTION vs. FACT

## @ FICTION

Roundabouts are unsafe

## @ FACT

Roundabouts are safe. They have fewer and less severe crashes, 90% fewer deaths and 75% fewer injuries.

In roundabouts, drivers cannot run red lights or stop signs.

Roundabouts can be used in various intersection types.

## @ FICTION

Roundabouts are dangerous for pedestrians and bicyclists

## @ FACT

Roundabouts have up to 40% fewer incidents with pedestrians and cyclists.

## @ FICTION

Roundabouts cause traffic delays

## @ FACT

Roundabouts offer non-stop travel with no waiting at stop signs or traffic signals. Roundabouts accommodate up to 50% more traffic than typical intersections.

## @ FICTION

Roundabouts are expensive

## @ FACT

Roundabouts eliminate the cost of traffic signals and signal maintenance. During power outages, traffic still flows freely.

## @ FICTION

Roundabouts are bad for business

## @ FACT

Businesses near roundabouts have seen an increase in sales with more customers who can easily and safely drive, walk, or bike there.

They can also mark a business district or main street.





***"Personally, I love them, and I'll tell you why. You only have to stop one lane of traffic, then go to the middle and wait. The cars can't go much faster than 20 mph through the roundabout so the crossing aspect is great."***

**Denise Haltom**

School Crossing Guard, Suamico, Wisconsin  
Green Bay Press-Gazette  
February 6, 2001

***"We have had a lot of people not very happy about the idea of roundabouts, but after they are constructed, those fears mostly go away."***

**Brian Walsh**

Washington State Department of Transportation  
Seattle Times  
June 5, 2002

***"We all know people speed up to get through a yellow light. But at the roundabout, all the vehicles have to slow down ... we have almost 50 roundabouts now, we have a lot [fewer] personal injuries. We have fewer fatalities."***

**James Brainard**

Mayor, City of Carmel, Indiana  
www.nbc17.com  
November 8, 2007

### Education is key.

Education is vital to the acceptance and success of a roundabout. Navigating a roundabout is easy. But because people can be apprehensive about new things, it's important to educate the public about roundabout use.

There are just a few simple guidelines to remember when driving through a roundabout:

1. Slow down.
2. If there's more than one lane, use the left lane to turn left, the right lane to turn right, and all lanes to go through, unless directed otherwise by signs and pavement markings.
3. Yield to pedestrians and bicyclists.
4. Yield at the entry to circulating traffic.
5. Stay in your lane within the roundabout and use your right-turn signal to indicate your intention to exit.
6. Always assume trucks need all available space — don't pass them!
7. Clear the roundabout to allow emergency vehicles to pass.

Visit [safety.fhwa.dot.gov](http://safety.fhwa.dot.gov) to learn more about roundabouts



U.S. Department of Transportation  
Federal Highway Administration

Design standards for roundabouts continue to evolve, and not all features of existing roundabouts meet current recommended practice. Please refer to FHWA's web site for recommendations on current design practice.

Original source photo by Lee Rodegerdts. Photo has been altered to illustrate roundabout and updated signage.

## Roundabouts

### A Safer Choice





## What is a roundabout?

A roundabout is a type of circular intersection with yield control of entering traffic, islands on the approaches, and appropriate roadway curvature to reduce vehicle speeds.

Modern roundabouts are different from rotaries and other traffic circles. For example, roundabouts are typically smaller than the large, high-speed rotaries still in use in some parts of the country. In addition, roundabouts are typically larger than neighborhood traffic circles used to calm traffic.

A roundabout has these characteristics:

## Why consider a roundabout?

Compared to other types of intersections, roundabouts have demonstrated safety and other benefits.

Roundabouts:

### > Improve safety

- More than 90% reduction in fatalities\*
- 76% reduction in injuries\*\*
- 35% reduction in all crashes\*\*
- Slower speeds are generally safer for pedestrians

### > Reduce congestion

- Efficient during both peak hours and other times
- Typically less delay

### > Reduce pollution and fuel use

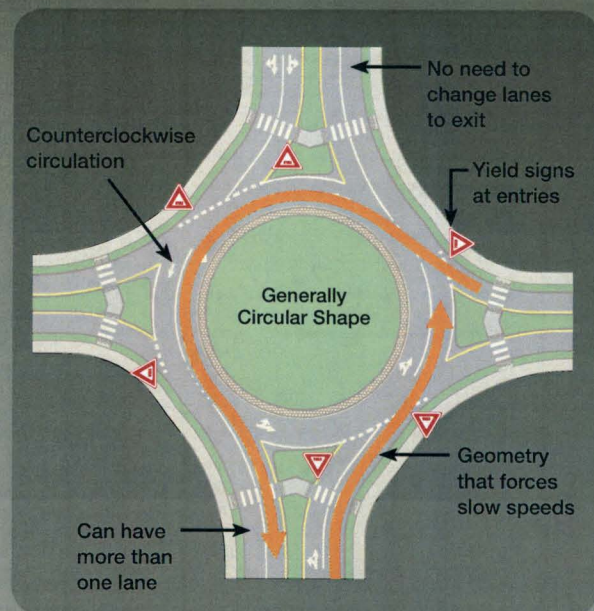
- Fewer stops and hard accelerations, less time idling

### > Save money

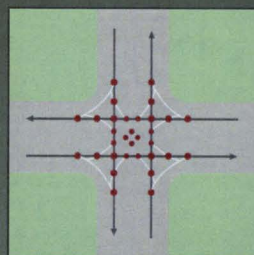
- Often no signal equipment to install, power, and maintain
- Smaller roundabouts may require less right-of-way than traditional intersections
- Often less pavement needed

### > Complement other common community values

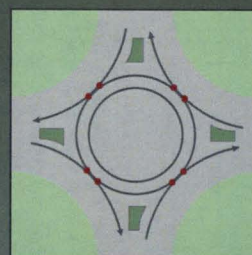
- Quieter operation
- Functional and aesthetically pleasing



With roundabouts, head-on and high-speed right angle collisions are virtually eliminated.



[ Traditional intersection ]

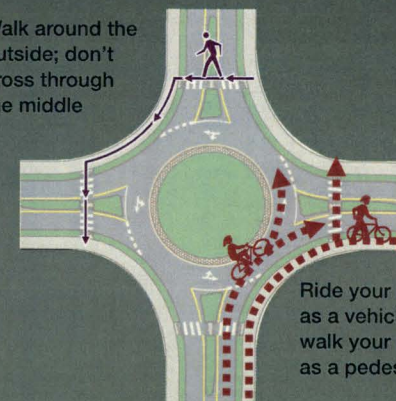


[ Roundabout ]

● Potential vehicle conflict point

### Tips for safely walking and biking through a roundabout

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



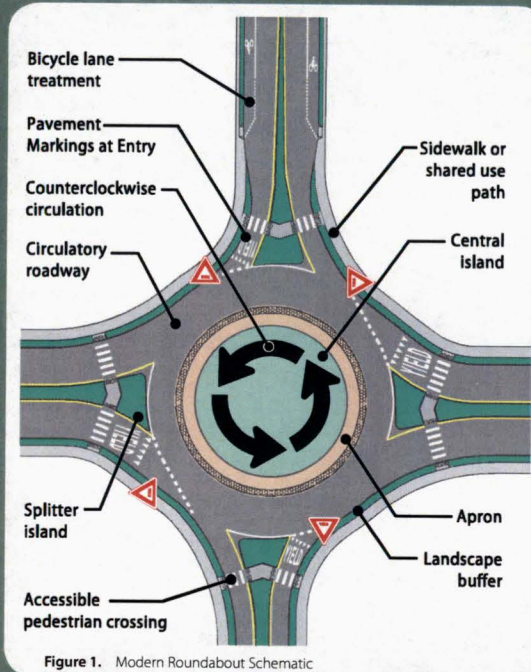
Ride your bike as a vehicle or walk your bike as a pedestrian

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



## What is a Roundabout?

A roundabout is a type of circular intersection, but is quite unlike a neighborhood traffic circle or large rotary. Roundabouts have been proven safer and more efficient than other types of circular intersections.



## Educational Resources

Wisconsin Guidance on Reacting to  
Emergency Vehicles in Roundabouts

<http://dot.wi.gov/safety/motorist/roaddesign/roundabouts/docs/br-emergencyveh.pdf>

Minnesota DOT Roundabout Animation

[www.dot.state.mn.us/roundabouts/emergency.html](http://www.dot.state.mn.us/roundabouts/emergency.html)

Washington State DOT Videos on  
Roundabouts and How to Drive Them

<https://www.youtube.com/watch?v=P3k65uS5-EE>  
<http://www.youtube.com/watch?v=MywmtskFiil>

British Columbia MOT Video on Navigating a  
Roundabout with Emergency Vehicles

<https://www.youtube.com/watch?v=Tk9n1uVa8LE>

## Strengthening Partnerships

Incorporating EMS into Strategic  
Highway Safety Plans

<http://safety.fhwa.dot.gov/hsp/shsp/ems/connection/>

## For More Information

Jeffrey Shaw, P.E., PTOE, PTP

FHWA Office of Safety  
708.283.3524 or [jeffrey.shaw@dot.gov](mailto:jeffrey.shaw@dot.gov)

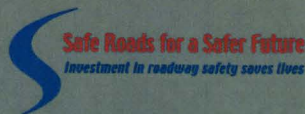
Hillary Isebrands, P.E., PhD

FHWA Resource Center  
720.963.3222 or [hillary.isebrands@dot.gov](mailto:hillary.isebrands@dot.gov)

To learn more about roundabouts, please visit:

[safety.fhwa.dot.gov](http://safety.fhwa.dot.gov)

Publication number FHWA-SA-14-098

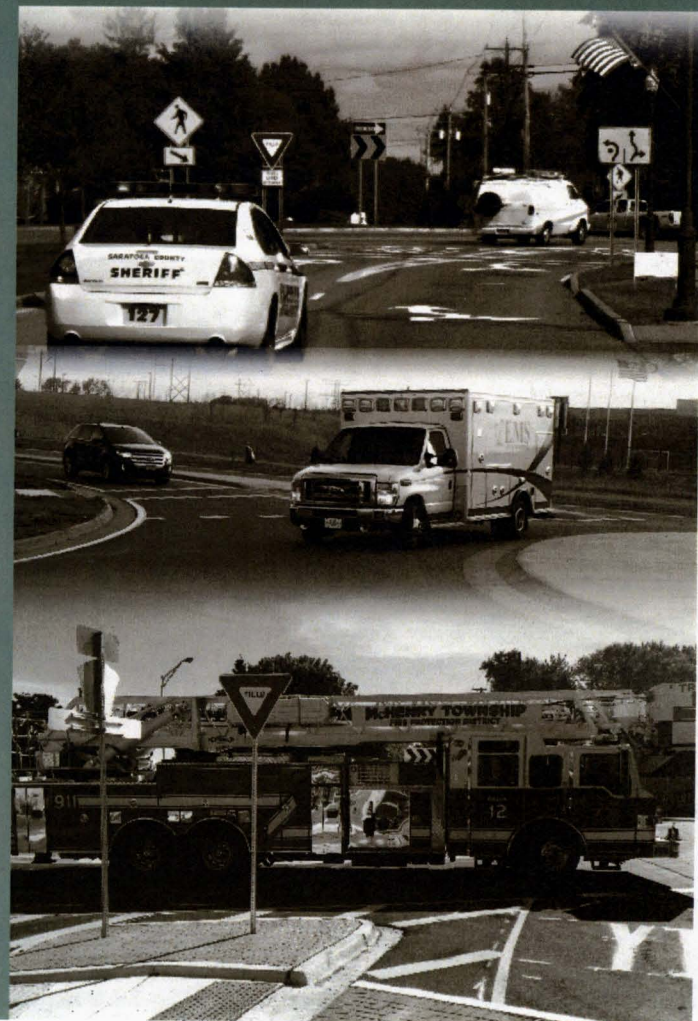


Cover photo sources, top to bottom: Jeff Shaw, FHWA; Brad Estochen, MnDOT;  
Jeff Young, McHenry County Highway Department



U.S. Department of Transportation  
Federal Highway Administration

# ROUNDABOUTS & First Responders Saving Lives Together



**On average, roundabouts reduce severe crashes –  
those resulting in injury or loss of life – by 78-82%<sup>1</sup>**

<sup>1</sup> Highway Safety Manual, American Association of State Highway and Transportation  
Officials, Washington, DC, 2010.



## Shared Mission – Shared Benefits

Saving lives and preventing serious injuries are the highest priority of both first responders and highway agencies. Roundabouts are safer intersections that result in fewer severe crashes requiring emergency response.

Safer intersections are important for first responder occupational safety and health, too. Studies show that most fatalities resulting from a crash involving a fire truck occur at, or are related to, an intersection. Further, angle crashes are the most common fatal crash type involving fire trucks.<sup>2</sup> The International Association of Fire Fighters (IAFF) and others cite intersections as high risk locations for all emergency response disciplines.<sup>3</sup>



Source: Howard McCulloch, NYSDOT

Roundabouts are also a very efficient type of intersection. They do not have the same stop-and-go conditions as traditional intersections.

- Roundabouts keep people moving, but at speeds where injury risk is greatly reduced.
- Roundabouts can reduce or eliminate lines of stopped traffic typical of stop signs and traffic signals, making them easier to navigate throughout the day and night.
- Unlike traffic signals, roundabouts don't depend on electricity to function, so they are not susceptible to power outages.

<sup>1</sup> Highway Safety Manual, American Association of State Highway and Transportation Officials, Washington, DC, 2010.

<sup>2</sup> Campbell, K.L., *Traffic Collisions Involving Fire Trucks in the United States*, UM-TRI-99-26, Ann Arbor, MI: University of Michigan Transportation Research Institute, Ann Arbor, MI, 1999

<sup>3</sup> International Association of Fire Fighters (IAFF), *Best Practices for Emergency Vehicle and Roadway Operations Safety in the Emergency Services*, Washington, DC 2010

<sup>4</sup> Bailey, E.D., Sweeney, T., *Considerations in Establishing Emergency Medical Services Response Time Goals*, National Association of EMS Physicians, Lenexa, KS, 2003

## Designing for First Responders



Roundabouts are not designed to inhibit traffic. Rather, they are optimized for the safety and efficiency of all users. Roundabouts can be designed for large trucks, including a special purpose apparatus such as a ladder truck. This is accomplished by using features such as:

- Wider entry and exit lanes for efficient movement of traffic through the roundabout.
- Mountable aprons and curbs intended for use by vehicles with a wide and/or long wheelbase.
- Curvature and radii that allow for easy turning movements, including u-turns.



Source: Brad Estochen - MNDOT

**“Before the first roundabout was constructed in our city, our station arranged to visit one nearby so that we could experience it firsthand. That answered a lot of questions and helped build confidence in roundabouts.”**

- Brad Estochen  
Minnesota DOT Safety Engineer &  
Firefighter and EMT for the City of Woodbury

## Frequently Asked Questions

When the first roundabout in a community is proposed, it is natural for first responders to have questions and concerns. Several of the most common questions are addressed below:

### **Q: Will all our vehicles be able to maneuver through a roundabout?**

A: Roundabouts work for many types of large vehicles. Partnering with the road agency to conduct a “test drive” (laying out the roundabout in a large open area using cones and temporary devices) can help evaluate and influence the design.

### **Q: What about emergency response times?**

A: At any intersection, traffic conditions vary throughout the day. Roundabouts can actually improve travel times by eliminating unnecessary stops and delays. Furthermore, the IAFF and other public health and safety organizations recognize that small differences in travel times rarely, if ever, impact incident or patient outcomes.<sup>3,4</sup>

### **Q: How will drivers in our community know how to react to approaching emergency vehicles?**

A: In this way, roundabouts are no different from other intersections – drivers must clear the intersection, pull off to the right, and let the emergency vehicle pass. To help educate drivers, there are many excellent resources available from states and cities where roundabouts are common. First responders can contribute to general roundabout education and outreach in a community by helping explain to the public how to react when an emergency vehicle approaches.

### **Q: Why consider roundabouts when we have traffic signal preemption in our city?**

A: The use of preemption devices at signalized intersections remains a worthwhile option. However, in addition to being safer, roundabouts are viable in many places where traffic signals are not. Furthermore, even where signal preemption is used, first responders must obey state laws and department policies, and proceed cautiously – likely at speeds comparable to a roundabout.



## What is a Roundabout?

A roundabout is a type of circular intersection, but is quite unlike a neighborhood traffic circle or large rotary. Roundabouts have been proven safer and more efficient than other types of circular intersections.

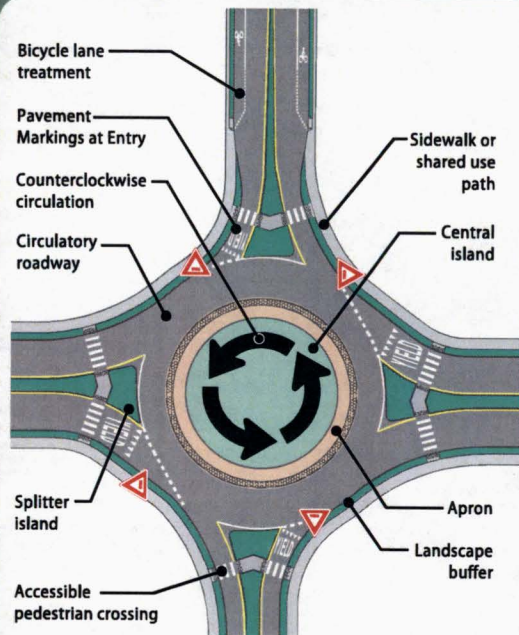


Figure 1. Modern Roundabout Schematic

Roundabouts have certain essential distinguishing features:

- **Counterclockwise Flow.** Traffic travels counterclockwise around a center island.
- **Entry Yield Control.** Vehicles entering the roundabout yield to traffic already circulating.
- **Low Speed.** Curvature that results in lower vehicle speeds (15-25 mph) throughout the roundabout.

FHWA identified roundabouts as a **Proven Safety Countermeasure** because of their ability to substantially reduce the types of crashes that result in injury or loss of life. Roundabouts are designed to improve safety for all users, including pedestrians and bicycles. They also provide significant operational benefits compared to conventional intersections.

**On average, roundabouts reduce severe crashes – those resulting in injury or loss of life – by 78-82%\***

\* Highway Safety Manual, American Association of State Highway and Transportation Officials, Washington, DC, 2010.

## Educational Resources

Michigan "How to Use a Roundabout – Sharing the Road" Informational Brochure  
[www.michigan.gov/documents/mdot/MDOT\\_RoundaboutPedBikeBrochure\\_465164\\_7.pdf](http://www.michigan.gov/documents/mdot/MDOT_RoundaboutPedBikeBrochure_465164_7.pdf)

New York Guidance for Roundabout Users  
[www.dot.ny.gov/main/roundabouts/guide-users/pedestrians](http://www.dot.ny.gov/main/roundabouts/guide-users/pedestrians)

Washington State videos for Roundabouts and Pedestrians and Bicycles  
[www.wsdot.wa.gov/Safety/roundabouts/PedestriansCyclists.htm](http://www.wsdot.wa.gov/Safety/roundabouts/PedestriansCyclists.htm)

## Leveraging Partnerships

PEDSAFE Pedestrian Safety Guide & Countermeasure Selection System - Roundabouts  
[www.pedbikesafe.org/PEDSAFE/countermeasures\\_detail.cfm?CM\\_NUM=25](http://www.pedbikesafe.org/PEDSAFE/countermeasures_detail.cfm?CM_NUM=25)

BIKESAFE Bicycle Safety Guide & Countermeasure Selection System - Roundabouts  
[www.pedbikesafe.org/BIKESAFE/countermeasures\\_detail.cfm?CM\\_NUM=17](http://www.pedbikesafe.org/BIKESAFE/countermeasures_detail.cfm?CM_NUM=17)

Choosing Roundabouts for Safe Routes to School  
[www.saferoutesinfo.org/program-tools/case-study-bellingham-wa](http://www.saferoutesinfo.org/program-tools/case-study-bellingham-wa)

AARP Livable Communities Fact Sheet Series  
[www.aarp.org/livable-communities/info-2014/livability-factsheet-modern-roundabouts.html](http://www.aarp.org/livable-communities/info-2014/livability-factsheet-modern-roundabouts.html)

## For More Information

Jeffrey Shaw, P.E., PTOE, PTP

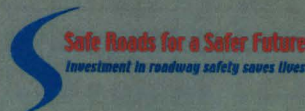
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To learn more about roundabouts, please visit:  
**[safety.fhwa.dot.gov](http://safety.fhwa.dot.gov)**

Publication number FHWA-SA-15-016



Cover photo source: Google Earth Pro



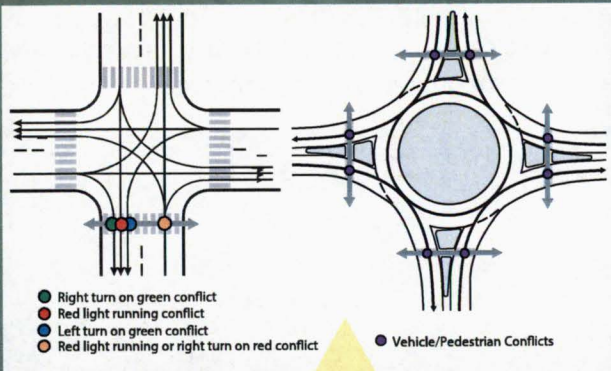
U.S. Department of Transportation  
Federal Highway Administration

## ROUNDABOUTS with Pedestrians & Bicycles

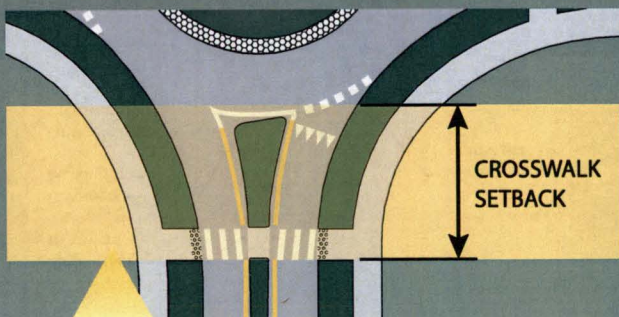
### A Safe Choice for Everyone







**Less conflict.** Roundabouts have fewer conflict points. A single lane roundabout has 50% fewer pedestrian-vehicle conflict points than a comparable stop or signal controlled intersection. Conflicts between bicycles and vehicles are reduced as well.



### Shorter, setback crossings.

Pedestrians cross a shorter distance of only one direction of traffic at a time since the entering and exiting flows are separated. Drivers focus on pedestrians apart from entering, circulating and exiting maneuvers.

### Lower speed.

Traffic speed at any road or intersection is vitally important to the safety of everyone, and especially non-motorized users. Lower speed is associated with better yielding rates, reduced vehicle stopping distance, and lower risk of collision injury or fatality. Also, the speed of traffic through a roundabout is more consistent with comfortable bicycle riding speed.



**Features for All Users.** Adding certain treatments at roundabouts can enhance the experience for both pedestrians and bicycles.

- At more complex roundabouts, such as those with multiple lanes, certain design elements and enhanced crossing treatments can improve accessibility for visually impaired pedestrians.
- Where bicycle facilities lead to a roundabout, providing an option to bicyclists to either ride in the travel lane or use a ramp to and from a separated shared use path.





## State Hwy 55 at County Hwy KK Calumet County, Wisconsin

The intersection of State Trunk Highway 55 (STH 55) and County Trunk Highway KK (CTH KK) was originally a two-way stop-controlled intersection with a 55 mph posted speed limit on each approach. In a five-year period (2001-2005), 30 crashes occurred at the intersection resulting in 17 people injured and one person killed.

The Wisconsin Department of Transportation (WisDOT) added intersection warning signs along STH 55 in advance of CTH KK and lowered the approach posted speed limits to 45 mph, but crashes continued to occur.

In 2006, WisDOT decided to reconstruct the intersection as a roundabout. They modified the design to account for the high-speed approaches by providing longer splitter islands and pavement markings, along with enhanced signing. These features help drivers recognize the roundabout well in advance, and to reduce their speed accordingly.

In the six-year period after construction, WisDOT reports there have been 11 total crashes resulting in one person injured and zero fatalities. These significant reductions in crashes made this project a success for WisDOT, and helped them move forward with other roundabouts along rural highways throughout the state.



FHWA identified roundabouts as a **Proven Safety Countermeasure** because of their ability to substantially reduce the types of crashes that result in injury or loss of life. Roundabouts are designed to improve safety for all users, including pedestrians and bicycles. They also provide significant operational benefits compared to conventional intersections.

## What is a Roundabout?

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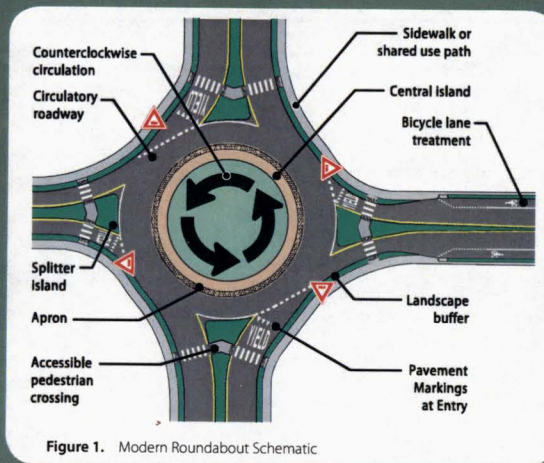


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## For More Information

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Publication number FHWA-SA-14-097



Cover image source: Washington State Department of Transportation (WSDOT)



U.S. Department of Transportation  
Federal Highway Administration

## ROUNDABOUTS & Rural Highways





## Common Problems/Concerns

Crashes at rural intersections often involve high speeds, which tend to result in severe injuries or fatalities. Roughly  $\frac{1}{3}$  of annual intersection fatalities in the U.S. occur along rural, two-lane highways.

In many rural environments, drivers can miss a stop sign or traffic signal, leading to running through a stop sign or red light and resulting in an angle crash.

For a driver turning left across oncoming traffic, it can sometimes be difficult to judge the speed of the approaching vehicle, resulting in misjudged gaps, and potentially severe crashes.

It doesn't seem like people would slow down for a roundabout along rural highways. Motorists will just drive right into or over the roundabout because they won't be able to slow down in time.

In the northeastern U.S., circles are being signalized or removed because they do not work.

Why build something "different", when all that is needed is either stop signs or a traffic signal?

## Why Consider a Roundabout

Roundabouts are geometrically designed for drivers to negotiate the intersection at speeds in the range of 15-25 mph, regardless of the posted speed limits on approaches.

Because roundabouts require vehicles to yield and then navigate around a raised, circular island, the possibility of an angle crash is significantly reduced.

With roundabouts, there is no need to make a turn across opposing traffic. Entering vehicles yield to traffic already in the circle, and proceed when there is a safe gap.

High-speed approaches to roundabouts include advance signing, pavement markings and raised channelization. With proper design, drivers adjust their speeds, slow on approach, and navigate the roundabout safely.

The old traffic circles and rotaries that are common in the northeastern U.S. are not modern roundabouts.

Improvements like stop signs and signals, while very familiar, aren't always the safest choice. With intersections representing about one-quarter of annual U.S. traffic fatalities and roughly half of all injury crashes, safer designs are needed that improve mobility while saving lives.

## Real World Results\*

Roundabouts constructed at intersections along high-speed, two-lane rural highways reduced overall crashes by up to 68% and reduced injury crashes by up to 88%.

Roundabouts constructed at intersections along high-speed, two-lane rural highways eliminated 83% of angle-type crashes.

There were 11 fatal crashes in the 5 year "before" period and ZERO fatal crashes in the 5 year "after" period at 19 roundabouts constructed along high-speed, two-lane rural highways in six different states (KS, MD, MN, OR, WI, and WA).

Researchers compared traffic speeds of approaches to roundabouts and stop-controlled intersections. At 100 feet before the yield or stop lines, the speed of traffic at the roundabouts was 2.5 mph lower than at the stop-controlled locations.

Roundabouts are designed for slower speeds, require entering traffic to yield to vehicles already in the circular roadway, and to eliminate the need to weave or change lanes to exit.

Since the late 1990s, an ever growing number of State DOTs and local road agencies are finding that roundabouts work in their jurisdictions. Their potential for saving lives is too significant to ignore.

\* Sources:

Isebrands, H., S. Hallmark, N. Hawkins. "Effects of Approach Speed at Rural High-Speed Intersections" Transportation Research Record: Journal of the Transportation Research Board, Volume 2402, Transportation Research Board, National Research Council, Washington, DC, 2014

Isebrands, H. and S. Hallmark. "Statistical Analysis and Development of a Crash Prediction Model for Roundabouts on High-Speed Rural Roadways" Transportation Research Record: Journal of the Transportation Research Board, Volume 2389, Transportation Research Board, National Research Council, Washington, DC, 2012



# Modern Roundabouts

## A LIVABILITY FACT SHEET

Every day in the U.S. more than 20 people are killed at traffic intersections, and many more are seriously injured.<sup>1</sup> Roundabouts — circular intersections that move traffic counterclockwise around a central island — can help reduce these deaths and injuries. Roundabouts are calmer and safer than conventional intersections and have been deemed a “proven safety counter-measure” by the U.S. Department of Transportation.<sup>2</sup>

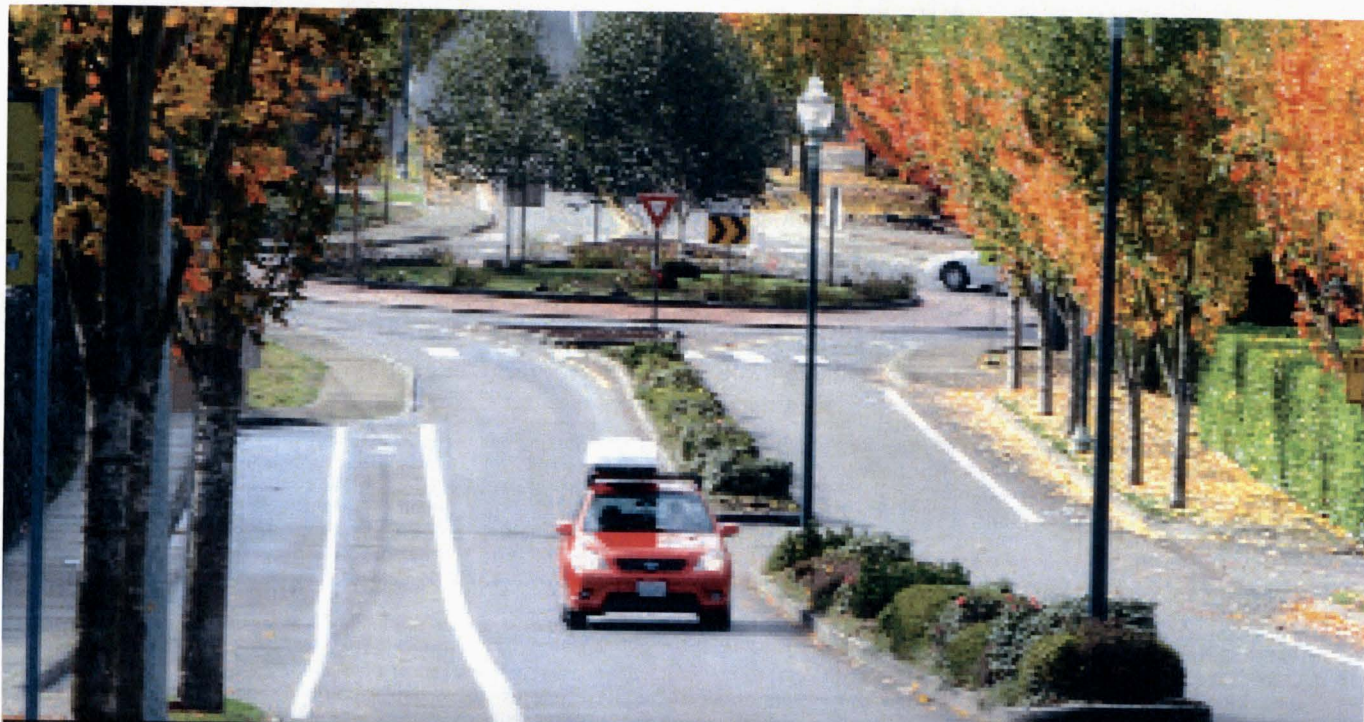
Modern roundabouts — often the size of a baseball field — differ from rotaries or traffic circles, which can be as big as the stadium itself. Roundabouts feature lower, safer vehicle speeds. They can be 80 feet across with single lanes carrying 25,000 vehicles a day or larger at 200 feet, with double lanes and 45,000 vehicles a day.<sup>3</sup>

Personal injuries and fatalities plummet as much as 90 percent in modern roundabouts when compared to conventional intersections.<sup>4</sup> Roundabouts cause drivers to slow down, ideally to less than 20 mph, which reduces the risks to both pedestrians and drivers.

Because roundabouts can handle 30 to 50 percent more traffic than conventional intersections, they reduce travel delays.<sup>4</sup> Since roundabouts can be designed to be aesthetically pleasing, they help create a sense of place.

By January 2014, roundabouts graced over 2,000 intersections in the U.S., with more planned.<sup>5</sup> Given their safety and placemaking benefits, roundabouts should be considered for many more of the three million intersections in the U.S.

1. U.S. Department of Transportation's Federal Highway Administration (FHWA) (n.d.), [safety.fhwa.dot.gov/intersection/roundabouts/fhwas10023/transcript/audio\\_no\\_speaker/](http://safety.fhwa.dot.gov/intersection/roundabouts/fhwas10023/transcript/audio_no_speaker/)
2. U.S. DOT FHWA (n.d.), [safety.fhwa.dot.gov/provencountermeasures/fhwa\\_sa\\_12\\_005.htm](http://safety.fhwa.dot.gov/provencountermeasures/fhwa_sa_12_005.htm)
3. U.S. DOT FHWA (n.d.), [fhwa.dot.gov. Roundabouts: An Informational Guide. http://www.fhwa.dot.gov/publications/research/safety/00067/000674.pdf](http://www.fhwa.dot.gov/publications/research/safety/00067/000674.pdf)
4. U.S. DOT FHWA (n.d.), [safety.fhwa.dot.gov. http://www.fhwa.dot.gov/resourcecenter/teams/safety/teamsafe\\_rndabout.pdf](http://www.fhwa.dot.gov/resourcecenter/teams/safety/teamsafe_rndabout.pdf)
5. Kittelson & Associates, Inc. (August 2000), [roundabout.kittelson.com. Modern Roundabouts – the web site. Retrieved February 3, 2014 from http://roundabout.kittelson.com/Roundabouts/Search](http://roundabout.kittelson.com/Roundabouts/Search)



*Vehicle speeds on Grandview Drive in University Place, Wash., were once as high as 50 mph. After the installation of roundabouts, crashes dropped from one every nine months to none in 14 years.*



## MYTH-BUSTING!

### ■ "Roundabouts require too much land."

Roundabouts can be installed on virtually any size street. They can range from single-lane mini-roundabouts to two lanes or more.<sup>6</sup> A single-lane roundabout can be as narrow as 80 feet in diameter, measuring across the circle from the outside edges of the vehicle lanes. A well-placed roundabout can keep a road from being widened, saving up to 10 million dollars per mile in land and construction costs.<sup>7</sup>

### ■ "The public won't embrace roundabouts."

Before several two-lane roundabouts were installed in Bellingham, Wash., only one-third of people surveyed by the Insurance Institute for Highway Safety supported the creation of a roundabout. Once it was built, the numbers reversed, and 70 percent of respondents became supportive.<sup>8</sup> In another study conducted by the Institute, support for six different roundabouts went from a low of 22 percent to a high of 87 percent five years after installation.<sup>9</sup> Building one roundabout in a community is usually all it takes to convince most people of their benefits.

### ■ "Roundabouts hurt business."

The lower the speed of traffic through an area, the easier it is to park a car, walk, bicycle and locate and approach a business. Since roundabouts are also quieter than conventional intersections, outdoor seating can be placed nearby. In Golden, Colo., retail sales increased 60 percent after the addition of a string of roundabouts — and that was during the 1989 recession. Sales in Golden outpaced those of all other cities in the state.<sup>10</sup>

### ■ "Fire trucks, snowplows buses and semis can't use roundabouts."

A "truck apron" in the center of a roundabout can accommodate emergency vehicles and large trucks, including those with wheel-base lengths of 50 or more feet.

### ■ "Roundabouts don't work for pedestrians or bicyclists."

By using space to pause on the "splitter island," pedestrians need to watch only one direction of traffic at a time, which simplifies the task of crossing the street. The low vehicle speeds through a roundabout — which can be as low as 15 mph — also allow more time for drivers and

pedestrians to react to one another, which reduces the chance and consequences of error. A bicyclist can be given the option of riding in the lane of slow-moving cars or crossing as a pedestrian.<sup>11</sup>

### ■ "Roundabouts aren't good for older adults."

By 2025, about one-quarter of all drivers in America will be over the age of 65. Forty percent of all car crashes that involve drivers over the age of 65 occur at intersections.<sup>12</sup> As we age, we lose our ability as drivers to judge left-turn gaps.<sup>13</sup> Roundabouts don't require those decisions, and they eliminate head-on and right-angle crashes. When collisions do occur, they are at lower speeds and less harmful.

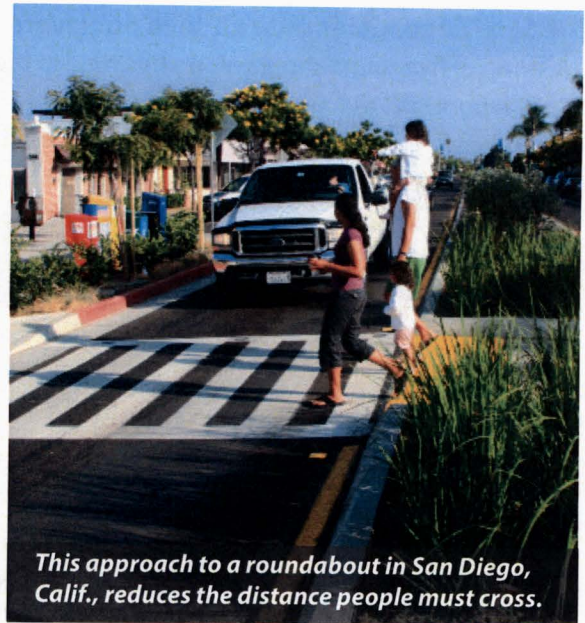
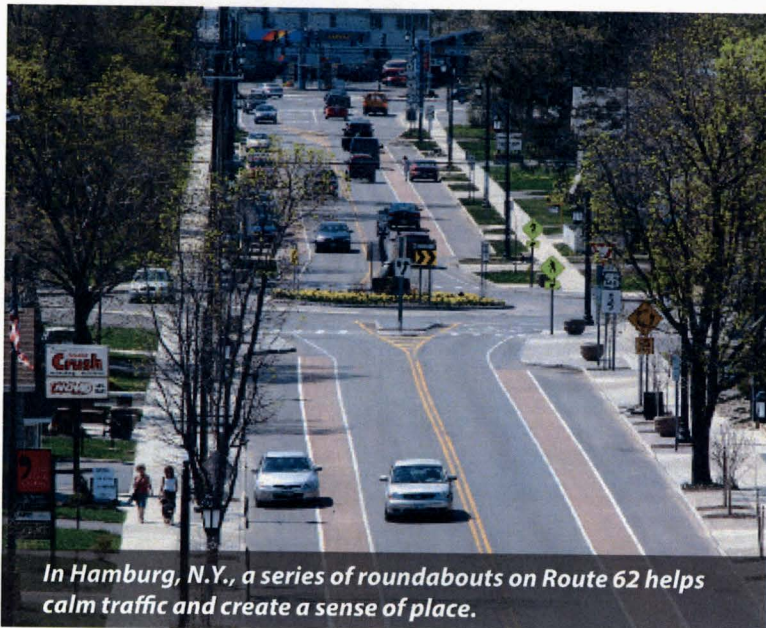
### ■ "Pedestrians with limited vision can't cross roundabouts."

A known issue with roundabouts and other street crossings — such as mid-block crossings and right-turn slip lanes — is that it's difficult for pedestrians with limited vision to determine when traffic has stopped and it's safe to cross. Solutions are being sought to address this problem.<sup>14, 15</sup>

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13. Owsley, C. (2004). Driver Capabilities in Transportation in an Aging Society: A Decade of Experience. Technical Papers and Reports from a Conference: Bethesda, MD; Nov. 7–9, 1999. Washington, D.C.: Transportation Research Board.
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## HOW TO GET IT RIGHT



The success of any tool lies in getting it right, and this is especially true of modern roundabouts. Try the following:

### ■ Adopt a roundabout-first policy

Whenever a project includes reconstructing or constructing an intersection, analyze the feasibility of using a roundabout instead. This approach is recommended by the U.S. Department of Transportation's Federal Highway Administration and backed by the Insurance Institute for Highway Safety.<sup>16</sup>

### ■ Embrace a public process and build support

Since roundabouts can be a new idea, elected leaders and agency staff may need to seek public support first, to inspire approval and navigate implementation. For example, community advocates can print this fact sheet, talk to neighbors, build community support and then meet with decision makers, news outlets, experts and others to discuss the benefits of roundabouts. Agency staff can engage the public in a meaningful process, hosting interactive design workshops to build public acceptance and understanding.

### ■ Design for speeds lower than 20 mph

Fast-moving vehicles kill people and divide places. A pedestrian hit by a vehicle at 20 mph has a 90 percent chance of survival while the odds of surviving a 40 mph impact are only 10 percent.<sup>17</sup> Good roundabout design ensures that drivers slow down to 15 or 20 mph. This protects pedestrians, reduces pollution and noise and creates a more pleasant neighborhood.

### ■ Keep dimensions tight

To keep traffic calm and therefore safe for all roadway users, roundabouts should feature context-appropriate design elements that reduce speed. Examples include tight entry and exit turn radii, landscaping, narrow entry and circulatory lanes, a truck apron for large vehicles and splitter lanes to help pedestrians cross two or more traffic lanes.

### ■ Make it beautiful

An aesthetically pleasing roundabout can create a sense of place, frame a neighborhood, establish an entry point into a business district and serve as a canvas for public art or a garden.

16. Smart Transportation Guide, Planning and Designing Highways and Streets that Support Sustainable and Livable Communities. Chapter 6. <http://www.state.nj.us/transportation/community/mobility/pdf/smarttransportationguidebook2008.pdf>

17. Federal Highway Administration (FHWA). Proven Safety Countermeasures. [http://safety.fhwa.dot.gov/provencountermeasures/fhwa\\_sa\\_12\\_0](http://safety.fhwa.dot.gov/provencountermeasures/fhwa_sa_12_0)



## SUCCESS STORIES

### ■ San Diego, California: La Jolla Boulevard

A string of five roundabouts along this road in the Bird Rock neighborhood has allowed the city to reduce the road from five vehicle lanes to two, while also cutting travel time, adding on-street parking, attracting new businesses and still moving 23,000 vehicles a day. The number of people walking went up, noise pollution plummeted and the increase in walking, bicycling and street life is bringing new business to retailers.

### ■ Hamburg, New York: Route 62

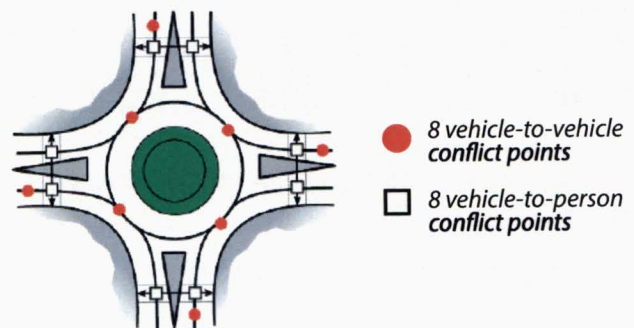
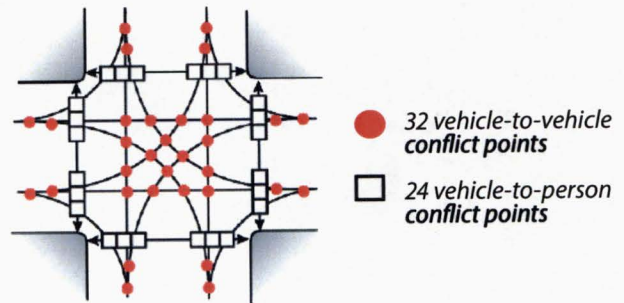
By the 1990s, business had declined along the Route 62 commercial district. Empty storefronts pushed shoppers out to malls and big box stores. The road was often congested and presented hazards for cyclists and pedestrians. A state plan emphasized wider roads and signalized intersections. But a group of residents banded together as the "Route 62 Committee" and created a new vision for Route 62 based on walkability and calmer traffic. Roundabouts have reduced the number and severity of crashes, congestion has been eased and emissions from idling cars have been reduced.

### ■ Bradenton Beach, Florida: Bridge Street

One pedestrian per year was being killed at the intersection of Bridge Street and North Gulf Drive. With 18,000 cars and trucks moving daily, the traffic on this street separated residents and visitors from the beach. People could see the beach, but they could not walk to it without taking severe risks. A roundabout was built and the police chief reports there hasn't been a recorded crash of any type since. With many more people walking to the beach, parking eased, and the roundabout became one of the nation's first to kick-start downtown reinvestment, which is now bustling with pedestrians, new homes and retail activity.

## WHY IT WORKS

As the illustrations below demonstrate, roundabouts harbor far fewer potential conflict points than conventional intersections, making streets safer for all users.



## RESOURCES

1. **Roundabouts**, FHWA. <http://safety.fhwa.dot.gov/intersection/roundabouts/>
2. **Technical Summary: Roundabouts**, FHWA. <http://safety.fhwa.dot.gov/intersection/roundabouts/fhwasa10006/fhwasa10006.pdf>
3. **Technical Summary: Mini Roundabouts**, FHWA. <http://safety.fhwa.dot.gov/intersection/roundabouts/fhwasa10007/fhwasa10007.pdf>
4. **Roundabouts: An Informational Guide**, FHWA, Lee August Rodegerdts, National Research Council (U.S.). Transportation Research Board, National Cooperative Highway Research Program, American Association of State Highway and Transportation Officials, 2010
5. **Geocoded National Roundabout Database**. <http://roundabouts.kittelson.com/>
6. **Roundabout Benefits**, Washington State Department of Transportation. <http://www.wsdot.wa.gov/safety/roundabouts/>
7. **Insurance Institute for Highway Safety**. <http://www.iihs.org/>
8. **Proven Safety Countermeasures**, FHWA. [http://safety.fhwa.dot.gov/provencountermeasures/fhwa\\_sa\\_12\\_0](http://safety.fhwa.dot.gov/provencountermeasures/fhwa_sa_12_0)



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[www.scgov.net/PublicWorks/Pages/Roundabouts.aspx](http://www.scgov.net/PublicWorks/Pages/Roundabouts.aspx)

[www.swflroads.com/resources/roundabouts](http://www.swflroads.com/resources/roundabouts)

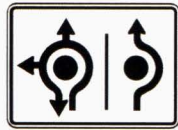


# How to drive in a roundabout



## Slow Down:

Driving speeds in roundabouts are 20 mph or less.



## Lane Choice:

Drivers must make the appropriate lane choice, based on their destination, prior to entering a multilane roundabout. As in a standard intersection, use the left lane to make left-turns, U-turns, or straight-ahead movements; use the right-lane to make right-turns or straight-ahead movements (see charts below). Never change lanes, pass or overtake another vehicle after entering a roundabout.



## Yield Principle:

When preparing to enter a roundabout, yield to all traffic in all lanes already circulating within the roundabout.



## Large Vehicles:

Give special consideration to trucks, trailers and other large vehicles. Never pass or drive adjacent to large vehicles within a roundabout.



## Emergency Vehicles:

Do not impede emergency vehicles. If you are within a roundabout when an emergency vehicle approaches, move through, exit, and then pull over.



## Pedestrians:

All pedestrians must cross at the designated crosswalks. Although vehicles are required to stop for pedestrians, always exercise caution when crossing.



## Bicyclists:

Bicyclists are encouraged to walk their bikes and use the pedestrian crosswalks. Only experienced bicyclists should ride within the roundabout.



# Top 10 reasons to like roundabouts:

1. 37 percent total reduction in crashes compared to signalized intersections\*
2. 75 percent reduction in injury crashes compared to signalized intersections\*
3. 90 percent reduction in traffic fatalities compared to signalized intersections\*\*
4. Improved pedestrian safety and reduced pedestrian delay compared to signalized intersections\*\*
5. 30 percent increase in intersection traffic capacity with fewer delays\*\*
6. Reduction of air pollution and fuel use due to fewer idling vehicles\*\*
7. More visually appealing, with center-island landscapes
8. Cost savings on annual maintenance and life cycle replacement\*\*
9. Surveys show the majority of residents like roundabouts after having tried them.\*\*\*
10. Elimination of traditional left turns and the associated dangers of right-angle crashes

\* Source: Insurance Institute for Highway Safety's "Status Report Vol. 40, No. 9, 2005."

\*\* Source: Federal Highway Administration's "Your Community Deserves a Lot Less" brochure

\*\*\* Source: A report titled "Public Opinion and Traffic Flow Impacts of Newly Installed Modern Roundabouts in the United States" in ITE Journal, September 2002.