



CIVILReMARKS

CIVIL AND ENVIRONMENTAL ENGINEERING [civil.umd.edu]

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

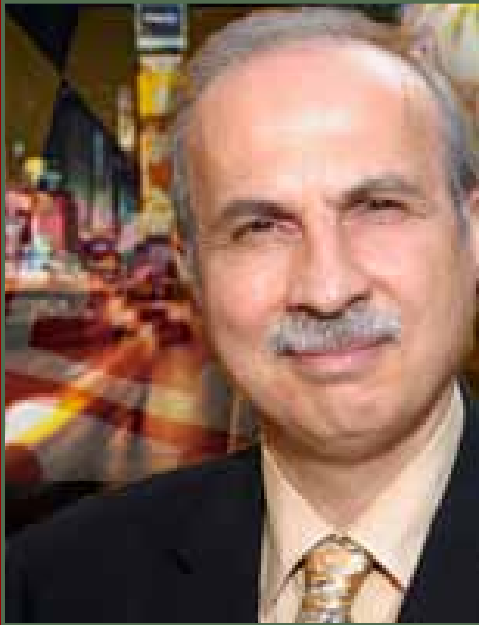
Fall 2012
Vol. 12, No. 1



Veronica O. Davis
*Alumna Earns
Presidential Recognition*



**\$1 Million FHA Grant For
Game-Changing Traffic
Monitoring System**



CHAIR'S MESSAGE

Welcome to the Fall 2012 issue of Civil Remarks.

What makes our department strong and our students so successful is the combined dedication of our innovative faculty, our hardworking staff and our driven and ambitious students. In this issue, we'll highlight some of the great new research of our long-time faculty, as well as introduce you to some newer members of our team. You'll get to know one of our exemplary seniors and one of our successful young alumni.

Our cover story highlights research professor Stu Milner's \$1 million grant from the Federal Highway Administration to overhaul and dramatically improve transportation monitoring systems across the country. He and collaborator professor Chris Davis, from the department of electrical and computer engineering, are creating autonomous, continuous, ultra-high-definition monitoring systems that can track traffic congestion and simultaneously record features such like vehicle speeds—all without human monitoring.

The other research story focuses on professor Allen Davis' work on developing methods to enhance the removal of sediment, nitrogen and phosphorous from stormwater runoff. He was awarded \$632,000 by Prince George's County, which he has worked with closely for the last two decades. He'll primarily be using rain gardens to accomplish this goal, testing at our rain gardens on campus. It's great to see our professors so engaged with our local government and community.

Our professors are also guiding our students to solve real-world problems. ENCE 688J, Contemporary Water Resources Management, is taught by professor Gerry Galloway. The unique class brings together civil engineering and public policy students, who work together to better understand and tackle the water resources issues that we face today. They study everything from Hurricane Katrina

to the Three Gorges Dam. It's a great interdisciplinary experience for our students, who will have to work with people from many different fields once they graduate.

In this issue, we're introducing you to two new members of the department: assistant professor Brian Phillips, who started this fall, and assistant director of graduate services Kerri Poppler James, who started last year.

Phillips researches how buildings, bridges and other civil infrastructure respond to natural and man-made disasters like hurricanes, earthquakes, tsunamis and blasts. He hopes to develop cutting-edge devices and protocol for hazard mitigation. He's eager to get involved with our students, particularly with the steel bridge team. Phillips is a Maryland native and I'm excited to bring him back to his home state to be a great addition to our faculty.

James has only been with us for a year, but she's already made a big impact on our department. Her incredible dedication to our graduate students has led to the revival of the Graduate Student Council, as well as the streamlining of complicated application and other paperwork-intensive processes. Her open-door policy and her warm, friendly demeanor make her a great resource for our students. You'll learn a bit about her dedication to her community and her love of books

The engineering field is male dominated, but we're showing off two female engineers who are breaking the mold. One is a student with a prestigious government scholarship, and the other is a 2001 graduate who's started her own company.

Senior Erin Strittmatter won the Science, Mathematics and Research for Transformation (SMART) scholarship from the Department of Defense at the end of her sophomore year, which is giving her a full ride until graduation—as well as a job with the

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CHAIR'S MESSAGE (cont. on adjacent page)

CIVIL REMARKS | FALL 2012

ENCE 688J Contemporary Water Resources Management

From the Egyptians using the Nile for irrigation to the Chinese damming rivers for flood control, humans have been trying to control water for thousands of years. But we still haven't figured it all out.

That's why Gerry Galloway is offering ENCE 688J, Contemporary Water Resources Management, a joint civil engineering and public policy class, for the eighth year in a row.

"This class brings together who have different views," Galloway says. "These are students who are interested in water as the common element and want to know how to manage all the challenges that face us in the 21st century."

ENCE 688J examines water resources problems through a technical and a policy lens. These issues include floods, water quality, water quantity, environmental degradation, navigation and hydropower.

"Learning about flooding challenges has been a highlight" of the class, says Meg Imholt, a second-year master's of public policy student specializing in environmental policy. "Living on the Gulf Coast, I saw how storm surges and other flood events can devastate communities. Learning methods to control and predict these events as well as policies to manage risk, we can help communities prepare for and recover from these disasters."

Students in the class study all the impacts water resource projects can have, including environmental, economic, socio-cultural and political, and try to reconcile the benefits and negative consequences of certain actions.

"This is not a course that tries to teach everybody economics or hydraulics or hydrology," Galloway says, "But it teaches the presence of these disciplines and how they interact and where they can go wrong."

For example, the class examines Hurricane Katrina. They start with why New Orleans exists in the first place, despite being under sea level: it's the largest port in the United States in terms of tonnage, and there's a huge oil industry in the Gulf of Mexico. Then, they study the engineering failures, like the destruction of the defensive structures meant to protect the city, and the policy failures, like the government reaction at all levels that led to loss of life.

Finally, they try to answer the big question: What did we learn from Katrina, and what should we do today?

Another example they study is the Three Gorges Dam in China, which is an example of hydropower. The class investigates the advantages of hydropower, which include creating power without polluting the atmosphere and providing flood control for downstream cities, as well as the disadvantages, which include changing the entire flow of the Yangtze River, displacing certain populations and creating new environmental challenges.

The graduate-level class has no explicit prerequisites, but does require a passion for the subject matter. Galloway speaks to every student who hopes to take the class, offered each fall, to make sure they are open-minded and willing to contribute.

"That's what's the most fun about a course like this," he says. "You get to see what other people can come up with, looking at the same ball from a different angle. It makes you better equipped to do your job."

One of the class requirements is for students to write a paper for the Office of Budget and Management arguing whether or not to implement a water resources project.

"The idea of not doing a 50-page term paper, but something that can be understood by everyone in the class and makes good sense and is backed up by material they've dug out is very critical," says Galloway.

An engineer that doesn't understand the human and societal impact of his work is not a good engineer, Galloway says. An engineer must be able to look beyond the math and the science.

"I've been in the water resource field for a number of years, but I only had a limited perspective on water issues as a whole outside of my number-crunching engineering work," says Vince Moody, a first-year graduate student in the master's of engineering and public policy program. "Learning about the history and political considerations that have shaped our nation's water policy, or lack thereof, is fascinating."

"I'd like to help bring some sanity to the water policy world here in the United States and maybe even help other countries shape their policies as they begin to face many of the challenges we are dealing with today," Moody says.

government. The current American Society of Civil Engineers at the University of Maryland president, Strittmatter has been a great student both inside and outside the classroom. She's set a great example for all students to follow, and I wish her the best as she prepares to enter the workforce.

Alumna Veronica O. Davis has also earned government recognition for her work. She was named a White House Transportation Champion of Change this year for her work in improving transportation accessibility for all. She started her own company, represents and advocates for her community on local transportation boards, and even started a social

movement that's brought together local black, female bicyclists. As a young, black, female engineer, she's faced challenges in the field, but never gave up. That's the spirit I hope to instill in all of our students.

Whether they're conducting groundbreaking research or deciphering construction jargon for the public, I'm proud of our students, faculty, staff and alumni. I hope you'll take a little time to read through Civil Remarks and learn more about what they do.

Ah. Haglani



\$1 Million Federal Highway Administration Grant Funds Research to Create Game-Changing Traffic Monitoring System

Civil engineering research professor Stuart Milner and electrical and computer engineering professor Chris Davis were awarded a three-year, \$1 million grant from the Federal Highway Administration to create a more efficient and effective traffic monitoring technologies that could more quickly and accurately identify incidents like accidents or major congestion.

"I feel honored that we were selected," Milner says. "Chris and I have been doing research for quite some time in this area and our research is unique."

Their research project, entitled "Cooperating Camera Platforms for Ultra High Resolution Traffic Surveillance and Autonomous Event Detection," will radically improve the existing widely-used closed-circuit television traffic monitoring systems. This builds on their previous work for the Center for Integrated Transportation Systems Management, funded by the Department of Transportation.

Current systems use single cameras that transmit low-resolution, streaming images over wired networks or the Internet to an operation center where they rotate on multiple screens. A major disadvantage is that they usually require human monitors to detect incidents or control movement, and if an operator doesn't see the incident when it comes on the screen, a critical event could be missed. If current systems can do any automatic detection, they are limited to identifying a single event like stop-bar detection, counting vehicles, vehicle classification or identifying accidents and vehicle speeds within a fixed area.

Milner and Davis are creating a system and technologies that provide autonomous, continuous, ultra-high-definition monitoring through the use of several cooperating cameras. Using algorithms they developed, the system can track and monitor multiple "events" like congestion, abnormal vehicle patterns and accidents, as well as autonomously and simultaneously record features such as vehicle types (including make and model identification) and speeds, and then alert operation centers with this data in real time.

They describe the system as providing multiple sets of eyes to oversee traffic. One set monitors ongoing situations like multiple-lane highways, intersections, freeway ramps and parking lots, and the other set focuses on anomalies like accidents, suspicious activities, vehicles tracking or sudden changes in traffic patterns.

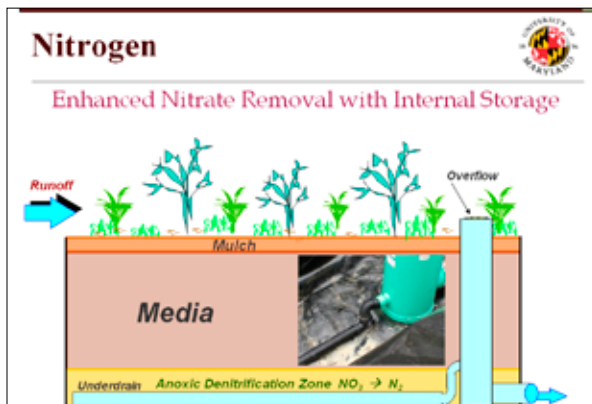
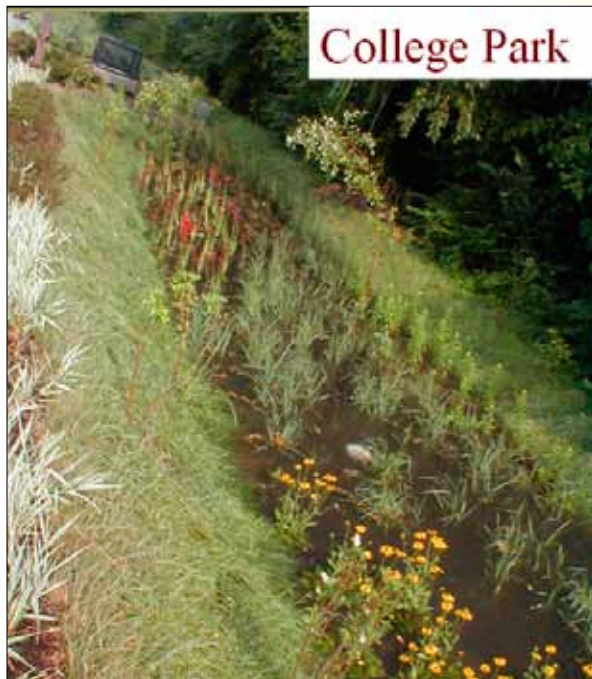
The system could allow for real-time control of traffic flows to alternate routes, speedier dispatch of first responders to address highway problems, and tracking of vehicles from source to destination.

Beyond monitoring traffic situations, Milner sees their system benefitting the departments of defense or homeland security.

"There's a great demand for video intelligence, surveillance and reconnaissance," he says. "One of our tasks is to show how our unique technology and capabilities enable future applications."

Saving the Bay:

Professor Receives Prince George's County Funding to Find Cost-Efficient Ways to Keep Pollutants Out of the Chesapeake



Allen Davis was awarded \$632,000 by Prince George's County this spring to provide methods to enhance the removal of sediment, nitrogen and phosphorous from stormwater runoff, particularly in urban areas.

The three-and-a-half-year grant is just the most recent one Davis has received from the county. He's worked with officials on stormwater management for nearly two decades.

"It's great working with the county," Davis says, particularly on a problem that affects the community as a whole.

A year and a half ago, the Environmental Protection Agency put a Total Maximum Daily Load (TMDL) in place for the Chesapeake Bay, regulating how much sediment, nitrogen and phosphorous could be discharged to the bay by the surrounding states. These pollutants create "dead zones," which are oxygen-free areas that kill aquatic life in that area. Sediment causes the problem by blocking light and then settling into the water, choking off organisms in the process. Nitrogen and phosphorous promote major algae blooms. When the algae dies, it is consumed by bacteria that sucks up all the available oxygen and kills off any organisms in that space.

Each state and local jurisdiction is responsible for reducing its output. These pollutants come primarily from three sources in urban areas: atmospheric

deposition; fertilizer from lawns, golf courses and other green areas; and the breakdown of organic matter, like grass clippings, leaves and pollen, that fall onto roadways. In urban areas, this organic matter washes quickly into the waterways, as opposed to settling and decomposing into the soil.

Davis' method for pollutant removal is bioretention, primarily rain gardens.

"We've been focusing on this particular technology for 15 years," he says. "We've been understanding them, learning from them, and we've put several on campus."

He has already helped the county establish many of these throughout the county, but they require new methods to efficiently remove the nitrogen and phosphorous from the runoff.

To remove nitrogen, he must create anoxic, or oxygen-free, zones in the bioretention facility to keep the water stored for hours or even days. To remove phosphorous, he's looking into adding aluminum and iron, which can adsorb phosphorous, into the soil mix.

Davis' goal is to create an economical way to remove these pollutants. With current methods, the county could spend hundreds of millions of dollars to reach the 15-year goal.

"Like many engineering challenges, we want to try to do more with less," he says. "It's such an ambitious goal."

Doctoral student **James Jones** was awarded a \$10,000 research stipend by the Graduate Research Award Program on Public-Sector Aviation Issues for the 2012-13 academic year. The award will help to fund his research on "Algorithms for Dynamic Re-sequencing of En Route Flights."

Jones is affiliated with the National Center of Excellence for Aviation Operations Research (NEXTOR II), an eight-university consortium researching aviation operations research. The Institute for Systems Research (ISR) is the home for University of Maryland NEXTOR researchers. Jones, whose research interests lie in algorithms for air traffic management, is advised by Associate Professor David Lovell (CEE/ISR). The award is sponsored by the Federal Aviation Administration of the U.S. Department of Transportation and administered by the Airport Cooperative Research Program (ACRP) of the Transportation Research Board/National Academies.



Doctoral students **Woon Kim** and **Poornima Natarajan** received the Ann G. Wylie Dissertation Fellowship award for 2012-13. These fellowships carry a stipend of \$10,000 plus candidacy tuition remission and \$800 toward the cost of health insurance.

These are one-semester awards intended to support outstanding doctoral students who are in the final stages of writing their dissertation and whose primary source of support is unrelated to their dissertation. The Graduate School awards approximately 40 Wylie Dissertation Fellowships per year.

Doctoral student **Noah Blum** was awarded the 2012 Eisenhower Graduate Fellowship, which comes with a prize of \$5,000. The objective of the Dwight David Eisenhower Transportation Fellowship Program is to attract qualified students to the field of transportation and research, and advance transportation work force development.



Master's student **Timothy Briner** received a 2012 Post-Tensioning Institute scholarship sponsored by AMSYSO Inc. The award included \$2,500 and an all expenses paid trip to attend the annual PTI Technical Conference. The award was

established to commemorate the company's 30 years in the post-tensioning industry and to encourage students studying and/or researching in the field of post-tensioned concrete.

Briner is currently conducting research sponsored by the Maryland State Highway Administration on transversely post-tensioned skew concrete slab bridges in conjunction

with his graduate adviser, Dr. Chung Fu, and the Bridge Engineering Software and Technology (BEST) Center at the University of Maryland.



Senior **Erin Hylton** was named a Udall Scholar for 2012, in recognition of her work in environmental studies. The honor comes with a \$5,000 prize for tuition and other educational expenses. Hylton is president of the campus chapter of Engineers

Without Borders and leads the new Maryland Sustainability Engineering group. She is a Banneker-Key Scholar and an honors student and has participated in the Federal Semester program in the Energy and Environmental Policy track.

The Udall Scholarship program recognizes future leaders across a wide spectrum of environmental fields, including policy, engineering, science, education, urban planning and renewal, business, health, justice and economics. The program was established by the U.S. Congress to honor Congressman Morris King Udall's 30-year legacy of public service.

The University of Maryland Student Chapter of the **American Society of Civil Engineers (ASCE)** entered this year's principles they learn in the classroom, along with important team and project management skills they will need in their careers. The event challenges students' knowledge, creativity, and athletic stamina, while showcasing the versatility and durability of concrete as a building material.

The Steel Bridge Competition involves designing and building a 21-foot span bridge that can hold 2500 lbs of vertical load with minimal deflection. During the competition, timed construction and load testing events are used to score the bridge.

The **A. James Clark School of Engineering** is ranked 14th in the Academic Ranking of World Universities list of engineering schools this year. The ranking is produced by the Shanghai Jiao Tong University's Institute of Higher Education and Center for World-Class Universities and takes into account each school's number of highly cited researchers selected by Thomson Scientific, the number of articles published in journals of Nature and Science, the number of articles indexed in Science Citation Index - Expanded and per capita performance with respect to the size of an institution, among other factors.

The 2013 U.S. News & World Report Best Undergraduate Engineering Programs Ranking lists the Clark School's program as 23rd in the nation, up one position from last year. The Clark School is ranked 11th among public universities.

One SMART Cookie:

Dynamic, Involved Senior Lands Department of Defense Job, Scholarship

When senior Erin Strittmatter found out she received the Science, Mathematics and Research for Transformation (SMART) scholarship from the Department of Defense at the end of her sophomore year, it took a huge weight off her shoulders.

"I'm so blessed to have the comfort of having school paid for and knowing that I'll have a job with the government right out of school," she says. "College is so expensive, particularly when you are from out of state."

She'd been on the scholarship search for two years, and to find out that she wouldn't have to pay for the second half of college, she was able to put more focus on her studies.

"I am really honored to have received the SMART Scholarship as it is highly competitive and provides recipients with excellent training opportunities," she says.

The scholarship pays for tuition and gives her a monthly stipend to help with housing and other expenses. Because it covers her junior and senior years, she is committed to work for the government for at least two years once she gets her degree.

She's already had the opportunity to see what it's like to work with the Department of Defense. This summer, she interned at a facilities program office. "I was able to help with, observe and go to meetings for a variety of different types of civil engineering projects"—she really enjoyed her experience.

"It was comforting to know that I really liked it, since I'll be there after I graduate," she says.

As a high school student, Strittmatter thought she might be an architect. But when she saw the architecture curriculum didn't include much math or science beyond the first semester, she decided on engineering—which turned out to be a perfect fit for her.

The Indiana, Penn., native chose Maryland after visiting all 11 colleges she applied to. She visited Maryland on a beautiful day and says she was able to picture herself among the throngs of students walking to class.

"I come from a small town, so the opportunities to go to D.C., to go to Baltimore, means I always have something to do here," she says.

One particular draw for her was the Women in Engineering program and Flexus living and learning community.

"It was really nice," she says, "because your roommate and the people next door and down the hall are all doing homework together and going to class together."

"I made my best friends in the program," she says. "It was a really good thing for us because engineering was really overwhelming in the beginning, and it was nice to have a support system."

She appreciated the resume-building and etiquette workshops that were part of her seminar, as well as the networking events that exposed her to the realities of finding a job in engineering after graduation.

After her freshman year, she decided to get more involved, becoming the vice president her sophomore year to help new female engineering students become involved and have some fun. She planned door decorating contests, ice cream socials, scavenger hunts and served as a liaison between the students and advisors to help improve the program.

She's also a member of Chi Epsilon, the Society of Women Engineers, the Society of American Military Engineers, and a student ambassador for the A. James Clark School of Engineering.

The activity she's dedicated most of time to, however, is the American Society of Civil Engineers. Strittmatter has been involved since her freshman year, when her student mentor was the president.

"She gave me a connection and I really got my foot in the door," she says. "I was lucky to have a mentor who led me in that direction because not all freshmen jump on the boat right away."

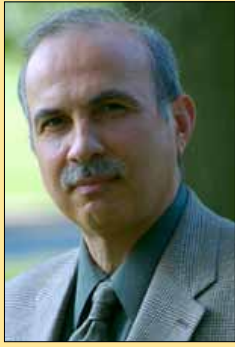
In her sophomore year, Strittmatter joined the steel bridge team in the first competition attempt by Maryland in many years. The team placed in the middle of the pack, but it was an eye-opening



experience for her: the time commitment required and the actual building and assembling and disassembling of the bridge posed challenges she'd never faced before. Strittmatter placed 2nd at the competition for her paper and presentation on 'Ethics and the ASCE Report Card.'

The next year, she took on a different but related challenge: as Chief Financial Officer, she controlled the accounts for the concrete canoe and steel bridge competition teams, working with sponsors to ask for money, often thousands of dollars. She made sure the money went to the right team and the sponsors were thanked for their contributions and support.

STUDENT PROFILE (cont. on page 12)



Department Chair **Ali Haghani** has signed a memorandum of understanding with the Afghan minister of public works to collaborate on transportation research, education and best practices. Key issues include improving ways of managing the regions' highways and providing safe driving conditions. Center for

Advanced Transportation Technology Director Tom Jacobs will help foster the relationship.



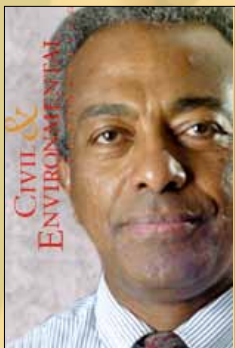
Professor **Gregory Baecher** has been appointed to The Water Institute of the Gulf's newly formed Scientific and Engineering Advisory Council. In this role, he will provide scientific and technical advice to the Institute related to coastal protection and restoration in support of Louisiana's Comprehensive Master Plan for a

Sustainable Coast.

The Water Institute of the Gulf is an independent research institute dedicated to advancing the understanding of coastal and deltaic systems and applying this knowledge for the benefit of society. In collaboration with public, private and academic partners, the institute studies coastal and deltaic systems to preserve and protect the U.S.'s Gulf Coast environment.

Baecher was also awarded the National Award for Significant Contributions in Science and Technology by the National Secretariat for Science, Technology and Innovation of Panama (SENACYT).

Through this recognition, SENACYT, responsible for science policy, technology and innovation in Panama, celebrates the work of this group of professionals in the field of civil and structural engineering.



Professor **Amde M. Amde** gave the keynote papers at two international conferences this year. The conferences were the "International Conference on Sustainability Challenges & Advances in Concrete Technology" in Coimbatore, Tamil Nadu, India, and the "International Workshop on Sustainability and Advances

in Concrete Technology" in Calicut, Kerala, India. Both conferences were in May.



Professor **Miroslaw Skibniewski** served as Chair of the International Scientific Committee of the Creative Construction Conference, held this summer in Budapest, Hungary. He delivered the keynote address at the conference, which included researchers from more than twenty countries on four continents.



Glenn L. Martin Institute Professor of Engineering **Gerry Galloway** contributed to the National Academy of Sciences report "Disaster Resilience: A National Imperative." The report calls for a national vision and culture of resilience to natural and human-caused disasters. Galloway sits on the NAS Committee on Increasing

National Resilience to Hazards and Disasters.

Center for Integrated Transportation Systems Management (CITSM)



research engineer Mehdi Kalantari and Bridge Engineering Software & Technology (BEST) Center Director **Chung Fu** were featured in a University of Maryland [Newsdesk](#) article about their wireless sensor technology research. One in four bridges in the United States is listed by the federal government to be either "structurally deficient" or "obsolete," and they hope to

prevent bridge collapses like the one that sent more than 100 cars into the Mississippi River in 2007.

The article mentions Kalantari's start-up company, Resensys, created with the help of the Maryland Technology Enterprise Institute (Mtech), and the system he developed of tiny, long-lasting, energy-efficient, low-maintenance wireless sensors and software that analyze real-time data collected. His company has manufactured systems for use in the private sector and for testing by Maryland State Highway officials.

The story also describes the Integrated Structural Health Monitoring System being developed by Fu and a research team. This "smart bridge" package will have multiple technology innovations. Though it is not yet available

Shaking Things Up: *New Professor Brings Expertise in Hazard Mitigation to Campus*



Brian Phillips is working to protect us from earthquakes, hurricanes and even terrorist attacks.

"I've always been interested in the dichotomy of man and nature," he says. "Civil infrastructure pushes the limits of what people can achieve, but there's always natural hazards that bring challenges."

When he first started college, he was more interested in design. He had always been impressed by large structures and knew civil engineering had a positive and visible impact on society.

"But I quickly realized to be able to advance the state-of-the-art in civil engineering, I needed to pursue research," he says.

His research interest is in the area of structural dynamics: how buildings, bridges and other civil infrastructure respond to natural and man-made disasters like hurricanes, earthquakes, tsunamis and blasts. He hopes to develop cutting-edge devices and protocol for hazard mitigation.

"I want to know how to keep these structures safe and hopefully standing during these events," he says. "And in the aftermath, improving the first response to keep people safe and aiding first responders and the cleanup effort to get everything back to normal."

Phillips is focused both on improving old designs and creating effective new ones with innovative materials and devices like variable damping systems, which can help absorb and dissipate energy. Old buildings can be enhanced through retrofitting, while new ones can simply incorporate these new devices.

His graduate research primarily focused on earthquake engineering, but because of Maryland's proximity to Washington, D.C. and its urban environment, he's developed an interest in blast loading. Whether these explosions are caused by terrorist attacks or just accidents, they present unique challenges. Civil engineers must work to not only enhance the structural stability of the building, but also find a way to protect people from the desks, chairs and partition walls that can become projectiles.

Phillips is a Maryland native. He grew up just an hour north of College Park, in Mount Airy, Md. He didn't expect to return to Maryland after a decade away, studying at the University of Pittsburgh and University of Illinois, but he's happy to be back.

"The faculty and staff have been extremely helpful in the transition from my life in Illinois," says Phillips, who's just weeks into his first semester as a faculty member. "I'm happy that everything has clicked."

He's early in the process of setting up his lab and hiring graduate students, but he's excited by the initial contact he's had with several students who want to bounce ideas off of him.

Mentoring these students reminds him of his own great mentor, who inspired him to go into academia. He realized he could see himself leading a research group and that he wanted to stay connected to the community through teaching and service.

He's teaching one graduate class this semester, ENCE 611, Finite Element Methods.

"Through teaching, you're able to interact with the next generation of civil engineers," Phillips says. "I'm always learning new things. In order to teach something, you have to understand it much better than you would as a student, so sometimes I feel I learn more as a teacher than I did as a student."

He hopes to work with and advise students



through clubs and other activities. In particular, he's interested in the Maryland steel bridge team, because he competed with the University of Pittsburgh as an undergraduate.

As a student, he also had the opportunity to travel to several countries, particularly throughout Asia. He visited Japan, Korea and China to learn more about smart structures and earthquake engineering in those nations. He enjoys traveling, and says he'd like to visit Europe soon.

In the United States, he particularly enjoys going out to California and Colorado. Nearby, West Virginia is his favorite place to hike, bike and camp.

"You can find some nice secluded areas in the mountains," he says.



Photo Courtesy VIKA

Jeffrey Amateau '88 was promoted to vice president at VIKA Incorporated in Germantown, Md. He manages a staff of 14 including, planners, landscape architects, engineers and CADD Designers. He has more than 18 years of design

experience in preparation of site development plans for commercial and residential developments; preparation of construction documents for commercial and residential developments; and, preparation of Special Exception Plans. He is particularly experienced in the designs of stormwater management facilities, sediment and erosion control, public streets, sanitary sewer and water distribution systems, and storm drain design, both public and private.



Dewberry

Duncan Hastie '95 was promoted to associate vice

president of water resources at Dewberry. Hastie is based in the company's Atlanta office. In addition to 16 years' experience in water resource engineering and hazard mapping and mitigation, he has 10 years of program and project management experience.

Hastie's clients have included municipalities, state government, FEMA, as well as private industry. He has also conducted numerous public meetings, county commissioner briefings, workshops, and scoping meetings. He is a member of the Georgia Association of Floodplain Management, the Georgia Association of Water Professionals, and the Association of State Floodplain Managers.

Richard P. Kercher '92, a project manager in Gannett Fleming's Transportation Division based in the firm's Harrisburg, Pa., headquarters, successfully completed his third and final trip to Sierra Leone, Africa, where he worked with a team of students from The Pennsylvania State University's (PSU) chapter of Engineers Without Borders-USA (EWB-USA) to build a latrine for the Baoma Covenant Preparatory School.

As a professional mentor for the PSU EWB-USA chapter, he provided oversight for three trips to Africa. Two of trips focused on collecting assessment data, coordinating technical guidance, reviewing the structural design of the latrine, and helping the chapter develop a construction plan and schedule that incorporated local materials and building techniques. In May 2012, Kercher and members of

PSU EWB-USA chapter made their third trip to construct the two-seater latrine. The project will greatly improved sanitation around the school property and will help to teach the children the importance of hygiene.

Kercher is a member of the American Society of Highway Engineers.

Joseph G. DiCarlo '79 has joined the firm Wallace Montgomery in Towson, Md. as an associate in charge of business development. DiCarlo has more than 30 years of the experience in the transportation engineering industry.



Previously, he served as district manager at a multinational consulting firm where he was responsible for transportation operations in Maryland, Northern Virginia and the District of Columbia. He also spent numerous years designing bridges and managing bridge projects for mid-Atlantic regional firms. He is an active member of the ASCE MD section; ASHE, both the Chesapeake and Potomac Chapters; and the Maryland Association of Engineers. He is also involved in ACEC, both the Maryland and MW Chapters, and the Virginia Transportation Contractors Association.

Timothy F. Whittie '83 is now the director of public works for Harford County, Md. He has more than 30 years of professional engineering experience and is a registered Professional Engineer in the State of Maryland and District of Columbia. As director of public works, he oversees more than 450 employees in four divisions: highways and water resources, environmental services, water and sewer and construction management. Responsibilities include the operation, maintenance, repair and potential construction of road and storm drain systems, solid waste facilities, and water and waste water facilities.

Whittie previously worked as the chief of development services for Cecil County. He was responsible for the creation of procedures regulating the asbestos disposal at the Cecil County Landfill. In addition to his work local government, he also acted as the project manager for many companies throughout the state.

Captain James Wink, USN (ret.) M.S. '98 joined RBF Consulting in San Diego, Calif., as assistant office manager and vice president. He has more than 25 years of experience and leadership in public works, engineering, construction and business management as a Navy Civil Engineer Corps Officer.



Turning the Wheels of Change:

Entrepreneurial Alumna Earns Presidential Recognition for Making D.C. Transportation More Accessible For All



For Veronica O. Davis '01, P.E., biking to work each day is just the start of her innovative ways of facing transportation challenges.

"I literally live transportation all day long," she says. "This is what I do professionally, this is what I do in my community, this is what I do for my city and region and by the way—it's what I do in my personal life."

She started her own company, represents and advocates for her community on local transportation boards, and even started a social movement that's brought together a community of black, female bikers in the Washington, D.C. area.

That's why she was named a White House Transportation Champion of Change this summer.

"In communities across the country, we have found bold, innovative leaders who have taken up the important cause of changing the way we think about transportation and have created jobs in the process," said Secretary of Transportation Ray LaHood in a statement. "These Champions are making a difference every day in their local communities and across the country. And, thanks to them, it is a new day for transportation in America."

Davis co-founded Nspiregreen, LLC, a sustainability and environmental consulting company, with friend Chancee Lundy in 2009.

"We call ourselves engineers who understand people," she says. "Our role is translator, coordinator and headache mitigator."

Her work keeps the community in the loop on construction projects, helping them to understand what companies are doing and how that will impact their lives. Nspiregreen also takes this a step further by helping companies figure out the best times to work to create the fewest obstacles for residents.

They work with the District Department of Transportation, Prince George's County, and other local governments, as well as nonprofit organizations.

"Where we're different [from our competitors] is that we have the engineering backgrounds," she says. "We provide information to the community but also advocate for the community back to the construction team and the contractor."

She credits Maryland with her dedication to people-centric engineering.



"I'll always remember when I took introduction to transportation planning and my professor told me, 'it's not enough to design a road—you have to figure out that road in the context of the people,'" she says.

Davis holds dual master's degrees from Cornell, in civil engineering with a concentration in urban infrastructure, and in regional planning with a concentration in environmental and land use planning. She worked for the Federal Highway Administration and as an urban planner for the city of Alexandria before starting her own business. Despite her education and years of experience, it hasn't been an easy road.

"The challenge of the civil engineering profession is that it still lacks diversity," she says. "It's challenging

ERIN'S FAVORITES



Classes: Mechanics I and II: “It was the first thing that really exposed me to what a structural engineer would do. I use what I learned in those classes in all of my other classes since.”

Construction Documentation and Building Information Modeling: “Our instructor is from the industry and he tells it like it is. We’ve gone over contract vehicles and plans and things that you don’t really learn in class but you know you’ll have to know as soon as you get on the job.”

Professor: Dr. David Lovell: “Probability and Statistics isn’t exactly my forte, but he had a way of teaching that made you think about the problems in a different way. He didn’t teach straight out of the book — it was a challenging class but he made it enjoyable.”

Spot on campus: The third floor of the Engineering Library. “It is the most underrated study spot on campus!”

Place to eat in College Park: YoLove: the new frozen yogurt shop under the Varsity apartments.

Sport to play: Tennis: “I don’t play as much as I would like to, but that was a big thing I was into in high school, and it’s one of those lifelong sports.”

Sport to watch: Baseball. “I’ve recently become a Nationals fan—living here I was caught up in the craze!” She is, of course, a Pittsburgh Steelers fan, too!

D.C. spot: Every part of the Smithsonian, from the museums to the National Zoo.

Leisure activity: Sleeping: “I don’t think I’ve ever loved sleep so much.” — with watching movies and shopping a close second and third.

Advice for Freshmen: Study a lot: “Be prepared to not do well on some exams. It might be shocking at first, but don’t give up” — and don’t be shy about introducing yourself to your professors so you’ll be comfortable asking for help when you don’t understand something.



Now, Strittmatter serves as president. It’s been her goal since she was a freshman, and one of her first tasks was to renovate the student lounge over the summer.

“We love hanging out there between classes, and I wanted a clean, fresh, professional looking lounge,” she says.

As president, she’s continued the strong tradition of professional development by connecting with professional chapters of ASCE as well as bringing in company representatives to talk to students at general body meetings.

“It’s a good way for students to see their options and begin to focus on what they would like to do or where they would like to work or get internships,” she says.”

She knows that from firsthand experience, through her varied internships. One year, she interned with the Pennsylvania Department of Transportation in her hometown, where she worked on a bridge rehabilitation project.

“It was a really good first internship for me to have because I didn’t know a lot about civil engineering or about structural engineering,” she says. “It was good to see a construction project from start to finish.”

There, she learned how to look at plans, the safety issues involved with construction jobs, and some of the tips and tricks that contractors know after years on the job.

Now, after interning at the Department of Defense, she feels ready to go into the workforce. She’s not sure about her professional plans after the two-year service commitment, but she does want to get a master’s degree.

“Regardless of where I end up, I hope I can focus on structural design,” she says.

Graduating the Graduates:

Assistant Director Leads Master's and Doctoral Students Through the Weeds to Success

For the graduate students in Civil and Environmental Engineering, Kerri Poppler James isn't just the person who keeps them on track to graduate, but also brings her can-do spirit to make school more fun—especially with the occasional free lunch.

"Without Kerri, the graduate students would be lost sheep," says master's student Reuben Juster. "She's assisted me through the sometimes intimidating university procedures and advised me on how many classes I have to take each quarter. She even tells me and the rest of the graduate students when there are leftovers from faculty/staff luncheons."

As Assistant Director of Graduate Student Services, James handles all administrative tasks for the roughly 230 graduate students in the department, starting from the day they start applying through the day they complete their degrees.

"I'm a firm believer in higher education, so any way that I can assist somebody with their own dreams of getting a master's or a Ph.D., it makes me feel good," she says.

She particularly enjoys interacting with the large number of international students in the program.

"Just watching them acclimate to the U.S. and to the program and flourish in another country, it's amazing," she says.

Third-year doctoral student Mercedeh TariVerdi, originally from Iran, says James' dedication makes it much easier for foreign students to learn about the university and understand the processes and paperwork involved in both applying and enrolling. James even helps with international student-specific issues, like renewing visas.

"From the day Kerri start working—and it's not only me but all the graduate students who agree on this—everything has been done faster in the department," TariVerdi says. "Knowing she is there to help me makes me feel less stressed and not panic when something happens or needs to be done!"

James worked with TariVerdi and other graduate students to revive the Graduate Student Council over the last year. So far, they've put together a constitution and planned social events like barbecues and a volleyball game.

"With the six different technical divisions, a lot of times the students don't bond with each other and stay in their own little silos," James says. "We want to get the students more involved and make sure they know we're all one unified department."

James has been in her position with the department for just about one year, though she initially worked at the now-defunct Maryland Transportation Institute for six months when she first moved to Maryland. From there, she moved to the Office of Advanced Engineering Education, which offers a part-time master's degree program for working professionals. She was in charge of budget and payroll, in addition to student services, but she found that she really enjoyed working with students. When the opportunity came to do that full-time, she took the chance to make a change.

In this position, "I really like the fact that I get to interact with the students on more of a personal level," she says. "I have an open door policy—I want students to feel comfortable stopping in whenever they need anything."

James is originally from St. Croix Falls, Wis., a small town of just 2,000 residents. She went to a small private college called Hamline University, where she earned both her bachelor's and master's degrees. She came east when her husband, Nathan, got a job at the Library of Congress as an analyst in crime policy for the Congressional Research Service.

She likes being here, but wishes she could transplant her friends and family—as well as the Minnesota State Fair.

"There's nothing like it around here," she says. "It's a fun place to walk around and see all the different animals. There's always new food vendors selling something deep fried on a stick."

But James doesn't give herself much of a chance to miss home. She keeps busy, even outside of work. As the secretary of the South Silver Spring Neighborhood Association, she helps to plan their annual street fest, which draws a crowd of up to 2,000. She and the association also serve as the voice of the community to the county. They bring in county leaders like Montgomery County's County Executive Ike Leggett to speak on initiatives that affect the neighborhood, and they're currently



fighting to get residential parking permits for the area.

On top of that, she's also a member of not one—not two—but three book clubs.

"The one thing I miss about college is having an intellectual discussion," James says. She estimates that she reads five to six books per month on a wide range of topics, ranging from classics to New York Times best-sellers.

She loves trying new things, from food at the many of the great restaurants in D.C. to traveling to across the United States and the world. She just went to Ireland in October.

STAFF PROFILE (cont. on page 15)

to be a person of color, and being a woman in a very white male dominated industry. And then you add the fact that we're business owners and we're young. But we know what we're talking about, and we're passionate about our business."

Her passion goes beyond just her work. She serves on the Citizens Advisory Council for the Transportation Planning Board for the Washington, D.C. region, and transportation chair for the Hillcrest Community Civic Association where she lives.

And just over a year ago, she and two friends started Black Women Bike in D.C.

A recreational biker for years, Davis started biking to work because of increasing gas prices and the introduction of the Capital Bikeshare program.

One day, as she was biking through a public housing community in D.C., a young African-American girl pointed at her and said, "Mommy, mommy! There's a black lady on a bike!"

Though Davis was biking in a bike lane, she thought, "I must be the first person on a bike she's seen that looks remotely like her."

She relayed the story on Twitter, and Black Women Bike was born.

"It's not that women of color don't bike, it's that we're underrepresented," she says. She created a community to work for the first time. The group has swelled to more than 650 members in just one year.

She organizes regular outings and workshops for Black Women Bike, which includes both novices and dedicated cyclists. She seeks to make biking accessible to all—from the grandmother who hasn't biked in 40 years to the woman trying out commuting to work for the first time. Workshops include topics like fixing flat tires, biking in the winter, how to lock bikes securely and even bike fashion.

Davis didn't always want to go into engineering. A trained dancer—she studied ballet, modern and tap



dance—she thought she might open a dance studio one day. But her interest in science and math in high school led her to consider her dad's career: civil engineering.

Originally from New Jersey, she chose Maryland for both its academic reputation and its popularity among her classmates.

"It's a big school but a small school at the same time. You can really do anything at Maryland," Davis says.

She took advantage of that, taking dance and Spanish classes (amassing nearly enough credits for a second major) just for fun, as well as sociology and urban planning courses to round out her education. She also participated in QUEST, a multidisciplinary program focused on tackling real-world challenges through both a technical and business perspective.

"I liked the fact that from the first day of being a freshman in engineering, you learn to work in groups," says Davis. "Going into the professional workforce, it's important to know how to do that and be prepared to function in a team."

She encourages students to follow her path.

"Don't be afraid to take classes that are outside the box that will help you be a better engineer," she says. "Study hard, but don't forget to have a social life."

In what little free time she has, Davis enjoys going to the theater and taking dance classes. But she doesn't mind being busy—though she's created change already, she has no plans to stop.

"It's about people having transportation options," she says. "It's about everyone having access and mobility."

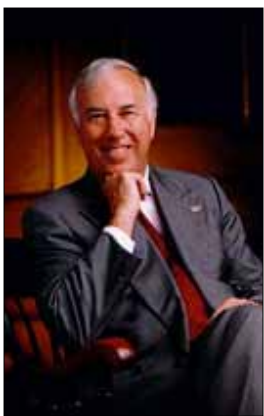
Most recently, he served as the executive director of Naval Facilities Engineering Command, Southwest, where he managed daily operations for a 3,500-person organization with a \$3.0 billion annual business volume. He provided engineering, construction, utilities management and facilities support to 20 military installations across six states in the southwestern United States.

Wink is a qualified Seabee Combat Warfare Officer, a member of the Acquisition Professional Community, and a registered Professional Engineer in the Commonwealth of Virginia. He

currently serves on the Board of Directors of the San Diego Chapter of the Society of Military Engineers (SAME) and is a past president of that organization.

Daniel Pino '82 was named director of engineering at Axiom Engineering Design, based in Columbia, Md. He has more than 25 years of local civil engineering design and entitlement approval experience.

Andrew Breeding '09 is now an office engineer with the Clark Construction Group, LLC, in Bethesda, Md.



commercially, key elements of the system are being tested by Maryland State Highway officials, the Maryland Transportation Authority and the North Carolina Department of Transportation.

Former UMD president **C.D. (Dan) Mote, Jr.** and current Clark school professor is the sole nominee for the presidency of the National Academy of Engineering beginning July 2013 for a six-year term. Voting will take place in March 2013.

"I am thrilled that Dan has accepted the nomination for the NAE presidency," said NAE council chair Charles O. Holliday Jr., retired chairman of the board and CEO of DuPont. "His passion for engineering excellence and his experience advancing the profession make him the ideal person to build upon the leadership of Chuck Vest."

The National Academy of Engineering is part of the National Academies, which also include the National Academy of Sciences, Institute of Medicine, and National Research Council. These independent, nonprofit institutions advise the government and the public on issues related to science, engineering, and medicine. NAE members are the nation's premier engineers, elected by their peers for their distinguished achievements. Established in

1964, NAE operates under the congressional charter granted to the National Academy of Sciences in 1863. The NAE president is a full-time employee of the organization at its headquarters in Washington, D.C., and also serves as vice chair of the National Research Council, the principal research arm of the National Academies.

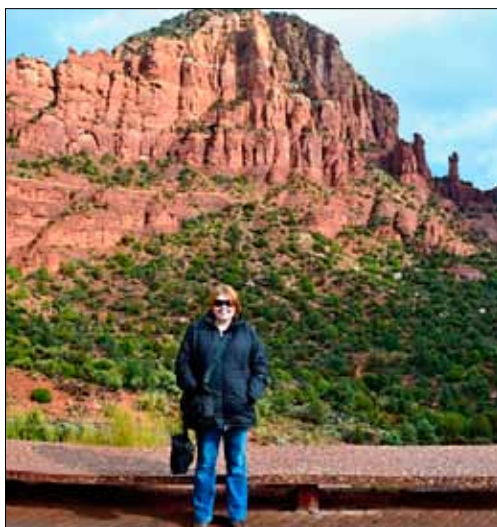


Professor Steven Gabriel and doctoral students Seksun Moryadee and Hakob Avetisyan gave four presentations to U.S. and foreign energy organizations as part of the LinkS energy project funded by the Research Council of Norway. They spoke in Paris, to Electricité de France (EDF), the French national energy company, about the influence of U.S.

natural gas exports to both Europe and Asia and the uncertainty of shale gas production in China. They also spoke to the Chinese State Grid national power company and the Chinese National Petroleum Corp. and the U.S. Department of Energy.

Gabriel is also the lead author of a new book, "Complementarity Modeling in Energy Markets," which presents mathematical, engineering, and economic models for the energy sector based on optimization and game theory collectively called "complementarity."

STAFF PROFILE (cont. from page 13)



The vacation days are definitely an advantage of working at the university, she says. She's also taken advantage of staff rates for football games and musical performances, and says she just likes the laid-back attitude in general.

"It's a fun place to work," she says, "particularly this department."

KERRI'S PICKS

BOOKS

"Motherless Brooklyn" by Jonathan Letham

"It's classified as a detective novel, but it has more depth and better developed characters than your typical crime fiction novel."

"Do Androids Dream of Electric Sheep?" by Phillip K. Dick

"It's set in a post-apocalyptic near future, where Earth and its populations have been damaged greatly by nuclear war during World War Terminus. The novel explores the issue of what it is to be human. Unlike humans, the androids possess no empathic sense and the novel probes the existence of qualities that separate humans from androids."

RESTAURANTS

Zaytinya: "Get the grape leaves dolmades and seared halloumi cheese!"

Poste: "Try the steak frites and poulet roti."

VACATION SPOTS

Sedona, Ariz.:

"Sedona's natural beauty is like nothing I have ever seen. We go for the view, and the laid-back and friendly attitude of the locals."

Negril, Jamaica:

"Negril has the most beautiful beach and a relaxed atmosphere. When in Jamaica, we try our best to leave our hectic lives behind and enjoy life at a slower pace."



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In your update, please be sure to include the following information:

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- DEGREE(S): GRADUATION YEAR(S)
- HOME ADDRESS: CITY: STATE: ZIP+4
- EMPLOYER NAME: POSITION TITLE
- EMPLOYER ADDRESS: CITY: STATE: ZIP+4
- BUSINESS PHONE: E-MAIL
- SHORT BIO ON LIFE AFTER GRADUATION FROM UMD

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