

Connections

Department of Civil and Environmental Engineering

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Can Automated Traffic Management Systems (ATMS) Help to Reduce Traffic Congestion?

Bill Taylor's Work Helps to Assess the Effectiveness of ATMS in the Detroit Area.

Traffic congestion has steadily become a severe and expensive problem in most urban areas. Recently the Texas Transportation Institute (TTI) released a study that set the overall cost of traffic congestion in the United States at \$78 billion per year. This estimate includes the waste of 6.8 billion gallons of fuel and 4.5 billion hours of wasted travel time. Focusing on Metro Detroit, this same study estimates that during 1999 (the most recent data available) traffic congestion cost 248 million gallons of wasted fuel and nearly 90 million excess freeway driving hours. The authors of the study also calculate that Metro Detroit drivers compile a staggering 26 million vehicle miles per day!



Traffic congestion such as this result in enormous waste and is an ongoing area of study by transportation engineers. (Photo by University of Cincinnati Research News)

One of the greatest challenges facing today's transportation engineers is to understand all the complex factors that contribute to traffic congestion and to develop technologies for managing that congestion. Today engineers employ many elements of what are called Intelligent Transportation Systems (ITS) to reduce traffic congestion and the very real costs and aggravation associated with it. Evaluating the effectiveness of such systems once they are in place has also become a crucial engineering task.

The Michigan Department of Transportation (MDOT) engaged Professor William C. Taylor of the CEE department to assess the effectiveness of an Automated Traffic

Continued on page 2

Also in this Issue...

Message from the Chairperson	3
Thank You to Contributors	4
Alumni News	6
Department News	8
Focus on Research	9
Student News	10
Focus on Outreach	11

Continued from page 1

Management System (ATMS) in alleviating congestion in Southeastern Michigan. The goal of this study was to provide MDOT some sense of the cost effectiveness of the system and whether it might be a useful approach to managing traffic congestion in other Michigan cities. In order to perform this task Dr. Taylor had to identify some useful indices of traffic congestion and then develop methods to measure the effect on this congestion of installing an ATMS. When you consider the number of variables involved (road conditions, traffic conditions on secondary roads, weather, seasonal variations, highway maintenance projects—to name just a few), this is indeed a daunting analytical task.

A full-fledged ATMS would consist of many components: sensors to detect traffic speed and queue length, ramp-metering systems, technology to communicate traffic conditions to highway and law enforcement officials, messaging systems to inform drivers of changing traffic conditions or hazards, etc. Such a system would really be a large, complex network to collect, store, and transmit information about flow of traffic across area highways. In the Detroit Metro area, the system consists of sensors and an Automated Messaging System.

In this particular case, Dr. Taylor, assisted by Dr. Virginia Siskiopiku and several graduate students, addressed six project tasks:

- Determine the availability of data;
- Recommend a sampling plan for data collection;
- Develop and validate quantitative measures of congestion;
- Develop models to test the impact of the ATMS system on freeway congestion;
- Analyze the effect of changeable message signs on traffic diversion and travel time;
- Determine the change in the congestion measured by the SCANDI (Surveillance, Control and Driver Information) Network between 1997-99.

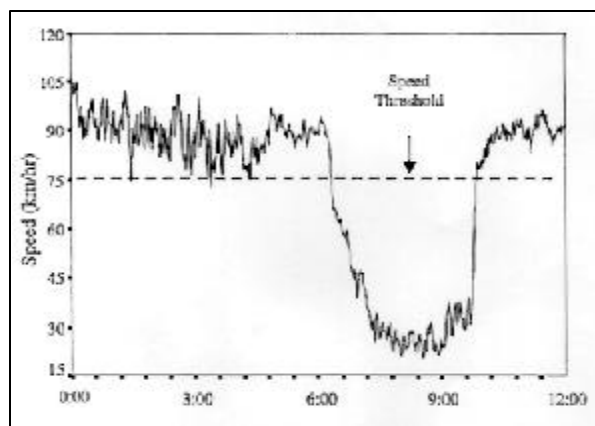
Two types of congestion occur on freeways: *recurring congestion* and *incident congestion*. Recurring congestion is a daily pattern that appears in rush hour traffic. Incident congestion is irregular and usually

results from events such as accidents, construction projects, or a hazardous materials spill.

Carrying out these tasks required that the investigators face some real-world issues. An ATMS within a given region faces political as well as technical considerations, and engineers must work within those constraints. For example, suburban and center-city governments may offer different levels of support for concepts such as ramp-metering. On the technical side, sensors installed at different locations and at different times may not provide information in compatible formats. Another challenge is that of gathering large enough sets of data from which to derive valid conclusions.

At this point the investigation has led to some interesting, but still tentative, conclusions. It identified the number of days of data sampling required to yield statistically meaningful congestion measures in the area studied. Results suggested that changeable message signs were effective in diverting traffic away from incident-based congestion. Freeway traffic close to the center city seemed to experience reduced congestion between 1997-99.

The study also provided some preliminary data on the number of crashes occurring on the Southeast Michigan Freeway System, data which might be used as a baseline to measure the effects of an ATMS deployment on reducing crashes. Please contact Professor Bill Taylor at taylor@egr.msu.edu for more information on this study.



One measure of congestion. When the measured speed of freeway traffic flow falls below a certain threshold, that measurement is a strong indicator of congestion. The trough in this graph pinpoints rush hour congestion on westbound I-94.

Message from the Chairperson—



Traditionally, this is the time of year when I update alumni and friends about the state of the department. But first I wish to take a few moments to celebrate the many accomplishments of Professor Frank Hatfield, who is retiring from the department this year.

As many of you know, Frank is an outstanding teacher. He is a three-time winner of the Withrow Award for Teaching Excellence and a three-time winner of the William A. Bradley Outstanding Faculty Member Award. He was nominated and selected for these awards by our students.

In addition, at the national level, he won the Western Electric Award presented by the American Society of Engineering Education. In 1984, a research paper he wrote with Professor David Wiggert and Robert Otwell was selected for the Moody Award by the Fluids Engineering Division of the American Society of Mechanical Engineering. Many of you know him through the structural analysis and steel design classes he taught for many years, and through participation in the steel bridge teams he coached. He gives his time to students unconditionally.

Despite his many accomplishments, Frank is a modest person and a solid department citizen. In the six years that I have been chairperson I have come to rely heavily on him to get things done. He led our ABET accreditation effort to success in 1998—a painstaking task. He chaired a number of faculty search committees recently, and he also has participated in the planning and construction of the Civil Infrastructure Lab. Frank is going to be missed dearly by the faculty, staff and students. I express our sincere thanks to him for his many years of dedicated service.

The department has come a very long way since Frank joined it. Today we must compete in a fierce marketplace for strong students and national and international visibility. The department must hire outstanding faculty and recruit outstanding students. The faculty must engage the students

and build visibility for our programs at both the graduate and undergraduate levels. Excellent undergraduate programs establish our visibility amongst employers. We know that we already enjoy great success on this front. Our graduates are rated as being among the best, especially in Michigan. The credit for this goes to our faculty and to our alumni. We also seek national and international recognition for our research and graduate programs.

Maintaining our excellent undergraduate program and simultaneously strengthening our research productivity poses significant challenges. We must seek faculty members who are capable of performing cutting-edge research and who are excellent teachers. We must recruit outstanding graduate students and establish a climate of inquiry that catalyzes their achievement.

I can report steady progress on all fronts. We are hiring some of the best people in the country to join our faculty. We currently have six junior faculty in the department and will have more after we complete the searches currently underway. These new faculty have the intellect, training and passion to perform high-quality research, and they also care deeply about the undergraduate program.

Despite some progress, recruiting graduate students is one of our most difficult problems. The slowing economy should help on this front; fewer jobs usually means more graduate students!

A high priority in building the infrastructure to support research is the Civil Infrastructure Laboratory. Construction of the lab has begun and is scheduled to be completed in early fall. We plan the dedication next spring after we move equipment into the lab and it becomes fully operational. Many of you have given generously to make the lab a reality, and I am deeply grateful. In lieu of the usual retirement gift from his colleagues, Frank Hatfield requested that they contribute toward the lab. I am happy to report that the faculty, emeritus faculty and staff of the department, and Frank, have collectively contributed more than \$10,000 toward the lab. This gift will be recognized on a plaque in the lobby of the lab and indicates the high regard Frank's colleagues have for him and their commitment toward strengthening our research.

Continued on page 6

A Huge “Thank You” to Contributors for Supporting the CEE Department

We are extremely grateful for the ongoing support the department has received from alumni and benefactors. Such support remains crucial to our efforts to sustain and improve the quality of our teaching, research, and outreach. The faculty, students and staff of the Department of Civil & Environmental Engineering join in recognizing the following individuals and organizations who have contributed to the department during 2000-2001.

Individuals:

Joseph Alberts
 Robert Bachteal, Sr.
 Timothy & Suzanne Benton
 James Berlow
 Stuart & Charlotte Bogue
 Lyle & Ruth Bornor
 Richard Bressler
 Jeff & Trisha Brink
 Bradley & Linda Brogren
 Wayne Burke
 Bruce & Deborah Campbell
 James & Carilon Carr
 Myung Chang
 Mu-Tsang Chen
 Lizette Chevalier
 Roy & Julia Colby
 Roy Colby, Jr.
 William Costick
 Jonathan Crince
 Gary & Linda Culver
 Gordon & Patricia Danke
 Ronnell & Linda Denhof
 John Dexter
 Jason & Jennifer Early
 Bruce & Mary Elenbaas
 John & Jennifer Estill
 J.A. Farrell
 Kenneth Faulk, Jr.
 Martha Foley
 Daniel Fredendall
 Timothy Gorenchan
 Ernest & Sally Gubry
 Eric Gumayagay
 Darrell & Mildred Hall
 Daniel Hanson

Special Recognition

The College of Engineering and the Department of Civil & Environmental Engineering join in thanking alumni and friends who have taken a leadership role through major gifts and pledges to the Civil Infrastructure Laboratory.

Reginald E. Batzer (B.S. '50, M.S. '54)	Richard Kriner (B.S. '55)
Roger & Sheila Conrad (B.S. '67)	Rodney & Mary Jo Meade (B.S. '55)
Frank DeDecker (B.S. '49)	Michigan Concrete Association
Leroy & Cheryl Dell (B.S. '66)	Michigan Concrete Paving Association
Henry S. & Virginia Espenship (B.S. '64)	Charles Raths (B.S. '49)
Larry & Jacqueline Fleis (B.S. '73)	Donald & Ruth Welling (B.S. '49)
Faculty & Staff of CEE	Mark Young (B.S. '76)
Alton & Janice Granger (B.S. '54)	
Great Lakes Cement Promotion Association, Inc.	

David & Cheryl Hawthorne
 Curt Herron
 Richard Hibner
 Richard & Lori Hinkley, Jr.
 James Holzbach
 Thomas Hoogerhyde
 Janet Houthhoofd
 Richard & Sharon Hrudra
 Joowon Kang
 David Kasley
 Gus & Constance Kavalaris
 David & Lynn Kimpel
 Josephine Klingler
 Michael Lamping
 John LaVoy
 Rodney & Nancy Lentz
 Frederick & Barbara Levantrosser
 Mark Loch
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 Audrey Post
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 Keith & Karen Risdon
 Gilbert Ropes

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 James Wight
 Holly Zabitz

Organizations:

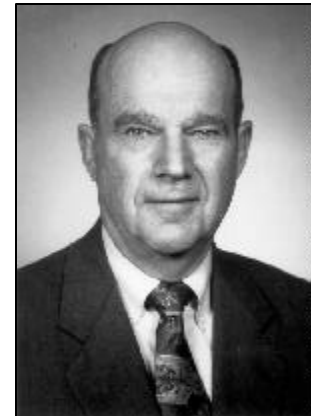
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 Wade-Trim
 Wightman & Associates, Inc.
 Zurn Industries

Lab Updates & Funding Opportunities

- The formal dedication of the Civil Infrastructure Laboratory has been tentatively set for May 9, 2002. We hope that you will be able to attend this event.
- The department deeply appreciates the outpouring of support for the Civil Infrastructure Laboratory. We hope that support will continue as we make plans to equip the laboratory and make the best possible use of its facilities. Naming opportunities remain through gifts of \$25,000 or more. In addition, gifts of \$10,000 or more will be prominently recognized on a plaque placed at the entrance to the laboratory. Alumni, associations, companies and friends are invited to participate in this program. For more information please contact Jonathan Hill, associate director of development, College of Engineering at (517) 355-8339.

Thompson Scholars Program to Benefit Asphalt Pavement Studies

The CEE department has received a major boost through establishment of the Robert M. Thompson Graduate Scholars Program. The program resulted from a gift from Robert M. Thompson, a founder and president of Thompson-McCully Co., Michigan's largest asphalt paving contractor.



Robert M. Thompson has established graduate fellowships in pavement studies.

This program establishes a graduate fellowship program to benefit asphalt pavement studies. The gift will support five master's level student fellows for a period of two years each. According to Ron Harichandran, department chairperson, "This program raises the level of interaction between industry, government and the university. The program will help develop a new generation of asphalt pavement engineers to address Michigan's needs."

Recipients of these fellowships are selected by the Robert M. Thompson Scholars Advisory Board, which consists of representatives from the CEE department, the Michigan Asphalt Paving Association, Michigan Department of Transportation and Michigan Technological University. The first two Thompson Scholars have already been named. They are **Mike Scorch** and **Jason Bausano**.

Robert M. Thompson gained national attention in recent years for sharing with his employees the proceeds of the sale of his company. He has also been a leader in establishing education initiatives across the state. In recognition of his generosity, as well as his engineering achievements, Mr. Thompson received the Award of Excellence in 2000 from *Engineering News-Record*.

*A Message from the Chairperson--**Continued from page 3*

We also significantly enhanced our undergraduate program. One success story is the effective implementation of technical writing within the curriculum. Two years ago we hired a full-time technical communications specialist, David Adams, to spearhead this effort. Within two years we have effectively implemented technical writing in two of our required classes. Professor Roger Wallace played a leading role in this effort, with support from Professors David Wiggert, Rick Lyles and Virginia Sisiopiku. Our accomplishments were reviewed this semester by a communications specialist from the civil engineering department at the University of Texas at Austin, and she gave us very high marks. Unfortunately, David Adams will leave us soon to direct the technical communications program at Case Western Reserve University. We wish him success in his new endeavor. The structure he has helped put in place will survive in our department for many years to come.

Another success story is our study abroad program in Russia. This program was developed a few years ago by professors Bill Taylor and Tom Maleck. This last year, owing to the untiring efforts of Professor Maleck, the program has been expanded to include civil engineering students from Michigan Technological University. The classes now include pavement engineering, in addition to the transportation engineering and Russian language classes offered earlier. Next year Michigan Tech hopes to become a full-fledged partner in this program.

An effort that is just beginning is the development of a new capstone design class. Professor Roger Wallace is leading this effort, and the model that we plan to implement is likely to involve students working on projects defined by employers. We hope that those of you in industry will participate in this endeavor by proposing projects and serving as "clients" for our student teams.

As you can see, we are steadily building and refining our programs. The support of alumni and friends remains crucial to our continued success, and I appreciate your willingness to provide that support.

Events Calendar

A Mid-Michigan Alumni gathering is scheduled for September 13, 2001 at 5:30 p.m. in the courtyard of the Engineering Building. If you are interested in attending this event, please contact Linda Steinman at 517/355-5107 or E-mail her at steinman@egr.msu.edu

Alumni News

Robert C. Smith, P.E. (B.S. '67) retired from public service in November 2000. He was the Columbus City Engineer for the last 11 years. He is currently pursuing several other employment opportunities. *E-mail: rcsmith343@aol.com*

Kevin L. Tolliver (B.S. '79) is a team project manager responsible for the construction documents and permitting of commercial projects, healthcare facilities and public park facilities in Central Florida. Kevin began this position in June of 2000 following 14 years of civil and sanitary engineering in Atlanta, GA. He is registered in Georgia and Florida, and received his M.S. from Georgia Institute of Technology in 1982. *E-mail: kevinolliver@hotmail.com*

Marty Phillips (B.S. '80) recently left his job at CalTrans and was named Municipal Civil Engineer at the City of Chula Vista in California. He is a licensed Civil Engineer in California. His wife Kathryn has worked for the State of California for 35 years. He has a daughter Megan (19) and a step-daughter Julie (15). *E-mail: marty-kathy@home.com*

Zafer Bozkus (M.S. '85, Ph.D '91) has worked as a deputy general manager of a major Turkish Construction Company, TUBIN Inc. Co. for 2 years and just returned to his university position three months ago at Middle East Technical University while keeping a consulting relationship with his former employer. "My Chinese wife (whom I met at MSU) works as a pianist at Ankara University. We have two kids. Our daughter Filiz is 12 and our son Aydin is 10 years old." *E-mail: bozkus@metu.edu.tr*

Doug Skyllis, P.E. (B.S. '85) was recently promoted to senior project manager at the Lapeer office of Rowe, Inc.

Jon D. Andrews (B.S. '87) has become a principal at Tylk Gustafson Reckers Wilson Andrews, LLC *E-mail: jandrews@tgrwa.com*

John Starceвич, P.E. (B.S. '87, M.S. '90) is president of J.P. Starceвич, Inc. His firm specializes in earthwork and heavy civil construction. *E-mail: kstarceвич@thekpgroup.com*

Jeff A. Sowers (B.S. '88) used to design bridges for the Indiana DOT. He now works in a specialized field related to utilities in the Lansing office of TBE Group, Inc.

Tom Guist, PE, (B.S. '90) recently accepted an opportunity to be one of three market sector leaders in charge of opening a new office for Atwell-Hicks, Inc. (Civil Engineering, Surveying and Environmental Consulting) in Chicago. "We are aggressively recruiting Spartan alumni in all areas." *E-mail: tguist@atwell-hicks.com*

David Eno (B.S. '92) is a senior engineer with Fishbeck, Thompson, Carr & Huber. "I recently transferred from the main office in the Grand Rapids area to the firm's newest office in Farmington Hills to help establish and lead the civil engineering effort from the new office. I have been with FTC&H for over 6 years and work in the areas of highway design and general municipal services." *E-mail: dpeno@ftch.com*

Douglas Peters, P.E. (B.S. '92) served with the Army Corps of Engineers after graduation (4 years). "I have worked for Walsh Construction Company of Illinois since 1995 and am currently serving as the Project Manager for the Cast in Place Concrete bid packages at the new Northwest Airlines Midfield Terminal Project Parking Structure (11,500 car) at Detroit Metro Airport." *E-mail: kimbohella@aol.com*

Jim Grant, P.E. (B.S. '92, M.S. '96) is senior project engineer/associate at NTH, Ltd. Jim recently joined the department's Professional Advisory Board and moved to NTH's Lansing office in hopes of fulfilling his life-long aspiration to attend one MSU athletic event in the "Sparty" mascot outfit.

Christian J. Knutson (B.S. '93) is currently serving as a captain in the U.S. Air Force assigned to Ramstein AB, Germany as the Installation Maintenance Engineer Chief with a professional and technical staff of 25. Over the past four years he has deployed to Hungary in support of Bosnian operations, Kuwait in support of continuing operations in the Persian Gulf, as well as in Africa. Since earning a professional license in 1999, has served as the European examination proctor for the North Carolina Board of Examiners. He is currently a member of NSPE, SAME, and ASCE. *E-mail: knutsons@bunt.com*

Joo Won Kang (M.S. '93, Ph.D. '98) was appointed last year as a lecturer at Yeungnam University in South Korea. *E-mail: kangj@yu.ac.kr*

Melissa Hall (Rockwood), B.S. '95) is an environmental engineer at General Motors. "Since graduation I have had several jobs, including working at a waste water treatment plant, a ground water treatment plant and at General Motors specializing in compliance. More importantly, my husband Dan and I had our first child, Gabriel, on May 7 of this year. We live in Livonia, Michigan, and visit campus whenever possible." *E-mail: MelissaHall@MSUSpartans.com*

Craig Galecka (M.S. '95) was recently named manager of the LGB, Inc. office that opened in Lansing. Craig specializes in environmental, health and safety compliance, and the design of industrial and domestic wastewater treatment facilities. *E-mail: cgalecka@jlbinc.com*

Brad Semp (B.S. '97) obtained an M.S. in Systems Engineering from Oakland University (OU) in 1999. He is currently working on his Ph.D. in Systems Engineering and is a full-time systems engineer at the Product Development & Manufacturing Center (PDMC) at OU. *E-mail: bwsemp@oakland.edu*

Jacob Hiller (B.S. '97, M.S. '00) is a graduate research assistant and civil engineering Ph.D. student at the University of Illinois at Urbana-Champaign. *E-mail: jhiller@uiuc.edu*

Ahmed S. Abdel-Rahim (Ph.D. '98) joined the Department of Civil Engineering at the University of Idaho as an assistant professor.

Ahmed Hassan (Ph.D. '98) is a lecturer in the Civil Engineering Department at Minia University in Cairo, Egypt. He reports a new baby, Mohamed, was born on May 4, 1999. *E-mail: hassan4ahmed@yahoo.com*

Heather Cheslek (Marek), B.S. '99) was married in May of 1999 to Eric Cheslek, an MSU chemical engineering graduate (B.S. '98), and is a water resources engineer for Camp Dresser & McKee in Indianapolis where she assists clients with stormwater and wastewater related issues. She was recently nominated to the board of the Indiana chapter of the Water Environment Federation as the Schools Education Committee Chair and volunteers at various Society of Women Engineers functions. *E-mail: cheslekha@cdm.com*

Made Sukrawa (Ph.D. '00) returned to Bali where he is a lecturer at Udayana University. *E-mail: sukrawam@yahoo.com*

Justin Wood (B.S. '00) is a structural representative at CalTrans. "CalTrans so far has been an excellent place to begin a career in civil engineering. They invest a lot in their new employees as far as experience and education. California is cool, but weird things happen all the time."

Department News

Professor **Tom Maleck** recently received the Richard H. Austin Traffic Safety Award for 2000. The award is given by the Michigan State Safety Commission "for long-term contributions in Transportation Engineering." Professor **Neeraj Buch** received the Withrow Award for Teaching Excellence. **Laura Taylor** received the Gloria Stragier Award for service.



Professor Neeraj Buch won this year's John D. and Dortha J. Withrow Teaching Excellence Award. This award is presented annually to members of the engineering faculty "who have achieved the highest level of instructional excellence."

Three New Members Strengthen Professional Advisory Board (PAB)



Tereza Szuper (B.S. '95) joins the PAB after over five years as an engineer at Secor Environmental Consulting. Her areas of expertise include brownfield projects, remedial investigations, and risk-based site closures.



Robert Rabeler, P.E. is a vice president at SME, Inc. He brings to the board 20 years of diverse experience in geotechnical, environmental, and construction materials engineering. He has practiced in nine states and several foreign countries.



Jim Grant, P.E. (M.S. '94) is associate/senior project engineer at NTH Consultants, Ltd. Jim has managed projects in brownfield redevelopment, environmental investigation, and remediation systems.



As usual, the CEE Department's Laura Taylor is ready to help with a smile. That probably helps explain why she won this year's Gloria Stragier Award for outstanding service.

New Faculty

Amit H. Varma joined the Department of Civil & Environmental Engineering for the spring semester, 2001. He received his Ph.D. in Civil Engineering (Structures) from Lehigh University in January of this year. He holds an M.S. in Civil Engineering (Structures) from the University of Oklahoma and a B.S. In Civil Engineering from the Indian Institute of Technology-Bombay.

His Ph.D. research focused on the seismic behavior, analysis and design of high-strength, concrete-filled steel tube columns. His M.S. research concerned the fatigue behavior of threaded connections for large diameter offshore pipe columns.

His current areas of research interest include: steel-concrete composite structures; seismic behavior and performance-based design of structural systems; fire engineering of steel and steel-concrete composite structures; repair and retrofit of existing steel structures; new and innovative structural systems and components.

He has taught courses on basic and advanced structural analysis and structural dynamics at Lehigh University. He teaches basic steel design (CE 405) and advanced steel design (CE 805) here at MSU.

He is a member of the American Institute of Steel Construction (AISC) and the Structural Stability Research Council (SSRC). He is chairperson of SSRC Task Group 20-Composite Members and Systems. Next fall he will become co-advisor (joining Frank Hatfield) to the Steel Bridge Design Team.



Focus on Research

The work done in the department's Pavement Research Center of Excellence (PRCE) illustrates the diversity of important research carried out in Civil & Environmental Engineering. We asked professors Baladi, Buch and Chatti to answer some questions about their efforts.

Q: How would you describe the specific goals of your research, and where do they fit within the larger scheme of pavement research?

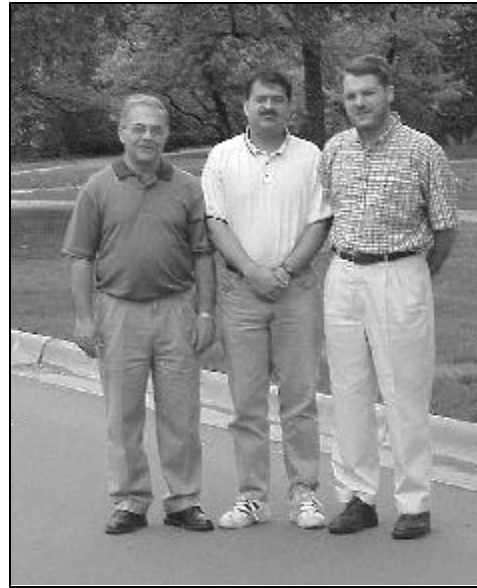
The PRCE research focus has been on: (1) prediction and improvement of pavement performance and (2) mechanistic analysis and design of pavement systems. This focus fits with the current national emphasis in research promoted by such entities as the Federal Highway Administration (FHWA), the National Cooperative Highway Research Program (NCHRP), and the Industry Partnership Research Fund (IPRF).

Q: What are the implications of your research for your area of engineering? What might be the practical payoffs?

MDOT has sponsored a series of research projects aimed at developing a new and integrated pavement design methodology based on mechanistic principles. This will be done in time for the arrival of the new *American Association of State Highway & Transportation Officials (AASHTO) 2002 Pavement Design Guide*. Also, because of the national trend to improve and renew our transportation infrastructure, we have established a new senior-level design course on pavement rehabilitation and a series of outreach courses in pavement engineering.

Q: Are you pursuing this research with colleagues or institutional partners?

Yes. Thus far we have collaborated with the following institutions outside MSU: Michigan Tech. Univ., Univ. of Michigan, Univ. of Washington, Univ. of California, and ERES Consultants, in Illinois. Within MSU, we have worked with the Composite Materials and Structures Center and colleagues from chemical engineering, material science and mechanics, and statistics departments.



Professors Gilbert Baladi, Neeraj Buch, and Karim Chatti lead the CEE department's Pavement Research Center of Excellence (PRCE).

Q: What is the current status of your research efforts in pavement performance?

We can point to several accomplishments. For example, in collaboration with Prof. Ron Harichandran, we developed the MFPDS program: an integrated software design system for flexible pavements (based on the MICHPAVE and MICHBACK programs). A current project will enhance MFPDS by including dynamic analysis capability for interpreting non-destructive (FWD) field test results. We created the new pavement rehabilitation manual for MDOT (Michigan Department of Transportation).

We also developed new preventive maintenance (PM) tools for MDOT aimed at optimizing the selection and timing of PM fixes, and maximizing pavement life extension. Examples of such tools are (1) a roughness diagnosis tool aimed at detecting the optimal time for smoothing pavement surfaces and minimizing dynamic truck loads; (2) a new construction technique of load transfer restoration for concrete pavements.

Other work includes the creation of new guidelines to mitigate material-related distresses in concrete pavements (with Michigan Tech) and development of a new tool for identifying asphalt mix segregation in newly constructed flexible pavements.

Student News

Students in the Department of Civil & Environmental Engineering have garnered a number of awards recently.

Marissa Patterson received the 2001 Michigan Section American Water Works Association Fellowship for Water Quality and Treatment Study. **Nadia Kholodova** and **Heather Morales** were recipients of Annual Michigan Section ITE Scholarships. **Julie Galambos** received the CCC Undergraduate Scholarship awarded by the AGC Education and research Foundation and the Carleen E. Hallman Scholarship awarded by NAWIC's Lansing chapter. **Tony Sesti** won a General Motors Environmental Excellence Award. **Melissa Pelkey** was selected as the first recipient of the Francis X. McKelvey Award for Transportation. This award was established by the former students of Emeritus Professor Francis X. McKelvey at the time of his retirement. **Therese Sutphen** received the AWMA East Michigan Chapter Scholarship and the Conrad Outstanding CEE Student Award.

Members of the 2001 Steel Bridge Team. Front row, L-R: Reid Moreland, Katie Smith, James Lee, Ed Kwon, Julie Galambos, Pete Walker. Back row, L-R: Kyle Phinney, Chris Evans, Mike Szumigala, Neil Weghorst, Dave Macklin.

2001: A "Learning Experience" for Steel Bridge and Concrete Canoe Teams

Normally at this time of year, students from the Steel Bridge and Concrete Canoe teams are busily planning for competition in the national finals. Well, the old saying that "engineers learn more from setbacks than from success" certainly applies this year as neither team qualified for the nationals.

The canoe team followed a Superman theme for the boat they named "FTSB" (Faster Than a Speeding Bullet). But it seems someone had some Kryptonite on hand as the team finished second and thus missed qualifying for the nationals. Meanwhile, the bridge team had a real setback as a suspect joint on the bridge caused it to deform upon loading.

Save space in the trophy case, however, because both teams are determined to bounce back with a vengeance next year.



Members of the 2001 Concrete Canoe Team. Front row, L-R: Aimee Bolen, Brad Pries, Kimberly Jacks, Karen Ives, Sarah Rozema, Susan Quiring, Wanda Lau, Norm Holm. . Back row, L-R: Dean Kanitz, Joe Lehning, Dane McBane, Sean Duffett, Troy Kelts (co-captain), Kevin Dubnicki (co-captain), Allison Hazen, Sarah Powell, Susan Rozema, Dr. Mack Davis (coach).



Focus on Outreach

TOSC (Technical Outreach Service to Communities) examines Proposed Bioremediation at Occidental Chemical Corporation Facility, Montague, Michigan

For more than 20 years, residents of this Lake Michigan community have sought answers concerning contamination from a defunct Occidental Chemical Corporation manufacturing facility. The facility caused major contamination of ground water and soils, and of sediments in nearby White Lake. The site contaminants include PCBs, C-series compounds (hexachlorobenzene, hexachlorobutadiene, etc.) and asbestos.

The Lake Michigan Federation and the Montague community have requested TOSC assistance on proposed remedies for the site, particularly the bioremediation of soils and White Lake sediments using two proprietary bioremediation strategies. Key questions that TOSC will address include: Will the bioremediation succeed in breaking down PCBs in the sediments? What is the success rate of the two strategies at other sites? The community also wants an evaluation of the proposed "institutional controls" for the site, such as deed restrictions and other methods to limit access to and disturbance of the site.

Dr. Michael J. Dybas is leading the CEE-MSU TOSC effort, with the support of TOSC coordinator Kirk Riley and Atiq Syed, TOSC project specialist.

Highway Traffic Safety Programs (HTSP) – A Continuing Education Opportunity

Another HTSP traffic safety/transportation engineering training program is drawing to a close. However, planning for next year's program continues. Here is a short preview of coming attractions! Next year's program will begin earlier, with a class on the **Michigan Vehicle Code** to be offered on September 11 and 18. This class was offered for the first time this training year and had an overflow of registrations large enough to offer a second class.

It provides a basic understanding of Michigan traffic laws.

Two more classes will be offered at the end of September. The first is a class on traffic impact studies and the second is a class on the practical applications of CORSIM (traffic simulation). In October and November we repeat classes on highway-railroad grade crossing issues and pedestrian/bicycle considerations. Our popular class on signs and pavement markings will be offered in December, along with a new class on pavement marking inspection.

January will witness the start of our pavement classes with pavement design being offered on January 29 and 30. If you would like to learn more about our specialty classes or wish to be placed on our mailing list, contact either Tom Krycinski at 517-353-9782 or Laura Taylor at 517-353-1790.

In addition to the course listed above, we offer many other classes and training opportunities, including "Investigation of Vehicle Crashes Associated with Hydroplaning and Possible Roadway Defects" and "Advanced Accident Reconstruction." We also offer three motorcycle training programs certified by the The Michigan Commission on Law Enforcement Standards: "Police Motorcycle Operator Training," "Police Motorcycle Operator Recertification Training," and "Basic Police Motorcycle Training Tailored for the Civilian Operator." HTSP also offers a course on "Alcohol and Other Drug Enforcement."

For information on these and other courses, please call Eunice Weber at 517/355-3270.

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How to Find Us

By mail:

Department of Civil and
Environmental Engineering
Michigan State University
East Lansing, MI 48824-1226

By e-mail: cee@egr.msu.edu

By phone: 517-355-5107

By FAX: 517-432-1827

On the Web:

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