SNOW PLOWING GOES HIGH TECH

Public partners: Federal Highway Administration, Iowa Department of Transportation, Michigan Department of Transportation, Minnesota Department of Transportation, and the Center for Transportation Research and Education (CTRE) at Iowa State University


For highway agencies in the Snowbelt, the special problems posed by snow- and ice-covered roadways make it especially difficult to satisfy the public’s demand for uninterrupted mobility. And tight staffing budgets sometimes mean that lone equipment operators are single-handedly driving the snow plow truck and managing its ancillary equipment. Operators and highway agencies are always looking for ways to modify the snow plow truck to make it more efficient, safer, and easier to operate.

Together with university and private sector partners, three Snowbelt state departments of transportation—In Iowa, Michigan, and Minnesota—have embarked on a project to design, assemble, and test an advanced-technology vehicle for winter highway maintenance. CTRE at Iowa State University is the project manager. Eleven private vendors from Canada, Norway, and the United States provided technologies for a prototype truck for each participating state. The prototypes have been assembled and will be tested in the three states during the 1997–98 winter.

Snow Plow: Special Technologies

For the prototype vehicles, each of the three DOTs provided a new, 25-ton snow plow truck equipped with underbody blade, front and wing plows, spreader box for salt/sand, and state-of-the-art material application systems. The application systems differ from truck to truck, according to the preferences of each state DOT. Minnesota’s truck has a slip-in, removable Tyler V-Blend salt/sand V-box inside the dump body. A divided spreader box allows operators to distribute any desired ratio of the two materials. The systems are controlled by the operator in the cab with a Tyler Quantum Control. Michigan’s truck employs a Monroe Duz More chassis-mounted V-box and permanent liquid tank. The anti-icing and prewetting systems are run from the cab by a Raven controller. Iowa’s truck has a slip-in, single-skid-mounted liquid tank/Monroe Brute MSV heavy-duty V-box spreader inside the dump box. The anti-icing and prewetting systems automatically reduce the amount of dry material when liquid operations commence. The operator uses a SYN/CON controller, provided by Bristol Company, in Iowa’s cab.
I have always felt it is important that we at CTRE constantly update and improve our programs, not only to satisfy our program sponsors but also to keep our staff and students challenged and intellectually stimulated; thus, the slogan at the top of our newsletter: "Change is the only constant."

In the last six months there has been a lot of change around CTRE, as some of our efforts to build relationships and develop programs have come to fruition. For example, since the regional competition for the U.S. Department of Transportation Regional University Transportation Center was won by a consortium of universities led by the University of Nebraska–Lincoln, we have sought a role in that program for CTRE and Iowa State University (ISU). We are pleased to have been asked to join the consortium—the Mid-America Transportation Center (MATC)—and beginning October 1, 1997 (the beginning of the federal fiscal year), ISU will be a member of MATC and I will be an associate director of MATC.

All ISU programs and centers are required to be reviewed periodically, and in January 1997 CTRE had its first external review. Three reviewers came to Ames to examine our program. We saw this as an opportunity to obtain objective input into our programming and as a mechanism to help us direct and organize CTRE’s growth and change. The principal recommendations of the reviewers related to formalizing and improving CTRE’s organizational structure, management, and funding; improving marketing strategies for CTRE’s programs; and continuing to improve quality. Overall, the reviewers’ report was quite positive.

To help ourselves better understand the direction of CTRE’s overall program, the reviewers recommended that we develop a mission statement. This task elicited a lively internal debate about the center’s purpose and function, resulting in the following statement:

**CTRE’s mission is to develop and implement innovative methods, materials, and technologies for improving transportation efficiency and safety.**

We will use this mission statement on CTRE project reports and other materials from now on.

The external review committee also recommended that we form an external advisory board to help us direct CTRE’s programs and set program policy. We believe that we also need an internal (within the university) board of advisors to help us develop our relationships within ISU. Therefore, we are in the process of establishing an Advisory Board of external advisors and a Faculty Coordinating Council of senior faculty.

Dr. Benjamin Allen, dean of ISU’s College of Business and distinguished professor of transportation and logistics, has agreed to chair the external Advisory Board, and we will be announcing the other members of the board in the next newsletter. The initial members of the Faculty Coordinating Council are:

- **Riad Mahayni**, Departmental Executive Officer and Professor, Community and Regional Planning
- **Lowell Greimann**, Departmental Executive Officer and Professor, Civil and Construction Engineering
“CTRE’s mission is to develop and implement innovative methods, materials, and technologies for improving transportation efficiency and safety.”

Michael Crum, Professor, Transportation and Logistics

Kenneth Bergeson, Professor, Civil and Construction Engineering and Materials Analysis and Research Laboratory contact

Terry Wipf, Professor of Civil and Construction Engineering and Director of Bridge Engineering Center

Eugene Takle, Professor of Atmospheric Sciences, Department of Geological and Atmospheric Sciences

The initial members of the Faculty Coordinating Council include senior faculty representing areas that are the most active in transportation research at ISU. More individuals may be asked to become involved in the future, and the makeup of the Faculty Coordinating Council may change to reflect trends and needs in transportation research and outreach.

We are pursuing other recommendations made by the external reviewers, including more formally and aggressively marketing CTRE programs, producing more peer-reviewed publications, generating more programmatic support from ISU’s central administration, and expanding CTRE’s office space. That’s right. After being settled in our new facility for only 18 months, we already need more room. Our current space is so cramped that graduate students are sharing desks, and project work is typically being conducted in our conference rooms.

In future issues of CTRE en route, I will let readers know how the changes suggested by the reviewers are evolving.

Another very welcome change at CTRE has been the development of a joint staff relationship with the Iowa Department of Transportation (Iowa DOT). Because CTRE’s needs for intellectual resources are similar to those of the Iowa DOT, we have developed our first joint position with the department and have recently jointly hired a new transportation materials engineer and assistant professor of civil and construction engineering.

Dr. Brian Coree has been hired for this first joint position, and he will be joining CTRE during the fall 1997 semester. His position involves a half-time appointment with the Department of Civil and Construction Engineering, where he will teach, advise, and conduct other scholarly activities. The other half of his position will be assigned to CTRE under contract with the Iowa DOT. Much of Dr. Coree’s CTRE time will spent working at the Iowa DOT asphalt materials laboratory conducting and directing research for the Iowa DOT. He will also be available to conduct research for other sponsors.

This partnership benefits the Iowa DOT by providing them with an individual with strong research credentials to direct research in one of their core businesses (in this case, asphalt materials and pavement). It benefits ISU by gaining the university a faculty member who is active in research from the first day on the job while using only one-half of a tenure-track faculty position.

The materials engineering position that Dr. Coree will occupy is the first of such arrangements with the Iowa DOT. We think it makes good business sense and, as a result, other similar arrangements will follow. It also takes advantage of our physical proximity to the Iowa DOT.

Like all issues of CTRE en route, the rest of this one is devoted to discussing some of our ongoing or recently completed projects, changes in staff that have taken place in the last six months, student awards, and the calendar. If you are interested in any of our current projects, please view our home page at http://ctre.iastate.edu/ or contact us directly.
After configuring the basic vehicle components, the project team added special technologies to increase each truck’s performance. The technologies selected for the prototype vehicles during the first phase were primarily those that meet high-priority needs identified by truck end-users and that can be obtained, basically “off the shelf,” through participating vendor partners.

- **On-board computer.** Rockwell International’s PlowMaster was installed in the cab. The PlowMaster stores data collected by various components of the vehicle on a standard PCMCIA card. These data (surface temperature, material distribution, roadway surface friction, and engine status) are immediately available to the truck operator via a display in the cab. The PCMCIA card can be removed from the PlowMaster to transfer data to a personal computer, or the base station (e.g., the state DOT) can download the data via the base station’s radio system.

- **Friction meter.** The Norwegian uses an automobile tire to measure the friction of the road surface. The tire is automatically skidded on the roadway surface at timed intervals (and at the operator’s discretion), and a friction value is recorded by the Norwegian. The meter can record values at tire “slippage”—or, to save wear on the tire so it lasts longer, at 80 percent of slippage—and sends the friction data to the PlowMaster. The operator can then adjust the amount and kind of deicing material being applied to the roadway based on actual measurements of friction rather than on guesswork. (At a later phase in the project, an automated system will be added to the vehicle to adjust material application levels based on pavement friction and temperature and other data.)

- **Temperature sensors.** A Sprague RoadWatch Warning System monitors the temperature of the pavement surface and the air. Infrared sensors mounted on the driver’s side-view mirror collect temperature data and transmit them to the PlowMaster and the cab display. Carefully monitoring the pavement temperature helps operators decide when to employ anti-icing techniques. If anti-icing materials are applied too soon (when the pavement is still far above freezing), they are wasted. If materials are applied too late (after the pavement has reached freezing), snow and ice will already have begun accumulating on the roadway and the operator will need to switch to deicing strategies. But, as Strategic Highway Research Program tests have demonstrated, anti-icing materials applied just as the pavement surface temperature reaches freezing can often help keep a roadway clean, relatively dry, and safe using less material than do traditional deicing techniques.

- **On-board global positioning systems (GPS) receiver.** A Rockwell International GPS receiver is mounted above the cab. As the truck moves down the highway, the receiver records the vehicle’s location every five seconds and sends the data to the PlowMaster. The truck operator can also trigger the receiver to collect position information (time and location) for landmarks like crossroads and for emergencies like stranded vehicles or accidents.

During the 1997–98 winter tests, these technologies will relay friction, temperature, and position data to the truck operator, via the on-board computer, and to the operator’s base station. This real-time information will take much of the guesswork out of operators’ road maintenance decisions and will help agencies respond...
**DIVISION HIGHLIGHTS: ADVANCED TRANSPORTATION TECHNOLOGIES**

- **reverse obstacle sensors:**
  Global Sensor Systems
  Ontario, Canada

- **high-intensity warning lights:**
  Tri-State Signing
  New Hampton, Iowa

- **global positioning system:**
  Rockwell International
  Cedar Rapids, Iowa

- **pavement friction measuring device:**
  Roadware Corporation
  Ontario Canada
  and
  Norsemeter Company
  Rud, Norway

- **engine power booster, alternative tank:**
  Fosseen Manufacturing
  Radcliffe, Iowa

- **air/pavement temperature sensor:**
  Sprague Company
  Canby, Oregon

**Iowa’s prototype truck**
O’Halloran International Inc.,
Des Moines, Iowa (truck vendor); Bristol Company,
Broomfield, Colorado (material applicator)
quickly to stranded vehicles and other emergencies. The on-board display is currently being designed to be tested in each of the three prototype vehicles. The goal is for the hard data to be translated and displayed in terms that are immediately meaningful to the operator.

In later phases of the project the on-board computer will automatically and continually fine-tune the truck’s application of sand, salt brine, and chemicals according to current road conditions. Eventually, the real-time road condition data (friction, temperature) may also be made available to the public so travelers can make informed decisions about changing routes or postponing trips.

High-tech safety features were also added to the prototype vehicles. Heavy, slow-moving snow plow trucks themselves can present a hazard to motorists in a snowstorm, but each prototype truck is specially equipped to reduce the danger.

- **High intensity, fiber optic warning lights** by Federal Signal. A single light motor mounted in the cab distributes light signals through fiber optic cables to the external lens, originating four solid or flashing warning lights to supplement the existing strobes and revolving beacon. Light from the fiber optic lens, installed on and above the cab and box, will penetrate greater distances in blowing snow and fog than will traditional warning lights.

- **Power booster.** Fosseen Manufacturing’s Hydrofire fuel injection system has been incorporated into the fuel system and an eight-gallon alternative fuel tank tucked into free space behind the cab. This unique engine power booster automatically introduces a water/alcohol lubricant blend fuel additive into the engine injectors for extra horsepower when needed. For example, the booster will help the truck accelerate quickly when entering traffic, reducing the need for motorists to brake on slippery roads.

- **Reverse sensors.** Global Sensor Systems Inc.’s Search-Eye sensor system detects the presence of objects behind the vehicle. If an object is detected while the vehicle is in reverse, the system automatically applies the brakes to avoid collisions with objects in the operator’s blind spots or that are obscured by snow. The Search-Eye system consists of three sensors mounted at different locations along the rear of the vehicle and wired to the braking system. Three sensors are necessary to compensate for the salt/sand chute’s interference with each sensor’s cone of vision. Without the additional input from other sensors, the system would see the chute as an separate object and would apply the brakes every time the operator tried to back up. (See the overhead representation of the three cones of vision, adjusted to miss the chute, below.)
A unique aspect of this project has been the active involvement of the eventual vehicle “consumers” in the vehicle’s design—a bottom-up approach. At five focus group meetings in the three states, snow plow operators, mechanics, and highway maintenance supervisors—the vehicle end users—identified approximately 600 features they would like in the ideal snow plow truck. Participants were encouraged to dream, and their wishes ranged from hovercraft units that don’t touch the roadway, to systems for monitoring operators’ vital signs, to automatic washing systems to prevent vehicle corrosion.

The features identified at the five meetings were later incorporated into a database and categorized (administrative, pre-operative, post-operative, and at-rest features; features pertaining to infrastructure and roadway systems). Similar features were combined, leaving a total of 183 desired features that, prioritized, would serve as the basis for the prototype vehicle requirements.

In July 1996 the vendor partners met in St. Paul with the three participating DOTs to set up a team for each state, prioritize the list of desired truck features, develop a list of specifications, and establish development schedules and budgets.

The prototype vehicles were ready for some initial testing and evaluation in late winter 1996–97. Summer 1997 activities involve incorporating new or improved versions of technologies, testing the functionality of the vehicles in non-winter roadway maintenance activities (edge rutting, pavement patching, etc.), soliciting additional information from vendors, and evaluating the appropriateness of the technologies. A plan is being developed for correlating data from the prototype vehicles with the transportation management systems of the three participating state DOTs.

“Ten vendors initially committed to the project, and others have since asked to participate.”

Another critical aspect of this project was the involvement of vendors from the private sector. The contributions of vendors not only made the prototype vehicles possible but also opened avenues for eventual private production of additional vehicles.

To solicit the involvement of private enterprise, the Iowa, Michigan, and Minnesota DOTs developed a list of technology vendors in their states that might be interested in the project, and the ITS America membership directory was culled for additional prospects. Over 200 potential partners, including maintenance engineers and research engineers from all the Snowbelt state DOTs, were invited to a workshop in which the project was introduced, progress to date described, and commitments of technology, equipment, vehicle assembly, staff time, and/or funds solicited.

Of the 49 people who attended the workshop, held in Detroit in April 1996, 10 vendors initially committed to the project (additional vendors have since asked to participate). These vendors agreed to supply off-the-shelf technology that could be used on the prototype vehicles. Some vendors of unique technologies agreed to supply products for all three prototype trucks. (See the photos on page 5 for a complete list of participating vendors.)
The bottom-up design approach is being supplemented by top-down consideration from DOT management personnel. In subsequent phases of the project they will consider how state DOTs can use data provided by the prototype vehicles in maintenance management systems and what the data architecture should be to ensure compatibility with DOT systems. They will also determine the logical data transfer points from the vehicles to the DOTs’ business processes.

During the winter of 1997–98 the prototype vehicles (with some modifications) will be thoroughly tested and evaluated in snow and ice conditions. Some of the new technologies have never been subjected to the harsh environment of snow and ice removal. One goal of the prototypes is to identify technology or equipment failures caused by the environment and make modifications to ensure future reliability. The research team will document the validity and repeatability of the data captured by the moving vehicle. Vehicle operators will be surveyed in simple telephone interviews to discover “Did the enhancements on this vehicle make a difference in your job assignment?” A report covering the testing and evaluation of the prototype vehicles will be issued in 1998.

In the final phase of the project the project team proposes to develop a fleet of 10 vehicles in each of the three states to be tested and evaluated.

**Snow Plow: Bottom Line**

The initial literature review and design phase of the project was funded by the three state DOTs, and the project partners are securing funds for the second phase of the project: modifying, testing, and evaluating the prototype vehicles. A lump sum has been secured from the Federal Highway Administration’s regional and national Priority Technology Program; the balance will be covered under a pooled-fund study. Invitations to participate in the pooled-fund study will be sent to all Snowbelt state DOTs this summer. Funding for the final phase, assembling and testing a small fleet in the three partner states, will depend on the evaluations of the prototype vehicles.

It would be prohibitively expensive for most highway agencies to duplicate the prototype vehicles. But the partners believe that by developing, testing, and modifying enhanced winter maintenance vehicles, they are leading the way for private industry to produce them at competitive prices.
Urban planners have long been using computerized transportation planning models to help them make decisions regarding transportation investments. Transportation modeling software helps planners forecast an urban area’s future transportation needs (e.g., as a result of anticipated population growth or the arrival of a new business or shopping mall) and analyze alternative transportation scenarios (e.g., building either a two-lane or four-lane roadway through a particular neighborhood).

In recent years many transportation agencies have also begun to use geographic information systems (GIS) to graphically display roadway inventories and other data on maps. However, despite several studies suggesting GIS’s potential usefulness for transportation forecasting and scenario analysis, most urban transportation agencies are not reaping the benefits of integrating GIS with their transportation planning modeling environments.

A few commercial products do incorporate both transportation modeling and GIS capabilities. TransCAD (Caliper Corporation) and UFOSNET (RST International Inc.) are GISs that contain transportation forecasting procedures. The developers of Tranplan and QRSII, two popular modeling programs, are currently beta testing or releasing GIS-capable interfaces. But most transportation agencies continue to use their stand-alone modeling packages and GIS packages independently of each other because of the significant investment already made in the separate technologies, both in initial cost and in training time and expense.

In [year], CTRE, in a project for the Iowa Department of Transportation (Iowa DOT), developed a user-friendly Windows program that integrates a transportation modeling program (Tranplan) with a desktop GIS package (MapInfo). The goal was to develop a simple program that would allow the department to use technologies it already had to reap the full benefits of GIS-based transportation modeling. The project was successful, and CTRE and the Iowa DOT believed the results were worth sharing with other Iowa transportation agencies.

Through its Priority Technology Program, the Federal Highway Administration (FHWA) then funded another project in which CTRE (1) extended the work to include additional GIS packages and (2) field-tested one integrated package in four Iowa urban agencies. With small urban areas as its primary audience, this project focused on keeping costs low and the learning curve short.

CTRE’s goal was to assist the largest number
of potential users in the short run. The project team selected Tranplan, used by five of Iowa’s eight metropolitan planning organizations (MPOs), as the modeling environment for the project, and the four most widely used desktop GIS packages (according to the 1997 GeoDirectory of Products and Services)—ArcView (ERSI), AtlasGIS (ERSI), MapInfo (MapInfo Corp.), and Maptitude (Caliper Corp.).

The end result was four separate products, or integrated environment interfaces: Tranplan/ArcView, Tranplan/AtlasGIS, Tranplan/MapInfo, and Tranplan/Maptitude. (The software versions tested with the interfaces were Tranplan 8.0 for Windows, ArcView 2.1a, AtlasGIS 3.03, MapInfo Professional 4.1, and Maptitude 3.0c.) The capabilities of the four interfaces could be extended to other modeling environments and GISs as well. All four interfaces operate on desktop personal computers with a minimum 486 processor, 66 megahertz, and 8 megabytes (MB) of RAM. Their operational characteristics were assessed and compared using a Pentium Pro operating at 150 megahertz with 16 MB of RAM and running Windows 95.

Each interface operates from within the appropriate GIS software. To develop each interface, CTRE staff first imported the Tranplan traffic network into the GIS environment. Then it was possible to modify the network, perform a Tranplan model run, determine traffic volumes for Tranplan links (or roadways) using sample network data, and incorporate the values into the GIS as new “link (roadway) attributes.” In addition, capabilities for the integrated environments were developed: turning movement diagrams and visualization plots; network infrastructure modifications and displays of the modifications’ effects on traffic volume; and alternative scenarios.

Turning movement diagrams with directional arrows to display traffic turns can be created in all the GIS interfaces.

Visualization plots display links (roadways) labeled and buffered by traffic volume. Buffering refers to a visual representation of quantity (e.g., displaying proportionally thicker lines for heavier traffic). Buffers are developed through “themes” in AtlasGIS and through “dialog boxes” in MapInfo and Maptitude. ArcView cannot buffer elements, but several line styles and widths can be used to develop effectively buffered plots.

Network comparisons involve analyzing the effect of modifications to transportation infrastructure (e.g., enlarging a roadway from two lanes to four, or adding a new roadway where none previously existed) on traffic volume on roadways within a transportation network. The links on the resulting GIS displays are buffered and labeled according to the changes in traffic volume.

Tranplan’s tools for graphic scenario development (the HNIS module) were imitated in each GIS environment. All four GIS environments can incorporate additional data sets—e.g., CAD (computer-aided design) files, aerial photographs, and TIGER (the Census Bureau’s topologically integrated geographic encoding and referencing) line work—to enhance the background display.

The four GIS interfaces function satisfactorily in each of the areas tested. Differences in time to perform these functions result, in part, from differences in the level of development of each environment. CTRE hopes to improve all the environments, automating as many functions as possible.

Planning: Field Tests

CTRE conducted a six-month beta test of one interface (Tranplan/MapInfo) at three Iowa MPOs and one city traffic engineering department. These metropolitan areas range in population from 50,000 to 400,000, and each office was already using Tranplan (and some were also using MapInfo) prior to the test.

Overall response from the test sites was favorable. The graphical display of transportation models was “sharp, easy to read” and “presentation quality.” One evaluator commented that the maps “not only grab the attention of policy makers and the public, but also illustrate useful traffic information and future transportation needs.” While several evaluators found MapInfo’s ability to zoom in, add text, and customize titles and labels to be a definite advantage, one agency found Tranplan alone to be superior in at least one aspect: ensuring that labels do not overlap.

Validation of the accuracy of visualization plotting in Tranplan involves double checking link by link. Testers of the beta version of Tranplan/Mapinfo found the automatic color coding and labeling of percent traffic differences more efficient than Tranplan alone, offering the potential to save several hours validating new or updated models.

Two agencies found the ability to develop and display turning diagrams in Tranplan/MapInfo to be particularly useful; one agency cited requests from developers and city planners for such diagrams. Tranplan alone lacks such a mechanism. And users were pleased
with the interface’s ability to develop graphics to support potential modifications in infrastructure.

The learning curve proved short, although users who had previous experience with Tranplan but not with MapInfo found the GIS interface a bit cumbersome to learn. Users with GIS experience generally preferred the Tranplan/MapInfo environment to Tranplan alone.

Field testers of the integrated GIS/Tranplan environment liked its sharp, easy-to-read maps and graphic displays that allow quick illustration of the effects of changes in the roadway system. The environment “expedites the plotting procedure (and) enhances the quality of output,” reported the Quad City, Iowa, metropolitan planning organization.

The four interfaces developed are not problem free, but weaknesses have been addressed and the interfaces modified according to the suggestions of the beta testers. These modifications include:

- removing common file management errors
- automating selected analytical calculations
- modifying formatting programs to automatically manage differences in network structures (e.g., the format of an agency’s Tranplan network files are different from the format required by Tranplan/MapInfo)
- increasing the capability to customize

Planning: Improvements

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visualization plots and turning movement diagrams and adding dialog boxes that display customizing options.

**Planning: Shareware**

Completed versions of the four interfaces developed by CTRE, along with documentation and the full project report, are available for downloading at CTRE’s World Wide Web site: http://www.ctre.iastate.edu/fhwa/

The GIS interfaces have been structured to allow you to import your Tranplan traffic network, modify the network, perform model runs, determine traffic volumes for Tranplan links, and incorporate the values into the GIS as new link attributes. The interfaces also include special programs for developing turning movement diagrams and visualization plots; incorporating modifications to network infrastructure and displaying the modifications’ effects on traffic volume; and developing alternative scenarios. The interfaces also include sample data for the City of Ames transportation network to use in experimenting with the capabilities of the interface.

Agencies without Internet access can receive the programs by contacting Michael Anderson at CTRE, 515-294-8103 (e-mail: mikea@ctre.iastate.edu). Information about the project is available from Anderson or from Becky Hiatt, Iowa Division, FHWA, 515-233-7321.

CTRE and the Iowa Department of Transportation are planning their second biennial transportation research conference to be held May 14–15, 1998 in Ames, Iowa. This event will provide an opportunity for midwestern transportation professional who may not regularly attend national events like the annual Transportation Research Board conference to attend a high-level research conference.

Readers of *CTRE en route* will have the opportunity to participate. In a few weeks you will receive a flier inviting you to submit an abstract of a formal presentation to be made during the conference. Abstracts describing both basic and applied research projects in transportation will be solicited. Although the majority of conference attendees will be from the Midwest, we welcome presenters from all parts of the country.

The conference will cover a broad spectrum of transportation issues, ranging from infrastructure design to transportation policy. Papers covering any of the transportation modes are welcome. Possible topic categories include the following:

- transportation planning
- safety and traffic engineering
- commercial transportation
- transportation policy
- advanced transportation technologies
- transportation systems management
- passenger transportation
- transportation infrastructure

Abstracts will be reviewed by a committee of transportation professionals through a confidential review process. Authors of abstracts selected for presentation at the conference will then be invited to submit a brief paper on the topic of their presentation; the papers will be included in the conference proceedings.
Yet another CTRE graduate research assistant is among the few students nationwide to have won a prestigious Dwight David Eisenhower Fellowship this year toward graduate studies in transportation-related fields. Dave Preissig, BSCE ’96, Iowa State University, has received a two-year master’s degree fellowship. A graduate student in civil and construction engineering at ISU, Dave has already begun working on a statewide freight transportation modeling project for the Iowa Department of Transportation’s Office of Systems Planning. This will be a compilation of new and existing tools and data sets that can be used to quantify the impacts associated with a variety of freight transportation issues. Congratulations, Dave.

CTRE congratulates Jeff Gerken, a CTRE Transportation Scholar, who has received a $1,000 scholarship for the 1997–98 academic year from the Missouri Valley Section of the Institute of Transportation Engineers (MOVITE). Jeff, BSCE ’97 (Iowa State University), is a graduate student in civil and construction engineering, specializing in transportation engineering. He is researching the use of traffic simulation models for work zone applications and plans to develop simulation models for optimizing work zone performance while minimizing delay and accidents. As a research assistant at CTRE, Jeff is involved with integration of collision diagram software and with the development of traffic simulation models for weigh station electronic screening.
CTRE staff breathed a collective sigh of relief when the center recently hired its first full-time network administrator. Pam McColley maintains and updates CTRE’s computers, computer networks, and software and provides general computer system support for CTRE staff. She advises the center’s administration about the optimum hardware and software configurations for the center’s various computing needs—geographic information systems, computer-aided design, publishing, graphics, simulation models, World Wide Web activities, etc.

Pam graduated from the National Education Center in Des Moines in 1990 with an associate degree in electronic engineering technology and, before joining CTRE, she worked for APEX Systems.

CTRE welcomes Michael Jorgensen, CTRE’s new Safety Circuit Rider. He replaces Ed Bigelow, who has retired. Mike will continue and enrich CTRE’s highly successful safety program by providing safety information and training to Iowa’s cities and counties, including workshops in flagger training and accident location and analysis.

Mike received a master’s degree in transportation engineering from Iowa State University in 1992. He was a traffic engineer with the Iowa Department of Transportation for six years and later with consulting firms in the Des Moines area for four years. Mike is a member of the Institute of Transportation Engineers, the Missouri Valley Section Institute of Transportation Engineers, and the Iowa Traffic Control and Safety Association.

Marilyn Kuntemeyer, senior projects manager for advanced transportation technologies, has taken a position as senior transportation engineer at Carter-Burgess in Florida. Marilyn has been with CTRE since 1995 and, among other projects, has led a study of early deployment of intelligent transportation systems in the Des Moines, Iowa, metropolitan area. Des Moines is one of the smallest urban areas for which the Federal Highway Administration has funded such an early deployment study; a report with deployment recommendations will be published in August.

Good luck in the sunshine state, Marilyn.

Tim Strauss is a new transportation research specialist at CTRE and adjunct assistant professor in ISU’s Department of Community and Regional Planning in the College of Design.

Tim’s responsibilities at CTRE include research and analysis for projects in geographic information systems (GIS) and transportation planning. He is working on projects related to the Iowa Department of Transportation’s GIS Coordinating Committee, improved employment data for transportation planning, the GIS Accident Location and Analysis System, and pavement management.

Tim earned a Ph.D. in geography from the University of Washington in 1994. Before coming to CTRE, he was a program and planning analyst at the Wisconsin Department of Transportation. Welcome, Tim.
These upcoming events are hosted or co-hosted by CTRE and/or organizations with which CTRE is closely associated.

<table>
<thead>
<tr>
<th>Date</th>
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<tr>
<td>October 6–7, 1997</td>
<td>Mauker Union, University of Northern Iowa, Cedar Falls, Iowa</td>
<td>“Making the Vision a Reality—GIS Applications in Iowa” Third Annual Iowa Conference on Geographic Information Systems</td>
<td>David Plazak, CTRE voice: 515-294-8103 e-mail: <a href="mailto:plazak@ctre.iastate.edu">plazak@ctre.iastate.edu</a></td>
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<td>October 8–9, 1997</td>
<td>Iowa State Center</td>
<td>Iowa Winter Training Expo</td>
<td>Duane Smith, CTRE voice: 515-294-8103 e-mail: <a href="mailto:desmith@iastate.edu">desmith@iastate.edu</a></td>
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<tr>
<td>November 1997</td>
<td>Memorial Union, Iowa State University, Ames, Iowa</td>
<td>Annual Transportation Scholars Conference and Paper Competition</td>
<td>Tom Sanchez, CTRE voice: 515-294-8103 e-mail: <a href="mailto:tsanchez@iastate.edu">tsanchez@iastate.edu</a></td>
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<tr>
<td>January 11–15, 1998</td>
<td>Washington, D.C.</td>
<td>Transportation Research Board Annual Meeting</td>
<td>Tom Maze, CTRE voice: 515-294-8103 e-mail: <a href="mailto:tom@ctre.iastate.edu">tom@ctre.iastate.edu</a></td>
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<tr>
<td>May 14–15, 1998</td>
<td>Iowa State University, Ames, Iowa</td>
<td>CTRE/Iowa DOT Biennial Transportation Research Conference</td>
<td>Joyce Baker Iowa Social Science Institute The University of Iowa voice: 319-341-9885 e-mail: <a href="mailto:joyce-baker@uiowa.edu">joyce-baker@uiowa.edu</a> <a href="http://www.geo.drake.edu/magicRep">http://www.geo.drake.edu/magicRep</a>.</td>
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<tr>
<td>May 1998</td>
<td>Lincoln, Nebraska</td>
<td>Mid-America GIS Consortium (MAGIC) Symposium</td>
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Representative Thomas E. Petri (R-Wisc) spoke to Iowa State University’s transportation seminar in May 1997 about negotiations in progress for reauthorizing the Intermodal Surface Transportation and Efficiency Act of 1991 (ISTEA). Petri chairs the U.S. House of Representatives subcommittee on surface transportation and is a key player in the reauthorization debate.

His presentation to transportation students at ISU and, via the Iowa Communications Network, the University of Northern Iowa was attended by local and regional Federal Highway Administration personnel and other transportation professionals.

Like all programs from the seminar series, Petri’s presentation is available on video tape through CTRE. For more information on the series or to borrow a video tape, contact Sharon Prochnow, CTRE, 515-294-8103; e-mail: sharon@ctre.iastate.edu.
To add someone to the mailing list or to correct your mailing address, please fill out the following form and return this page to CTRE. You may also fax the page (515-294-0467) or contact Margaret Bonel at CTRE: (voice) 515-294-8103; (e-mail) margaret@ctre.iastate.edu.

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