

Roundabout Safety in North America

In March 2000 a report was published by the Insurance Institute for Highway Safety entitled A Study of Crash Reductions Following Installation of Roundabouts in the United States. The study, available for download on the Resources page, looked at changes in motor vehicle crashes after the conversion of 24 intersections from STOP sign or traffic signal control to roundabouts. It was done in a mix of urban and rural locations, and involved single-lane and two-lane roundabouts.

The study found the following highly significant relationships:

- A reduction in collisions of all types of 40%.
- A reduction in injury collisions of 75%.
- A reduction in fatal and incapacitating collisions of about 90%.

Why Install Roundabouts?

Greater Safety

Roundabouts are the safest type of at-grade intersection. They create slower speeds, fewer conflict points for pedestrians and motorists, and reduced collision angles compared to Stop sign or traffic signal control. For more information, refer to Safety.

Reduced Delay

Since motorists do not always have to stop, delays and queues are usually less compared to STOP sign or traffic signal control especially at high traffic flows. For more information on their performance under heavy flows, refer to Avon and Vail.

Environmental Benefits

With reduced delay, roundabouts lessen noise, air pollution and fuel consumption. *This is likely to become an increasingly important consideration in the future.* Roundabouts also provide opportunities for traffic calming and speed transition, as well as landscaping and gateway treatments.

Where Should Roundabouts be Considered?

Roundabouts are a feasible and practical alternative to other types of control where:

- Traffic flows do not exceed about
 - 2,000 vehicles per hour for one-lane roundabouts; and,
 - 4,000 vehicles per hour for two-lane roundabouts; and,
 - 6,000 vehicles per hour for three-lane roundabouts; and,
 - 8,000 vehicles per hour for four-lane roundabouts.
 - Locations experience high rates of angle, rear-end or loss-of-control collisions.
 - Stop signs are creating unacceptable delays for side street motorists, but where a traffic signal is not warranted, or where a traffic signal would result in greater delays than a roundabout.
 - There is a high proportion of left turning traffic, or where the major traffic route is not straight through the intersection.
 - Intersections have unusual geometry or more than four legs.
 - It is important to emphasize the transition between urban and rural environments (i.e. gateways).
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Roundabouts are not always practical or feasible where:

- Land availability is limited.
- Sight distance of the entry points is limited, such as on abrupt crest vertical curves on the intersection approaches.
- Traffic signal progression is critical, as in some cases roundabouts can disrupt traffic platooning. (Meadows Place benefits from co-ordinated 'platooning')