

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.

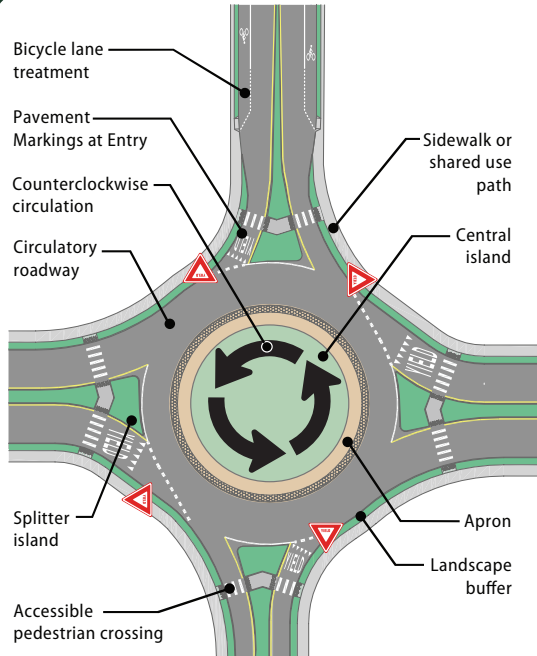


Figure 1. Modern Roundabout Schematic

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%¹

¹ *Highway Safety Manual*, American Association of State Highway and Transportation Officials, Washington, DC, 2010.

Educational Resources

Wisconsin Guidance on Reacting to Emergency Vehicles in Roundabouts
<https://wisconsin.dot.gov/Documents/safety/safety-eng/roundabouts/br-emergencyveh.pdf>

Minnesota DOT Roundabout Animation
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=MywmstskFiil>

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/hisp/shsp/ems/connection/>

For More Information

Jeffrey Shaw, P.E., PTOE, PTP

FHWA Office of Safety
202.738.7793 or jeffrey.shaw@dot.gov

Hillary Isebrands, P.E., PhD

FHWA Resource Center
720.545.4367 or hillary.isebrands@dot.gov

To learn more about roundabouts, please visit:
safety.fhwa.dot.gov

Publication number FHWA-SA-14-098 Updated July 2020



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

ROUNABOUTS & First Responders Saving Lives Together



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.² The International Association of Fire Fighters (IAFF) and others cite intersections as high risk locations for all emergency response disciplines.³



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.

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

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

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

⁴ 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



Source: Jeff Young, McHenry County Highway Department

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.^{3,4}

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.