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Included with this issue: **MTC Asset**

ISU first recipient of new award from AASHTO

The American Association of State Highway Transportation Officials (AASHTO) has named Iowa State University (ISU) and former AASHTO Deputy Director David J. Hensing the first recipients of the Francis B. Francois Award for Innovation. This award translates into a \$10,000 graduate fellowship for a student who pursues an advanced transportation-related degree. ISU's Civil and Construction Engineering Department, in cooperation with CTRE, will choose the fellowship winner.

"The award is made on behalf of Hensing, an ISU graduate, and honors Francois, another ISU alumnus," says Reginald Souleyrette, associate professor of civil and construction engineering. "We're honored for ISU to be the first recipient of this award."

Francis B. Francois (CE '56) served as executive director of AASHTO for 18 years. He has been an excellent friend and supporter of ISU and CTRE. Hensing (CE '60), now the interim president and executive director of the Intelligent Transportation Society of America (ITS America), served at AASHTO for 20 years.

AASHTO officials stated that in succeeding years, the Francis B. Francois Award will be presented to a state department of transportation (DOT), which will then designate a state university as the recipient. The winning state DOT will work with the state university to develop criteria and procedures for selecting fellowship winners. •

Planning for the next generation of PCC pavements

CTRE will play a major role in shaping the direction of portland cement concrete (PCC) pavements research for decades to come.

The Innovative Pavement Research Foundation (IPRF) has awarded a three-year project to CTRE's Center for Portland Cement

Concrete Pavement Technology (the PCC

Center), and its several partners, to develop an innovative, long-term plan for concrete pavement research and technology, along with an implementation plan.

To collect input about desirable characteristics of the next



ISU's PCC Center will make its mark by helping shape the focus of PCC research.



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CTRE's mission is to develop and implement innovative methods, materials, and technologies for improving transportation efficiency, safety, and reliability, while improving the learning environment of students, faculty, and staff in transportation-related fields.

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PCC PAVEMENTS CONTINUED FROM PAGE 1

generation of PCC pavements, the PCC Center and its partners will soon conduct regional and national workshops for a wide cross section of the PCC pavements community. The goal is to understand the innovations and outcomes of PCC pavement research desired by industry; federal, state, and local governments; academia; and many other groups of stakeholders.

The project team combines some of the country's finest PCC technical experts, long-term program managers and implementers, and PCC pavements researchers in the country. Partners include

- TDC Partners, Alexandria, Virginia (Mr. Ted Ferraguto)
- The Transtec Group, Inc., Austin, Texas (led by Dr. Robert Rasmussen)
- ERES Consultants, Champaign, Illinois (led by Dr. Michael Darter)
- Dr. Dan Zollinger, Texas Transportation Institute, The University of Texas
- Dr. David Fowler, International Center for Aggregate Research, The University of Texas
- Mr. Ted Neff, Peak Management Associates, St. Charles, Illinois

This project is part of the IPRF's cooperative program with the Federal Highway Administration. IPRF will carry out PCC pavement-related research specified in the Transportation Equity Act for the 21st Century (TEA-21) to improve the performance and cost-effectiveness of PCC pavements.

The PCC Center is sponsored by the Iowa Concrete Paving Association, the Iowa Department of Transportation, and Iowa State University's Civil and Construction Engineering Department. •

Knapp wins national award

Keith Knapp, former manager of traffic and safety programs at CTRE, was honored for presenting the best paper at the 70th annual meeting of the Institute of Transportation Engineers in Washington, D.C.

While at CTRE, Knapp co-authored "Converting Four Lane Undivided Roadways to a Three Lane Cross Section: Factors to Consider" with Tom Welch, a transportation safety engineer in the Iowa Department of Transportation's Office of Traffic and Safety, and John A. Witmer, a former research assistant at CTRE. The award was presented August 5, 2000, in Nashville, Tennessee.

The award-winning paper explores how the conversion of an existing four-lane undivided roadway configuration to a three-lane cross section with a two-way left-turn lane can be considered a viable alternative where safety and traffic volume issues have been identified. Knapp says, "This paper was an initial attempt at summarizing case study experiences, and identifying some of the key factors that need to be considered to determine the feasibility of this type of conversion."

Topics in the paper include roadway function; total traffic volume; turning volumes and patterns; weaving, speed and queues; accident type and patterns; pedestrian and bike activity; and right-of-way availability and cost.

To read this paper, see www.ctre.iastate.edu/pubs/conferences/3lane_paper.pdf •



From left, Keith Knapp; Robert Rogers, International President of the Institute of Transportation Engineers; Tom Welch, Iowa DOT.

From the Director: Not-so-remote technologies



Steve Andrie

The combination of remote sensing technologies, global positioning systems (GPS) and geographic information systems (GIS) is on the verge of revolutionizing roadway design, construction, and infrastructure management. These technologies have been maturing for years, becoming more economical and less restricted.

For example, in May 2000, the U.S. Department of Defense ended the practice of “selective availability,” thereby greatly improving the accuracy of GPS receivers for civilian use. One-meter accuracy is commonly available now and one-centimeter accuracy is not far away. Improvements in digitally processed aerial photography and radar technologies are becoming sufficiently accurate for use in land surveying, and manufacturers are offering grading equipment and pavers that can be guided by GPS technology. The application of these technologies is not totally out of the research phase yet, and CTRE is playing a role in speeding deployment for transportation applications.

CTRE is a partner with three other universities and two private companies in the “Infrastructure” group of the National Consortium on Remote Sensing in Transportation. The consortium is funded by the National Aeronautics and Space Administration, the Research and Special Programs Administration of the U.S. Department of Transportation, and three states. During the first year of the consortium, CTRE faculty and staff concentrated on identifying transportation applications of remote sensing technologies that could be brought on line soon. Based on this work, planned applications in Iowa starting this summer include

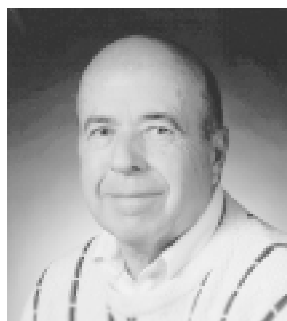
the use of remote sensing to improve assessment of infrastructure performance and identification of highway problem areas for older drivers.

Parallel to these planned consortium activities, CTRE is planning to do a project with the Iowa Department of Transportation to compare the accuracy and cost of LIDAR (light detecting and ranging) to conventional mapping techniques for corridor studies. LIDAR is an airplane-mounted radar technology that collects high-accuracy terrain elevations and digital terrain images. This could significantly reduce the time and cost of ground surveying and traditional photogrammetry.

When applied to infrastructure management, LIDAR could be used to collect as-built highway information such as pavement cross-slope, elevation, two-dimensional location, environmental conditions related to pavement deterioration, and location of drainage structures. Similarly, bridges and structures can be accurately located in three dimensions.

These seemingly “remote” technologies can also play a role in making roads safer for older drivers. The literature indicates that older drivers are disproportionately involved in certain types of crashes such as head-ons while turning left, crashes in rural areas at night, crashes at non-signalized intersections, and crashes in snowy weather. LIDAR and aerial photography show promise for identifying locations with characteristics suggesting high probability of an older driver crash. The ability to inexpensively scan large areas using digital terrain images and specially designed software has potential to improve programming of roadway safety funds.

CTRE's GIS/remote sensing team will conduct these projects. Shauna Hallmark, Omar Smadi, Reginald Souleyrette, and David Plazak contributed ideas to this article. •

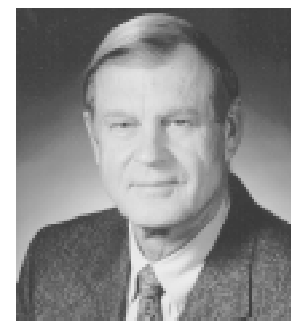


Jim Hogan

CTRE welcomes new employees

Jim Hogan has joined CTRE's staff as library coordinator to maintain the Local Technical Assistance Program resource library. From 1965 until 1999, Jim worked for the Iowa Division of the Federal Highway Administration as a design, traffic operations, and safety engineer.

Harold Smith joins the Center for Portland Cement Concrete Pavement Technology at CTRE as training and public works engineer. From 1960 until 1999, Harold worked for the city of Des Moines in various engineering positions, including city engineer for the last 29 years. Harold will



Harold Smith

Measuring friction on icy, snowy roadways

CTRE's participation in the January 2000 Winter Runway Friction Workshop at North Bay, Ontario, marked Iowa's continued commitment to improving highway safety.

Reducing those slippery spots

At the workshop, CTRE tested the SALTAR friction meter, a state-of-the-art Norsemeter AS product that measures pavement surface friction in winter conditions.

The SALTAR is mounted on the Iowa Department of Transportation's (Iowa DOT) highway concept maintenance vehicle (HCMV), a prototype snow plow for advanced winter research and maintenance, which CTRE is testing and evaluating (see the sidebar below).

Friction measurements reported by the SALTAR can help snow plow operators decide when, where, and how much chemical or abrasive to apply to increase surface friction and help keep moving vehicles under control.

The accuracy of SALTAR measurements is critical to effective maintenance decision making.

Testing at North Bay

Sponsored by the Joint Winter Runway Friction Measurement Program (a government/industry study directed by National Aeronautics and Space Administration, Transport Canada, the Canadian National Research Council, and the U.S. Federal Aviation Administration), the workshop had two primary goals:

- assess the effectiveness of different ground friction measuring devices on various winter-contaminated surfaces
- verify the correlation between different ground friction measuring instruments

These goals matched those of the HCMV study team for testing the SALTAR.

Iowa's unusually mild winter of 1999–2000 rarely provided icy or snowy pavements on which to test the SALTAR.

HCMV: a pooled-fund study

The highway concept maintenance vehicle (HCMV) not only serves as a maintenance truck in the winter but also acts as a moving research lab for evaluating new technologies. A consortium formed by the Iowa, Michigan, and Minnesota departments of transportation developed the HCMV prototype.

The HCMVs currently used by the consortium states include some or all of the following features:

- front, wing, and underbody plows
- AMS-200 on-board data logger
- global positioning system (GPS) receivers
- Road Watch pavement/air temperature sensors

- Frensor freezing point chemical sensor
- liquid and granular spreading equipment
- extra horsepower for fast acceleration
- fiber-optic lighting
- high-intensity discharge (HID) lights
- SALTAR friction meters

With the success of the HCMVs, the consortium is working to increase the number of state DOTs participating in the program and the number of HCMVs on the road.

For more information, visit <http://www.ctre.iastate.edu/research/conceptv/focus.htm>.

The harsh weather conditions at North Bay, however, provided “perfect” pavement conditions.

CTRE was able to monitor the SALTAR's performance on a variety of surfaces:

- loose and compacted snow
- smooth and rough ice
- sanded and chemically treated ice
- slush

Dennis Kroeger, transportation research specialist at CTRE, says, “Testing at North Bay was successful. The SALTAR was successful in measuring roadway conditions on these surfaces.” For example, the SALTAR successfully measured low friction values on the hard-packed snow and higher friction values on dry pavement.

Because of the promise shown by the SALTAR at North Bay, it has been installed on a new Iowa DOT maintenance vehicle for additional testing. Friction levels measured by the SALTAR on this vehicle will be reported to the Iowa DOT's district maintenance headquarters, where decisions about the application of deicing chemicals can be made. •



The SALTAR friction meter measures pavement surface friction in winter conditions.

An Iowa DOT maintenance vehicle tests the friction meter. (Photos courtesy of the Iowa DOT.)

Keeping up with TSA

In keeping with its mission to provide students interested in transportation with a number of professional activities and opportunities, Iowa State University's Transportation Student Association (TSA) has helped its members make numerous professional connections and has encouraged students to experience the transportation industry on both the local and national level.

Several TSA members attended the Institute of Transportation Engineers annual meeting in Nashville, Tennessee, in August 2000. In January 2001, almost a dozen TSA members attended the Transportation Research Board (TRB) meeting in Washington, D.C. Students attended presentations and participated in a round table discussion with other

students from Texas A&M and the University of Massachusetts.

TSA also held its fourth annual golf outing as well as “Transportation Career Days.” Both events gave students opportunities to mingle with transportation officials. “Transportation Career Days,” for instance, began with an evening of presentations by seven companies. The second day of the event provided an opportunity for qualified students to interview with the participating companies.

TSA has plans for field trips to a trucking firm, engineering firm, and a crash test facility. Members are also organizing a social service activity to educate area elementary school children on issues of traffic safety. •

Calendar

- March 27 ITS Heartland 2nd Annual Meeting, Topeka, KS (contact Kathy Glenn, 402-472-6363)
- May 15-17 Iowa Tribal Summit on Cultural Preservation and Transportation, Ames, IA (contact Sharon Prochnow, 515-294-8103, prochnow@iastate.edu)
- May 16-18 Midwest Transportation Planning Conference, Moline, IL (contact Gena McCullough, 309-793-6300, gmccullough@bi-state-ia-il.org, or see www.bi-state-ia-il.org/)
- Summer (TBA) PCC Pavements: Constructability Workshop (contact Lori Wildeman, 515-294-2869, lwild@iastate.edu)
- Sept. 23-25 National Transportation Asset Management Workshop, Madison, WI (contact Ernie Wittwer, wittwer@engr-wisc-edu, or see www.mrutc.org/septworkshop.htm)
- Oct. 3-5 5th Biennial Iowa GIS Conference, Iowa City, IA (contact Michelle Lantermans, 515-281-4293, or see www.gis.state.ia.us/conference/home.htm)

Spring 2001 scholars seminar series

All seminars are held in Ames, IA. Contact David Plazak, 515-294-8103, dplazak@iastate.edu.

- April 6 TEA-21 Reauthorization Goals for the Transportation Construction Industry
- April 13 Preparing for the Winter Olympics
- April 20 Local Roads and Asset Management/GASB 34
- April 27 National Transportation Safety Board

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EMPLOYEES CONTINUED FROM PAGE 3

be responsible for training and technical transfer of information and research regarding PCC pavements.



Lori Wildeman

Lori Wildeman joins CTRE's Center for Portland Cement Concrete Pavement Technology as assistant to the director. Before coming to

CTRE, she worked as an administrative assistant in several Iowa State University offices, including the Margaret Sloss Women's Center. Lori will support research, coordinate technical conferences, manage industry committee activities, and oversee office operations. •