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## 911 sign vandalism takes a bite out of rural budgets

by Josh Murphy, Editorial Assistant



SIGN VANDALISM costs Iowa counties over one million dollars annually. In recent years, sign vandals and thieves are turning their attention from the ever-popular traffic control signs (STOP, YIELD, etc.) to new targets—911 rural road signs.

As counties have implemented 911 service, they have installed road signs for rural addressing systems. The purpose of these signs is to guide emergency vehicles to rural sites.

### Safety problems associated with vandalism/theft

When rural road signs are missing or vandalized, two major safety problems can occur:

- Misdirected emergency services. Emergency service personnel rely on 911 road signs for direction. When signs are missing or vandalized, personnel can be seriously delayed.
- Accidents. People who travel on rural roads also rely on the signs for direction. When signs are missing or vandalized, drivers may become confused, slow down, and possibly cause an accident.

### Other problems

Sign vandalism/theft also means that counties are saddled with the expense of repair and replacement. Howard Cress, sign manager for the Linn County secondary roads department, says that Linn County's materials cost to replace or repair rural road signs in 1996 was over \$18,000. With labor costs, this figure would be even higher. Mark Jobgen, Dubuque County engineer, says Dubuque County's cost to replace or repair rural road signs came to nearly \$16,000 (including labor) in 1995.

A nonscientific survey conducted by *Technology News* reveals that 911-sign vandalism/theft is a large problem for counties. Of 48 counties that responded "yes" to having a 911-sign system in place, 47 said they have experienced vandalism or theft of those signs. Twenty-four said vandalism is



Vandalized signs like this one in Linn County pinch local governments' budgets and pose potential safety hazards. (Photo courtesy of Howard Cress.)

more common than theft, eight said theft is more common than vandalism, while 12 said their rates are about the same.

### Factors that contribute to vandalism/theft

One factor that may lead to high rates of vandalism/theft is the use of named signs as opposed to numbered signs. Thirty respondents said they think vandalism/theft is more common among named signs, one said it is more common among numbered signs, while 11 said rates are about the same, regardless of naming or numbering.

Dale Caquelin, certified engineer technician (CET) for Hamilton County, says his county uses both a numbering and naming system for its rural 911-road signs. Caquelin says the named signs are a major contributor to Hamilton County's sign vandalism/theft problems.

... 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.

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



## SIGN VANDALS . . . from page 1

“We have too many names that attract persons to the point of theft. Lots of common names and some unique names make for nice wall hangings,” Caquelin said.

Another potential factor may be the time of year. Twenty-five respondents said vandalism/theft rates are highest during spring and summer months, eight said rates are highest during fall months, while eight said rates are about the same throughout the year.

Jerry Hare P.E., Pottawattamie county engineer, says rates are highest in his county during non-school months (late spring and summer) and during hunting season.

### Penalties associated with vandalism/theft

Several county officials think that sign vandals and thieves are not deterred by current vandalism laws. According to Section 321.260 of the Iowa Code, vandalism or possession of a traffic control device is considered a serious misdemeanor that carries a fine of up to \$1,000 and/or one year in jail. However, 35 respondents said their counties do not capture and prosecute many sign vandals and thieves. In addition, 25 respondents said that penalties for sign vandalism are not strict enough. One respondent said penalties are strict enough, but law enforcement officials treat acts of vandalism/theft as pranks.

Jim DeLozier, Taylor County engineer, believes that penalties for sign vandalism/theft are adequate; however, laws need to be enforced.

### Methods to deter vandalism/theft

Some officials have developed measures to counter increased vandalism/theft to rural road signs. One of these is a change in the physical specifications of the sign. After finding that many thieves were breaking signs off the post, Jobgen says Dubuque County switched to square posts with riveted signs in high vandalism areas. Previously, Dubuque County used signs with a round post and a cap on top, which enabled thieves to rock the sign back and forth and break it off the post. Jobgen says the new design makes this virtually impossible.

Caquelin says his county has increased the length of sign post anchors and added a wedge-shaped spade to the anchor, making it almost impossible for thieves to pull signs out of the ground.

Another measure is to change from named to numbered signs. Jobgen says that signs with names such as Paradise Valley or Lovers Lane are regularly stolen in Dubuque County.

Mark Johnson, Winnebago County maintenance superintendent, says his county numbers all of its signs, which he believes reduces vandalism and theft. Winnebago County averages only 10–15 signs stolen or vandalized per year at a cost of less than \$1,000.

Many young people have never stopped to consider the safety hazards and costs of stolen or vandalized signs. DeLozier believes that a first step in reducing rates of vandalism/theft is to educate children via the school system. He adds that an educational program should begin when children are young and include follow-up in subsequent years. Such a program could be coordinated by the county engineer, the county sheriff, or other interested officials.

A second method DeLozier advocates is to set up a hot line for witnesses to report incidents anonymously. DeLozier says people are more likely to “blow the whistle” on sign vandals and thieves if they know their names won’t be used.

DeLozier believes that sign vandalism/theft is an indicator of larger problems faced by society today. “If a kid gets away with sign vandalism, what will he do next?” he says.

For more information on efforts to reduce 911-rural road sign vandalism, contact Jim DeLozier, 712-523-2167. ■

## CTRE welcomes new staff

CTRE welcomes several new staff members who have joined the center in the last few months.

**DAVID PLAZAK, transportation policy analyst.** (MA, urban and regional planning, University of Iowa, 1979). David is also an adjunct assistant professor in the Department of Community and Regional Planning at Iowa State University. At CTRE he will develop proposals, manage projects, and conduct research related to geographic information systems (GIS) policy issues, transportation planning, and intergovernmental cooperation. David has over 17 years of experience in policy analysis in Iowa, including with the Iowa Department of Transportation, and has extensive experience in transportation systems planning, transportation and economic development, and small community/rural issues.



**TIM STRAUSS, transportation research specialist.** (PhD, geography, University of Washington, 1994) Tim is also an adjunct assistant professor at Iowa State University's Department of Community and Regional Planning in the College of Design. His responsibilities include research and analysis for CTRE's projects in geographic information systems (GIS) and transportation planning. He is currently working on projects related to the Iowa DOT's GIS Coordinating Committee (GISCC), improved employment data for transportation planning, the GIS Accident Location and Analysis System (GIS-ALAS), and pavement management.



**ALI KAMYAB, transportation research scientist.** (PhD, civil engineering, Iowa State University, 1995) A post-doctoral research associate at CTRE since 1995, Ali recently joined CTRE's full-time staff. He specializes in traffic engineering, transportation engineering, and traffic modeling. Ali has worked on a number of projects related to intelligent transportation systems for commercial vehicle operations (ITS/CVO).



**DENNIS KROEGER, transportation research specialist.** (MS, public administration, Drake University, 1984) Dennis's work will focus on projects involving intelligent transportation systems for commercial vehicle operations (ITS/CVO). He brings a decade of experience to his new position, including several years with the Federal Highway Administration in Minnesota.



**MARK NELSON, transportation research specialist.** (MS, public administration, The Evergreen State College, 1994) Mark will specialize in projects involving intelligent transportation systems for commercial vehicle operations (ITS/CVO). He was formerly a research coordinator at the University of Washington's Transportation Research Center. ■



### 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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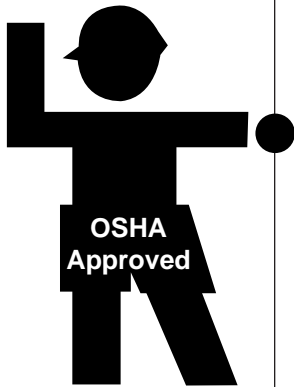
Jim Thompson  
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City of Des Moines  
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**Iowa Department of Transportation**



Center for Transportation Research and Education



## Got a minute?

OCCUPATIONAL SAFETY TRAINING should be a top priority for every transportation shop. But who's got time for regular training programs? You do—with these *short* (under 20 minutes) videos from CTRE's lending library. You and your employees can view these videos between regular tasks.

**Trenching Safety I** covers a check list of safety concerns and emergency procedures to follow before trenching. (V 288) 6:15 min.

**Eye Injuries** depicts potential injuries that can occur when proper eye protection is ignored. (V 346) 3:30 min.

**Machine Safety Guards** offers safety tips for workers who use machines with safety guards. (V 354) 6:15 min.

**Know Your ABCs—Fire Extinguishers** outlines different types of and uses for fire extinguishers. (V 356) 4:45 min.

**Back to Basics** describes the back structure, exercises to strengthen the back, and methods to plan and lift, push, and pull to reduce back strain. (V 472) 5:00 min.

**Star Witness—Accident Reporting** describes procedures to follow if you witness an accident. (V 496) 4:00 min.

**Effective Safety Meetings** provides simple instructions for managers and supervisors to follow to conduct effective safety meetings. (V 497) 7:27 min.

**Trench Emergency** reviews the dos and don'ts of trench rescue and dangers posed by trenches. (V 462) 16:00 min.

**Fire Safety: There's No Second Chance** presents classes of fires, methods to prevent and extinguish fires, and procedures to develop emergency action plans. (V 480) 20:00 min.

**Safety Training for Repair Technicians** reviews the most common injuries associated with repair shops. (V 484) 21:00 min.

**Back Care and Safety** provides instructions on how to prevent back injuries, proper lifting techniques, and basic back exercises (V 473) 15:00 min.

**Chain Saw Safety** discusses dangers of chain saws, operating tips, proper clothing, and safe under-cutting, felling, and bricking (V 485) 13:00 min.

**Tree Trimming Safety** discusses types of equipment and methods to properly maintain and use equipment (V 489) 5:00 min.

**Breaker/Jackhammer Safety** provides tips on the preparation and use of this equipment and guidelines for operation (V 490) 5:00 min.

Have you got another safety subject in mind? Chances are the CTRE library has a related video you can borrow. For a more complete list or to borrow a video, contact Stan Ring, library coordinator, Monday, Wednesday, and Friday mornings, 515-294-9481. ■

## Position opening: Safety Circuit Rider



CTRE IS LOOKING for an engineer to take over Iowa's award-winning Safety Circuit Rider program. The Rider provides transportation safety programs throughout the state and represents CTRE as a member of several transportation safety-related organizations.

The person in this position will have a positive impact all across Iowa, making our transportation facilities safer for transportation agency employees and for the traveling public.

### Requirements

- Bachelor's degree in civil engineering or related field of engineering
- Professional registration in Iowa as a civil or highway engineer (or the ability to become registered)

- Excellent presentation and verbal communication skills; good written communications skills
- Critical: Dedication to improving the safety of Iowa's highways and the safety of employees of agencies and firms that work in and around transportation facilities
- Desirable: Experience as a professional engineer in government or as a consultant in highway transportation

### To apply

Send a letter of application, along with a resume and the names of at least three references, to Duane Smith, Associate Director for Outreach, Center for Transportation Research and Education, 2625 N. Loop Drive, Suite 2100, Ames, IA 50010-8615. Direct questions to Duane at this address, by telephone (515-294-8103), or by e-mail (desmith@iastate.edu). ■



## SHRP stresses quality in pothole repairs

by Michele Regenold, Editorial Assistant

This article is the last in our series on pavement maintenance.



WINTER IS NO FRIEND to Iowa's roads. Potholes erupt over night in Iowa's wet, cold climate.

For winter pothole patching, research conducted as part of the Strategic Highway Research Program shows that the throw-and-roll method, using high quality cold-mix materials, is the most cost-effective procedure.

In throw-and-roll, the patch is compacted by a truck tire rolling over the patch five or six times. By using high quality proprietary materials—brand-name products that have carefully mixed aggregate and asphalt to a precise formula—the throw-and-roll patch can last as long as a semi-permanent patch using local materials.

In the dead of winter, the goal of pothole patching is to “restore rideability and safety as quickly as possible—not to repair the distress permanently,” according to SHRP's *Asphalt Pavement Repair Manuals of Practice*.

Once spring rolls around, the life expectancy of patches increases because the freeze-thaw cycle is finished. “The goal of spring patching operations,” according to SHRP, “should be to place patches which last as long as the surrounding pavement.”

Springtime options include throw-and-roll, semi-permanent patches, hot-mix patching, and spray injection patching. SHRP recommends choosing materials and procedures based on their cost-effectiveness and the experience of the local crew.

To borrow SHRP's *Asphalt Pavement Repair Manuals of Practice*, contact Stan Ring, CTRE librarian, 515-294-9481. ■

Scott Pepler believes Cedar Rapids's spray injection machine is saving the city money. (Photo courtesy of Scott Pepler.)

## Spray-injection pothole repair in Cedar Rapids

by Michele Regenold, Editorial Assistant



ONE CEDAR RAPIDS STREET MAINTENANCE CREW has a new trailer-mounted spray-injection machine for pothole repair. The two-man crew started using their new machine last July. They use the machine year-round.

The men repair potholes using a simple technique. The machine's compressor blows out the pothole, clearing it of water and debris.

Next, one man sprays a tack coat of emulsion on the sides and bottom of the hole. That's followed by the aggregate and asphalt, which are mixed as they blow through the hose.

The crew leaves a layer of aggregate on top of the patch. For especially large holes the crew uses a tamper; otherwise the force of the hose provides enough compaction.

Cedar Rapids Streets Director Scott Pepler says, “We're real pleased with it.” Pepler says the spray-injection method isn't as fast as throw-and-roll, but the patches hold up well, sometimes better than hot-mix patches.

The spray-injection machine cost \$29,000. Pepler hasn't had time to work the numbers for a cost-effectiveness analysis, but he believes the machine is already saving money. The machine essentially makes its own asphalt, Pepler says, for \$18 per ton and the patches are definitely lasting longer than other types.

Pepler says spray-injection won't replace throw-and-roll. There are too many potholes for that to happen. Besides potholes, the machine has been used to fill large, wide cracks and two-or three-inch dropoffs in concrete.

For more information about the spray-injection machine, contact Scott Pepler, Cedar Rapids streets director, 319-398-5360. ■



# Speak Up!

by Michele Regenold, Editorial Assistant

This article is the third in a continuing series on public relations issues.



PRESENTING YOUR IDEAS, plans, and suggestions to the city council or board of supervisors is probably a regular part of your job. Have you thought about taking your show on the road?

Speaking to local organizations can be a good way to develop public support for your department. Community groups like the Kiwanis Club or the Lions Club are often looking for speakers. Speaking to a group of people who know next to nothing about transportation, however, may require a different approach.

## Tips on content

The first concern of many speakers is what they're going to talk about. While you may know exactly what you want to say, stop to consider your audience's needs and interests before writing your speech. Who will make up your audience, and what are they interested in listening to? Are they business people concerned about the installation of parking meters? Are they engineers interested in Iowa's transportation history?

Stan Ring, CTRE's library coordinator, has given many speeches over the years to service organizations, church groups, and even a high school reunion. The key to good speaking, Ring says, is to "fit the material" to your audience so people can understand and relate to your topic.

Once you have some ideas about who your audience is, your speech's purpose will be clearer. Do you want to inform, entertain, or persuade your audience? You can certainly use a mixture of all three, but you should have one overriding purpose.

Ring says his speeches on Iowa transportation history are mostly entertaining but also informative. His talks on bicycle safety are mainly informative.

With an audience and a purpose firmly in mind, you can begin to shape your content. Don't try to talk about too many different things. Focus on a single main theme.

Ring also recommends tailoring the length of your talk to fit the subject and audience. "Find out when they expect the speech to end and keep this schedule," Ring says.

## Tips on delivery

While content is one half of giving a good speech, the other is delivery. Being a good speaker doesn't mean you have to fire off one-liners; in fact, only use humor when it's relevant. Being a good speaker means you engage your audience and keep them interested.

## Four ways to open a speech

- Tell a brief story to illustrate a point.
- Tell about something unusual or new.
- Use humor with yourself as the brunt of the joke. The audience will warm to you.
- Ask a startling question. Could you own and operate a snowplow on just 5 cents a day?

One fundamental of good speaking is this: *do not read* your speech. Don't even write out the whole speech—ever. That just tempts you to memorize it word for word, and if you forget where you are, you have a harder time getting back on track.

Use notes with key words and phrases. Practicing your speech with note cards will make you more relaxed and comfortable than reading the whole thing to a sleepy audience.

Another fundamental aspect of good speaking is to show your enthusiasm. (If you're not enthusiastic about your topic, then choose another topic.) Don't hide behind a lectern all the time. Take your note cards with you and move around the room. Use gestures and facial expressions when they're natural for you.

#### Using visual aids

Handouts are extremely effective visual aids. They give your audience more information than overhead

transparencies can. They also give your audience a place to turn if their attention lags. Handouts are a record of your speech that audience members may take with them. This can be particularly important if you're giving a persuasive speech and you want your audience to act on what you've said.

Other forms of visual aids should be used sparingly. Overheads can easily become a crutch. You've probably heard speakers read each overhead to you verbatim. Avoid overheads unless they provide something extra to your speech, such as color images that would be impractical to hand out.

Slides and video are also best used when they add something your speech can't, such as images of a flood washing out a bridge.

Ring uses slides of old construction sites when he speaks about transportation history. The slides show Iowa "getting out of the mud" and provide entertainment, Ring says.

Speaking to community groups can be a good way to develop public support for your department. So if you'd like to inform, persuade, or entertain local organizations, take the initiative and become a public speaker. ■

### Basic structure for a persuasive speech

- Grab your audience's attention.
- Describe the problem using plenty of supporting evidence.
- Provide a solution.
- Invite the audience to act.
- Develop a definite beginning, middle, and end to provide a familiar structure for your audience to follow.



## Computers that go almost anywhere

by Josh Murphy, Editorial Assistant

TODAY'S LAPTOP COMPUTERS (also called notebooks) offer almost as many features and as much power as desktop PCs. However, one feature of laptops differentiates them from desktops—mobility.

As mobile computing becomes more important, transportation personnel may use laptop computers to run more transportation-related software. Already, some road construction supervisors use laptops to record construction progress data (see "Marshall County tests construction records software in the field" in the June 1996 issue of *Technology News*).

Other transportation personnel use their laptops to perform office functions away from the office and to communicate with CTRE's electronic bulletin board service (BBS).

In the future, bridge inspectors may use laptops to collect field data for the Pontis bridge management system, or highway maintenance supervisors may use laptops to monitor road conditions via road weather information systems.

Duane Smith, CTRE's associate director for outreach, uses his laptop computer to organize names and phone numbers, take electronic notes while working around the state, and perform spreadsheet applications. Smith says that his laptop allows him to answer on-the-spot questions from field personnel and eliminates his need to take manual notes which he then must transfer to his desktop PC.

Mike Bugenhagen, CTRE's systems specialist, suggests you first consider price when you buy a laptop. Price depends on the type of laptop. You can buy a discontinued or obsolete laptop for under \$1,000. Current technology laptops range in price from \$3,000–\$6,000. As technology advances, prices will probably continue to fall.

The computer market is highly volatile. Bugenhagen warns that today's technology will probably be outdated soon.

"Buy the fastest processor and the largest hard drive financially possible," he says, "because upgrading a laptop often costs two times as much as the same upgrade for a PC."

He adds that new operating systems such as Microsoft Windows 95 require fast processors and large quantities of hard disk space to run optimally.

Most laptops today come packaged with either 810 megabytes of storage space and 16 megabytes of RAM or 1.2 gigabytes of storage and 32 megabytes of RAM.

In terms of processing speed, the 133 megahertz Pentium processor is currently the standard. Bugenhagen says the 166 or 200 megahertz Pentium will likely be the new standard by the end of this year.

In addition to price, Bugenhagen suggests you consider the following features when shopping for a laptop:

### Screen size and resolution

Standard laptops typically come with 9.5–10.4-inch VGA (640 x 480 pixel) screens. Larger screens such as 11.3 inch super VGA (800 x 600 pixels) are available on more expensive models.

### Sound

If you need audio, consider buying a multimedia laptop with 16-bit audio, built-in speakers, and a microphone. Make sure the laptop is capable of processing DOS game-type sounds if your software doesn't use Windows "Midi" sound.

### Weight

Most laptops weigh six to eight pounds, while some weigh as little as four to five pounds. If you need a lighter laptop, you will have to sacrifice features such as larger screens, larger keyboards, faster processors, and greater upgrade options.

### Warranty and service

Most laptops come with one year warranties. Bugenhagen suggests you buy a laptop with at least a two-year warranty. Also, look for local service centers and toll-free technical support provided by the manufacturer.

*Upgrading a laptop often costs two times as much as the same upgrade for a PC.*



*Laptop computers may become as indispensable as pocket calculators.*

### Desktop use

If you don't want to buy separate laptop and desktop computer systems, consider buying a docking station—a device onto which you “dock” your laptop on your desk when you don't need to carry it with you.

With a docking system, you do not run a separate desktop computer. Your laptop *is* your desktop, eliminating the need to transfer files between hard drives. Your notebook contains the CPU and hard drive, while the docking station allows you to hook up additional options such as an extra hard drive, an external keyboard, a bigger monitor, a mouse, and a modem.



Mike Jenkins, construction technician for the Iowa Department of Transportation, uses the Iowa DOT's FieldBook program on an IBM Think Pad to record construction progress at a bridge replacement site.

However, docking stations are specific to brands of laptop, so check to see if the manufacturer also makes a docking station to fit its laptops.

### Battery

All laptop batteries run for a limited amount of time. You can expect no more than two to three hours of battery life, so consider carrying an extra battery. Some manufacturers now offer lithium-ion batteries which offer longer life than conventional nickel-metal-hydrate batteries.

If you don't have easy access to an electrical outlet, consider buying a laptop that allows you to remove the floppy disk drive to insert an extra battery.

### CD-ROM

These devices are now available for many laptops and usually fit into the floppy drive bay.

Bugenhagen says installing software is much faster using CD-ROMs than floppy diskettes, thus conserving your battery.

### Carrying case

Buy a good carrying case for your laptop. Bugenhagen says this is an often overlooked but necessary accessory that cushions your laptop during travel.

Bugenhagen concludes by saying you should expect to pay more if you want to buy a laptop with more advanced features. However, he adds that if you plan to buy more than one laptop for your office try to obtain competitive bids from manufacturers so you can receive the best price. You may be able to further reduce costs by buying any external accessories at the same time.

Smith believes laptop computer use will become more widespread. He recalls the days when pocket calculators were first introduced and people were afraid to carry them around out of fear that they would break or be exposed to dirt particles. These fears generally proved groundless. One day soon, laptop computers may be as indispensable as pocket calculators have become. ■



## Time and money saver: crack-filling program

CITY STREET DEPARTMENTS that practice crack filling know that these programs can be frustrating and time consuming.

However, Willard Wray, director of public works for the City of Clive, has set up a crack filling program that saves time and reduces future road maintenance.

Wray's crew uses a truck loaded with an air compressor on the bed, while the truck pulls an asphalt kettle. (Normally, the air compressor is pulled by a separate truck.) Because the air compressor rides on the bed, only one truck and, thus, one driver are required per crack filling crew.

To fill cracks, Wray's crew uses a water emulsion crack filler called *Styrelf*. In addition, workers use agricultural lime to dry the filler faster, which prevents wet tar from splattering on cars that drive over the pavement.



City of Clive crack-filling rig. (Photo courtesy of Willard Wray.)

Wray says the crack-filling program saves time and labor—last year his crew was able to fill cracks on all of Clive's busy streets and half of its residential streets. The program also helps reduce future maintenance—workers did not have to fill in any potholes in 1996.

For more information, contact Willard Wray, 515-223-6230. ■

## Snow plow skill



IOWA SNOW PLOW DRIVERS in the single-axle class demonstrated their skills in a new championship round during the 1996 APWA Snow Plow Rodeo in Des Moines last October.

Nick Witt and Chris Legvold of Oskaloosa drove their way into first place. In the tandem axle class, Iowa DOT's Dave Hipnar and Sam Thomas took first, as did celebrity driver Scott Pepler of Cedar Rapids.

Besides the addition of a championship round this year in the single-axle class, another new feature of the rodeo was requiring both drivers to drive.

Drivers had to switch after the first driver came to a stop in the alley dock.

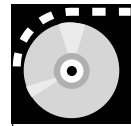
The conference kept its two-day format this year, with the written exam and vehicle defect identification on day one and the driving test on day two. ■



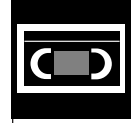
Top: Nick Witt and Chris Legrold, first place winners in the single-axle class.

Bottom: Dave Hipnar and Sam Thomas, tandem-axle class first place winners.

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**



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| <b>Quality Assurance Software for the Personal Computer</b> (USDOT-FHWA-SA-96-026, 1996) 185 pages plus disk.                   | This material provides guidance on the use of practical and effective quality assurance procedures for highway construction projects. Loan copies.   | Request # P1204 <input type="checkbox"/> |
| <b>Access Management: A Review of Recent Literature</b> (CTRE, 1996) 19 pages.  | This report provides an overview of the current status and practice of access management in the US and represents the SOA. Loan copies.  | Request # P1207 <input type="checkbox"/> |
| <b>Engineering Study for Reducing Sign Vandalism</b> (Iowa DOT HRB-HR 246, 1992) 31 pages.                                      | This research reports on a study to reduce the rate and cost of sign vandalism in Iowa. Loan copies.   | Request # P1208 <input type="checkbox"/> |
| <b>Tire Pavement Noise and Safety Performance</b> (USDOT-FHWA-SA-96-068, 1996) 111 pages.                                       | This publication recommends noise-reducing construction methods that work for new construction and treatments for existing noisy pavements. Loan copies.   | Request # P1210 <input type="checkbox"/> |
| <b>Let Me Shingle Your Roadway</b> (Iowa DOT, Report HR 2079, 1997) 17 pages.   | This publication reports on the findings of a project where 500 tons of waste bituminous roofing was mixed into a crushed granular surfaced roadway to provide a dust-free roadway. Loan copies. | Request # P1215 <input type="checkbox"/> |
| <b>Effects of Raising and Lowering Speed Limits on Selected Roadway Sections</b> (US DOT FHWA, FHWA-RD-92-084, 1997) 175 pages. | This research studied the effects of raising and lowering posted speed limits in rural and urban nonlimited access highways on driver behavior. Loan copies.                                     | Request # P1216 <input type="checkbox"/> |

**Videotapes**

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| <b>Star Witness: Accident Reporting</b> (Safety Shorts, 1989) 4:00 minutes.                | This videotape describes what individuals should do if they observe an accident.   | Request # V496 <input type="checkbox"/> |
| <b>Computeritis</b> (Safety Shorts, 1992) 4:30 minutes.                                    | This videotape describes the proper techniques for reducing Carpal Tunnel Syndrome, which is caused by repeated striking of computer keys. | Request # V498 <input type="checkbox"/> |

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Stan Ring, library coordinator



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3	Fundamentals of Wastewater Treatment	Creston	Jim Cable, 515-294-2862
5	Fundamentals of Wastewater Treatment	Ames	Jim Cable, 515-294-2862
6	Fundamentals of Wastewater Treatment	Ottumwa	Jim Cable, 515-294-2862
6-7	APWA Spring Conference	Ames	Jim Cable, 515-294-2862
6-7	ASCE Environmental Water Resources Conference	Iowa City	Jim Cable, 515-294-2862
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7	ASCE Geotechnical Conference	Williamsburg	Jim Cable, 515-294-2862
10	PCC Pavement Design	Ames	Jim Cable, 515-294-2862
11	Fundamentals of Wastewater Treatment Short Course	ICN	Jim Cable, 515-294-2862
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12	Water Distribution System Analysis Modeling Workshop	Ames	Jim Cable, 515-294-2862
12-14	Institute of Transportation Engineers-Spring Meeting	Hot Springs, AR	William Henry, 501-371-4858
13	Workzone Safety	Iowa City	Joyce Emery, 515-239-1016
13-14	SLSI Land Survey Conference	Ames	Jim Cable, 515-294-2862
14	Workzone Safety	Ottumwa	Joyce Emery, 515-239-1016
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