

## State Hwy 55 at County Hwy KK

### Calumet County, Wisconsin

The intersection of State Trunk Highway 55 (STH 55) and County Trunk Highway KK (CTH KK) was originally a two-way stop-controlled intersection with a 55 mph posted speed limit on each approach. In a five-year period (2001-2005), 30 crashes occurred at the intersection resulting in 17 people injured and one person killed.

The Wisconsin Department of Transportation (WisDOT) added intersection warning signs along STH 55 in advance of CTH KK and lowered the approach posted speed limits to 45 mph, but crashes continued to occur.

In 2006, WisDOT decided to reconstruct the intersection as a roundabout. They modified the design to account for the high-speed approaches by providing longer splitter islands and pavement markings, along with enhanced signing. These features help drivers recognize the roundabout well in advance, and to reduce their speed accordingly.

In the six-year period after construction, WisDOT reports there have been 11 total crashes resulting in one person injured and zero fatalities. These significant reductions in crashes made this project a success for WisDOT, and helped them move forward with other roundabouts along rural highways throughout the state.



FHWA identified roundabouts as a **Proven Safety Countermeasure** because of their ability to substantially reduce the types of crashes that result in injury or loss of life. Roundabouts are designed to improve safety for all users, including pedestrians and bicycles. They also provide significant operational benefits compared to conventional intersections.

## What is a Roundabout?

A roundabout is a type of circular intersection, but is quite unlike a neighborhood traffic circle or large rotary. Roundabouts have been proven safer and more efficient than other types of circular intersections.

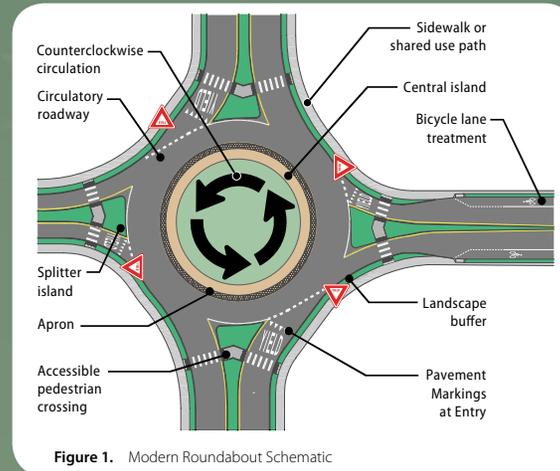


Figure 1. Modern Roundabout Schematic

Roundabouts have certain essential distinguishing features:

1. **Counterclockwise Flow.** Traffic travels counterclockwise around a center island.
2. **Entry Yield Control.** Vehicles entering the roundabout yield to traffic already circulating.
3. **Low Speed.** Curvature that results in lower vehicle speeds throughout the roundabout.

## For More Information

Jeffrey Shaw, P.E., PTOE, PTP

FHWA Office of Safety  
708.283.3524 or jeffrey.shaw@dot.gov

Hillary Isebrands, P.E., PhD

FHWA Resource Center  
720.963.3222 or hillary.isebrands@dot.gov

To learn more about roundabouts, please visit:

[safety.fhwa.dot.gov](https://safety.fhwa.dot.gov)

Publication number FHWA-SA-14-097



Cover image source: Washington State Department of Transportation (WSDOT)



U.S. Department of Transportation  
Federal Highway Administration

# ROUNDABOUTS & Rural Highways



## Common Problems/Concerns

Crashes at rural intersections often involve high speeds, which tend to result in severe injuries or fatalities. Roughly  $\frac{1}{3}$  of annual intersection fatalities in the U.S. occur along rural, two-lane highways.

In many rural environments, drivers can miss a stop sign or traffic signal, leading to running through a stop sign or red light and resulting in an angle crash.

For a driver turning left across oncoming traffic, it can sometimes be difficult to judge the speed of the approaching vehicle, resulting in misjudged gaps, and potentially severe crashes.

It doesn't seem like people would slow down for a roundabout along rural highways. Motorists will just drive right into or over the roundabout because they won't be able to slow down in time.

In the northeastern U.S., circles are being signalized or removed because they do not work.

Why build something "different", when all that is needed is either stop signs or a traffic signal?



## Why Consider a Roundabout

Roundabouts are geometrically designed for drivers to negotiate the intersection at speeds in the range of 15-25 mph, regardless of the posted speed limits on approaches.

Because roundabouts require vehicles to yield and then navigate around a raised, circular island, the possibility of an angle crash is significantly reduced.

With roundabouts, there is no need to make a turn across opposing traffic. Entering vehicles yield to traffic already in the circle, and proceed when there is a safe gap.

High-speed approaches to roundabouts include advance signing, pavement markings and raised channelization. With proper design, drivers adjust their speeds, slow on approach, and navigate the roundabout safely.

The old traffic circles and rotaries that are common in the northeastern U.S. are not modern roundabouts.

Improvements like stop signs and signals, while very familiar, aren't always the safest choice. With intersections representing about one-quarter of annual U.S. traffic fatalities and roughly half of all injury crashes, safer designs are needed that improve mobility while saving lives.



## Real World Results\*

Roundabouts constructed at intersections along high-speed, two-lane rural highways reduced overall crashes by up to 68% and reduced injury crashes by up to 88%.

Roundabouts constructed at intersections along high-speed, two-lane rural highways eliminated 83% of angle-type crashes.

There were 11 fatal crashes in the 5 year "before" period and ZERO fatal crashes in the 5 year "after" period at 19 roundabouts constructed along high-speed, two-lane rural highways in six different states (KS, MD, MN, OR, WI, and WA).

Researchers compared traffic speeds of approaches to roundabouts and stop-controlled intersections. At 100 feet before the yield or stop lines, the speed of traffic at the roundabouts was 2.5 mph lower than at the stop-controlled locations.

Roundabouts are designed for slower speeds, require entering traffic to yield to vehicles already in the circular roadway, and to eliminate the need to weave or change lanes to exit.

Since the late 1990s, an ever growing number of State DOTs and local road agencies are finding that roundabouts work in their jurisdictions. Their potential for saving lives is too significant to ignore.

### \* Sources:

Isebrands, H., S. Hallmark, N. Hawkins. "Effects of Approach Speed at Rural High-Speed Intersections" Transportation Research Record: Journal of the Transportation Research Board, Volume 2402, Transportation Research Board, National Research Council, Washington, DC, 2014

Isebrands, H. and S. Hallmark. "Statistical Analysis and Development of a Crash Prediction Model for Roundabouts on High-Speed Rural Roadways" Transportation Research Record: Journal of the Transportation Research Board, Volume 2389, Transportation Research Board, National Research Council, Washington, DC, 2012