

Connections

Department of Civil and Environmental Engineering

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MICHIGAN STATE
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New Civil Infrastructure Laboratory is Focus of Major Campaign

The Department of Civil and Environmental Engineering must support its existing research and educational endeavors while positioning itself to address future needs and opportunities. To meet those challenges, the department, with the support of the College of Engineering, has proposed to build a new Civil Infrastructure Laboratory.

In addition to offering necessary facilities for education and advanced research, this laboratory will enable the department to recruit high quality structural engineering faculty. Faculty recruitment looms as a major issue since some of our most experienced faculty members are approaching retirement. The new laboratory will enable our structures and pavements faculty members to perform critical research in such areas as the repair and rehabilitation of deteriorating bridges, as well as pavements and construction materials research. These efforts will address pressing needs within Michigan and across the nation

We already make significant contributions in these areas despite the cramped laboratory conditions, and with the new laboratory we have the potential to become leaders. Our faculty are very excited about this project, and we are sure that those of you who had classes in the small "structures" lab will share this excitement. Read more about the Civil Infrastructure Laboratory in the pages that follow.

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An artist's rendering of the new Civil Infrastructure Laboratory.

Why MSU Needs the Civil Infrastructure Laboratory

- Although faculty in the department have been quite resourceful in their use of the existing laboratory for research and teaching, a new, dedicated facility is paramount to the continued success of the infrastructure and materials program at Michigan State University.
- Laboratory testing is crucial for developing and evaluating new structural systems. New systems that incorporate fiber-reinforced plastics and other innovative materials with traditional materials such as concrete, steel and wood, have strong potential for future research.
- The department cannot attract new researchers until it can provide adequate laboratory space. Retirements of key faculty combined with difficulty in hiring new faculty threatens MSU's viability in this core area of civil engineering.
- A new facility located away from classrooms will allow researchers to schedule their work so as not to disrupt daytime classes. It also will provide separate rooms for some equipment so that noise is isolated and dust and water damage to electronic controls is minimized.
- The existing facility provides insufficient work and storage space for both research and classroom use. Although the laboratory is equipped with 12 benches (2 students per bench), three are consumed by research equipment, thus restricting the number of students who can enroll in courses.
- An ineffective ventilation system in the existing laboratory fails to remove dust and fumes.
- The new facility will feature a strong floor—a necessity for testing large structural components.
- The new laboratory will provide much-needed high-bay space for testing tall structures, and an overhead crane to move large specimens and heavy equipment safely. Presently, large specimens are transported manually, a process that is inherently unsafe.
- Transport of bulk materials by wheelbarrow through the hallways of the Engineering Building is impractical and unsafe. Hauling materials such as sand, gravel, concrete, and construction-type waste to and from the new facility will be much safer and easier, thanks to accessible loading areas.

Infrastructure and Materials: Past, Present and Future

The study of infrastructure and materials has played a major role in the Department of Civil and Environmental Engineering's long history at Michigan State University. In the past five years alone, departmental researchers have been awarded \$2.6 million for experimental studies of structures and materials. These studies have benefited the industrial associations, automobile manufacturers, utility companies, cooperatives, state and federal agencies, chemical companies, and materials manufacturers that provided funding.

During that same period, over 100 undergraduate and graduate students have participated in research projects in this area of study, with graduate degrees awarded to six master's students and 18 doctoral students. In addition, undergraduate students receive a degree that is accredited by the Accreditation Board for Engineering and Technology and firmly grounded in the subjects of infrastructure and materials.

The new Civil Infrastructure Laboratory will be dedicated to basic and applied research on structures and materials. The department also proposes to renovate the existing laboratory to better serve instructional needs. These two efforts will place the Department of Civil and Environmental Engineering at the forefront in experimental investigation of materials and structures.

A History of Success

Over the years, the department's research activities in the area of infrastructure and materials have resulted in the following accomplishments:

- innovations in cellulose-fiber-reinforced-cement composites which led to major commercial activities;
- new concepts for using recycled materials in concrete which are now the focus of industrial activities;
- new curing techniques for cement-based materials, making value-added use of carbon dioxide (a greenhouse gas);
- use of coal fly ash in concrete, which led to new industrial enterprises, including one undertaken by the Michigan State University physical plant that resulted in major annual cost savings to the university; and
- approximately ten patents issued or pending on the above technologies.

(Continued on page 3)

The current laboratory is used by departmental researchers for the following:

- studying the use of fiber-reinforced plastics (FRP) for reinforcing bridge decks;
- conducting durability research on thin, reinforced-cement products;
- studying secondary reinforcement of concrete pavements with recycled plastic and paper fibers;
- studying the use of FRP for repair of corrosion-damaged bridge columns;
- developing ductile composite materials;
- testing full-scale concrete pavement slabs (sections of road) to study transverse crack characteristics;
- determining mechanical and durability properties of fiber-reinforced concrete;
- determining mechanical and durability properties of large-stone concrete mixtures; and
- presenting workshops on fiber-reinforced concrete.

Gifts-in-Kind: Another Way to Help

Materials for the building, such as concrete block, cast-in-place concrete, pre-engineered steel framing and doors, and site work can be donated as gifts-in-kind. Gift Credit and tax deductions for such donations are available and can be discussed with the college's development officer.

The department is offering the opportunity to have specific areas of the building named for contributions to the campaign

Named Giving Opportunities

The department is offering the opportunity to have specific areas of the building named for contributions to the campaign. Each laboratory and room will bear the name of the donor, and the gift will be acknowledged in *Currents*, the College of Engineering Honor Roll, and *Connections*. Campaign gifts of \$10,000 or more will be recognized on a designated "donors wall" in the Civil Infrastructure Laboratory. Donors contributing to designated areas may request modifications.

Gifts for the campaign may be in cash, appreciated securities, gifts-in-kind, and pledges payable over a five-year period. Planned-giving opportunities are available and can be discussed with the college's development officer.

The department invites you to donate to the Civil Infrastructure Laboratory. By joining others who have pledged their commitment to the campaign, you will help Michigan State University enter the next century as leaders in infrastructure and materials engineering. For more information, contact:

Mark Brower, director of development, College of Engineering, at (517) 355-8339; or **Ronald Harichandran**, chairperson, Department of Civil and Environmental Engineering, at (517) 355-5107. □

Suggested Named Gifts*	Square Footage	Gift Amount
Structures and Pavements Laboratory	2,500	\$250,000
Civil Materials Laboratory	700	\$100,000
Conference Room	550	\$75,000
Micro-Testing Laboratory	500	\$50,000
Controlled Environment Room	400	\$50,000
Specimen Preparation Room	900	\$25,000
Curing Room	200	\$25,000
Faculty Offices (3)	600	\$10,000
Student Offices	200	\$10,000

*A special opportunity exists for naming the Civil Infrastructure Laboratory in recognition of a substantial gift.

Introducing Dean Janie M. Fouke—an Interview



On September 1, 1999, Janie M. Fouke became dean of Michigan State University's College of Engineering. Dean Fouke came to MSU from the National Science Foundation, where she was director of Bioengineering and Environmental Systems. During her stay at NSF, she was on leave from her position as a professor of biomedical engineering at Case Western Reserve University. She received her doctorate in biomedical mathematics and engineering from the University of North Carolina and currently serves on the board of directors of the Institute for Electrical and Electronics Engineers.

You have been at MSU for only a short time. What has most surprised you about the place?

While I had no real preconception, I have been delighted by the quality of the students. I have witnessed a number of their presentations and found them to be exceptionally well done. I have also been surprised by the complexity of the structure here. There are so many meetings and committees that I worry about whether there might be some duplication of efforts or failures in communications.

What is there in your own background that might be illuminating for readers of this newsletter?

I think people in the department, as well as the alumni, might be unaware that one of my accomplishments at NSF was setting up the Environmental Technology Program. Bioengineering and environmental engineering activities both reported to me, creating a wonderful partnership between engineering and the life sciences. I had an opportunity to meet environmental engineers from all over the U.S. In terms of my own background, I think growing up on a farm and doing well in math made engineering a perfectly logical career choice. I was always around things being built or being wired or being repaired.

What do you see as the biggest challenges facing the college and, in particular, the CEE department?

I see two basic and related challenges: resources and recognition. We need increased resources if we are going to accomplish our missions as they relate to education, scholarship and service. Our ability to increase resources will result from better visibility in the appropriations process as well as from more developed relationships with our alumni.

In terms of recognition, we simply need to do a better and more consistent job of publicizing the achievements of our faculty and students. I am committed to making sure that happens. For example, I want to make sure that our communications with alumni are interesting and that they occur on a regular basis, including communications with our international alumni.

What do you feel are the most critical issues in engineering education today?

Of course the new ABET (Accreditation Board for Engineering and Technology) criteria are an issue for all engineering colleges. We rose to the challenge and took the risk of defining our goals and did it years before it was required of us. The real issue for us will be how we will look when the accreditation team returns in six years. Will we have done what we said we would?

I would suggest that another issue for the College of Engineering is the fact that we don't admit students until their third year. Contact with potential engineers early in their academic life is quite important. I wouldn't pretend to understand all of the ramifications of third-year admission, but perhaps we need to examine that structure and be certain that we can make it work to the best advantage of our students.

The CEE department faces a number of pending retirements. How do you view that situation?

I see this situation as both a challenge and an opportunity. On the one hand, the department will lose a great deal of experience and expertise. Conversely, it is an unusual opportunity for the department to define its direction over the next ten years or so.

How do you envision the role of CEE alumni?

I hope that CEE alumni can become more active players in addressing the two issues I mentioned earlier: resources and recognition. We need the alumni. They are valuable to us. They keep us current. It is our responsibility also to be valuable to them. □

A Big Thank You to Contributors for Donations to the CEE Department and the Civil Infrastructure Laboratory

We have been very fortunate in garnering support from individuals and corporations for our department and its activities. With shifts in funding at all levels, the need for fund-raising at the department level has become a significant ongoing activity for the department chairperson, individual faculty, and even students. In that context, we would like to extend our very sincere thanks to the following individuals and organizations who have contributed to the department during 1998-99.

Individuals

Mr. & Mrs. John Aldighieri
 Mr. & Mrs. Kent Allemeier
 Mr. & Mrs. Patrick Allen
 Joy Ammond
 Robert M. Bachtal, Sr.
 Mr. & Mrs. Richard Bacon
 Ceo Bauer
 Mr. & Mrs. Timothy Benton
 James Berlow
 Mark Biro
 Mr. & Mrs. Arthur Bittel
 Denis Boles
 Richard Bressler
 Jeff Brink
 Mr. & Mrs. Bradley Brogren
 Wayne Burke
 Timothy Buresh
 Rachele Busser
 Michael Carter
 Thomas Casari
 William Clifford, Jr.
 Mr. & Mrs. Gary Cline
 Edward Cote
 Paul Cottrell
 Mr. & Mrs. Sarnual
 Cryderman
 Mr. & Mrs. Gordon Danke
 John Dexter
 Paula Dynda
 Scoff Emmons
 Kenneth Faulk, Jr.
 Larry Fleis
 Erik S. Fiskars
 Raymond Fix
 Thomas J. Foss
 Daniel Fredendall
 Ira Gabin
 Timothy Gates
 Michael Gazella
 Mr. & Mrs. Charles Gobba
 Mr. & Mrs. Patrick
 Gumpfer
 Mr. & Mrs. Darrell Hall
 Heather Hengesbach
 Curt E. Herron
 Richard Hibner
 Richard Hinkley, Jr.
 Mr. & Mrs. Michael Horgan
 Janet Houthoofd
 Lenora Jadun
 Mr. and Mrs. Steven
 Karlowski
 Anne Kernkamp
 Howard LaFrance
 Mr. & Mrs. Allen Lampela
 Michael Lamping
 Eric Lentz

Civil Infrastructure Laboratory: An Update and Special Thanks

The College of Engineering and the Department of Civil and Environmental Engineering join in thanking our alumni and friends who have graciously donated to the Civil Infrastructure Laboratory. The lab has currently received gifts, pledges and other commitments in excess of \$971,000—with over \$1,000,000 yet to be raised. We extend a special thank you to the following individuals who have taken a leadership role through major gifts and pledges to this critical project.

Reginald F. Batzer ('54)	Henry S. Espenship ('64)	Charles H. Rath ('59)
Roger A. Conrad ('67)	Leo V. Nothstine ('38)	William F. Savage ('56)
Leroy R. Dell ('66)	John C. O'Malia ('72)	Mark A. Young ('83)
Bruce K. Elenbaas ('67)		

As fundraising for the Civil Infrastructure Laboratory progresses, we look forward to continued support from all of you. Several named giving opportunities are available for gifts and pledges of \$10,000 or higher. Pledges may be paid over a 10-year period and qualify for gift recognition from Michigan State University through the President's Club, Beaumont Tower Society, the John A. Hannah Society and others. All gifts to the Civil Infrastructure Laboratory are tax deductible. For further information about gifts or pledges, please contact Mark Brower, director of development, College of Engineering at (517) 355-8339.

Mr. & Mrs. Frederick
 Levantrosser
 Mr. & Mrs. Mark Loch
 Steven Lynch
 Mr. & Mrs. Ben Maibach
 Dana J. McCarius
 Clayton McCormack
 Roger Mieden
 Mr. & Mrs. Gordon Milne
 Susan Mohr
 Mr. & Mrs. Harold
 Neumann
 Mr. & Mrs. Patrick O'Leary
 Mr. & Mrs. David Olson
 David Orr
 Mr. & Mrs. Lawrence Pate
 Mr. & Mrs. Herbert Post
 Mr. & Mrs. Christopher
 Potvin
 Lawrence Radzville
 Charles Rath
 Robert Rayl
 Susan Regen
 Keith Risdon
 Lea Schmidt
 Robert Scraver
 Ben Sherman
 Peter Siegenthaler
 Michael Smith
 Doreen Snow
 Mr. & Mrs. Russell Snow II

Lawrence Sonne
 Jack Steel
 B. Thomas Stover
 David Strockis
 Linda Sturgess
 Seok Yan Tan
 Burt & Rae Ann Thompson
 Roy Townsend
 Richard Turcotte
 Mr. & Mrs. Edward Umiker
 Mr. & Mrs. Leroy VanderLinden
 Mr. & Mrs. Donald Welling
 Robert Wen
 Gary Whittenbaugh
 James K. Wight
 Nancy Willis
 Cdr. Harry Wills
 Frederick Witte
 Paul Woodruff
 Ming-Shan Yeh
 Robert Zuhl

Organizations

AISC Education Foundation
 Atwell-Hicks, Inc.
 B.F. Goodrich
 Bestfoods
 Boeing Company
 Capital Consultants, Inc.
 Carrier & Gable, Inc.

Consoer Townsend
 Envirodyne
 Detroit Edison
 Douglas Steel Fabrication
 Dow Chemical Co.
 Foundation
 Exxon Education Foundation
 Fishbeck, Thompson, Carr
 & Huber
 Ford Motor Company Fund
 Gr Lakes Fabricators
 HH Engineering
 HNTB Corporation
 Hubbell, Roth & Clark, Inc.
 Institute of Transportation
 Engrs
 Ledy Design Group, Inc.
 Lucent Technologies
 Master Builders, Inc.
 MI Chapter Assoc. Gen
 Contractors
 NTH Consultant, Ltd.
 Novak Engineering
 Portland Cement Association
 SEG Engineering
 Soil and Materials Engineers,
 Inc.
 SOMAT Engineering, Inc.
 Turner Construction
 Company
 Zurn Industries, Inc.

Alumni News

Leroy Dell of Dell Engineering, Inc., received the 18th Annual Claud R. Erickson Distinguished Alumnus Award from the College of Engineering at MSU at the undergraduate commencement ceremony held on May 8, 1999. In October 1998 he received an Alumni Service Award from the MSU Alumni Association at the national board recognition dinner.

Carl Floyd Larson (BS '39) is a retired civil engineer living in Essexville, Michigan, with his wife Leona Belle. He serves as a consultant for Larson Salvage Company, a family-owned business.

Wayne K. Ward (BS '48) retired in 1991 after 18 years with the Ingham, Clinton, and Shiawassee County Road Commissions and 24 years with Jensen Bridge and Supply. He and his wife Helen reside in St. Johns, Michigan.

Ray R. Filipchuk (BS '54), a former Sterling Heights city councilman and retired director of public services, was honored by the Sterling Heights City Council who named the city's public works facility after him.

Bruce M. Jones (BS '55) recently completed 40 years of service with the St. Joseph County Road Commission. He spent the last 33 years as the engineer manager.

Richard W. Kriner (BS '55), president of CEMCON Consulting, Inc., was elected chairman of the American Society of Testing Materials (ASTM) Committee C-1 on Cement for 1999. The committee has 316 members and is charged with developing specifications, test methods, practices, and terminology for hydraulic cements. He is fellow of ASTM and the American Concrete Institute. Kriner resides in South Haven, Michigan.

William F. Marcuson III (MS '64) was a candidate for ASCE Zone II vice-president for 1998-2000. He is the director of the Geotechnical Laboratory at the Waterways Experiment Station in Vicksburg, Mississippi. He is a Fellow in the ASCE and was ASCE National Government Civil Engineer of the Year in 1994 (among many other honors).

Luiz F. Autran (MS '70) of Rio de Janeiro Brazil is a professor at the Fluminense Federal University and a member of the National Academy of Engineering (Brazil). Dr. Autran also holds a Ph.D. from the University of California at Berkeley. *E-mail: autran@ax.ibase.org.br*

Thomas Ecklund (BS '72) was named vice-president and appointed to the board of directors for Wade-Trim of Grand Rapids, Michigan. He is responsible for day-to-day operations in Wade-Trim's Grand Rapids and Cadillac offices.

Bruce Henley (BS '75, MS '77) has been a "nuclear gypsy" working in the nuclear power industry in Chicago, Ann Arbor, Long Beach, Boston, Knoxville, and, for the last ten years, in a small community 35 miles southwest of Fort Worth, Texas. As a structural engineer, he notes that the MSU graduates that he's come in contact with are as well-prepared and competent as those from any of the other Big Ten schools and better than most others. *E-mail: bfhjmb@itexas.net*

Tim Buresh (BS '76) is vice-president of infrastructure for Jacobs Engineers. He currently manages the program and construction management of large infrastructure projects in the western US.

Randal Van Portfliet (BS '77) has been appointed as Michigan Department of Transportation district engineer for the Upper Peninsula. He oversees all planning and operations in the 15-county region. Van Portfliet began his career at MDOT in bridge design in 1977.

Gary W. Collins (BS '79) has been promoted to assistant director of structural and civil engineering at Albert Kahn Associates, Inc. A registered professional engineer with nearly 20 years of experience, he had previously served as senior project structural engineer. Collins is a resident of Canton, Michigan, with his wife, Marjorie, and two children, Mariel and Garret.

Michele Dorian (BS '79) is president of Dorian Construction, Inc., a commercial and industrial general contractor in the metro-Detroit area.

Paul C. Larsen (BS '79) is the general manager of Engineering and Testing Services, Inc., in Indianapolis. He was recently recognized by the Indianapolis Business Journal in their publication, *Who's Who in Construction/Design/Engineering*.

Patrick J. O'Leary (BS '79) has joined Orchard, Hiltz & McCliment, Inc. of Livonia, Michigan. He is responsible for construction engineering and related contract administration of transportation and utility projects.

Marty Phillips (BS '80) is a transportation engineer for Caltrans, where he has worked for 19 years. Marty is currently design project engineer on a \$50-million seismic retrofitting of the San Diego-Coronado Bay Bridge.

Kenneth R. Davis (BS '81) is a senior project manager with Mansur Real Estate Services and is responsible for the development of an 800-acre golf-course community in Clarkston, Michigan. Davis has worked in real estate development for the past six years after spending nine years in consulting.

Marla M. Hough (BS '82) is president of Hough Engineering in Bradenton, Fl. She is a 1999 Distinguished Women in Business Award winner and was named Engineer of the Year in 1997 by the Florida Engineering Society's local chapter.

Aris Drakopoulos (MS '84, PhD '93) is an assistant professor at Marquette University and continues "to be rich and famous..."

Drew Floyd (MS '84) is a senior vice president of Spencer White and Prentis in Washington, D.C. where he manages the Mid-Atlantic office.

Carolyn St. Cyr (BS '84) works as an environmental engineer with Cliffs Mining Services Company, a subsidiary of Cleveland Cliffs, Inc., in the Upper Peninsula. **Mark St. Cyr** (BS 80) now works for Morrison Knudsen in Troy, Michigan, after working for Bechtel Power Company for 17 years. And finally, **Susan St. Cyr** (BS 89) recently accepted a position as airport engineer for the City of Corpus Christi, Texas, after working for Bechtel Power for four years.

(Paul) Chi-Kang Chiu (BS '85, MS '88) reports that he is in the midst of a job transition. *E-mail: hawaiiaw@aol.com*

El Houssine Bartali (PhD '86) is a professor of civil engineering in Rabat, Morocco. He has been elected incoming president (term: 2000-2002) of the International Commission of Agricultural Engineering.

Daniel D. Lauderback (BS '86) was promoted to associate partner at Andersen Consulting of Chicago. He works in the firm's communications industry group in the customer contact arena, specializing in the optimization of large-scale information technology organizations.

Venu Sarakki (MS '87) is president of Sarakki Associates, a California-based firm involved in the design, implementation and integration of ITS projects. Venu reports that being a traffic engineer in Southern California "is my Mecca and Karma."

Jeff Heald (BS '88) has recently taken the position of associate in charge for Wilbur Smith Associates' Southern California Operations. He, wife Sandi, and two-year-old Matthew live in Costa Mesa, California. *E-mail: jbh@wilbursmith.com*

Abdeslam Reklaoui (MS '89) lives in Tangier, Morocco, where he is the director of a civil engineering consulting firm. The firm does work in the analysis and design of reinforced concrete structures and conducts foundation and multiframe calculations.

Jarkko Salminen (MS '89) is the deputy CEO of Pekka Salminen Architects in Helsinki, Finland.

Hatem Youssef Goucha (BS '90) is a project field engineer with Bechtel Corporation. He is working on the \$5 billion Pemex Cantarell Project and is assistant site manager working with the gas compression platform.

Julia (Hoogerwerf) Wilkie (BS '90, MS '92) and **Geoff Wilkie** (BS '89, MS '91) are the proud parents of future civil engineer Benjamin Michael Wilkie, born April 14, 1999. Julia and Geoff have recently moved from Texas to Centerville, Ohio. Geoff works for KPMG Peat Marwick in Dayton; while Julia works for Wagner-Smith (also in Dayton). *E-mail: Jwilkie702@aol.com*

Thomas Guist (BS '90) is a district manager for Professional Service Industries, an environmental, geotechnical, and materials testing consulting firm with 160 offices and 2,500 employees nationwide. PSI was listed as #39 in the top 500 design firms by *Engineering News Record*. *E-mail: tguist@psiusa.com*

Brian Wolshon (MS '90, PhD '97) is an assistant professor in the Department of Civil Engineering at Louisiana State University in Baton Rouge, Louisiana. His research is in the area of advanced transportation systems and highway safety. He's patiently waiting for the Spartans to win another Rose Bowl. *E-mail: brian@rsip.lsu.edu*

Bill Kussro (BS '91, MS '92) is a project structural engineer with Giffels Associates, Inc., and recently completed design engineering for the new General Motors engine manufacturing facility in Flint, Michigan. He and his wife reside in Fenton, Michigan. *E-mail: wkussro@giffels-usa.com*

Bill Eisele (BS '93, MS '94) is assistant research scientist at the Texas Transportation Institute located at Texas A&M University. His research areas include ITS data management and advanced traveler information systems. Bill is also working on his Ph.D. part-time at A&M.

(Continued on page 10)

A Message from the Chairperson



The past year has been a momentous one for the department with a number of significant accomplishments and initiatives.

We succeeded in obtaining tentative approval from the college and the university for the construction of the Civil Infrastructure Laboratory, which is described in detail in the feature article of this edition of the newsletter. However, we are not out of the woods yet. The bids from contractors came in significantly higher than anticipated, and we are in the midst of a major fund-raising effort. We appeal to all our alumni and friends to help us realize this crucial goal. We must demonstrate the ability to acquire the necessary funds before we approach the MSU Board of Trustees for formal approval.

Our undergraduate curriculum was evaluated by the Accreditation Board for Engineering and Technology (ABET) in October 1998 for accreditation under the new Engineering Criteria 2000. We emerged with flying colors. The only negative comment was the inadequacy of our soils and materials teaching laboratory, which will be addressed as soon as the Civil Infrastructure Laboratory is completed.

Our success would not have been possible without the cooperation and participation of our entire faculty and staff. Professor Frank Hatfield led the department's effort to prepare for the evaluation, and deserves recognition for thoroughly documenting all aspects of the undergraduate program. We also thank all the employers and alumni who provided valuable feedback by completing and returning the surveys we sent out as part of this process. Surveys and other documents related to the accreditation process are

available on the Web at <http://www.egr.msu.edu/cee/about/resource.html> under "The Department" section.


In fall 1998 the faculty participated broadly in the development of the department's strategic plan entitled, "Vision 2005," and adopted it in December 1998. The plan has been endorsed by the department's Professional Advisory Board and serves as a guide for the period extending up to 2005. It also is available on the Web at <http://www.egr.msu.edu/cee/about/stratplan.html>.

Energized by the momentum generated through preparing for the ABET accreditation evaluation, we are in the process of a comprehensive review and potential revision of our curriculum. As a follow-up to the employer and alumni surveys, a comprehensive survey of our students was conducted to obtain their feedback regarding our curriculum. In addition, faculty are compiling lists of competencies for all undergraduate and graduate subject areas relevant to civil and environmental engineering, with the intent of identifying core competencies. We will obtain endorsement of the core competencies from all constituencies, and then revise our curriculum (as needed) to ensure that students have the opportunity to master these competencies. The process diagram on page 9 illustrates how this effort will work.

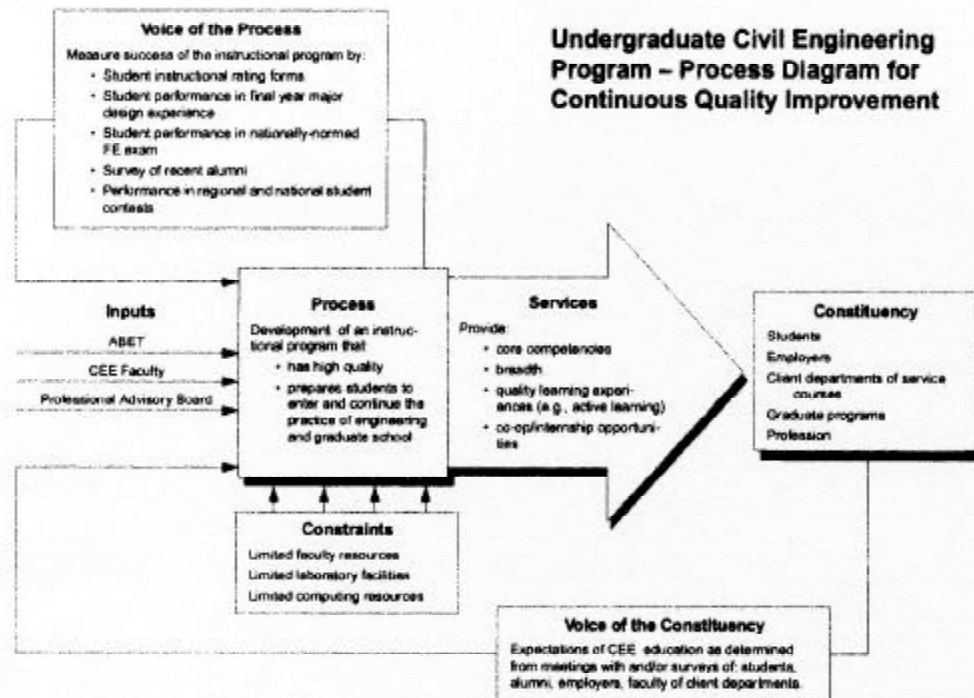
There has been broad discussion among the faculty about quality teaching and learning. This has resulted, in part, on an increased emphasis on the evaluation of teaching potential in new faculty members. In February 1999 the faculty adopted a document entitled *A Brief Guide to Good Teaching Practices and Guidelines for the Assessment of Teaching Potential of New Temporary and Tenure-Track Faculty Members*. If you wish to review this document, you can find it on the Web at <http://www.egr.msu.edu/cee/about/tchguide.pdf>.

It is evident from the accomplishments and initiatives listed above that we are well on our way to meeting the challenges facing higher education. We will continue to strengthen and build our programs, faculty, and laboratory facilities. We trust you will continue to support us throughout this endeavor.

Ronald S. Harichandran
Chairperson

harichan@egr.msu.edu 

This diagram represents the continuous quality improvement (CQI) process of our undergraduate program. This process ensures that ABET, our faculty, our Professional Advisory Board, students, employers and alumni all have an opportunity to influence our undergraduate program. We also are working to eliminate the constraints identified in the diagram.



Department News

Faculty/Staff Updates

William C. Taylor (professor, transportation) was awarded the Sitara-I-Imtiaz in recognition of his contribution to the development of science and technology in Pakistan at a ceremony held on March 23, 1999. This award, consisting of a medal and citation, was presented by the president of Pakistan. The ceremony is held each year on the day Pakistan celebrates its independence. With the assistance of Dr. Taylor, Pakistan founded the National University of Science and Technology (NUST) which now has colleges of Civil Engineering, Electrical and Mechanical Engineering, Computer Science, Aeronautical Engineering, Naval Architecture, and Logistics. The university was built from military colleges that previously existed but have been expanded in scope and program to include civilian students and faculty. Many of their faculty received their doctorates from departments at MSU.

Parviz Soroushian (professor, structures) was elected a Fellow of the American Concrete Institute. His research is in concrete composites including using fiber reinforcement and recycled materials in concrete.

Mackenzie L. Davis (professor, environmental engineering) received the 1999 Withrow Teaching Excellence Award. Davis regularly teaches the sophomore-level introduction to environmental engineering and senior-level electives. As many alumni will recall, he also spends countless hours with the student chapters of ASCE and EESS, including serving as the principal advisor for the perennially successful concrete canoe team.

Tom Voice (professor, environmental engineering), **David Wiggert** (graduate coordinator and professor, fluid mechanics), and **Susan Masten** (associate professor, environmental engineering) are collaborating on a \$176,500 fellowship program designed to restructure environmental engineering education around a framework known as risk assessment/risk management. This paradigm suggests that environmental problems are best addressed by considering the health effects, science and engineering aspects, and social context of those problems. The program will provide up to eight fellowships, with emphasis on multi-disciplinary student-faculty mentoring, student collaboration, and a comprehensive learning experience, including field work and international study. There is also a supervised teaching component, directed by Masten.

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(*Alumni News, continued from page 7*)

Nicole Howell (BS '93) is a senior quality engineer with General Motors—NAO Car Group. In 1996 she was a recipient of the Certified Quality Engineer designation from the American Society for Quality. She currently works on NAO Car Group's China project and has made several trips to Shanghai teaching GM quality processes to her Chinese counterparts. She is married and has a two-year-old son.
E-mail: DNAHowell@geocities.com

Todd Davlin (BS '93, MS '97) has been selected to lead EMCON's new Grand Rapids, Michigan, office. He will concentrate on expanding engineering, environmental, regulator, and operational support services to solid waste and industrial clients in western and northern Michigan.
E-mail: tdavlin@emconinc.com

Robert Rayl (BS '93) is a project engineer for Orchard, Hiltz & McCliment, Inc., of Livonia, Michigan, where he works in general municipal engineering services and geographic information systems. Rayl recently obtained his professional engineering license in Michigan.

Myung-Keun Chang (PhD '94) is president of Samyang Water & Sewage Ind., Ltd. Samyang specializes in water and wastewater treatment, process water, and power plant water intake equipment.

Roshan Utamsingh (MS '94) is a project manager for Cambridge Technology partners and reports enjoying both the job and the cultural opportunities available in Boston.

Paul Carr (BS '95) is a transportation engineer with HTNB Michigan, Inc. He highway projects in Michigan include I-96 in Grand Rapids and I-75 in Bay City.

Matthew Thomas Bower (BS '96) is a Peace Corps volunteer in Mohale's Hoek, Lesotho (southern Africa). He is a water development specialist.

Joe Schulenberg (MS '95) indicates that he's finishing his Ph.D. from Northwestern and looking for a university position. *E-mail: jws592@lulu.acns.nwu.edu*

Joe D. Bellinger (BS '97) joined the Suttons Bay office of Inland Seas Engineering, Inc., as a surveying technician. Bellinger will be involved in boundary and topographic surveys for residential developments and commercial sites across the state.

Paula Dynda (BS '97) is now a project engineer with Orchard, Hiltz & McCliment, Inc., of Livonia, Michigan. She is part of OHM's transportation group, preparing plans and specifications for road improvement projects.

Duncan Paterson (BS '97) is a research assistant at Lehigh University. He was married (wife Julie) in May 1999.

Karl Pennings (BS '97) is a structural engineer with Skidmore Owings & Merrill, LLP, in Chicago. He received his M.S. in Engineering from the University of Texas in May 1999.

Stephanie Rossi (MS '97) has moved to Seattle, Washington, where she is working as a transportation planner for the Puget Sound Regional Council. She reports that she is actually using public transit! *E-mail: rossiste@hotmail.com*

Mohammad O. Rehman (MS '98) is an associate engineer with CK Engineering, Inc., in Phoenix, Arizona.

Heather Cheslek (Marek) (BS '99) is a staff engineer at ATC Associates. Husband Erik is an MSU grad in chemical engineering.

Share Your News

Throughout *Connections* you will read about what faculty, students, and other alumni are doing. We want to hear YOUR news as well. Fill out the form below and send it to us—we'll include your news in the next issue.

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News about your work, family, achievements

You can also complete this form on the department's Web Site at <http://www.egr.msu.edu/cee/alumni/alumniup.html>

(Faculty/Staff Update, continued from page 9)

Mary Wiseman, department secretary, was married to Tim Mroz on September 25, 1999. Mary has been with the department since March 1995.

Student Updates

Qingyan Yang, an M.S. student in transportation engineering, is an Eisenhower Research Fellow with the Federal Highway Administration (FHWA). His research was on "Assessment of Wireless Communications Systems with Respect to Advanced Rural Transportation Systems." This fellowship ran 10/16/98–11/15/99. The research is supervised by Dr. Virginia P. Sisiopiku and Mr. Paul Pisano of the Federal Highway Administration.

Christopher Ritchie, an undergraduate student, was awarded a \$1,500 scholarship by the East Michigan Chapter of the East Central Section of the Air & Waste Management Association. The award was formally presented at the spring conference and annual meeting in mid-May. **Timothy J.F. Gorechan**, another undergraduate, was awarded a \$1,000 scholarship by the same group for his senior year. The award will be formally presented in the fall. **Bernie Walraven** also won a \$1,000 scholarship for the 1999-2000 academic year from the same organization.

Jamal Khattak was named the Outstanding Graduate Student in civil engineering in 1998. Jamal is a Ph.D. student in the pavements area. His advisor is Gilbert Y. Baladi. His expected graduation is summer 1999. **Diane Lickfelt** was named the Outstanding Graduate Student in environmental engineering in 1998. Her adviser is Susan Masten. Both awards were presented at an engineering college ceremony in April.

Michael Spitz, a graduating senior, won a \$1,000 scholarship from the Michigan Section of the Institute of Transportation Engineers. Mike will be pursuing his M.S. in civil engineering (transportation engineering) at MSU on a part-time basis beginning in the fall of 1999.

Mshadoni Smith, an M.S. student (transportation), and **Nicholas Mascia**, a graduating senior, took first and second places, respectively, in the student paper competition sponsored by the Michigan Section of the Institute of Transportation Engineers. The papers will be presented at the summer technical session sponsored by the section. Nick will also be pursuing his M.S. in civil engineering (transportation engineering) at MSU. He has worked with Dr. Tom Maleck as an assistant for the traffic engineering function on MSU's campus.

Undergraduates **Donna Cervelli**, **Matt Darr**, **Karen Ellis**, and **Eric Gray** won the award for Best Student Paper at the American Waterworks Association competition in 1998 with their paper entitled, *Survey of Lead in Drinking Fountains in Two Dormitories*. The paper also took first place in the Air and Waste Management Association's 1998 Michigan Section Annual Meeting and Exhibition student poster contest.

Undergraduates **Talia N. Dodak** (junior) and **Heather A. Marek** (graduating senior) won one of the top prizes at the university's Undergraduate Research and Creative Activity Forum for their poster presentation on "An Economic Model for Abrasive Blasting" in April 1999. The students also took third place for Best Student Paper at the American Waterworks Association competition in September.

Undergraduates **Cyndyann Albaugh**, **Talia Dodek**, **Lisa Huntington**, **Karen Ives**, **Jolene Johnson**, **Kevin Mullins**, and **Robert Verschaeve** were awarded Undergraduate Academic Awards during engineering college ceremonies in April. Robert Verschaeve also won a similar award last year.

Several undergraduate students won recognition for service to the department or the College of Engineering. **Talia Dodek**, **Heather Marek**, and **Tony Sesti** were the civil and environmental engineering students recognized. Both Marek and Sesti were also recognized last year. The Society of Women Engineers (SWE) recognized **Sarah Salenski** as the outstanding graduating civil and environmental engineering undergraduate student and **Diane Lickfelt** as the outstanding graduating M.S. student. These awards were sponsored by SWE and DaimlerChrysler, respectively.

Michelle Barnaby, **Matt Darr**, **Heather Marek**, **Renee Pionk**, **Julie Rumble**, and **Kristin Vallieu** were first-place winners in the American Water Works Association and Michigan Water Environmental Association "Jeopardy" contest.

Donald C. Wotring (senior) was first author on a research paper, "Pavement Distress and Selection of Rehabilitation Alternatives: Michigan Practice" published in *Transportation Research Record 1629* by the Transportation Research Board. Other authors were Gilbert Baladi, Neeraj Buch, and Steve Bower.

(Continued on page 12)

(Department News continued from page 11.)



Lilly Teaching Fellow

Neeraj Buch (assistant professor, pavements and materials) has served as Lilly Fellow over the past year. What follows is an excerpt describing what he did in this capacity. His objective was to introduce inquiry-based learning into the undergraduate curriculum.

Inquiry-based learning is defined as a process in which a student poses a question, develops an experiment, collects and analyzes data, answers the question, and presents the results. The process of inquiry encourages “information processing” rather than “information scanning.”


The goal of Buch’s efforts was the investigation of the role of inquiry-based learning in the undergraduate and graduate curriculum in the College of Engineering at Michigan State University. CE 337 (Civil Engineering Materials-I) was the targeted course. While no content changes were made in the lecture portion of the revised version of the course, the laboratory phase of the course was altered extensively to fit the “inquiry” model. The laboratory phase was divided into two parts: 1) traditional laboratory experiments to provide basic information regarding the role of testing standards (e.g. ASTM) and theory and 2) an inquiry experiment where students grappled with an open-ended question in light of the information acquired through classroom notes, research literature and experience of others in their team including their faculty and laboratory instructor.

From an instructor’s perspective, inquiry based teaching and learning requires that:

- the semester lecture outline and laboratory instructions be well-planned prior to the beginning of the semester;
- the instructor be able to foresee potential laboratory scheduling conflicts with other classes;
- the availability of the required raw material and testing equipment be determined in advance;
- the instructor be flexible enough to alter the sequence of classroom lectures so that the students have enough background material to design a meaningful experiment to answer the proposed open-ended questions;
- the course syllabus be flexible to accommodate setbacks during the course of the semester; for example the syllabus should allow additional time for group discussions or “brainstorming” sessions to further explain the problem statement or group expectations.
- there be “customer” buy-in.

Since students are major players in inquiry-guided exercises, it is crucial for the instructor to explain the meaning of inquiry and very clearly indicate the role students will play both in the syllabus and during the course of the semester.

In summary, the integration of research methodology into course activities fosters an environment for interdisciplinary learning, and cultivates the need for inquiry in the curriculum. In order for inquiry-based teaching and learning to be successful, obstacles inhibiting curriculum changes need to be overcome. Changes in the traditional course content and teaching practices have to be made and the students have to be more active learners rather than the traditional passive listeners. In order for students to become critical thinkers and first-rate engineers, they must be provided with an opportunity to define a complex problem, to obtain the pertinent information and to assimilate the information into a solution. It is imperative that students be provided this opportunity along with an occasion to communicate orally and in writing, to work in a group, to come to consensus on a solution, and to test that solution.

For more information on this program, inquiry-based instruction, or the results of this exercise, please contact Neeraj Buch at: 517-432-0012 or via E-mail at: buch@egr.msu.edu. 

Highway Traffic Safety Programs (HTSP)—Continuing Education Opportunities

A number of civil and environmental engineering alumni have attended outreach classes offered by HTSP through the CEE department at Michigan State University. For those of you who haven't, here is a little background on the HTSP training program. Each year from 15 to 17 outreach classes are offered. Fourteen of these are one-day classes involving traffic safety and transportation engineering topics such as traffic signs, traffic signals, geometric design, and computer modeling. Three other classes cover the topic of pavements (pavement design, pavement rehabilitation, and pavement materials). The first two pavement classes are a day and a half and the materials class is a one-day class. These classes are offered at hotels in the greater Lansing area, and at the Kellogg Center. Computer-oriented classes use the department's Transportation Lab. Some classes also are offered in Livonia, Grand Rapids, Grayling, Saginaw, and, this year, at Marquette. HTSP also serves law enforcement by offering classes in the areas of accident investigation, speed-measuring devices, and the detection of drivers under the influence of alcohol. For further information about the training program or to obtain a list of engineering classes, contact Laura Taylor at 517/353-1790 or Tom Krycinski at 517/353-9782. □

Department Offers Lab Services Campus-Wide

Last October the Environmental Engineering Research Analytical Labs (EERAL) made its analytical services available to on-campus units. This fee-for-service program is directed by **Paul Loconto**, Ph.D., laboratory manager for environmental engineering. He is assisted in the laboratory by **Yan Pan** and **Joseph Nguyen**. EERAL is positioned to assist researchers in providing high-quality analytical data as well as assisting university staff in solving practical problems. EERAL has been supported in the past by grants from the Great Lakes and Mid-Atlantic Hazardous Substance Research Center and the National Institute of Environmental Health Sciences, Superfund Basic Research Program.

In the past, EERAL has been available to students, faculty, and staff who wished to use the extensive collection of sophisticated analytical instruments. Students from other departments who desired to learn to use the laboratory were trained by EERAL staff and continuously assisted at the Research Complex and in the Hazardous Waste Analysis Laboratory. During the past year, Gary Icopini, a graduate student from geological sciences, used the capillary electro-

phoresis instrument to measure trace inorganics in river water and Jennifer Jacobs, a graduate student from chemical engineering, will be separating and measuring fructose and glucose using a unique high performance liquid chromatograph built by EERAL staff.

The value of this outreach was recently demonstrated when Dick Ingersoll from MSU Physical Plant wanted to know what constituted the "crud" that was removed from their boilers. Dr. Loconto examined the material and quickly discovered that the "crud" consisted mostly of carbonates. He did this without any use of analytical instruments. Most students of beginning chemistry learn that all carbonates react with strong acids to liberate carbon dioxide. If this gas is released into a saturated solution containing calcium hydroxide, the carbon dioxide will react with the calcium to form the insoluble, calcium carbonate (CaCO_3) and thus confirm the composition. This is exactly what happened! The EERAL staff asked for a sample of the incoming water supply and proceeded to conduct an elemental analysis for the three metals that contribute to water hardness: calcium (Ca), magnesium (Mg), and iron (Fe). The "crud" was also analyzed by Yan Pan, the resident expert in the use of EERAL's inductively-coupled atomic emission spectrometer, who determined the hardness content was very high. Ingersoll then concluded that water was allowed to enter into the boilers without first being softened. EERAL is now assisting Kristen Erickson, MSU's radiation safety officer, in providing analytical services for an anticipated bioremediation project involving university-generated waste methanol. This project is anticipated to save MSU over \$100,000.

EERAL offers thirteen analytical methods. A brochure that describes the program and the available services was distributed across the campus. EERAL has already assisted physical plant, the departments of Chemical Engineering, Microbiology, and Life Sciences. If you would like to know more about EERAL or how it can assist you, please contact Paul Loconto, 517/353-5580 or via E-mail at: loconto@egr.msu.edu. □

An Engineering Riddle!
(from Professor Frank Hatfield)

Here's a question your brain to test.
What causes stress without strain
And strain without stress?

(Answer on page 14)



Members of the 1999 Concrete Canoe Team. Top row, L-r: Bob Verschaeve, Therese Sutphen, Sarah Rozema, Ernie West (Captain), Jesús Plasencia, Jollen Johnson, Lisa Harrison. Bottom Row, L-r: Brian Gombos, Yolanda Wilson, Allison Hazen, John Janiszewski, Stephanie Smith, Dean Kanita, Kevin Dubnicki, John Lehning, Karen Ives, Alison Leach, Jeff Hayball, Kevin Endres.

Student Activities

Concrete Canoe: MSU Paddles to First Place at Concrete Canoe Competition

After a brief (one-year) hiatus, MSU's concrete canoe team is back on top! In April, MSU placed first in the American Society of Civil Engineers' North Central Regional Concrete Canoe Competition hosted by the University of Akron. Taking first place in all the racing events, MSU's "High Rower" (a Las Vegas-inspired theme) paddled away from the competition.

The Concrete Canoe Competition consists of both academic and racing events. The academic portion includes: 1) preparation of an engineering report describing the design, construction and economic evaluation of the canoe-building process; 2) an oral presentation; 3) a display (poster



Spartan paddlers John Janiszewski (front) and Kevin Dubnicki.

presentation; and 4) the final product—canoe appearance. These four activities account for 60 percent of the scoring. There are five races: distance races of 600 meters for women's and men's pairs; sprint races of 200 meters also for women's and men's pairs; and a co-ed sprint of 200 meters for a team of four paddlers (two men and two women).

MSU garnered a first for their design paper, a second in the final product finish, third in the display portion, and a fifth in the oral presentation. On the racing side, the MSU team won *all* of the races.

The 1999 team co-captains were **Ernie West** and **Bob Verschaeve**. Committee chairs were: **Kevin Endres**, construction; **Jeremy Horton**, reinforcement; **John Janiszewski**, paddling; **Heather Miln**, hull design; **Jésus Plasencia**, mix design; and **Yolanda Wilson**, display. **Stephanie Smith**, **Jolene Johnson**, and **Jésus Plasencia** were the oral presentation team. The men's distance paddlers were **Kevin Dubnicki** and **Dean Kanitz**. The women's distance paddlers were **Stephanie Smith** and **Jolene Johnson**. The men's sprint team included **John Janiszewski** and **Kevin Dubnicki**. The women's sprint paddlers were **Stephanie Smith** and **Alison Leach**. The co-ed sprint paddlers were **John Janiszewski**, **Dean Kanitz**, **Alison Leach**, and **Jolene Johnson**.

The canoe team finished tenth overall in the national competition in Florida last June. If you would like to know more about the canoe effort, the competitions, or how you can help, contact Mack Davis, the faculty advisor for the team at 517/353-9813 or 355-5107 or by E-mail at: davis@egr.msu.edu. Other faculty assisting in the canoe effort were George Stockman (from computer science) and Neeraj Buch. □

*Answer to Engineering Riddle (p13):
A change in temperature.*



Members of the 1999 MSU Steel Bridge Team. L-r: Dirk Heckman, Long Tran, Adrienne Evert, Jonathon Woodard, Jerry Feighner, and Jermaine Vaughn.

Steel Bridge: MSU Bridgers Finish Second in Regional Contest.

The regional Student Steel Bridge Contest was held on April 9, 1999 in Akron, Ohio. Having “steeled” themselves against last year’s problems (when the bridge was disqualified), this year’s MSU student steel bridge team took second place. The winner was Lawrence Technological University and third place went to University of Michigan.

The Student Steel Bridge Contest is sponsored by the American Institute of Steel Construction with support from the department, the College of Engineering, and numerous other professional and industrial organizations. Students are challenged to design and fabricate a steel bridge to span seventeen feet and support 2,500 pounds. Bridges are judged on lightness, resistance to sag under load, person-minutes required for erection over an imaginary river using pieces not longer than 66 inches, economy, efficiency and aesthetics. This year’s bridge weighed 82 pounds, sagged 0.28 inch under the 2,500 pound load, and was constructed by four students in just under five minutes.

The MSU bridge team (with hometown and date of graduation) included **Jerry Feighner** (St. Johns, May 1999), **Dirk Heckman** (St. Ignace, May 1999), **Long Tran** (Jackson, May 1999), and **Jermaine Vaughn** (Grand Rapids, May 1999). Others who designed and fabricated the bridge were **Adrienne Evert** (Saline, May 1999), **Jonathon Woodard** (Lansing, May 1999), **Heather Milne**, (Essexville, December 1998), **Doug Irrer** (St. Johns, December 1998), and **Chris Johnson** (Bloomfield Hills, May 1999). Frank Hatfield was the faculty adviser for the steel bridge team. If you would like to know more or help out in some way,

contact Frank at 517-355-5167 or 355-5107 or via e-mail hatfield@egr.msu.edu. □

Span Fan E-Mail List

Alumni of the MSU Steel Bridge Building Team frequently inquire about the team's progress. Coach Frank Hatfield will send progress reports by E-mail to all who are interested (except competitors). To receive occasional updates on the bridge team, E-mail your request to hatfield@egr.msu.edu.



Team members Jermaine Vaughn and Dirk Heckman at work.

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