

## MINNESOTA ROUNDABOUT REDUCES CRASHES, IMPROVES SAFETY

### INTRODUCTION

The Minnesota Department of Transportation (Mn/DOT) faced the challenge of improving the intersection of State Highway 13 and County Road 2 in Scott County. The two-way stop-controlled rural intersection was the site of two fatal crashes and 50 injury crashes between June 2000 and June 2005. Both roads have speed limits of 55 mph. State Highway 13 had an average daily traffic (ADT) of 4,650, and County Road 2 had an ADT of 4,300. Previous treatment attempts, including larger stop signs, striping, and flashing lights, had little success in reducing crashes.

After looking at other agencies' experiences with similar sites around the country, Mn/DOT decided that reconstructing the intersection as a single-lane roundabout should substantially reduce serious crashes.<sup>1</sup> The crash reduction averages in this report reflect the average percent reduction per year based on the difference between the total number of "before" and "after" crashes, between 2002 - 2007. The "before" period was 36 months and the "after" observation period was 24 months.

This article summarizes the safety benefits of roundabouts as an alternative safety treatment for rural high-speed stop-controlled intersections.

### TREATMENT SUMMARY

The Scott County roundabout was constructed in 2005 with a central island 110 feet in diameter. Approach lanes to the roundabout were 16 feet wide, and departure lanes from the roundabout were 14 feet wide. A 200-foot long median island was provided on County Road 2, and a 300-foot long median island was provided on State Highway 13. Splitter islands were 25 feet wide, and the truck apron width was 10 feet, with transverse rumble strips spaced apart on the truck apron at approximately 20 feet, center to center.

According to Paul Kachelmyer, Mn/DOT Project Manager, "It's worked great. We couldn't have hoped for better results. All of the serious accidents have just gone away. The thing about roundabouts ... drivers have to physically change how they're driving. The shape of it causes them to slow down, to change direction."

In the 3-year period before construction of the roundabout, there were 19 total crashes and 14 injury crashes. In the 2-year period following the construction of the roundabout, only 3 total crashes and 2 injury crashes were reported. While the two-way stop-controlled intersection experienced 18 right-angle crashes (one of which involved a fatality) in the 3-year period prior to the roundabout conversion, there have been no angle crashes since the intersection was converted to a roundabout.

### The Cost of Improved Safety

Mn/DOT had no implementation issues with the installation of the roundabout. The construction of the roundabout took place in 2005 and lasted 90 days. During this time, both State Highway 13 and Scott County Road 2 were closed at the intersection, and motorists were advised to follow the posted detour routes during the closure. The cost to construct the roundabout was \$725,000 (no additional right-of-way acquisition was required).

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<sup>1</sup> Existing intersection treatments met minimum Manual on Uniform Traffic Control Devices (MUTCD) standards.

Mn/DOT converted this high-speed rural intersection to a roundabout to reduce high-crash rates that had not been mitigated through other lower-cost treatments. **Converting this intersection to a roundabout resulted in a 76.2 percent reduction in total crashes and a 78.7 percent reduction in injury crashes. Angle crashes were eliminated.**

As the Minnesota experience demonstrates, roundabouts can effectively improve safety and reduce traffic crashes and their resulting injuries and/or fatalities. For more detailed data and results on this success story and other proven intersection safety treatments from across the country, please visit: <http://safety.fhwa.dot.gov/intersection/>. For more information, contact Ed Rice, Intersection Safety Team Leader, FHWA Office of Safety ([ed.rice@dot.gov](mailto:ed.rice@dot.gov)), or Anthony Winiiecki, Scott County Public Works Department, Jordan, MN ([twiniiecki@co.scott.mn.us](mailto:twiniiecki@co.scott.mn.us)).

OPTIONAL IMAGES (provided courtesy of Minnesota DOT):

### **Intersection of Highway 13 and County Rd 2**



**Sign on the approach to the Roundabout**



**Construction of the Roundabout**