

# CTRE en route

Winter 2006

## In this issue

### Articles

#### [Go! A teen magazine about transportation](#)

*Go!* will open teens' eyes to the exciting innovations in transportation as well as the human problems that transportation helps solve.

#### [New Center for Weather Impacts on Mobility and Safety](#)

A new research center at CTRE will bring together scientists and engineers to study how weather impacts transportation systems. That could lead to better and safer ways to travel when weather is a problem.

#### [PCC Center evolution](#)

The Center for Portland Cement Concrete Pavement Technology (PCC Center) has a new name and a new national focus.

#### [Roundabouts in rural America](#)

Hillary Isebrands, an Iowa State University doctoral student in civil, construction, and environmental engineering and CTRE research assistant, is studying whether modern roundabouts on rural Midwest highways can reduce crash severity.

## Research projects

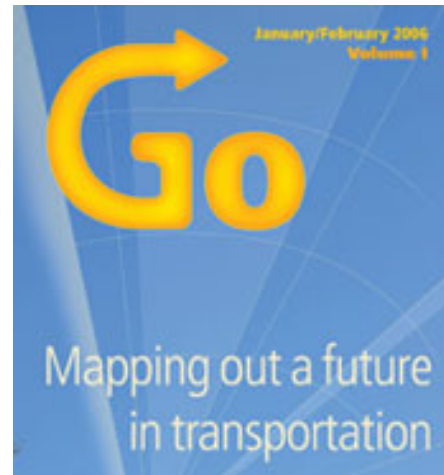
#### [Recently completed](#)

Read about projects completed since August 2005. This list includes links to project details and related publications.

#### [Recently started](#)

Find out about projects begun since August 2005. This list includes links to brief project statements.

*CTRE en route* is published twice a year to inform readers about CTRE's projects and programs.



CTRE proposes publishing a teen magazine



Address: CTRE, 2901 S. Loop Drive,  
Suite 3100, Ames, IA 50010

Phone: 515-294-8103

FAX: 515-294-0467

Website: [www.ctre.iastate.edu/](http://www.ctre.iastate.edu/)

CTRE Communications:

[Marcia Brink](#)

*CTRE en route* editor:

[Michele Regenold](#)

[Tech transfer summaries](#)

Download short, 2–4 page summaries of research projects.

CTRE is an [Iowa State University](#) center.

Page last updated March 1, 2006

**IOWA STATE UNIVERSITY**  
*Becoming the best.*

[Copyright](#) © 1996–2006, Iowa State University. All rights reserved.

# CTRE en route

Winter 2006

## Go! A teen magazine about transportation



Sample magazine cover

CTRE proposes to publish a nonprofit, bimonthly magazine for teenagers about transportation.

*Go!* will open teens' eyes to the exciting innovations in transportation as well as the human problems that transportation helps solve. It will appeal to young men and women, 12 to 17, who are curious about the world and who are interested in math, science, technology, government, politics, economics, geography, and/or the environment. Through the lens of transportation, *Go!* will show teens how to help people and make a difference in the world.

*Go!* will cover the diversity of transportation from infrastructure to modes to technology to people. Each issue will have a theme such as rebuilding transportation systems after disasters, fueling the future, beautiful design, and "extreme" transportation projects.

*CTRE en route* is published twice a year to inform readers about CTRE's projects and programs.

**ctre**  
Center for Transportation  
Research and Education

Address: CTRE, 2901 S. Loop Drive,  
Suite 3100, Ames, IA 50010

Phone: 515-294-8103

FAX: 515-294-0467

Website: [www.ctre.iastate.edu/](http://www.ctre.iastate.edu/)

CTRE Communications:

[Marcia Brink](#)

*CTRE en route* editor:

[Michele Regenold](#)

CTRE is an [Iowa State University](#)  
center.

**IOWA STATE UNIVERSITY**  
*Becoming the best.*

## Why a magazine

The United States is facing a shortage of professional and skilled workers over the next several years as the baby boom generation begins to retire. In light of this, the transportation industry faces the problem of attracting enough well trained, qualified people to replace retirees.

Unlike other industries that seem to be shipping whole classes of jobs to other countries, the transportation industry is inherently place based. The potential effects on the U.S. transportation system could be significant if the United States fails to maintain and improve this system, which is so vital to our national interests.

The transportation industry provides great opportunities for people with many different career interests and levels of skill and education. Yet to teens considering their career possibilities, the industry is virtually invisible. Teens, and many adults for that matter, are oblivious to the challenging work that happens behind the scenes, particularly when it comes to building and maintaining the transportation infrastructure.

*Go!* will show teens (and their parents, teachers, and guidance counselors) that transportation is an exciting, dynamic, cool career field. It will also help them better understand the role of this important industry in their own lives and help fill the “pipeline” of future transportation workers at all skill levels.

## Why a *print* magazine

Teens read print magazines. According to research by Mediamark Research Inc. for the Magazine Publishers of America, eight out of 10 teens read magazines.

Teens are consummate multitaskers. But when they’re reading print magazines, they’re much less likely to multitask with other media. For example, 55 percent of teens simultaneously use the Internet and watch TV, but only 12 percent simultaneously read magazines and watch TV.

By arriving six times a year in teens’ mailboxes or their classrooms, *Go!* will make transportation visible and interesting on a regular basis. In addition to a print magazine that teens can take anywhere and pass along to their friends, subscribers will also have exclusive access to an online version.

## Other benefits

*Go!* will also show teens how their high school classes in math, science, English, and social studies relate to jobs and careers in the real world—and why studying these disciplines in college could be great for their wallets. Teachers and home schoolers will also have access to a free curriculum guide to make integrating *Go!* into their lesson plans as simple as possible.

## Editorial board

An editorial advisory board is being formed. CTRE plans to invite people with national reputations in transportation and magazine publishing, teachers, high school and college students, and faculty from Iowa State University’s Greenlee School of Journalism and College of Design.

## Funding

CTRE is seeking sponsors/donors to get the magazine started and to fund about half the expenses for the first two years of magazine production. CTRE anticipates that by year three of the project, the magazine will be self-supporting through subscriptions and modest advertising. For more information about the anticipated costs and revenues, please [download a copy of the business plan](#).

## For more information

For more information about the magazine's content, staffing, budget, etc., please [download a copy of the business plan](#). Or contact Michele Regenold, *Go!* editor, 515-296-0835 or [mregenol@iastate.edu](mailto:mregenol@iastate.edu).

Page last updated March 1, 2006

[Copyright](#) © 1996–2006, Iowa State University. All rights reserved.

# CTRE en route

Winter 2006

## New Center for Weather Impacts on Mobility and Safety

Tom Maze, an Iowa State University professor of civil, construction, and environmental engineering, will direct a new research center focused on finding better and safer ways to travel whenever weather is a problem.

The center's goal is to get scientists and engineers working together for a better understanding of how weather impacts transportation systems. That can lead to better ways to maintain roads, design infrastructure, share information, and manage transportation systems.

### Weather's impact

The National Academy of Sciences estimates as many as 7,000 deaths per year are associated with weather-related traffic accidents. Weather-related crashes in Iowa annually add up to more than \$240 million in economic losses.

"Reducing the economic and human losses due to weather-related crashes provides an opportunity to positively impact Iowans and Iowa's economy," says the proposal to establish the Center for Weather Impacts on Mobility and Safety at Iowa State's Center for Transportation Research and Education. "Beyond Iowa and the Midwest, the recent disasters that resulted from hurricanes Katrina and Rita and the titanic logistical and personal transportation blunders that occurred in the wake of these disasters have highlighted the need to better understand transportation weather and to better prepare transportation students for weather-related issues they may encounter in their careers."

### Iowa State research on

*CTRE en route* is published twice a year to inform readers about CTRE's projects and programs.



New CWIMS logo



Address: CTRE, 2901 S. Loop Drive, Suite 3100, Ames, IA 50010

Phone: 515-294-8103

FAX: 515-294-0467

Website: [www.ctre.iastate.edu/](http://www.ctre.iastate.edu/)

CTRE Communications:

[Marcia Brink](#)

*CTRE en route* editor:

[Michele Regenold](#)

CTRE is an [Iowa State University](#) center.

IOWA STATE UNIVERSITY  
*Becoming the best.*

## weather and transportation

Maze said Iowa State researchers are already studying weather's impacts on transportation. Maze and Research Engineer Zach Hans, for example, are studying winter crash trends for the Iowa Department of Transportation. They'll analyze 10 years of crash data to find out where accidents are occurring on Iowa's state and federal highways.

The center could also position Iowa State to attract more weather-related transportation research. The \$286.4 billion, five-year federal transportation bill signed by President Bush in August includes \$5 million per year for weather-related research.

Maze said Iowa State is a natural for that kind of research. Because of its agriculture programs, the university has expertise in the science of weather and its impacts at ground level. And Iowa State's departments of civil, construction and environmental engineering; logistics, operations and management information systems; and community and regional planning all do transportation research.

Gene Takle, an Iowa State professor of geological and atmospheric sciences and agronomy, will serve on the new center's executive committee. He said the center is an opportunity for scientists who study weather and engineers who study roads and transportation to work together to make travel better and safer in bad weather.

And there are certainly improvements that can be made. During a recent trip from Minnesota, Takle said he counted 27 vehicles in the ditch because of snowy weather.

## For more information

Contact Tom Maze at [tmaze@iastate.edu](mailto:tmaze@iastate.edu) or 515-294-9459. A CWIMS website will be developed in the next few months. See [CTRE's weather-related research](#).

Page last updated March 1, 2006

[Copyright](#) © 1996–2006, Iowa State University. All rights reserved.

# CTRE en route

Winter 2006

## PCC Center evolution

The Center for Portland Cement Concrete Pavement Technology (PCC Center) has a new name and a new national focus. The PCC Center will now be known as the [National Concrete Pavement Technology Center \(CP Tech Center\)](#).

The original center, which was founded by Iowa State University, the Iowa Concrete Paving Association, and the Iowa DOT in April 2000, was formally renamed in December 2005.

The CP Tech Center's new name and national focus were unveiled at the American Concrete Pavement Association's Annual Convention in California. The center will seek to facilitate strategic partnerships and accelerate implementation of promising technologies.

## For more information

Contact Tom Cackler, center director, at [tcackler@iastate.edu](mailto:tcackler@iastate.edu) or 515-294-3230.

Page last updated March 1, 2006

[Copyright](#) © 1996–2006, Iowa State University. All rights reserved.

*CTRE en route* is published twice a year to inform readers about CTRE's projects and programs.



New CP Tech Center logo



Address: CTRE, 2901 S. Loop Drive, Suite 3100, Ames, IA 50010

Phone: 515-294-8103

FAX: 515-294-0467

Website: [www.ctre.iastate.edu/](http://www.ctre.iastate.edu/)

CTRE Communications:

[Marcia Brink](#)

*CTRE en route* editor:

[Michele Regenold](#)

CTRE is an [Iowa State University](#) center.

**IOWA STATE UNIVERSITY**  
*Becoming the best.*

# CTRE en route

Winter 2006

## Roundabouts in rural America

Hillary Isebrands, an Iowa State University doctoral student in civil, construction, and environmental engineering and CTRE research assistant, is studying whether modern roundabouts on rural Midwest highways can reduce crash severity. She is also negotiating grants with the Iowa Department of Transportation, the Federal Highway Administration, the Minnesota Department of Transportation, and Minnesota's Local Road Research Board to help develop guidelines for considering and building roundabouts.

And she's 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.

### Reasons to build roundabouts

Isebrands said 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, Isebrands said. 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 32 in a four-way intersection to eight. And roundabouts eliminate head-on crashes and make "T-bone" crashes (one car's front crashing into another car's side) much less likely.

*CTRE en route* is published twice a year to inform readers about CTRE's projects and programs.



The First Avenue and Holiday Road roundabout in Coralville. *Photo by Scott Larson*



Address: CTRE, 2901 S. Loop Drive, Suite 3100, Ames, IA 50010

Phone: 515-294-8103

FAX: 515-294-0467

Website: [www.ctre.iastate.edu/](http://www.ctre.iastate.edu/)

CTRE Communications:

[Marcia Brink](#)

*CTRE en route* editor:

[Michele Regenold](#)

CTRE is an [Iowa State University](#) center.

## Traffic flow

Traffic at busy intersections doesn't pile up behind roundabouts, Isebrands said. 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 traffic signals 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 Department of Transportation, said the department will build its first highway 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.

And 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 another in the planning stage. Scott Larson, Coralville's assistant city engineer, said the city built the first two roundabouts as alternatives to adding turn lanes and traffic signals.

He said 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? This is Iowa, after all. 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, answered by clicking through her laptop computer. And there was 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.

And 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."

## For more information

Contact Hillary Isebrands for more information about her research: [hillaryi@iastate.edu](mailto:hillaryi@iastate.edu) or 515-294-7188.

Page last updated March 1, 2006

[Copyright](#) © 1996–2006, Iowa State University. All rights reserved.

# CTRE en route

Winter 2006

## Recently completed research

Below is a list of projects that were completed between August 2005 and January 2006. All links will take you out of this newsletter site.

### Construction

[Design and Construction Procedures for Concrete Overlay and Widening of Existing Pavements \(TR-511, Proj. 6\)](#)

[Innovative Solutions for Slope Stability Reinforcement and Characterization in Iowa Soils \(TR-489\)](#)

### Pavements

[In Situ Detection Methods for Materials-Related Distress in Concrete Pavements: Phase II \(HR-1081, Proj. 1\)](#)

[Self-Consolidating Concrete--Applications for Slip Form Paving \(Phase 1\)](#)

[Synthesis of Procedures to Forecast and Monitor Work Zone Safety and Mobility Impacts](#)

### Miscellaneous

[Iowa Produce Market Potential Calculator](#)

### Safety

[Guidelines for Removal of Traffic Control Devices in](#)

*CTRE en route* is published twice a year to inform readers about CTRE's projects and programs.



Mini paver used in study of self-consolidating concrete



Address: CTRE, 2901 S. Loop Drive, Suite 3100, Ames, IA 50010

Phone: 515-294-8103

FAX: 515-294-0467

Website: [www.ctre.iastate.edu/](http://www.ctre.iastate.edu/)

CTRE Communications:

[Marcia Brink](#)

*CTRE en route* editor:

[Michele Regenold](#)

CTRE is an [Iowa State University](#) center.

[Rural Areas](#)

IOWA STATE UNIVERSITY  
*Becoming the best.*

[Rehabilitation of Concrete Pavements Utilizing Rubblization and Crack and Seat Methods \(TR-473\)](#)

[Safety Effectiveness of High-Speed Expressway Signals](#)

Page last updated March 1, 2006

[Copyright](#) © 1996–2006, Iowa State University. All rights reserved.

# CTRE en route

Winter 2006

## Recently started research

Below is a list of projects that were started between February 2005 and July 2005. All links will take you off site.

### Construction

[Field Validation of Intelligent Compaction Monitoring Technology for Unbound Materials and HMA](#)

### Pavements

[Investigation of Electro-Magnetic Gauges for Determination of In-Place Density of HMA Pavements TR-547](#)

[Performance Evaluation of Rubblized Pavements in Iowa](#)

### Planning, Standards

[Developing a Rural and Urban Roadway Lighting Practical Design Guide for Iowa \(TR 540\)](#)

[Investigation of the Impact of Rural Development on Secondary Road Systems TR-548](#)

[Roadway Design Standards for Rural and Suburban Subdivisions TR-549](#)

[Revision to the SUDAS Traffic Signal Design Guide TR 546](#)

### Safety

*CTRE en route* is published twice a year to inform readers about CTRE's projects and programs.



Address: CTRE, 2901 S. Loop Drive, Suite 3100, Ames, IA 50010

Phone: 515-294-8103

FAX: 515-294-0467

Website: [www.ctre.iastate.edu/](http://www.ctre.iastate.edu/)

CTRE Communications:

[Marcia Brink](#)

*CTRE en route* editor:

[Michele Regenold](#)

CTRE is an [Iowa State University](#) center.

**IOWA STATE UNIVERSITY**  
*Becoming the best.*

[Crash Mapping Analysis Tool for Minnesota DOT](#)

[High-Speed Expressway Intersections Study of Crash Risk Factors](#)

## **Traffic**

[Iowa Event Operations](#)

[Western Growth Area Land Use Sensitivity Analysis, Phase 2](#)

## **Weather**

[Snow and Ice Operations Cost Analysis](#)

[Winter Weather Crash Trends on Iowa Primary Roads](#)

Page last updated March 1, 2006

[Copyright](#) © 1996–2006, Iowa State University. All rights reserved.

# CTRE en route

Winter 2006

## Tech transfer summaries

Below is a list of research summaries completed since August 2005.

All links are to pdf files. To view pdf files, you may need to download the [free Adobe Acrobat Reader](#).

- [ME Design Approach for HMA Overlaid PCC Pavements, Oct 2005](#)
- [Elliptical Fiber Reinforced Polymer Dowel Performance, Oct 2005](#)
- [PCC Patching Techniques: Performance vs. Traffic Delay Time, Oct 2005](#)
- [Detecting Materials-Related Distress in Concrete Pavements, Aug 2005](#)

Page last updated March 1, 2006

[Copyright](#) © 1996–2006, Iowa State University. All rights reserved.

*CTRE en route* is published twice a year to inform readers about CTRE's projects and programs.



**Center for Transportation  
Research and Education**

Address: CTRE, 2901 S. Loop Drive,  
Suite 3100, Ames, IA 50010

Phone: 515-294-8103

FAX: 515-294-0467

Website: [www.ctre.iastate.edu/](http://www.ctre.iastate.edu/)

CTRE Communications:

[Marcia Brink](#)

*CTRE en route* editor:

[Michele Regenold](#)

CTRE is an [Iowa State University](#)  
center.

**IOWA STATE UNIVERSITY**  
*Becoming the best.*