



TRAFFIC TIPS



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Roundabouts:

A safety solution to reduce intersection crashes

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What is a modern roundabout?

A modern roundabout is a one-way circular intersection without traffic signals in which traffic flows around a center island. Roundabouts feature yield control for all entering traffic, channelized approaches and appropriate geometric curvature to ensure that travel speeds on the circulatory roadway are typically less than 30 mph. Roundabouts must be designed to meet the needs of all users - drivers, pedestrians, pedestrians with disabilities and bicyclists. When designing roundabouts, special considerations must be given to the needs of pedestrians with visual disabilities who are unable to judge adequate gaps in traffic at roundabouts. Proper site selection and pedestrian channelization are essential to making roundabouts accessible to all users. Roundabouts can also be designed for trucks and larger vehicles and in geographic areas where significant snowfall is the norm during the winter.

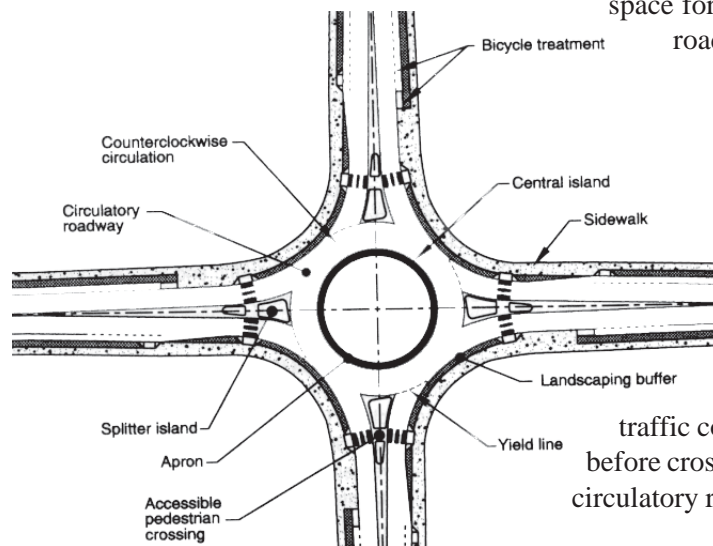
Features of Modern Roundabouts

The design and traffic control features of roundabouts are as follows:

- **Yield control** is used on all entries.
- The **circulatory roadway** has no traffic control. Circulating vehicles have the right-of-way. All vehicles circulate counter-clockwise and pass to the right of the central island.
- **Central island.** Once within the circulatory roadway, vehicles' paths are further deflected by the central island.
- **Pedestrian access** is allowed only across the legs of the roundabout, behind the yield line to the circulatory roadway. Pedestrian crossings are located at least one vehicle length upstream of the yield point.
- **Splitter island.** A splitter island is a raised or painted area on an approach used to separate entering from exiting traffic, deflect and slow entering traffic and provide storage space for pedestrians crossing the road in two stages.

• **Yield line** is a pavement marking used to mark the point of entry from an approach into the circulatory roadway. This is generally marked along the inscribed circle. Entering vehicles must yield to any circulating

traffic coming from the left before crossing this line into the circulatory roadway.



- **Landscaping buffer.** Landscaping buffers are provided at most roundabouts to separate vehicular and pedestrian traffic and to encourage pedestrians to cross only at the designated crossing locations. Landscaping buffers can also significantly improve the aesthetics of the intersection.
- **Accessible pedestrian crossings.** Accessible pedestrian crossings should be provided at all roundabouts. The crossing location is set back from the yield line and the splitter island is cut to allow pedestrians, wheelchairs, strollers and bicycles to pass through. Tactile surfaces should be used to warn pedestrians with visual disabilities that they are about to enter the roadway.

Roundabout Safety

Research indicates that well-designed roundabouts can be safer and more efficient than conventional intersections. Safety benefits of roundabouts include:

- Roundabouts have fewer conflict points in comparison to conventional intersections. The potential for hazardous conflicts, such as right-angle and left-turn head-on crashes is eliminated with roundabout use. Single-lane approach roundabouts produce greater safety

benefits than multilane approaches because of fewer potential conflicts between road users and because pedestrian crossing distances are shorter;

- Low absolute speeds associated with roundabouts allow drivers more time to react to potential conflicts, and help to improve the safety performance of roundabouts;
- Since most road users travel at similar speeds through roundabouts, i.e., have low relative speeds, crash severity can be reduced compared to some traditionally controlled intersections;
- Roundabouts have fewer annual injury crashes than rural two-way stop-controlled intersections, and the total number of crashes at roundabouts is relatively insensitive to minor street demand volumes; and
- Roundabouts have fewer injury accidents per year than signalized intersections, particularly in rural areas. At volumes greater than 50,000 average daily traffic (ADT), urban roundabout safety may be comparable to that of urban signalized intersections.



Safety Problems Susceptible to Correction by Roundabouts

The decision to install a roundabout as a safety improvement should be based on a demonstrated safety problem of the type susceptible to correction by a roundabout. A review of crash reports and the type of accidents occurring is essential.

Examples of safety problems include:

- High rates of crashes involving conflicts that would tend to be resolved by a roundabout (right-angle, head-on, left/through, U-turns, etc.);
- High-crash severity that could be reduced by the slower speeds associated with roundabouts;
- Site visibility problems that reduce the effectiveness of STOP sign control (in this case, landscaping of the roundabout needs to be carefully considered); and
- Inadequate separation of movements, especially on single-lane approaches.

Adapted from: "Issue Briefs" Issue 14: Roundabouts. April 2004. U.S. Department of Transportation, Federal Highway Administration, and Institute of Transportation Engineers.

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