



CIVILReMARKS

CIVIL AND ENVIRONMENTAL ENGINEERING [civil.umd.edu]

A newsletter for the alumni and friends of the Department of Civil and Environmental Engineering

Fall 2010
Vol. 10, No. 1

Dr. G. Wayne Clough
(Secretary for the
Smithsonian Institution)
Visits CEE on
John J. Kirlin Day

civil & environmental engineering department presents

★KIRLIN RESEARCH REVIEW DAY

*sponsored by John J. Kirlin Lecture funds



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With the coming of fall the new semester has started. But, before I share highlights of what you will be reading in this issue of *Civil Remarks*, I would like to look back to this past spring for a moment.

I am proud to share with our readers the news that CEE held its first **John J. Kirlin Research Review Day** this past May. This is a wonderful opportunity for us to share our research activities with others, including our alums. The event included student poster displays, research demonstrations and lab visitations. Our keynote speaker was Dr. G. Wayne Clough, secretary for the Smithsonian Institution. It was a wonderful day, and we look forward to doing it again next year.

Now, to the other the information and stories we are eager to share with you. Looking at this issue, I am struck by the varied life experiences and talents of our faculty, staff and students.

For example, in this issue you will learn about **Professor Charles Schwartz**. But you will not only learn about the important research he conducts on analytical and numerical modeling techniques for pavements structures and the characterization and laboratory testing of pavement materials. You will also get to know him as a person. For instance, he not only is a dedicated teacher and an accomplished researcher, but quite a talented musician. Playing rhythm and bass guitar, he has belonged to several bands. Apparently, he is as talented outside the classroom and lab as well as in them and finds much contentment in expressing himself through his music.

Then there is our student profile on **Doug Asplen**. Now 47, he decided to change from a career running his own construction business and come back to school to study civil engineering. While he is a wealth of knowledge and experience to our students who have yet to go out into the professional world, he admits readily that he has taken as much from his experience as a student as he has given. I, for one, admire his courage and perseverance in returning to school and choosing a different career path.

Speaking of career paths, **Alfred Bituin**, our laboratory manager, has quite a resume. Born in the Philippines, he was determined to get a good education there and become an engineer. He realized that goal and more, working in Kuwait for a U.S. Navy defense contractor for many years before coming to the United States. Now, he brings his talents and expertise to our laboratories. And they, the laboratories, and we, CEE, are certainly the better for it.

Finally, our alumni profile features **Robert Rauch**, who has built a successful career in the community he loves and now takes great joy in working with his own sons by his side. Rauch knew early on what he wanted in life and his story is an absolute inspiration, showing what ambition, commitment and hard work can accomplish.

CEE and those affiliated with us include many unique and talented individuals. And, in that, we are quite fortunate.

Ali Haghani



CIVIL & ENVIRONMENTAL
ENGINEERING DEPARTMENT

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A Different Direction

Research Focuses on New Approaches in Designing and Maintaining Roads

Schwartz regularly assists the Maryland State Highway Administration and other local agencies and private firms on pavement-related topics.

Professor Charles Schwartz can't drive down a road or highway without noticing the state of the pavement he is travelling on. "When I was in Alaska last summer, I was driving along and kept noticing thermal cracks. We never see those here in Maryland," he says.

However, Schwartz is aware of and familiar with plenty of other pavement concerns here at home. His research focuses on analytical and numerical modeling techniques for pavement structures and the characterization and laboratory testing of pavement materials.

He has conducted research for the National Cooperative Highway Research Program on such topics as the 2002 Pavement Design Guide; Superpave Performance Models; Experimental Plan for Calibration and Validation of Hot Mix Asphalt Performance Models for Mix and Structural Design; Calibration of Rutting Models for Hot Mix Asphalt Structural and Mix Design; and Sensitivity Evaluation of Mechanistic-Empirical Pavement Design Guide Performance Prediction, and for the Federal Highway Administration Using Radio Frequency Identification Technology to Better Manage and Assess Pavements.

And, it is all research and work that is much-needed, according to Schwartz. "Recently, the American Society of Civil Engineers graded the overall status of the nation's infrastructure, giving it a D minus," he says. "Many of our infrastructure assets, such as our major highways, are decades old and are deteriorating."

A prime goal in addressing the infrastructure issue, says Schwartz, is not in creating new systems, "costing trillions of dollars," but in better rehabilitating and reconstructing existing systems.

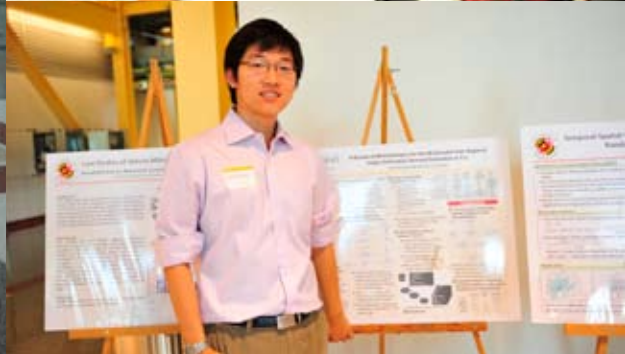
As such, Schwartz participated in the development of the multi-million dollar, multi-year American Association of State Highway and Transportation Officials (AASHTO) Mechanistic-Empirical Pavement Design Guide. The guide, which began development in 1996 and was completed in 2004, was the largest project in the over 40-year history of AASHTO. The new guide with its software provides a "major paradigm shift in design," says Schwartz, "from a purely empirical system to one based on the theory of mechanics - for example, how load environment, temperature and moisture fluctuations impact pavement stresses and strains which in turn cause cracking and rutting"

Prior to the new guide, which is in the process of being adopted state by state, the previous guide was based on empirical equations derived from an earlier AASHTO road test. "This test was conducted between 1958 and 1960," explains Schwartz, "with limited structural sections at one location, Ottawa, Ill., and with modest traffic levels compared to those of today."

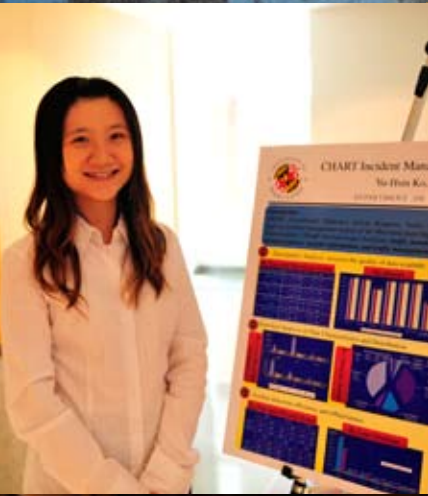
As a result, the guide has grown increasingly inadequate and outdated. "Vehicle traffic has changed enormously," he continues, "with modern truck designs causing more damage to pavements and traffic volume increasing enormously, from an estimated 2 million trucks in the original AASHTO road test to design values of up to 400 million today."

Schwartz is especially enthusiastic about the opportunity the new guide makes for "changing how we think about pavement design." "We have an opportunity to address problems and take advantage of newer and different materials and better high-performance materials," he says.

He and his students are doing just that, conducting a material evaluation for the Maryland State Highway Administration on recycled foamed asphalt bases.



civil & environmental engineering department presents
★KIRLIN RESEARCH REVIEW DAY
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CEE's First John J. Kirlin Research Review Day a Huge Success



The Department of Civil and Environmental Engineering held its first John J. Kirlin Research Review Day this past May. The event featured student poster displays, research demonstrations and lab visitations. Dr. G. Wayne Clough, secretary for the Smithsonian Institution, was the distinguished speaker.

“We as a department felt it was important for us to highlight our extensive research activities and inform our alumni and friends about the exciting research that is ongoing in our department,” says Ali Haghani, department chair. “It was an opportunity for our alumni and friends to visit our laboratories and meet the faculty and graduate students who are

engaged in our activities. And, we also had the opportunity to recognize some of the outstanding research work that is being done here.”

The John J. Kirlin Research Review Day is named in honor of John J. Kirlin, founder of one of the nation's leading construction companies specializing in plumbing, heating, ventilation and air conditioning. Kirlin established an endowment, “the income of which can be used to support departmental distinguished seminars, lecture and events such as Research Review Day, which supports departmental research,” says Haghani.

According to Haghani, the “highlight of the day,” was the lecture by Clough who talked about the importance of civil engineering to society throughout the course of history.

“We were very excited about this event and by all accounts it was a huge success,” says Haghani. “We look forward to having such an event on an annual basis.”

JOHN J. KIRLIN DAY: POSTER AWARDS

A total of about 75 student posters were presented during Research Review Day. The winners are:

Category: Undergraduate

1st Place: Michael Mercado

2nd Place: Brooke Homar

2nd Place: Margaret Sharkey

Category: Graduate, M.S.

1st Place: Kyla Gregoire

2nd Place: Ampun Janpongpen

2nd Place: Sarah Fick

Category: Graduate, Ph.D.

1st Place: Zhuangxiang He

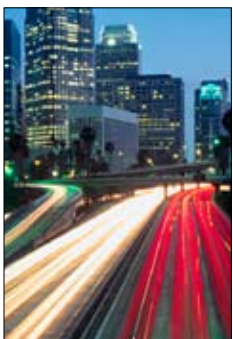
2nd Place: Yan Wang

2nd Place: Rahul Nair

Category: Student Group

1st Place: Engineers Without Borders

CURRENT RESEARCH (cont. from page 3)



The process involves using recycled asphalt concrete. “You take the asphalt concrete from resurfacing and mix it with a small amount of foamed asphalt cement,” he says. “This is a cold process. A hot process would require heating the reclaimed asphalt concrete to 300 degrees, using a lot of energy and producing more fumes, which is not good.”

In using recycled material, he says, “you end up with a material having properties between hot mix asphalt and conventional crushed stone. The process and result are greener and better for the environment and should be less expensive. This is a good product.”

And a good example of what the future may hold. “This is a time of great opportunities and challenges in pavement design,” says Schwartz. “The door is wide open for new ideas and processes.”

As such, Schwartz finds the experience especially rewarding. “This is research that will have staying power and could be the basis for the next 30 to 40 years of pavement design. I find that idea very gratifying,” he says.

In the *U.S. News & World Report* 2011 edition of "America's Best Colleges" the Clark School's undergraduate program is ranked 19th in the nation among all engineering programs—the first time the school has entered the top 20 in this survey. The Clark School was tied at 19th with Rice University and UCLA. Among public programs, the Clark School ranked 9th—also the first time it has entered the top 10 of public schools.

CEE has launched a new interdisciplinary graduate program in **civil systems**. The focus of the program is to study a variety of systems such as energy, transportation, evacuation and sensor-based ones and their interactions. This approach involves a holistic view of the system under consideration and will involve an interesting mixture of engineering principles and other disciplines.



CEE's **Engineers Without Borders** program was recently honored by the National Council of Examiners for Engineering and Surveying. While the University of Delaware won the \$25,000 grand prize, the University of Maryland was one of five \$7,500 winners. The other co-winners in this category

were California Polytechnic State University, San Luis Obispo, California State University, Los Angeles, Clemson University and the University of New Mexico.

This year, two CEE students received the prestigious **Dwight David Eisenhower Transportation Fellowship** from the U.S. Department of Transportation. The program encompasses all modes of transportation-related research. This year's Eisenhower Fellows are **Michael Mercado** (B.S.'10), an incoming master's student in structural engineering, and **Michael Maness**, a master's student in transportation engineering. Mercado is working on developing innovative structural testing methods for more realistic evaluation and validation of bridge condition assessment and repair techniques, and Maness is researching vehicle ownership issues.



CEE graduate student **Natasha Andrade** was invited to visit and give a seminar at Cal Poly Pomona as part of the National Science Foundation ADVANCE program. The program at Cal Poly Pomona is aimed to recruit and develop programs to increase the number of women in science, technology, engineering, and mathematics (STEM) disciplines and increase the number of Cal Poly Pomona female students that will seek graduate studies in the sciences and engineering. As part of her visit Andrade gave a seminar on her research and experiences as a graduate student at the University of Maryland.

Andrade, a Future Faculty Fellow, has also been selected to participate in **The Chesapeake Project**. The Chesapeake Project is an initiative to integrate sustainability across the curriculum of the University of Maryland. Central to the project is a two-day workshop where participants learn about core concepts of environmental, economic and social sustainability and explore unique ways of integrating sustainability into existing courses across all academic disciplines. Selection was largely based on the quality of the application, the applicant's interest in integrating sustainability in their curricula, the number of students the applicant teaches each year, and an evaluation of how much the applicant could learn from the workshop. The Future Faculty Program prepares selected Clark School doctoral students to achieve career-long success in the academic world as teachers and researchers.

CEE students, **Chelsea Sprague**, **Theodore Tan** and **Selme Yilma** received generous scholarship awards from the Associated Builders and Contractors (ABC) Metro Washington Chapter. The scholarships were presented at the chapter's annual scholarship award banquet held in Bethesda, Md. The total amount awarded this year to the three students was approximately \$6,500. CEE is home to an active student chapter of ABC.



A team of UM students, faculty and mentors has earned one of 20 spots in the elite international Solar Decathlon Competition sponsored by the U.S. Department of Energy. It's the fourth time the Terp team has made it to the finals in the competition to build a house that is fully and creatively powered by solar energy. In 2007, Maryland's **LEAFHouse** entry led all U.S. designs and captured second in the competition.

The university's 2007 Solar Decathlon entry, LEAFHouse, is featured in a new book on sustainable housing. *Prefabulous and Sustainable* profiles 25 green homes in North America. LEAFHouse is an 800 square-foot solar-powered home developed by a team including Clark School students to be inhabitable and able to produce its own power. The house came in second place in the international competition and won the **BP Solar People's Choice Award** as the crowd favorite among those who toured the 2007 competition houses on the National Mall.

Clara Man Cheung, a master's student, majoring in project management, recently won the Gaylord E. Christle Scholarship from the Project Management Institute. The scholarship is to support scholarly studies and scientific advancement in the fields of acquisition, program and project management. Cheung is currently working on her master's thesis on building a framework for project managers to better implement organizational change projects.

According to a story in *The Washington Post*, Maryland's high school class of 2009 leads the nation in advanced placement test performance, a key measure of preparedness for college. One of the local high schools cited as highly ranked in minority student achievement was Prince George's County's Eleanor Roosevelt High School in Greenbelt, Md. Roosevelt is one of the Clark School's Top 25 Source Schools, an annual designation honoring the 25 Maryland high schools that send the most students to the Clark School.



Starting Over

Returning Student Begins Path to New Career in Civil Engineering

At the end of each semester, Doug Asplen and his 19-year-old daughter, Chelsea, compare grade point averages. "We have a competition," says Asplen, "and whoever has the higher grade point average buys the other one dinner."

Chelsea is a student at the University of South Carolina majoring in business administration. Asplen is a student at the University of Maryland majoring in civil engineering with plans to graduate this spring. At the age of 47, he is a returning student.

"I'm making some big changes in my life," he says.

Asplen has spent most of his adulthood working in the construction business and running his own business. A few years ago, though, he reevaluated his career and his life. "I had an accident and suffered some pretty bad injuries, a busted foot, a broken vertebrae," he recalls. "It was a wake up call for me in many ways"

While he enjoyed his work in construction, he felt it wise to pursue a career in a less physically demanding and risky type of work. He decided to attend the University of Maryland and major in civil engineering. "I had always liked math and science," he says. "Civil engineering seemed like a good fit for me and the University of Maryland was the only school I really considered."

Prior to enrolling at the university, he had taken classes at Anne Arundel Community College where he earned an associate's degree in math in 2003.

Ironically enough, though, college had not been on the radar for Asplen as a high school student. "I started working in construction during the summer while I was still in high school," he says. "The money was good, and I guess I was good at it."

He decided to go to work and get his GED instead of graduating from high school. Initially, he had no regrets, he says. "I was self-employed from 1986 on," says Asplen. "The industry was doing really well then. I was working for myself and not someone else. I

liked the idea of being my own boss. I did mostly home improvement jobs and each job was different and a challenge. I liked that."

Then came the accident and a hard look at the future. He enrolled at the university in 2007. The idea of becoming a returning student and changing his career was not a unique one to Asplen. His own father had done the same thing. "My father received his degree in civil engineering from the University of Maryland," says Asplen, who was born in Baltimore and now resides in Arnold, Md. "He then went into the military, the Air Force, flying cargo planes."

His father too had a change of heart and came back to school to study medicine, going on to become a doctor and meeting Asplen's mother while she was in nursing school. The two married and had four children, with Asplen being the only boy. Unfortunately, his father passed away as a very young man following a heart attack. "My mother was left to raise us, and she went back to school so that she could teach nursing," says Asplen. Adding, "I definitely grew up with an appreciation for higher education."

However, "My first day at Maryland, I was really nervous," he says. "I felt so out of place."

That first semester, because he would continue to work full time while attending school, he only took two courses. One was in biology and the other in engineering. "I didn't meet a lot of the people in the engineering school just then," he says.

That would all change the following semester when he took only engineering classes. "Immediately," he says, "other students, those much younger than me, came up to me and asked if I wanted to participate in study



"My first day at Maryland, I was really nervous," says Asplen, pictured with daughter Chelsea. "I felt so out of place."

groups or needed someone to work with on a project. They were very engaging. I never felt like an outcast."

When he struggled, say in a computer class, "they kind of came to my rescue," he says. "These other students would sit down with me and help me figure certain things out."

And, of course, Asplen, had something to offer as well. He had spent two decades in the professional world. "They will ask me about different things, such as what my own work experiences were like and what internships they should take," he says.

He is eager to help. Much as he was helped. "There are a dozen fellow students I can call at night if I'm working on something and I have a question, just as they can call me," he says.

STUDENT PROFILE (cont. on page 14)



Professor Ali Haghani has been named director of the Center for Integrated Transportation Systems Management. Haghani is also chair of CEE and is an expert in transportation systems analysis, large-scale mathematical modeling, traffic management, logistics and emergency response. Recently Haghani traveled to China and presented a keynote speech at the Seventh International Conference on Traffic & Transportation Studies (ICTTS 2010) and the 10th International Conference of Chinese Transportation Professionals (ICCTP 2010). The ICTTS Conference was held in Kunming, China, and the ICCTP was held in Beijing, China. Haghani was also invited by the Institute of Transportation Engineering, Tsinghua University, and the Department of Traffic Engineering, Beijing Jiatong University, to give lectures and engage in discussions aimed at establishing professional collaborations between these institutions and CEE.



Professor Gang-Len Chang was invited as a distinguished speaker by the Hong Kong Society for Transport Studies and by Northern Chiao-Tung University of China. The topics of discussion were Development of a Multi-modal Emergency Evacuation System, a Case Study of Baltimore City, (Hong Kong) and New Directions for Developing the Intelligent Transportation Systems in China (China). Chang also presided over an Advanced Freeway Control workshop for Taiwan transportation researchers and practitioners in late August.

In other news, Chang's **Applied Technology and Traffic Analysis Program (ATTAP)** recently received an extension and an award of \$1 million, by the Maryland State Highway Administration (MSHA). Over the past five years, joint efforts between MSHA and Chang's Traffic Safety Lab have made MSHA the nationwide leading institute on both fundamental research and field implementation of various unconventional intersections. ATTAP's focus is to develop design guidelines and evaluation procedures for unconventional intersections – an increasingly popular new design strategy to minimize the local arterial bottlenecks. This latest award will support the lab by further advancing research on this vital subject.

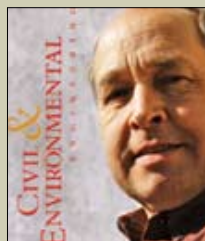
Technological advances developed by University of Maryland researchers, including **Allen P. Davis**, a CEE professor, promise significant reductions in urban runoff polluting the Anacostia watershed and the Chesapeake Bay. The researchers say their work represents the next generation of "low impact development" technologies. In the laboratory, the researchers have dramatically improved the removal of phosphorous, nitrogen and other prime

urban pollutants from runoff. To achieve these results, they've re-engineered bioretention projects, also known as rain gardens - special strips of greenery that capture and filter storm runoff before it enters the watershed. Now, in partnership with the Prince George's County government, the researchers will demonstrate the effectiveness of their new approaches by improving the capture and treatment of university campus runoff that would eventually end up in Chesapeake Bay waters.



"Runoff from urban development represents a growing source of pollution to the Chesapeake watershed, and we believe we can help curb this," says Davis, the lead researcher on the project. "Our technologies offer major improvements, and could one day be used by housing developments or businesses to reduce their environmental footprint."

With a new grant from the **National Fish and Wildlife Foundation** and the Prince George's County government totaling nearly \$600,000, Davis's team will conduct a three-part demonstration project near parking lots at the university's Comcast Center. The project is designed to reduce phosphorus, nitrogen, sediment and the volume of runoff from the university into the Anacostia watershed, one of the rivers feeding the Chesapeake Bay. "The university already is recognized as one of the greenest in the nation, and with this project, we'll be able to reduce our environmental impact even further," says Davis.



Lewis E. Link, senior research engineer, was asked by the government of the Netherlands to participate as a member of the International Advisory Commission Delta-model. The commission will advise the Dutch on their plans for coping with sea-level rise and climate change with respect to their riverine and coastal flood-risk reduction efforts. Link was also recently honored for his service by the U.S. Army Engineer Association and Regiment. This is the highest honor given by the regiment, and is awarded to only one individual each year.



Link and **Professor Gregory B. Baecher** will jointly deliver the keynote lecture to the annual meeting of the Canadian Dam Association in October at Niagara, Ontario. Link and Baecher's lecture will focus on Recent Lessons Learned about Flood Risk Management. They will discuss experiences as part of the **Interagency Performance Evaluation Taskforce (IPET)** on Katrina, the Delta Risk Management Study in California, and various dam and levee safety projects in the United States, Canada and Europe.

Baecher was also asked to deliver the Pennsylvania State University's 2010 Donald R. F. Harleman Honorary Lecture in Environmental Fluid Mechanics and a lecture at the SUNY Buffalo Seminar on Reliability and Risk Analysis in Civil Engineering. Baecher's lecture for both events is entitled Tolerable Risk for Flood and Coastal Protection.



Expressing Himself

Professor is a Man of Varied Talents – Researcher, Teacher and Guitarist

Take a peek at Professor Charles Schwartz's web page and you will discover a man of varied interests. Of course, he is a professor with CEE and conducts research on mechanistic pavement analysis and design, geomechanics and infrastructure maintenance and management.

But he is also a rhythm and bass guitarist, who most recently played with a band called Geezer. And whether it's writing a grant proposal for a research project or playing cool licks on his guitar, "I enjoy being creative," he says.

Creativity runs in the family. Schwartz, who is originally from Wisconsin and is the oldest of four brothers, comes from a family of builders. "My grandfather used to buy farms, subdivide them and build houses," he says. "My father was also a builder. Now, all three of my brothers are involved with building, from structural framing to cabinet making."

With building in his blood, Schwartz originally considered becoming an architect. That is, until he had a revelation during class. "I remember sitting in my first studio design class and the professor was up front talking about the 'poetics of the space' in the design of a building. But, all I kept thinking about was, 'How was he going to hold up the roof?' That's when I decided to become an engineer." A civil engineer to be more exact.

Schwartz went on to receive his bachelor's degree in 1975; his master's degree in 1977; and finally his Ph.D. in 1979, all in civil engineering and all from MIT. He went to work briefly after attaining his bachelor's degree. "I did power plant structural design, focusing on nuclear and hydroelectric energy, for a company in Boston," he recalls. That was until "the bottom fell out of the nuclear power industry," as a result of a poor economy.

"It seemed like a good time to go to graduate school," he says. He became especially interested in geotechnology with its "massive uncertainties." "Unlike, say structural engineering, everything about this area was more complicated and uncertain," he says. "I liked that."

Working as a graduate research assistant he finished his master's degree and Ph.D. one right after the other. By this time, he was married and both he and his wife were finishing up their Ph.D. work at the same time.

"My wife is an international economist," he says. "There are a limited number of places that an international economist can find work. Maryland was one of them, being so near Washington, D.C."

Schwartz's wife went to work for first the Commerce Department and then later the Treasury Department, where she is employed today. Schwartz found work as a faculty member with the University of Maryland's civil engineering department in 1979.

When he first came to the university, his area of research focused mainly on underground construction. "That was a well-funded area for a while in the 70s and 80s," he says. "You had the construction of the subway systems in Washington, D.C., Atlanta and San Francisco."



"I remember sitting in my first studio design class and the professor was up front talking about the 'poetics of the space' in the design of a building. But, all I kept thinking about was, 'How was he going to hold up the roof?' That's when I decided to become an engineer," says Schwartz.

While at the university during the 1990s, however, he became interested in his current area of research which focuses on analytical and numerical modeling techniques for pavement structures and the characterization and laboratory testing of pavement materials.

"I began working with a fellow faculty member here, Matt Witczak, one of the early

Col. Edward Fleming (M.S. '98, civil engineering) is the new district engineer for the U.S. Army Corps of Engineers New Orleans District. Fleming is a native of Lowell, Mass., and was commissioned a second lieutenant in 1989 when he graduated from West Point. Fleming also has a master's degree in national security and strategic studies from the National War College. Fleming served in Iraq as a platoon leader in 1990 in the 1st Infantry Division during operations Desert Shield and Desert Storm and in 2003 was sent to Kosovo where he served as the operations officer for the 82nd Engineer Battalion in support of Operation Joint Guardian. In January 2003, he returned to Iraq in support of Operation Iraqi Freedom as a brigade operations officer in the 1st Infantry Division. His many other command and staff assignments include being a project manager and deputy district engineer in the Baltimore District, company commander at the National Training Center in Fort Irwin, Calif., and an engineer staff officer in both Heidelberg, Germany, and Washington, D.C.

Neil Parrott (B.S. '94, civil engineering) chose to run as a Subdistrict 2B state delegate for the Maryland House of Delegates. Parrott, a Republican, formed the Hagerstown (Md.) TEA (Taxed Enough Already) Party last year as part of a nationwide movement protesting high taxes, a rising deficit and other federal issues. Parrott, who lives near Hagerstown, Md., was a state traffic engineer, then deputy director of public works for engineering for the City of Frederick in

Maryland before starting his own business, Traffic Solutions Inc., in August 2007.



David Mongan (B.S. '71 and M.S. '76, civil engineering), has been appointed to the Maryland State Board for Professional Engineers. He is also a member of the department's Board of Visitors. In addition to having served as president of ASCE in 2008, he recently retired as the president of Whitney, Bailey, Cox & Magnani, LLC.

Asok Ghosh (Ph.D. '99, civil engineering) has been selected as both the 2010 Veterans Affairs (VA) Headquarters Engineer of the Year and the 2010 Overall Veteran Affairs Engineer of the Year. The U.S. Department of Veterans Affairs provides U.S. veterans benefits and healthcare services in VA medical centers nationwide. Ghosh, in his role as the principal structural engineer for the Consulting Support Services of VA Facilities Management, is described as consistently exceeding the obligations of his position and the expectations of VA Medical Center clients. His accomplishments include major projects review, consultation and advisement to VA medical centers and other facilities VA-wide; review of facility condition assessments; and service on technical evaluation boards for lease projects. Ghosh also serves on the VA Structural Advisory Committee.

Course Leads to Transportation Engineering Career Path for Students

ENCE 370: Introduction to Transportation Engineering and Planning not only introduced students Cory Krause and Nicholas Ferrari to transportation engineering, it set them on their current career path as well.

"This class gave me access to the research I am doing now," says Krause, who will be a student in the Transportation Graduate Program this fall. "ENCE 370 laid the groundwork for my undergraduate and now graduate research career," adds Ferrari, who will also be a student in the Transportation Graduate Program this fall and working part time at a transportation engineering firm "to supplement my research with industry development."

Both Krause and Ferrari are research assistants working with Professor Lei Zhang, who teaches ENCE 370. Their research is focusing on sustainable transportation planning in terms of ecological, social and economic impacts of multimodal highway improvements.

"For most students, ENCE 370 is their first class ever on transportation," explains Zhang. "It is a window that shows students the world of transportation science, engineering and planning."

Through ENCE 370 Zhang hopes to expose students to the most important topics in modern transportation systems, including transportation facility design, traffic flow theory, capacity analysis, traffic operations and control, intelligent transportation systems, transportation planning, travel demand modeling, transportation-land use interaction, transportation economics, sustainable transportation, transportation safety and multimodal transportation, such as transit, rail, air, water, pedestrian and bike.

"It is expected that students will learn the basic characteristics of transportation systems, develop the ability to analyze the performance and effectiveness of various transportation systems and become capable of applying mathematical, statistical and economic analysis methods to transportation system operations and planning," says Zhang.

But, most importantly, "I hope students leave the class with the understanding that an efficient, safe and sustainable transportation system is crucial to quality of life and economic developments," says Zhang.

He also hopes that students will "start considering transportation as a viable and rewarding career option for them." Much as Krause and Ferrari have done.

"ENCE 370 furthered my interests and helped connect my discipline to the real world," says Ferrari. This is not by chance. "Most of the methods and tools taught in the class are those used by transportation engineers and planners in the real world," says Zhang.

And, it is that real-world approach that Krause found especially beneficial. "For example, we went out to actual intersections to record timings, vehicle location, etc. It made it easier to grasp comments explained in the classroom," says Krause.

"If students are not paying attention, they're not going to learn," says Zhang. "My strategy is to mix things up with lectures, discussions, in-class problem solving, competition and educational games between different groups of students and participation in field studies. "I want students to think 'Wow, this is cool and important, and I want to know more about it.'"

And perhaps make a career out of it as well.



Burning Ambition

Alum Robert Rauch Finds Success by "Reaching Higher"

Growing up in Easton, Md., Robert Rauch could have spent his high school and college summers at the beach working and playing as many of his peers did. But, Rauch had bigger ambitions. Instead, he found work with the town engineer, William Corkran, and the experience was the first step toward a career in engineering.

"He was one of the most brilliant engineers I've ever met and a great role model for me," says Rauch of Corkran. "I received a tremendous amount of experience from that job, and I knew what I wanted to do. My career path was set."

"I started out digging the ditches, then I surveyed them and now I design them," Rauch says with a chuckle

Today, Rauch, who received his bachelor's degree in civil engineering in 1973, is owner and principal engineer of Robert D. Rauch & Associates, Inc., in Easton, Md., focusing on civil engineering, land planning and environmental consulting. "I was career-goal minded early on," he says.

In fact, Rauch would find his way to the University of Maryland through his relationship with Corkran. "He was an alum of Maryland, and he took me there and showed me around," says Rauch. Rauch was impressed. "I wanted to get away from the Eastern Shore, but not too far away," he says. "And, I liked the intimacy of the engineering program – it could be as big or as little as you wanted it to be."

After graduating, he went to work for a small civil engineering consulting company in Easton. "It was a good way to begin," he says. "But I wanted more."

He would find more with the Maryland Department of Natural Resources (DNR), where he applied for work as a hydrologist. "I was involved in the development of statewide storm water management standards and

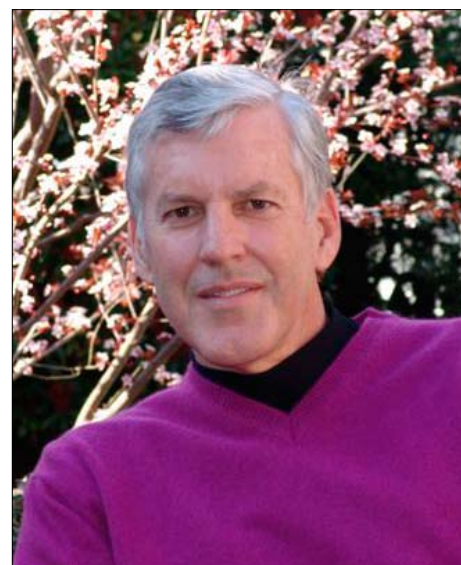
watershed modeling of streams and tidal rivers in the state," he says.

But that was only the beginning. At just 24 years old, Rauch was also named Maryland's first state coordinator of the Federal Flood Insurance Program. This required that he work with every town and county government in the state to bring them into compliance with federal regulations for flood plain management. "I got to know the state very well, learned public speaking and developed a comfort level dealing with public officials," he says.

By 1978, Rauch had become a registered professional engineer in Maryland, Delaware and Virginia. After leaving the DNR, he went to work in Talbot County, Maryland, becoming the state's youngest county engineer. "I was 27," he says.

For the next six years, he was responsible for the designs and construction of three wastewater facilities, and initiated a countywide building permit program and the creation of county roads standards; among other activities. "I loved the responsibility and being in charge," he says. "You learn very quickly that the only bad decision is no decision."

In 1984, he struck out on his own with Robert D. Rauch & Associates Inc. By 1986, he had started two more businesses - Rauch, Walls and Lane, Inc., which provided consulting services for residential and commercial development projects on the Delmarva Peninsula, and RWL Development Inc., a



"I loved the responsibility and being in charge," he says. "You learn very quickly that the only bad decision is no decision."

land development and small construction company.

Always looking ahead, Rauch, a member of the high-IQ societies MENSA and TOPS (Top One Percent Society), realized early on the impact computer technology would have on his profession and business. "With the support of my brother-in-law, a computer consultant, I made the decision to build our future around technology," he says.

Rauch soon became recognized as an expert in computer-based Critical Path Construction Scheduling. In fact, he was invited by the World Bank to teach a course at George Washington University to a contingent of engineers from Saudi Arabia. Later, Rauch's

ALUMNI PROFILE (cont. from page 9)

company, Rauch, Walls and Lane, Inc., would become a Beta testing site for AutoCAD software and the largest PC CAD-based design company in the country at the time.

Rauch's computer expertise would lead him to design the first Tour 18 golf course in Houston, Texas, using 3D modeling and Critical Path Construction Scheduling. "Tour 18 replicated 18 famous golf holes and was recognized by professional golfers as being 95 percent authentic," says Rauch. "I love golf. Now I was able to combine my love for golf with my passion for the design of golf courses."

As a result of his experience with Tour 18, Rauch created the Whole In One Design Group in 1992. "We were one of only two golf course design companies that used 3D CAD modeling to design golf courses," explains Rauch. The company would go on to provide golf course design services across the United States and overseas in Japan and Indonesia.

In 1994, Rauch decided to put all his energy and efforts into focusing only on Robert D. Rauch & Associates, Inc. and its work on large multi-use residential and recreational developments. "I enjoy looking across an open field and having a vision of what I want it to be," he



says. "The Easton Club, with 340 homes and a Rauch-designed golf course, was my first chance to make that vision a reality. I've never been afraid to reach higher. You can't be afraid if you want to be successful."

As his career has thrived, he has remained connected to his alma mater. Both his sons, Casey and Dustin, graduated from the university's engineering program with Dustin graduating from the civil engineering program in 2008. Rauch's wife, sister, daughter-in-law and both brothers-in-law are also alums. So, it is not surprising that he is a staunch supporter of both the university and the engineering school. Currently he serves on CEE's Board of Visitors.

"With both my sons going there, I realized just how much the place meant to me," he says.

Casey and Dustin joined their father in the family business, and Rauch takes great pride in that fact even as he jokes, "I tell people that my business can't grow any larger because I've run out children."

There is however, Brady David. "My older son, Casey and his wife Meghann, just blessed us with our first grandchild," he says, his voice full of pride. "The next Rauch engineer."

FACULTY PROFILE (cont. from page 9)



leaders in the field," says Schwartz. (For more information on Professor Schwartz's research, please see page 3 of this issue). "Eventually, I decided that this was the area that I really wanted to focus on."

Besides his research, he is a teacher, who enjoys conveying the fundamentals of engineering to undergraduate students and introducing his area of research to graduate students. He also

develops and presents short courses to industry and agency groups and is an active continuing education instructor for the Federal Highway Administration's National Highway Institute.

Schwartz is also a current member of the Transportation Research Board, ASCE, the International Society for Asphalt Pavements and the Association of Asphalt Paving Technologists, and serves on the editorial boards for the *International Journal of Pavement Engineering*; the *ASCE International Journal of Geomechanics* and the *International Journal of Road and Airports*.

And, this past summer, he put his engineering skills to further use by joining the university's Engineers Without Borders chapter on a trip to Burkina Faso, located in West Africa. There, EBW is planning to

provide a solar-powered water supply and water treatment for a rural health clinic.

"It was fascinating, kind of exhilarating," he says of the experience. Schwartz, who was accompanied on the summer trip by his 17-year-old son, Warren, plans to return in January for the implementation phase of the project. While he and his son were in Burkina Faso, his 23-year-old daughter, Claudia, who recently graduated from Brown University with a degree in international relations, was working for a NGO in Kenya.

Then there are his activities off campus and outside of the classroom and lab. A great lover of music, he has played rhythm and bass guitar for bands with names like Geezer and The Balding Eagles.

"I grew up during the British invasion, with bands like the Kinks and the Animals. In high school I played in a garage band, and I never lost my love for music," says Schwartz, who admits to having over a 650 "influential songs from the late 60s and early 70s" on his iPod play list. He collects ("accumulates," he jokes) electric guitars and amps, many from eBay or Atomic Music in Beltsville, Md., and is currently between bands. "I'm looking, though," he says. "I miss getting together with a few people and doing a bit of jamming." And he has plans for his retirement.

"I joke that my retirement plan is to play blues guitar in a bar band for beers," he says with a chuckle.



Creating a Better Work Environment

Alfred Bituin Brings Extensive Engineering Experience to Role as Lab Manager

Alfred Bituin remembers as a young boy travelling into Manila from his home in Angeles City, Philippines, and envying what he saw outside the bus window. "As I looked out, I envied those engineering students with slide rule slots in their back jeans pockets entering the MIT gate," he says.

The Mapua Institute of Technology or better known as the MIT of the Philippines was one of the topnotch institutions in engineering in the early 1970s. And, it was Bituin's obsession and dream to get into the school.

He would do just that, getting his education and going on to a successful career in engineering. It was a career that would lead him to become an engineering instructor and a metrology technician working for a U.S. Navy defense contractor in Kuwait before he found his way to the CEE and his current work as a laboratory manager.

"I have been fortunate in my career," he says.

Bituin, the fourth eldest of two sisters and six brothers, pursued his education in engineering "with great determination and perseverance." The difficulties he encountered with the entrance exam didn't deter him to reach his targets. Out of 20,000 applicants who took the MIT college entrance test in 1971, "I'm one of the 1,000 lucky applicants who made it," he says.

Once admitted to the Mapua Institute of Technology, Bituin plunged into his studies. "I went through many sleepless nights," he recalls, "working on multiple research projects and reports and studying for frequent exams. During that time, some professors passed only five to 10 students out of 40."

A major in electrical engineering is a five-year course in the Philippines, but Bituin finished in four and a half years and went on to work two jobs at once- one as an engineering instructor and another as a power engineer. He became a licensed registered engineer in

1976 and acquired his professional engineer's license in 1980. Bituin continued to study and obtained a bachelor's degree in mechanical engineering in 1984, as well as other licenses and certificates in the United States.

Despite working two jobs, times were hard. And Bituin now had a family to support, a wife and three young children. "Construction was at its peak in 1985, but my income was not enough to buy a house," says Bituin. He made the difficult decision to pursue work abroad. "My wife and I were inseparable, but I wanted to have a good job with better pay," he says.

His sister-in-law worked in Kuwait and encouraged him to apply for work with Kay and Associates, Inc. (KAI), a U.S. military defense contractor. Bituin was hired by the company as a metrology technician, but was also tapped as a metrology instructor and facilities engineer, where he worked on upgrading the metrology facilities. "I was involved directly in the upgrade of the electrical power generation and distribution projects in many different calibration laboratories," he says.

His work was noticed by top KAI management, who named him the first recipient of the Employee of the Year award during his first year of work in Kuwait.

Bituin enjoyed his work. However, the downside was the agonizing separation from his loved ones who had stayed behind in the Philippines. Nevertheless, "I have no regrets for choosing the path I did and being apart from my children in order to give them a



Out of 20,000 applicants who took the MIT college entrance test in 1971, "I'm one of the 1,000 lucky applicants who made it," says Bituin.

better life and a good education," he says. Today, his children are grown with careers of their own. One is a physician, one a physical therapist and one a computer engineer. Bituin credits his wife for much of their success. "My wife, Mildred, left her teaching profession in order to educate and guide our children," he says. "When the children were in school she managed our book store and restaurant. At home, she spent hours teaching our children. When I would return home, I used to hear her saying to them, 'Be the best you can be,' and 'Aim high always.'"

All seemed well with family and work until August 2, 1990. "I awoke to a big boom," he recalls. "It was a bomb that struck the Abu-Halifa telecommunications building which is

STAFF PROFILE (cont. on page 14)



STAFF PROFILE (cont. from page 13)

about a half of a mile from the flat where I was staying," he says. "This was the start of the first Persian Gulf War."

After evacuating Kuwait, Bituin had to find work elsewhere. In February 1991, he accepted a position as a senior design electrical engineer with a U.S. Navy contractor at the U.S. Navy base in Diego Garcia, a small island in the Indian Ocean.

In 1993, he was asked to return to KAI and his previous job as a metrology and facilities engineer. When KAI lost its contract to another U.S. defense contractor in 2000, "I went home to the Philippines," says Bituin.

During a visit to the United States to see his brother, his career would take yet another turn. "My brother Frank is a mechanical engineer, and he asked me if I would like to work with him," says Bituin.

"Of course, I said yes." Bituin was introduced to the president of NV enterprises now in Herndon, Va., where his brother Frank was employed, and was given the position of an electrical and mechanical design engineer. "I started working with the company in July 2001," says Bituin. "But I also applied for jobs at other companies including the University of Maryland. I wanted to work at this university because of its good employee benefits as well as its non-discriminatory policy based on race, color, religion, gender, age and ethnic origin."

Bituin was hired part time as a laboratory manager for CEE in 2002. "In my job, I supervise undergraduate laboratory assistants, assist faculty and students working on specific projects by providing support on instrumentation, set-up and installation of equipment for proper operation," he says.

Bituin has worked hard to create a comfortable and productive laboratory environment. "When I was interviewed for the position of laboratory manager, I was astounded when I was shown the lab facilities," he says. "The labs were cluttered and grimy."

Bituin set out to change that, and did so successfully. "I considered it a personal challenge in changing and improving the labs," he says. "Today, I am proud of what I have accomplished, though, not satisfied yet. I love my job and am pleased with the support the CEE management and staff show me. I love helping people by being a medium or instrument in solving their problems or making things easy for them. It's who I am."



STUDENT PROFILE (cont. from page 7)

Asplen was determined to make the transition to returning student early on and with gusto. "I jumped right in," he says. "I got involved as much as I could."

In fact, he has been involved with the concrete canoe competition; is a member of the Chi Epsilon honor society for civil engineering; and involved with the ASCE student chapter on campus. "I also get tickets and go to the football and basketball games. That's fun. My son and I go sometimes," he says of his 22-year-old son Charlie.

Now, like any other undergraduate, Asplen is eyeing graduation in the year ahead. "Time is ticking down," he says, a bit regretfully, "and, I'm getting a bit nervous about what's next."

He is interested in perhaps pursuing a career in environmental engineering with an emphasis on water resources engineering. This was an area of civil engineering he was introduced to as a student at the university.

But first, "I really want to savor my education experience here," he says. "At my age, you realize how fast times goes by. I see the other students. They are in such a hurry to graduate and get a job. I want to tell them to slow down and really appreciate this time. These are some of the best times of your life."

Even at 47.



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