

Executive Summary and Research Readiness Level Assessment

Restricted Crossings on Rural Highways

Research Objectives

This study examined the potential for replacing the standard intersection design at two- and four-way stop control intersections along rural highways with a restricted crossing u-turn facility, prohibiting left- and through-movements from the side road, and providing a u-turn location downstream from the main crossing. This type of facility has been implemented for rural highways in both Maryland and North Carolina, and has the potential to serve as a cost effective solution to resolve safety issues within Nebraska.

Research Benefits

This research aided NDOT in providing guidance on a safe, efficient, and field-tested solution to cost-effectively mitigate current safety concerns and future conditions at two- and four-way stop controlled intersections of rural highways and minor roads. As an alternative to providing grade-separation as a safety treatment, the RCUT design is expected to save more than six million dollars per treatment location. However, these designs require a sizable median to implement, and this research was necessary to determine both the best practices for which geometry to implement in a variety of conditions, but also what the potential cost impacts could be depending on the existing configuration of the roadway.

Principal Investigators

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Background

This study examined the potential for replacing the standard intersection design at two-way stop control (TWSC) and allway stop control (AWSC) intersections along rural highways with a roundabout or a restricted crossing u-turn (RCUT) facility. The geometry of the RCUT design prohibits left and through movements from the side road, and provides a u-turn location downstream from the main crossing. This type of facility has been implemented for rural highways extensively in both Maryland and North Carolina, as well as in limited cases in many other states such as Minnesota and Missouri, with the potential to serve as a cost-effective solution to improve roadway safety within Nebraska.

Conclusion

The primary takeaway from the research was that both a roundabout and an RCUT design can be relied upon to lead to significant safety improvements for unsignalized intersections on rural highways, and that the decision of which one to use should factor in the potential increase in delays to the minor approach at the RCUT design if a high demand volume is anticipated (such as Dakota City), or the consideration of whether it is permissible to interrupt the flow of the major arterial through movement with a roundabout versus leaving it free-flowing with the RCUT.

NDOT Recommendations Based Off of Research Project

The report produced by this research will supplement the Interchange versus At-Grade Intersection on Rural Expressways report from 1992, providing a suite of recommendations for measured approaches to improvements for at-grade intersections on rural highways. Case study analysis on multiple sites within the state will focus on specific problem locations as identified by the Technical Adviser Committee members. The Department will use the research recommendation to have them in the toolbox for this type of design in the future.

- *As provided by Dan Waddle, Lead TAC Member*

Interested in finding out more? Final report is available at:
[NDOT Research Website](#)

Research Readiness Level (RRL) Assessment **RRL 5** Level 5: Standard Practice

Research/Technology fully implemented and understood. No follow-up is necessary.

**This brief summarizes Project SPR-P1 (18) M077
“Offset Right-Turn Lanes on State Highway Systems”
Nebraska Department of Transportation Research Program**