

Effectiveness of roundabouts and design features

Q: Why do we use roundabouts?

A: Roundabouts can offer a good solution to safety and capacity problems at intersections. At intersections where roundabouts have been installed in Iowa to replace existing intersections, crashes of all types have been reduced. Roundabouts can also offer high capacity at intersections without requiring the expense of constructing and maintaining a traffic signal.

Q: What are the benefits of roundabouts?

A: Compared to other types of intersections, roundabouts have demonstrated benefits such as: Improve Traffic Safety; Improve Pedestrian Safety; Reduce Congestion; Reduce Pollution & Fuel Use; Lower Operating and Maintenance Costs than a Traffic Signal

Q: Is the roundabout like a 4-way stop?

A: Not really. The main similarity is that both roundabouts and four-way stop intersections do not have signals. The differences include: four-way stops yield to whoever arrives first, or the vehicle on the right, roundabouts yield to the left---like a right turn on red---because the circulating traffic comes from that direction. At four-way stops, each direction gets a turn in order. At roundabouts, each driver chooses a safe gap to enter and no driver "gets a turn."

Q: What are the features of a good roundabout design?

A: Proper design can help to optimize the safety benefits of roundabouts.

- ⇒ Approach roads should be sufficiently curved, far enough in advance of the roundabout, to reduce speeds of entering drivers.
- ⇒ Islands separating the approach and exit lanes (known as splitter islands) should extend far enough from the roundabout to provide pedestrian refuge and delineate the roundabout.
- ⇒ Traffic signs, pavements markings, and lighting should be adequate so that drivers are aware that they are approaching a roundabout and should reduce speed. With multi-lane roundabouts, signing and pavement markings should help drivers choose the appropriate lane when entering and exiting the roundabout.

Q: Aren't traffic signals safer than roundabouts for pedestrians?

A: It depends on the amount of pedestrians and vehicles. In many cases, a roundabout can offer a safer environment for pedestrians than a traffic signal because the pedestrian crossing at a roundabout is reduced to two simple crossings of one-way traffic moving at slow speeds. A pedestrian crossing at a traffic signal still needs to contend with vehicles turning right or left on green, vehicles turning right on red, and vehicles running the red light. The latter of these potential conflicts occur at high speeds and often result in injuries or fatalities to pedestrians.

Q: Are roundabouts appropriate everywhere?

A: No. The choice of using a roundabout versus a traffic signal is a case-by-case decision that must take into account elements such as traffic volumes, land use, topography and corridor.

Typical 4-leg intersection

- 32 vehicle-to-vehicle conflict point
- 24 vehicle-to-pedestrian conflict points

4-leg roundabout

- 8 vehicle-to-vehicle conflict point
- 8 vehicle-to-pedestrian conflict points

Appropriate locations for a roundabout

- High crash rate locations
- Intersections with large traffic delays
- Complex geometry (more than four approach roads for example)
- Frequent left-turn movements

Using a roundabout

Q: In a roundabout, do I “Yield to the Right”?

A: At roundabouts, the traffic circulates counter-clockwise and moves toward vehicles at the yield line. Vehicle operators should always yield at the entry to circulating traffic. In practice, that means yield to traffic from the left, similar to the action that is necessary when entering a freeway or turning right at a red traffic light/signal.

Q: Should I use my turn signals in a roundabout?

A: Yes. Especially when exiting the roundabout. This allows vehicles waiting to enter the roundabout to know your intentions.

Q: When do I enter the roundabout?

A: Roundabouts are not like four-way stops in the fact that there is not taking of turns among vehicle operators. Vehicle operators should enter the roundabout when there is a safe gap in the traffic flow.

Q: Should I stop inside the roundabout to let someone in?

A: No. Vehicle operators in the roundabout may slow down so that the safe gap becomes more obvious to the driver wanting to enter the roundabout; however, they should not stop. Vehicle operators should not stop after crossing the yield line and are actually in the roundabout circle.

Q: Can roundabouts accommodate larger vehicles?

A: Yes. To accommodate vehicles with large turning radii such as trucks, buses, and tractor-trailers, roundabouts provide an area between the circulatory roadway and the central island, known as a truck apron, over which the rear wheels of these vehicles can safely track. The truck apron generally is composed of a different colored material than the paved surface, usually a reddish colored concrete, to discourage routine use by smaller vehicles.

Q: Do drivers favor roundabouts?

A: Drivers may be skeptical, or even opposed to roundabouts when they are proposed. However, opinions quickly change when drivers become familiar with roundabouts. A 2002 Institute study in three communities where single-lane roundabouts replaced stop sign-controlled intersections found 31 percent of drivers supported the roundabouts before construction compared with 63 percent shortly after. Another study surveyed drivers in three additional communities where single-lane roundabouts replaced stop signs or traffic signals. Overall, 36 percent of drivers supported the roundabouts before construction compared with 50 percent shortly after. Follow-up surveys conducted in these six communities after roundabouts had been in place for more than one year found the level of public support increased to about 70 percent on average.

Sources of information

- www.safety.fhwa.dot.gov
- www.iowa.gov
- www.dot.wi.gov
- www.dot.state.mn.us