March–April 2006

Technology NEWS

Local Technical Assistance Program

Providing transportation technology transfer for Iowa's cities and counties

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Iowa Local Technical Assistance Program
Iowa Traffic Safety Data Service
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Roundabouts in rural America

Hillary Isebrands wants to add roundabouts to Iowa's street and road agencies' toolbox for intersection solutions.

Isebrands, an Iowa State University doctoral student in civil, construction, and environmental engineering and CTRE research assistant, is studying the effects of modern roundabouts on rural Midwest highways.

According to Isebrands, there are three good reasons to build roundabouts.

Safety. Research shows roundabouts reduce crashes by 50 percent and reduce the severity of crashes by up to 80 percent. That's because drivers have to reduce speeds to get around them, especially if a roundabout replaces a highway intersection controlled by two stop signs.

Roundabouts also reduce potential crash points from thirty-two in a four-way intersection to eight. Roundabouts also eliminate head-on crashes and make "T-bone" crashes (one car's front crashing into another car's side) much less likely.

Traffic flow. Traffic at busy intersections doesn't pile up behind roundabouts, Isebrands says. Drivers entering a roundabout don't have to stop, but they do have to yield to vehicles already in the circle.

Cars continuously move in and out of roundabouts, increasing traffic flow and intersection capacity.

Another tool. Adding stop signs or traffic signals isn't always the solution to a problem intersection. Sometimes traffic signals are only warranted during peak travel times, and they can result in more severe crashes. Roundabouts give road designers and transportation engineers another solution to consider.

For all those reasons, roundabouts are on their way to Iowa's highways.

Roundabouts in Iowa

John Abrams, an engineer for the rural design section of the Iowa DOT, says the department will build its first highway

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Three-leg roundabout in Coralville, Iowa.

Acronyms in *Technology News*

AASHTO	American Association of State Highway and Transportation Officials
APWA	American Public Works Association
CTRE	Center for Transportation Research and Education (at Iowa State University)
FHWA	Federal Highway Administration
Iowa DOT	Iowa Department of Transportation
ISU	Iowa State University
LTAP	Local Technical Assistance Program
MUTCD	Manual on Uniform Traffic Control Devices
NACE	National Association of County Engineers

U.S. Department of Transportation
Federal Highway Administration

Iowa Department of Transportation

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Roundabouts continued from cover

roundabout this summer. That roundabout will be at the south intersection of U.S. highways 63 and 34 in Ottumwa.

The roundabout should improve a three-way "spaghetti jumble" at the intersection, he said.

Will Iowans see more highway roundabouts over the next few years?

"I would definitely say yes," Abrams said. "Once the people of Iowa notice this one, there will be more of a demand."

Coralville has built two roundabouts since 2002, has one under construction, and is planning another. Scott Larson, Coralville's assistant city engineer, says the city built the first two roundabouts as alternatives to adding turn lanes and traffic signals.

He says drivers seem to like them and there have been few negative comments.

"People tend to appreciate how a roundabout is an alternative to traffic signals," Larson said. "As people learn to drive roundabouts—and there is a short learning period for some—they begin to appreciate how they can help themselves get through the intersection more smoothly by yielding and anticipating gaps in traffic, instead of being at the mercy of a stop sign or red light."

But will roundabouts work out in the country? What happens when a tractor pulls a disk plow into one?

Isebrands, who worked six years as a highway designer in Wisconsin and returned to Ames in 2003 for graduate school, answers by clicking through her laptop computer. She shows a picture of a Kansas roundabout with room for three big trucks pulling three long trailers. So there's room in a roundabout for tractors.

Isebrands thinks there's room in Iowa for roundabouts and their safety features. "I think there's a place for them," she said. "Roundabouts are a proven safety alternative for reducing crash severity at intersections, and this puts Iowa one step closer to reducing the number of Iowans who die every year in crashes."

Hillary Isebrands

Future research

Isebrands is currently negotiating grants with the Iowa DOT, FHWA, the Minnesota DOT, and Minnesota's Local Road Research Board to help develop guidelines for considering and building roundabouts.

She's also working with Shauna Hallmark, an Iowa State associate professor of civil, construction, and environmental engineering and CTRE transportation engineer, to assess whether roundabouts can reduce vehicle emissions by decreasing idling time and creating fewer stops at intersections.

For more information

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Editor's note: *This article was adapted from articles by ISU News Service and in the Center for Transportation Research and Education's March 1, 2006, issue of* CTRE en route. ■