

Michigan

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Roundabouts: A quick route out of traffic congestion

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Have you ever found yourself waiting at a congested intersection, creeping forward inch by tedious inch as you wait for the traffic signal to cycle from red to green? The solution to this gridlock could be coming to an intersection near you!

Roundabouts, popular in Europe for the last several decades, are rapidly gaining favor across the United States. Here in Michigan, the numbers are skyrocketing. In 2003, there were only three roundabouts in the state. Just three years later, in 2006, 22 roundabouts have been built or are under construction. Engineers estimate that including roundabouts in the design or planning stage pushes the number to more than 40.

A modern roundabout is a circular shaped intersection configured with a center island that allows vehicles from multiple directions to enter and exit simultaneously. The modern roundabout does not use traffic signals.

It's no traffic circle!

It's important to understand that a modern roundabout is not a traffic circle or a rotary. Traffic circles, like those found in DuPont Circle in Washington DC, or the Arc de Triomphe's Etoile (the eight-lane, twelve-spoke tourist's nightmare in central Paris) are different from the roundabouts being built today. In traditional traffic circles, roads entering the circle typically intersect the center at a 90-degree angle. Traffic circles often use stop signs or signals to control entry. Rotaries typically feature a large diameter circle, which allows for fairly high speeds of travel and weaving movements.

While modern roundabouts can vary in size according to the intended use, all roundabouts share very specific attributes:

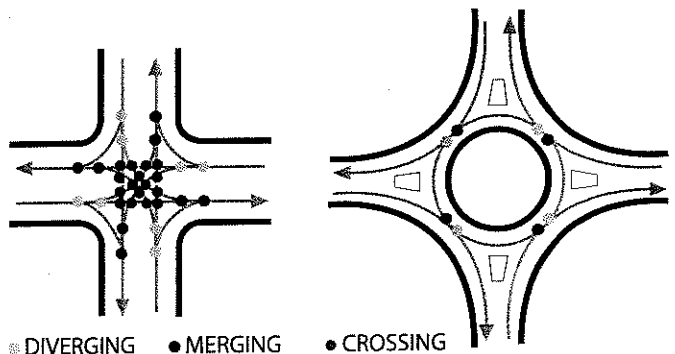
- A circular roadway. The circumference of the roundabout's circle, the width of entry lanes, and other characteristics are all precisely designed for the area's peak traffic volume.
- Traffic enters the circle at a gradual angle, similar to the way traffic merges onto a freeway.

- Entering traffic yields to the vehicles already circulating.
- Low speeds. Modern roundabouts, due to their size, feature low speeds for both the entering and circulating traffic. The small circumference forces drivers to move at lower speeds within the circle, reducing the likelihood of accidents. The speed inside the roundabout ranges from 15-25 miles per hour.

Benefits of modern roundabouts:

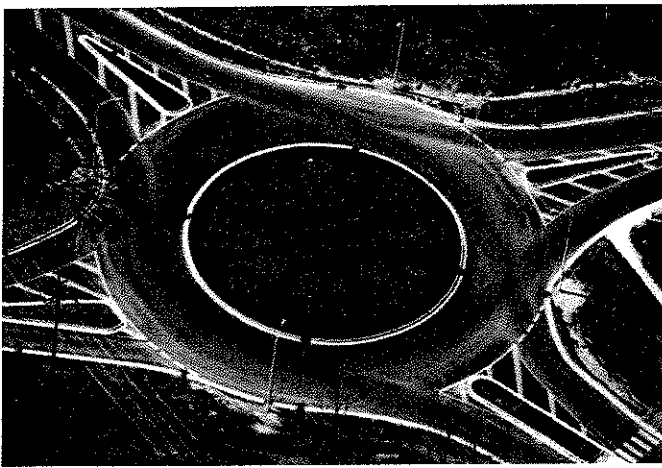
Safety – According to the Insurance Institute for Highway Safety, installing a roundabout typically results in:

- A 76% reduction in injury-accidents.
- A 90% reduction in fatalities.



- A 40% reduction in pedestrian injuries and 75% fewer "conflict points" compared to standard intersections (see diagram above).

Pedestrian friendly – In urban areas, roundabout plans often prompt concerns about pedestrian access and safety. Actually, roundabouts are significantly safer for pedestrians than traditional cross or t-shaped intersections. A traditional intersection requires that pedestrians cross one or more lanes of traffic while being aware of vehicles approaching from four different directions.



Bloomington, IN roundabout – Center for Transportation Research & Training, Kansas State University website.

At a roundabout, a pedestrian crosses only one lane of traffic at a time.

Greater capacity, less delays – Although drivers may slow their speeds to enter the roundabout and yield as necessary, roundabouts eliminate lengthy, complete stops and the traffic backups that follow.

Improved environment – A less obvious benefit of roundabouts is that smog-producing emissions are reduced. Automobiles spend less time idling in traffic jams or waiting at signals, thereby emitting fewer pollutants into the air.

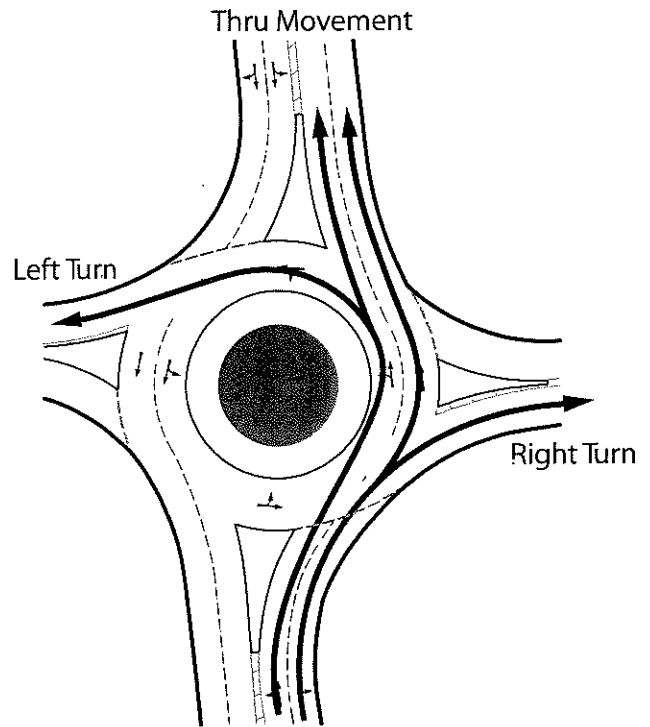
Aesthetically pleasing – The roundabout’s center island is usually attractively landscaped and can even serve as a source of pride for a community. Bloomington, Indiana features a roundabout with its center island planted to create a basketball.

Jim Marcinkowski, P.E. has designed a number of roundabouts in California and Michigan. He is managing a large transportation improvement effort, known as the Northwestern Connector project (www.nwconnector.com), in Farmington Hills and West Bloomfield Township, in Oakland County. This project, designed to relieve the booming area’s traffic congestion and reduce accidents, features a series of eight multi-lane roundabouts.

“When roundabouts are designed correctly, they result in a meaningful reduction in delays, increased capacity for intersections, and most importantly, a significant reduction in accidents, especially fatalities,” says Marcinkowski. “Roundabouts are a valuable tool to resolve traffic issues.”

When are roundabouts most effective?

Modern roundabouts can’t solve every traffic problem, but when properly designed, they are particularly effective in a number of situations:



- Intersections with capacity problems
- Intersections with frequent accidents
- Closely spaced intersections
- Intersections with a large volume of left-turning traffic
- Areas with significant right of way
- Areas where a traditional traffic signal would require lengthening or widening a bridge
- Intersections with unusual geometry (where roadways cross at a skewed angle)

Oakland County’s Orion Township was the site of Michigan’s first two-lane roundabout, which opened to the public in 2004. The location, where three two-lane roads intersected in a “y” shape, was plagued by accidents because the heaviest traffic, coming from the south, made an abrupt left turn without stopping. Citizens in the area were particularly concerned about buses navigating the busy intersection to reach the nearby elementary school.

In the year and half that the roundabout has been open, it has functioned smoothly.

Michigan's fastest growing county, Livingston County, is also using roundabouts to alleviate traffic issues. A large commercial development at US-23 and Lee Road promises to add throngs of traffic to the highway interchange in an area constrained by an existing bridge and nearby frontage road. One of the two planned roundabouts is already constructed – when complete, this will be Michigan's first double roundabout. The new roundabouts will absorb the traffic increase, without the tremendous expense of widening or replacing the bridge. "We're definitely seeing much smoother traffic flows and far fewer accidents, now that the roundabout is in operation," commented Craig Bryson, public information director for the Road Commission for Oakland County. "We were able to take a tricky intersection and make it work more efficiently."

Roundabouts aren't right for every situation

While roundabouts are fitting for many applications, they aren't a perfect solution in every case. Roundabouts may not be suitable if:

- There is a very great disparity between the traffic volumes of the intersecting streets.
- The location's volume of traffic requires a central island and circulating roadway larger in diameter than the right of way (ROW) allows.

Finally, there are concerns regarding roundabouts for visually-impaired pedestrians. The U.S. Access Board, the federal body responsible for compliance regulations for the American's With Disabilities Act (ADA), is considering a rulemaking that would require the installation of pedestrian-actuated signals for roundabouts with two or more entering/exiting lanes.

Roundabouts aren't a panacea for all of Michigan's traffic ills, but as more communities institute this device, the traffic flow and safety benefits may turn skeptics into enthusiasts. ♦

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