

- 2 Disc attachment reclaims shoulders
- 3 Iowa's secondary road maintenance supervisors working together
- 4 Satellite workshop will compare GIS software
- 5 Iowa's safety management system: making our roads safer
- 6 Safety shorts: Local safety committees essential to transportation agencies
- 7 Quick action by task force affects speed limit legislation
- 7 Make Iowa a safer place to travel: Serve on a safety task force
- 8 Microtechnology: Marshall County tests construction records software in the field
- 9 Seal coat season
- 10 Tip from the field: Mowing tip

Changes in agriculture affect Iowa's roads

By Michele Regenold, Editorial Assistant



PICTURE THIS. You're driving along a county blacktop on a sunny fall day. The golden cornfields have succumbed to farmers' combines, leaving rows of stubble. You crest a hill and suddenly find yourself behind a tractor pulling two loaded wagons. The wagons bob and sway gently. You toot your horn as you pass, offering the farmer a friendly wave (okay, maybe not so friendly, but you get the idea).

Could that tractor and wagon migrating down the highway soon be just a memory?

Agriculture is changing as Iowa farmers become more savvy marketers of their products. For the last few years more farmers have been selling their corn and soybeans directly to processors, barge terminals, and feeder markets. Since these farmers must haul their grain farther than the six to eight miles to the local grain elevator, more and more farmers are hauling their grain by semi.

According to a recent report called "The Iowa Grain Flow Survey: Where and How Iowa Grain Producers Ship Corn and Soybeans," Dr. Phillip Baumel, extension economist at Iowa State University, concluded that 5.3 percent of grain producers in Iowa owned a semi in 1995 and sold 13.3 percent of the corn and soybeans that year.

Approximately 10 percent of producers expect to own a semi in the year 2000.

It is important to take note of this developing trend because of the eventual impact more trucks and their heavy loads will have on county roads. As farmers attempt to increase their income, they have been finding new markets for their grain. The future will see Iowa keeping more of its grain in the state rather than exporting it via railroad

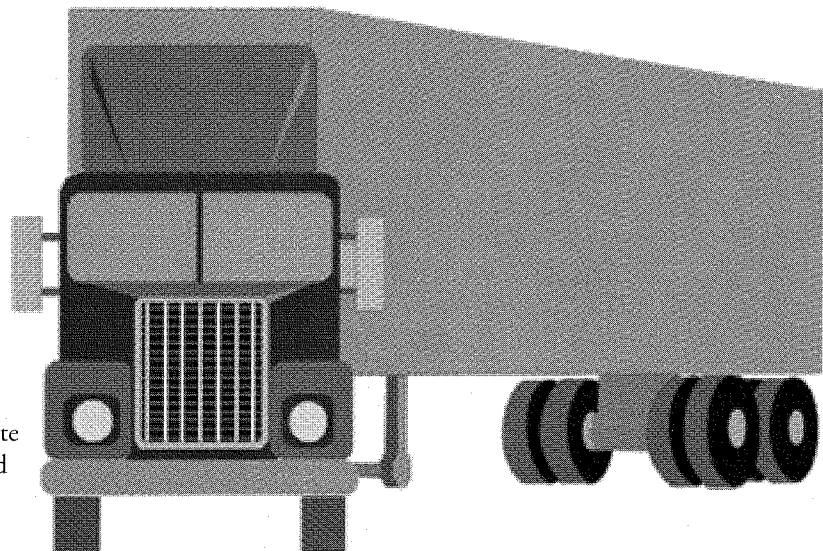
and river barge. Processing plants for corn sweeteners, ethanol, and other new products are already in place and more are being planned.

For example, a new feed mill in Algona built by Murphy Family Farms, a North Carolina pork producer, could pull in as much as 25 percent of Kossuth County's corn once the mill is operating at full capacity. Realistically, the mill will probably draw corn from other counties, too, like Humboldt and Palo Alto. Once a soybean processing plant is built by AGP Incorporated in nearby Emmetsburg, it has the potential to draw in all the soybeans produced in Kossuth County.

Murphy Family Farms supplies the feed to approximately 100 contract hog farmers in Iowa. Conley Nelson, head of Murphy Family Farms' Iowa operations, said in a transportation seminar in February at Iowa State University that when the Algona feed mill is operating at capacity, he expects "44,000 truckloads of product" to come in and out of the mill every year.

That will certainly be a dramatic increase in semi traffic for Kossuth County roads. Richard Schiek, Kossuth County engineer, says that it's still too early

continued on page 2



The preparation of this newsletter was financed through the Local Technical Assistance Program (LTAP). LTAP is a nationwide effort financed jointly in Iowa 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.

Subscriptions to **TECHNOLOGY NEWS** are free, and we welcome your comments, questions, and suggestions. To subscribe, or to obtain permission to reprint articles, contact the editor at the address below.

Center for Transportation
Research and Education
2625 N. Loop Drive, Suite 2100
Ames, Iowa 50010-8615
Telephone: 515-294-8103
Fax: 515-294-0467
BBS: 515-294-9784

Tom Maze
Director
(e-mail: tom@ctre.iastate.edu)

Jan Graham
Assistant to the Director
(e-mail: jan@ctre.iastate.edu)

Duane Smith
Associate Director for Outreach
(e-mail: desmith@iastate.edu)

Marcia Brink
Editor
(e-mail: x1brink@iastate.edu)

Ed Bigelow
Safety Circuit Rider
(e-mail: ed@ctre.iastate.edu)

Sharon Prochnow
Program Coordinator
(e-mail: sharon@ctre.iastate.edu)

Stan Ring
Library Coordinator
(e-mail: stan@ctre.iastate.edu)

Diane Love
Account Clerk
(e-mail: diane@ctre.iastate.edu)

Margaret Hammer
Secretary
(e-mail: margaret@ctre.iastate.edu)

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

Iowa State University and the Center for Transportation Research and Education provide equal opportunities and comply with ADA requirements in programs and employment. Call the Affirmative Action Office at 515-294-7612 to report discrimination.

TECHNOLOGY NEWS
nameplate and graphic
elements were designed by
Jennifer J. Reed.

AGRICULTURE . . . continued from page 1

to assess the impact the new Algona feed mill will have, but he has noticed increased semi traffic the last few years. Part of that increase is due to the loss of railroad access. Consequently, the county has been making changes to the asphalt roadways by increasing their thickness so they can better handle the increased traffic and loads.

How many loads are currently being hauled across Iowa roads and how heavy are they? According to Dr. Baumel's survey, wagons were the principal vehicle for hauling the grain of 76.2 percent of corn and soybean producers. Wagons are obviously still an important mode of transportation for Iowa grain farmers.

Wagons come in several sizes, so it's difficult to estimate the total number of loads they haul. A small load would be 35,000 pounds gross weight, but a tractor with two large wagons could haul up to 80,000 pounds gross weight. A rough estimate by Jim York, motor carrier specialist at CTRE, and Mark Lettow of the Heart of Iowa Coop in Roland, puts 80 percent of two-wagon loads between 45,000 and 70,000 pounds gross weight with an average payload of 500 to 600 bushels of corn. The average distance a wagon travels is 7.9 km (4.9 mi). For comparison's sake, a legally loaded semi can weigh a maximum of 80,000 pounds, with a payload of approximately 900 to 950 bushels of corn.

However, people in charge of roads need to consider the axle loads that vehicles actually haul, and not just rely on what they're legally allowed to haul. Research has shown that the primary determinant of pavement wear is axle loads. Overloaded axles

accelerate pavement wear due to the exponential relationship between axle load and pavement wear.

In Iowa for the 1994-95 season, semis hauled a combined total of 760,982.5 loads of corn and soybeans. For the same time period, tandem-axle trucks hauled 725,618.4 loads of corn and soybeans, and single-axle trucks carried 758,404.8 loads. According to Dr. Baumel's research, the average distance traveled by single-axle trucks was 13.0 km (8.1 mi) for corn and 16.4 km (10.2 mi) for soybeans. Tandem axles traveled a little farther, hauling corn an average 17.2 km (10.7 mi) and soybeans 19.9 km (12.4 mi). As expected, semis hauled grain the greatest distances at an average of 59.8 km (37.2 mi) for corn and 58.9 km (36.6 mi) for soybeans.

New markets will certainly impact farmers' decisions about how and where to haul their grain. Dr. Baumel concludes that "the current and expected shifts from wagons and single-axle trucks to farmer-owned semis is dramatic. By the year 2000, up to half of the corn and soybeans could move from farms in semis." That means grain will likely be hauled over greater distances and will impact longer stretches of roads.

Someday in the future, finding yourself stuck behind a poky tractor and wagon may provoke a feeling of nostalgia rather than annoyance. Especially when farmers' semis are passing you.

For more information, contact Phillip Baumel, 515-294-6263. For a loan videotape of Conley Nelson's seminar at ISU, contact Stan Ring, 515-294-9481. ■

Disc attachment reclaims shoulders



Photo courtesy The Retriever

By April Greenbeck and Michele Regenold, Editorial Assistants



TO IMPROVE THE DRIVING SURFACE and decrease maintenance on gravel roads, try a disc/gravel retriever. It's a weed-mulching, gravel-retrieving disc attachment for motor graders, trucks, or tractors.

A disc/gravel retriever conditions road shoulders and brings gravel back to the road surface without

continued on page 3

DISK TOOL . . . continued from page 2

creating sod clumps that are typical of some methods of shoulder maintenance.

This tool makes it possible to reclaim gravel from as far as five to six feet down the inslope of the ditch. The rotating action of the discs cuts and mulches growth at the side of the road and tosses gravel from the inslope back onto the road where it belongs. If a motor grader tries this with a regular blade, the blade may cut deep furrows in the shoulder.

Disc/gravel retrievers, which attach to a wing mount or to a two- to three-point hitch, may be placed on motor graders, trucks, and tractors.

When attached to a motor grader, the operator can blade the road while using the disc/gravel retriever to condition the shoulders. That's the method used by Robert Ageson, Lyon County maintainer operator.

Ageson says he leaves the gravel and grass mixture, which the disc/gravel retriever has pulled back on the road, along the road's edge for a couple of weeks. That allows the grass to dry and blow away. He does opposite sides of the road every other week.

"Doing the same side of the road every other week works the material back on the road so the crown lays right and you don't have secondary ditches," Ageson says. He can grade and reclaim 95 miles of road and shoulder in six days if he's careful, five days if he's in a hurry.

He cautions, "This is a fascinating machine, but it has to be mounted properly. If it isn't, you can dig holes yourself and cause more problems."

The disc/gravel retriever tool can also be used for shoulders of paved roads. Pavement edge cracking is a problem when material slides from beneath the edge and into the ditch. By conditioning the shoulder and moving material back up to the edge of the pavement, pavement edge cracking is reduced.

In a Minnesota Department of Transportation test, the disc/gravel retriever saved over \$2,400 per mile compared with previous methods. Part of the savings is in recycled gravel retrieved from ditches and shoulders. From 50 to 100 yards of gravel can be reclaimed per mile.

The disc/gravel retriever also helps reduce the need to mow shoulders. In Sheridan County, Wyoming, a test was done on shoulders along 17 miles of road where the vegetation was stripped and the sod mulched. When the sections were examined in June 1995, vegetation growth was minimal.

Disc/gravel retrievers are already popular tools in over 20 Iowa counties.

For information about the Retriever, call Dave Skibsted at 800-663-3179, and for information about the All-American Disk, call 800-658-5491.

For more information about Robert Ageson's use of a disc/gravel retriever, call him at 712-478-4601. ■

Iowa's secondary road maintenance supervisors working together



ARE YOU RESPONSIBLE for any of the following?

- maintaining secondary roadways and rights-of-way
- managing roadway maintenance personnel and budgets
- procuring roadway maintenance equipment and materials
- managing roadway maintenance administrative and office functions

If so, the Iowa Secondary Roads Maintenance Supervisors Association (ISRMSA) is for you. Road superintendents, foremen, and other road personnel with supervisory and/or management functions benefit from membership in ISRMSA.

With some support from the Center for Transportation Research and Education and the Iowa Department of Transportation, ISRMSA was formed in 1995. The association provides an avenue

continued on page 4

LTAP Advisory Committee

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 committee meets at least annually. Representatives of rural and urban agencies and individuals concerned with the transfer of transportation technology in Iowa are welcome to attend advisory committee meetings.

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

Roger Anderberg
Local Systems
Iowa Department of Transportation
Telephone: 515-239-1291

Saleem Baig
Local Systems
Iowa Department of Transportation
Telephone: 515-239-1051

Charles L. Fisher
Superintendent of Public Works
City of Spencer
Telephone: 712-264-7220

Kevin Gilchrist
Senior Transportation Planner
Des Moines Metropolitan Planning Organization
Telephone: 515-237-1316

Becky Hiatt
Iowa Division, Federal Highway Administration
Telephone: 515-233-7321

Raymond Holland
City Engineer
City of Bettendorf
Telephone: 319-344-4055

Harold Jensen
Story County Engineer
Telephone: 515-382-6581

Brian Parker
Iowa Division, Federal Highway Administration
Telephone: 515-233-7315

Bob Sperry
Webster County Engineer
Telephone: 515-576-3281

Jim Thompson
Transportation Director
City of Des Moines
Telephone: 515-283-4973



Iowa Department of Transportation



Center for Transportation Research and Education

IOWA STATE UNIVERSITY

ISRMSA to sponsor fall conference

MEMBERS OF THE Iowa Secondary Roads Maintenance Supervisors Association are already busy planning this year's annual conference to be held September 24 and 25, 1996, in Ames, Iowa.

The ISRMSA's first organizational conference, in 1995, was a big success. Planners of the 1996 event—"The First of Many"—anticipate even greater participation, with many valuable learning opportunities for supervisors. A highlight of the conference will be a slide show by Al Jansen about his road-grading trip to Russia.

In addition to the business meeting, the type of topics that have been identified for conference sessions include

- equipment management
- new laws and regulations for class C roads
- the interface between Iowa DOT and county maintenance operations
- traffic signing for maintenance
- county safety programs
- IPERS update
- the maintenance vehicle of the future

Plan now to attend. If you have suggestions for the conference, contact Duane Smith, CTRE associate director for outreach, 515-294-8103. ■

ISRMSA . . . continued from page 3

for county roadway maintenance supervisors to share information and expertise and improve their operations. The association is also a vehicle for identifying training opportunities for maintenance supervisors (see the sidebar article on this page describing the upcoming fall 1996 conference).

Fifty counties were represented at the initial organizational meeting in November 1995, and more counties are getting involved.

Each county has one vote in electing officers and conducting the business of the association.

For more information, contact one of the following association officers:

	County	Office
Ron Dirks	Pocahontas	Chair
Marv Barber	Webster	Vice Chair
Ken Crossover	Hardin	District 1 Representative
Pete Day	Hamilton	District 1 Alternate
Bob Hoodjer	Butler	Dist. 2 Rep.
Mark Johnson	Winnebago	Dist. 2 Alt.
Denny Keairnes	Crawford	Dist. 3 Rep.
Tom French	Buena Vista	Dist. 3 Alt.
David Hightshoe	Ringgold	Dist. 4 Rep.
Mike Boehm	Pottawattamie	Dist. 4 Alt.
Clayton Smith	Lucas	Dist. 5 Rep.
Jerry Dickerson	Mahaska	Dist. 5 Alt.
Ray Scherrman	Dubuque	Dist. 6 Rep.
Vernon Fahrenkrog	Scott	Dist. 6 Alt.
Denny Osipowicz	Lee (Pres., Iowa County Engineers Assoc.)	
Saleem Baig	Story (Local Systems, Iowa DOT)	■

Satellite workshop will compare GIS software

Confused about which GIS software package is best for your transportation-related applications? This workshop will help you choose wisely. Tune in via satellite.

Session 1: Wednesday, July 10, 1996

Session 2: Wednesday, July 17, 1996

Both sessions will be broadcast at 10:30 a.m. – 2:30 p.m. Central Daylight Time.



GEOGRAPHIC INFORMATION SYSTEMS (GIS) allow trained personnel, using hardware and software, to collect, maintain, analyze, and effectively present spatially referenced data. These powerful decision-making tools are rapidly being tapped for transportation applications (GIS-T).

Dozens of GIS software packages are being marketed. The packages differ widely in cost, user friendliness, hardware and software requirements, capabilities, staffing and training requirements, geographic reference systems, and data accessibility and standards.

With all the choices, how does an agency choose the best GIS package(s) for its needs? This technical workshop can help you make that choice.

The workshop will showcase specific GIS programs that represent the vast majority of GIS-T applications in the industry. Both full-function and desktop GIS-T software packages will be explained and demonstrated. Workshop viewers will be able to make side-by-side comparisons and evaluate software characteristics and strengths for a variety of applications.

Software vendors represented at the workshop will include Caliper Corporation (TransCAD and Maptitude), Environmental Systems Research Institute, or ESRI (ArcInfo and ArcView), Graphic Data Systems (GDS), Intergraph Corporation (MGE and VistaMap), Strategic Mapping, Inc. (Atlas GIS), and MapInfo Corporation (MapInfo).

This workshop will be transmitted via satellite. During the sessions, viewers can ask questions by calling a toll-free number or by sending a FAX.

The workshop is sponsored by the Center for Transportation Research and Education. For more information about the workshop, contact Duane Smith, associate director for outreach, 515-294-8103. For registration information and forms and for information about accessing satellite downlink sites, contact Sharon Prochnow, workshop coordinator, 515-294-3781. ■

Iowa's safety management system: making our roads safer

By Josh Murphy, Editorial Assistant

CHECK OUT THESE STATISTICS from the Iowa Department of Transportation and the National Highway Traffic Safety Administration (NHTSA): Annual traffic fatalities in Iowa have increased every year since 1992. One-third of the health care costs associated with motor vehicle accidents are paid for by tax dollars. Fatality and other accident rates on rural roads are three to six times higher than rates on rural interstates.

Safe transportation affects everyone. Traffic accidents not only cause pain and suffering but also cost money.

To help make Iowa's roadways safer, various local, state, federal, and private transportation officials are developing a comprehensive statewide safety management system (SMS).

The SMS was not formed to duplicate existing safety efforts but rather to enhance them, to identify gaps in current safety programs, and build on existing channels of communication, coordination, and cooperation among local, state, federal, and private agencies.

The federal Intermodal Surface Transportation Efficiency Act (ISTEA) of 1991 required states to develop and implement statewide safety management systems by October 1996. However, the National Highway System Designation Act of 1995 rescinded some ISTEA requirements, including mandatory statewide safety management systems.

Robert B. Sperry, P.E., Webster County engineer and member of Iowa's Safety Management System Coordination Committee (SMSCC), says that even without a federal mandate, work on Iowa's SMS continues. Highway safety constantly needs to be improved, he says, and Iowa's SMS is an effective tool for doing just that.

Unlike bridge and pavement management systems which are driven by economics, safety management systems are driven primarily by the human tragedy of motor vehicle accidents. Safety is also a continually changing issue. To deal with these changes, two committee levels support and develop Iowa's SMS:

1. The Safety Management System Coordination Committee (SMSCC). The SMSCC consists of representatives from Iowa's safety interests: the Iowa Departments of Transportation, Public Safety,

Education, and Health; the Governor's Traffic Safety Bureau; cities; counties; universities; consultants; and private

enterprise. Acting as a standing committee, the SMSCC develops and oversees SMS implementation and aids in the formation of task force topics.

2. Task forces.

Under SMSCC guidance, multidisciplinary task forces exist for a limited time to address specific problems. Current task forces address the following: proactive maintenance practices, reflectorization of railroad cars, running signs and signals, uniformity of data collection and analysis, stricter enforcement for OWI/DUI

drivers, and access management. An additional task force that studied speed limits has already completed its report and has been disbanded (see the article on page 7).

The SMS work plan states that the SMS should reduce traffic accidents by establishing and maintaining processes to identify, implement, and evaluate all opportunities to improve the following:

1. Highway planning, design, construction, maintenance, and operation
2. Traffic and transportation law, law enforcement, and adjudication

Fatality and other accident rates on rural roads are three to six times higher than rates on rural interstates.



continued on page 6



Employees are the key to a successful local safety committee

By Ed Bigelow, Safety Circuit Rider

Effective local road and street departments have safety programs. Ideally, these programs have three elements: loss control, traffic safety, and employee safety. Division directors (such as county engineers or city public works directors) are required by the Occupational Safety and Health Administration (OSHA) to establish and administer employee safety programs.

IF YOU WANT your employee safety program to be really effective, establish a local safety committee composed of employees who perform different tasks within your division or agency.

The employee safety committee collects ideas from all employees on methods to improve workplace safety and makes recommendations based on these ideas to division heads.

Depending on the size of the division, the committee should consist of at least three employees. Additional employees can serve as committee advisors. The safety officer may serve as the committee chair.

(In agencies or divisions with no safety officer, the county engineer or city public works director can serve in that capacity.)

A safety committee might follow this process:

1. Employees submit requests, ideas, and recommendations regarding safety issues to any committee member.
2. The committee meets at least monthly with the safety officer to discuss the suggestions.
3. The committee makes recommendations to the division head based on the suggestions.

The safety committee should actively solicit suggestions from all employees. Also, the division head should respond to every recommendation submitted by the committee. If the division head does not agree with a suggestion, he or she cannot simply ignore it but must explain to the committee why a suggestion will not result in a policy change.

For more information on how to develop an effective safety program for employees, contact me at 515-294-8103. ■

Editor's note: Ed Bigelow will be recovering from knee surgery until July 8.

SMS . . . continued from page 5

3. Emergency response, trauma patient care, and the educational activities of the health care community related to highway safety
4. Other safety programs relating to vehicles and people
5. Information systems to accomplish the above-mentioned tasks, prioritize problems, and effectively utilize resources

Sperry says a short-term goal of the SMS is to get input from local officials and in turn encourage them to participate on the task forces. A long-term goal is to inform local officials of practices to help reduce accidents and, ultimately, reduce fatalities.

The primary method of increasing SMS participation is through its various task forces (see the sidebar article on page 7).

The SMSCC hopes to hold meetings in various locations to obtain name recognition and encourage local participation on the task forces. The next

meeting will be held in Des Moines on June 20. The meeting will be broadcast over the Iowa Communications Network (ICN) to the Scott County Multi-disciplinary Traffic Study Task Force in Bettendorf. Subsequent meetings will be held on July 18 and August 15, with locations to be announced.

Sperry believes the SMS will initially distribute information to local officials in a written format. For example, he says the access management task force's report will probably become a design guideline distributed as a pamphlet. Later, as more local officials participate on task forces, they will be able to personally communicate safety practices to their constituencies.

To learn more about Iowa's SMS, contact Fred Walker, Iowa DOT director of transportation safety and SMS chair, 515-239-1184, or Joyce Emery, Iowa DOT safety program administrator, 515-239-1016. To learn more about task force participation, contact Robert Sperry, 515-576-3281. ■



Quick action by task force affects speed limit legislation

By Josh Murphy, Editorial Assistant

To study the impact of raising Iowa's speed limits, the Iowa Safety Management System Coordinating Committee (SMSCC) formed a task force. The group compiled a report that may have affected the Iowa legislature's decision to retain current speed limits on interstates but raise the speed limit to 65 miles per hour on certain divided, multilane highways.



HERE ARE MORE STATISTICS from the National Highway Traffic Safety Administration (NHTSA) related to motor vehicle travel: Speed is a factor in 30 percent of all fatal accidents and kills an average of 1,000 Americans every month. For every 10 mph over 50 mph you travel, you double your chances of death or serious injury. Increased speed increases pollutants. Carbon monoxide emissions increase by 100 percent if you increase your speed from 55 mph to 65 mph.

In November 1995, President Clinton signed the National Highway System Designation Act of 1995. One part of the act repealed the National Maximum Speed Limit (NMSL) and returned the authority to set speed limits to the states. In October 1995, the SMSCC formed a speed limit task force to assemble information detailing the impact of increased speed limits.

The speed limit task force consisted of 12 members representing local, federal, and state transportation interests. According to Dwight Stevens, P.E., speed limit task force chair and state traffic engineer for the Iowa Department of Transportation, the purpose of the task force was not to make specific recommendations to the legislature but rather to "assemble a comprehensive set of facts so people who make the decisions (concerning speed limits) would have necessary data rather than subjective information."

Task force members had never prepared a report for presentation to the legislature. In addition, members had to work under considerable time constraints. Stevens said the task force wanted to finish the report by January 1, 1996, because three bills raising speed limits were already pending in the legislature. The report was completed on time, and on January 31 Ian MacGillivray, director of the Iowa DOT Engineering Division, presented it to

the transportation committees of the legislature.

To compile necessary information, task force members examined travel, speed-trend data, and accident statistics for various classes of highways. The Iowa DOT provided speed and accident statistics used in the report. Individual task force members provided other information based on their areas of expertise.

Royce Fichtner, P.E., task force member and Marshall County engineer, furnished estimates related to the cost of changing, adding, and upgrading speed limit signs for the counties.

Fichtner's report said options included replacing entire signs or placing overlay panels with the new speed limit onto existing signs.

On April 30, the Iowa General Assembly sent a bill to the governor that amends Section 321.285, subsection 6 of the 1995 Iowa Code. The bill gives the Iowa DOT the option to establish a 65-mile-per-hour speed limit on certain divided, multilane highways.

The bill affects approximately 128 miles of road. On May 16, 1996, the governor signed the bill. The Iowa DOT's Engineering Division will now determine which stretches of roadway will be raised to 65 and which will remain at 55.

Members of the speed limit task force were **Scott Falb**, Research and Training Planner, Iowa DOT, Motor Vehicle Division
Royce Fichtner, P.E., Marshall County Engineer
Paul Fitzgerald, Story County Sheriff
Roger Hayes, State EMS Coordinator, Iowa Department of Public Health
Lt. Gary Hoskins, Education Coordinator, Iowa State Patrol
Mary Jensen, Policy Analyst, Iowa DOT, Director's Staff Division
Jack Latterell, P.E., Environmental and Safety Engineer, Federal Highway Administration
Dr. Loren Muench, Assistant Professor, Retired, Iowa State University
Lt. Leonard Murray, Traffic Unit, Des Moines Police Department
John Nervig, Senior Accident Analyst, Iowa DOT, Engineering Division
Dwight Stevens, P.E., State Traffic Engineer, Iowa DOT, Engineering Division
Bob Thompson, Program Evaluator, Governor's Traffic Safety Bureau ■

Make Iowa a safer place to travel— Serve on a safety task force

THE COORDINATING committee for Iowa's safety management system is forming four new task forces to address the following issues:

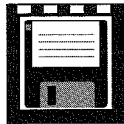
- animals in the road
- curve and grade-related issues
- rural primary/secondary road intersections
- municipal primary/city street intersections

Volunteers are needed from a variety of disciplines—law enforcement, emergency medical response, roadway construction and maintenance, drivers education, traffic engineering, etc.—to make these task forces most successful.

Traveling to task force meetings will be held to a minimum. The groups will meet in various locations around the state, and some meetings will be held via the Iowa Communications Network (ICN).

Your participation is needed on one of these task forces! For more information, contact Fred Walker, director of transportation safety at the Iowa Department of Transportation, 515-239-1184. ■

micro
technology



Marshall County tests construction records software in the field

By Josh Murphy, Editorial Assistant

The Marshall County engineer's office is using laptop computers to record construction progress information as part of a field test of the Iowa Department of Transportation's new construction recordkeeping software.

FieldBook is a computer program used to record construction progress information and upload this information to the Iowa DOT's Bid Analysis Management System/Construction Administration System (BAMS/CAS). CAS is a mainframe database used for construction records. When running on a laptop computer, FieldBook can be used in the field

by construction personnel to record daily diaries, view the previous day's diaries, record item progress, record stockpiles and material allowances, record contract modifications, and close out pay periods.

FieldBook increases recordkeeping productivity. It follows standard

construction recordkeeping procedures, eliminates many paper records and duplicate data entry, and performs all data processing up to payment voucher generation.

To date, the Iowa DOT has trained 250 field and

office personnel to use FieldBook. Officials hope to implement it in all 20 Iowa DOT residencies.

To more closely align county and state construction documentation, the Iowa DOT is testing FieldBook at the local level. Marshall County

was chosen as a test site due to its proximity to the Iowa DOT central office in Ames.

As a test site, Marshall County's cost to use FieldBook is minimal because the Iowa DOT provided the laptop computers and training for field personnel.

Wayne Chizek, assistant to the engineer of Marshall County, says five field personnel are trained to use FieldBook. These personnel use FieldBook for federally funded projects.

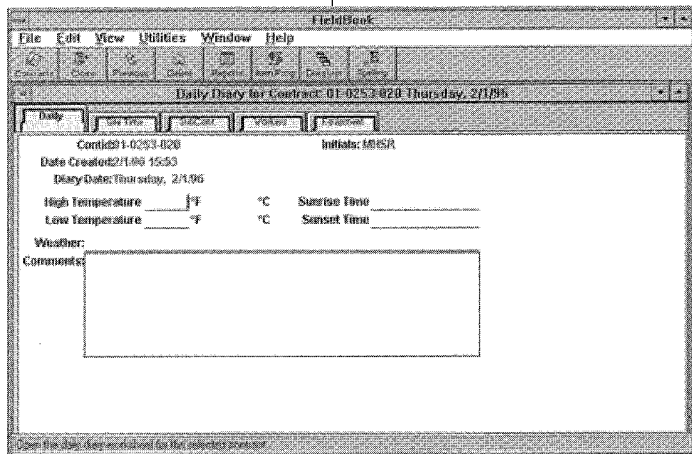
To check FieldBook's performance, Marshall County continues to keep manual records. So far, FieldBook has detected a calculation error field personnel were making while recording asphalt quantities manually. Although this detection has saved Marshall County money, Chizek says FieldBook will save more time and money when his office does not have to keep the manual records and when the Iowa DOT develops a system to upload information from his office to the mainframe CAS. Currently, field personnel must upload the information from an Iowa DOT resident construction engineer's office.

FieldBook is being upgraded to perform more tasks. In the future, Chizek says, FieldBook may calculate and maintain gradation and materials inspection figures. This will save state and local construction agencies additional time and money.

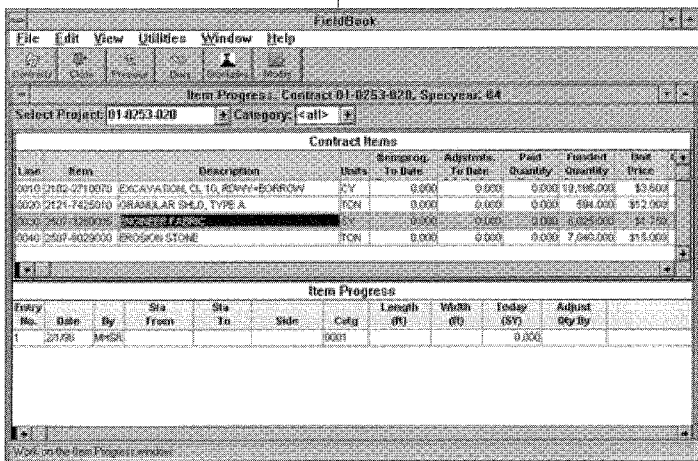
Although FieldBook can save agencies time and money, one current disadvantage of its field use is that the laptop computers cannot be exposed to extreme temperatures. Through the FieldBook software developer, the Iowa DOT is working on personal digital assistant (PDA) technology for the 1997 release of FieldBook. PDA is a hand-held data collector that is more lightweight and less expensive than laptops.

Donna Buchwald, transportation engineer at the Iowa DOT, says eventually all counties with projects let through the Iowa DOT will need the equipment to be compatible with the CAS system. FieldBook does not require field personnel to use the mainframe CAS system, although personnel must use a 486 or higher computer and the Windows operating system.

For more information on FieldBook, contact Wayne Chizek, 515-754-6343, or Donna Buchwald, 515-239-1848. ■



FieldBook's Daily Diary and Item Progress windows have easy-to-use menus.



Seal coat season

Pavement maintenance series

By Michele Regenold, Editorial Assistant



SEAL COATS ARE A SIGN of high summer. One truck sprays an emulsion down one side of a street or road, and it's followed shortly by a truck spreading aggregate on top of it.

The purpose of a bituminous seal coat (BSC) is to protect a basically sound asphalt surface from moisture. A BSC rejuvenates the asphalt mix with a thin application of an emulsion and aggregate. A BSC also improves the roadway's skid resistance. As a preventive maintenance procedure, chip sealing is cost effective and looks good to the driving public.

A BSC however is not a cure-all. If you're using a BSC to cover severely distressed pavement, hoping it will hold the road for a while longer until your budget will allow for resurfacing, you're wasting your money.

Quality control

If applying a BSC is still a "seat of your pants" kind of project, consider using the Strategic Highway Research Program's (SHRP) new method for rating a chip seal application, including the conditions of the job as well as the results. The rating procedure is tied to SHRP's specification requirements for the treatment in a broad geographic region.

A chip seal rating tree (see figure at right) provides five main branches for evaluating the quality of a job, including the environment, surface conditions, equipment, construction, and curing and traffic control. Each branch has a numerical value based on its relative importance to the overall project. The whole rating process involves answering simple questions and finding values for each part of the procedure. For example, factors that are evaluated along the surface conditions branch include the cleanliness of the road's surface, the level of moisture on the surface, and the pavement temperature.

Get bang for your buck

Applying a BSC to an improperly prepared roadway surface can also lead to wasted money. Evaluate the condition of the road you intend to chip seal. If it's showing signs of severe distress like alligator cracking, a BSC won't help. That would be like putting a Band-Aid on a broken arm.

Once you've determined a BSC is appropriate, clean the surface of all foreign material, including dust,

with a power broom sweeper. Make any minor repairs at this stage, too. Taking time to prepare the surface will prevent tires from peeling off strips of the BSC later because the bitumen hadn't penetrated the layers of dust and dirt on the surface. This step is akin to scraping old chipped paint off a house before applying new paint. Like fresh paint, emulsion and aggregate adhere best to a clean, dry surface.

Use quality materials

Your roadway surface is clean and ready for the emulsion and aggregate. But wait. Is your aggregate clean, too? Dirty aggregate can be easily stripped from the road because the dust coating prevents a good bond from forming between the emulsion and the aggregate. You can order washed aggregate from your contractor.

Now that your aggregate is clean, how does it look? For best results, it should be fairly uniform in size so when it's rolled, it all gets seated. Roughly cube-shaped aggregate seats the best. Unless otherwise specified, use sand for shoulders and the 1/2-inch size for other work.

As for the emulsion, bituminous material should be a cut back asphalt or an emulsified asphalt.

Application reminders

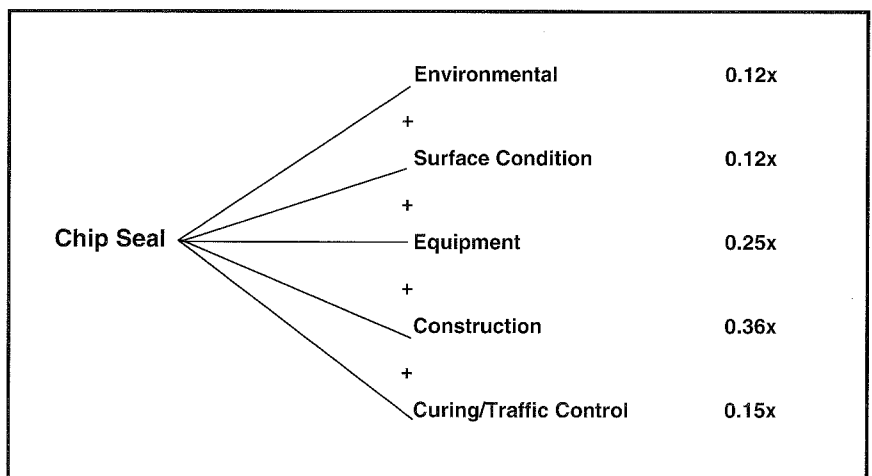
Before you start spraying the emulsion, double check your spray bar to make sure it will apply the

continued on page 10

BEGINNING THIS MONTH with the article on this page, *Technology News* will publish a series of articles on pavement maintenance techniques.

We'll focus on new recommendations from the Strategic Highway Research Program (SHRP), preventive maintenance strategies, and common sense reminders. The series will include the following topics: seal coats, cracking and seating for PCC, sealing cracks in asphalt pavements, alternative paving methods, and pothole repairs.

If you have suggestions for additional topics you would like to see covered or have some tips for any of the topics mentioned, please send them to Michele Regenold at CTRE or call her on Tuesdays or Thursdays, 515-296-0835.



The rating tree developed by SHRP for evaluating the quality of a chip seal requires detailed specifications explained in the SHRP publication "Rating Tree Procedure for Chip Seals and Crack Sealing."

tip from
the field



Mowing tip: Why didn't I think of that?

IF YOU'VE MOWED A LAWN, you know about the hassles eave spouts cause—you either have to mow

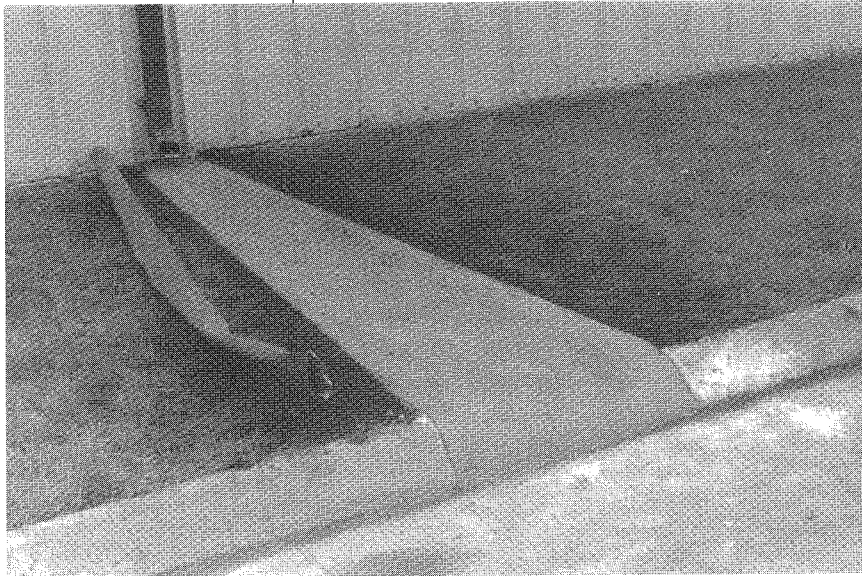
around them or remove them so you can mow under them. Some mowers for the City of Clive apparently got tired of this process and chose to mow right over the eave spouts at some public buildings, denting the spouts up royally in the process.

So the City of Clive has replaced eave spouts at public works buildings with concrete drainage slabs. Workers used 2x4 forms and poured the cement slabs with a belly or dip in the middle for drainage. Most important: Because the slabs are flush with the ground, workers can mow right over them.

Workers now mow more quickly and easily. A side benefit: The buried slabs increase drainage to the areas where they lie.

For more information, contact Willard Wray, director of public works for the City of Clive, 515-223-6230. ■

Dented and damaged eave spouts have given way to buried drainage slabs at public works buildings in Clive.



SEAL COATS . . . continued from page 9

emulsion uniformly, following the manufacturer's recommendations. When you get fat and thin streaks in your emulsion, the aggregate won't stick well to the thin spots, and bleeding occurs in the fat streaks.

Timing is crucial when spreading the emulsion and aggregate. Once you've started spreading your emulsion, the aggregate truck should spread the gravel within 30 seconds of the emulsion. If the aggregate is put on too late, it won't set well and will be stripped from the road by traffic.

Driving the roller over the aggregate to seat it in the emulsion must be done within 30 minutes of the emulsion being spread. A steel roller is less effective than a pneumatic tired roller, because it hits the high spots and misses the low spots. A pneumatic tired roller is naturally more flexible and seats the aggregate better.

Sometimes if a roller is unavailable, letting traffic do the job of seating aggregate in the emulsion may be better than nothing. If traffic is allowed on the BSC

less than two hours after its application, speed should not exceed 25 mph.

Finally, after all your hard work in the hot sun and miserable heat, visions of a cold drink are dancing in your head. You just want to do a light brooming to remove any loose gravel. But if you're in too much of a hurry, brooming can dislodge properly seated aggregate. Instead, wait until the next morning. It'll be cooler and the emulsion will have set.

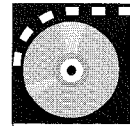
Have a good seal season.

For the SHRP specifications and detailed rating tree procedure, contact Stan Ring, CTRE librarian, at 515-294-9481 for a copy of "Rating Tree Procedure for Chip Seals and Crack Sealing." Four excellent videos are available on loan from the CTRE library: "Pavement Maintenance Rehabilitation—Seal Coats" (Asphalt Institute, order #V-60); "Bituminous Seal Coats" (Washington State DOT, order #V-100); "Sealcoating—A matter of skill" (Minnesota LRRB, order #V-448); and "Chip Seal Applications" (USDOT-FHWA, order #V-448). ■

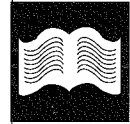
Photo courtesy of Hibbs
Highway Engineering Services.



FOLLOWING IS A SAMPLING of new or popular materials available from the CTRE library. To obtain materials or a catalog of library materials, contact Stan Ring, library coordinator, Monday, Wednesday, and Friday mornings at 515-294-9481. Or use this page as an order form. Check the box next to the materials you want and return this form to the Center for Transportation Research and Education, ISU Research Park, 2625 N. Loop Drive, Suite 2100, Ames, Iowa 50010-8615. (Please limit your request to four items.)



library materials

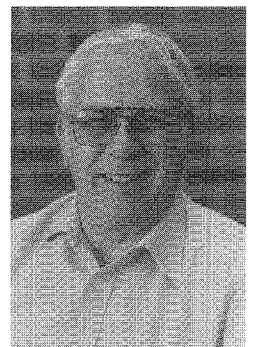


Publications

- | | | |
|--|--|---|
| <p>Guidelines for the Use of RAP in Routine Maintenance Operations (Texas Transportation Institute, 1994) 43 pages.</p> | <p>Provides guidelines for using recycled asphalt pavement (RAP) in routine maintenance operations with minimum lab testing. Loan copy.</p> | <p>Request # P1138 <input type="checkbox"/></p> |
| <p>Best Management Practices for Erosion and Sediment Control (USDOT-FHWA-FLP-94-005, 1994) 187 pages.</p> | <p>Provides guidance for preventing erosion and controlling sediment on construction projects. Loan copy.</p> | <p>Request # P1157 <input type="checkbox"/></p> |
| <p>Evolution of Recycled Rubber in Asphalt Concrete (Iowa DOT-HRB-HR 330, 1996) 37 pages.</p> | <p>Evaluates the performance and use of asphalt rubber binders and recycled rubber granules in asphalt pavement in Muscatine County, Iowa. Loan copy.</p> | <p>Request # P1160 <input type="checkbox"/></p> |
| <p>Evolution of Pavement Base and Subgrade Material Properties and Test Procedures (USDOT-FHWA-TX 96/1335-2, 1995) 126 pages.</p> | <p>Describes simple and less expensive procedure for characterizing the resilient properties, strength parameters, cohesion, and angle of internal friction of base and subgrade materials. Loan copy.</p> | <p>Request # P1180 <input type="checkbox"/></p> |

Videotapes

- | | | |
|---|--|--|
| <p>Problems with Gravel Roads (USDOT-FHWA) 55:00 min.</p> | <p>Has three parts: environment and materials, gravel road problems and causes, and maintenance equipment techniques. Loan copy.</p> | <p>Request # V443 <input type="checkbox"/></p> |
| <p>Sign Maintenance and Installation (USDOT-FHWA) 27:00 min.</p> | <p>States the need for traffic sign surveillance and inventory system, complaint forums, and frequent inspections and the value of a computerized database. Also explains how to use the ball-bank indicator. Loan copy.</p> | <p>Request # V444 <input type="checkbox"/></p> |
| <p>Rubblizing and SHRP Technology (Asphalt Paving Association of Iowa) 8:00 min.</p> | <p>Made in Black Hawk County, Iowa, describes how existing PCC pavement was rubblized, compacted, and used as a base for an asphalt concrete overlay. SHRP technology and SUPERPAVE techniques were used. Loan copy.</p> | <p>Request # V450 <input type="checkbox"/></p> |

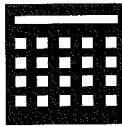


Stan Ring, library coordinator

Name _____
 Address _____
 City/State/Zip _____
 Phone _____

Please send a complete catalog of all publications and audiovisual materials available from your office.

**conference
calendar**



June 1996

25 Motor Grader Operator Training Spencer Sharon Prochnow, 515-294-8103

July 1996

9 Motor Grader Operator Training Mason City Sharon Prochnow, 515-294-8103
 10 Geographic Information Systems for Transportation Satellite "downlink" Sharon Prochnow, 515-294-8103
 (GIS-T): Comparing Software Session I sites across the U.S.
 10-11 Iowa County Engineers Association (ICEA) Midyear Conference Ames Jean Jesse, 515-239-1528
 17 Geographic Information Systems for Transportation Satellite "downlink" Sharon Prochnow, 515-294-8103
 (GIS-T): Comparing Software Session II sites across the U.S.
 18 SHRP Showcase (Pavements) Ames Duane Smith, 515-294-8103
 23 Motor Grader Operator Training Cedar Rapids Sharon Prochnow, 515-294-8103
 31 Rural ITS Conference Ames Duane Smith, 515-294-8103

August 1996

4-7 National LTAP Conference New Orleans, Louisiana Duane Smith, 515-294-8103
 6 Motor Grader Operator Training Cedar Rapids Sharon Prochnow, 515-294-8103
 6-7 Multistate RWIS Council Bluffs Duane Smith, 515-294-8103
 8-9 SHRP Showcase (Pavements) Council Bluffs Duane Smith, 515-294-8103
 8-10 Pedestrian and Bicycle Conference Waterloo Duane Smith, 515-294-8103
 24-29 APWA National Conference Washington, D.C. Duane Smith, 515-294-8103

September 1996

10-11 APWA Fall Conference Newton Duane Smith, 515-294-8103
 17 Maintaining Pavements Eastern Iowa Duane Smith, 515-294-8103
 19-20 ITCSA Fall Conference Ankeny Don Wall, 515-294-3811
 24 Improving Supervisory Skills Ames Sharon Prochnow, 515-294-8103
 24-25 Iowa Secondary Roads Maintenance Supervisors Association Annual Conference Ames Duane Smith, 515-294-8103
 25-26 IMSA Ames Ed Bigelow, 515-294-8103

October 1996

2-3 APWA Snow Plow Roadeo Des Moines Duane Smith, 515-294-8103
 8 Maintaining Pavements Central Iowa Duane Smith, 515-294-8103

P486-0524

TECHNOLOGY NEWS

Center for Transportation
 Research and Education
 ISU Research Park
 2625 N. Loop Drive, Suite 2100
 Ames, IA 50010-8615

DO NOT FORWARD
 ADDRESS CORRECTION REQUESTED
 RETURN POSTAGE GUARANTEED