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## Automated train horns mean quieter neighborhoods



EVERY DAY, at various hours, an average of 65 trains run through Ames, Iowa. Six and a half miles of Union Pacific Railroad track cut through the city from east to west. Where the double track intersects seven busy city streets, motorists and pedestrians are warned of approaching trains by automated gated arms, flashing lights, and bells.

And by the train horns.

About a quarter mile before street/railroad intersections, locomotive engineers begin sounding their horns. To be heard at this distance, a train's horn must be extremely loud. The combination of (1) loud train horns, (2) the long distance for which the horns are sounded for each intersection, and (3) the number of street/railroad intersections in Ames has meant that a large section of the city—

both residential and business neighborhoods—is regularly disturbed by horn noise.

All that's changing. In fall 1998 the City of Ames began operating automated horn warning systems at three street/railroad intersections. At the time, Ames was only the third city in the country to use the automated systems. The city's goal is to reduce the negative impact of noisy train horns on the quality of life in Ames while maintaining safety at the street/railroad intersections.

### Effects on noise levels

Manufactured by Railroad Controls Limited (RCL) of Fort Worth, Texas, the automated horn systems use two stationary horns mounted at each crossing.

*TRAIN . . . continued on page 2*



Photos courtesy of the Iowa Department of Transportation

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To foster a safe, efficient, environmentally sound transportation system by improving skills and knowledge of local transportation providers through training, technical assistance, and technology transfer, to improve the quality of life for Iowans.

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### TRAIN . . . continued from page 1

Each horn directs its sound toward an opposite lane of the approaching street.

When a train approaches the intersection, the automated horns are activated by the same track signal circuitry that activates the gate arms, lights, and bells. When the automated horns are activated, a strobe light flashes to inform the locomotive engineer on the approaching train that the automated horn system is working, and the engineer then refrains from sounding the train horn.

Unlike train horns, the automated horn system restricts warning horn blasts to the immediate area of the street/railroad intersections, targeting the sound down the street where motorists and pedestrians are. Figures 1 and 2 compare the sound contour maps of a westward-bound train horn and an automated horn system at the North Dakota Street intersection in Ames. The footprints were developed by the Iowa Department of Transportation (Iowa DOT), which evaluated the automated systems installed in Ames.

The Iowa DOT gives some perspective to the sound levels shown in Figures 1 and 2: A person shouting

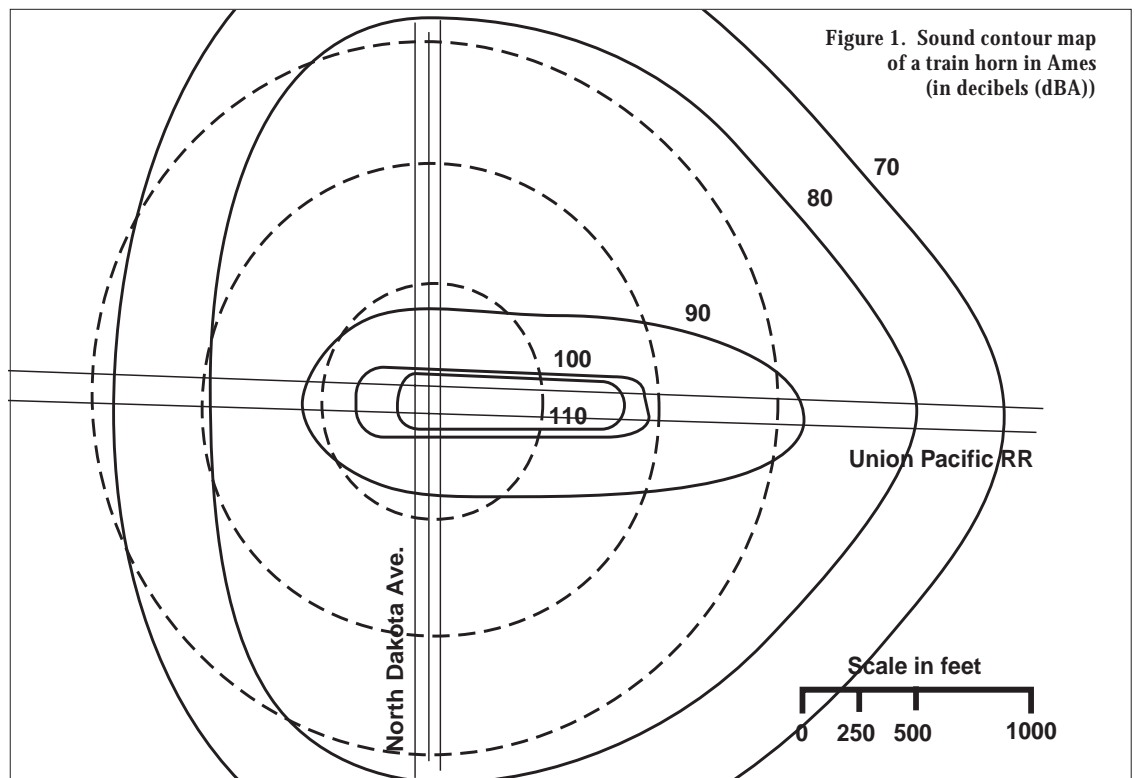
at a distance of three feet would produce a decibel reading of approximately 78 dBA. According to the 1987 AASHTO Guide on Evaluation and Attenuation of Traffic Noise, "An increase of 10 dBA in sound level will nearly double the loudness as rated subjectively by typical observers. . . . A decrease of 10 dBA will appear to an observer to be a halving of the apparent loudness."

The sound contour maps in Figures 1 and 2 depict maximum sound levels from traditional train horns and from the automated horn system, respectively, recorded in the area surrounding the North Dakota Street intersection. The maps indicate that people living up to 1,500 feet from the intersection experienced traditional train horn noise at the 80-decibel level or higher; with the automated horn systems, that level of noise was experienced no farther than 500 feet from the intersection.

In general, the use of the automated horn system at the North Dakota Street intersection reduced the land area affected by noise levels greater than 80 dBA by 97 percent, from 171 acres with traditional train horns to less than six acres.

### Acceptance and safety

Residents didn't need to see a sound contour map to hear the difference. A survey of residents in the



neighborhood of the North Dakota Street railroad intersection showed overwhelming support for the automated horn system.

Ninety-two percent of train engineers surveyed rated the overall safety at crossings with the automated horn systems to be "about the same" as or "safer" than crossings that rely on traditional train horns. And 78 percent of motorists polled preferred the automated horn systems to traditional train horns.

**More systems to be installed**

According to Scott Logan, traffic engineer for the City of Ames, this winter the city will install three additional automated horn systems at the Clark, Kellogg, and Duff avenue/railroad intersections. Together these systems will create a "quiet zone in downtown Ames and the surrounding residential districts," Logan says.

Each system will cost about \$30,000 installed. In its current agreement with the Union Pacific, the City of Ames is responsible for the purchase, installation, maintenance, and electrical power needed for the automated horn systems, and the city is liable if an accident can be traced to one of the horns.

With these three newest systems, Ames will be the first community in the country to install RCL's newest, modified automated horn systems. They will have three improvements over the original design: (1) Even very slow-moving trains will trigger the strobe light that informs train engineers the system has been activated. (2) The system will independently detect approaching trains on each set of tracks. (3) The horns themselves will require less maintenance.

**For information**

For more information about the Iowa DOT study, contact Steve Gent, research coordinator, 515-239-1129, [sgent@max.state.ia.us](mailto:sgent@max.state.ia.us). The report is online at [www.dot.state.ia.us/trainhorn.htm](http://www.dot.state.ia.us/trainhorn.htm). It is also available through the LTAP library. Contact Stan Ring, library coordinator, 515-294-9481, [sring@iastate.edu](mailto:sring@iastate.edu). Ask for #P1405.

For information about purchasing, installing, and maintaining the automated horn systems, contact Scott Logan, City of Ames traffic engineer, 515-239-5275, [logan@city.ames.ia.us](mailto:logan@city.ames.ia.us). •

**LTAP Advisory Board**

The people listed below help guide and direct the policies and activities of the Center for Transportation Research and Education's Local Technical Assistance Program (LTAP). The board meets at least annually.

Contact any of the advisory committee members to comment, make suggestions, or ask questions about any aspect of LTAP.

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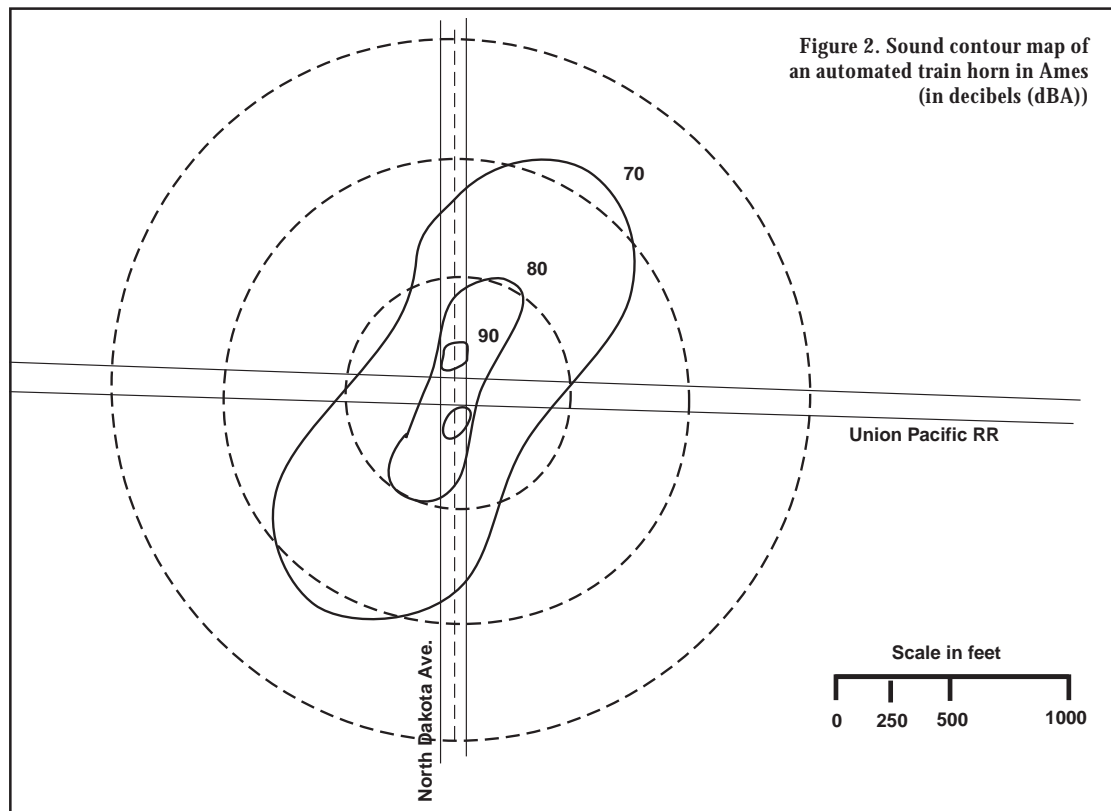


Figure 2. Sound contour map of an automated train horn in Ames (in decibels (dBA))



Center for Transportation Research and Education

IOWA STATE UNIVERSITY

## Spin your web: creating the look and feel of your web site

*Editor's note: CTRE's web site has recently undergone a major reorganization and redesign. To learn more about how we applied our own design tips, read about the changes online at [www.ctre.iastate.edu/pubs/web/index.htm](http://www.ctre.iastate.edu/pubs/web/index.htm).*

**This is the fifth article in a series about World Wide Web site development for local transportation agencies. The first four articles covered planning a web site, acquiring the tools for creating it, choosing and organizing content, and helping users navigate your site.**



DESIGN isn't just about making your web site look nice. In fact, by planning content, labels, and navigation systems, you've already begun the design process. Creating the look and feel of your web site is the next logical step in this process. Even if you decide to outsource some or all of your web site development, generating some ideas about what your site should look like will help the designer realize your vision of the site.

Following are some basic tips to help you get started:

### **Finding ideas**

Examine your organization's existing print materials for design ideas. Does your agency have a consistent image in its print materials that you'd like to use on your web site? The print materials may suggest a color scheme. Your agency may have a logo you could incorporate as well.

If you haven't been surfing the Internet and looking at other agencies' web sites, now is the time to start. Think about the elements of other sites that you like and dislike. Borrowing design ideas and applying them to your own web site is perfectly acceptable, but of course downloading other sites' images and text and using them as your own is not.

### **Color**

You don't need to use any images at all to make your web site colorful. Color can be used as background for a whole page while other colors can be used as backgrounds for small sections of pages to set them apart. Text and links can also be assigned different colors.

The key to using color well is to have a high contrast between the background color and the text color. A plain white or other light colored background with black or other dark text will be easily readable. But light text on a dark background is hard to read.

### **Link colors**

While it is possible to change the colors of links, it's not advisable. The web browser default colors for text links are blue for an unvisited link and purple for a visited link. Web users understand this, and new users learn this idea quickly. So it's a useful navigation and orientation tool for all users. These colors have almost become a standard, but many web designers don't use the default colors because they don't "go" with the rest of their design. Consequently web users can run into navigation problems on sites with nonstandard link colors.

### **Backgrounds**

Background images should be subtle or they'll overwhelm the text and users won't be able to read information. One popular use of a logo is to fade it to a pale version of itself, similar to a watermark on fine paper, and then use it as a tiled background. Tiling means that one small image is repeated across and down the page. Another popular background is to create a two-color image that looks like two

## World Wide Web design resources

### **[www.useit.com/alertbox/](http://www.useit.com/alertbox/)**

This site contains biweekly columns about web usability and design by Jakob Nielsen, a former Sun Microsystems engineer and an expert on web usability and human interface issues. One of the most popular columns is his list of top 10 web design mistakes.

### **<http://webreference.com/authoring/design/tutorials.html>**

This link takes you to a list of web design tutorials compiled by Webreference.com, one of the best sites on the web for beginning and intermediate web developers.

### **<http://designshops.com/pace/ds/pub/1999/09/rightstuff.html>**

This article offers advice about choosing a web design firm.

### **[www.lynda.com/resources/inspiration/](http://www.lynda.com/resources/inspiration/)**

Need design ideas? Take a look at this collection of "inspirational sites." The sites are listed because they're doing interesting things with color, background tiles, photography, illustration, etc.



columns, one narrow left-hand column and a wider right-hand column. The narrow column usually contains information that is repeated from page to page such as navigation bars and contact information.

### Images

Logos, illustrations, and photos can enhance your site, but it's easy to go overboard and significantly increase the download time of a page. A very basic web page would incorporate an organization's logo, often in the top left corner of the page, and the rest would be well organized text. It's a good idea to use your logo (or your name if you have no logo) on every page because it lets web users know whose site they're visiting, especially if they enter the site from somewhere besides your home page.

Evaluate each image you'd like to use on your web site. Does it add something to the site's content, such as a map showing where your agency is located? Does it help users navigate your site? Graphical navigation bars are a common way to incorporate colorful yet simple images. Think hard before using images that are simply there to look pretty, especially if the images are large and take a long time to download. Try to make your images do double duty.

### Animation

Animation is a fun gimmick for a few seconds. After that the continuous movement is distracting for web users who are simply looking for information. Considering that the main purpose of a local transportation agency's web site is to inform rather than entertain, animations may be inappropriate. Even the tiny and innocuous spinning "new" signs and letters stuffing themselves into envelopes to be e-mailed can be visually distracting. There are probably better, more professional ways to draw attention to specific parts of your site.

### Final tips

In addition to using your logo or name on every page, include a way to contact your agency (mailing address, telephone number, fax number, and e-mail address). You'd be surprised how hard it is to find this basic information on many web sites.

When deciding where to put your navigation bar, be consistent. The top and left side of the page are probably the most common places, and thus the

places users frequently look. The bottom is a useful place for redundant text links for a graphic navigation bar.

The final article in this series will discuss creating web pages from scratch with html code. •

## Corrections

TWO ARTICLES in the August–September 1999 issue of *Technology News* contained incorrect information:

### Recycled asphalt shingles

An article on page 5 about using recycled asphalt shingles stated, "Iowa DOT tests of bituminous shingles demonstrate that their asbestos content is extremely low, typically two to three percent. The little asbestos present is generally encapsulated in asphalt cement, so crushing the shingles does not produce dangerous asbestos dust."

According to Mark Dunn, materials research engineer at the Iowa DOT, only .8 percent of sample shingles contained asbestos. Of those shingles, the asbestos content was two to three percent. Also, according to Dunn, *no* shingles containing asbestos can be recycled for pavement applications. Finally, an initial field test evaluating ground, recycled asphalt shingles for hot-pour crack filling in Spencer, Iowa, was sponsored by the Iowa Highway Research Board HR-379, not HR-207.

We apologize for the errors and thank Mark Dunn for bringing them to our attention.

### Implements of husbandry

Our cover story reported that an asphalt cement concrete pavement section under construction in Crawford County would be instrumented for testing stresses related to implements of husbandry. Due to construction scheduling, researchers were unable to use the Crawford County pavement but did instrument a new flexible pavement in Sioux County just north of Orange City.

Thanks to Fouad Fanous, professor of civil and construction engineering at Iowa State, who brought this change to our attention. •

## Ultra-thin whitetopping update

*“Over 170 UTW projects have been constructed across the country.”*

**This article is adapted from information provided by the Federal Highway Administration (FHWA) and the Local Technical Assistance Program (LTAP) Clearinghouse.**



ARE YOU FIGHTING ruts in your city's intersections or washboarding in your county roads? Are you looking for alternate overlay options? If so, you may want to try ultra-thin whitetopping (UTW). UTW is becoming a popular resurfacing alternative for deteriorating asphalt pavements.

UTW is a relatively new technique that involves placing a thin (50 to 100 mm) portland cement concrete (PCC) overlay to restore asphalt concrete pavements that have cracked and/or rutted. Asphalt pavements are candidates for UTW rehabilitation where rutting, cracking, washboarding, or shoving of asphalt is a problem or where you need additional load-carrying capacity.

The technique was developed specifically for low-volume roads, parking areas, and light-duty airports. With UTW, the overlay is thinner than conventional whitetopping and forms a bond with the underlying asphalt pavement, which creates a composite action. Short joint spacing significantly improves the overlay's performance.

Since the first experimental application of UTW was constructed on an access road near Louisville, Kentucky, in 1991, over 170 UTW projects have been constructed across the country, including a section of Iowa Highway 21 in Iowa County in 1996. At 40,000 square yards, the Highway 21 project is one of the largest UTW projects in the country.

### **Advantages of UTW**

UTW has several benefits. It

- provides a durable wearing surface.
- is cost competitive compared to other overlay methods.
- can be opened to traffic within 24–36 hours using fast-track mixes monitored by the maturity procedure common to Iowa's concrete pavement construction industry.
- reflects light, reducing the need for street lighting.

- provides a cooler surface than asphalt overlays.

### **UTW construction**

Generally, the four steps to constructing UTW include the following:

1. Prepare the existing asphalt surface so that it will bond with the PCC overlay. Milling may be recommended.
2. Place, finish, and cure PCC overlay using conventional techniques. Match the mix to the project's traffic conditions and requirements for opening the road to traffic. Consider using synthetic fibers to increase post-crack integrity of the panels. Proper curing is critical. Because the overlay is thin, it can lose water rapidly due to evaporation; therefore, apply curing compound at twice the normal rate or cover the surface with burlap or other material while it's curing.
3. Cut saw joints as early as possible to control cracking. Iowa researchers have found a joint pattern of small squares, rather than conventional slabs with center line and transverse joints, to be desirable. The tight joint pattern relieves stress and allows the UTW to move with the underlying flexible pavement.
4. Open to traffic.

### **What's new?**

The FHWA and the American Concrete Pavement Association have launched a joint research effort to evaluate critical design factors affecting UTW performance. FHWA will test UTW pavement sections in Virginia using the Turner Fairbank Highway Research Center Accelerated Loading Facility. For more information on this project, see the TFHRC web site, [www.tfhrc.gov](http://www.tfhrc.gov) (click on "Pavements," then on "Ultra-thin Whitetopping").

The American Concrete Pavement Association posts information on UTW on its web site; see [www.pavement.com](http://www.pavement.com) (click on "Follow this link to design an ultra-thin overlay").

A recent Minnesota DOT UTW research project is described on the web; see [mnroad.dot.state.mn.us/newsletters/gauge151.html](http://mnroad.dot.state.mn.us/newsletters/gauge151.html).

For up-to-date information on the Iowa Highway 21 research project, contact Jim Cable, associate professor of civil and construction engineering at Iowa State University, 515-294-2862, [jkcable@iastate.edu](mailto:jkcable@iastate.edu).

## Online winter maintenance information

by Duane Smith, Associate Director of Outreach



A NEW information resource is available for your winter maintenance activities: a collection of World Wide Web links to companies and organizations that provide winter maintenance services and products. This page is part of a new APWA web site, InfoLink ([www.apwa-infolink.com](http://www.apwa-infolink.com)).

The winter maintenance page is maintained by Larry Frevert, deputy director of public works, Kansas City, Missouri, who gave a presentation on this web site at the 1999 Iowa Winter Training Expo.

The winter maintenance topics include weather/RWIS, materials, equipment, and education, training and practices. Here's a sample of available links:

- Snow fighters training program (courtesy of the Salt Institute)
- Monroe Truck Equipment Company, snow and ice control equipment
- University of Colorado National Snow and Ice Data Center

- Cargill Salt, deicing salt
- Aurora Project, an international partnership researching RWIS
- Surface Systems, Inc., RWIS and related system components

This collection of web links is a useful tool for someone with limited resources, and it provides the opportunity to explore a multitude of subjects in a short period of time.

APWA InfoLink is a web site providing a wide range of information such as permits and standard specifications for the planning, design, construction, and maintenance community. APWA's Kansas City Metro Chapter has developed this unique national pilot program.

Currently the standards available pertain to Kansas and Missouri only, but eventually the rest of the country will be included. Site users will be able to access a variety of data from government agencies and the private sector about permits, planning and zoning documents, and software downloads. •

## Finding the web site

The APWA's winter maintenance page is available directly at [www.apwa-infolink.com/infolink/ipinfoid.asp?ipidpas=238](http://www.apwa-infolink.com/infolink/ipinfoid.asp?ipidpas=238).

It may also be accessed by going to the APWA InfoLink site listed at left, clicking on "Search" at the top, typing "winter maintenance," and selecting "Information Provider" from the list of links that comes up.

You don't need to download the plug-in in order to view the winter maintenance page or do a search. •

## Iowa APWA snow roдео winners



FORTY, two-person teams competed in the truck division of the 1999 snow roдео on September 29 in Ames, Iowa. Thirty-five operators tested their mettle in the motor grader division, a graded event for the first time this year.

In the truck division, a team from Ankeny, Greg Householder and Mark Goins (left to right in top photo), earned first place. Wearing special Ankeny snow plow t-shirts, Householder and Goins said practicing before the event really paid off. Two teams from West Des Moines, Jon Thompson and Tom Spatz (left to right in bottom photo), and Dean Hutchins and Larry Laughbridge (not pictured), placed second and third, respectively.

In the motor grader contest, Poweshiek County operators David Rodman and Stan Hauser (left to right in far right photo) took first and second places, respectively, and Dick Henson of Iowa County (not pictured) placed third. •



*Editor's note: After the awards ceremony, an error was brought to the judges' attention. The snow plow team that had been named the third place winner during the awards ceremony was dropped down a place, moving the West Des Moines 1 team into third place.*

# Iowa's pavement management program: an update

by Omar Smadi, Pavement Management Specialist

**Iowa's pavement management program covers all of Iowa's non-National Highway System (non-NHS) federal aid eligible roads under state, county, and city jurisdictions.**



Iowa's pavement management program (IPMP), under development since 1994, is in the implementation stage this year.

The project's major tasks (development of a GIS database, distress data collection, selection of pavement management software, and distress data delivery) have been completed. Pilot training workshops will be scheduled early in 2000.

Following is an overview of current work and also future plans for the IPMP.

### Distress data collection

By the end of October 1999, two full cycles of distress data collection were completed. Sixteen out of 18 RPAs and all of the eight MPOs are participating in the data collection effort. The Iowa Department of Transportation (Iowa DOT) Office of Program Management is requesting commitments from all the RPAs and MPOs for the next two cycles of data collection.

This year the IPMP task force is also evaluating new technologies used for distress data collection. The data collection subgroup (with city, county, and Iowa DOT representatives) is evaluating three different automated distress data vendors (current

vendor Roadware Corporation, Infrastructure Management Systems (IMS), Inc., and Transportation Management Systems (TMT)) for the next cycle of data collection. A vendor will be selected before the end of the year. Cities and counties have been invited to attend vendor presentations and demonstrations.

### Data collection for the federal aid system

Throughout 1999 local agencies participating in the IPMP distress data collection program were given the option of adding the rest of their paved miles (non federal aid eligible) to the distress data collection effort for an extra cost. The IPMP was able to negotiate with the vendor to give cities and counties collecting the extra miles the same advantages as working with the entire state system.

About 15 agencies (cities and counties) have signed up for the extra data collection for 1999 and 2000. If you are interested in this program, please let us know so that we can arrange for the data collection to be completed in a timely manner.

The cost for data collection is \$40 per mile for rural routes and \$55 per mile for urban routes, plus an additional cost for the Center for Transportation Research and Education (CTRE) to set up the system, manage the data collection, and deliver the data.

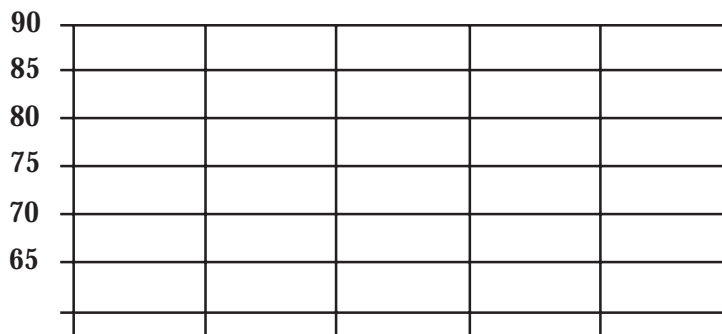
### Distress data delivery

The IPMP held a data delivery workshop on November 9, 1999, in Ames. The workshop provided participants with a summarized listing of their distress data (collected in 1997 and 1998),

a pavement management software demonstration, and a project overview.

### Pavement management software

Based on input from the agencies participating in the IPMP, the PMS software group has selected dTIMS for the IPMP and has negotiated a contract with the Deighton Company

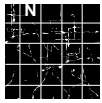


*IPMP... continued on  
page 10*



# Iowa Traffic Safety Data Service

by Jerry Roche, Undergraduate Research Assistant



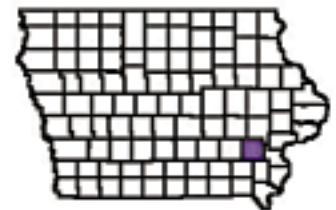
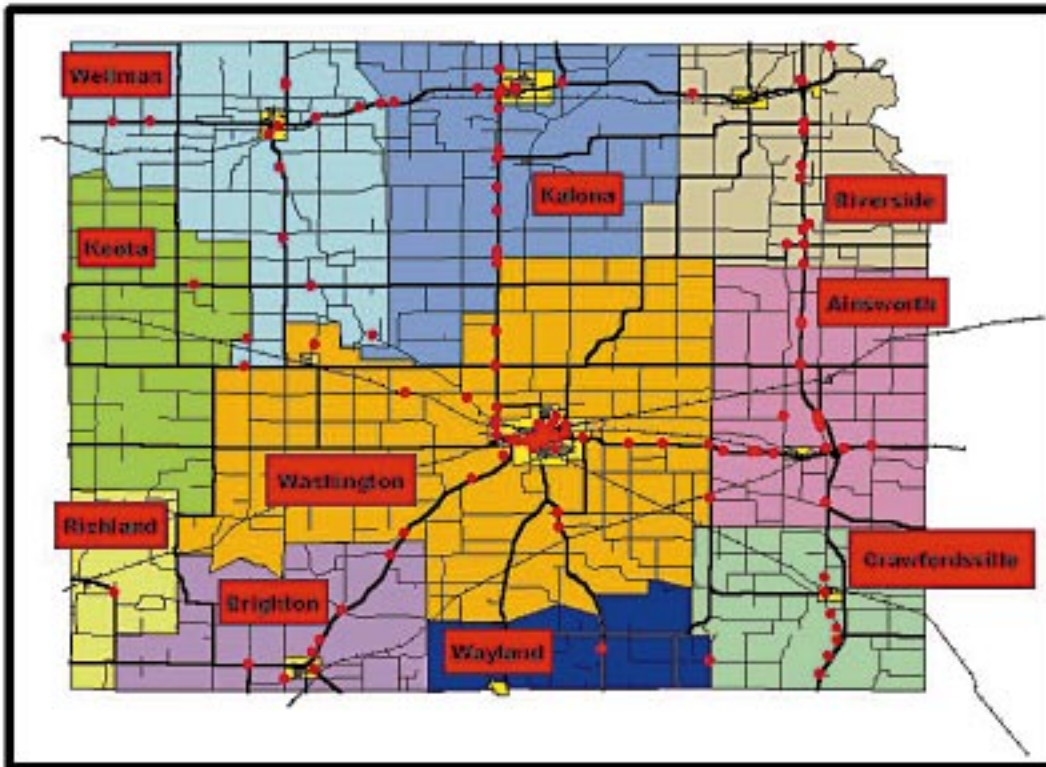
THE IOWA TRAFFIC SAFETY DATA SERVICE (ITSDS) is up and running at the Center for Transportation Research and Education (CTRE). The ITSDS will provide timely access to analyses and reports from many traffic safety and geographic information systems tools developed by the Iowa Department of Transportation (Iowa DOT) in recent years. The ITSDS will facilitate decision making, effective presentations, and education.

The need for such a service has emerged due to the large amount of traffic safety data now available. Under the umbrella of transportation safety, there are such projects and programs as

- Access-Based Accident Location and Analysis System (Access ALAS)

- Geographic Information System-Based Accident Location and Analysis System (GIS-ALAS)
- aerial photogrammetry
- Crash Analysis Rapid Evaluation (CARE)
- Crash Outcome Data Evaluation System (CODES)
- Coordinated Transportation Analysis and Management System (CTAMS)
- Emergency Response Information System (ERIS)
- Intersection Magic
- Location Smartmap
- pavement management

*ITSDS . . . continued on page 10*



- Fatal and Injury Crash Locations
- Washington County Roads
- Washington County Rail
- Cities
- Fire/EMS Districts
  - Ainsworth
  - Brighton
  - Crawfordsvile
  - Kalona
  - Keota
  - Richland
  - Riverside
  - Washington
  - Wayland
  - Wellman



9 0 9 18 Miles

\*\*\*preliminary data subject to change\*\*\* prepared by J.R. 10/27/99

An example of mapped data available through the ITSDS:  
1997 fatal and injury crashes in Washington County

*IPMP . . . continued from page 8*

for the purchase of 100 copies of dTIMS for \$100,000. The Iowa DOT policy committee contributed \$50,000 towards the initial cost of the software. Participating cities, counties, RPAs, and MPOs will pay a onetime cost of \$500 and an additional \$650 per year for maintenance and updates.

We still have several copies of dTIMS. If you are interested, please give me a telephone call at 515-294-7110 to make arrangements for the purchase. After the first 100 copies have been purchased, additional copies of the software will cost \$1,000.

### **Training workshops**

Three different pilot training workshops are being scheduled. The first workshop will cover basic pavement management systems and will provide an overview of the IPMP to policy decision makers (boards of supervisors and council members).

The second workshop will cover the pavement management software and will provide participants with detailed information on how to operate the program, input parameters, and output information. The third workshop will cover the GIS tools developed as part of the IPMP GIS database and will provide training on using these tools. The second and third workshops are intended for day-to-day users of the system.

For more information on the IPMP and about training workshops, contact Omar Smadi, 515-294-7110, [smadi@iastate.edu](mailto:smadi@iastate.edu). •

Omar Smadi (right) discussed pavement data with participants at the November 9 workshop.



*ITSDS . . . continued from page 9*

- Roadway Weather Information System (RWIS)
- various GIS/CAD analysis applications

The typical user doesn't have the time or the resources to effectively use all of these tools. That's where the ITSDS can help. We provide traffic safety data in a timely and useful form to users and decision makers. If we can't get the results you need, we can find someone who can help you.

Currently, the ITSDS is developing a general, jurisdiction-by-jurisdiction report of crash facts complemented with tables and maps. The report includes such things as fatalities, type of injuries, collision type, contributing circumstances, driver/vehicle characteristics, occupant protection use, alcohol involvement, time of day/day of week, light, weather, pavement conditions, and a host of other variables.

Cities, counties, and officials can access this report for their jurisdictions by contacting the ITSDS. Eventually the reports will be available online through the ITSDS's web site, currently under construction.

More products will be available as the service expands. Examples of ITSDS product capabilities include county profile reports, fire/EMS district boundaries, incident location studies, crash rate comparisons, and red-light running occurrences.

The ITSDS wants to hear from you about your needs for safety-related information:

- What specific safety-related reports can we provide for your organization today?
- What standard, safety-related information products would you like to have available in the future?

For more information or to request reports, contact Jerry Roche, 515-294-5004, [ITSDC@iastate.edu](mailto:ITSDC@iastate.edu). •

## Need help managing pavement markings and traffic control devices?

DURING the next year, the Center for Transportation Research and Education will be developing a comprehensive guide and reference manual to help Iowa's local governments develop and administer management programs for traffic control devices and pavement markings. Researchers may ask some *Technology News* readers to participate in this project by serving on the project advisory committee, completing a survey of current needs/practices, and/or reviewing draft documents.

Iowa's local transportation agencies have made a tremendous investment in traffic control devices and pavement markings that are critical to public safety. This investment includes thousands of items of inventory, special equipment and facilities, and staff dedicated to installing and maintaining devices and markings. The manual will help agencies get the most from this investment by helping them manage their day-to-day activities.

The manual will cover many topics, including the design and application of signs, devices, and markings; inventory systems, including acquisition and inventory control; periodic, documented inspections; and maintenance and replacement programs. The manual will be comprehensive but flexible enough to be modified for each agency's needs. It will be packaged in a three-ring binder, with removable pages for easy updating, and printed on high-quality paper suitable for field use.

In February 2000 the research team will survey Iowa's local governments to determine current practices and interests regarding managing pavement markings and traffic control devices. Please complete and return your survey as soon as possible.

Researchers will also identify programs and strategies used by agencies in other states to manage pavement markings and traffic control devices. An advisory team and legal counsel will guide development of the manual, which should be completed by the end of 2000. The project is supported by the Iowa Highway Research Board (TR-441).

If you have questions, contact Safety Circuit Rider Tom McDonald, 515-294-6384, [tmcdonal@iastate.edu](mailto:tmcdonal@iastate.edu).

## Are traffic signal violations a problem in your jurisdiction?

AS URBAN traffic volumes and congestion increase in Iowa, some drivers manifest their impatience by displaying aggressive behaviors. One particularly dangerous activity is willfully ignoring traffic signals—"red-light running." In the last few years red-light running has come under scrutiny in many jurisdictions across the country and now in Iowa.

The Center for Transportation Research and Education is undertaking a study of red-light running in Iowa for the Iowa Department of Transportation. Researchers will examine the scope of the problem, concentrating on selected urban intersections with a high number of traffic signal violations that result in crashes. Other states' experiences with traffic signal violations and programs to deter red-light running will also be reviewed.

In addition, researchers will study the use of video traffic surveillance equipment to determine if data collected by such systems are adequate bases for issuing traffic signal violation citations. The emphasis of this research is on increasing the safety of signalized urban intersections, not on identifying and prosecuting violators.

The video surveillance equipment will also be analyzed to determine its capabilities for uses in other areas, such as monitoring traffic speeds through work zones.

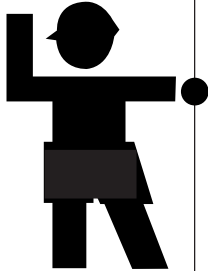
The final report will be completed by the end of 2000 and will include the following information:

- data regarding the scope of traffic signal violations in Iowa
- a discussion of other states' initiatives and programs to deter red-light running
- recommendations for improving intersection operational safety and the need for potential legislative action in Iowa

For more information contact Safety Circuit Rider Tom McDonald, 515-294-6384, [tmcdonal@iastate.edu](mailto:tmcdonal@iastate.edu).

*Editor's note: Safety Circuit Rider Tom McDonald and other CTRE researchers have recently begun two projects, described at left, that will result in important safety-related information and products for Iowa's local transportation agencies. You may be asked to provide input for either or both projects via a short survey. Thank you in advance for your participation.*

safety shorts



## New standards for worker safety apparel

by Tom McDonald, Safety Circuit Rider

ALTHOUGH the *Manual on Uniform Traffic Control Devices* states that workers exposed to traffic should be attired in bright, highly visible clothing, no specific standards have ever been adopted.

To address this need, the Safety Equipment Association has developed and published guides as American National Standard ANSI/ISEA 107-1999. These standards provide uniform, authoritative guidance for the design, performance, and use of highly visible and reflective garments of all types with a high level of conspicuity for 24-hour use.

The standards include three levels of conspicuity, based on degree of worker exposure to traffic, considering both proximity and speed. Combinations of fluorescent and reflective materials are included in these guidelines.

If you are interested in learning more about this important subject, the full document, *American National Standard for High Visibility Safety Apparel*, is available for loan from the LTAP library at the Center for Transportation Research and Education. Contact Stan Ring, library coordinator, 515-294-9481, [sring@iastate.edu](mailto:sring@iastate.edu). Ask for #P1408. •

## Safety Circuit Rider Program celebrates 10 years

SINCE 1989, Iowa's safety circuit rider has criss-crossed the state, holding workshops in break rooms, court houses, work sheds, and anywhere else local government employees could attend them. During the last 10 years more than 7,000 people have attended over 400 workshops presented or organized by Iowa's safety circuit rider.

Iowa's safety circuit rider program, which is part of the Local Technical Assistance Program at the Center for Transportation Research and Education (CTRE), is somewhat unique. CTRE is one of just a handful of technology transfer centers across the country with a safety circuit rider.

Iowa's first circuit rider, Ed Bigelow, offered workshops in accident location and analysis (ALAS) and, a few years later, flagging and sign inventory and analysis. Over the years the flagger workshop, begun in 1992, has been the most popular; over 4,700 people have attended 234 workshops.

In addition to the standard flagger workshop, Tom McDonald, circuit rider since 1998, now offers a certified flagger workshop. He also presents workshops on work zone safety and signing practices.

The signing practices workshop was developed in 1998 to help people working with signs deal with the constant influx of information about new products and new requirements. Signing is a "very dynamic subject and obviously important for drivers," McDonald says.

Each year McDonald tries to add two or three new topics, such as walkable communities and roadside safety, to his repertoire of workshops. He's currently organizing workshops on backhoe safety, chain saw safety, excavation safety, traffic control for first responders, and incident management.

In addition to workshops, the safety circuit rider organizes a conference each spring on pavement markings or signing. The topics alternate each year. Speakers from national organizations present current information about requirements and materials.

Upcoming safety workshops include a signing practices workshop on February 15, 2000, in Ft. Madison, 14 Iowa Department of Transportation work zone safety workshops from January through March, and the pavement markings conference on March 29, 2000. See the calendar on page 15.

For more information or to schedule a workshop, contact McDonald, 515-294-6384, [tmcdonal@iastate.edu](mailto:tmcdonal@iastate.edu). •

***"During the last 10 years more than 7,000 people have attended over 400 workshops presented or organized by Iowa's safety circuit rider."***



## Putting a positive spin on improvements: the public involvement process

Adapted from information provided by Gil Janes,  
Vice President, Howard R. Green Company

**This is the first of two articles describing a general philosophy and strategies for involving the public in transportation improvement projects.**



EVERY transportation improvement is as much a people project as an engineering project. Street and intersection construction is especially notorious for generating public attention. Issues such as property acquisition, long-term traffic patterns, public safety, changes in access, disruptions and inconveniences to businesses, and the character of the affected project area naturally generate public reaction. Effective communication between your agency and the public can help make this reaction positive rather than negative.

Effective communication will emphasize a project's long-term, positive effects on the community and/or economy. Phrases like "improved access," "less congestion," and "improved traffic safety" will be used when citizens and visitors describe the project.

### Listening is key

Listening may be the most important part of communication. Key players in a transportation improvement project (business owners, neighborhood residents, community leaders, public officials, special interest groups, and others) need their concerns to be heard. They need to feel they are part of the design solution.

To make sure your relationship with key players in a project gets off to a good start, be sure to involve them early in the planning process—and focus on listening.

### Charettes

*Charette* is a French word that means an intense effort in a condensed, defined period of time to solve a particular problem. This process was widely used in early French architecture schools.

To adopt this process for a transportation improvement project, prepare a structured outline of meetings with project players, then act as facilitator at the meetings. Together, players review the project's background, develop project goals, and contribute information and suggestions.

The design team, working at a location within the community, then develops alternative project scenarios and presents them to charette participants to decide on a preliminary project direction and consensus.

Such a process creates opportunity for early dialogue among key players. It also permits opportunities for players to react to possible alternatives early in the planning phase. Such dialogue and early project input generally develop and strengthen ownership in the project by all diverse groups involved.

### Systematic development of informed consent

A husband and wife team, Hans and Anne Marie Bleiker, have spent the last 20 years studying public projects, those that got implemented and those that did not. Based on their research, they have described a philosophy—they call it "systematic development of informed consent (SDIC)"—that was common to successfully implemented projects.

SDIC is founded on the belief that an organization must be both 100 percent responsible to a project's mission and 100 percent responsive to affected parties' needs.

Informed consent is engineered by making sure that potentially affected parties understand the following:

- A serious problem or significant opportunity exists that must be addressed.
- You are the appropriate entity to address the problem or opportunity; in fact, it would be irresponsible for you not to do so.
- Your approach to the situation is reasonable, sensible, and responsible.
- You do listen and you do care. If you are proposing something that is going to adversely affect someone, it is not because you do not care.

### Summary

Involving the public early and routinely throughout a project will result in improved awareness, better understanding, and stronger advocacy for and acceptance of the project.

Next article: public engagement skills and public education strategies. •

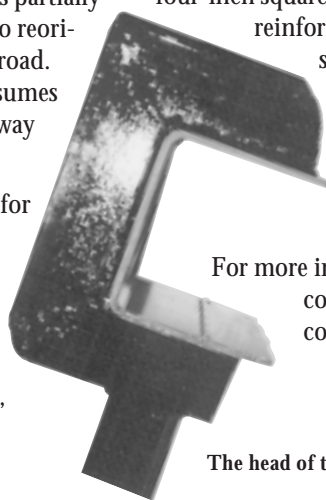
*"Every transportation improvement is as much a people project as an engineering project."*

tip from  
the field



WHEN STRONG WINDS turn signs and their posts in the ground just enough to make the signs partially unreadable and unsafe, sign crews have to reorient the signs so they're straight with the road. Digging up the post and resetting it consumes considerable time, and can take a crew away from other important duties.

Raymond G. Myers, a mechanic/welder for the Clinton County Highway Department, has fabricated a tool to help. The tool facilitates turning the post while it's still in the ground. One person can rotate the post back to the correct orientation and repack the soil around it, which saves a lot of time.



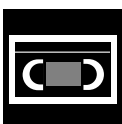
The head of the sign post reorienting tool

The tool consists of a five-inch piece of four-inch by four-inch square tubing with one side removed. It's reinforced with 3/8-inch by two-inch flat stock to prevent it from spreading open, and it's attached to a 36-inch by one-inch pipe handle. The tool was constructed from scrap steel in the shop, and the cost was minimal.

For more information about how to construct and use this tool, contact Myers, 319-659-8230. •

## Reorient sign posts

library  
resources



## New library acquisitions

FOLLOWING are descriptions of a few of the newest materials available through Iowa's Local Technical Assistance Program (LTAP) library. To borrow these or other library materials, use the form on the back page of this newsletter.

The complete LTAP library catalog is online at [www.ctre.iastate.edu/Outreach/ltap/library/search.cfm](http://www.ctre.iastate.edu/Outreach/ltap/library/search.cfm). You can search the online catalog and use an online order form.

You can also order a hard copy of the LTAP library catalog; use the form on the back page. Everyone who has a hard copy of the catalog will receive updated lists of library materials three or four times a year.

**V585 *The New Generation of Snow and Ice Control: Anti-Icing and RWIS***. This video follows two maintenance managers, Mike and Fred, as they make decisions on when and where to dispatch snow plows. Fred is listening to local weather reports and waiting for the storm to start; he'll then make decisions about when and where to dispatch snow plows. Mike is using forecasts specially tailored to his region, together with the latest in snow and ice control technologies, to determine where to send crews to treat roads with

anti-icing chemicals *before* the storm starts. The video was produced by the Iowa Department of Transportation in cooperation with the Federal Highway Administration, the American Association of State Highway and Transportation Officials, and the Lead States team for anti-icing/road weather information systems.

**P1412 *Guide for Snow and Ice Control***. This guide presents a comprehensive overview of the components required for a successful snow and ice control program. It includes personnel practices, equipment types and capabilities, materials and chemicals used, and the use of weather information technologies to improve resource allocation decisions.

**V443 *Problems with Gravel Roads***. Unpaved or "gravel" roads present unique and persistent problems to people who have to maintain them. They tend to corrugate, or washboard, in wet weather and are dusty in dry weather. In addition, loose gravel has been blamed for breaking many windshields. Help is available. This three-part video covers critical issues concerning gravel roads:

- environment and materials
- problems—causes, prevention, and correction
- maintenance equipment and techniques

This video is distributed by the national LTAP Clearinghouse. •



Stan Ring, LTAP library coordinator

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**January 2000**

10	Iowa Reception, Transportation Research Board	Washington, D.C.	Sharon Prochnow 515-294-3781, prochnow@iastate.edu
18	Work Zone Safety Workshop	Davenport	Tom McDonald 515-294-6384, tmcdonal@iastate.edu
19	Work Zone Safety Workshop	Cedar Rapids	Tom McDonald 515-294-6384, tmcdonal@iastate.edu
20	Work Zone Safety Workshop	Ottumwa	Tom McDonald 515-294-6384, tmcdonal@iastate.edu
21	Work Zone Safety Workshop	Ottumwa	Tom McDonald 515-294-6384, tmcdonal@iastate.edu
25	Asphalt Paving Conference	Ames	Jim Cable 515-294-2862, jkcable@iastate.edu

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**February 2000**

9-10	Incident Management Workshop	Ames	Duane Smith 515-294-8103, desmith@iastate.edu
15	Sign Workshop	Ft. Madison	Tom McDonald 515-294-6384, tmcdonal@iastate.edu
16-18	ICPA Concrete Paving Workshop	Des Moines	Jim Cable 515-294-2862, jkcable@iastate.edu
28	Work Zone Safety Workshop	Mason City	Tom McDonald 515-294-6384, tmcdonal@iastate.edu
29	Work Zone Safety Workshop	Mason City	Tom McDonald 515-294-6384, tmcdonal@iastate.edu

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**March 2000**

1	Work Zone Safety Workshop	Storm Lake	Tom McDonald 515-294-6384, tmcdonal@iastate.edu
13	Work Zone Safety Workshop	Ames	Tom McDonald 515-294-6384, tmcdonal@iastate.edu
14	Work Zone Safety Workshop	Council Bluffs	Tom McDonald 515-294-6384, tmcdonal@iastate.edu
15	Work Zone Safety Workshop	Council Bluffs	Tom McDonald 515-294-6384, tmcdonal@iastate.edu
16	Work Zone Safety Workshop	Sioux City	Tom McDonald 515-294-6384, tmcdonal@iastate.edu
20	Work Zone Safety Workshop	Ames	Tom McDonald 515-294-6384, tmcdonal@iastate.edu
21	Work Zone Safety Workshop	Ames	Tom McDonald 515-294-6384, tmcdonal@iastate.edu
22	Work Zone Safety Workshop	Iowa City	Tom McDonald 515-294-6384, tmcdonal@iastate.edu
22-24	ISAC Spring School of Instruction	Des Moines	Jim Cable 515-294-2862, jkcable@iastate.edu
23-24	Iowa DOT Annual Conference	Ames	Jim Cable 515-294-2862, jkcable@iastate.edu
29	Pavement Markings Conference	Ames	Tom McDonald 515-294-6384, tmcdonal@iastate.edu
29-30	Governor's Traffic Safety Bureau Conference	Council Bluffs	Tom McDonald 515-294-6384, tmcdonal@iastate.edu
30-31	APWA Iowa Chapter Spring Conference	Ames	Duane Smith 515-294-8103, desmith@iastate.edu

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**April 2000**

16-20	NACE 2000 Annual Meeting and Technical Management Conference	Overland Park, Kansas	Duane Smith 515-294-8103, desmith@iastate.edu
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## CTRE has a new director



Stephen J. Andrie

THE CENTER for Transportation Research and Education (CTRE) is pleased to welcome Stephen J. Andrie, who became the center's new director on November 8. Steve will administer CTRE's transportation research, education, and outreach programs.

Since 1994 Steve has managed the Transit Cooperative Research Program at the Transportation Research Board, National Academy of Sciences, where he was responsible for an extensive national research portfolio. As former vice president of S.G. Associates, Inc., and senior planner with Alan M. Voorhees and Associates, Inc., he has managed a variety of transportation projects, primarily in the

areas of transit planning and performance evaluation, transit maintenance and information systems, rural transit and paratransit, transit alternatives analysis, traffic and intermodal analysis, transportation research and planning, and training.

A native of Iowa, Steve has a master's degree in urban and regional planning from the University of Iowa, and he has held positions with the Linn County (Iowa) Regional Planning Commission and the Iowa Northland Regional Council of Governments.

Steve replaces Tom Maze, who has managed CTRE since 1992. •

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