Figure 51-12ZZ, BACKGROUND

Roundabout FACTS

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 crash records from hundreds of intersections and experimental layouts. Based on this research, they deduced the precise intersection shape and characteristics that will serve 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 used often 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.

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What is a modern roundabout?

Relatively new to the United States, modern roundabouts have been common throughout other parts 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.

Studies show a roundabout to be one of the safest types of intersections available compared to a signalized intersection. The introduction of a roundabout in lieu of a typical intersection, stop-controlled or signalized, has resulted in the following:

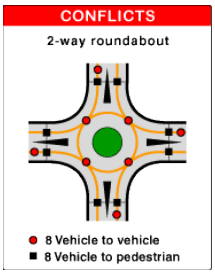
1. 40% reduction in total crashes;
2. 80% reduction in injury crashes;
3. 90% reduction in less serious injury or fatality crashes; and
4. 50% reduction in vehicle-pedestrian crashes.

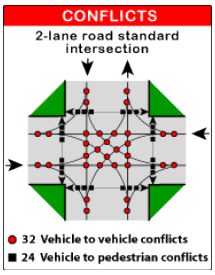
The vehicular crashes that do occur at a roundabout tend to be low-speed sideswipes or rear-end collisions versus typically, more serious head-on, left-turn and high-speed broadside collisions that are more frequently experienced at a signalized intersection.

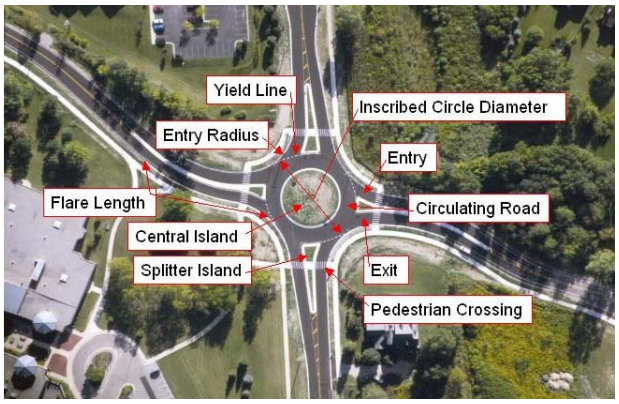
How does a roundabout differ from a traditional signalized intersection?

A roundabout maintains efficient traffic operations by keeping vehicles moving. This results in less delay, fuel consumption, and pollution. The use of a roundabout saves money used to maintain signal equipment and provide electricity. A traffic signal tends to encourage drivers to accelerate their vehicles through the intersection in order to beat the red light, and thus results in speeds averaging as high as 35 mph, which can ultimately increase the number of crashes, injuries, or fatalities.

The comparison charts shown below show the difference in conflict points that motorists can encounter at a typical signalized intersection versus at a roundabout.







How does a roundabout differ from a traffic circle?

Although a traffic circle, sometimes referred to as a rotary, and a modern roundabout each utilize round circulating roadways, there are major differences in the design and operation of each type of intersection.

A modern single-lane roundabout is typically smaller in diameter than a traffic circle. This can result in lower speeds and safer conditions. A single-lane roundabout's outer diameter is 100 to 150 ft, as opposed to that of a traffic circle, of 150 to 300 ft or larger. Because a traffic circle is larger, it can move more vehicles at higher speeds ranging from 30 to 45 mph. A roundabout is smaller, and thus, forces vehicles to slow to speeds ranging from 15 to 20 mph. This difference is significant due to the following.

1. Vehicles enter a roundabout more easily due to lower speeds of 15 to 20 mph on the circulating roadway.

2. A traffic circle permits higher speeds making entering the circle more difficult, which can result in more frequent and severe traffic crashes.

3. Higher speeds on a traffic circle make crossing for pedestrians more dangerous.

4. The flared approach and proper entry angle on a roundabout allows vehicles to safely yield at the entry when merging into the circulating traffic. This allows for shorter delays as vehicles easily merge into the circle by slowing for circulating traffic, and not stopping.

5. A properly planned roundabout is designed using rigorous standards based on specific traffic turning volume. However, the size of a traffic circle is based on land availability and distance needed to accommodate high-speed weave movements.

6. A roundabouts can accommodate large vehicles, including fire trucks and other emergency vehicles.

7. Since a roundabout is smaller than a traffic circle, this results in cost savings for construction and maintenance.