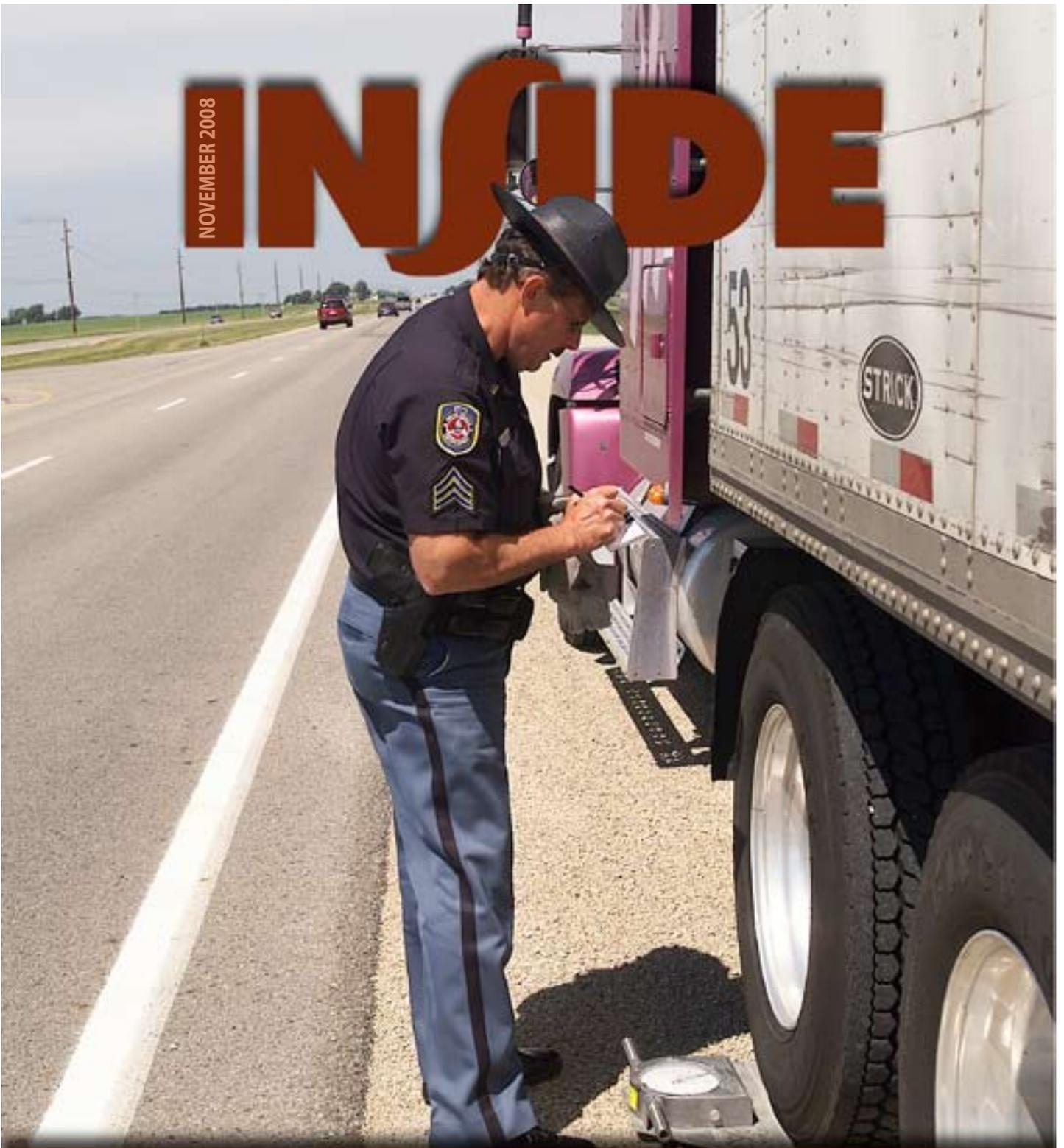


NOVEMBER 2008

INSIDE



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ONE 2 ONE

WITH DIRECTOR NANCY RICHARDSON

As previously mentioned, I will occasionally take a month off from my column. You know how it is with us

temperamental writers - occasional writer's block! This month Neil Volmer, director of the Planning, Programming and Modal Division is going One 2 One with you in my place. Enjoy and I'll see you next month.

Recently, I sent a note to Nancy advising her of my intention to retire at the end of the year. She asked if I would be interested in doing an article for Inside which I readily agreed to as it would serve as an opportunity for me to say goodbye to the many wonderful people I have had the opportunity to work with over the past 39 years.

First, I want to express my sincere gratitude to all of you for enriching my life in so many ways. I have enjoyed the journey and learned much from all of you and will carry those memories, as well as the knowledge you have given me, into the retirement phase of my life.

When I graduated from college in 1969, the economy was booming and I had opportunities to work for multiple state agencies, as well as many consulting and construction firms across the country. My choice to work for the Iowa Department of Transportation proved to be one of the best decisions I ever made. Like many of you, I have had personal successes as well as disappointments throughout my tenure. However, I have never once wished that I had chosen to work for another state agency or private company. We have all accomplished so much to be proud of. We have significantly contributed to the quality of life for the citizens of this state by providing them with a great transportation system which they enjoy every day of their life.

It has been interesting for me to reflect on my time with the Iowa DOT and the many accomplishments of the department. As I think about our greatest accomplishments, the one thing that stands out for me is that the greatest achievements have always been due to the contributions of many, not just a few. It is all of you that have made this a great place to work, and it is all of you that have made us one of the best departments in state government anywhere in this country.

As a member of the Management Team for the past 16 years, I have worked on strategic plans and many other documents to help keep us at the top of our game. I have learned through the years that these things are important. It is important that the organization have a vision and a mission and that we have guiding principles to remind us of the path we should be following, but at the end of the day our greatness comes from our solid foundation that is built from the heart

of each and every one of you. It is this foundation that has made us great, and it is this foundation that has made this such a wonderful place to work for 39 years.

As I look to the future, I see great opportunities for the DOT and its employees. I believe the department is working better today than ever before, without the typical barriers that frequently existed between divisions and offices. This collaboration, along with increased connectivity between the transportation modes and a greater customer focus, position the department for continued success.

These characteristics are evidenced in so many of the things we have done and continue to do. Last year we succeeded in getting a TIME-21 bill passed by the legislature that will increase annual funding for highway transportation by approximately \$130 million (\$79 for the primary system) by 2013. Cooperation among all divisions was essential to providing the necessary data and information to the legislature as they deliberated TIME-21. Key to the effort was the collaborative effort involving countless hours analyzing and reanalyzing all the data associated with the numerous revenue alternatives.

The relationships that have developed between the Highway Division and the Planning, Programming and Modal Division are evident in the development of the five-year program and long-range plan. The relationships that have developed between the offices of rail, transit and aviation with their constituencies outside the department reflect tremendous customer focus and a willingness to partner with others to achieve common goals. The outstanding relationships that exist between the department and the metropolitan planning organizations, regional planning affiliations and councils of government reflect the same attitudes.

I am especially proud of the construction and maintenance forces that so effectively handled one of the most difficult winters in recent years followed by subsequent flooding and other natural disasters. The heart of our agency and our customer focus was evident in the efforts of the employees who worked many hours during these difficult storms. I have tremendous optimism that these successes will continue into the future and I look forward to watching the department's progress.

Retirement is bittersweet for me. I will miss working for the DOT and being a part of all of your lives. On the other hand, I have much to look forward to. My wife, Denise, and I have purchased a home in Gold Canyon, Arizona, where we intend to live during the cold months of Iowa. I have a brother who also lives in Gold Canyon and a sister who lives just 15 miles away in Mesa, and it will be exciting to have the opportunity to renew those family relationships. During the summer we will return to our home in Ankeny where we can be close to our children, grandchildren and old friends.

I pray that you will always enjoy good health and that all goes well for you.

Technology at work

Bridge monitoring systems

By Ahmad Abu-Hawash, P.E., Iowa DOT Office of Bridges and Structures; Dr. Terry Wipf, P.E., director of Iowa State University's Bridge Engineering Center, and Dr. Brent Phares, P.E., associate director of Iowa State University's Bridge Engineering Center

The condition of the nation's infrastructure received a significant amount of attention in recent months generating serious debate about bridge safety.

Although current bridge inspection and maintenance practices have served Iowa well and continue to be the most reliable, it is important to investigate the latest advances in structural-monitoring technology.

The Iowa DOT's Office of Bridges and Structures (bridge office) is responsible for the design and construction of Iowa's highway structures, and maintains roughly 4,000 bridges. In recent years, the bridge office focused efforts on investigating the use of new high-performance materials, design and construction methods, and supplemental maintenance methods. These efforts are intended to increase the life span of bridges in meeting the objectives for building and maintaining cost-effective, safe bridges. Bridge testing and monitoring have also proven beneficial to determine plans of action for Iowa's bridges. To help with these testing and monitoring efforts, the Iowa DOT enlisted Iowa State University's (ISU) Bridge Engineering Center.

The Iowa DOT uses bridge testing in numerous situations to supplement typical evaluation methods. The test concept involves taking field measurements on a bridge – using various sensors and monitoring systems – to identify the actual structural response (movement, forces, etc.). This is typically under vehicle-load conditions. Usually, field data is compared with some design-based structural parameters to determine if the response is appropriate. The data may also be used to calibrate an analytical model to provide a more detailed structural assessment (e.g., a load rating to determine safe bridge capacity). Diagnostic testing can also be used to help identify deterioration and damage, or assess the integrity of an implemented repair or strengthening method. In cases where the bridge office investigated the use of innovative materials (e.g., high-performance steel, ultra-high performance concrete or fiber-reinforced polymers) and design/construction methods, testing was used as part of evaluating bridge performance.

Sensors and monitoring systems

One key component associated with testing is the use of sensors and monitoring or data-collection systems. Each project has unique objectives, so sensor components and monitoring systems used differ depending on specific test requirements. Most testing sensors are conventional electronic-based devices (Figure 1), such as displacement transducers, foil or vibrating wirestrain gauges and accelerometers for monitoring vibration characteristics.

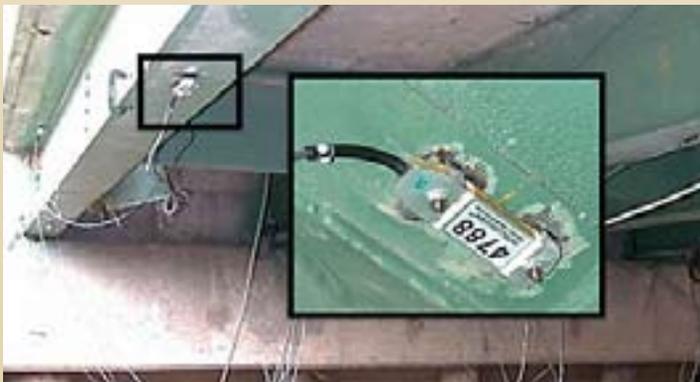
For typical one-day tests, the Iowa DOT invested in a testing system that includes sensors and a monitoring and evaluation system (consisting of hardware and software) from Bridge Diagnostics Inc. (BDI). This BDI system uses reusable electronic-based strain gauges (Figure 2). Innovative sensors and data-collection systems – fiber-optic-based sensors use light wave mechanics, unlike more typical electronic-based sensors – have also been used for monitoring several Iowa bridge projects. Fiber-optic sensors have been used for longer term, continuous monitoring (Figures 3 and 4).

Bridge monitoring, continued next page



Figure 1. Conventional electronic-based displacement and foil-strain gauges used to evaluate structural connection response.

Figure 2. Multiple BDI strain gauges placed on bridge girders for load-rating test.



Bridge monitoring, continued from previous page



Figure 3. Uncoated fiber on hanger rod with sensor (in black package) bonded to the specimen; the actual fiber-optic sensor within the fiber is extremely small

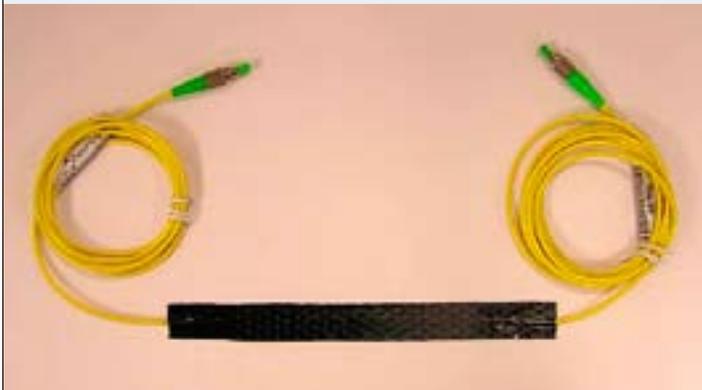


Figure 4. The coated-fiber leads, on either end of a fiber-optic sensor, are contained within a larger (210 mm x 20 mm) carbon fiber package and bonded directly to a bridge member.

Brief project descriptions

Some typical Iowa projects utilizing bridge testing and monitoring that illustrate the practical use of structural health monitoring (SHM) technology are described below.

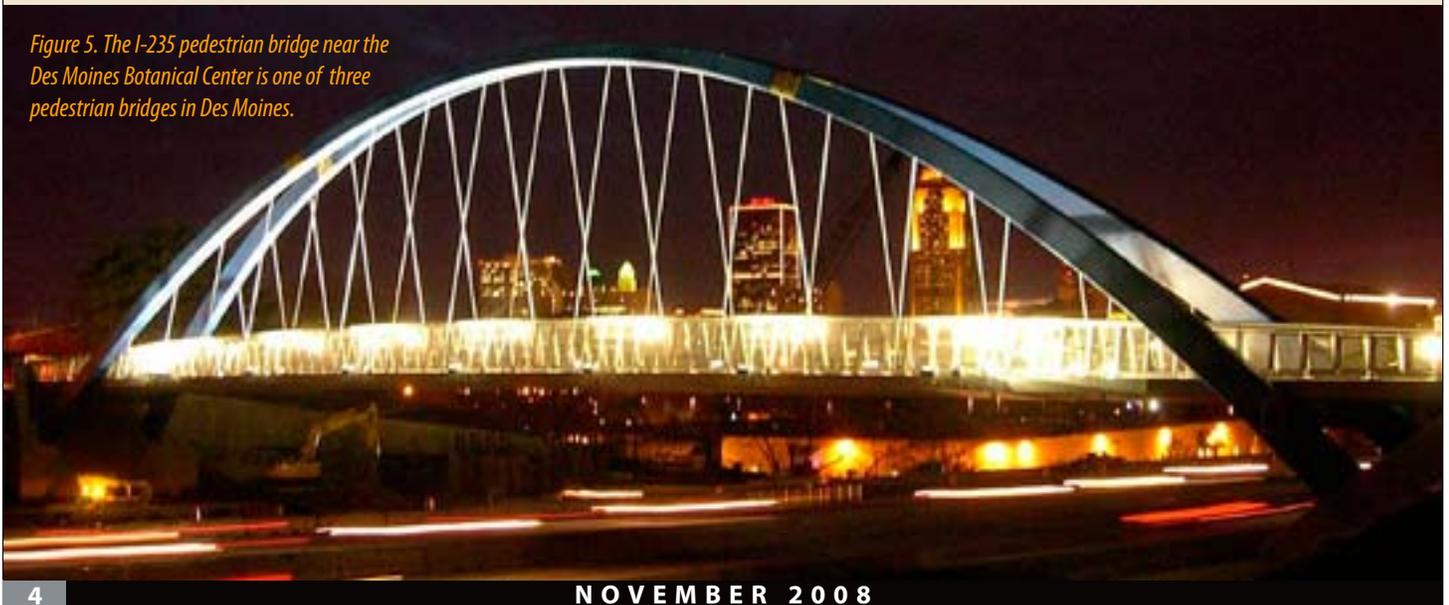
- I-235 pedestrian bridges.** The bridges at 40th and 44th streets in Des Moines (two of three pedestrian bridges) were monitored during construction to insure hanger forces supporting the precast deck units were within specifications. During and after construction of the first pedestrian bridge near the Des Moines Botanical Center (Figure 5), there were indications the forces on the bridge could be better controlled. The bridge office decided that monitoring during and after construction of the bridges at 40th and 44th streets would provide better quality control.

Bridge monitoring, continued next page



Figure 6. A permitted vehicle crosses a bridge on Iowa 18 in Cerro Gordo County during bridge testing.

Figure 5. The I-235 pedestrian bridge near the Des Moines Botanical Center is one of three pedestrian bridges in Des Moines.



Bridge monitoring, continued from previous page

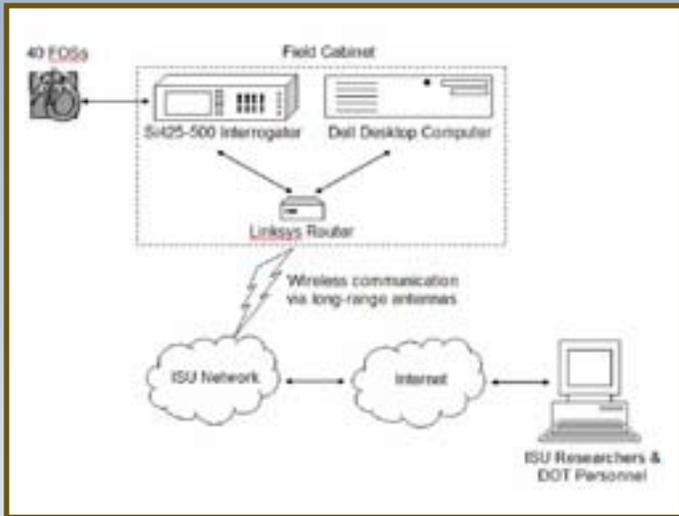


Figure 7. The SHM system schematic illustrates fiber-optic sensors, data collection and processing system, and wireless communication on the U.S. 30 bridge over the Skunk River in Ames.

- **Bridge capacity for atypical vehicles.** Permitted vehicles, often referred to as super loads, cross bridges on a regular basis. Before the permit is issued, the bridge office must evaluate the bridge capacity for the atypical vehicle. When an evaluation does not indicate adequate bridge capacity, testing is performed to provide additional information.

On one occasion, bridge testing and evaluation using several representative Iowa DOT trucks was conducted to supplement the typical bridge-rating evaluation for the super load. Additional tests determined the permit could be approved. To further validate this decision, the bridge's response was monitored during the super load's passage. Response data confirmed the load-test evaluation was valid (Figure 6).

- **SHM technology.** Several recent, continuous monitoring projects were conducted to develop SHM systems for identifying the potential development of bridge deterioration or damage. The SHM systems used fiber-optic strain sensors and wireless communication on a bridge over the Skunk River in Ames (Figure 7), the first such application of these sensors in the United States. The first high-performance steel bridge in Iowa was also monitored. The bridge is at East 12th Street over I-235 in Des Moines and the SHM system collected structural-performance data continuously from 2004-2006 with typical traffic. The data processed at the data-collection point on the bridge was sent via wireless communication to a Web site during the study.

Another application using SHM to supplement the typical rating process is the Iowa 926 bridge over the Des Moines River in Fort Dodge (Figure 8). After the collapse of the I-35W Mississippi River bridge in Minneapolis, the Iowa DOT evaluated bridges with similar design for structural capacity and safety. The Iowa 926 bridge was one of the bridges investigated. The bridge office utilized bridge testing to provide supplemental information for validation of its bridge rating evaluation.



Figure 8. A truss bridge on Iowa 926 in Fort Dodge that was tested to validate load rating results.

The Iowa DOT's Office of Bridges and Structures, in cooperation with ISU's Bridge Engineering Center, utilizes some of the most technologically advanced health monitoring devices to test the safety of Iowa's bridges, and validate the performance of new construction materials and bridge design methodology. For additional information on this technology, visit <http://www.iowadot.gov/bridge/research.htm>.

Wanted: cost-effective winter operations

by **Christina Andersen**

With the economy struggling, most of us are looking for ways to spend less for the things we need every day. In the same way, the Iowa DOT faces the constant pressure of finding ways to do more with less. Salt and fuel prices are up, salt is harder to find this year, and the weather last winter and this summer has taken its toll. Now more than ever, it will be especially important to make every penny count.

Dennis Burkheimer, winter operations administrator in the Office of Maintenance, encourages snowfighters to make small changes that can add up to big savings. "Doing things like prewetting dry materials, calibrating spreader control systems, using salt when it's most effective, and making sure routes are done as quickly and efficiently as possible could produce significant savings in time and materials," said Burkheimer.

A series of winter "wanted" posters was developed by the Winter Operations Committee and the Office of Media and Marketing Services to let operators know what they can do to help the DOT save money this winter. The posters focus on four major cost-saving strategies: spreader calibration; prewetting; salt conservation; and operational efficiencies.

Spreader control calibration

Spreader control calibration is something each operator should do to his or her truck at the beginning of the winter season to insure the optimum amount of material is being applied. A truck that applies 225 tons of salt each year can use 11.25 tons more salt than desired if the spreader controller is over-applying materials by just 5 percent. Multiplying that by 900 snowplows in the department's fleet, is 10,125 tons of salt each year.

*Typical scatter of road salt **without** prewetting*



*Typical scatter of road salt **with** prewetting*



Prewetting

Prewetting salt at the spinner before spreading it on the roadway activates the salt and helps the material stick to the roadway. According to a study conducted in Michigan, prewetting can keep 26 percent more material on the roadway than when applied dry.

Salt conservation

Salt can be an extremely effective tool in combatting ice and snow on Iowa's roadways. However, as the temperature drops, so does the effectiveness of salt. The department will often use straight salt down to 15 degrees and, in some cases lower, based on the situation. Though salt is less effective at lower temperatures it can still be useful to eliminate snow and ice from the roadways when conditions warrant. This practice follows guidelines set by the Federal Highway Administration.

| Pavement temperature (degrees Fahrenheit) | One pound of salt |
|---|-------------------|
| 30° | 46.3 lbs. of ice |
| 25° | 14.4 lbs. of ice |
| 20° | 8.6 lbs. of ice |
| 15° | 6.3 lbs. of ice |
| 10° | 4.9 lbs. of ice |
| 5° | 4.1 lbs. of ice |
| 0° | 3.7 lbs. of ice |

Operational efficiency

One of the primary goals of winter maintenance operations is to effectively and efficiently provide safe roadways during winter storms. Keeping that in mind, it's important to be aware of the hourly cost of winter operations. For one hour, the Iowa DOT pays approximately \$32, including benefits, in equipment operator wages; \$30 in truck costs; and \$236 in salt costs (based on an application rate of 250 pounds per lane mile at 30 mph). The total cost of one hour of operation is approximately \$298. Multiply that by 900 trucks operating statewide, and the total cost per hour of snow removal operations statewide is approximately \$268,200. You can see why it's so important the winter operations are completed as effectively and efficiently as possible.

Burkheimer said, "The Iowa DOT has some of the best snow removal staff in the country. These employees are aware of their role in providing safe travel for users of our road system, and strive to clear snow and ice covered roads as effectively and efficiently as possible. The 'wanted' posters are intended to show equipment operators what small changes in each operator's routine can mean to the statewide operation."

The ultimate casual Friday

Sometimes you just have to have a little fun. Several employees around the state celebrated Halloween in high style with costumes and merriment. Here are the Halloween photos submitted to INSIDE.



It was fantasy land for the purchasing section. (From left) Pat Harmeyer, Rhonda Ruark, Julie Brown, Laura Linduski, Mary Zimmerman, and Jan Halverson



Scary Kary Sobaski from District 5 maintenance



Bubble, bubble toil and trouble in District 6. (From left) Cathy Cutler, Heather Gugler and Sandi Byers



Left photo: Bob Cassidy from Finance takes an apple from Mary Zimmerman.



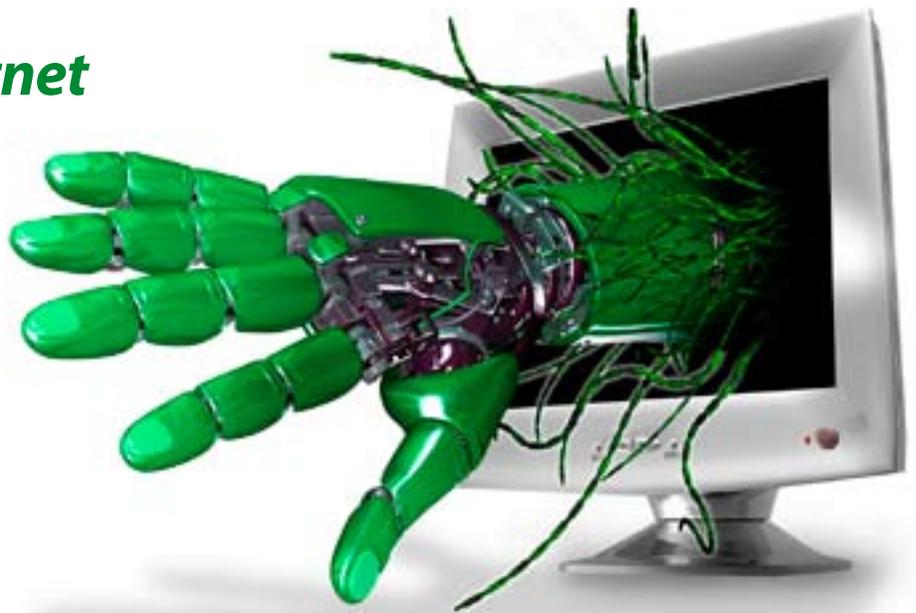
Right photo: "Hi Ho, Hi Ho" for the crew in Facilities Support. (Back row) Jim Surber, Janet Vaughan, Lee Hammer, Mallory Engelen, Ashley Smelzer, (front row) Ashley Roach and Scott Gustafson

Beware of the botnet

Your home computer could be carrying out illegal activities without you even knowing it. For many years, we've all been made aware of worms and viruses that can infect our computers and damage files. A more recent development in the malicious computing world is networks of pirated computers (called bots or zombies) remotely linked together and running autonomously and automatically. These networks of bots, called botnets, are often associated with disruptions of computing software or placement of malicious software (malware).

According to a Winferno.com article dated April 14, 2008, the Storm botnet is estimated to be the most prevalent example, with up to 1 million pirated machines worldwide at any given time. Individual machines within a botnet are referred to as bots or zombies because they are externally commanded to perform tasks without the owner's consent. Victims are typically unaware that their computers are infected and being controlled remotely by a botnet administrator. Symptoms of a bot infestation generally show up in very slow operation of a zombie machine or a slew of E-mail bounce backs into your inbox.

The Winferno article goes on to explain that by stealing and coordinating the computing resources of thousands of zombies, cyber criminals can construct botnets that have the Internet bandwidth of a small country and the processing power of hundreds of supercomputers. Criminals use hijacked machines for various illegal tasks, such as sending massive amounts of spam E-mail or launching distributed denial-of-service attacks that can completely shut down the networks of corporate or government targets. Estimates place 50 to 80 percent of all spam is being sent from zombie computers. Using



zombies can mask the identity of the criminals. Having a huge network of zombies means no one machine will compromise the entire network, making detection of the source of the botnet extremely difficult.

Worms are often used to propagate a zombie infection, and increase the overall bandwidth and power of a robot network. The Storm botnet uses the Storm worm to infect and connect victims to its robot network. Contaminated systems will mail copies of the Storm worm to all E-mail addresses that can be harvested from address books or archived E-mails. The message sent from a victim's machine contains either an infected attachment or a link to a Web site that uses security loopholes such as Active X to automatically download malware.

Benefitting from a botnet

Plain and simple, the reason anyone would set up a botnet is money. Successful botnet owners rent their stolen bandwidth to spammers who flood your inbox with bogus sales messages trying to entice you to buy pharmaceuticals or click a link and expose your bank account information.

The criminals use zombies with the fastest connections to set up

mail servers, which rapidly distribute millions of E-mails across the Internet. Spammers pay botnet administrators to send messages containing advertisements and links to Web sites that in turn bring revenue back to the spammers. Spammers save money because they pay far less for pirated bandwidth than for space on legitimate Internet service provider (ISP) networks. Legitimate ISPs also have rules about mass mailings that are not followed by rogue botnets.

Since this is a highly technical global issue, finding a solution is a huge challenge for law enforcement. The Federal Bureau of Investigation launched Operation Bot Roast, which has yielded some arrests, but the attacks continue seemingly unabated. The most highly publicized Operation Bot Roast arrest was 18-year old New Zealander Owen Walker earlier this year. But botnet hunters say as soon as one botnet operator is arrested, another steps into the picture.

How to protect yourself

By now, you should know you never click a link or open an attachment from an unknown source. But with botnets, these infected links or attach-

Botnets, continued next page

Botnets, continued from previous page

ments are often packaged to appear harmless. Users should not be fooled by appearances because clicking the wrong link, or downloading the wrong attachment, can lead to immediate infection. Iowa DOT's Information Security Officer, Deb Covington, advises users to never open an attachment you're not expecting, even if it looks legitimate. She goes on to say that attackers often use inviting advertisements and seemingly harmless messages to entice victims into visiting a site that will infect and connect their machine to a botnet. Once connected, their system becomes a node in an international network of illegal activity. "The Iowa DOT has the security tools and best practices in place that prevent potential attacks from being successful," said Covington. "But because the identity of these botnets changes so frequently, sometimes every 10 to 15 minutes, it is very difficult to keep up with them. Users need to be vigilant and never click a link or open an attachment that is not known to them."

If your DOT computer begins to operate very slowly or erratically, contact the Call Center at 515-239-1075. For your home computer, there are several products available, both free downloads and purchased software that can help protect your machine against botnet invasion. You can find a list of products by typing "spyware" into your search engine. Covington suggests running at least two of these softwares on a regular basis to cover possible infections. "Even the major protection softwares struggle to keep up with the ever-changing face of botnets. Running more than one scanning software on a regular basis just increases your chances of identifying and removing the offending controller from your machine," said Covington.

New federal rule takes effect this month

A federal rule change designed to enhance the visibility of highway workers takes effect Nov. 24. The rule calls for all workers on foot in federal-aid highway right-of-way to wear high-visibility safety apparel that meets the American National Standard for High Visibility Safety Apparel and Headwear performance class 2 or 3 requirements. For Iowa DOT, that means a shift in shirt colors from orange to fluorescent yellow-green. The current high-visibility, fluorescent yellow-green vests are compliant and will not be changed.



A revised DOT policy (PPM 230.05) will take effect the day the federal rule is enacted and will cover all DOT employees working in the right-of-way and not in the cab of a vehicle. The change will also affect all emergency workers, such as fire, EMS, tow truck operators, contractors, and city and county workers. The change will also affect law enforcement when they are directing traffic and media when covering a crash or other event on federal-aid highway right-of-way.

All workers are required to wear high-visibility apparel while working within the right-of-way. High-visibility vests, shirts and jackets are acceptable, with only the vests being provided by the Iowa DOT. Employees wanting to purchase shirts or jackets should look for a label inside the garment specifying compliance with the standards noted in the PPM.

High-visibility pants will be required for night work and recommended for other low-visibility conditions. These pants will be provided by Iowa DOT when an employee's work requires them. High-visibility headgear will also be provided by Iowa DOT when it is required. Fluorescent yellow-green face-masks, stocking caps and shirts are available for employee purchase from the warehouse or can be purchased from private vendors. Iowa DOT will also modify all current and future professional services contracts and permits to include requirements for the new apparel.

Mark Bortle from the Office of Construction has been working for the past year to make sure all Iowa DOT employees had time to stock up on the new apparel. Bortle said, "The most important thing to remember about this federal rule and accompanying policy change is that our workers will be more visible on the job site. Aside from the color change, another big difference in the requirements calls for all shirts to be untucked. We know these are big changes for many of our employees, but the increased visibility will make the change worthwhile."

Honing leadership skills

There's something to be said for sharing experiences with people who are in similar situations. While the speakers and programs of the annual Supervisor's Conference provide information for Iowa DOT leadership, the ability to connect one-on-one with other supervisors is undoubtedly one of the most beneficial aspects of the day and a half spent each year in Altoona. "The planning committee for the conference did an excellent job of seeking out talented and informative speakers. I know I learned a lot from them," said DOT Director Nancy Richardson. "But beyond the programmed sessions, the conversations with folks in the halls and over meals benefited me in getting to know some folks I don't otherwise have the opportunity to interact with. They get to understand just a little more about me as a person and I get to do the same. There is a great deal of value in that sharing of experiences."

Sharing experiences DOTer-to-DOTer carried over into the sessions this year with the concurrent programs all led by DOT supervisors. One of three supervisor-led breakout sessions was: "Selecting with Success – the Open House Process" presented by District 2

supervisors Randy Taylor, Ron Loecher, Keith Norris, and Russ Frisch. You may remember reading about this process in the March 2008 edition of INSIDE.

The second breakout discussed the "SECURE Project – Older Adult Sensitivity Program – Seeing your world through the older customer's eyes" presented by Office of Driver Services' supervisors Karmella Heuer, Lisa Hennessey, Mary Schaer, and Deb Carney. This group led participants on a journey to understanding older customer needs and how best to address them.

Dena Gray-Fisher, director of the Office of Media and Marketing Services, provided the third breakout session on "Contemporary Communication Technologies." From RSS feeds to Avatars, Gray-Fisher gave attendees a quick glance at what communications strategies are emerging to meet the need of techno-savvy customers.

In the large group sessions, outside speakers amused and enlightened DOT supervisors. The initial speaker, Dean Lindsay, brought attention to the "Six Ps of Progress" to sell the benefits of progress versus change. He challenged the supervisors to offer their best as the way to get the best out of employees.

Dr. Paula Morrow, a professor at Iowa State University and long-time collaborator with the DOT, brought results of the most recent employee survey. While many of the survey results showed a steadiness in our workforce, Morrow noted a few challenges in the area of diversity.

Being lowans, our agency takes a common sense approach to challenges, even difficult ones like how to embrace and encourage diversity in the work place. Alfred Ramirez, a consultant specializing in diversity and inclusion, recruitment and retention, training, coaching, and many other areas, spoke to the group on his vast experience with workplace diversity issues. Ramirez encouraged each supervisor to relate to his or her own heritage, and see diversity and the flood of new ideas it can provide as a business advantage.

The final speaker for the 2008 Supervisor's Conference reminded DOT leaders that a smile and a laugh are great motivators in the workplace and can help diffuse stressful or difficult situations.

Thank you to this year's conference committee: James Berger, Materials; Mitch Dillavou, Highway Division; Christine Grimm, Information Technology Division; Tina Hargis, Vehicle Services; Mark Lumsden, Information Technology Division; David May, Procurement and Distribution; Michelle Mc Enany, Aviation and Public Transit; Kate Murphy, Operations and Finance Division; Wes Musgrove, District 1; and Jim Schnobelen, District 6.



left) Mike Krohn, District 1 maintenance manager, looks on as (right) Jim Vansickle, Ames highway maintenance supervisor, and (center) Greg Mulder, Des Moines resident construction engineer, use tools provided by the Driver Services' supervisors to gain awareness of how your body reacts as it ages.

Iowa DOT helps fuel the race toward alternative energy

by Christina Andersen

As the supply dwindles and cost increases for traditional energy sources, such as crude oil and coal, the Iowa DOT remains steadfast in the exploration of alternative energy sources. The Office of Research and Technology's sponsorship of Team PrISUM is one of the many innovative ways the Iowa DOT is promoting a greener world through alternative fuels.

Team PrISUM began in 1989 as a Tau Beta Pi project in the Iowa State University (ISU) College of Engineering. At that time, the team was known simply as the ISU Solar Car Project. By 1995, the team took the name of its first car, "PrISUM."

Soon after its inception, the team began to incorporate the experience of students from all ISU colleges in disciplines as varied as business to graphic design to engineering to play a role in the team's success.

The Iowa DOT's Office of Research and Technology's \$500 donation to Team PrISUM was used for transportation costs associated with the team's participation in the 2008 North American Solar Challenge (NASC), July 13-22. Competing against 14 other solar car teams, Team PrISUM's "Sol Invictus" car placed eighth with a time of 91 hours, 12 minutes and 59 seconds. "Sol Invictus" is the ninth car Team PrISUM has entered in the challenge, but the first sponsored by the Iowa DOT.

NASC is a 10-day challenge covering nearly 2,500 miles. Weather, battery capacity and terrain all affect how well the cars perform on the road. The race spans across two North American countries, beginning in Dallas, Texas, and finishing in Calgary, Alberta, Canada. The car needs no special permit

to complete this journey because before the race it will be certified as street-legal and classified as an experimental vehicle. From brake lights, turn signals, a five-point racing harness, and a horn, the car has many of the features of a regular car.

"Sol Invictus" was designed from the ground up by ISU students. The car boasts nearly 700 SunPower solar cells and produces almost 1400 Watts of power when the sun is charging the batteries at the highest level. Its body is constructed from lightweight, carbon fiber and weighs just less than 90 pounds. The structural frame, made of thin-walled aluminum tubing, weighs less than 50 pounds. The battery pack on this car is larger than past team cars, with NASC's regulations changing to allow more storage capacity. The lithium-ion cells used in the car are of the same chemistry as a laptop or cell phone battery, holding nearly four times as much energy as a typical car battery of the same weight.

While the technical aspects of the car are important, Team PrISUM can't make an impact on the nation unless the team reaches out to educate the public about renewable energy and the project. To that end, Team PrISUM travels the Midwest to energy expos, schools, and events to talk about alternative energy and science and technology.

Plans are already in the works for the next Team PrISUM car to compete in the 2010 NASC. For more information about Team PrISUM, go to www.prisum.org. (Source: <http://www.prisum.org/>)

Team PrISUM's 2008 vehicle





Kudos!

These are letters that have been submitted to the editor. They may have been edited for length and continuity.

To: Chief Dave Lorenzen
From: Lt. David Eick, Iowa State Patrol

I would like to take a moment to express my sincere appreciation for the assistance your officers provided with the flooding issues earlier this year. When I called Captain Kevin Steele to ask for help, the response was ... "How many bodies do you need and where do you need them?" Captain Steele, I understand, also covered some of the posts himself.

While I am sure this caused extra work hours and differing shifts for your people, please be assured that were it not for your agency's assistance, my mission would not have been the success that it was.

I do not know all of the officers that helped, but I am hoping you could somehow pass along my gratitude to them for their efforts in maintaining some sense of normalcy during this chaotic time. Their hard work, long hours and professionalism will long be remembered, not only by me, but by the citizens they serve. Again, my sincerest thank you to you and your officers for a job well done.

(Editor's note: This note refers to situations surrounding the flooding in May and June, specifically, closing the Iowa 150 bridge over the Wapsipinicon River in Independence (two separate times) and flooding in the city of Elkader. These emergencies resulted in Iowa DOT motor vehicle officers responding very quickly to overnight events.)

To: Highway Helper Program
From: Tom Ford, Tom and Jerry Trucking, Iowa Falls

I want to commend one of your workers of the Highway Helper team named Bill. He was so helpful to our driver earlier this fall. He really did go the 'extra mile' to help get our driver back on the road in a very short amount of time. Please extend our thanks and gratitude to Bill. Keep up the good work, Bill!

(Editor's note: Bill Lane is a highway technician associate working with the Highway Helper Program in Des Moines.)

To: Chief Dave Lorenzen, Motor Vehicle Enforcement
From: Sheila Schichtl, safety director, Holiday Express, Estherville

On Friday, Aug. 29, 2008, two of your investigators, Sergeant Joel Sivinski and Officer Brad Nelson were invited to be a part of our annual driver appreciation festivities here at Holiday Express.

I just wanted you to know that they did an outstanding job! We had a truck and trailer here as they walked through a "mock" inspection giving our drivers the opportunity to ask questions and feel at ease as they went through what can be "real life" in their day-to-day jobs. This really meant a lot to the drivers, because, believe it or not, they have questions, but never feel comfortable when it is a formal inspection.

Sergeant Sivinski spoke at our noon picnic to a gathering of 100 people, sharing words of inspiration and partnerships as we work together in this industry. He did a great job!

Here at Holiday Express we work hard at being safe, and that also includes complying with all the rules and regulations that your staff educates and enforces. When we can partner up as we did at the driver appreciation event, it makes both of us succeed in this industry. Words of commendation extended to both Sergeant Sivinski and Officer Nelson!

To: Captain Dean House, Motor Vehicle Enforcement
From: Doug DeFilippo, FS Insurance Agency, Bloomington, Illinois

On behalf of Growmark Inc. and its Illinois FS member cooperatives, I want to thank you for allowing Hazardous Materials Specialist Dave Drummond to attend and conduct training at our recent environmental, health, safety, and insurance compliance meeting. In August, Growmark staff and Iowa FS employees, representing six companies, attended the training program held at the New Century FS office in Grinnell. It was a terrific training program presented to our system employees on DOT packaging rules, particularly the portable tank rules, and new fingerprinting procedures.

The presentation was well received by the attendees, as we had many comments praising his presentation ability and knowledge on the subject. It was a very worthwhile program for our system, and we appreciate the time and effort put into the preparation and presentations.

Again, thank you for the training programs you arranged for us, for Drummond's excellent presentation, and also, thank you for your continuing the fine work to help all of us stay in compliance with the DOT hazardous materials regulations. We truly appreciate all you do for us.

Family happenings

District 2

Lu Mohorne



On Wednesday, Aug. 6, 2008, Clyde Mohorne, engineering technician senior in Mason City, had a hole-in-one, with a pitching wedge, on the 148

yard, seventh hole at Centennial Oaks Golf Club in Waverly.

Planning, Programming and Modal Division

Mary Kay Reimers



Peggy Baer (right) and her husband, Roger

Peggy Baer, former director of the Office of Rail Transportation, retired at the end of June. Peggy worked in various positions and offices, but spent her entire 29-year DOT career working with Iowa's railroads. Many of Peggy's friends and co-workers attended an open house at the DOT June 25. Peggy is very interested in genealogy and history, and is a board member of the Ames Historical Society. In lieu of gifts, her coworkers contributed on Peggy's behalf to the Ames Historical Society's Building Fund.

District 5

Brenda Hadley



T.J. (Terry) Smyser, construction technician in the Chariton construction office, and his wife, Kenna, are proud first-time parents of a baby boy. Grady

Lee was born July 5 weighing 7 pounds, one ounce. He was 19 1/2 inches long. Congratulations, Smysers!

Thank you



Kathy Davis, secretary 2 in Materials, submitted this thank you note on behalf of her daughter and son-in-law, Diane and Al Hobart. Kathy's

granddaughter, Karleigh Hobart, born July 18, has been diagnosed with a rare disease called hemophagocytic lymphohistiocytosis or HLH. She is currently at the University of Iowa Hospital in Iowa City undergoing chemotherapy. She will eventually have a bone marrow transplant.

From Diane Hobart:

"We want to say a very heartfelt thank you to everyone at the DOT in Ames where my mom works. The Materials Office had a pizza luncheon that they made a fundraiser for my daughter, Karleigh Hobart. We cannot tell them how incredibly special that gesture was to us. We thank all of you for your kindness. Once again, we can't express how much this touches our hearts. Thank you very much."

In Memory

Donald William Stevens, 77 of Nevada, died Thursday, Sept. 25, at the Israel Family Hospice House in Ames.

Don was born Nov. 2, 1930, in Ames to William and Ethel (Kelly) Stevens. He married Verla Jean Breer June 24, 1950, in rural Cambridge. Don was a building engineer for George White Chevrolet, and after his retirement he was employed at the Iowa DOT. He enjoyed buying cars, working and bowling.

Don is survived by two sons, Darrell Stevens of Ames and Bill Stevens of Runnells; two daughters, Carol Bappe of Colo and Bev Fiscel of Altoona; nine grandchildren; eight great-grandchildren; and a sister, Doris Skare of Story City.

Don was preceded in death by his parents, his wife Verla, two grandchildren, two brothers, and two sisters.

Service Awards

Information supplied by the Office of Employee Services for November 2008

40 Years

Larry Cihacek, Council Bluffs-north garage

35 Years

Ronald Buckholdt, Avoca garage; **Randy Dunkelberger**, Ashton garage; **John Haas**, Maintenance; **Mark Johnson**, Cedar Rapids materials; **William Lutz**, Systems Planning

30 Years

Mylon Card, Latimer garage; **Scott Falb**, Driver Services; **Donald Glenn**, Des Moines construction; **Jane Holtorf**, Driver Services; **Sylvia Isley**, Driver Services; **Kermit Wilson**, Procurement and Distribution

25 Years

Scott Hepker, Urbana garage; **Roger Marchant**, Iowa Falls garage; **Stephen Mefford**, Council Bluffs maintenance; **Michael Reikofski**, Council Bluffs-north garage; **Lynn Sestina**, Bridges and Structures; **Danny Steenhard**, New Hampton construction

20 Years

Ricky Bergfeld, Dubuque garage; **Lorrell Borkowski**, Avoca garage; **James Kennedy**, District 1 Office; **Toni McAlister**, Employee Services; **Kevin Smith**, District 2 bridge crew; **Jane Stalheim**, Finance

15 Years

None

10 Years

Wayne Allen, Avoca garage; **Duane Bahr**, Maquoketa garage; **Steven Bosshard**, Bridges and Structures; **Vesper Brace**, Transportation Data; **Brad Breitsprecher**, Elkader garage; **Joshua Brimeyer**, Dyersville garage; **Scott Church**, Perry garage; **Matt Dinan**, West Union garage; **Daryl Erickson**, Britt construction; **Todd Frasher**, Dyersville garage; **Larry Frueh**, Donnellson garage; **Joel Gavigan**, Waterloo garage; **Christopher Gerling**, Washington garage; **Marty Goedken**, Dubuque garage; **David Grise**, Davenport garage; **Roger Hosch**, Manchester garage; **Donald Kent**, Muscatine garage; **Sherri Ketelsen**, Clinton DL station; **Anya Lane**, Information Technology Division; **Rodney Lang**, Swea City garage; **Jerry Leonard**, Fairfield garage; **John Lyle**, Washington garage; **Michael Moller**, Cherokee construction; **Mark Mullenbach**, Osage garage; **Rodney Rosenow**, Neola garage; **Jason Sallach**, Red Oak garage; **Christine Schreck**, Employee Services; **Daniel Vallier**, Motor Vehicle Enforcement; **Travis Wesselmann**, Information Technology Division; **Dennis Wilson**, Tama garage

5 Years

Todd Cogdill, Onawa garage; **Steve Gibson**, Fort Dodge garage; **David Hunt**, Maintenance; **Terry Richardson**, Oakdale garage; **Troy Siefert**, Systems Planning

Personnel Updates

Information supplied by the Office of Employee Services for Aug. 8 to Sept. 4, 2008

New hires

Diana Barajas-Tatum, driver's license clerk, Davenport DL station; **Sheridan Billhorn**, motor vehicle officer, Motor Vehicle Enforcement; **Teresa Chenault**, driver's license clerk senior, Iowa City DL station; **Amy Christensen**, driver's license clerk, Iowa City DL station; **William Dotzler**, transportation engineer manager, District 3 Office; **Benjamin Driscoll**, motor vehicle officer, Motor Vehicle Enforcement; **Michael Keys**, mechanic, Waterloo garage; **Troy Kuecker**, motor vehicle officer, Motor Vehicle Enforcement; **Joseph Nickell**, motor vehicle officer, Motor Vehicle Enforcement; **Brian Rink**, motor vehicle officer, Motor Vehicle Enforcement; **Deborah Roeder**, executive officer 1, Motor Carrier Services; **Catherine Scott**, driver's license clerk, Fort Dodge DL station; **Kristan Shanks**, driver's license clerk, Fort Dodge DL station; **Stuart Turner**, executive officer 2, Maintenance; **Jonathan Wenger**, mechanic, Waterloo garage; **Ronald Werner**, motor vehicle officer, Motor Vehicle Enforcement

Promotions

Anthony Blint, from construction technician to construction technician senior, Mount Pleasant construction; **Bryan Bradley**, from transportation engineer intern, Design to transportation engineer, Traffic and Safety; **Shane Fetters**, from materials technician 3, Materials to materials technician 4, Fairfield materials; **Andy Loonan**, from transportation planner 2, Systems Planning to transportation planner 4, District 5 Office; **James Murray**, from construction technician, Creston construction to materials technician 4, Atlantic materials; **Brian Pribyl**, from highway technician associate to equipment operator senior, Osceola garage; **Richard Pross**, from construction technician associate to design technician, District 4 Office; **Todd Sadler**, from executive officer 2 to public service executive 4, Employee Services; **Kyle Schuchmann**, from motor vehicle officer to motor vehicle investigator, Motor Vehicle Enforcement; **Roberta Siems**, from driver's license clerk to driver's license clerk senior, Waterloo DL station; **Richard Voss**, from highway technician associate to highway technician, Newhall garage

Transfers

Phillip Davis, highway technician associate, from Grimes garage to Highway Helper; **Darla James**, design technician, within Design; **Stephen Lampe**, from mechanic to equipment operator senior, Storm Lake garage; **Kim Nobiling**, executive officer 1, from Motor Carrier Services to Maintenance; **Duane Prange**, highway technician, from Allison garage to Waterloo garage

Retirements

Maynard Bochmann, highway technician associate, Allison garage; **Gerald Jerman**, design technician, District 1 Office; **Paul Johnson**, highway technician associate, Sac City garage; **Michael Lindner**, survey party chief, District 2 Office; **John Redlinger**, highway technician associate, Washington garage; **Byron Wheels**, highway technician associate, Grimes garage

(Correction: In the October *INSIDE*, **Dennis Ackerman** was listed as being promoted from the Ames garage to the Boone garage. The promotion was from the Boone garage to Jefferson construction.)

Road construction completed near Ames complex

The extension of South Grand Avenue (U.S. 69) east of the Ames DOT complex was completed and opened to traffic Oct. 1. Also opening at this time was Fourth Street, which runs between the main complex and sign shop and District 1 Office. DOTers coming to Ames from field offices can access the complex from Lincoln Way using either the old or new Grand Avenue (U.S. 69) entrances,

the entrance off South Fourth Street or either of the two entrances off Oak Street.



Tacos for Tots time in Algona

It's time again for tacos! Noe Villarreal, equipment operator in the Swea City shop, his wife, Monica, and many of their friends will host the 21st Tacos for Tots Nov. 24 from 4:30-7:30 p.m. at the First United Methodist Church, 201 E. Nebraska Ave. in Algona.

Villarreal and his helpers plan to cook up more than 250 pounds of meat for 2,500 tacos to raise money so underprivileged kids in northern Iowa can have a toy at Christmas.

For more information on the event or how you can help, call Villarreal at the Swea City shop at 515-272-4295 or by cell phone at 712-260-7009.

INSIDE

INSIDE is developed to help keep all Iowa DOT employees informed about critical issues affecting them, recognize DOT employees for their excellent service and share interesting aspects in the lives of our co-workers. For more information contact Tracey Bramble, Office of Media and Marketing Services, at 515-239-1314 or e-mail tracey.bramble@dot.iowa.gov.

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On the cover: Motor Vehicle Sergeant Cal Enfield conducts a roadside inspection.

Getting started on the right foot

Driving in a winter storm can be a harrowing experience for any driver, but can be even scarier for a new highway technician associate on that first snow run.

Since safety of our employees and the traveling public is our main goal, the DOT began a training program in 2004 to make sure new employees have the skills they need to safely operate equipment in the field. The DOT Academy is a three-week training offering construction, materials, safety, and emergency preparedness classes, in addition to maintenance winter operation activities, depending on the time of year. The week-long maintenance session held Sept. 29 through Oct. 3 in Ames included an orientation on winter operations and instruction on CDL/load securement, end loader operation, dump truck/snowplow fundamentals and chemical applications, plus a spin in the DOT's driving simulator. This year, calibration of spreader equipment was added to the curriculum.

Everyone learns in a different way, so the academy offers training using different delivery methods. The subject matter is usually introduced in a classroom setting, then a veteran employee will work with a small group of new employees to demonstrate the ideas presented. The new employees then have a chance to try their hand at the task. Trainers try to keep the academy as hands-on as possible, since many people learn better by doing than by just listening to a speaker.

Russ Cornelius, mechanic in the Carroll garage, thinks his experience as a mechanic can give a different perspective to new highway technician associates. "When we go through the vehicle inspections, as a mechanic, I can give new employees some tricks of the trade that highway technician associates might not think about."

Many of the new DOT operators have experience with large equipment. Kary Sobaski, engineering office assistant 1 in District 5 maintenance,



Kary Sobaski, engineering office assistant in District 5 maintenance, goes through the pre-trip inspection list with new employee, Moses Borntrreger from the Ames shop.

was walking through pre-trip inspection procedures with Moses Borntrreger, a recently hired highway technician associate in the Ames shop. Borntrreger, who operated equipment for Cramer and Associates prior to coming to the agency in July, said the training is very good because it points out the way things are done at the DOT. "I could probably go out and do the job without this training," he said. "But here I can learn how to do the job in the way the DOT expects it to be done."

Sobaski, who helps out on snow runs when she's needed in District 5, says teaching in the academy refreshes her skills for the upcoming winter. "I work in the office during the summer, so running through the various winter maintenance activities here helps me refocus," she said.

But it's not just new highway technician associates included in the training. New mechanics also go through the paces at the academy. Jonathan Wenger, mechanic in the Waterloo shop hired Aug. 11, said, "I need to know how to run the equipment as much as I need to know how to fix it. That includes the safety elements and calibration that we go through here."

The learning doesn't end when the week of training wraps up. The feedback forms completed by the

veteran employees are forwarded to the new employee's supervisor to continue working on areas identified as needing further instruction. Dave Hipnar, equipment operator senior from Denison, said, "Having the feedback for the supervisor on areas that need to be reinforced for each employee will be very useful when that employee gets back to his or her own shop. It doesn't mean they've not done well, it just identifies areas that can be improved."

Hipnar also says the non-tangible benefits of the training include a sense of camaraderie among the trainers and between the trainers and new hires. Hipnar said, "This training is helpful to get new employees ready to go and do the job, but it's also good to meet people from other shops that you might not get the opportunity to see. It introduces new employees to each other so they have a sense that we're all in this together."

Jim Dowd and Barb Coon from the Office of Maintenance have been coordinating the maintenance week of the academy for the last year. Dowd said, "It takes a lot of field volunteers to put on this training. We receive a great deal of help from the district mechanics who not only serve as instructors, but have helped assemble the curriculum."