

# CTRE en route

Summer 2004

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The issue is to save over \$2 billion worth of diesel fuel annually, reduce nitrogen oxides (NOx) and harmful particulate emissions, provide truckers with cleaner air and better places to rest, and to reduce air and noise pollution around truck stops and depots.

### [Recently completed research](#)

List of projects completed between February and August 2004.

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The CM&T program researches innovative construction technologies and processes for the transportation industry. Visit its new website.

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## From the Director: Road Weather Research

by Steve Andrle, CTRE Director

Weather fascinates us. People pay more attention to the weather than any other news item except, perhaps, sports. A new angle on weather is “road weather.” This pertains to the weather characteristics at the surface of the road.

Road weather is now a national priority and for good reason. Adverse weather is associated with over 1.5 million vehicular accidents per year, accounting for about 800,000 injuries and 7,000 fatalities, according to the National Academy of Sciences 2004 report *Where the Weather Meets the Road*. In 2003, the American Meteorological Society released *Weather and Highways*, a report of a two-day forum on how to improve highway safety through better weather information. The Federal Highway Administration has developed and is field testing the Maintenance Decision Support System (MDSS), a package of improved micro-level road weather forecasting and response tools. Finally, Congress is considering special funding for road weather research and safety programs.

The Iowa Department of Transportation (Iowa DOT) is very interested in road weather and, with the assistance of CTRE, took the first step toward creating a regional program in road weather research and demonstrations. As Chris Albrecht of CTRE’s staff put it, this is a regional affirmation of a national priority.

On July 14, 2004, more than 100 people from seven states met at Iowa State University to discuss road weather issues and how to advance the state of the practice in the region. Focus group discussion topics included

- weather equipment, data, and prediction
- road maintenance – technologies, storm management, and operations
- traffic management and operations
- facilities

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- road design and construction

Twenty-five research topics were developed and prioritized. The Iowa DOT agreed to provide leadership until a regional structure can be developed, and CTRE is preparing a report on the workshop results, which will be available on the [Weather Issues in Transportation website](#).

The Iowa DOT and CTRE have been engaged in a number of road weather projects:

- Since 1997, CTRE has helped the Iowa DOT develop and evaluate the “[Concept Vehicle](#),” a snowplow equipped with experimental devices for measuring friction, pavement temperature, application rates, and the freezing point of the slurry on the road surface.
- The management of the [AURORA pooled fund study](#), which started in 1996, moved to Iowa in 2004. AURORA conducts research on road weather information systems for the 12 member states, Ontario, Quebec, and the Swedish Road Ministry.
- The Iowa DOT was host to FHWA’s field tests of the MDSS during the winters of 2003 and 2004. CTRE assisted the Iowa DOT with data collection and evaluation on location-specific treatment rates.
- CTRE and ISU have conducted nearly 40 research projects on weather-related topics. Refer to this website for information on weather research: <http://www.ctre.iastate.edu/research/weather.cfm>.

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## SUDAS Goes Corporate

Iowa is the only state with border-to-border, uniform urban design standards and specifications developed by stakeholders.

SUDAS (pronounced “soo'dahs”) is the shorthand way of saying Statewide Urban Design and Specifications. To establish a mechanism for ensuring continuation of this highly successful program, SUDAS has incorporated in Iowa. CTRE will continue to administer SUDAS under a new director, Larry Stevens.

### A brief history

In the mid 1990s, after several years of cooperative meetings among a growing number of central Iowa urban jurisdictions, 34 jurisdictions adopted a set of urban standards for project design standards and specifications for public improvements. Participating agencies soon began experiencing significant cost savings and other benefits.

Many communities across Iowa were eager to duplicate central Iowa's success. In 2001 Iowa State University negotiated a license agreement with the original central Iowa committee, and CTRE took on the task of overseeing the expansion and updating of the regional standards into statewide standards. CTRE worked with a statewide steering committee representing various stakeholders.

Now uniform urban design standards and specifications are being implemented across Iowa. Updates are distributed annually to manual holders.

### Why incorporate?

By conservative estimates, implementing urban standards statewide should result in construction savings of four to seven percent. At only four percent, the potential annual savings

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to Iowans is \$16 million—a benefit-cost ratio of 44 to one. Here are a few examples of savings opportunities:

- With up-to-date and uniform design standards and specifications, jurisdictions are improving their project plans and providing clearer information for contractors, which results in improved bidding.
- Because contractors are familiar with the uniform standards, more contractors are now bidding on some individual urban projects, resulting in more competitive bids.
- When contractors don't have to constantly change equipment and methods to meet varying specifications, they can pass on any resulting reduction in construction and maintenance costs to employing agencies.
- Engineers save time formerly devoted to updating and, in some cases, developing new design standards and specifications for a vast number of agencies.

It is critical that such a valuable resource remain current and viable. To ensure that SUDAS does just that, the central Iowa committee will transfer ownership of the SUDAS manuals to a separate, statewide entity. The new, nonprofit SUDAS Corporation will be that entity. Its board of directors consists of representatives from various statewide stakeholders, including all Iowa cities and counties, Iowa DOT, engineering consultants, and industry representatives. One of the corporation's first charges will be to develop a policies and procedures manual.

## **Secret of success**

The effort to develop statewide design standards and specifications has only succeeded because of incredibly strong stakeholder involvement and buy-in. Dale Harrington, the original director of the SUDAS program who was instrumental in facilitating this involvement, calls it a “little democracy.” More than 200 engineers around the state have donated significant time and effort to the program.

## **The future**

On March 23, Harrington passed the SUDAS torch to Larry Stevens, former Oskaloosa city engineer and public works director. Stevens brings 27 years of city engineering experience to CTRE as the SUDAS director.

With a new director and new corporate oversight, the mechanisms are in place to continually build upon this vital constituency, maintain strong support, and continue to improve urban design standards and specifications as needs change.

One important effort currently underway is to make the SUDAS and Iowa DOT specifications compatible. The organizations have already worked hand in hand to develop a common design section on jointing concrete pavements. And SUDAS specifications are included in the Iowa DOT's electronic reference library.

## **For more information**

You can find both the design and specifications manuals, along with recent updates, supplementals, and developmentals, online, as well as forms for ordering hard copies. See [www.iowasudas.org/](http://www.iowasudas.org/). The website also lists district meeting schedules and minutes of past meetings.

If you have other questions, feel free to contact Larry Stevens, SUDAS director, 515-294-0419, [lstevens@iastate.edu](mailto:lstevens@iastate.edu).

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## Alternatives to Truck Engine Idling



CAT MorElectric truck with ShurPower hook-up.

The Center for Transportation Research and Education hosted a workshop June 22–23, 2004, in Des Moines, Iowa, to discuss ideas and policies to reduce unnecessary idling of heavy trucks. Sponsored by the Iowa Energy Center, the workshop brought together more than 70 professionals from trucking companies, equipment manufacturers, truck stop operators, local, state, and federal agencies, national research laboratories, and universities from across the United States.

The issue is to save over \$2 billion worth of diesel fuel annually, reduce nitrogen oxides (NOx) and harmful particulate emissions, provide truckers with cleaner air and better places to rest, and to reduce air and noise pollution around truck stops and depots.

The day-and-a-half workshop provided participants an opportunity to focus on regional and national energy and transportation research and technology transfer issues related to the latest breakthroughs in engine idling reduction strategies. Presentation topics included policy, programs, research methods, technology and industry trends, tax and finance issues, transportation infrastructure, operations, and future directions. Together the presentations at the conference showcased the variety of research that is shaping the next era of energy efficient transportation.

See the [workshop proceedings](#) and [more photos](#).

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Shurpower electric connection



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## Recently Completed Research

- [Corridor Management Pilot Project, Phase I](#)
- [Determination of the Optimum Base Characteristics for Pavements \(TR-482\)](#)
- [Evaluation of Racial Differences in Seat Belt and Child Restraint Use: A Review of Current Literature](#)
- [In-Pavement Pedestrian Flasher Evaluation, Cedar Rapids, Iowa](#)

## Bridge Engineering Center project

[Monitoring and Evaluation of the Westbound Roadway of the Iowa River Bridge](#)

## Midwest Transportation Consortium projects

- [Decision-Support System for Management of Slope Construction and Repair Activities: An Asset Management Building Block](#)
- [Research and Training of Private Transportation Providers for Efficient and Effective Provision of Transportation Services](#)

## Center for Portland Cement Concrete Pavement Technology projects

- [Evaluating Properties of Blended Cements for Concrete Pavements](#)

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Launch pit for the Iowa River bridge construction.



Pedestrian crosswalk with built-in flashers.



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- [Stringless Portland Cement Concrete Paving \(TR-490\)](#)

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