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Des Moines bus schedules on line

<http://metro.ctre.iastate.edu/>



TRAVELERS USING the Des Moines Metro bus service can now access bus schedules and route maps via a new World-Wide Web site. The web site was created by the Center for Transportation Research and Education (CTRE) in conjunction with the Des Moines Metropolitan Transit Authority (MTA).

This project is part of a national initiative to develop intelligent transportation systems (ITS), technologies that, among many other things, can help motorists navigate around detours, delays, and traffic congestion. Members of the Des Moines MTA serve on a steering committee of local officials guiding the Des Moines ITS research project.

If computer access to bus service information becomes popular, the site may be expanded to include other travel information, like detours and

road construction in the Des Moines metropolitan area.

CTRE researchers are also developing a plan to automate other transportation services and systems in Des Moines. In the future, motorists may be able to find up-to-the-minute news about metro-area accidents and traffic congestion on the Internet or at public kiosks.






"Dollars for building new roads are getting harder to find," said Marilyn Kuntemeyer, senior project manager at CTRE. "We have to focus our resources on technologies that make traveling on our current roads more efficient and safe. The Metro web site is a small, but significant, first step in that process for Des Moines."

The Des Moines project is funded by the Federal Highway Administration, the Iowa Department of Transportation, and the Des Moines Area Metropolitan Planning Organization. ■

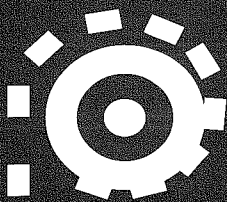
METRO

Des Moines Metropolitan Area
ITS Early Deployment Study

You are visitor number 00276.
Select one of the following buttons:

	Information about <u>bus</u> routes throughout the Metro Area...
	Information about <u>paratransit</u> opportunities throughout the Metro Area...
	Information about <u>vanpool</u> and <u>carpool</u> opportunities throughout the Metro Area...
	Introduction to the <u>Des Moines Metro Transit Authority</u>
	Information about <u>employer</u> programs throughout the Metro Area

The Metro web page provides Des Moines bus schedules and more.



TECHNOLOGY NEWS

roads / bridges / transit

Transportation technology transfer for Iowa's local governments

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.

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TECHNOLOGY NEWS nameplate and graphic elements were designed by Jennifer J. Reed, Patricia Santiago, and Gail Bayeta.



Iowa access management study and awareness program: case study nomination

David Plazak, Transportation Policy Analyst



CTRE IS PARTNERING with the Iowa Department of Transportation's Access Management Task Force to study the benefits of applying access management techniques to highways, roads, and streets in Iowa.

Part of the research will involve detailed analysis of selected case studies throughout Iowa. We will be looking at case studies in terms of traffic operations, safety, and impacts of access management on businesses.

We'd like your help identifying potential case studies, both urban and rural, that could be used in the research. If you'd like to nominate a case study, please fill out the following short description and return it to David Plazak at the following address.

If you have questions about the project, contact Plazak at (voice) 515-294-8103 or (e-mail) plazak@ctre.iastate.edu.

Thanks for your help. ■

Please return completed form to:

David Plazak

Center for Transportation
Research and Education

Iowa State University Research Park

2625 N. Loop Drive, Suite 2100

Ames, IA 50010-8615

Fax: 515-294-0467

-
1. General case study location (city or county): _____
 2. Route number or name: _____
 3. Suggested starting and end points: _____
 4. Why is access management an issue for this location? (e.g., traffic safety, congestion, operations, or business impacts; provide a one- or two-sentence answer) : _____
 5. Has access control been changed at this location in the past five years? If yes, how? _____
 6. Contact name and address (e.g., a local engineer or planner who can be contacted for further information) about this location: _____
 7. Contact telephone number (include area code): _____

New evaluation procedure for scour

Michele Regenold, Editorial Assistant



A NEW INTERMEDIATE EVALUATION procedure for scour-susceptible bridges is in the works.

The Iowa Department of Transportation (DOT) and the Federal Highway Administration (FHWA), which jointly oversee inspections of bridges in the National Bridge Inventory (NBI), are developing an intermediate evaluation procedure for approximately 4,000 bridges. These bridges have been categorized as either "scour susceptible" or "screened" and were reported in categories 2(B) or 2A(2) on the Bridge Scour Evaluation table (Attachment B), which was completed by Iowa cities and counties in 1996.

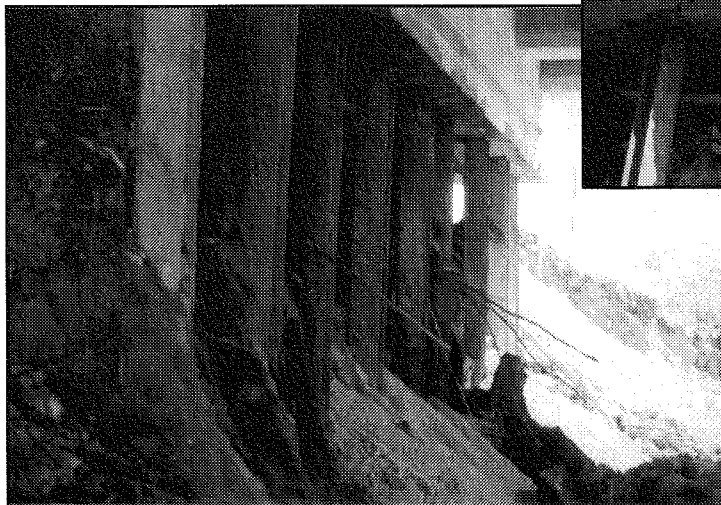
The new intermediate evaluation procedure will result in fewer bridges needing to undergo the

high-level, more intensive analysis explained in the FHWA manual *Hydraulic Engineering Circular No. 18, Evaluating Scour at Bridges*. In the meantime, scour-susceptible bridges will be closely monitored to keep the traveling public safe.

The potential impact of scour on a bridge's stability is significant. Bridge scour is soil erosion caused by flowing water around piers and abutments supporting a bridge. Floods are the most common cause of bridge failure. But the most common reason floods can be so damaging is streambed scour.

For more information about the new intermediate evaluation procedure, contact David Heer, Bridge Maintenance and Inspection, Iowa DOT, 515-239-1435. ■

Photos show scour at the primary bridge over Weldon River in Crawford County.



Photos courtesy of the Iowa DOT.

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.

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 Iowa Department
of Transportation



Center for Transportation
Research and Education

Winter a good time for video training in the shop

WINTER IS A GOOD TIME to review and modify safety procedures in your department. The LTAP library at CTRE has several new safety videos that can help improve your department's safety program. Here's a short list of some new videos on digging, welding, operating snowplows, and preventing back injury. For a more complete list or to borrow a video, contact Stan Ring, library coordinator, Monday, Wednesday, and Friday mornings at 515-294-9481.



DIGGING:

Digging Dangers (V 422)

Identifies the dangers of digging before locating all underground utilities, emphasizes the "one-call" location system, and summarizes legal responsibilities.

Digging Dangers 2 (V 423)

Describes underground digging problems; gives example court rulings, uniform color coding system, nondestructive location methods, and effects of damage to underground communication lines.

Digging Dangers 3 (V 424)

Describes the ramifications of hitting a gas line and the importance of the "one-call" location system. Especially useful in explaining the use of a safety program in trench excavation.

Digging Dangers 4 (V 425)

Reviews accidents that frequently occur in the U.S. and warns of the consequences of not using the "one-call" location system.

Digging Dangers 5 (V 426)

Identifies safety zones near utilities and several location methods.

Digging Dangers 6 (V 427)

Identifies many above-ground disasters that occur when excavators hit an underground utility line. Emphasizes the use of the "one-call" location system.

WELDING:

Maintenance Welding—General Welding Safety and Tank Repair (V 439)

Covers the dangerous aspects of welding and provides safety procedures and tips with examples.

Maintenance Welding—Arc Welding (V 440)

Examines the characteristics of arc welding, equipment required, types of electrodes, and safety precautions.

Maintenance Welding—Gas Welding and Metal Identification (V 441)

Emphasizes safety aspects of using equipment and operations. Discusses how to identify different types of metals.

SNOWPLOWS:

Snowplow Safety (V 463)

Intended for new plow operators or as a refresher for experienced operators. Addresses equipment inspection, positioning of the truck, scanning, mirror use, and defensive driving techniques.

BACK CARE:

Worker's Enemy Number One (V 471)

Discusses problems in lifting. Explains how back problems occur due to the way objects are lifted, pushed, or pulled, and discusses methods to redesign storage space.

Back to Basics (V 472)

Describes the back structure and how to exercise and strengthen the back and how to plan and lift, push, and pull to reduce strain on the back.

Back Care and Safety (V 473)

Provides instructions on how to prevent back injuries, how the back works, dangers encountered in the workplace, proper lifting techniques, and basic back exercises. ■

Enjoyed this year's Semisesquicentennial Transportation Conference? Just wait until 1998!

MORE THAN 300 STATE and regional transportation researchers and practitioners gathered in Ames last May to honor the Transportation Research Board's 75th anniversary with a local research conference. CTRE and the Iowa Department of Transportation sponsored the event.

Follow-up evaluations of the conference were overwhelmingly positive, and the majority of respondents indicated a preference to repeat the event every other year. Therefore, plans are already in the works for a spring 1998 conference.

A call for papers will go out in the fall of 1997, and we look forward to hearing from many of Iowa's local transportation agencies. ■



Robert Skinner, Jr., executive director of the TRB (left), and Robert Gallamore, director of strategic planning for the Union Pacific Railroad, were among those who attended the May 1996 conference.

Working with elected officials

Michele Regenold, Editorial Assistant

This is the second article in a series on effective public relations.



MAINTAINING A POSITIVE, professional relationship with elected officials requires good communication. That's a given. Attending regular board or council meetings is the typical way transportation officials communicate with their elected officials.

Council Bluffs Public Works Director Mike Wallner has another idea. Informal study sessions are the key, he says. Council members get answers to their questions before they have to vote on issues during their regular meetings. Because of the success of the study sessions, Wallner says, "I have not had to attend a council meeting this year."

Honesty is also important, Wallner says. The city council or board of supervisors needs to trust the advice of its transportation professionals. County engineers and public works directors also need to trust their elected officials to do what's needed and necessary in the long run.

CTRE's associate director for outreach, Duane Smith, former assistant traffic engineer in Colorado

Springs, Colorado, says to establish trust you need a common "level of understanding" with elected officials. Smith says the Colorado Springs public works staff would invite newly elected council members to visit their facilities. They would discuss the public works budget and equipment, tour the facilities, and meet the managers. When public works issues came before the city council, members were already familiar with the people, the money, and the work involved.

Politics

The stereotypical politician is a short-term thinker who only cares about getting re-elected. This is a rare breed in Iowa. Lee County Engineer Dennis Osipowicz says, "For the most part, the boards are excellent."

Osipowicz's three-person board responds well to long-range planning. "They keep projects in sequence" according to the county's five-year program. In fact, the board uses the program as a way of "not promising things" it can't provide to constituents.

Making promises prematurely is often how elected officials, despite their good intentions, create problems for their county engineers or public works directors.

The stereotypical politician is a short-term thinker who only cares about getting re-elected. This is a rare breed in Iowa.

... continued on page 6

Tough decisions

Iowa State University researcher Kathleen Waggoner will soon conclude her research on decision making by county engineers and boards of supervisors. The main objective of the study is to prepare a reference manual for county engineers bringing controversial problems to their boards. The manual will include a list of common road and bridge problems Iowa counties face and the ways these problems have been solved.

Watch for the manual, to be distributed to county engineers throughout Iowa as soon as it's finished.

It helps to cultivate the attitude that "that's what you hired me for—I'm the professional."

ELECTED OFFICIALS . . . continued from page 5

When elected officials make promises, sometimes public works directors can't avoid "playing the political game a little bit," Wallner says, particularly in a ward system of city government like the one he experienced in Fort Dodge. This is different from the system in Council Bluffs where all members serve at-large.

When council members represent specific sections of a city, they feel more pressure to do what constituents want. The council members then pressure the public works department to correct the problem for the constituents, even if doing so doesn't fit into the city's maintenance plan for that year.

If the project can be funded with the annual maintenance budget, Wallner says, then "just do it." For projects requiring capital expenditures, like laying five new blocks of pavement, then Wallner suggests working with the council member to find ways to secure funding and to garner support for the project from other council members.

Avoiding micromanagers

Osipowicz says he inherited a board whose philosophy is that each department head runs his or her department without any day-to-day involvement by the board. This hands-off approach has become a sort of tradition and is passed on by experienced board members to new members. Osipowicz credits the board itself for developing this easygoing style.

To prevent micromanaging by a board, Osipowicz says it helps to cultivate the attitude that "that's what you hired me for—I'm the professional." But insisting too forcefully can also endanger your job. To keep a board or city council from micromanaging requires tact.

Educating elected officials

Occasionally elected officials may require "more coaching" about the need for a project, Wallner says. That was the case with an expensive, major renovation of a waste water plant. The city council didn't immediately understand why the project was necessary or so costly. For the majority of projects, Wallner says, the Council Bluffs City Council understands the need and timing for a project.

Osipowicz uses a lot of "supportive data to answer questions." When the county had the funds to buy a sign truck, he learned the company that makes them had a used one for sale with 8,000 miles on it. He did an economic analysis comparing the costs and

benefits of buying a new sign truck versus a used one. The county bought the used one because it was the best buy.

Osipowicz points out that his board is "willing to spend money" if the project is worthwhile. His staff likes to try new ideas. The board thought a heater scarification system for asphalt sounded like a good idea. It saved \$10,000 to 12,000 per mile on a 10-mile paving project, a significant savings for Lee County.

Political decisions

Of course there's no guarantee the board or council will follow the engineer's advice. Smith recalls an example in Colorado Springs. A street with the highest accident rate in the city needed a left-turn lane. Accident studies and engineering design studies clearly showed the benefits of a left-turn lane. But the city council didn't like the project because a handful of homeowners would have lost on-street parking.

Smith says the left-turn lane "made all kinds of engineering sense but not political sense." The project didn't go forward. When a board or council wants to do something the engineer believes violates safety standards or ethics, Smith suggests keeping an active file of all correspondence on the issue. This does two things: It keeps decision makers fully informed, and it lets engineers provide supporting data later on if needed. Beyond that, Smith says, you just have to move on.

When Lee County needed to buy a new crawler-loader, Osipowicz put together a checklist rating various features like safety and hydraulics. He recommended a Caterpillar brand because he and his personnel felt it was the best overall. The board decided to purchase a John Deere brand instead because it was American-made.

It "became a political decision," Osipowicz says, but overall he says he's "been extremely fortunate" to have the board he does. "We're there to serve the public," Osipowicz says of himself, his staff, and the board. Keeping that in mind may make life easier and more productive for everyone. ■

FHWA reports results of anti-icing study

Josh Murphy, Editorial Assistant



THREE YEARS AGO, 15 states set out on a mission—to test anti-icing strategies and the conditions under which anti-icing technology is most effective. The states tested the strategies as part of the Federal Highway Administration's (FHWA) two-year Test and Evaluation Project Number 28 (TE-28).

TE-28 was a follow-up to the Strategic Highway Research Program (SHRP) Project H-208 on anti-icing practices. The states' tests concluded in the winter 1994-95 season. In August 1995 the FHWA released a report summarizing the findings of the 15 states.

Some of the topics reported by the states were types of chemicals used, equipment used to spread chemicals, amount of chemical used, and conclusions of the tests. (This information is summarized in the table below).

Salt and sand are materials frequently used in traditional deicing strategies. However, these materials cause several problems: 1. Salt is corrosive and can damage the pavement and the automobile traveling on the pavement. 2. Salt can be environmentally harmful. During winter seasons, large volumes of salt are shoveled or washed into roadsides and storm drains.

To reduce the amount of salt and sand applied to the roadway, Colorado used liquid magnesium chloride as an anti-icing agent.

Salt and sand applied by deicing procedures were damaging thousands of trees and shrubs planted along the roadway. Officials reported a 20-25 percent reduction in sand usage and increased skid resistance on the road surface as a result of anti-icing.

Five anti-icing agents were available to states for use in TE-28: sodium chloride (NaCl), magnesium chloride (MgCl₂), calcium chloride (CaCl₂), calcium magnesium acetate (CMA), and potassium acetate (KAc). Officials in Iowa used salt brine as an anti-icing agent. Charles Pickett, a highway maintenance supervisor for the Iowa Department of

Transportation who headed Iowa's participation in TE-28, says that salt brine was a highly cost-effective anti-icing chemical.

Pickett says he can make one gallon of salt brine for about four cents, compared to a cost of 65 cents for a gallon of CaCl₂. CMA costs about \$700 per ton, while one ton of salt costs \$27.50. A ton of salt can then be mixed with water to make over 1,000 gallons of salt brine.

Pickett also says that salt brine does not leave behind any residue, unlike chemicals like calcium chloride.

To spread anti-icing chemicals, the states needed specialized spreading equipment. According to Pickett, Iowa purchased an Epoke SW2000 liquid spreader for about \$20,000. The Epoke hooks onto conventional deicing equipment and can be removed easily when conditions require deicing procedures. Other states also purchased specialized equipment from various manufacturers, while California built a customized spray bar that is capable of applying 25 gallons of solution per lane mile at speeds up to 30 mph.

Today, Iowa DOT officials are testing other types of equipment to spread anti-icing chemicals. Pickett says Iowa DOT maintenance personnel can modify existing equipment to spread salt brine for about \$3,000.

As anti-icing strategies have become more popular, more companies have started to manufacture spreading equipment. Sprayer Specialties, a manufacturer of equipment used to spread herbicides, will

... continued on page 8

	CHEMICALS USED	RWIS NEAR TEST SITE?	SPREADING EQUIPMENT	AMOUNT OF CHEMICAL USED	OVERALL EFFECTIVENESS?
CALIFORNIA	Anti-Icer + PCI	✓	3000 gal tank truck	25 gal/lane mi	✓
COLORADO	Liquid MgCl	✓	Epoke SW 2000 Bearcat Ethyre skid-mounted	28-40 gal/lane mi	✓
IOWA	NaCl Brine	✓	Epoke SW 2000	50 gal/lane mi	✓
KANSAS	Liquid NaCl	✓	Epoke SW 4500	43-86 gal/lane mi	✓
MARYLAND	Not Available	No	Not Available	Not available	✓
MASSACHUSETTS	Liquid CaCl ₂	Not Available	Epoke SW 2000	43-57 gal/lane mi	✓
MINNESOTA	CMA	Not Available	Nido Liquid Spinner	Not available	No
MISSOURI	Salt/cinder mix prewetted with CaCl ₂	✓	Not Available	200 lb/lane mi	✓
NEVADA	Liquid MgCl	Not Available	Epoke 300	35-45 gal/lane mi	✓
NEW HAMPSHIRE	CF7 (Potassium Acetate)	Not Available	Epoke SW 2000	0.5-1 gal/sq ft	✓
NEW YORK	Fine graded rock salt with liquid CaCl ₂	✓	Not Available	9 g/sq m	✓
OHIO	Liquid CaCl ₂	✓	Epoke SW 3500	50-500 lb/lane mi	No
OREGON	CMA	✓	Epoke SW 2000	22-55 gal/lane mi	✓
WASHINGTON	CMA	✓	Epoke SW 2000	42-57 gal/lane mi	✓
WISCONSIN	Salt Brine	✓	Epoke SW 2000	42.9 gal/lane mi	No

✓ = Yes

Why anti-icing?

Anti-icing is the proactive practice of applying a freezing-point depressing chemical to a pavement, just before a storm hits, to prevent a bond from developing between snow or frost and the pavement. The goal of anti-icing is to keep the pavement wet or slushy rather than icy. A pavement free of snow or ice provides two benefits: safer driving conditions for the traveling public and easier plowing operations for the snowplow operator.

In contrast, deicing involves the application of chemicals to the pavement to break an *existing* bond between snow or ice and the pavement. Most deicing operations occur after a storm has hit, making it a reactive procedure. Tom Donahay, director of maintenance programs at the Iowa DOT, says that anti-icing gives better service to the public because the chemicals used keep roads wet as opposed to slippery and also permit easier clean-up.

According to the Federal Highway Administration (FHWA), anti-icing is not a new concept. What is new is the "integration of state-of-the-art weather forecasting and reporting systems with innovative materials and application methods to form an improved winter road maintenance strategy, namely, anti-icing."

build spreading equipment to be tested by the Iowa DOT. Pickett says the spreader will cost about \$6,000 and will offer the advantages of three-lane coverage and parts availability in the United States.

In addition to the report on TE-28, the FHWA published the *Manual of Practice for an Effective Anti-Icing Program: A Guide for Highway Winter Maintenance Personnel*. The manual provides highway agencies with information on how to implement an effective anti-icing program.

The manual says that pavement temperature is an important consideration in an effective anti-icing strategy. Pavement temperature sensors can be used to forecast when pavement temperature will drop below freezing several hours before an oncoming storm.

Officials in Iowa used a freezing-point sensor to gain information on pavement temperature. Pickett says that when pavement temperatures reached 34 degrees Fahrenheit, he started treating the roads. When pavement temperatures reached 15–16 degrees and were still falling, anti-icing methods no longer worked; so Pickett switched to deicing methods using a 50/50 salt/sand mixture.

In addition to pavement temperature sensors, the manual recommends that maintenance personnel use road weather information systems (RWIS) to provide information to effectively allocate snow and ice control resources. Most states that participated in TE-28 had RWIS near their test sections. Officials in Kansas reported that for anti-icing to work, officials must have access to RWIS data "to monitor the weather, pavement conditions, and effectiveness of the anti-icing treatments."

Pickett says he used RWIS data to determine the best time to start anti-icing operations. Based on experience, Pickett says he started to apply anti-icing chemicals one to two hours before a storm hit. (See the cover story of the October 1996 issue of *Technology News* for information about local Iowa agencies gaining access to the Iowa DOT's RWIS information. A videotape describing this program is listed in our library column, page 11 of this issue.)

Now that TE-28 has concluded, Pickett says anti-icing strategies are spreading to other parts of Iowa. Iowa DOT maintenance garages in Davenport and Sioux City are modifying equipment to use in their anti-icing programs. Also, Pickett says that all Iowa DOT maintenance garages along Iowa's interstate system now have equipment to mix salt brine.

To learn more about anti-icing in Iowa, contact Charles Pickett, 515-225-3322. To learn more about TE-28 or to get a copy of the FHWA's Manual of Practice, contact the FHWA Research and Technology Report Center, 301-577-0818. ■

Whitetopping update

Michele Regenold, Editorial Assistant

This is the fourth article in a series on pavement maintenance.

Part 1: Conventional whitetopping in Iowa



WHITETOPPING "OFFERS A GOOD SOLUTION for a county to eliminate the need for maintenance at the early ages" of pavement life, says Jim Grove, engineer with the office of materials at the Iowa Department of Transportation (DOT).

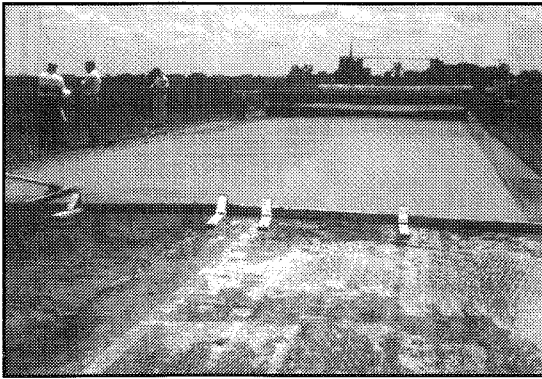
Whitetopping, the placing of a portland cement concrete (PCC) overlay on an asphalt cement concrete (ACC) surface, has been practiced in Iowa

since 1977. Projects in Boone County, Dallas County, and Washington County are nearly 20 years old and still performing well.

Washington County Engineer Bob Bauer says there are hardly any random cracks in the 1977 project. The county covered up its last stretch of asphalt pavement in 1986. "The old asphalt works as a super base," Bauer says. It's the "perfect template" for a concrete overlay. The concrete fills in the wheel ruts and potholes, the exact points where the asphalt is weakest, adding to the road's strength.

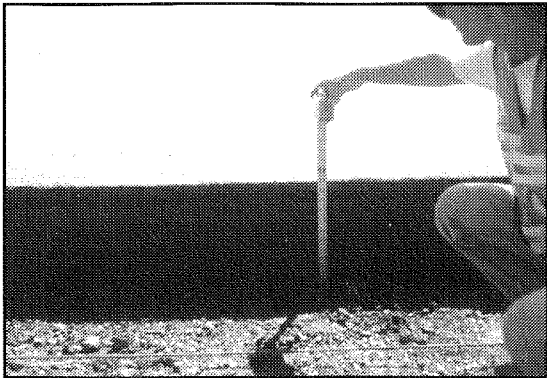
The 1977 project had a thickness of five inches at the center and seven inches on the edges. Lately, Bauer says, the county's been using seven to eight inches for new slabs. "Making it the extra inch thicker is relatively cheap" for the added strength, Bauer says.

. . . continued on page 9



In the Highway 21 whitetopping project, one of the variables being tested is base preparation. This section of the pavement was scarified before PCC was placed.

Photo courtesy of the Iowa DOT.



A worker measures the pavement thickness on the Highway 21 whitetopping project.

Photo courtesy of the Iowa DOT.

WHITETOPPING . . . continued from page 8

The only maintenance Washington County needs to do on its PCC overlays is painting the centerline and resealing cracks. The initial cost of the PCC overlay is generally higher compared to ACC, Bauer says, but the low-maintenance PCC will last 30 to 50 years, making it a viable alternative.

Washington County residents have been cooperative when whole roads were shut down during PCC overlay construction. Local access is usually provided along the shoulders, depending on the design of the original road.

Bauer says that according to traffic needs, the county uses different types of PCC mixes. For example, if traffic access is very important, a maintenance mix is used which allows traffic on the pavement after 24 hours. Those type of mixes are naturally more expensive. The county typically uses

a C-mix, which causes a five- to seven-day traffic detour.

Grove says that maturity testing, a nondestructive test method, shows that PCC pavements gain "strength earlier than we've given [them] credit for." In one case, Grove says, the maturity test showed the pavement was ready for traffic after 18 hours. Most of the time maturity tests will show that PCC pavements may be opened to traffic in a day or two. This goes for all kinds of PCC, including traditional concrete. The 1996 construction season marked the first time maturity testing was used in several real projects in Iowa. It's been used in Iowa research projects since 1988.

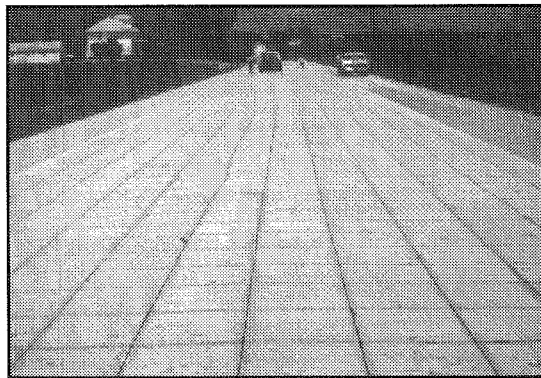
Part 2: Ultra thin whitetopping



THE ORIGINAL IDEA behind ultra thin whitetopping (UTW) was to develop a thin concrete overlay that would be competitive with asphalt overlays, says Gordon Smith, executive vice president of the Iowa Concrete Paving Association.

Ultra thin whitetopping (UTW), which is typically a PCC overlay four inches thick or less, can be placed at equivalent thicknesses to ACC at competitive cost, says Jim Grove, engineer with the office of materials at the Iowa DOT.

. . . continued on page 10



2 ft x 2 ft joint pattern on an ultra thin section of Hwy 21 whitetopping project.

Photo courtesy of Jim Cable, ISU professor of civil and construction engineering.

Conventional whitetopping how-to

1. Power broom the surface. Correct extremely distorted surface problems on a case-by-case basis.
2. Place, finish, and cure the PCC overlay using conventional paving techniques and material.
3. Saw joints.

UTW how-to

1. Clean the surface and consider milling it. This enhances the bond.
2. Place, finish, and cure the UTW using conventional paving techniques and material.
3. Saw joints quickly to prevent cracking.

**tip from
the field**



Folddown device protects strobe lights

MOTOR GRADER OPERATORS in Washington County frequently damaged the strobe light on top of their motor grader until maintenance foreman Doug Moothart came up with a device to protect the light.

Moothart says that their motor grader shed has a low door. Every time the operator drove the grader in the shed, he would have to remove the strobe light because it would hit the top of the door. If he forgot to remove the light, he would damage it.

To avoid the hassle and possible damage, Moothart installed a metal mounting bracket and a

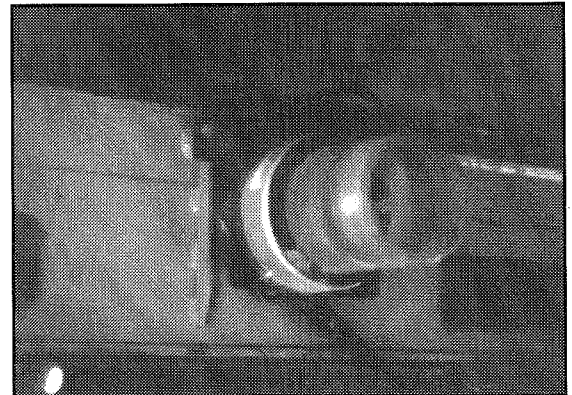
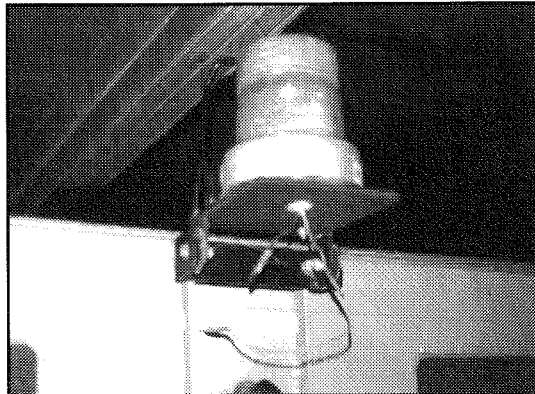
guard with friction washers. The device allows the operator to easily pull down the light and push it back up for operation. If he forgets, the light folds down, preventing damage.

Moothart says that the new device works so well that they are installing one on their end loader to protect its strobe light from possible damage by trees and brush.

For more information, contact Doug Moothart, 319-653-7733. ■

Photo at left shows mounted strobe light. Photo at right shows the light folded down to avoid damage from the shed doors.

Photos courtesy of Doug Moothart in Washington County.



UTW . . . continued from page 9

Smith says that the thickness of conventional whitetopping has posed geometric problems for cities. Conventional white-topping has not often been specified by Iowa towns because the elevation of the streets and curbs is always a concern; laying a five- or six-inch PCC overlay isn't practical. He's hoping that UTW may open some doors in the municipal market.

Research on UTW in Iowa is currently being done on an 11.6 km stretch of Iowa Highway 21 in Iowa County. The Iowa DOT and Iowa State University researchers are experimenting with pavement thicknesses of two, four, six, and eight inches (50, 100, 150, and 200 mm). Joint spacing is being tested in two-, four-, and six-foot squares (0.6, 1.2, and 1.8 m squares) and 15-foot spacing (4.6 m spacing). The other variables being tested are the addition of polypropylene fibers and base preparation (patch only, scarifying the surface, and cold-in-place recycling).

Grove says the primary thicknesses being tested are two-, four-, and six-inch. For these pavements, the joint pattern is squares rather than conventional slabs with centerline and transverse

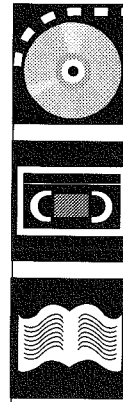
joints. The spacing "plays a big part in longevity," Grove says. He believes the two-by-two squares may be below the practical limits for large, rural paving projects. "The optimum may be thicker than two inches, requiring less sawing," Grove says.

The purpose of the tight joint pattern is to reduce the stress ratio, Grove says. Larger panels exaggerate the forces of loading, curling, and warping. Researchers hope to have relieved these stresses with the smaller joint pattern. Smith says this approach is necessary because UTW is a "composite-type pavement that bonds" with the underlying asphalt. The UTW needs to behave more like a flexible pavement and move with its asphalt base.

After two years, Grove says the performance is good in all sections. Only two percent of two sections of two-inch pavement shows debonding and distress. Grove says he's seen "no distress of any kind on four-inch or greater" thickness.

For more information on the Highway 21 UTW project, contact Jim Grove, 515-239-1226. ■

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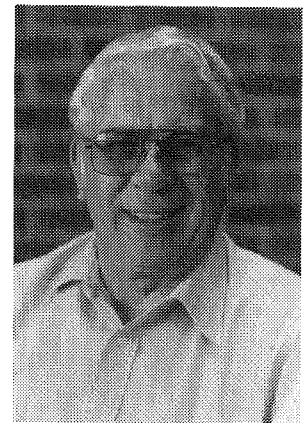
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Publications

- | | | | |
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| Pavement Recycling: Executive Summary and Report (USDOT-FHWA-SA-95-060, 1996) 119 pages. | This publication reports on a survey of 17 state highway agencies to assess the S-O-A of recycled hot-mix asphalt production. Loan copies. | Request # P1202 | <input type="checkbox"/> |
| Median Intersection Design (TRB-NCHRP-R-375, 1995) 93 pages. | This NCHRP report describes the development of design guidelines for the selection of median widths on divided highways with partial or no-control access. Loan copies. | Request # P1194 | <input type="checkbox"/> |
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| Creating Bicycle Transportation Networks-- A Guidebook (University of Minnesota, 1996) 141 pages. | This guide presents a practical model for bicycle transportation in cities and towns. Loan copies. | Request # P1201 | <input type="checkbox"/> |

Videotapes

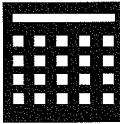
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| Geographic Information Systems for Transportation Volumes I and II (CTRE, 1996) 8 hours. | This two-volume set of videotapes covers the nationwide satellite GIS workshop that was held July 10 and July 17, 1996. Subjects covered are enterprise (full-function) GIS software, desktop GIS software, and demonstrations. Loan copy. | Request # V476 | <input type="checkbox"/> |
| Paradigm In-Place Concrete Recycling System (Manatts, Inc., 1996) 10:00 minutes. | This videotape describes an on-site system of concrete recycling and paving without the need for a large fleet of haul-trucks and off-site work areas. Loan copy. | Request # V475 | <input type="checkbox"/> |
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- 3-5 Iowa County Engineer's Conference
- 9 Influencing Managers of Tomorrow

January 1997

- 7 Super Pave Conference
- 12-17 TRB Annual Meeting
- 15-18 AGC of Iowa Annual Convention
- 21 AC Paving Conference

February 1997

- 5-7 ICPA Paving Workshop
- 10-12 Hot Mix Asphalt Conference
- 12 Workzone Safety
- 13 Workzone Safety
- 26 Workzone Safety
- 27 Workzone Safety
- 27-28 Local Road and Street
Pavement Management

March 1997

- 6-7 ASCE Environmental Water
Resources Conference
- 6-7 APAI 38th Annual Workshop
- 11-13 Highway Capacity Quality and Flow
(NHI Course)
- 13 Workzone Safety
- 14 Workzone Safety
- 19-21 ISAC Spring School
- 21 ASCE Geotechnical Conference
- 27-28 SLSI Land Survey Conference

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