Local Decision Making for Rural Roundabouts

Keith Berndt
Cass County Engineer
Improved Safety with Roundabouts

- 75% less potential conflict points
- Head on and high-speed right angle collisions are virtually eliminated
- 90% less fatalities*
- 76% less injuries**
- 34% less crashes**
- Slower vehicle speeds are safer for pedestrians

*Safety Effect of Roundabout Conversions in the United States. Transportation Research Board (TRB) 1751
**NCHRP Report 572: Roundabout in the United States, Nation Cooperative Highway Research Program, TRB
Reduced Congestion

- Less vehicle delays
- Less stops
- Efficient during both heavy and light traffic times
Saved Money with Roundabouts

- No signals to maintain
- May require less pavement
Roundabouts are a simple concept

- They eliminate conflicting left turns
- UPS has discovered the benefits of right turns over left turns
Cass County ND Highway 17 project

- 6 mile asphalt overlay project with some reconstruction, turn lanes and shoulder widening
- ADT of 3,000 – 5,000
- High AM and PM peak flows
Cass 17 and 52nd Avenue Intersection

- Misaligned West Leg
- Grain Bins, Power Lines, Barn, and House close to intersection
- Right of way challenges
- Close proximity to Sheyenne River Bridge
Cass 17 – 52\textsuperscript{nd} Ave Intersection
Grain Bins west of C17 at 52\textsuperscript{nd} Ave.
House at C17/52\textsuperscript{nd} Ave intersection
Barn and House north of C17/52\textsuperscript{nd} Avenue Intersection
Options Considered

- Conventional: Un-signalized/Signalized
  - Didn’t meet signal requirements, likely would in time
  - Public concern
- Modern Roundabout: Tough Sell
Features of a Modern Roundabout

Traffic Flow
Pavement markings, curves at entry points and raised islands direct traffic into a one-way counter-clockwise flow around the central island.

Curvature
The size of the roundabout and the angles of entry are designed to slow the speed of vehicles.

Yield Line
Traffic entering the circle yields to traffic already in the circle.
Round About Analysis
Round About Analysis
Roundabouts often have less delay than signals.

![MUTCD Signal Warrant Volume Threshold](image)
Third Party Review

MEMORANDUM

Date: April 18, 2008
To: Keith Berndt
   Cass County Department of Public Works
   1201 Main Avenue West
   West Fargo, ND 58078
From: Lee Rodegerdts and Andrew Cibor
Project: Proposed CH 17/52nd Avenue Roundabout
Subject: Roundabout Peer Review Summary

Kittelson & Associates, Inc. (KAI) has performed a review of the proposed roundabout at the intersection of CH 17/52nd Avenue in West Fargo, North Dakota. The documents and designs used in the review were provided on April 4th, 2008 by Cass County Department of Public Works and prepared by SRF Consulting Group, Inc. The design incorporates an ultimate multilane configuration and an interim single-lane design for which 95% plans have been prepared.

This review is primarily of the single-lane roundabout design and assesses the following items:

- Lane numbers and arrangements
- Fastest path and design vehicle checks
- Horizontal alignment and cross section
- Pedestrian and bicycle features
- Signing and striping

This review has been conducted in general conformance with the principles outlined in FHWA’s Roundabouts: An Informational Guide (the FHWA Roundabout Guide), the Kansas Department of Transportation’s Kansas Roundabout Guide, NCHRP Report 572: Roundabouts in the United States, and other research and experience on similar types of projects.
Extensive Information Available

Current Research on Roundabouts

Lee A. Rodegerdts, P.E.

Minnesota Roundabout Conference
April 5, 2006

KITTELSON & ASSOCIATES, INC.
TRANSPORTATION ENGINEERING/PLANNING
6.7 Landscaping Considerations

The use of landscaping at a roundabout is one of the distinguishing features that give roundabouts an aesthetic advantage over traditional intersections. The type and quantity of landscaping plantings or other material incorporated into the roundabout design may be dependent on both the site location and level of care available for maintenance. Exhibit 6-42 illustrates examples of landscaping installed at existing Kansas roundabouts.

Exhibit 6-42
Summary of Landscaping Schemes at Existing Kansas Roundabouts

Lawrence, Kansas – 24th Place at Inverness Drive

Topeka, Kansas – I-70 Ramps at Rice Road and Sycamore Drive
CASS 17 & 40th AVE
QUESTIONS