

# The facts about modern roundabouts...

When considering the modern roundabout as an intersection alternative, a number of **common misconceptions** are often presumed by members of the public, elected officials, consultants, and even transportation experts who are unfamiliar with this type of intersection control.

## Some truths concerning the modern roundabout are:

- 1 The modern roundabout is significantly different than old-style traffic circles or rotaries.
- 2 When designed properly, modern roundabouts are safer than traffic circles, rotaries, and most traditional signalized intersections. They are often used as a calming effect to slow traffic.
- 3 Roundabouts increase road capacity since they can accommodate high traffic volumes and may require fewer lanes or reduced median widths, and they can reduce congestion and backups.
- 4 Roundabouts are an effective treatment for rural intersections where signalization may not be appropriate.
- 5 Roundabouts can provide adequate downstream gaps for motorists entering the roadway from side streets or out of driveways.
- 6 Roundabouts are inexpensive to operate and have lower maintenance costs compared to traffic signals.
- 7 Roundabouts safely accommodate high volumes of pedestrians and bicycles.
- 8 Roundabouts can increase capacity and reduce delay time over traditional intersections.
- 9 Roundabouts can be landscaped to be aesthetically attractive.
- 10 Roundabouts reduce vehicle emissions compared to signalized intersections.
- 11 Roundabouts have fewer conflict points for all users.

## History of the Modern Roundabout

The modern roundabout was developed by British engineers in the 1960s and 1970s. During that time, engineers analyzed traffic volumes and accident records from hundreds of intersections and experimental layouts. Based on this research, they deduced the precise intersection shape and characteristics that would carry vehicles most efficiently and safely. Since 1987, the British have had the lowest highway fatality rate of any country in the world, (20% lower than the United States).

Roundabouts are heavily used in Britain, France, Australia, Switzerland and many other countries. Modern roundabouts have been constructed at hundreds of intersections throughout the United States over the past ten years, and are gaining popularity every year.



Photo courtesy of DLZ Michigan, Inc.

Intersection of Hamilton and Marsh Roads, Okemos, Michigan

### Resources:

Federal Highway Administration  
Michigan Department of Transportation  
DLZ Michigan, Inc.

[www.fhwa.dot.gov](http://www.fhwa.dot.gov)  
[www.michigan.gov/MDOT](http://www.michigan.gov/MDOT)  
[www.dlz.com](http://www.dlz.com)

This document was produced by the Washtenaw County Road Commission  
February ♦ 2007

For further information on modern roundabouts, please refer to the WCRC brochure,  
"Navigating Roundabouts."



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# What is a modern roundabout?

Relatively new to the United States, modern roundabouts have been common throughout other portions of the world for several decades as an alternative to stop-controlled and signalized intersections. The main characteristic of a modern roundabout is the “**yield-at-entry**” rule, meaning that traffic entering a roundabout must yield to the traffic already within the roundabout. Other characteristics include:

- ⦿ A modern roundabout is an unsignalized intersection engineered to maximize safety and minimize traffic delay
- ⦿ Splitter islands are located on each approach, which also serve as refuge islands for pedestrians
- ⦿ The splitter and center islands of a roundabout deflect entering traffic and reinforces the yielding process
- ⦿ The yield-at-entry rule keeps circulating traffic from locking up and allows free flow movement
- ⦿ Drivers enter the roundabout when circulating space becomes available
- ⦿ Roundabouts are safer than intersections with stop signs or traffic signals
- ⦿ Slower, more uniform vehicle speeds simplify user decision-making

Additionally, studies show roundabouts to be one of the safest type of intersections available. According to the **Insurance Institute for Highway Safety** (2001), a modern roundabout can provide approximately:

- ⦿ **39%** reduction in total crashes
- ⦿ **76%** reduction in injury crashes
- ⦿ **89%** reduction in less serious injury/fatality crashes

Vehicular crashes that do occur at roundabouts tend to be low-speed sideswipes or rear-end collisions versus head-on, left-turn, and high-speed broadside collisions that are more frequently experienced at signalized intersections. Studies also indicate that pedestrians are 50% less likely to be hit at a roundabout than at a signalized crosswalk.

**Splitter islands have multiple roles. They...**

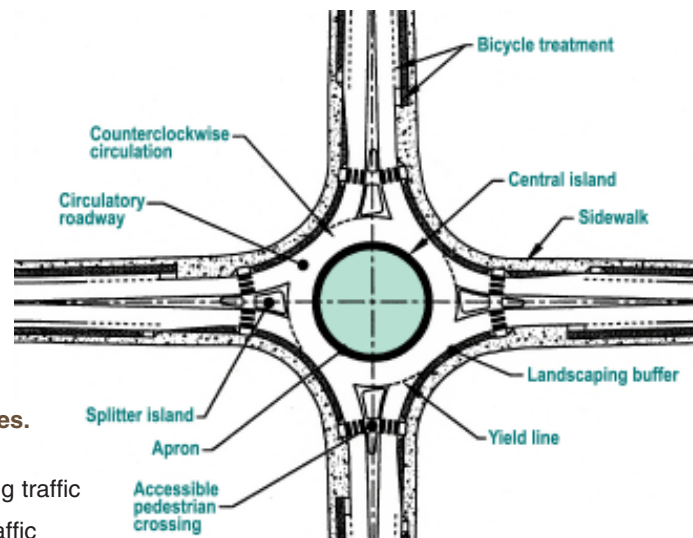
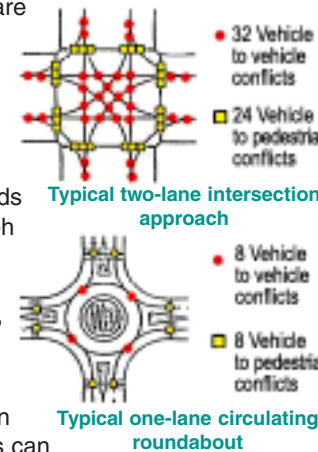
- Separate entering and exiting traffic
- Deflect and slow entering traffic
- Provide a pedestrian refuge

## How does a roundabout differ from traditional intersection signalization?

Roundabouts have efficient traffic operations by keeping vehicles moving. This results in less fuel usage and pollution. Another noticeable difference between a traditional signalized and/or stop-controlled intersection and a modern roundabout are the safety factors.

Traffic signals tend to encourage drivers to accelerate through intersections in order to “**beat the red light.**” Speeds are generally higher (35 mph avg.), which can ultimately increase the number of crashes, severity of injuries, and fatalities.

The comparison charts (right) show the difference in conflict points that motorists can encounter at a typical signalized intersection versus at a roundabout. A conflict point is defined as a location where collisions could occur as traffic cross paths.



**Key Roundabout Features**

## How do roundabouts differ from the old-style rotaries and traffic circles?

Although rotaries or “**traffic circles**” and modern roundabouts utilize round circulating roadways, there are major differences in the design and operation of these type of intersections.

Traffic circles, located primarily in the northeastern United States, encountered serious operational and safety problems, including the tendency to lock up at higher volumes.

A modern roundabout is smaller in diameter than the traditional rotary or traffic circle. This results in lower speeds and safer conditions. Roundabouts are generally 100 to 150 feet in the outer diameter as opposed to the two older-style circles, which are typically 150 to 300 feet in diameter or larger.

Because rotaries and traffic circles are larger and their entries are tangential to the circle, they move vehicles at higher speeds, ranging from 30 to 45 mph.

**Roundabouts are smaller, and thus, force vehicles to *slow* to speeds ranging from 15 to 20 mph.**

Compared to modern roundabouts, non-conforming traffic circles often incorporate one of the following operations or design deficiencies:

- a. Traffic within the circle is required to yield to entering traffic. During peak hours of the day, this operation has a tendency to lock up the circle.
- b. Pedestrians are permitted to cross to the central island in a traffic circle. This is unsafe for pedestrians and disruptive for motorists.
- c. Parking is permitted around some traffic circles. This reduces capacity and overall safety.
- d. Their purpose is often less about traffic efficiency and more about aesthetics and features.

## Examples of traffic circles are:

1. Dupont Circle - Washington D.C.
2. Columbus Circle - New York City
3. L’Arc De Triomphe - Paris, France
4. St. Armand’s Circle - Sarasota, Florida