

Technology

Roads Bridges Transit

Iowa Transportation Center

Iowa State University

News

October 1994

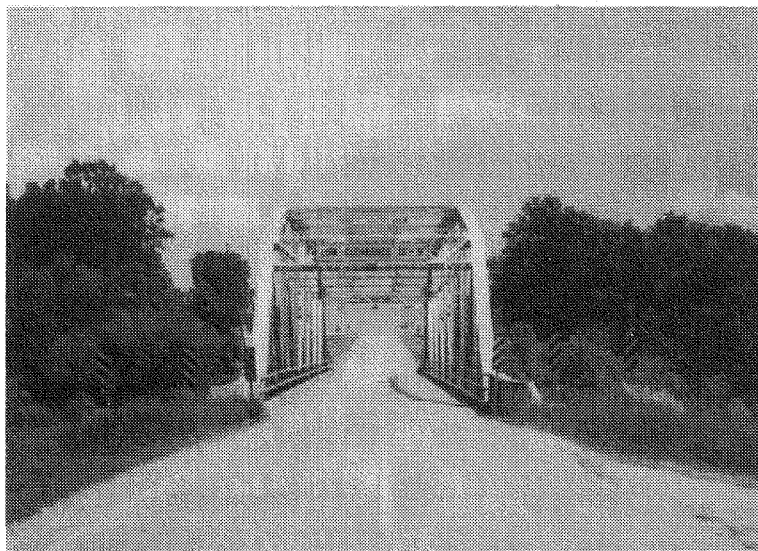
Iowa to implement bridge system

By Marcia Brink
Editor, *Technology News*

As of October 1, a work plan to implement a statewide bridge management system (BMS) is in place in Iowa. The BMS will provide a system for collecting, storing, and analyzing inventory and condition data for all public bridges in the state, and will help establish bridge condition histories. These data and histories will be used in financial analyses and in determining optimal bridge maintenance, repair, and replacement strategies.

The BMS implementation plan has been developed by the Iowa Bridge Management Technical Committee (the BMTC). According to Bruce Brakke, bridge maintenance engi-

Since the mid-1980s, several BMS programs have been developed around the country. BRIDGET, for example, is a product of the National Cooperative Highway Research Program. Several states, including North Carolina, Pennsylvania, and New York, have developed their own software.



To conform with ISTEA requirements, Iowa has a work plan to implement a system for managing the state's nearly 26,000 public bridges.

Iowa will use PONTIS, a BMS software developed in 1992 by the State of California under a contract with the Federal Highway Administration (FHWA). Iowa participated in the beta test of PONTIS, so the Iowa DOT is familiar with the program's capabilities.

Inside this issue of *Technology News*:

Survey: winter road maintenance methods change	3
Stop sign study needs your help	3
Travel demand modeling in the Midwest	4
New ITC workshops	6
New training concept	7
FHWA's Ed Finn retires	8
Tips from the field	10
For more information	11
Conference calendar	12

neer for the Iowa Department of Transportation and chair of the BMTC, the plan establishes a time frame to implement a BMS for Iowa's nearly 26,000 bridges. The vast majority of these bridges—approximately 20,500—are owned and managed by counties, about 1,100 are managed by municipalities, and approximately 4,000 are managed by the state.

The BMTC has already selected software for the statewide system.

In addition to selecting software, the committee has already identified CORE (commonly recognized) elements for state-owned bridges. Examples of CORE elements are concrete decks, girders, floor beams, expansion joints, pier caps, pier columns, and bearings.

Beginning in late 1994, condition data for state-owned bridges will be collected and entered into PONTIS. This will be done during the Iowa

continued on page 2

Bridge management system continued from page 1

DOT's regular bridge inspections.

A consultant has been retained to work with the Iowa DOT, counties, and cities to assist in implementing the BMS for the structures owned by local entities. Specifically, the consultant will

- identify CORE elements for which condition data must be collected,
- determine performance (deterioration rates) and cost data for each CORE element,
- train city and county personnel, including private consultants, in data collection requirements and techniques,
- produce revised data collection forms,
- produce a bridge inspection manual and other aids for city and county personnel, and
- provide follow-up support to cities and counties through 1996.

The BMS consultant will work closely with city and county personnel. For example, input will be solicited from cities and counties regarding appropriate performance and cost data for each CORE ele-

ment. In addition, the consultant will train approximately 300 city, county, and private bridge personnel in inspection procedures for PONTIS.

For the foreseeable future, the FHWA will continue to require bridge inventory and condition data according to the National Bridge Inventory (NBI). Data required for the statewide BMS will supplement, rather than replace, data collected for the FHWA. For example, the FHWA requires condition ratings (0-9) for a bridge's deck, superstructure, and substructure. For the BMS, these three parts will be separated into about eight to ten CORE elements. The condition of these elements will be determined and recorded.

To simplify the recording of bridge inspection data for both the NBI and the state BMS, the consultant will revise present bridge inspection forms to include data required for PONTIS. Even so, the *initial* inspection under the BMS will take longer than the NBI inspection alone. After the initial inspection, however, recording the condition of the additional elements for each bridge in subsequent years should take little extra time.

The extra time will result in significant benefits:

- PONTIS will provide a reliable basis for evaluating bridge maintenance, repair, and replacement strategies. These strategies potentially include developing lists of the kinds of work that may need to be performed on certain types of bridges or on bridges with particular problems.
- Development of such strategies will be possible because PONTIS will provide very reliable estimates of current and forecasted bridge conditions.
- Inspection reports will be less subjective because condition states are better defined.
- PONTIS will help with financial analyses. For example, the current method for deciding the optimum time to treat bridge problems is generally to fix the worst problems first. PONTIS, however, will look at the "condition cost" and compute the optimal, least costly time to do particular kinds of work over the life of each bridge.

continued on page 8

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The preparation of this newsletter was financed through the Technology Transfer (T²) Program. The T² Program is a nationwide effort financed jointly by the Federal Highway Administration and the Iowa Department of Transportation. Its purpose is to translate into understandable terms the latest state-of-the-art technologies in the areas of roads, bridges, and public transportation.

The opinions, findings, or recommendations expressed here are those of the Iowa Transportation Center and do not necessarily reflect the views of the Federal Highway Administration or the Iowa Department of Transportation.



Iowa Transportation Center

IOWA STATE UNIVERSITY

Survey: winter road maintenance strategies are changing

By Wilfrid A. Nixon, Associate Professor of Civil and Environmental Engineering, University of Iowa

With all the talk about global warming, you might think that winter highway maintenance will soon be simplified, but the severity of the last couple winters does not make such a prediction seem likely to come true. What *is* likely in the years ahead is that winter highway maintenance personnel will be expected to do more with less. As budgets tighten and public expectations grow, tried and true methods of winter road maintenance may no longer work.

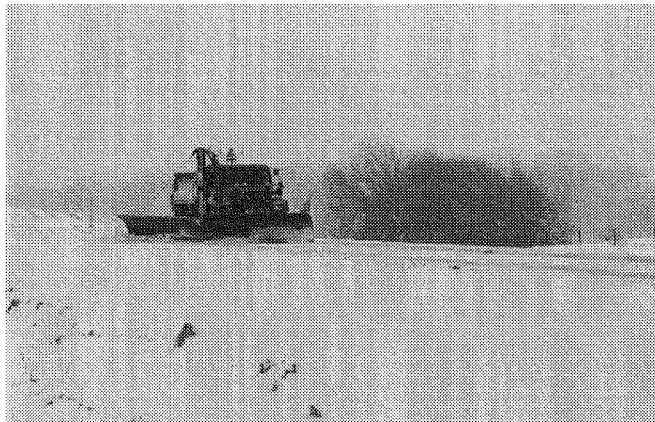
To understand cities' and counties' changing needs for winter road maintenance, the Midwest Transportation Center and the Iowa Department of Transportation have funded a study to examine the development of strategies for winter highway maintenance. The study will be finished by the end of the year, when a full report will be available. In the meantime, preliminary results from a survey of Iowa cities

and counties have turned up some interesting insights.

All Iowa counties and those Iowa cities with populations above 25,000 were surveyed. A very high survey response rate (86 replies) indicates the great interest in the difficult problem of trying to keep Iowa's roads clear in the winter.

Many respondents indicated concern about maintaining current levels of service in an environment of shrinking or flat budgets, hiring restrictions, and a work force with generally less experience clearing ice and snow from roads than the work force had ten years ago.

A number of factors are causing changes in our approach to winter road



The Midwest Transportation Center is studying the development of new strategies for winter highway maintenance.

continued on page 9

Stop sign study needs your help



Sometimes drivers approaching a stop sign assume incorrectly that

the cross street traffic also has a stop sign. Drivers who mistakenly think they are at an all-way stop may pull out in front of oncoming traffic, causing an accident. To try to prevent such accidents, some traffic control personnel have installed variations of "cross traffic does not stop" warning signs, either as a supplemental sign on the stop sign pole or in advance of the stop sign.

A study at the University of Arkan-

sas is trying to determine how widespread the use of these warning signs is, what colors and words have been tried, and if any before-and-after studies have been conducted regarding the signs' effectiveness.

If your jurisdiction uses these signs, please call J. L. Gattis at 501/575-7586 (FAX: 501/575-7168) or write to Gattis at the Civil Engineering Department, 4190 Bell Engineering Center, Fayetteville, AR 72701. •

Travel demand modeling in the Midwest

On August 19, the Iowa Transportation Center hosted transportation planners from the Midwest at the first meeting of the Midwest TRANPLAN Model Users Group (MTMUG). MTMUG will promote the sharing of ideas, techniques, problems, and data sets among transportation planners using TRANPLAN software. Groups represented at the first MTMUG meeting included the Iowa Department of Transportation, the Nebraska Department of Roads, the City of Ames, and the MPOs of Des Moines, Dubuque, the Quad Cities, and Sioux City.

TRANPLAN is a commonly used transportation planning package. It is a microcomputer package which, like other microcomputer travel demand models, has its roots in the mainframe travel demand models first developed in the 1950s.

The four-step procedure used to estimate travel demand is known as the urban transportation modeling system (UTMS). Using this approach, transportation analysts estimate the number of trips generated by various types of land uses and distribute these trips from origin zones to destination zones.

Analysts use these estimates to determine the demand for travel between different areas within a city or region and to examine the need for new or improved transportation facilities. Analysts can also compute the share of trips by mode (e.g., auto, transit) and assign traffic to the available transportation networks. These capabilities facilitate analyses of highway and transit needs in specific corridors.

Microtechnology

By Reg Souleyrette
Associate Director of Research

Most of these capabilities are greatly aided by computers, which facilitate mathematically modeling and forecasting travel demand. Among today's powerful UTMS software packages are MINUTP, EMME2, QRSII, and TRANPLAN.

TRANPLAN has been chosen by the Iowa DOT and many MPOs for regional travel demand modeling. The Iowa DOT purchased a TRANPLAN software license cover-

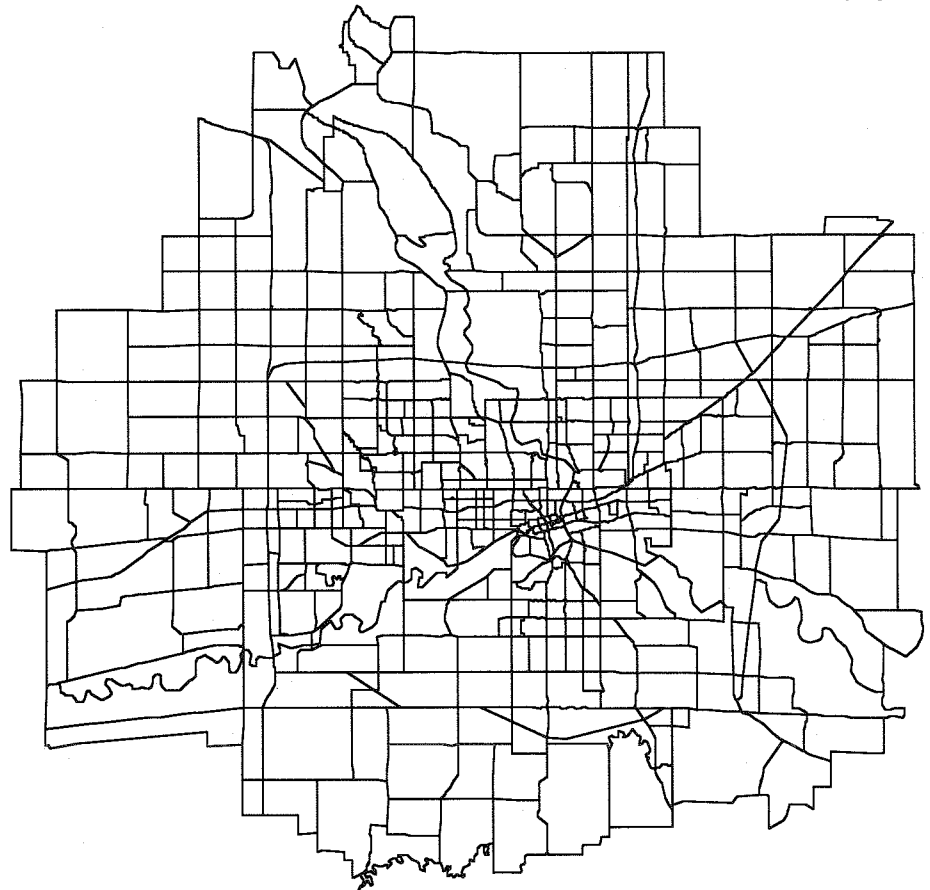
ing any public agency in the state.

Following are answers to common questions regarding travel demand modeling:

What can a travel demand model be used for?

An important regional application is forecasting the impact of projected changes in the transportation system on travel patterns, system level of service, total delay, or vehicle miles traveled. Examples of system changes are adding lanes to a major arterial, adding a beltway, adding new transit routes or a new transit facility, and upgrading a highway by restricting access.

continued on page 5



Des Moines traffic analysis zones

Courtesy of Des Moines MPO

Travel demand modeling continued from page 4

Regional models are limited in their sensitivity to small, project-level changes (e.g., adding left turn bays or eliminating parking).

Models can also be used to estimate current and future travel by vehicle type and by roadway functional classification. Current and future estimates of average vehicle operating speed may be made. Travel demand models are often used to assess the impact of major zoning and other land use changes on the performance of the transportation system.

There also has been some discussion about using a travel demand model for site impact assessment for large developments. For these assessments, other software such as traffic operations models (e.g., Highway Capacity Software, TRANSYT, PASSER) are typically used to determine local highway level of service impacts.

Several other types of computer programs are being combined with demand models. They include Geographic Information Systems (GIS), which provide superior data management and graphical display; air quality emissions and dispersion models (e.g., MOBILE5, the Urban Airshed Model); and even hazardous materials (including radiological shipment) risk assessment programs such as RADTRAN.

Who uses the model?

Local governments (e.g., City of Ames, West Des Moines) can use travel demand models to

- plan for needed roadway construction (financing, staffing, right-of-way acquisition),
- investigate the efficacy of travel demand management programs

(ride sharing, remote parking, flex time, telecommuting), and

- forecast the impact of zoning and land use changes on the transportation system.

Regional planning organizations (e.g., MPOs) can use travel demand models for

- transit development and corridor assessment,
- regional mobility assessment and enhancement (planning of work programs), and
- development of regional Transportation Improvement Programs (TIP).

State departments of transportation may use the model to develop statewide TIPs and long-range plans.

Other transportation engineers and planners may use the model to assess large highway construction projects and to aid in the development of large parcels of land (identification of impact area, traffic impact analysis).

Who maintains the models?

A model is the collection of data and parameters representing a particular land use and transportation network scenario (e.g., Des Moines network "A" for the year 2005). The models are maintained by the MPO, if one exists for the area.

The issue of model maintenance (data update, parameter adjustments, quality assurance) involves the significant effort required to install updated versions and troubleshoot problems, particularly if processes cannot be automated (a GIS linkage may provide significant automation).

Who provides training and communications?

To address some of the issues discussed above, several regional user groups have been formed around the country. For example, the Southwestern Region TRANPLAN Model Users Group has over 100 members representing consulting firms, public agencies, and universities from California, Nevada, Arizona, and Hawaii who attend quarterly meetings in southern California or Nevada. MTMUG has been modeled after this group and will share information in the Midwest.

Local user groups may also be formed. In the future, transportation planners in large local areas such as Des Moines, Kansas City, or St. Louis may want to form a local user group consisting of MPO staff, state DOTs, and affected local government representatives and consultants. A similar group has been formed in Las Vegas, Nevada.

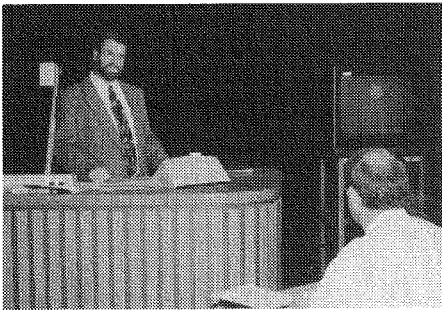
Finally, training is available. The ITC conducts short courses sponsored by the Iowa DOT and the Federal Highway Administration. Formal courses on travel demand model concepts and techniques are taught at most major universities. In addition to courses on the fundamentals of travel demand modeling, both Iowa State University and the University of Iowa have courses featuring microcomputer travel demand models.

The next meeting of MTMUG will be hosted by the Des Moines Area MPO on October 28, 1994. All interested individuals are encouraged to attend. For details, call Reg Souleyrette at 515/294-8103.

ITC offers new workshops . . .

This summer and fall, the Iowa Transportation Center sponsored several new and innovative workshops described here and on the next page. For information about upcoming workshops, see the calendar on page 12.

Workshop examines traffic signal systems



Richard Denney, Jr., P.E., senior associate at Barton-Aschman Associates, Inc., of Dallas, Texas, discusses traffic signal configuration at the first session of the traffic signal satellite workshop.

The latest developments in traffic signal technology were highlighted at the Iowa Transportation Center's first Advanced Traffic Signal Systems Technology Workshop, broadcast nationally via satellite from Iowa State University in June and

July. In addition to the live audience, more than 500 viewers participated in the workshop at 60 downlink sites nationwide.

Sponsored by the ITC and the region VII office of the Federal Highway Administration, the workshop featured national leaders in the field of traffic signal systems. Speakers discussed traffic signal system design, development, and operation; recent advances in vehicle detection, and the advantages and disadvantages of various strategies; new communication methods and their benefits and costs; and strategies for day-to-day system operation in response to dynamic traffic conditions.

This workshop was the ITC's first attempt to present brief (less than

three-hour) workshops using satellite communications. Groups of individuals tuned in from Maine to southern California, confirming the wide appeal of such programs and paving the way for the presentation of similar workshops in the future.

Video tapes of the Advanced Traffic Signal Systems Technology Workshop are available at a cost of \$20 for the set of four tapes. To order a set, contact the ITC at 515/294-8103.

Editor's note: We are looking for other topics of wide interest that can be presented without hands-on training and that are suitable for two- to three-hour instructional sessions. If you have ideas for future satellite workshops, call Duane Smith, ITC's associate director for outreach, at 515/294-8103.

Snow conference for supervisors

In September and October, the ITC sponsored three one-day workshops on snow management strategies. The workshops targeted city and county managers, department heads, and first-line supervisors and foremen who develop and prioritize snow management strategies and/or supervise highway and street maintenance crews.

Nearly two dozen speakers—county engineers, public works

directors, street superintendents, and representatives from the private sector—discussed the latest developments in snow removal equipment and materials, weather and forecasting, and policy making.

Related workshops are being planned for equipment operators and maintenance crews on the safe operation of equipment. Look for details in future issues of *Technology News*.



Mike Wallner, director of public works at Council Bluffs, Iowa, addresses the first snow management conference in Ames.

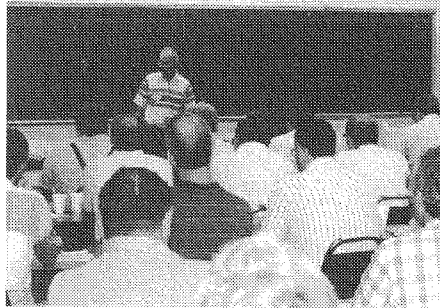
... more new workshops

MoGO again—this time for supervisors

County engineers recently got a taste of the "front lines" when they attended a special Motor Grader Operators Workshop for supervisors. Participating in virtually the same training as their crews, county engineers learned the nitty-gritty about articulated graders and other equipment considerations, basic equipment operation techniques, and strategies for special situations like frost heave.

Attendees now have a better understanding of the unique challenges faced by their grader operator crews. "Maintenance is the backbone of road work for the county crews," said Francis Todey, assistant engineer for Story County.

In addition to the practical knowl-



Doug Taggart, maintenance foreman at Audobon County, talks with county engineers about properly crowned roads.

edge gained at the workshop, attendees reaped other benefits, as well. For one thing, the workshop offered an opportunity for engineers to learn what other counties are doing in the area of road maintenance. This kind of idea exchange is promoted at all ITC-sponsored workshops.

Also, attendance at the workshop provided a basis for team-building

at the county staff level. Ken Coffman, county engineer for Cass County, emphasized the importance of gaining credibility with the operators. "When I drive through the county, I know what the roads are supposed to look like, but I don't know how to get it done. . . . If you can get out on the blade with the crew, they're more likely to talk to you."

Attendees also valued the training their crews have received at the regular MoGO workshops.

"It's not the easiest thing in the world to keep these roads right," Coffman said. "We've sent a lot of people to these workshops. In Cass County, each operator has to maintain about 80 miles of road, and at any given time only about five miles might need some work. That's a pretty good ratio. Most of these [operators] know what they're doing." •

... and a new training concept

Take the travel out of training

Now you can bring training workshops right to your office or shop. Computer Assisted Transportation Training (CATT) provides easy and convenient training for field personnel—and it is available on loan through your Iowa Transportation Center library.

All you need is a video monitor or TV. Trainees do not have to be familiar with computers or keyboards. They merely sit in front of a TV screen and use a simple remote control to respond to audio and

visual instructions. Trainees can move through the highly graphic and user-friendly training at their own speed, backing up and repeating whenever they want.

Key to this new technology is the Compact Disk-Interactive (CD-I) player, which hooks up easily to your video monitor or TV. (The computer is actually inside the CD-I player.) The ITC lending library now has three CD-I players available for loan.

In addition to the CD-I players, the ITC library has two AASHTO-produced training CDs available for

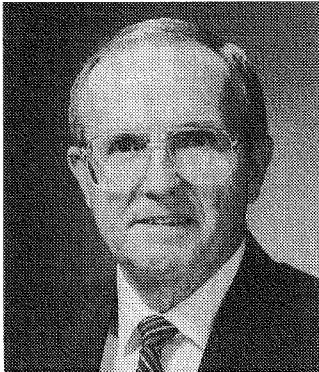
loan: *Traffic Control in Construction Work Areas* and *Snow and Ice Control*.

You can borrow a CATT training package from the ITC library for two weeks. Each package includes

- a CD-I player,
- the training CD you request,
- an administrator's guide for using the equipment,
- pre-, post-training examinations,
- evaluation forms.

For more information or to borrow a training package, call ITC library coordinator Stan Ring at 515/294-9481. •

FHWA's Ed Finn retires



Ed Finn retired October 1 after nearly 30 years with the Federal Highway Administration.

In his capacity as planning and research engineer for the Iowa division, Ed worked closely with the

Iowa Transportation Center. He oversaw the Iowa Local Technical Assistance Program, which is administered by the ITC. He was involved with ITC research projects, particularly those involving Intelligent Vehicle-Highway Systems. In addition, in recent years Ed worked diligently with the ITC and transportation agencies to implement ISTEA regulations.

Ed was an excellent representative of the FHWA and an outstanding public servant. He will certainly be missed by the profession and by the Iowa Transportation Center. The staff at the ITC wish Ed and his wife Eleanor all the best in their retirement.

Plan ahead for 1995

The **NACE (National Association of County Engineers) national conference** is coming to **Davenport, Iowa**, in **April 1995**. For more information, contact Larry Mattusch, Scott County engineer, at 319/326-8640.

The Iowa Transportation Center is preparing a new pavement markings technical conference. Mark your calendar now for **"Durable Markings for Driving Safety"** to be held **April 19, 1995**. For more information, contact the ITC's Safety Circuit Rider Ed Bigelow at 515/294-6384.

Bridge management system continued from page 2

- Another financial analysis involves determining the adequacy of available funds. PONTIS can predict, for example, the condition of all bridges given a certain funding level. Conversely, and perhaps more important, PONTIS can determine how much funding is required to maintain all bridges at a certain level.

According to Marlee Walton, transportation engineer at the Iowa DOT and a member of the BMTC, financial analyses like those possible with PONTIS are essential for maintaining today's transportation infrastructure.

"We're in an era of preservation and maintenance rather than building new," Walton said of Iowa's bridge infrastructure. "Our goal is to main-

tain bridges as efficiently as possible, and to do that we need to know the optimal timing and the optimal funds for maintenance and repair work."

The BMS will comply with the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA), which requires each state to develop, establish, and implement six transportation management systems. Development of Iowa's BMS parallels the development of other management systems (see the June 1994 issue of *Technology News*) and applies to all public road bridges.

Training of county and city bridge inspectors will begin next year and could be completed by October 1, 1995. The BMS will be completely operational by October 1998, when

the BMTC expects that all Iowa bridges affected by ISTEA will have been inspected and the data entered into PONTIS.

The Iowa DOT will continue to update local agencies and personnel about the status of the BMS implementation plan, the places and times for training, etc. If you have any questions, contact Larry Jesse, Iowa DOT systems engineer, at 515/239-1256, or Bruce Brakke at 515/239-1165.



Snow survey continued from page 3

maintenance. Chief among them is a growing concern about the negative environmental effects of road salt and sand. Although the federal government has not yet regulated or limited the use of road salt, some cities outside of Iowa have had to reduce their use of abrasives because of concern about PM10 (particulate matter less than 10 microns in size) air quality standards.

Salt, of course, causes a number of problems for pavements and bridges, and for that reason alone its use should probably be minimized. Additionally, growing evidence indicates that some roadside vegetation is damaged by salt use, and the salt content of some rivers and streams has risen steadily over the years.

If these concerns have not already surfaced in your community, don't be surprised if they do soon. Supervisors in charge of winter highway maintenance may be wise to consider now some alternative ways to remove snow and ice.

Unfortunately, the options will probably be more expensive.

One new technique being tried in some areas is anti-icing. This procedure involves applying a de-icing chemical to the road before a storm occurs rather than after snowfall has started. The benefit of applying the chemical earlier is that the chemical prevents snow and ice from forming and bonding to the road surface, and the chemical doesn't have to melt its way through snow and ice that have already adhered to the road.

Iowa is currently participating in an anti-icing study by the Federal Highway Administration, and

results should be coming out soon. In the meantime, anti-icing techniques appear to keep roads clear of snow and ice more effectively and with fewer chemicals than traditional de-icing strategies.

One drawback of anti-icing methods, however, is that they require excellent information about the weather. Maintenance supervisors have to know precisely when and where a storm is going to hit. For example, a weather forecast for 70 percent chance of snow in eastern Iowa is not much help in planning anti-icing strategies.

Another drawback is that you have to be able to respond rapidly once you know that snow is coming. Trucks have to hit the road at precise times, and chemicals must be applied within an hour prior to a storm or they will be swept away by traffic.

Finally, because the amounts of chemicals applied are much smaller than typical deicing quantities (100 pounds of salt per mile, for example, compared to 400 pounds), dispensing equipment must be much more accurate.

Clearly, setting up an anti-icing system involves considerable expense, and right now such systems may not be cost effective for you. As the winter maintenance arena continues to change, however, the benefits of new technologies like those involved in anti-icing systems might offset the costs.

A number of other innovations in winter road maintenance are currently being tested that could have considerable benefits in the areas of safety and training. Both safety and training were repeatedly cited

in the survey as major concerns of respondents. The number of operators with twenty years of snow-plowing experience is rapidly diminishing, and counties and cities urgently need either better training facilities or new, easier to operate equipment.

Such equipment may be on the way. You can expect to see trucks with computer information systems on board very soon. These systems may include information on the truck plow (its angle, for instance), making it easier to train new operators.

According to the survey, a number of cities and counties have developed written snow policies specifying procedures to be followed during street clearing. Such a document can be critical if you use contractors. Also, in court cases involving accidents on icy roads, having such a policy and documenting that you followed it can be of great benefit.

In all, many new approaches and equipment are being developed in the area of winter road maintenance, and the recent survey indicates that they are seriously needed. That is, they'll be needed until it stops snowing here in the winter, and that doesn't seem likely right now—global warming predictions notwithstanding.

For further information about the Iowa study, contact Wilfrid A. Nixon at 319/335-5646.

Editor's note: In the next issue of Technology News, we will examine anti-icing strategies, as well as the technology critical to their effectiveness: road weather information systems (RWIS).

Tips from the field

Liner protects truck box

To prevent your truck boxes from being banged up when you haul rip-rap or broken concrete, try fitting your boxes with these innovative liners. Cut from hefty 8/10,000-gallon recycled fuel barrels, the liners eventually conform to the shape of your box while providing the buffering strength of 3/8-inch steel.

Brian Keierleber and Bob Masters of Palo Alto County submitted these directions:

Quarter a barrel to make four liners. In the end of each liner, cut an opening for the dog house or cylinder, as shown in the top inset. Above the cut-out, attach angle iron to run straps to the front of your box to hold the liner in place (see bottom inset). You might improve the design by constructing a metal box around the cylinder area.



Photo shows two liners. Insets show (top) opening cut for cylinder and (bottom) angle iron attached for running straps to the front of the truck box.

Remember, used fuel barrels can blow up; be sure the barrels are completely empty before you quarter them.

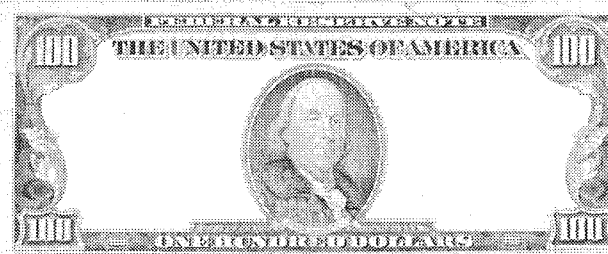
For more information, contact Keierleber (now at Buchanan County) at 319/334-6031.

Earn \$100 for your "tip"

Technology News is looking for a few good tips and is willing to pay for them.

At the Iowa Transportation Center we know that the Iowans who maintain the state's streets and highways have developed many innovative ways to do their jobs more efficiently, safely, and/or cost effectively. We are eager to publish these ideas and will pay \$100 to anyone whose tip is accepted for publication in *Technology News*.

A good tip should be about something easy to do or easy to construct in a shop. It should not focus



on a commercially available product nor endorse any specific product.

To submit a tip, write a brief description of your innovation. Describe how you use it and how it solves a problem or saves your department time, money, or accidents. Include brief instructions for building any special equipment. Photographs and diagrams are helpful.

Send your tip to Marcia Brink, Editor, *Technology News*, Iowa Transportation Center, 2521 Elwood Drive, Suite 125, Ames, Iowa 50010-8263, or call her at 515/294-9480.

For more information

Following is a sampling of publications and video tapes available from the ITC library. Many of these are new. To obtain a publication, video tape, or a complete catalog of library materials, contact Stan Ring, library coordinator, at 515/294-9481 Monday, Wednesday, and Friday mornings. Or use the order form below.

Publications

Soil Nailing—Field Inspector's Manual. This FHWA publication provides field inspectors with the knowledge to monitor and document the construction of this specialized treatment. Limited copies available free! **Request #P1014**

Recommendations Clouterre, 1991. This is an English translation of the French book for designing, constructing, and inspecting soil nailing. Loan copy. **Request #P1013**

Drainable Pavement Systems. This FHWA publication notebook was designed for a training course on state-of-the-art design and construction of permeable bases and edge drains for PCC pavements. Loan copy. **Request #P1011**

Design of Bridge Deck Drainage. This FHWA publication provides guide-

lines and procedures, with illustrated examples, emphasizing efficiency and maintenance-free operation of bridge deck drainage systems. Loan copy. **Request #P1010**

A Guide to Wetland Functional Design. This FHWA publication is a guide for development, site selection, and design of wetlands. Loan copy. **Request #P1012**

Maintenance of Aggregate and Earth Roads. This FHWA publication is a manual for maintenance personnel with a review of design, construction, and maintenance practices, focusing on gravel and earth roads. Loan copy. **Request #P1009**

The National Cycling and Walking Study. This FHWA report is on a plan of action to promote bicycling and walking as viable transportation options. Loan copy. **Request #P1000**

Videotapes

Winning Moves In Maintenance. This video by the Caterpillar Company demonstrates the value of regular inspections of equipment, preventative maintenance, and proper record keeping of maintenance activities. 16:00 min. **Request #V358**

New Work Zone Safety Devices. This SHRP video explains how to set up

the new work zone safety devices and describes their advantages. 17:04 min. **Request #V337**

Right Before Your Eyes. This ATSSA video promotes good pavement markings by demonstrating drivers' inability to drive safely when roadways are marked improperly. 9:30 min. **Request #V342**

Eye Injuries. This video shows how eye injuries can happen in an instant when the proper eye protection is ignored. 3:30 min. **Request #V346**

First Aid Kits. This video provides information on the different types of kits, their placement and proper maintenance. 5:15 min. **Request #V347**

Bloodborne Pathogens. This video discusses the new OSHA standards with an overview of the subject and its requirements. 5:00 min. **Request #V348**

Hard Hats, Hard Heads. This video emphasizes the importance of wearing a hard hat and reviews proper first aid treatment for head injuries. 4:15 min. **Request #V351**

The First Line of Defense—Fire Extinguishers. This video examines the basic types of extinguishers and reviews their proper use and maintenance. 7:45 min. **Request #V357**

Publication/video tape order form

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Conference calendar

Improving Supervisory Skills October 18 and 20—Carroll and Mason City, Iowa. This program, designed for city, county, state and other public works personnel in a supervisory position, covers basic management and supervisory techniques which will aid in directing, planning, and motivating employees in an efficient manner. Contact Sharon Prochnow, 515/294-5899.

Maintaining Pavement Performance into the Future October 25 and 28—Davenport and Atlantic, Iowa. City and county engineers, along with consulting engineering staff, will learn how to solve pavement maintenance problems, maintain pavement surface, and understand the principles of patching with asphalt or concrete products. Contact Sharon Prochnow, 515/294-8103.

Iowa's First Statewide Conference on Highway Safety Information Systems November 2-3 —Starlite Village, Waterloo, Iowa. Presentations, panels, and workshops will focus on new developments in safety management systems, data sharing, and new information technology for law enforcement personnel and engineers, and linkage of EMS and hospital data with accident reports. Contact Joyce Emery, 515/239-1016.

Better Concrete Conference November 3—Scheman Building, Ames, Iowa. This conference is designed to bring concrete producers, archi-

itects, and concrete users together to transfer the latest in concrete technology from the developer to the user. Contact Jim Cable, 515/294-2862.

Equipment Operations and Safety November 3—Fort Dodge, Iowa. This workshop is a pilot program. A workshop on trucks and loaders will be offered in the spring of 1995; other future topics include excavation equipment and small tools and equipment. Contact Sharon Prochnow, 515/294-8103.

Federal Highway Administration Region 7 County Road Engineers Meeting November 3-4—Council Bluffs, Iowa. The program will address changes in Part VI of the MUTCD, SHRP traffic control devices and products for local governments, management systems, bridge inspections and posting problems/solutions, oversized load permits, metrication, ISTE and more. Contact Del Jespersen, 515/382-6581.

American Society of Civil Engineers Transportation Conference November 9—Gateway Holiday Inn, Ames, Iowa. Contact Don Wall, 515/294-3811.

Iowa Traffic and Safety Control Association and Missouri Valley Institute of Traffic Engineers November 10-11—Savery Hotel,

Des Moines, Iowa. Contact Gerald Brickell, 515/274-4731.

ISAC Fall Conference, November 16-18—Sioux City Convention Center, Sioux City, Iowa. This program, open to county officials throughout the state, is an educational seminar. Contact Holly Herman, 515/244-7181.

Field to Finish Survey School November 21-23—Scheman Building, Ames, Iowa. This workshop will provide highway agencies a basic introduction to hardware/software used to electronically collect survey data. Contact Jim Cable, 515/294-2862.

County Engineers Conference December 6-8—Scheman Building, Ames, Iowa. This conference offers county engineers and their staff the latest in county engineering operations techniques. Contact Jim Cable, 515/294-2862.

Iowa Quality Initiative Conference December 14-15 (location to be announced). This conference, directed at all parts of the highway construction design and operation industry in Iowa, is part of a national quality initiative working to improve the quality of our transportation industry. Contact Jim Cable, 515/294-2862.

And justice for all

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