Table of Contents

Department Head's Message 3

Research News

Study outlines how to achieve improved airline fuel savings 4

Not afraid to ask: What's in your recycled water? 5

From the Katrina disaster comes new flood protection design methods 7

Managing the water; helping save the environment 9

Faculty Honors and Achievements 12

New Faculty 13

ASCE Department Heads Conference 16

Student News

Undergraduate scholarships 17

Graduate scholarships and fellowships 18

Ph.D. degrees awarded 19

Alumni News 20

Program Areas

CEE Faculty by Program Areas 21

Vecellio Construction Engineering and Management Program 22

Environmental and Water Resources Program 24

Geotechnical Program 27

Structural Engineering and Materials Program 29

Transportation Infrastructure and Systems Engineering Program 31

Via Scholars 33

Via Alumni: *Where are they now?* 47

Via Donors 57

A view of the Blue Ridge Mountains. (Photo credit: Richard C. Benson, Dean, College of Engineering)

Department Head's Message

Greetings from Blacksburg! Once again it is our pleasure to present the annual edition of the Via Report. I hope you enjoy the excellent articles on several of the outstanding research efforts that are in progress within the department. The work highlighted in these articles supports students in the department and serves society in general, particularly in the Commonwealth, as many of the issues that our faculty are researching are highly important in Virginia. Rest assured that these are but a few of the many great things in progress!

The highlight of the document each and every year is the section on our Via Scholars. The civil and environmental engineering (CEE) faculty and staff have the privilege of getting to know and work with these outstanding students on a day-to-day basis. I hope that the student biographical sketches contained in the report help you, as alumni and friends, get to know them. Hopefully, you'll have the opportunity to interact with the Via Scholars as well as the many other outstanding students in the department through your on-campus visits, professional activities, or as future employers. Each year with the influx of new students, we as a faculty are reminded just how fortunate we are to be part of the Via Department of Civil and Environmental Engineering!

Earlier this year, our department had the pleasure of hosting the 2015 ASCE National Civil Engineering Department Heads Conference. Approximately 80 department heads from across the country were in attendance. Each year that I attend the meeting I am always struck by the level of commitment and expertise of my department head colleagues around the country. These folks are working hard each and every day to support our broad and shared mission of educating the civil and environmental engineers of tomorrow. There are certainly significant challenges for us all, but it is refreshing to see the steadfast commitment the students we all serve.

As part of the conference, we were privileged to have two former CEE Alumni Board members participate in a panel session that focused on working effectively with alumni/advisory boards. I want to take this opportunity to thank Courtney Beamon, president

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of Delta Airports and Rick DiSalvo, retired chief operating officer of Draper-Aden Associates for their participation in the session. They were great representatives of the many alumni that have participated on our Alumni Board. They were able to articulate very well the benefits of the long-term positive relationship that we've all enjoyed between the board and CEE department.

Additional highlights of the meeting included remarks by President Sands and Dean Benson. Perhaps the most popular event was a research poster session and reception that we arranged for our Ph.D. and post-doctoral students to present their work. I know from comments I received that both students and visiting department heads enjoyed the opportunity to interact. This was a great way for department heads to meet future potential faculty members.

As I write this, we are getting ready to welcome the Virginia Tech Class of 2019. This will be, as you've probably read, the largest entering class in our storied history. The College of Engineering is likewise preparing for the largest ever entering class of engineering freshmen. It is very gratifying to witness the popularity of our programs, and we certainly look forward to doing our part in educating future members of our profession. I want you to also know that we are likewise welcoming the largest incoming group of graduate students that we've seen in a number of years. For perspective, the number of total students enrolled in the College of Engineering this fall will be approximately 9,800.

With the excitement of increasing the opportunities for students to attend Virginia Tech, comes genuine concern about maintaining our ability to offer the quality educational experience that all those associated with Virginia Tech have come to expect. The student numbers are putting extreme pressure on resources such as faculty, staff and space. Growing all of these are financially-driven decisions. The personnel growth can be realized in fairly short order once the decision is made to grow. The growth in critically needed space is however a much harder problem to address.

To illustrate my point, Dean Benson began leading the effort to put Goodwin Hall (which we referred to for many years as The Signature Engineering Building) in place when he arrived on campus in 2005. The building was complete and occupied in 2014 – nine years later. The hard work and generosity of many alumni, faculty, and staff brought this much needed building project to fruition. However, to be clear, the additional space provided addresses only a portion of our total need, particularly given the growth in student enrollment, and faculty and staff to accommodate that enrollment. We simply must develop an approach to solving our critical space needs that differs from our traditional capital building project model. If we're able to accomplish this, I believe we will all witness unprecedented growth in our ability to educate students and in our national and international reputation.

As always, I am extremely appreciative of the great work done by members of the department and College of Engineering to bring you this document. There are a number of our staff and faculty that are responsible for pulling together various parts of the Via Report. I want to thank them for the work they do in helping bring this document to you each year. In particular, I want to acknowledge the efforts of Courtney Long and Shelly Key for their leadership in the process within CEE. I want to close my remarks by thanking Lynn Nystrom for the exceptional job she does each year as editor and David Simpkins for his wonderful design work. I know you'll enjoy the results of their exceptional talent and dedication to bringing you the 2015 Via Report.

With kind regards,

Sam Easterling

Sam Easterling

Study outlines how to achieve improved airline fuel savings to the possible Wall Street bonus of $10 million the first year

Antonio Trani

By Lynn Nystrom

The airline industry has the ability to sustain significant fuel savings and greatly reduce its greenhouse emissions, according to the conclusions reached in a Virginia Tech led study for the Federal Aviation Agency (FAA) for traffic in the North Atlantic oceanic airspace.

Antonio Trani, director of Virginia Tech's Air Transportation Systems Laboratory and a professor of civil and environmental engineering, led the study that provided evidence for tactical recommendations on restricted cruise altitudes for aircraft crossing the North Atlantic oceanic airspace. The research is part of the Future Air Navigation System started in the 1990s that focused on communication between aircraft and air traffic control services.

Commercial traffic represented the majority of the operations studied by Trani in the North Atlantic space used by Canada, Denmark, France, Iceland, Ireland, Norway, Portugal, the United Kingdom, and the United States. In this space, the aircraft are subjected to extensive separation standards due to safety considerations, and these criteria can cause large vertical deviations that call for greater fuel usage.

As Trani and his colleagues developed a computer model based on improved surveillance between 2010 and 2015, they showed aircraft could fly at a closer spacing of five minutes apart instead of the current 10 minutes.

"If the lateral separation between the aircraft can be reduced, they can be spaced closer and remain more in line with their optimum flight paths. Overall, this would produce fuel economy as most aircraft save fuel at higher cruise altitudes," Trani explained.

The FAA defines a large height deviation as any vertical departure of 300 feet or more from the expected flight level.

The researchers called their new computer model the North Atlantic Systems Analysis Model (NATSAM III). After they successfully demonstrated its viability, one result was the FAA's decision to extend the study to the Pacific Ocean aviation operations.

Trani, working with Norma Campos of the FAA and Aswin Gunnam, a graduate research assistant in his lab, explained that most of the traffic in the airspace they studied took place along five to seven nearly parallel tracks of aircraft traffic flows. The exact location of these tracks is updated twice a day, one for eastbound and one for westbound traffic, and according to projected wind and meteorological conditions.

"This was an unprecedented study, capturing information for 44 major airlines, representing 81.6 percent of the North Atlantic Systems operations and 88.2 percent of commercial operations," Trani said.

Cost data to upgrade aircraft with the needed communication equipment was gathered through a cost focus group of industry representatives that included more than 40 participants from the aircraft and avionics manufacturers, commercial airlines, International General Aviation representatives, and all of the North Atlantic Systems Air Navigation Service providers.

The upgrades are necessary, Trani explained, because most of the North Atlantic airspace is out of range of very high frequency and radar. "Currently, the majority of communications take place using high frequency voice that is subject to disruption, atmospheric effects, ambiguity in accents, frequency congestion, and a third party relay between pilots and controllers," he added.

Consequently, with the approximately 2,152 commercial airframes operating in the North Atlantic Systems, Trani estimated that some 838 airframes would need some level of retrofit, totaling an estimated $464 million in 2010 money. The range for a single aircraft would be significant – anywhere from $50,000 to more than $1 million depending on its original level of aircraft

Continued on page 8

Not afraid to ask:
What's in your recycled water?

By Lynn Nystrom

At least 43 countries reuse advanced treated wastewater for the irrigation of parks, golf courses, crops, and other purposes. In a few countries, the treated water is already used as a source for drinking water, and this "vision of the future is shared by many," according to Amy Pruden, Virginia Tech Professor of Civil and Environmental Engineering.

However, research on health implications is not keeping pace with the rapid expansion of the recycled water infrastructure. At the very least, "we need to keep our eyes open to unintended consequences," Pruden advised.

As she defined the problem in an award winning paper, Pruden said the "role of the water environment as a source and pathway for the spread of antimicrobial resistance" and the "key knowledge gaps" regarding antibiotics, antibiotic resistance bacteria, and antibiotic resistance genes contained in the wastewater effluents "is of concern."

Human activities have a strong influence on the distribution of antibiotic resistance genes in the aquatic environment, said Pruden, a past recipient of a Presidential Early Career Award in Science and Engineering and who is credited with developing the concept of antibiotic resistance genes as environmental pollutants.

The scenario for the antibiotics entry into the water system is disarmingly easy.

When an antibiotic is consumed, researchers have learned that up to 90 percent passes through a body without metabolizing. Consequently, drugs can leave the body almost intact through normal bodily functions. Both humans and animals excrete the drugs and the bacteria resistant to the drugs, allowing the pollutants to enter the wastewater treatment plants or as agricultural runoff into bodies of water such as streams and rivers.

In the case of agricultural areas, excreted antibiotics can enter stream and river environments through a variety of ways, including discharges from animal feeding operations, fish hatcheries, and nonpoint sources such as the flow from fields where manure or biosolids have been applied. Water filtered through wastewater treatment

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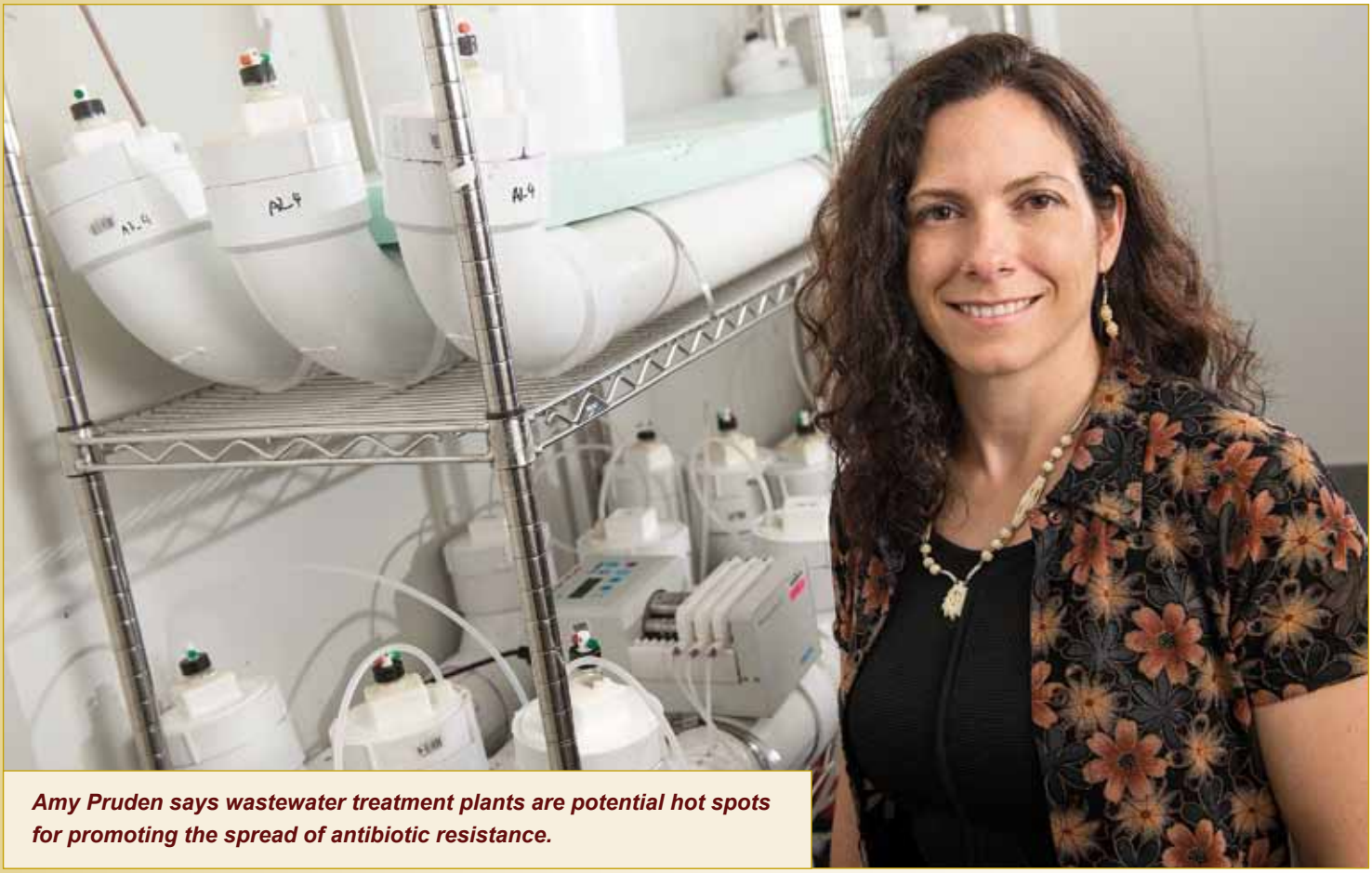

Amy Pruden says wastewater treatment plants are potential hot spots for promoting the spread of antibiotic resistance.

plants may also contain used antibiotics.

Consequently, these discharges become "potential sources of antibiotic resistance genes," said Pruden, also a past National Science Foundation CAREER Award recipient.

These sources of possible contamination of water "could serve as a contributing factor to growing rates of antibiotic resistance in human infections," Pruden wrote in her award winning paper, "Balancing water sustainability and public health goals in the face of growing concerns about antibiotic resistance."

This article appeared in Environmental Science and Technology (ES&T), a journal of the American Chemical Society. From a field of more than 1700 papers published in 2014 by the journal, Pruden's work was selected as the top paper in the feature category.

Antibiotic resistance "is the ability of bacteria to survive, and even thrive, in the presence of antibiotics," Pruden explained. "Resistance to antibiotics is encoded in segments of DNA called antibiotic resistance genes that enable bacteria to fight antibiotics."

A major challenge, Pruden said, is that the antibiotic resistant bacteria survive and multiply better than susceptible ones in the presence of antibiotics. This activity allows the populations of resistant strains to be enriched during antibiotic treatment.

"An even larger concern is the tendency of the antibiotic resistance genes to be shared among bacteria through horizontal gene transfer," Pruden added.

Her paper outlines the growing evidence that water plays a role as a source and a pathway for the spread of antimicrobial resistance.

Pruden pointed to wastewater treatment plants as "potential hot spots for promoting the spread of antibiotic resistance." These plants receive sewage containing residual antibiotics that are either excreted by patients or dumped down the drain. The plants are designed to remove solids, organic matter, and nutrients, but they are not designed for the removal of antibiotics.

Pruden, who currently is a lead investigator on a $2.25 million U.S. Department of Agriculture grant to Virginia Tech to examine the food chain from the farm to the kitchen table, wrote that history provides numerous examples of how innovation can have a down side.

For instance, the gasoline additive, methyl tert-butyl ether "was heralded as the answer to the Clean Air Act amendments of 1990, yet its high water solubility resulted in rapid contamination of groundwater supplies."

She was encouraged that the Environmental Protection Agency recently acknowledged that antibiotic resistance is an important knowledge gap in its guidance document for recycled water. This is "an important first step, but further action is needed," she penned.

Engaging the general public in discussion about how we invest in our water resources and best protect public health "is essential," she urged.

From a field of more than 1700 papers published in 2014 by Environmental Science and Technology, Amy Pruden's work was selected as the top paper in the feature category.

Tom Brandon has developed a number of flood prevention design methods.

From the Katrina disaster comes new flood protection design methods

By Lindsey Haugh

Ten years have passed since Hurricane Katrina struck the gulf coast of the United States in the early morning of August 29, 2005.

Deemed one of the strongest storms to impact the coast during the last 100 years, Katrina made landfall with a Category-3 rating on the Saffir-Simpson Hurricane Scale, bringing with it sustained winds of 100 to 140 miles per hour, a span of some 400 miles, and massive flooding over 80 percent of New Orleans.

The aftermath was catastrophic.

Overall, Hurricane Katrina displaced thousands of inhabitants from Louisiana, Mississippi and Alabama, killed nearly 2,000 people and affected approximately 90,000 square miles of the United States.

Over $110 billion in damages was estimated by FEMA, making it the costliest hurricane in U.S. history.

The U.S. Army Corps of Engineers issued its June 1, 2006 follow-up study of the hurricane protection system for New Orleans and Southeast Louisiana. Among its findings, it said: "The system did not perform as a system: the hurricane protection in New Orleans and Southeast Louisiana was a system in name only...The system's performance was compromised by the incompleteness of the system, the inconsistency in levels of protection, and the lack of redundancy. Incomplete sections of the system resulted in sections with lower protective elevations or transitions between types and levels of protection that were weak spots."

Tom Brandon, professor of the Via Department of Civil and Environmental Engineering (CEE) at Virginia Tech, had been among the experts called to help with evaluation and reconstruction.

Brandon, director of Virginia Tech Geotechnical Program's W. C. English Geotechnical Research Laboratory, facilitated much of the Virginia Tech research associated with the failures of the New Orleans levees.

In collaboration with Mike Duncan, CEE distinguished professor emeritus at Virginia Tech and a member of the National Academy of Engineering, and Stephen Wright, professor emeritus at University of Texas at Austin, they were a part of the Interagency Performance Evaluation Task (IPET) Force, working with the Corps' research engineers to investigate the seven breaches in the floodwall and levee system. Their conclusions concerning failures at 17th Street and London Avenue Canal are case studies documented in their book, Soil Strength and Slope Stability.

A few years after Katrina, Brandon submitted a proposal to analyze the data collected from the London Avenue Canal load test with the intent of integrating the findings into current flood protection design methods. Several papers have resulted from this study.

At the London Avenue test-site between the north and south failures that occurred during Hurricane Katrina, a 150-foot section of the I-wall was hydraulically loaded with pressures and displacements measured in the vicinity of the I-wall through an exten-

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sive instrumentation system. After assessment and analysis of the data, parameters for future canals were recommended in a 2013 paper, "Analytical Calibration Approach to Develop a Seepage Model for the London Avenue Canal Load Test," written by Abeera Batool, a Virginia Tech doctoral student at the time, and Brandon.

Brandon also collaborated with Batool and Daniel VandenBerge, postdoctoral associate at Virginia Tech, comparing the results of using the U.S. Army Corps of Engineers' blanket theory and finite-element analysis (FEA) to assess conditions in which the two methods provide essentially the same solution.

"The results of combined research were helpful in the design of the permanent canal closures for the outfall canals," said Brandon of the London test project completed in 2013 and the theory comparison study completed in 2015.

The soils on which the levees are built are also an important element of the post-Katrina research and levee construction standards in general.

"During the reconstruction of the flood protection system, there was a shortage of soils to be used with a construction material," said Brandon.

A report released in February 2015 by the Corps states concerns that a five mile section of Lake Borgne District's post-Katrina levees were built on highly unstable soil. Shifting soil under levees could possibly damage the pilings supporting them, undermining their ability to withstand a hurricane.

In their 2015 paper "Highly Organic Fill for Levee Stability Berms," published in the Geotechnical Testing Journal by VandenBerge, Brandon, and Michael Wielputz, materials regional technical specialist for the Corps of Engineers, they reported findings from testing samples of organic clay from Louisiana for compaction characteristics, undrained strength, and erodibility, evaluating their potential use for stability berms.

Earth berms constructed of cohesive fill are often used to improve the stability of levees. In some parts of the United States, many of the locally available cohesive soils contain high organic content, which has historically prevented their use for stability berms.

"Our research shows materials that had historically been considered poor construction soils could be used effectively in the flood protection system," said Brandon.

A compression test is administered on an organic soil sample. Results of the tests proved soils with organic content in excess of nine percent are suitable for stability berm fill.

They found the target total unit weight was almost impossible to achieve in soils with organic content above about nine percent. The desired minimum undrained strength was easily attained for all of the organic contents at water contents up to six percent wet of optimum. The erosion resistance stayed the same or increased as the organic content of the fill increased.

Based on the test results, soils with organic content in excess of nine percent are suitable for use as stability berm fill, provided that a lower total unit weight can be used in design.

Currently Brandon is being funded by the Corps to work in transient seepage analysis through dams and levees at its Engineering Development and Research Center (ERDC) in Vicksburg, Mississippi. Instruments have been installed in four levees to record responses to flood waters. Two of the levees are near the Vicksburg center, one near Cairo, Illinois, and one close to Seattle, Washington. The project is to be concluded in 2018.

From 2011 to present, Brandon has been retained by the U.S. Department of Justice to serve as its expert on Hurricane Katrina related litigation.

In January 2015, the USACE released a report recommending a "complete reanalysis" of the levee system by 2018, as part of a regular review process that would then be repeated every 10 years.

Brandon has been involved in aspects of a new levee design manual to be released in 2016. And the standards continue to be developed for systems in New Orleans and beyond.

"The Corps of Engineers can only build what is authorized by congress, said Brandon. "What many people tend to forget is that the engineers at the New Orleans District mostly live within the flood protection system. They have a personal vested interest in the proper performance of the flood protection system."

Trani Continued from page 4

equipment.

Trani's group estimated annual fuel benefits if changes occurred this year, moving to the five minute intervals, at $10 million. If, as he suspects, the time could be moved to two minute intervals, the savings would jump to $37,273, 498. Recently this analysis has been applied to Pacific Ocean flights by Trani and his postdoctoral assistant Tao Li with potential fuel savings of 35 million gallons annually.

Randy Dymond kneels at a culvert along Stroubles Creek, where a water sensor and related technology can monitor water quality and quantity, and rain levels.

Managing the water; helping save the environment

Randel Dymond's work is dedicated to ensuring heavy rains don't mean flooded streets and polluted rivers

By Steven Mackay

Late in the afternoon this past June, Randel Dymond sat in his office on the second floor of Patton Hall and saw a torrential downpour kickoff outside. The rain came fast and heavy. It pooled, quick.

Dymond knew a small section of Stroubles Creek across campus at the corner of West Campus Drive and Duck Pond Drive would easily overflow from water runoff and rain pouring down. His computer verified just that hunch as a monitoring and camera system at a small culvert at the intersection sent back data. The water was far deeper than normal and moving fast.

About to leave, Dymond – a professor in the Charles E. Via Jr. Department of Civil and Environmental Engineering – stopped by the creek for a personal look. The creek was past capacity, with water almost reaching the roadway. Dymond's doctoral students already had been on site to capture more photographs, and were leaving as their professor arrived.

Dymond then headed for home, down West Campus Drive, out to Prices Fork and up to University City Boulevard, all roads traveled on the way home. But the torrential rain made this trek near impossible.

The road was flooding fast during the continuing storm, up to eight inches deep according to Dymond's estimate as he watched water build up near a blocked storm water sewer inlet.

Dymond pegged the problem right away, the sewer pipes under the road were too small to handle such a large quantity of water. Cars were at a standstill. The inlet remained backed up.

"They got too much rain so quickly, it

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just overwhelmed the piping capacity over there," said Dymond, several weeks later. "It was pretty amazing to see that happen in Blacksburg."

Dymond and his team reached out to the city, and it sent police to close the road. Before long, Dymond and his team estimated water along the road, near the site of the new Holiday Inn construction, stood at a foot deep.

Dymond well knows the water and wastewater pipes, storm water street inlets, and basins throughout Blacksburg. For several years, Dymond and a rotating crew of graduate students have been advising and assisting Blacksburg as it meets storm water management and care rules set forth by the Environmental Protection Agency's Clean Water Act. In short, federal regulators want cities and towns to treat water from storm run-off before it enters creeks, rivers, or lakes, to the best of their ability.

The reason is simple and one close to Dymond's heart: all that water run-off carries with it pollutants picked up from parking lots, yards, streets, and farms – motor oil, animal waste, trash, chemicals from car washes and the like. The list is near endless.

None of the run-off of muck "goes away" magically, it goes somewhere, polluting water downstream. One look around Dymond's office and its many family photos, and you know he's an outdoorsman with a tilt toward water -- fishing, kayaking, and river rafting. Dymond wants to remain a water hobbyist.

"People often think it's washed away, it's gone, but it actually goes to our streams and rivers that we like to recreate in, or that serve as habitats for fauna and flora," added Dymond. "That's why we have storm water laws, that's why we need to clean up, that's why we need to take care of our construction sites and all the other sources of urban pollution, and agriculture pollution."

Dymond has studied urban and rural water and wastewater management, storm water runoff, watersheds, and land use development for decades. His interest in flooding hit as a teen, volunteering for a church group to help clean up damage after a flood in Pennsylvania. His father also had an interest in water quality, writing letters to the editor in the local newspaper on the matter.

At Virginia Tech since 1998, Dymond runs the Virginia Water Resources Research Center and the Center for Geospatial Information Technology. He tracks how new developments will affect runoff

"People often think it's [pollutants] washed away, it's gone, but it actually goes to our streams and rivers that we like to recreate in, or that serve as habitats for fauna and flora. That's why we have storm water laws, that's why we need to clean up, that's why we need to take care of our construction sites and all the other sources of urban pollution, and agriculture pollution."
~ Randall Dymond

from storm and demands on existing infrastructure, water and wastewater pipes that are buried and – in many cases – many decades old. In some cities, centuries old.

Locally, Dymond has been working with the Town of Blacksburg to meet its storm water management and treatment demands for eight years. He helps with modeling and tracking rainfall and areas prone to flooding, tricky for an area in the mountains. More so, rain doesn't fall evenly across any significant piece of real estate. On campus it may be sprinkling at Lane Stadium, but pouring torrentially at Torgersen Hall.

That also effects how potential flooding can pan out. And in changes as storms move as they drop rain.

Dymond does have one key test area on campus that helps him out greatly – that monitoring system inside a culvert at the corner of West Campus Drive and Duck Pond Drive, along Stroubles Creek.

There, the university's Learning Enhanced Watershed Assessment System (LEWSA, for short) Lab – directed by Vinod Lohani of engineering education, with Dymond serving as assistant director – operate a device that looks like a teepee with a pump in the middle. It monitors the height and flow sped of water, and can detect the pH – that's potential of hydrogen – balance in the water.

If a chemical in the water kicks off sensors, Lohani, Dymond, and their research team – and water quality staff at both Virginia Tech and Blacksburg – receive an automatic email alert. The creek flows through much of campus, from under Goodwin Hall and beyond into the town of Blacksburg where it starts. Water in the creek is easily affected. When Goodwin Hall was under construction, the water could become colored by mud.

Similar occurrences happen at the current construction now underway closer to the parking deck on Perry Street.

Trash and debris also wash up inside the culvert. The lab team collects the more unusual items – a plastic duck, a volley ball, a shoe, signs, concrete slabs, a good lot of liquor bottles, and, ironically, a "No Dumping" decal. Specifically for Stroubles Creek.

The monitoring system has evolved during several years, and now includes the ability to send data in real time, measure rain fall in a catch bucket, and has its own power source.

Funding for the site has come from the College of Engineering, Virginia Tech's Institute for Critical Technology and Applied Science, and the National Science Foundation.

Dymond wishes he had funding for several such sites around Blacksburg, to more easily compare water flow and quality and fain fall from campus' western side to other parts of town.

This collection of trash comes from a culvert in Stroubles Creek, near the Duck Pond. This "Hall of Fame Collection" is at McBryde Hall. Not pictured: A volleyball, plenty of airport-sized liquor bottles, and a sign asking people not to dump items into … Stroubles Creek.

For now, Dymond and team help train Blacksburg employees in modeling and monitoring watersheds, capturing water samples from creeks, lakes, and basins, and creating updated, constantly changing best management practices.

Every new development in town affects water run off as it changes the slope and design of land, and that affects how much water is eventually treated and then released by the town. Dymond already is looking at the plans for a new housing/commercial site at the locale of the old Blacksburg Middle School.

Developers are responsible for water management on their property. But once water flows off the property, responsibility moves to the town. It's a constant balance of what is smart and best economically and what is smart and best environmentally.

Dymond said he makes great efforts to keep water management and treatment in the public eye, and in the minds of his students.

"One of the assignments in my class I often give is to have students write about what they are walking on," added Dymond. "They often are walking over infrastructure or passing by infrastructure and don't pay attention to it, and that's one of the major reasons we don't have enough funding for infrastructure."

Indeed, citizens of any town or city well know when a road needs repair. Pot holes and cracked pavement can damage car tires. Deteriorating pipes, buried underground and out of sight, are easy to lose track of.

"Some towns don't even know where all their infrastructure is, so that's a problem when they really want to know how bad it is," said Dymond, "and we are working on techniques to help them do that."

Dymond also has been working with Roanoke for more than a year to monitor its water system and storm water management demands. As well, similar work is underway with collaborations at East Tennessee State University, and Charlottesville, Virginia, and Virginia Tech's satellite campus in Tamil Nadu, in southern India, as well as with the University of Queensland in Australia.

"Pipes in the ground supply our water and take away our waste, and take away our storm water, and it's a thing we need to maintain," said Dymond.

Faculty Honors and Achievements


BOARDMAN

Greg Boardman
- Selected for IBC's "Top 100 Engineers for 2014"

Matt Eatherton
- NSF CAREER Award, CIDER Teacher of the Week, Scholar of the Week, Office of the Vice President for Research


EATHERTON


GARVIN

Mike Garvin
- College of Engineering Certificate of Teaching Excellence

Kathleen Hancock
- 2015 Individual XCaliber Award for Excellence


HANCOCK


HEASLIP

Kevin Heaslip
- 2015 Outstanding Alumni, University of Massachusetts Institute of Transportation Engineers Student Chapter

Jen Irish
- College of Engineering Faculty Fellow


IRISH


LEON

Roberto Leon
- Distinguished Member of ASCE

John Little
- North American Lake Management Society Technical Merit Research Award


LITTLE


MARR

Linsey Marr
- Fralin Life Sciences Institute and Institute for Critical Technology and Applied Science Innovator Award

Cris Moen
- Metal Building Manufacturer's Association Faculty Fellowship, ICAT Research Fellow


MOEN


NOVAK

John Novak
- Perry L. McCarty / AEESP Founders Award

Amy Pruden
- College of Engineering Dean's Award for Excellence in Research
- Paul L. Busch Award, Water Environment Research Foundation


PRUDEN


SCARDINA

Paolo Scardina
- G.V. Loganathan Faculty Achievement Award

Nina Stark
- CIDER Teacher of the Week


STARK


TAYLOR

John Taylor
- 2015 ASCE Daniel E. Halpin Award for Scholarship in Construction
- Preston and Catharine White Professorship as Associate Director of the Myers-Lawson School of Construction

Antonio Trani
- CEE Alumni Teaching Excellence Award


TRANI


YOUNG

Kevin Young
- College of Engineering Certificate of Teaching Excellence

Katerina Ziotopoulou
- ASCE ExCEEd Fellow


ZIOTOPOULOU

New Faculty


FLINT

Madeleine M. Flint received her master's and her doctoral degrees in civil and environmental engineering from Stanford University in 2010 and in 2014, respectively, specializing in structural engineering and geomechanics.

Her undergraduate degree was in structural engineering from the University of California at San Diego, earned in 2007.

She spent a year at Stanford as a postdoctoral scholar in the area of earth system science before joining Virginia Tech. Her postdoctoral research assessed the impact of climate change on the transportation infrastructure. Her graduate work developed a framework for performance-based durability engineering.

Flint enjoyed a stint at Norwegian University of Science and Technology in 2011, working on the sustainability of repair strategies for Norwegian coastal reinforced concrete bridges. The position was made possible by the National Science Foundation (NSF), which awarded her a Nordic Research Opportunity Fellowship.

Among her honors and awards, Flint received a 2015 Rising Environmental Leader award from the Stanford Woods Institute for the Environment. Through a project funded by the Woods Institute, Flint studied the potential impacts of regional-scale climate change on built infrastructure performance. This research is undertaken in collaboration with her postdoctoral advisor, Noah Diffenbaugh, and with three faculty members of Stanford's Department of Civil and Environmental Engineering.

Climate change is expected to increase the risk of bridge failures during floods, and Flint's research at Stanford quantified the changing risks and the resulting negative economic, environmental, and social impacts. In order to robustly characterize the risk and impacts, Flint integrated data and models from the multiple disciplines, including climate science, hydrology, environmental fluid mechanics, structural analysis, and life-cycle assessment. Flint used a probabilistic approach, which allowed her to provide robust operational guidance for the protection of vulnerable bridges, as well as for the development of performance standards. At the policy level, Flint's research suggests methods for optimally allocating funds for climate change adaptation.

Flint also received a 2013 Achievement Reward for College Scientists from the ARCS Foundation, a national nonprofit organization that boosts American leadership and aids advancement in science and technology. She was an NSF Graduate Fellow from 2009 until 2012.

She is a co-author of one book chapter, A probabilistic framework for performance-based durability engineering, in the book Durability of Building Materials and Components, published by Springer-Verlag in 2013.


HEBDON

Matthew H. Hebdon, Professional Engineer (PE), received his doctorate in civil engineering in 2015 from Purdue University. Prior to this, he earned a master's and a bachelor's degree in civil and environmental engineering (CEE) from Utah State University in 2005.

He worked as a structural design engineer at Sargent Engineers, Inc., from 2005 until 2010. As a licensed PE, his responsibilities included the structural design of residential and small commercial buildings, as well as inspection of bridges for structural deficiencies.

Among his academic honors, he graduated summa cum laude from Utah State University in 2005. Additionally, he was named as both the outstanding sophomore and the outstanding senior for the CEE department.

In his doctoral studies, Hebdon investigated the member-level redundancy of built-up steel girders by testing full-scale specimens for fracture resilience and remaining fatigue life of partially failed members. He further analyzed the localized stress redistribution and behavior of partially failed built-up girders using three-dimensional finite element analysis to perform a parametric study.

Other research experience has included the field instrumentation and monitoring of in-service bridges, comparative study of three different data-acquisition systems for load rating in-service bridges, system-level redundancy evaluation through fracture testing of full size bridges, and a finite element parametric study of steel-slit panel frames being developed to be used as a lateral force resisting system.

He has taught certain aspects of the Introduction to Structural Mechanics and the Behavior of Metal Structures classes at Purdue. He served as the structural engineer and co-captain of Purdue's team in the U.S. Department of Energy Solar Decathlon competition. In his position, he taught students about the application of current building codes, led a student team in the development of structural design documents, and co-led students in the construction phase of the project including training on construction techniques as well as safe and proper use of construction tools.

He is a member of the American Society of Civil Engineers, the American Institute of Steel Construction, the American Railway Engineering and Maintenance-of-way Association, and Tau Beta Pi.

He has worked with Engineers Without Borders on a project in Peru, as well as the Eagle Condor Humanitarian organization in Peru.

New Faculty


JAZIZADEH KARIMI

Farrokh Jazizadeh Karimi's research interests are at the intersection of data management, data driven informatics, and built environment sustainability and adaptability. He is interested in leveraging the dynamics of the built environment towards improved and flexible performance at different scales from building/facilities to regional/urban levels.

The economic and sustainable maintenance and growth of the urban infrastructure have gained significant attention in recent years. The dynamics between different entities (buildings, energy networks, users, etc.) plays a major role in sustainable and efficient management. Context aware management of operations in these infrastructures could therefore improve their adaptability and efficiency, enable integration of renewable energy sources, and reduce the dependency on fossil fuels.

Accordingly, Jazizadeh Karimi's academic vision is to move towards realization of sustainable infrastructures in smart cities, where there is a bidirectional flow of information among facilities, users, and regional infrastructure to achieve cyber-physical systems (CPS) solutions capable of increasing adaptability for sustainability and resiliency.

Jazizadeh Karimi received his doctorate in civil engineering with a focus on informatics for intelligent built environment from the University of Southern California (USC) at Los Angeles in 2015. His Ph.D. followed two master's degrees, also earned from USC's Viterbi School of Engineering in computer science (2013) and in civil engineering (2011). Prior to his Ph.D. studies, Jazizadeh Karimi attended the Isfahan University of Technology, Isfahan, Iran, where he obtained his bachelor's degree in civil engineering in 2002 and Amirkabir University of Technology, Tehran, Iran, where he earned a master's degree in civil engineering in 2004.

His doctoral dissertation focused on enabling energy aware facilities through the application of non-intrusive load monitoring (NILM) as a low-cost alternative to appliance level sensing. NILM uses few sensing nodes in buildings, coupled with specialized machine-learning and signal processing algorithms to infer operational schedules of individual loads.

He is the author of 12 peer-reviewed journal publications in high impact journals and 15 peer-reviewed conference publications in international conferences. His name appears on two filed patents. One is on the human-building interaction framework for personalized comfort driven system operations in office buildings. The second is on an autonomous pavement condition assessment system. He is also a technical reviewer for seven journals and two international conferences and a member of American Society of Civil Engineers and several technical committees.

Among his achievements, he is the recipient of several awards and honors including the USC's Ph.D. Achievement Award (2015), Arek Mekertichian Award of Excellence in Engineering Education from Association of Professors and Scholars of Iranian Heritage (2015), membership of Phi Kappa Phi Honor Society (2014), USC's Department of Civil and Environmental Engineering's Outstanding Research Assistant Award (2013) and Outstanding Teaching Assistant Award (2012).

He has served as a teaching assistant (TA) for ten courses at USC's Astani Department of Civil and Environmental Engineering. Throughout his Ph.D. studies at USC, he has also served as a mentor to several students at different levels including undergraduate students, master students, and first year Ph.D. students.

He has also seven years of professional industry experience prior to moving to the U.S. to pursue his Ph.D. studies. He has diverse experience in design and construction of civil infrastructures as project manager, design manager, and design engineer from 2002 to 2009.

New Faculty


SHEALY

Tripp Shealy is a three-time civil engineering (CE) graduate of Clemson University. He received his bachelor's degree in 2010, his master's in 2013, and his doctorate in 2015.

While obtaining his doctorate he was the primary instructor for the construction section of the CE Capstone Design course. He guided students through project estimating, scheduling, and sustainability concepts. He also developed two additional online courses: "Are codes enough? Disaster mitigation and residential buildings" and "Sustainable construction."

Shealy was a primary instructor for Clemson's Youth Learning Institute. For the institute, he developed a departmental program offered to South Carolina high school juniors and seniors to explore CE systems and concepts. He taught students about buoyancy, structural mechanics, material properties, life cycle assessment, green infrastructure, and passive design using games and hands-on learning activities.

His research focus is on judgment and decision making for sustainable infrastructure. He targets underexplored areas by applying concepts from psychology, behavioral economics, and data science to implement cost effective ways to guide stakeholders in the infrastructure development process towards decisions that lead to more sustainable outcomes. His research interest also includes how themes related to sustainability can attract new students to study engineering.

Since 2014 he has consulted with Harper Corporation's Environmental Services Division. From May of 2012 until August of 2013 he acted as the engineering and technical programs researcher for the Federal Alliance for Safe Homes of Tallahassee, Florida. From June of 2010 until September of 2011 he was a project engineer for Crowder Construction Company of Greenville, South Carolina. There, he worked on a $30 million water treatment plant upgrade in Chesnee, South Carolina. He also contributed to a $1.8 million design and building of a water treatment plant in Spartanburg, South Carolina.

While an undergraduate he was an intern for Seamon, Whiteside and Associates of Charleston, South Carolina.

He is a member of the American Society of Civil Engineers, the American Society for Engineering Education, the United States Green Building Council, the National Charrette Institute, and the Congress for the New Urbanism. He was a session moderator for the 2014 Engineering Project Organization Conference and a reviewer for the American Society for Engineering Education and Construction Research Congress.


WANG

Since December, 2011 **Zhiwu (Drew) Wang** has served as a visiting assistant professor at The Ohio State University. For the past year, he has handled additional responsibilities as director of the renewable energy program.

At OSU, Wang pursued a number of research projects including: development of a unique biogranulation process for agricultural drainage water treatment; research of the solid-state anaerobic digestion technique; development of a copyrighted software program for anaerobic digester simulation; and the establishment of an advanced bioenergy laboratory.

He also developed syllabi for and taught six courses including topics relating to waste-to-bioenergy conversion and feedstock evaluation and analysis. He also lectured in environmental resource, agricultural business, and Upward-Bound programs.

Prior to joining OSU, Wang was a postdoctoral research associate at Oak Ridge National Laboratory from 2009 until November 2011. During this appointment, he focused on environmental engineering and bioenergy related research. Wang invented a thermophilic flow-cell system for real-time imaging of microbial cellulose utilization for ethanol production under anaerobic conditions. He also was able to determine the life cycle of cellulolytic bacteria on the cellulosic biomass surface.

An earlier stint found Wang serving as a postdoctoral research associate at Washington State University from 2007 until 2009. At WSU he developed a selection pressure-driven high-rate anaerobic digestion process for dairy manure treatment and biogas production. He also invented a household small-scale anaerobic digester and provided consultant service to the Pacific Natural Food Corporation for dairy and food processing waste management.

Wang earned his Ph.D. in environmental engineering in 2007 from Nanyang Technological University of Singapore. His Ph.D. research was focused on the cultivation of aerobic granular sludge for water purification by removing organic, nutrient, and heavy metal pollutants.

His bachelor's degree, also in environmental engineering, was awarded in 2000 by the Harbin Institute of Technology, Heilongjiang Province, China.

During his academic career he has published 25 peer-reviewed journal papers, 15 book chapters, and four invention disclosures. He has been the principal investigator on $772,000 in grants.

Among his honors, along with his advisee Fuqing Xu, Wang took first place in the 2014 American Society of Agricultural Biological Engineers' Boyd-Scott Graduate Research competition. In 2013 he served on the editorial board of the Journal of Environmental Sciences.

He is a member of the International Water Association, Association of Environmental Engineering and Science Professors, American Society of Agricultural and Biological Engineering, Water Environment Federation, Federal Water Quality Association, and Virginia Water Environment Association.

ASCE department heads conference hosted in Blacksburg

Civil and environmental engineering department heads discuss ways to engage their alumni boards during one of the moderated table sessions at the national conference held at Virginia Tech.

During the week following Virginia Tech's commencement, approximately 80 civil and environmental engineering (CEE) department heads from across the country, including California, Oregon, and Texas, gathered in Blacksburg for the 11th annual National Civil Engineering Department Heads Conference.

This annual conference gives the opportunity to share the American Society of Civil Engineers' (ASCE) strategic priorities and have department heads, from a wide range of universities, provide feedback on proposed criteria for Accreditation Board for Engineering and Technology (ABET) accreditation.

Early arrivers got the chance to tour campus before the sessions started on Monday afternoon. Kevin D. Hall, professor and civil engineering department head at University of Arkansas, moderated the sessions throughout the week that focused on common issues department heads face including curriculum, program development, student recruitment, strategic planning, and fundraising. Sessions focused on changes in the profession and proposed ABET administrative and structure changes.

Virginia Tech Dean of Engineering Richard C. Benson welcomed the guests on the first evening and more than 30 doctoral students from construction engineering and management, environmental and water resources engineering, geotechnical engineering, structural engineering and materials, and transportation infrastructure and systems engineering presented their research during an informal poster session.

"The week provided a chance for department heads to network and share their ideas and best practices, while focusing on strategies to advance their own departments and contribute to civil engineering in higher education," said Sam Easterling, department head of the Via Department of Civil and Environmental Engineering at Virginia Tech.

Tuesday brought more general sessions focused on best practices and various topical breakout sessions, on ethics, sustainability, or project management. Virginia Tech President Timothy D. Sands addressed the guests and conducted a question and answer session. Afternoon sessions centered around the Fundamentals of Engineering (FE) Exam and National Council of Examiners for Engineering and Surveying (NEECS) Reporting, mentoring junior faculty, and potential areas of new revenue streams.

Multiple networking breaks were built in for the guests to share ideas and meet with others, some of whom are alumni of the Via Department of Civil and Environmental Engineering. In particular, the focus was on interactive idea sharing and discussion of best practices.

"When the department heads coordinating committee (DHCC) first organized this conference we wanted it to be active, we wanted it be hands-on, and we wanted it to feature peer learning. That has been our goal, to make this [a conference] where you can come and learn and participate and help teach others as well. I think we have accomplished that and turned the corner into making this conference a very interactive workshop-type setting," said Hall.

CEE alumni Rick DiSalvo ('77) and Courtney Beamon ('95) returned to campus on Wednesday morning to discuss strategies for working with advisory boards. They moderated table sessions for individuals to discuss and share ideas of how to utilize the skills and knowledge of their alumni for the advancement of the department. Ideas for student and alumni engagement were one of the highly discussed outcomes of the session.

Following the conference, the DHCC had its annual meeting in Durham Hall to discuss future plans for the committee and start planning for next year's annual conference.

STUDENT NEWS: *Undergraduate Scholarships*

CE Alumni Board Scholarship
Helen Chen
Christopher Klemmtz
Brian Hensel
Raul Avellaneda
Alejandra Revilla Cisneros

Kenneth R. Ayers '80 Memorial Scholarship
Jacob Montague
Amanda Weikmann
Kylie Snyder

Kelso Baker Scholarship
Christopher Lawley
Daniel Jones
Samuel Goode
Michelle Helsel
Alex Rodriguez
Christopher Bentley

Michael Baker Corporation Engineering Scholarship
Fawad Mohammad

Balzer & Associates Scholarship
Adam DiMatteo
Kelli Gallt

James L. Bland Civil Engineering Scholarship
David Leech

Charles and Patricia Brown Scholarship
Christina Beauboeuf
Timmy Shaw

Everett Carter Memorial Scholarship
Andrea Ruano Duke

William A. Caruthers CE Scholarship
Elizabeth Angel
Jonathan Paquette

Joseph and Jane Christenbury Memorial Scholarship
Ryan Roman

Civil Engineering Class of '58 Scholarship
Ethan Kleinstuber
Adrian Santiago Tate
Ava Polstra
Arav Kharkwal
Connor Davis

Warren F. Cline Scholarship
Brenda Villarreal

Stanley and Francis Cohen Scholarship
Candace Janschek
Josh Dolinger
Grisha Santuryan

John DeBell Civil Engineering Scholarship
Adam Chiodini

Dewberry Scholarship
Philip Smith
Jacob Montague

Walter & Mary Ruth Duncan Scholarship
Stefany Flores
Bryan Murphy
Frederick King

Chelsey A. Godfrey Scholarship
Mia Jimenez

Lois Cox & Edna Goodwin Scholarship
Mohammed Abdalhamid
Kelsey Abais

Ralph P. Hines '59 Scholarship
Bryant Inge

Charles S. Hughes Scholarship
Alvaro Calle Laguna
Jordan Fleming

Williams A. Joyner Scholarship
Heather Hicks

Dennis & Sherry Kamber Scholarship
Chhaysrun Von

Hersie B. & Ethel G. McCauley Scholarship
Katelyn Karis
Kevin Lee

Andrew "Tripp" McDavid Memorial Scholarship
Bryant Throckmorton

Kenton & Liliana Meland Scholarship
Patrick O'Brien

Newport News Shipbuilding Scholarship
Haley Gardner

Pratt Study Abroad Scholarship
Samuel Barone
Meghan Sanford
Amanda Weikmann
Jillian Parrinello
Cara Kniphuisen
Garrett Fanshawe

John E. Pruitt, Jr. Scholarship
Kristine Irene Mapili
Alexander Cartaya
Eric Daly

Richard Quarterman '04 Memorial Scholarship
Nicholas Kenah

Howell & Ann Simmons Land Development Design Scholarship
Alexander Papp

Stantec Award for Excellence in Engineering
Laura Nicaise
Xiaoxue Xiang

Undergraduate George A. Stewart Scholars
Tyler Mueller
Casie Venable
Charles Conran
Kaitlynn Gessner
Sasha Redmon
Sunil Divakar
Ryan Stevens

L.J. Turner & W.S. Dewhirst Scholarship
Jacquelyn Zook
Raul Avellaneda

Vecellio Scholarship
Mia Jimenez (CEE)
James Martin (CEM)
Aaron Hill (CEM)
John Newmarker (CEM)
Max O'Krepki (CEE)
Ryan Roman (CEE)
Dakota Smith (CEE)

Virginia Concrete Scholarship
Joseph Spaziani
Matthew Sander

Donald and Mary Wiebke Scholarship
Elizabeth Zeigler

Harry S. & Patsy B. Williams Scholarship
Maria Haas

Williams Industries Scholarship
Michael Sullivan

Verne & Jewel Williamson Scholarship
Kate Kindig

STUDENT NEWS: *Graduate Scholarships and Fellowships*

Associated General Contractors of America Education and Research Foundation Scholarship
Edwin E. Gonzalez-Montalvo

Brian R. Bluhm Memorial Fellowship
James Franklin Duval

Chinese Government Scholarship
Chenxi Xing

Construction Management Association of America (CMAA) National Capital Chapter Scholarship Award
Maria E. Nieves-Melendez

Davenport Leadership Scholar
Levi Ekstrom

District of Columbia Water and Sewer Authority (D.C. Water)
Abdul Mancell-Egala
Joshua Mah
Jacob Metch
Victory Odize

Edna Bailey Sussman Award
Elana Chalmers
Rachael Cooley
Christina Devine
Zheng Ge
Carlos Mantilla Pena
Linsay Swain
Min Tang
Xinzhe Zhou

Edward L. Beale Fellowship
Thomas Spencer

Fulbright Fellowships
Denis Delcid Corrales
Jose Guervara
Evangelos Kontozoglou

Global Perspectives Scholar
Matt Chan

G.V. Loganathan Memorial Fellowship
Racheel Kuprenas
Kevin Madson

Hampton Roads Sanitation District
Alexandra Gagnon
Stephanie Klaus
Jeffrey Nicholson
Mark Miller
Michael Sadowski

Hawkins Fellowship
Julio Roa
Kenneth Velez Rodriguez
Yasaman Shahtaheri

ICTAS Doctoral Scholar
Craig Schillaber

Interdisciplinary Graduate Education Program (IGEP)
Majorie Willner
Matt Chan

IGEP Bio-Inspired Buildings (BioBuild) Fellowship
Armin Rahimi-Golkhandan

Myers-Lawson School of Construction Fellowship
Jose Guevara
Ardalan Khosrowpour
Yasaman Shahtaheri

Multicultural Academic Opportunities Program (MAOP)
Carlos Fernando Mantilla Pena

National Science Foundation (NSF) Fellows
Marian Alicea
George Allen Bowers, Jr.
Emily Dawn Gardner

New Horizon Graduate Scholarship
Marcus Aguilar
Marian Alicea
Paige Emanivong
Carrie Field
Christian Figueroa
Antonio Fuentes
Adrienne Hill
Katherine Santizo
Fannie Tao
Kristin Ulmer
Kenneth Velez-Rodriguez
Katherine Yoana Santizo Cojulun

Pratt Engineering Fellowship
Lakshhmi N.S. Dhulipala
Syeed Md Iskander
Adrian Tola Tola
Sneha Upadhyaya

Pratt International Study Abroad Fellowship
Fred Falcone
Julio Roa

Raymond and Madeline Curry Fellowship
Mohamad Rouhnia
Matthew Runion
Shiqiang Zou

Republic of Turkey Ministry of Forestry and Water Affairs
Faik Cuceoglu

Royal Thai Government Scholarship
Krekkiat Nutalaya

Terracon Fellowship
David Froster
Matthew Runion

Thomas N. Hunnicutt III Fellowship
Sean O'Connell

Vecellio Fellowship
Edwin Gonzalez

Vietnam Education Foundation
Hanh My Thi Truong

Virginia Sea Grant Graduate Research Fellowship
Stephanie Smallegan

Walker Graduate Research Fellow
Carlos Mantilla Pena

Walts Fellowship
Antonio Fuentes
Freddie Salado Martinez

STUDENT NEWS: ***Ph.D. Degrees***

The following doctoral degrees were awarded to CEE students between Summer II 2014 and Summer I 2015

Name: **Amey Bapat**
Dissertation Title: Redundancy Evaluation of Fracture Critical Bridges
Advisors: Chair **Roberto Leon**, Co-Chair **William Wright**

Name: **Kevin Bierlein**
Dissertation Title: Predicting Induced Sediment Oxygen Flux in Oxygenated Lakes and Reservoirs
Advisor: **John Little**

Name: **Polydefkis Bouratsis**
Dissertation Title: Scour at the Base of Hydraulic Structures: Monitoring Instrumentation and Physical Investigations Over a Wide Range of Reynolds Numbers
Advisors: Co-Chair **Panos Diplas**, Co-Chair **Clint Dancey**

Name: **Brandi Clark**
Dissertation Title: Effect of Installation Practices on Galvanic Corrosion in Service Lines, Low Flow Rate Sampling on Detecting Water-Lead Hazards, and Trace Metals on Drinking Water Pipeline Corrosion: Lessons in Unintended Consequences
Advisor: **Marc Edwards**

Name: **William Collins**
Dissertation Title: Fracture Behavior Characterization of Conventional and High Performance Steel for Bridge Applications
Advisors: Chair **Roberto Leon**, Co-Chair **William Wright**

Name: **Christina Davis**
Dissertation Title: Understanding and Predicting Water Quality Impacts on Coagulation
Advisor: **Marc Edwards**

Name: **Haitham Mohamed Mahmoud Mousad Dawood**
Dissertation Title: Partitioning Uncertainty for Non-Ergodic Probabilistic Seismic Hazard Analyses
Advisor: **Adrian Rodriguez-Marek**

Name: **Zheng Fan**
Dissertation Title: A Computer Model to Predict Potential Wake Turbulence Encounters Analysis in the National Airspace System
Advisor: **Antonio Trani**

Name: **Francisco Xavier Flores Solano**
Dissertation Title: Influence of the Gravity System on the Seismic Performance of Special Steel Moment Frames
Advisor: **Finley Charney**

Name: **Sahar Ghanipoor Machiani**
Dissertation Title: Modeling Driver Behavior at Signalized Intersections: Decision Dynamics, Human Learning, and Safety Measures of Real-time Control Systems
Advisors: Chair **Monty Abbas**, Co-Chair **Pam Murray-Tuite**

Name: **Kedar Halbe**
Dissertation Title: New Approach to Connections Between Members of Adjacent Box Beam Bridges
Advisor: **Carin Roberts-Wollmann**

Name: **Bryan Higgs**
Dissertation Title: Emotional Impacts on Driver Behavior: An Emo-Psychophysical Car-Following Model
Advisor: **Monty Abbas**

Name: **Johnn Judd**
Dissertation Title: Multi-hazard Performance of Steel Moment Frame Buildings with Collapse Prevention Systems in the Central and Eastern United States
Advisor: **Finley Charney**

Name: **Ilona Ottilia Kastenhofer**
Dissertation Title: Multimodal Assessment of Recurrent and Non-recurrent Conditions on Urban Streets
Advisors: Co-Chair **Monty Abbas**, Co-Chair **Antoine Hobeika**

Name: **Ron Kent**
Dissertation Title: Controlled Evaluation of Metal-based Nanomaterial Transformations
Advisor: **Peter Vikesland**

Name: **Taehyoung Kim**
Dissertation Title: Assessment of Vehicle-to-Vehicle Communication based Applications in an Urban Network
Advisor: **Antoine Hobeika**

Name: **Tao Li**
Dissertation Title: General Aviation Demand Forecasting Models and a Microscopic North Atlantic Air Traffic Simulation Model
Advisor: **Antonio Trani**

Name: **Ying Li**
Dissertation Title: Digital Mix Design for Performance Optimization of Asphalt Mixture
Advisor: **Linbing Wang**

Name: **Sheldon Masters**
Dissertation Title: Lead and Cooper Contamination in Potable Water: Impacts of Redox Gradients, Water Age, Water Main Pipe Materials and Temperature
Advisor: **Marc Edwards**

Name: **Milos Mladenovic**
Dissertation Title: Development of Sustainable Traffic Control Principles for Self-Driving Vehicles: A Paradigm Shift Within the Framework of Social Justice
Advisor: **Monty Abbas**

Name: **Daniel Estuardo Mogrovejo Carrasco**
Dissertation Title: Enhancing Pavement Surface Macrotexture Characterization
Advisor: **Gerardo Flintsch**

Name: **David Padilla-Llano**
Dissertation Title: A Framework for Cyclic Simulation of Thin-Walled Cold-Formed Steel Members in Structural Systems
Advisor: **Cristopher Moen**

Name: **Omidreza Shoghli**
Dissertation Title: A Decision Support System for Multi-Objective Multi-Asset Roadway Asset Management (DSRAM)
Advisor: **Jesus de la Garza**

Name: **Wenjuan Sun**
Dissertation Title: Quantification of Morphological Characteristics of Aggregates at Multiple Scales
Advisor: **Linbing Wang**

Name: **Raymond Tucker**
Dissertation Title: Influence of Individual Perceptions on Engineering Team Performance within Design Build Infrastructure Projects
Advisors: Chair **Mike Garvin**, Co-Chair **Marie Paretti**

Name: **Qi Wang**
Dissertation Title: Human Mobility Perturbation and Resilience in Natural Disasters
Advisor: **John Taylor**

Name: **Haocheng Xiong**
Dissertation Title: Piezoelectric Energy Harvesting for Roadways
Advisor: **Linbing Wang**

Name: **Yinning Zhang**
Dissertation Title: Characterization of High Porosity Drainage Layer Materials for M-E Pavement Design
Advisor: **Linbing Wang**

CEE ALUMNI: ***2015 Board Members***

Thomas A. Broderick, P.E.
Retired (Loudoun Water – Ashburn, Virginia)

James N. Carter, Jr.
Norfolk Southern Corporation – Atlanta, Georgia

Young Ho Chang, P.E. (Chair)
ATCS, P.L.C. – Herndon, Virginia

David D. Clarke
Virginia Department of Transportation
Christiansburg, Virginia

Stephen R. DeLoach, P.E., L.S.
Retired (HQ U.S. Army Corps of Engineers)
Washington, D.C.

Bernard J. Deneke, P.E.
NAVFAC EURAFSWA – Norfolk, Virginia

Brian K. Diefenderfer, Ph.D., P.E.
Virginia Department of Transportation
Charlottesville, Virginia

Betsy Ennis Dulin, Esq., P.E.
Coates & Davenport, P.C.
Richmond, Virginia

John R. Hillman, P.E.
HC Bridge Company – Wilmette, Illinois

Govindan Kannan
Volvo Group North America
Greensboro, North Carolina

Jeffrey N. Lighthiser, P.E.
Draper Aden Associates
Richmond, Virginia

Herbert Morgan, P.E.
Fluor Enterprises, Inc.
Richmond, Virginia

Laura J. Morillo, P.E.
Hilti – Fairfax, Virginia

Aaron Muck, P.E.
Terracon Consultants, Inc. – Cincinnati, Ohio

Robert "Skip" Notte, LEED AP
Dewberry – Charlotte, North Carolina

Ann E. Piazza, P.E.
L.A. Fuess Partners, Inc. – Dallas, Texas

Katherine G. Plasket (Co-Chair)
Bechtel Nuclear, Security & Environmental
Frederick, Maryland

Jonathan R. Porter, Ph.D.
Turner-Fairbank Highway Research Center
McLean, Virginia

Stephen M. Seay, L.S.
Rinker Design Associates, P.C – Manassas, Virginia

Beth Turner
Retired (Dupont – Wilmington, Delaware)

Patton Hall: Home of Civil and Environmental Engineering.

PROGRAM AREAS: *Faculty*

Vecellio Construction Engineering and Management Program

- **Jesus M. de la Garza**, *Vecellio Professor*
- **Deborah E. Dickerson**, *Associate Professor**
- **Michael J. Garvin**, *Associate Professor and Program Coordinator*
- **Farrokh Jazizadeh Karimi**, *Assistant Professor*
- **Tripp Shealy**, *Assistant Professor*
- **Denise Simmons**, *Assistant Professor**
- **Sunil K. Sinha**, *Professor*
- **John E. Taylor**, *Professor*

Environmental and Water Resources Engineering Program

- **Gregory D. Boardman**, *Professor*
- **Andrea M. Dietrich**, *Professor*
- **Randel L. Dymond**, *Associate Professor*
- **Marc A. Edwards**, *Charles Lunsford Professor*
- **Daniel L. Gallagher**, *Associate Professor*
- **Adil N. Godrej**, *Research Associate Professor (NCR)*
- **Zhen (Jason) He**, *Associate Professor*
- **Erich T. Hester**, *Assistant Professor*
- **Jennifer L. Irish**, *Associate Professor*
- **William R. Knocke**, *W. Curtis English Professor and Program Coordinator*
- **John C. Little**, *Charles E. Via, Jr. Professor*
- **Linsey C. Marr**, *Professor*
- **Glenn E. Moglen**, *Professor (NCR)*
- **Amy J. Pruden**, *Professor*
- **Robert Paolo Scardina**, *Assistant Professor of Practice*
- **Kyle Strom**, *Associate Professor*
- **Peter J. Vikesland**, *Professor*
- **Zhiwu (Drew) Wang**, *Assistant Professor*
- **Mark A. Widdowson**, *Assistant Department Head and Professor*
- **Kevin Young**, *Assistant Professor of Practice*
- **Husen Zhang**, *Research Assistant Professor*

Geotechnical Engineering Program

- **Thomas L. Brandon**, *Professor*
- **Joseph E. Dove**, *Associate Professor of Practice*
- **George M. Filz**, *Assistant Department Head and Charles E. Via, Jr. Professor*
- **Russell A. Green**, *Professor*
- **Matthew Mauldon**, *Associate Professor*
- **C. Guney Olgun**, *Research Assistant Professor*
- **Adrian Rodriguez-Marek**, *Professor and Program Coordinator*
- **Nina Stark**, *Assistant Professor*
- **Katerina Ziotopoulou**, *Assistant Professor*

Structural Engineering and Materials Program

- **Finley A. Charney**, *Professor*
- **W. Samuel Easterling**, *Department Head and Montague-Betts Professor of Structural Steel Design*
- **Matthew R. Eatherton**, *Assistant Professor*
- **Madeleine M. Flint**, *Assistant Professor*
- **Matthew H. Hebdon**, *Assistant Professor*
- **Ioannis Koutromanos**, *Assistant Professor*
- **Roberto T. Leon**, *David H. Burrows Professor*
- **Cristopher D. Moen**, *Associate Professor*
- **Victoria A. Mouras**, *Assistant Professor of Practice*
- **Carin L. Roberts-Wollmann**, *Professor and Program Coordinator*

Transportation Infrastructure and Systems Engineering Program

- **Montasir Abbas**, *Associate Professor and Program Coordinator*
- **Gerardo W. Flintsch**, *Professor*
- **Kathleen L. Hancock**, *Associate Professor (NCR)*
- **Kevin P. Heaslip**, *Associate Professor (NCR)*
- **Antoine G. Hobeika**, *Professor*
- **Bryan J. Katz**, *Assistant Professor of Practice*
- **Pamela M. Murray-Tuite**, *Associate Professor (NCR)*
- **Hesham A. Rakha**, *Samuel Reynolds Pritchard Professor of Engineering*
- **Antonio A. Trani**, *Professor*
- **Linbing Wang**, *Professor*

Emeritus Faculty

- **Thomas E. Cousins** - *SEM*
- **William E. Cox** - *EWR*
- **Donald R. Drew** - *TISE*
- **J. Michael Duncan** - *GEOT*
- **Thomas J. Grizzard, Jr.** - *EWR*
- **Robert C. Hoehn** - *EWR*
- **Siegfried M. Holzer** - *SEM*
- **J. Martin Hughes** - *EWR*
- **David F. Kibler** - *EWR*
- **Thangavelu Kuppusamy** - *GEOT*
- **James K. Mitchell** - *GEOT*
- **Thomas M. Murray** - *SEM*
- **John T. Novak** - *EWR*
- **Raymond H. Plaut** - *SEM*
- **Clifford W. Randall** - *EWR*
- **Kamal B. Rojiani** - *SEM*
- **Dusan Teodorovic** - *TISE*
- **Michael C. Vorster** - *CEM*
- **Richard E. Weyers** - *SEM*

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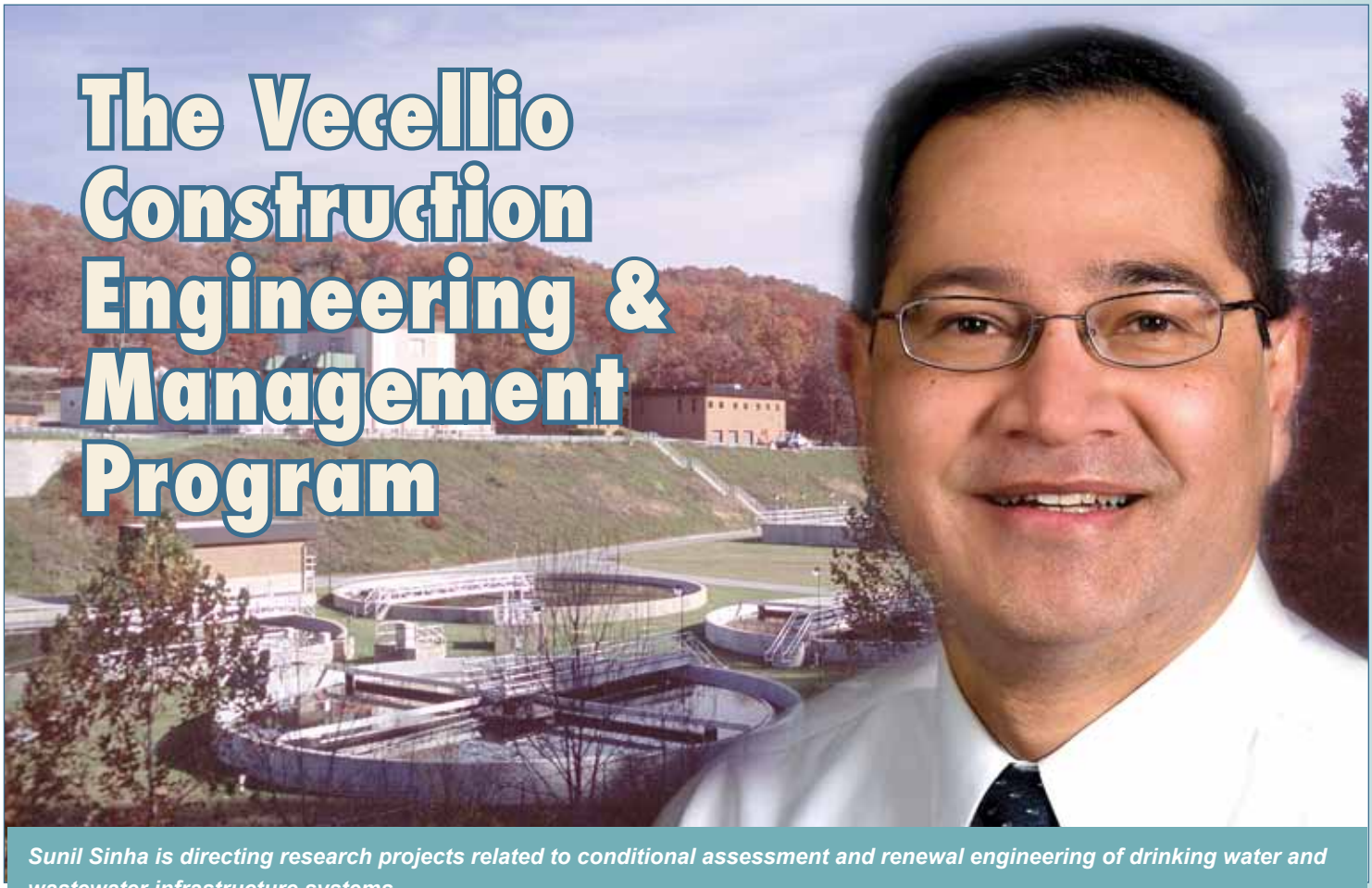
NCR - National Capital Region

The Vecellio Construction Engineering & Management Program



Sunil Sinha is directing research projects related to conditional assessment and renewal engineering of drinking water and wastewater infrastructure systems.

The Vecellio Construction Engineering & Management Program (VCEMP) welcomed new faculty members **Farrokh Jazizadeh Karimi** and **Tripp Shealy** (see introduction on pages 14 and 15). They will support VCEMP's research and education mission while also advancing the department's sustainable infrastructure initiatives. VCEMP also welcomed new administrative assistant Patty Angus.

Additional highlights during this year included: the 2015 Vecellio Distinguished Lecture presented by Darrell Waters, president and project executive for Tappan Zee Constructors, LLC (see sidebar story); recognition of Outstanding VCEMP Alumnus Vineet Kamat, associate professor at the University of Michigan, and Outstanding VCEMP Young Alumnus Semra Comu, assistant professor at Bogazici University, Istanbul; and the recognition of Outstanding VCEMP Ph.D. student, Qi (Ryan) Wang who accepted a postdoctoral position at Harvard University and Outstanding VCEMP master's student, Khalil Benali, a Fulbright Scholar.

Also, scholarship awards were given to several Ph.D. students: Edwin Gonzalez, Associated General Contractors of America; Ardalan Khosrowpour, ThinkSwiss; Maria Nieves-Melendez, Construction Management Association of America; and Neda Mohammadi, Construction Management Association of America.

Seven undergraduate Vecellio Scholarships and one graduate Vecellio Fellowship were awarded to highly-qualified students who have demonstrated leadership potential and an interest in pursuing a career in the construction industry. These students who were formally recognized during the proceedings of the Vecellio Distinguished Lecture are: Aaron D. Hill; Mia N. Jimenez; James Martin; Ryan Newmarker; Max O'Krepki; Ryan A. Roman; Dakota Smith; and Edwin Gonzalez.

Individual faculty achievements are as follows.

Jesus M. de la Garza, the Vecellio Professor in Construction Engineering and Management, became a "Yellow Jacket" during the spring 2015 while he was on sabbatical at Georgia Tech. de la Garza presented his research on Flash Tracking – i.e., Faster Fast Tracking – at the Construction Industry Institute's (CII) annual conference. He, with colleagues at the University of Illinois and Stanford, also received new research funding from CII to find ways to measure the productivity of model-based engineering. de la Garza, together with other Virginia Tech colleagues, also received new research funding from the National Science Foundation (NSF) to study the resilience and sustainability dimensions of buildings subject to multiple natural hazards. As for service to the profession, de la Garza is now on his fifth year as editor-in-chief for American Society of Civil Engineers' (ASCE) Journal of Construction Engineering and Management. He continues to serve in the executive committee of the National Academy of Construction, and on the Nuclear Regulatory Commission's Committee on Defense Materials, Manufacturing, and Infrastructure.

Deborah Dickerson had an active year on the research and scholarship front. She is principal investigator (PI) or co-PI on nine grant applications, totaling $9,044,798. She had six journal articles and two conference papers accepted for publication and four additional journal manuscripts submitted for review. She continued the work of three ongoing projects. One involves the development of a new ventilated cut-off saw for concrete construction work. A prototype has been produced and is currently undergoing laboratory testing for dust-control effectiveness and usability. In the second project, her team is analyzing the data from a national survey of concrete, masonry, and asphalt paving contractors regarding their use of pollution-prevention technology. In a new research endeavor, Dickerson, along with collaborators in industrial engineering and in

forestry, received a grant from Johns Hopkins University to perform environmental monitoring of commercial logging operations.

Michael J. Garvin had a productive year in teaching, research, scholarship, and service. He co-taught with Ignacio Moore of biological sciences one of the Graduate School's topics in interdisciplinary research on discovering synergies in biology and the built environment as part of the Bio-inspired Buildings (BioBuild) IGEP. He was also one of four engineering faculty to receive the College of Engineering's Certificate for Teaching Excellence. Garvin received a one year grant from Virginia's Office of Public-Private Partnerships (VAP3) to develop primers about alternative payment mechanisms in public-private arrangements, and he continued his NSF collaborative research with Stanford University studying governance in public-private partnerships. He published a book chapter and co-authored three conference papers with his students. He began service as a College of Engineering liaison, and continued to serve as the CIB student chapter's co-advisor. He also served on the editorial boards for four journals.

Sunil Sinha had a very productive year in teaching, research, scholarship, and service. He taught the graduate courses, Information Technology in Construction and Infrastructure Asset Management, in the fall and in the spring, respectively. He also taught undergraduate Course Estimating and Cost Engineering in the fall. Sinha continued work as a director of the Sustainable Water Infrastructure Management center. He is also directing two research projects related to condition assessment and renewal engineering of drinking water and wastewater infrastructure systems. Sinha continues to serve as the North American Society for Trenchless Technology (NASTT) Student Chapter advisor.

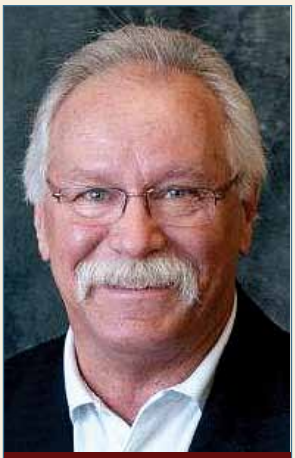
Denise R. Simmons was selected by the Frontiers in Education Conference as one of three New Faculty Fellows. The award, in part, provides an exhibit of each fellow's scholarship, exposure to the latest engineering educational practices and the opportunity to exchange information with leaders in education innovations. Simmons continues the research associated with her NSF Faculty Early Development (CAREER) Award to learn more about the influence of various factors in the choices undergraduate engineering and construction students make regarding their co-curricular involvement, ultimately leading to their entry into the work force. Her goal is to become a global leader in research that broadens the participation of students completing engineering and construction degrees and integrates academic-industry research partnerships. As a part of a team, Simmons revised the structure of the Construction Management undergraduate course to include active learning activities in each session to promote analysis, synthesis, and evaluation of class content. The new format was piloted in fall 2014.

John E. Taylor received the 2015 Daniel W. Halpin Award for Scholarship in Construction in recognition of his "broad and deep, path-breaking research on the effects of dynamic interpersonal and inter-organizational networks on the outcomes of constructed facilities over their lifecycle" from the ASCE. Over the past year, he has published 14 journal articles in leading journals. He also received a new grant from the Construction Industry Institute (CII) on Maximizing the Performance of Virtual Teams. In 2015 he expanded his Global Virtual Design and Construction course to include students from the new Bio-inspired Building (BioBuild) Ph.D. level Interdisciplinary Graduate Education Program (IGEP) at Virginia Tech. The students worked in globally distributed teams to design resource-efficient buildings based on natural system processes. Last year Taylor became the vice-chair of the academic committee of CII and served as an editorial board member for three ASCE journals.

Waters presents Vecellio Lecture

Darrell E. Waters, a senior vice president with Fluor Enterprises, Inc. and project executive and president of Tappan Zee Constructors, LLC, a consortium specifically assembled to execute the $3.9 billion replacement of the Tappan Zee Bridge in New York, presented the 2015 Virginia Tech Vecellio Lecture.

In his talk, "The Power of Collaboration –_The Tappan Zee Hudson River Crossing Project," he spoke of the three decades of political infighting and planning missteps over how to replace the ailing Tappan Zee Bridge. He said a decisive governor, a supportive federal government, the talents of the New York State Thruway Authority, and the design-build team Tappan Zee Constructors, LLC, was why success is now happening where failure prevailed previously.



WATERS

The reasons the old bridge needed replacement were legion, he said, as it was constructed in the early 1950s and only intended to be a temporary crossing. Ongoing deterioration compelled the Thruway Authority to pour increasing resources into keeping it safe, but major structural deficiencies could no longer be band-aided.

The first span of the twin-span bridge is scheduled to open in 2016 and the full project is on track for a 2018 completion. Waters said the new bridge will last at least a century without major structural maintenance.

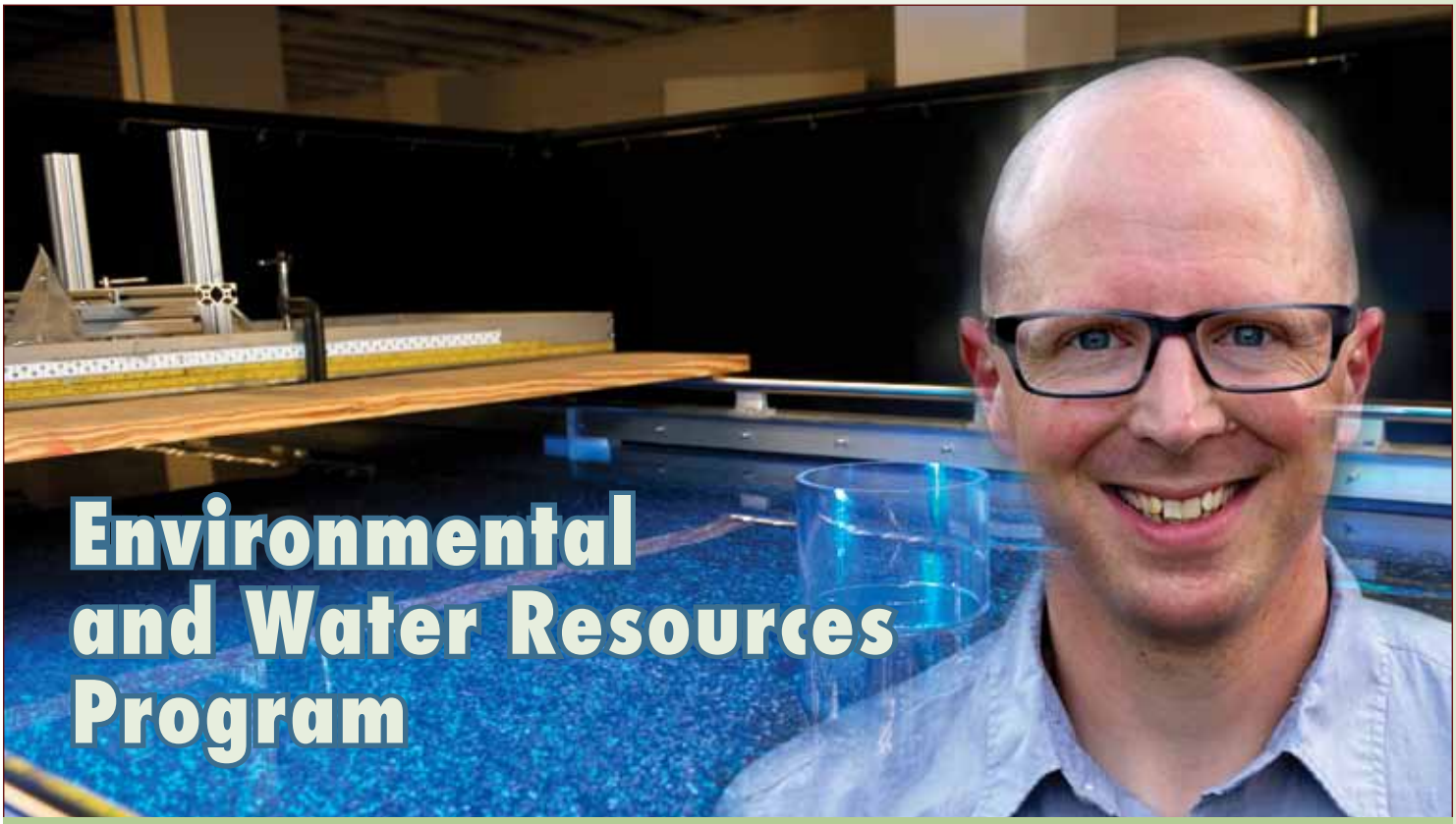
Waters cautioned, "Make no mistake, the landscape for delivering the project is challenging: the high profile of building America's largest infrastructure project, often forbidding weather on the river, a sometimes fraught political environment, enormous environmental hurdles and extensive public sensitivities with long established communities abutting the project.

"Succeeding in such a setting requires an "A-Team" of proven performers and the TZC team was strategically formed by recruiting the best of the best in a whole host of disciplines. The consortium teamed up based on their expertise areas including marine construction; steel girder assembly; large, mega-project management; New York labor unions; specialized equipment like the 'Left Coast Lifter' and ultimately, cable-stay bridge design and construction."

Walters has 40 years of experience in the design, engineering, procurement, construction and maintenance business, both domestically and internationally, and has completed numerous complex projects in the commercial, industrial, process, transportation and heavy civil sectors of the industry.

Prior to taking the leadership position on the Tappan Zee Hudson River Crossing Project, Waters was vice president, operations, rail transit for Fluor. In this role, he was responsible for the successful execution of multiple complex construction, design/build and design/build/operate/maintain and finance rail transit projects in the United States, including the World Trade Center Transportation Hub in New York, New York ($1 billion), the Mid-City Exposition Light Rail Project in downtown Los Angeles, California, ($900 million) and the Eagle P3 CRT in Denver, Colorado ($2.9 billion). Waters continues as a member of the Joint Venture board for the Eagle P3 Project.

Waters graduated from Stanford University in 1974 with a bachelor of science in civil engineering and a master of science in civil engineering and construction management. In addition to simultaneously earning multiple engineering degrees during his time at Stanford, he was a member of multiple Rose Bowl winning football teams, playing outside linebacker.



Environmental and Water Resources Program

Kyle Strom studies fluid and sediment interactions in natural environments, using the Baker Environmental Hydraulics Laboratory.

The Environmental and Water Resources (EWR) Program continues to be one of the most respected graduate programs in environmental engineering in the U.S., according to the rankings published annually by U.S. News and World Report. In 2015 the EWR program was tied for seventh among U.S. programs. Remaining among the top ten graduate environmental engineering programs reflects the dedicated work of the EWR faculty, staff, and students.

The EWR staff located in both Blacksburg and Northern Virginia support a large faculty of approximately 25 individuals and more than 125 graduate students. They help sustain a thriving research program across more than a dozen research labs. This spring the EWR program offered its best wishes to Merry-Gayle Moeller who retired from Virginia Tech after 16 years. Her many contributions to the program (including making sure that donuts were available on many Fridays in the EWR space in Patton Hall) is missed! Beth Lucas serves as the primary administrative support person to the EWR program in addition to her continued involvement with students pursuing MS degrees with an EWR engineering focus through the Commonwealth Graduate Engineering Program. She provides excellent support to the program, and in many ways serves as the "glue" that holds the program together as Betty Wingate did for much of her career with EWR. The EWR program in Blacksburg continues to receive extremely high-quality service and support from Julie Petruska and Jody Smiley who each see that the research laboratories and analytical equipment remain among the best available in the U.S. Their work contributes greatly to the research activities of the faculty and students.

Twelve EWR staff (with an average length of service of nearly 17 years) are residents at the Occoquan Laboratory in the National Capital Region (NCR), and all continue to make important contributions to departmental programs, particularly in the area of sponsored research. Under the supervision of Harry Post, field staffers George Underwood, Mark Lucas, and Doug Holladay operate a complex hydrologic and water quality observing network in the Occoquan Watershed and in other important water bodies of the NCR. Led by Dongmei Alvi, the accredited environmental laboratory is ably staffed by Joan Wirt, Curt Eskridge, and Scott Downs. Developing and maintaining several of the lab's web sites and managing both technical and IT-oriented tasks is Saurav Kumar. Another Occoquan Lab staff member, Ning Zhou is assigned to the U.S. Environmental Protection Agency (EPA) office in Annapolis, Maryland, where he has continued his important project work in support of the Chesapeake Bay restoration. All the field and lab staff members are key participants in a variety of research projects directed towards better understanding and sustainable management of the urban water cycle. Their work includes projects on water reuse, lake and reservoir management, mitigation of the water quality effects of urbanization, and development of hydrologic and water quality modeling systems. The technical staff also plays a vital role within the department by supporting and participating in the training of the latest generation of students pursuing their graduate degrees at the Occoquan Laboratory.

Office Manager Barbara Angelotti and Alicia Tingen continue to be responsible for all aspects of administrative support, including managing a 10,000 square foot facility consisting of lab, shop and office spaces. Jeanie Taylor does a wonderful job helping the lab to sparkle.

This August, the lab welcomed its newest member, **Zhiwu ("Drew") Wang**, as an incoming faculty member with expertise in sustainable biotechnologies for the treatment of both liquid and solid waste. Further information regarding Wang can be found in the section of the *Via Report* related to new CEE faculty hires.

Individual faculty reports follow.

Greg Boardman served as the advisor or co-advisor for 14 graduate students working on 11 research projects. Research results were presented at 11 conferences. Boardman also served as a board member for two organizations: the Virginia Section of the American Water Works Association (VA AWWA) and the New River Valley Regional Water Authority. His term as a VA AWWA board

member ended in December 2014, but he remains a member of three association committees. He is the faculty advisor for the joint VA AWWA/ Virginia Water Environment Association (VWEA) student chapter at Virginia Tech, a member of the Virginia Department of Health's (VDH) Operator Certification and Capacity Development Stakeholders Committee, a member of the VDH Waterworks Advisory Committee, and co-coordinator of the education program for VWEA's Operations Education and Operations Challenge Conference. He also chaired and taught in 16 short courses and was co-coordinator for a monthly, televised lecture series sponsored by VDH.

Through **Andrea M. Dietrich**'s dedication to environmental issues, she directed her undergraduate and graduate classes to tackle the processes and implications for hydraulic fracturing, which is a major challenge to freshwater quality and quantity in North America. With her undergraduate and graduate researchers, Dietrich published eight peer review articles, including the group's first two publications on the fate, transport, and human implications for exposure to the industrial chemical MCHM that contaminated West Virginia's drinking water. **Paolo Scardina** and **Dan Gallagher** are her collaborators on the MCHM contamination project. The MCHM project faculty and students presented at an invited national workshop on mechanisms for researchers to provide short- and long-term support during environmental disasters. Dietrich continues to co-direct the Virginia Tech Water INTERface Interdisciplinary Graduate Education Program that unites students and faculty in three colleges to focus on water and health. With her global collaborators in Spain and Taiwan, she authored review articles designed to improve drinking water quality.

Marc Edwards was appointed as a distinguished professor to the Chinese Academy of Sciences 2013-2014 and gave a series of lectures in Beijing during July 2014. He was part of a Virginia Tech team (including Pruden, Vikesland, and Marr) that submitted a 10 year, $48 million dollar NSF Science and Technology Center proposal in June 2015 entitled "Harnessing the Exposome of the Built Environment (HE^{x}BE)." Civil actions of young children lead poisoned by the 2001-2004 Washington, D.C. "Lead Crisis" will go to trial during 2015-2016, and Edwards will participate as a volunteer expert witness. Edwards was also awarded the 2015 ARCADIS/AEESP Frontier in Research Award at the Association of Environmental Engineering and Science Professors national conference.

A significant portion of **Adil Godrej**'s year was spent in aiding in the transition as the new director of the Occoquan Lab. Godrej served on the search team to hire a new EWR faculty member to be located at the lab. While his research into modeling the Occoquan watershed continues, he is excited to be on a multi-disciplinary and multi-institution team that won a four-year NSF grant to study a portion of the Chobe River in Botswana for the coupled human-natural dynamics of dryland river systems with respect to anthropogenic and environmental drivers. The water quality modeling, for which he will be responsible, is expected to be particularly challenging as the river overflows its banks for months at a time during the monsoon season, and also reverses flow direction due to high flow in the Zambezi River, of which it is a tributary.

Zhen (Jason) He operates the Environmental Biotechnology & Bioenergy Laboratory (EBBL). His group has published more than 20 journal papers during the past year, and one of the papers was featured as a back cover in ChemElectroChem. He gave an invited talk to the VTSuN and DOE workshop on hydrogen and bioproducts from wastewater. He presented his research at the 2014 AIChE Meeting and 2015 Water Energy Conference. A new project funded by EREF was started to develop a novel treatment system for resource recovery from landfill leachate. A new collaboration was formed with the researchers from Chile and Japan on resource recovery from waste. He also enjoyed teaching CEE 3104 Introduction to Environmental Engineering, and developed a new graduate course CEE 5894 Environmental Biotechnology. He continues to work as an associate editor for Water Environment Research, and joined the editorial board of several journals in the Frontiers series as a review editor.

Erich Hester's research focuses on how human actions in watersheds interact with stream, river, and wetland hydraulics to affect aquatic ecological health and water quality. A core research theme is the effect of stream restoration and river management practices on water quality. Hester and **Mark Widdowson** received a new NSF grant in this area to study natural attenuation of contaminants in riverbeds and how this can be enhanced by engineering practices. Hester also received another NSF grant to evaluate the effect of preferential flow in riverbanks on pollutant migration from uplands to rivers. A second research theme supported by Wells Fargo used geophysical techniques to determine where water pollution originates within surface coal mine valley fills. Finally, Hester continues to serve as associate editor for the journal Water Resources Research and instrumentation chair for the Consortium of Universities for Advancement of Hydrologic Science (CUAHSI).

Jennifer L. Irish and her group continued coastal hazards research, focusing on the physics of and risks posed by coastal floods and on the use of nature-based infrastructure to manage these risks. With her group and colleagues, Irish authored six journal papers, including an invited review article on future storm surge risk for Current Climate Change Reports. In 2015, the National Academies invited Irish to serve as a subject-matter expert at its Coastal Resiliency Forum. Irish also received the 2015 College of Engineering's Dean's Award for Faculty Fellow in recognition of her research accomplishments. Irish continues to be active with the American Society of Civil Engineers (ASCE), as a member of the Committee on Technical Advancement and of the Coastal Engineering Research Council, and to serve on the editorial boards of Coastal Engineering and the Journal of Waterway, Port, Coastal, and Ocean Engineering-ASCE. She is co-editor of the forthcoming Springer Handbook on Ocean Engineering, Part C: Coastal Design.

Bill Knocke completed his formal appointment in the Office of the Vice President for Research at Virginia Tech last August and returned to the CEE department on a full-time basis. He continues to lead the campus-wide Proposal Development Institute (PDI) program for the university. This program involves about 45 faculty from across the campus, and focuses on helping these faculty enhance their ability to secure external funding to support their research and scholarly activities. Knocke serves as advisor to all CEE distance learning students who are enrolled in the Commonwealth Graduate Engineering Program around Virginia. Knocke presented four research papers at conferences in the past year on manganese control in drinking water treatment. He is working to translate the research on manganese control done at Virginia Tech into new design practices for the water industry.

John Little received the North American Lake Management Society Technical Merit Research Award in 2014. Only five of these awards in the research category have been given in the last 10 years. Little also organized the Third International Water Association Symposium on Lake and Reservoir Management, held at Mountain Lake Lodge in Pembroke, Virginia, in 2015. In addition, Little was appointed an honorary professor in the Department of Civil Engineering at the University of Sydney in Australia. Finally, a new dimensionless number has been proposed that is named after Little. The "Little Number," designated Lt, is the ratio of the diffusional mass transfer resistance in a material to the convective mass transfer resistance in the air adjacent to the material. The number was proposed during a keynote lecture at Indoor Air 2014, the premier international conference of the International Society of Indoor Air Quality and Climate, held in Hong Kong.

Linsey Marr leads the Applied Interdisciplinary Research in Air (AIR^{2}) group. It studies the environmental impacts of nanomaterials in the atmosphere and the airborne transmission of infectious disease. Graduate students and postdoctoral researchers are applying techniques inspired by atmospheric science and nanotechnology to understand how the flu virus is inactivated in airborne respiratory droplets. Her group's research on the flu virus was featured in an article in the February 2015 issue of *Popular Science*. She is leading a new NSF Grant for Rapid Response Research to investigate the potential for exposure to Ebola virus surrogates aerosolized from toilets

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and wastewater treatment systems. In October, she gave an invited plenary talk on engineered nanomaterials at the American Association for Aerosol Research conference in Minneapolis.

Glenn Moglen is finishing his first year as the director of the Occoquan Laboratory, Manassas, Virginia. He has found that it's been a considerable "learning experience" in many new dimensions beyond his formal training as an academic. In April 2015, Moglen published his first book, a textbook entitled, Fundamentals of Open Channel Flow. Published by the CRC press, this book is aimed towards an audience of CEE seniors or graduate students taking their first course in this area. The book includes a suite of computer-generated videos that can be viewed at: https://sites.google.com/a/vt.edu/moglen/home/animations-open-channel-flow

Moglen continues to aggressively contribute through service to the professional community, especially the ASCE. He was an organizer for the ASCE Watershed Management technical conference held in Reston, Virginia, in August 2015 and is also the proceedings editor for this conference. In October 2015 he will assume chairmanship of the ASCE Watershed Management technical committee and will also serve as secretary on the ASCE Watershed Council.

Amy Pruden worked with Marr, Edwards and **Peter Vikesland** to launch a new Institute for Critical Technology and Applied Science (ICTAS) Center focused on the microbiology of the built environment. New NSF and Alfred P. Sloan Foundation grants were awarded to members of this team, to examine antibiotic resistance genes in recycled water, opportunistic pathogens in hot water plumbing, and the microbiome of indoor aerosols. Pruden was the 2014 recipient of the Paul L. Busch Award from the Water Environment Research Foundation and was honored with the Best Feature Article of 2014 in Environmental Science and Technology, both in honor of her work on antibiotic resistance in recycled water. (See related article, pages 5 and 6.) Pruden also joined the graduate school in a 50 percent appointment as its associate dean and director of interdisciplinary graduate education, where she oversees 14 Interdisciplinary Graduate Education Ph.D. (IGEP) programs, each led by faculty in CEE and across campus, to tackle grand challenges, such as sustainable nanotechnology, obesity, regenerative medicine, water, and global change.

Paolo Scardina continues to have an active teaching schedule instructing approximately double the typical number of courses each year. He added the CEE senior level hydrology course to his teaching load. He continues managing the civil engineering hydraulics teaching laboratory, used extensively with many CEE courses. In recognition of his efforts, Scardina received the Loganathan teaching award, which was voted upon by the CEE student body. He also received a "Thank a Teacher" note from a student administered through the Virginia Tech Center for Instructional Development and Education Research (CIDER). Scardina also continues to advise the student chapter of ASCE.

Kyle Strom joined the department in January 2015. Since joining he and his students have worked to establish their experimental research in the Baker Environmental Hydraulics Laboratory, including adding a new piece of major equipment that allows for the study of deltas and turbidity currents. The primary focus of his group is fluid and sediment interactions in natural environments. Their research improves understanding and modeling of rivers, estuaries, and deltas to aid in their responsible management. Over the past year, Strom and his colleagues published five papers and gave several university and conference presentations. In April, he joined a select group of researchers from the U.S., Europe, and South America in Houston, Texas, for a focused meeting on the dynamics of turbidity currents and deep-sea submarine fans. He also taught a graduate class on river mechanics and sediment transport and continued to serve as an associate editor of the Journal of Hydraulic Engineering.

Peter Vikesland's research group had a very productive 2014-2015, publishing 10 peer-reviewed papers and giving in excess of 20 presentations both in the U.S. as well as internationally. In September 2014, Vikesland was the guest of the China University of Geosciences-Beijing. While in China, Vikesland gave a number of seminars and also visited the China Institute of Hydrology and Environmental Geology. In summer 2015, Vikesland spent one month as an invited guest at the Centre Européen de Recherches et d'Enseignement des Géosciences de l'Environnement (CEREGE) in Aix-en-Provence, France. At the CEREGE, Vikesland collaborated with colleagues examining the environmental implications of nanotechnology. This long-term collaboration began when Vikesland spent part of his sabbatical at the CEREGE in 2009. Within the CEE department, Vikesland recently embarked upon a long-term collaborative effort with the Edwards, Marr, and Pruden groups to determine how to 'Engineer the Exposome.' This effort seeks to determine how environmental exposures to chemicals and microbes affect humans.

Zhiwu (Drew) Wang is joining the EWR program in August 2015. He will be posted at the Occoquan Laboratory at Manassas, Virginia. He will teach CEE 4174 Solid and Hazardous Waste Management and also develop a new graduate course, CEE 5894 Stormwater Treatment. Wang was employed with The Ohio State University as a visiting assistant professor. His research and teaching focus on the delivery and development of sustainable biotechnologies for the treatment of liquid and solid waste. Wang was invited for presentations on ASABE 2014 Annual International Meeting (Montreal, Canada) and won a first place Boyd-Scott Graduate Research Award with his advisee, Fuqing Xu. He is a member of the international program committee for the symposium on Lake and Reservoir Management (Pembroke, Virginia).

New and continuing research projects under **Mark Widdowson**'s leadership include regional water supply planning in Virginia, smart metering of municipal water systems, contaminant transport and remediation of chlorinated solvents in fractured rock aquifers, impacts of natural and anthropogenic organic carbon on natural and enhanced attenuation of subsurface contaminants, arsenic mobilization and transport in aquifers, and phytoremediation of polycyclic aromatic hydrocarbon compounds in soil and groundwater. Widdowson and colleagues presented several papers at the International Symposium on Bioremediation and Sustainable Environmental Technologies and published papers in several journals including the ASCE Journal of Environmental Engineering, Water Resources Research, and the Journal of Contaminant Hydrology. Widdowson continued his administrative role as assistant department head and graduate chair.

Husen Zhang continued his research on biological processes with applications in wastewater treatment and biodegradation of organic pollutants. He gave an oral presentation on metagenomics of biofilm communities affected by landfill leachate at the AEESP biannual conference held at Yale University in 2015.

John Little uses nanotechnology lab equipment to facilitate his research efforts.

Katerina Ziotopoulou is investigating geostructures emphasizing the constitutive modeling of soils subjected to liquefaction.

The national and international recognition of the Geotechnical Engineering program is reflected in the number and range of the publications by its faculty and the large number of awards and keynote lectures given to and by its faculty. Faculty members are also engaged in a wide range of top-level consulting projects at a national and international level.

The education of its students continues to be the core mission of the Geotechnical Engineering program. The graduates are highly sought by consulting companies and the alumni network continues to grow. The Graduate Student Organization also plays an active role in enhancing the value of the educational experience at Virginia Tech through community service and professional activities. For example, thanks in particular to the generosity of **J. Michael Duncan**, professor emeritus, Virginia Tech has had the largest number of students at the national GeoCongress for the past few years, a fact that also exemplifies the commitment of the faculty towards the professional preparation of its students.

The Center for Geotechnical Practice and Research (CGPR) continues to serve as an important link between academia and practice. Its annual meeting serves to connect regional and national members to the geotechnical faculty and graduating students. The CGPR also funds practice-oriented research that benefits both the academic and professional communities.

The impact of the program on engineering practice and on the research community is measured by the activity of its faculty members. A summary of these activities is presented below.

T.L. Brandon and **Duncan**, along with **Steve Wright**, released the second edition of Soil Strength and Slope Stability in the fall of 2014. The book is a major revision of the well-received first edition. Brandon has continued his research collaboration with the U. S. Army Corps of Engineers in developing guidelines for measurement and use of fully softened shear strength for stability analysis and the use of transient seepage analysis for levees. Brandon was particularly active in consulting, serving on the board or acting as a consultant for the Blue Ridge Dam, Lake Livingston Dam, and the Lower Colorado River Authority Lower Basin Reservoir. Brandon and consulting engineer Rick Valentine are engaged in determining the cause of failure of the 240 foot tall MSE slope at the Yeager Airport in Charleston, West Virginia.

Joe Dove continued his collaboration with faculty and students in developing novel methods to improve the engineering behavior of soils. He is also working to develop a methodology for evaluating energy use and carbon dioxide release during ground improvement operations. Other areas of active research include the application of advanced sensing techniques for site investigation, infrastructure assessment and hazard detection, engineering for sustainability, and bio-inspired materials. He serves the department as one of the academic advisors for undergraduate majors and as chair of the curriculum committee.

J. Michael Duncan worked with **George Filz** as co-director of the CGPR, and supervised CGPR and civil engineering department student research projects. With Filz, he supervised development of a beginner's guide on use of the finite element method for geotechnical applications. He sponsored a trip by 28 graduate students to attend the 2014 national geotechnical engineering conference in San Antonio. He and Brandon published the second edition of the book, Soil Strength and Slope Stability in September, 2014. During the past year he served on consulting boards for Keoshe Dam in South Carolina, for Linville Dam in North Carolina, for the design of a dam to develop an off-channel reservoir on the Lower Colorado River in Texas, and for the design of a powerhouse at Lake Livingston Dam in Texas.

George Filz's research projects and sponsors include: an accessible knowledge base for soil improvement technologies for transportation infrastructure renewal, the Strategic Highway Re-

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search Program 2; foundation support for bridge abutments using geosynthetic-reinforced soil, Virginia Center for Transportation Innovation and Research/Virginia Department of Transportation (VDOT); stability of slopes reinforced with various types of columns, with and without geosynthetic reinforcement, CGPR; design procedures for pile-supported floodwalls, U.S. Army Corps of Engineers; stress-strain and strength properties for soil-cement mixtures, Deep Foundations Institute; and integrated coastal protection systems, Virginia Tech College of Engineering. Filz and his students made presentations based on their research at conferences in New York, Portland, San Antonio, San Francisco, Stockholm, and Williamsburg. Filz served as assistant CEE department head, director of CGPR, faculty advisor of the Geotechnical Student Organization, member of VDOT's Geotechnical Research Advisory Committee, member of the American Society of Civil Engineers' (ASCE) Geo-Institute Soil Improvement Committee, and consultant on geotechnical design and construction projects. He organized the Deep Mixing 2015 Conference with over 300 participants from 23 countries. Filz received two awards from the Transportation Research Board of the National Academies: the 2014 Best Practice-Ready Paper Award from the design and construction group and the 2015 Best Paper Award from the soil mechanics section.

Russell Green has been actively working on several continuing research projects and a few new ones. Most notably, Green is continuing his work studying the 2010-2011 Canterbury, New Zealand earthquake sequence. Towards this end, he spent July and August, 2014 at the University of Canterbury in Christchurch, New Zealand, giving lectures and performing collaborative earthquake research. He returned to Christchurch in November 2015 to participate in the 6th International Conference on Earthquake Geotechnical Engineering. Green is continuing his work on a National Science Foundation (NSF) sponsored project on the development of an energy-based liquefaction evaluation procedure, and on a second NSF project on the development of an improved liquefaction severity index. Both of these projects are in collaboration with **Adrian Rodriguez-Marek**. Green is also involved in an international collaboration with the Earthquake Engineering Research Centre, University of Iceland, assessing the seismic hazard of northeast Iceland; He attended the kick-off meeting for this project in Husavik, Iceland, in June 2015. Finally, he is completing a project funded by the U.S. Geological Survey on the development of "magnitude bound curves" for use in paleoliquefaction investigations in the central and eastern U.S. Green serves as a member of the National Academies Committee on State of the Art and Practice for Assessment of Earthquake Induced Soil Liquefaction. His consulting activities have mainly focused on seismic safety analyses of the U.S. nuclear weapons facilities and issues related to induced seismicity. He is an associate editor/editorial board member of two journals, Earthquakes and Structures and the International Journal of Geoengineering Case Histories.

Matthew Mauldon is researching methods of rock mass characterization based on limited outcrop or borehole sampling. In connection with this work he presented a paper on "Use of image windows for the analysis of fracture traces and fractures" at the 49th U.S. Rock Mechanics / Geomechanics Symposium in San Francisco. He also gave an invited lecture on "Engineering Geology in Flatland" at the Richard E. Goodman Geological Engineering Symposium in Jenner, California. Mauldon serves on the editorial boards of Rock Mechanics and Rock Engineering and the Korean Journal of Civil Engineering.

Emeritus Distinguished Professor **Jim Mitchell** continues co-advising Ph.D. research on methods for evaluating sustainability considerations in ground improvement projects. He was keynote speaker at the ASCE Shale Energy Conference in Pittsburgh in July 2014, the Deep Foundations Institute/Connecticut Geotechnical Seminar on Ground Improvement in November 2014, and the annual meeting of the Geotechnical Society of Edmonton in May 2015. He presented the Fourth Victor deMello Lecture in Goiania, Brazil, in September and the Laurits Bjerrum Lecture in Oslo, Norway, in December 2014. Mitchell serves as a member of the National Academies Committee on State of the Art and Practice for Assessment of Earthquake Induced Soil Liquefaction. His consulting activities included the design review board for a large copper tailings storage facility in Utah, a review board for ground movement evaluation and stabilization of the I-20 Mississippi River Bridge at Vicksburg, Mississippi, the board of consultants for Linville Dam in North Carolina, and chairing a multidisciplinary independent science review panel for review of proposed methodology for prioritizing investments in the California Delta levees.

Guney Olgun is continuing his research and outreach efforts on energy geotechnology spanning a wide range of areas from energy piles to energy geostorage. Last year he was instrumental in establishing the technical committee on energy geotechnics under the International Society of Soil Mechanics and Geotechnical Engineering. He is active in the leadership of this new technical committee and is currently the thrust leader on energy geostructures. He presented the position paper of this thrust last June during the Symposium on Energy Geotechnics in Barcelona, Spain. He is currently leading an NSF-funded project to study the performance of energy piles through full-scale field tests. As an extension of this project, he is performing field tests to investigate the use of ground-source heating for deicing of bridge decks. He is also investigating the effect of temperature and water chemistry on the erosion of fine-grained soils using the hydraulic flume. Olgun is also leading another NSF funded project to study the use of soil-mix panel elements for ground reinforcement during earthquakes. Virginia Tech leads this study that involves three other universities where shake table tests, dynamic centrifuge testing, and full-scale field testing are conducted. Olgun and **Adrian Rodriguez-Marek** are also leading the geotechnical component of the recent multi-disciplinary project on resilient and sustainable building systems funded by NSF. This collective effort is led by Madeleine Flint from the SEM group and brings together structural, geotechnical, architectural, and construction disciplines. Olgun is also leading a project on the seismic hazard mapping of Washington, D.C. in which he is collaborating with Rodriguez-Marek, several geotechnical engineering firms from the area and researchers from the U.S. Geological Survey.

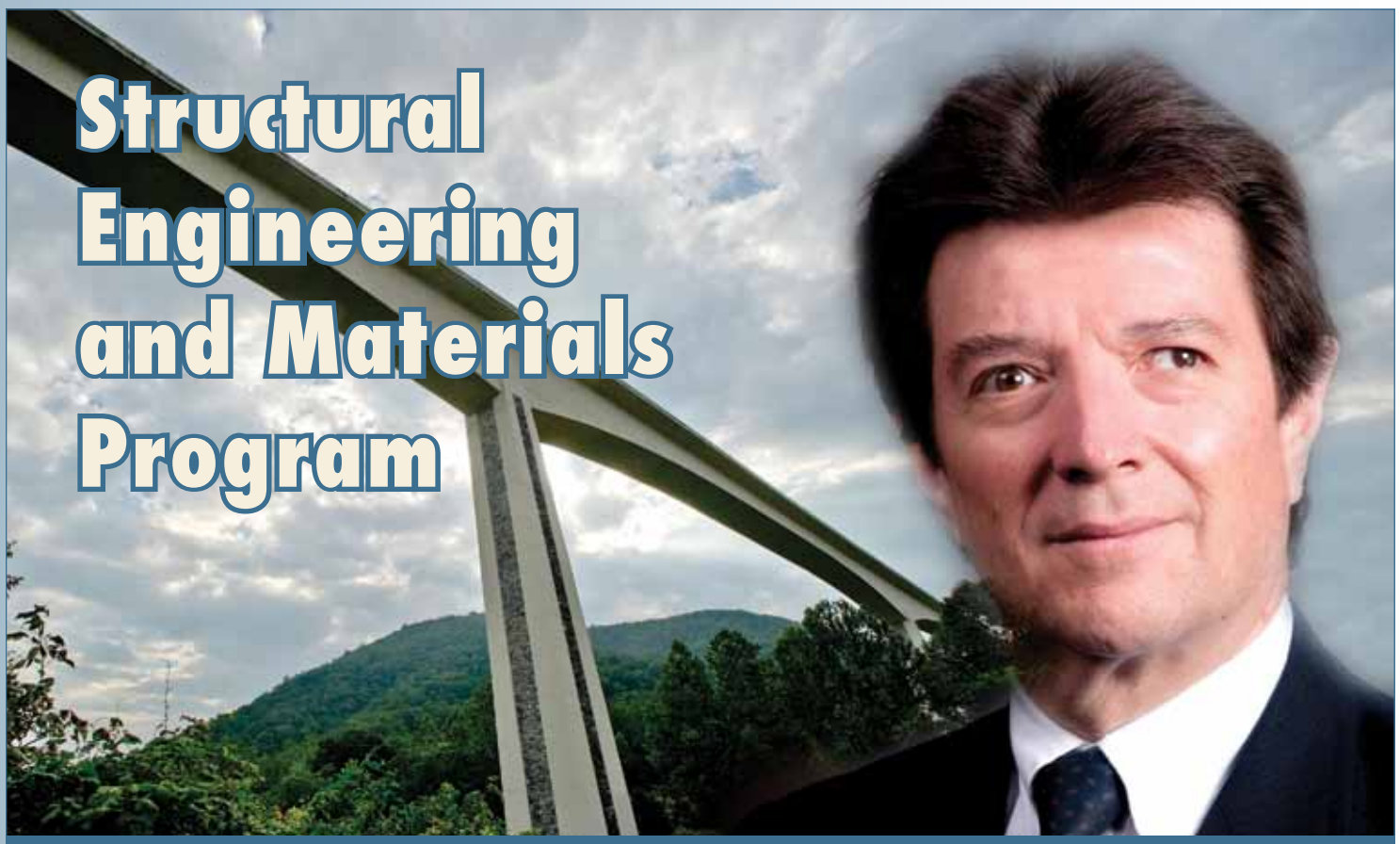
Adrian Rodriguez-Marek has continued to work on projects related to seismic hazard assessment. These include a study on the effects of site amplification on earthquake ground motions and on the development of ground motion prediction equations for subduction-type environments, both funded by the U.S. Geological Survey, and a project funded by the French national power company on the characterization of uncertainty for the seismic hazard analysis of nuclear power plants. He has also continued to collaborate with **Russell Green** on NSF-funded research focused on the development of an energy-based methodology for liquefaction assessment, and with various faculty in the CEE department on a multi-disciplinary project on resilient and sustainable building systems funded by NSF. His consulting work has been on seismic hazard assessment projects for nuclear power plants in the U.S. and abroad. He serves as the chair of the earthquake engineering and soil dynamics committee of the Geo Institute of ASCE and is an editorial board member for the journals Earthquake Spectra and Soils and Foundations.

Nina Stark continued her work on the development of cost-effective geotechnical survey strategies for early site assessment in ocean renewable energies. She tested survey strategies for a wave energy converter project in Yakutat, Arkansas, and for a tidal energy converter project in Digby, Nova Scotia. Additionally, she participated in an Arctic expedition to Herschel Island, Yukon. She investigated the geotechnical characteristics of Arctic near shore sediments in the vicinity of large thaw slumps. Stark also initiated two new projects: the geotechnical in-situ characterization of Great Bay, New Hampshire, and the monitoring of changes in sediment strength and compaction of the seabed surface in the active near shore zone in Duck, North Carolina. She started another new project to develop a mobile sediment sampler add-on unit for the deployment from portable penetrometers. The first designs were developed and prototypes will be manufactured shortly.

Katerina Ziotopoulou is working on geotechnical earthquake engineering and numerical modeling of geostructures with emphases on the

See Geotechnical, page 32

Structural Engineering and Materials Program



Roberto Leon is working on the updates of building code provisions for the 2016 American Institute for Steel Construction Specification for steel structures.

Many changes occurred within the Structural Engineering and Materials (SEM) group in 2015. **Kamal Rojiani** retired and **Tommy Cousins** moved to Clemson University. Their contributions will be missed, and their departures left the group a little thin, especially in the spring semester. Two new faculty members, **Madeleine Flint** and **Matt Hebdon**, joined the group, getting it almost back to full strength (See related story, page 13). A new administrative assistant, Lisa Bishop, joined the team.

The group is continuing to develop its Virginia Tech Structural Engineering Education Development (VT-SEEDs) program. VT-SEEDs was initiated last year with the mission of creating and nourishing educational activities in the SEM area. The SEM group is soliciting industry partners to support student groups, class field trips, student trips to conferences, invited seminar speakers, interaction with industry, and K-12 outreach events.

The SEM graduate program has over 70 new and continuing graduate students, with more than 35 of these students participating in research. The graduate students are active in student chapters of the Cold Formed Steel Research Consortium, the Earthquake Engineering Research Institute (EERI) and the Structural Engineering Institute. The Thomas M. Murray Structural Engineering Laboratory is busy with a large number of projects and runs smoothly, thanks to the efforts of Brett Farmer, Dennis Huffman, and David Mokarem.

The following paragraphs provide more detail about the faculty members' activities over the past year:

Finley Charney has been active in a variety of activities including research, building code development, and collaborative international research and teaching. Together with international colleagues and graduate students he published several journal and conference papers on a variety of topics related to structural analysis, software development, and wind and seismic engineering. He is also continuing his research in the area of collapse resistance of structures subjected to extreme loads. In the area of building code development Charney contributed to updated provisions for linear and nonlinear response history analysis that have been adopted for use in the 2015 NEHRP Recommended Seismic Provisions and in the American Society of Civil Engineers (ASCE) 7-16 minimum loads standard. The 2nd edition of Charney's book, Guide to the ASCE 7 Seismic Load Provisions, was published in early 2015.

In international activities, Charney has continued his association with Pontificia Universidad de Catolica in Santiago, Chile, and is currently hosting a visiting scholar from that university. Charney is also collaborating with the University of Chile (in Santiago), the university of Cuenca (in Cuenca, Ecuador), and San Francisco University (in Quito, Ecuador). He was a keynote speaker for the 2015 Chilean Conference on Earthquake Engineering, and is serving as a member of the Scientific Committee for the 16th World Congress on Earthquake Engineering to be held in Santiago in early 2017.

Matthew Eatherton and his research group have continued to focus on developing new structural systems with enhanced earthquake performance and improving resilience and sustainability of structural systems. The group is embarking on four new multi-year research projects including a collaborative project on seismic behavior of metal diaphragms, an NSF CAREER project related to buckling resistant steel shear panels, a collaborative project on optimizing resilience and sustainability of building systems, and a collaborative project on computational simulation of steel fracture in structures subjected to earthquakes. The group has several ongoing projects related to steel moment resisting frames including developing a self-centering moment frame that will not require repair after most earthquakes, developing

Continued on next page

new bolted end plate moment connections for metal buildings, investigating the effect of defects on seismic behavior of steel moment connections, and a collaborative project to conduct some of the largest steel moment connection tests ever attempted. The group is also conducting a number of smaller industrial testing projects.

Eatherton's research group is also active in outreach activities and professional service. His research group supported diversity and outreach initiatives by hosting learning activities at several outreach activities including C-Tech^2, Blast summer camp, Imagination summer camp, Engineering Open House, presentations at Blacksburg High School, and others. He also hosted an international visiting scholar from a prestigious university in China. Eatherton is a member of five professional committees and contributed to the structural engineering profession this past year in other ways such as authoring design examples to be used by practicing structural engineers.

Ioannis Koutromanos has been involved in the development of analytical tools for the performance assessment of structural systems subjected to static and dynamic loads. His work included the development of refined three-dimensional finite element models to capture the response of reinforced concrete structures such as bridge girders and walls. The models have been validated with experimental tests on actual concrete structures. The girder simulations were part of a project supported by the Virginia Center for Transportation Innovation and Research (VCTIR). He has also been developing simplified simulation tools, based on the nonlinear truss analogy for reinforced concrete, in collaboration with researchers from the University of California at Berkeley. His work resulted in submission of three journal papers, one research report, and publication and presentation of three conference papers in the United States and abroad. He was recently awarded, in collaboration with **Matt Eatherton**, a research grant from the National Science Foundation (NSF) to develop and calibrate analytical simulation tools for capturing inelastic deformation and fracture of structural steel members due to low-cycle fatigue.

Koutromanos was the moderator of a mini-symposium during the 2015 ASCE Engineering Mechanics Institute (EMI) convention at Stanford University. He initiated and serves as the inaugural faculty advisor of the Virginia Tech Student Chapter of EERI. The chapter has organized a series of seminars from academic and professional leaders. He also introduced and taught (with very positive response from attendants) a graduate course on the nonlinear finite element analysis of structures.

Roberto Leon has continued his research on resilient composite steel-concrete and bridge structures during the last year. His work on composite structures has focused the update of the building code provisions for composite beams and concrete-filled tube and encased columns for the 2016 American Institute for Steel Construction (AISC) Specification for Steel Buildings. He has also continued work on the development of innovative connections in steel and composite structures, with emphasis on incorporating advanced materials that minimize damage when subjected to large loads. Leon and his students are also working on advanced techniques to both identify critical members on bridges and to develop rehabilitation programs to improve bridge robustness. Leon continues to serve in

> The SEM graduate program has over 70 new and continuing graduate students, with more than 35 of these students participating in research.

numerous technical committees of ACI, ASCE/SEI and AISC and serves on the board of the Applied Technology Council (ATC). For his long-term contributions to the profession, Leon was recognized in 2015 with ASCE's Distinguished Member grade.

Cris Moen leads the structural systems and lifecycle reliability (SYSREL) team at Virginia Tech. SYSREL works at the intersection of engineering materials and systems to advance structural safety, efficiency, and durability. Current SYSREL efforts include bringing whole building system performance and reliability to national codes and standards and developing multi-objective design approaches for high-rise buildings that cohesively address in-service performance, embodied energy, constructability, and real estate economics. New engineering material development and characterization is a key research area within SYSREL, with a recent focus on tailored multi-functional materials realized with additive manufacturing and topology optimization. The SYSREL group is documenting properties for new high-stiffness high-damping and negative Poisson ratio material configurations through multi-university collaborations.

Transportation infrastructure continues to be a key focus for SYSREL. The team is developing structural guidelines and high fidelity simulation tools for Ultra-High Performance Concrete (UHPC) that can inspire the next generation of concrete building and bridge structural systems. SYSREL is partnered with the Virginia Department of Transportation to deploy corrosion resistant reinforcing materials and novel computer vision assessment techniques in bridges and pavements that will save millions of dollars in repair, maintenance and inspection costs.

Victoria Mouras has continued her focus on undergraduate teaching in structural engineering and in the required senior-level "Professional & Legal Issues in Engineering" course that all undergraduate students in the department take. In the spring, she also assumed the advisor role for the "Bridges to Prosperity" student group. In addition to these student activities, Mouras coordinated several renovation projects for the department, to include a facelift for the undergraduate geotech lab in Patton 17, the establishment of a new student support office in Patton 211, and the design for a new high-tech audio-visual collaborative teaching space.

Carin Roberts-Wollmann continues to focus her research on bridge engineering. This year she completed a project on best practices for repair of impact damaged prestressed bridge beams, a project developing an inverted T-beam system for short to medium span bridges, and a project investigating new connection techniques for adjacent box beam bridges. The connection techniques developed in the project were used to retrofit an existing box beam bridge near Staunton, Virginia, with the goal of extending the life of the bridge by eliminating the reflective cracking at the joint between adjacent beams. She also has a continuing project investigating carbon fiber reinforced polymer (CFRP) grids as end zone and shear reinforcement in prestressed concrete beams.

Roberts-Wollmann is very active in the American Concrete Institute (ACI), serving as the chair of ACI Committee 423 – Prestressed Concrete and as a voting member of ACI Committee 318 - Building Code and Commentary. She is also active in The Precast/Prestressed Concrete Institute and the Transportation Research Board, where she just stepped down after six years as chair of Committee AFF30 – Concrete Bridges.

Ray Plaut, emeritus professor, continues his research when not at his full-time voluntary job as a teacher's aide in a kindergarten class. During the past year, he published: "Stability of unbraced concrete beams on bearing pads with wind effect" (with **Cris Moen**), "Equilibria and instabilities of a Slinky: discrete model," "Formulas to determine fabric bending rigidity from simple tests," "Deformation and vibration of upright loops on a foundation and of hanging loops," "Adjacent equilibria in highly flexible upright loop on rigid foundation," "Falling vertical chain of oscillators, including collisions, damping, and pretensioning," "Snap-through of arches and buckled beams under unilateral displacement control," and "Head deflections during walking and running." The following papers have been accepted for publication: "Snap-through of shallow extensible arches under unilateral displacement control" and "Mathematical model of inchworm locomotion." The following paper will be submitted shortly for publication: "A new method for predicting critical speeds in rotordynamics."

Transportation Infrastructure and Systems Engineering Program

Kevin Heaslip is part of a research team to advance urban transportation needs.

The Transportation Infrastructure and Systems Engineering Program (TISE) had a very productive academic year. The group includes the National Surface Transportation Safety Center for Excellence and the Federal Aviation Administration National Center of Excellence for Aviation Research (NEXTOR). The TISE Program is comprised of 11 faculty members and 65 graduate students. The group has representation in both Blacksburg and the National Capital Region (NCR) campuses. Several of the TISE faculty members are affiliated with the Virginia Tech Transportation Institute (VTTI).

The following paragraphs illustrate salient accomplishments by faculty, research staff, and students in the TISE group.

Montasir Abbas, associate professor and TISE program coordinator, graduated one master's student and five Ph.D. students this year. Two started their own faculty careers as assistant professors. Abbas worked on seven research projects funded by Virginia Center for Transportation and Innovation Research (VCTIR), Mid-Atlantic Universities Transportation Center (MAUTC), MATS, and NSF, bringing three projects to completion. Abbas and his students developed and implemented two novel systems for enhancing safety at signalized intersections and improving traffic operation and reliability this year. With his group, he published six peer-reviewed journal papers and 10 peer-reviewed conference proceedings. He has also published one book chapter. He currently supervises five graduate students and serves on several Transportation Research Board (TRB) committees. Abbas was heavily involved with the Virginia Tech faculty senate this past year, contributing to its cabinet, the task force on university governance, and new curriculum reforms, and has been elected as the upcoming vice president of the senate.

Gerardo Flintsch, professor and director of VTTI's Center for Sustainable Transportation Infrastructure (CSTI), has built on the long term partnership with the Virginia Department of Transportation (VDOT) and VCTIR to initiate an accelerated pavement testing facility at VTTI, using a heavy vehicle simulator acquired by VDOT. He has received two federal contracts focused on increasing the safety of the nation's road infrastructure: the second phase of a project to help four state DOTs develop pavement friction management programs and to demonstrate continuous friction measurement equipment (CFME), and the National Cooperative Highway Research Program (NCHRP) Project 15-55, Guidance to Predict and Mitigate Dynamic Hydroplaning on Roadways. This year also marked the 10th anniversary of CSTI-led Pavement Surface Properties Consortium. Flintsch also organized the 9th International Conference on Managing Pavement Assets, in cooperation with Federal Highway Administration, VDOT, Transportation Research Board, and the American Association of State Highway and Transportation Officials (AASHTO), which brought more than 340 pavement management professionals from all over the world to Alexandria, Virginia.

During the past year, **Kathleen Hancock** began research on a unique dataset extracted from persistent wide-area airborne video provided by PVLabs. The data includes every vehicle track over two three-hour periods within a four-square-mile area in Hamilton, Ontario. Current research includes building an ontology that allows for the effective management and analysis of vehicle tracks and using the data to validate current microscopic car-following models. She is also continuing her work with the Virginia Division of Motor Vehicles to locate all crashes on all roads in Virginia and to use the located crash data to evaluate current safety initiatives and identify new opportunities to improve highway safety in the Commonwealth. She developed a new integrated undergraduate and graduate course in freight operations and planning and was awarded the University's XCaliber award for exceptional, high-caliber contributions to technology-enriched teaching and learning for her on-line course on geographic information systems applications in CEE.

Kevin Heaslip joined the TISE program in

Continued on next page

August 2014 in the NCR. He was also appointed to the research development team in the NCR vice president's office. Heaslip has been conducting research on automated vehicle security for the National Science Foundation and asset management work for the Utah Department of Transportation (UDOT). His research in automated vehicle security examines the safety and efficiency degradation due to adversarial attacks on vehicle platoons. His work for the UDOT on sign degradation and management is concluding. He is working to procure center level funding in the area of infrastructure systems resilience and is advising VDOT on its sign retroreflectivity measurement procedures. In partnership with **Kitty Hancock** and **Pam Murray-Tuite**, the transportation faculty in the NCR established the smart urban mobility laboratory to advance research in urban transportation.

Antoine Hobeika, professor, continued his research work in testing and improving various FHWA transportation planning software including TRANSIMS. He taught classes on transportation planning and land use and Intelligent Transportation Systems (ITS) and Introduction to Transportation Engineering.

Bryan Katz is continuing to serve as an assistant professor of practice after serving as an adjunct professor for the department since 2007. He teaches courses during the academic year and this past winter, taught a section of Introduction to Transportation Engineering as the department's first winter semester offering. He also teaches Geometric Design of Highways and Transportation Safety. He brings practical experience into the classroom through his position at toXcel where he serves as the vice president of engineering. He is an active member of the Virginia Section of the Institute of Transportation Engineers, serves as a peer reviewer for several journals, and he remains an active member of the National Committee on Uniform Traffic Control Devices, an organization that provides recommendations to the FHWA on changes to standards and guidance on traffic signs, pavement markings, and signals.

Pamela Murray-Tuite, associate professor, received funding from the VCTIR to study the transportation system impact of MeroRail's new Silver Line; from the National Institutes of Health to model socio-behavioral resilience during flu epidemics; from the Mid-Atlantic Transportation Sustainability Center to study coastal resilience; and from the Northern Virginia Transportation Commission to examine the ties between economic growth, transportation infrastructure, and congestion. She also continued her work on emergency vehicle to vehicle communication, funded by the Connected Vehicle/Infrastructure University Transportation Center, which involved conducting field studies with participating drivers. Murray-Tuite gave a keynote speech at the 3rd International Conference on Evacuation Modeling and Management. She is an associate editor for Transportation Research – Part C and continues to review papers for multiple journals and conferences. She is also a member of the Transportation Research Board's Transportation Network Modeling Committee and Emergency Evacuation Committee.

Hesham Rakha, together with researchers and students in the Center for Sustainable Mobility (CSM), worked on various national-level projects sponsored by the Federal Highway Administration, The Office of the Assistant Secretary for Research and Technology, the Federal Transit Association, VDOT, and the Washington, D.C. DOT. Rakha's group published one book chapter, 25 peer-reviewed journal publications, 15 peer-reviewed conference publications, and four reports, in addition to 30 conference presentations. Four of Rakha's master's students and one Ph.D. student graduated this year. He is currently advising/co-advising a total of 12 students at Virginia Tech. Rakha serves as an associate editor for the Institute of Electrical and Electronic Engineers' Transactions on Intelligent Transportation Systems, the Journal of Intelligent Transportation Systems, and is a member of the editorial board of the Transportation Letters: The International Journal of Transportation Research, and the IET Journal of Intelligent Transport Systems.

Samuel C. Tignor, adjunct professor, continued teaching the Highway Transportation Safety course. Besides teaching, he is active in the development and promotion of the Human Factors Guideline for Road Systems, NCHRP report 600, with emphasis on holistic determination of road user safety needs by having highway designers, planners, and traffic engineers serve as virtual road users during their project formulations. The application of the human factor guideline is facilitated by the use of a human factor interaction matrix (HFIM) which assesses the potential unsafe interaction between the infrastructure, vehicle, and road users. When unsafe interactions are found, solutions are developed and implemented by using the HFG, thus increasing road user safety. His students successfully used the HFIM methodology in the highway safety course. He is the chair of the TRB Joint Subcommittee AND10(2) "Human Factors Road Design Guides."

Antonio Trani, together with his associates and students were involved in four projects sponsored by the Federal Aviation Administration. Two of these projects include the development of a global oceanic model to predict cost-benefits of using advanced satellite-navigation and surveillance. Two other projects involve developing procedures to estimate the airport capacity improvements using new aircraft separation rules based on advanced wake vortex mitigation strategies and predicting benefits of reduced airspace separation in the Pacific Ocean for flights using the Pacific Organized Track system (PACOTS). Trani's group is also developing a global demand model for NASA headquarters. This model could help NASA to understand global implications of future demand patterns and provide guidance on the impact of aerospace technologies developed by NASA. The first application of such a model is to understand the market for an advanced hybrid turboprop-electric aircraft that can serve short haul markets of up to 500 miles.

Linbing Wang continued working on research in nanomechanics of structural materials, energy harvesting, and sensing technology. He guided five Ph.D. and two master's students to completion. The topics include: "Computational analysis of asphalt binder based on phase field method," "Quantification of aggregate morphological characteristics at multiple scales," "Digital mix design for performance optimization of asphalt mixture," "Characterization of high oorosity drainage layer materials for M-E pavement design," "Piezoelectric energy harvesting for public roadways," and "Multiscale modeling of friction mechanisms with hybrid methods." Wang also led a small Research Experience for Undergraduate program on digital mix design sponsored by NSF. He produced four technical reports of sponsored projects. Wang also served as an adjunct professor at the National Center for Materials Service Safety (NCMS) to establish a joint NCMS-Virginia Tech laboratory on accelerated pavement testing.

Geotechnical

continued from page 28

constitutive modeling of liquefiable soils, and the performance-based evaluation of liquefaction effects on structures. In the last year she and Ross W. Boulanger of the University of California at Davis released the third version of PM4Sand, a plasticity model for sands. Since January 2015, Ziotopoulou has been one of the predictors of the Liquefaction Experiments and Analysis Project (LEAP), an international collaboration between universities in the U.S., Japan, United Kingdom, Taiwan, and China to evaluate the capabilities of constitutive models for liquefaction problems. She presented her work at the annual meeting of the Eastern Section of the Seismological Society of America as well as the fifth International Conference on Computational Methods in Structural Dynamics and Earthquake Engineering. She also gave invited seminars at University of California at San Diego and North Carolina State University. Most recently, she was elected as an ASCE Excellence in Civil Engineering Education (ExCEEd) Fellow for 2015 and attended a week-long teaching training workshop at the Florida Gulf Coast University. She is currently continuing her work on the performance-based evaluation of liquefaction effects on shallow foundations and the validation of liquefaction modeling procedures against case histories and centrifuge test data.

Meet the Via Scholars

The following pages highlight some of the country's most exceptional students and alumni, the Via Scholars. The motivation and aspirations of this group reflect a profound curiosity and desire to improve the quality of life around the world — from helping municipalities manage growth, to the aesthetics of structures, the quality of water, and international development.

The Via scholarships are made possible through the generosity of the late Mrs. Marion Bradley Via of Roanoke, Virginia, and her family. In 1987, Mrs. Via contributed $5 million each to the Departments of Electrical and Computer Engineering and Civil and Environmental Engineering. Virginia Tech's Board of Visitors subsequently named the ECE department in honor of Mrs. Via's deceased father, Harry Lynde Bradley, and the CEE department in honor of her late husband, Charles E. Via., Jr. Mrs. Via died in 1993.

Both departments use a portion of the endowment to award scholarships to qualifying students. These scholarships are among the most competitive in the country. Since the Via endowment was created in 1987, the department has awarded more than $16 million in scholarships and fellowships.

VIA SCHOLARS: ***Masters***

Julia Baaklini

Hometown: Wayne, New Jersey

Location of Undergraduate Studies: The College of New Jersey

Awards/Recognitions: Graduated with highest GPA in civil engineering class, Dean's List, Tau Beta Pi Scholar, ASCE, EIT

Primary Area of Interest: Geotechnical

Outside Work Experience: Internship experience at Langan Engineering and Environmental Services working as a geotechnical and site/civil engineer

Career Goals: After graduating with a master's degree in geotechnical engineering, I plan to obtain my professional engineering license and work at an innovative consulting firm in the field of geotechnical engineering.

Elizabeth Bales

Hometown: Gillette, Wyoming

Location of Undergraduate Studies: University of Wyoming

Awards/Recognitions: Graduated Magna Cum Laude; Engineer in Training; member of Tau Beta Pi, Outstanding Member TBP WY A Chapter, 2014; Outstanding Student Engineer of the Year 2014, Wyoming Engineering Society; Wyoming EPSCoR Undergraduate Research Fellow 2014

Primary Area of Interest: Structures

Outside Work Experience: HVAC design internship with AE Associates, Greeley, Colorado; teaching assistant for engineering summer program at the University of Wyoming; surveying internship with KLJ, Gillette, Wyoming

Career Goals: After completing my master's degree, I hope to work in the integration of structural systems and efficient building materials. I would like to combine my knowledge and understanding of passive building systems and structural integrities to optimize building materials. I plan on obtaining my Professional Engineering license and LEED certification.

Thomas Barham

Hometown: Middleburg, Virginia

Location of Undergraduate Studies: George Mason University

Awards/Recognitions: George Mason University's Undergraduate Research Scholars Program (URSP); Graduated Summa Cum Laude

Primary Area of Interest: Geotechnical

Outside Work Experience: Internships with the Virginia Department of Transportation's Materials division and GeoStructures Inc., a ground improvement company

Career Goals: I want to publish papers while pursuing my graduate degree. I then plan to go on to work in the field, attain a P.E. license, and participate in professional societies. At the end of my career I want to return to school to teach as an Adjunct Professor, as they have had a profound influence on my studies.

Ryan Paul Bender

Hometown: Hazlet, New Jersey

Location of Undergraduate Studies: Worcester Polytechnic Institute

Awards/Recognitions: Graduated with High Distinction, WPI Class of 2014; 3rd Place, FAA Design Competition, Airport Operation and Maintenance Category (2014); Salisbury Prize, WPI (2014); Honorable Mention, ASEE Zone 1 Conference Undergraduate Poster Competition (2014); Member of Tau Beta Pi and Chi Epsilon (2013); Charles O. Thompson Scholar (2011); Sandra M. Glazier Memorial Scholar (2010)

Primary Area of Interest: Environmental and Water Resources

Outside Work Experience: Stormwater Testing Intern at Alden Research Laboratories (2014); Seasonal Park Ranger, Holmdel Park, Holmdel, New Jersey (2010-2013); Student Representative, Brookdale Water Pollution Control Program, Lincroft, New Jersey (2009-2010)

Career Goals: I plan to obtain my master's degree and then begin work in a practice where I can gain experience towards meeting P.E. licensure requirements. My goal is to use my knowledge of water resources engineering and other civil engineering disciplines to practice sustainable watershed management and stormwater design.

Matthew Blair

Hometown: Clear Spring, Maryland

Location of Undergraduate Studies: Mississippi State University

Awards/Recognitions: Mississippi State University Presidential Scholar; Graduated Summa Cum Laude with a 4.0 GPA; Goldwater National Research Scholarship Honorable Mention; John E. Pearson Prize in Civil Engineering; Spirit of State Honorary; Mississippi Engineering Society's Outstanding Engineering Senior; Tau Beta Pi; Chi Epsilon; Phi Kappa Phi; Bagley College of Engineering Outstanding Undergraduate Researcher of the Year; Bagley College of Engineering Publication Award; MSU's internal Rhodes Nominee

Primary Area of Interest: Environmental and Water Resources

Outside Work Experience: ReNUWIt National REU program researcher: UC Berkeley; MSU's Engineers without Borders expedition member: Zambia; Undergraduate Researcher at MSU: six semesters.

Career Goals: I plan on completing my masters, focusing on water and energy sustainability, before transitioning into industry work or continuing on to my Ph.D. Ultimately, I hope to work in both industry and academic settings while eventually giving back to my profession through teaching.

Ayrton Alexander Bryan

Hometown: Atlanta, Georgia

Location of Undergraduate Studies: Texas A&M University

Awards/Recognitions: National Merit Scholar; National Oceanic & Atmospheric Administration Hollings Scholar; graduated magna cum laude; Texas A & M University Scholar; President's Endowed Scholar; Geosciences Outstanding Student Award 2014

Primary Area of Interest: Environmental and Water Resources

Outside Work Experience: Advanced Structures and Composites Center (Summer 2012); Klotz Associates-Public Works (Summer 2013); Walter P. Moore-Hydraulics and Hydrology (Summer 2014)

Career Goals: I want to work in project management for energy projects and the water systems they require. I also want to work to make engineering education more appealing to children.

VIA SCHOLARS: ***Masters***

W. Lake Carter

Hometown: Newport News, Virginia

Location of Undergraduate Studies: Virginia Tech

Awards/Recognitions: Graduated Summa Cum Laude; Dean's list all eight semesters; recipient of Lingerfelt Family Foundation Scholarship (2011-2012), Vecellio Scholarship (2010-2011), V.C. & J.N. Williamson Scholarship (2009-2010)

Primary Area of Interest: Geotechnical

Outside Work Experience: Summer internship with Geopier Foundation Company; internship with U.S. Army Corps of Engineers

Career Goals: I want to obtain my master's degree and subsequently pursue a career as a licensed professional engineer. I hope to contribute my knowledge and experience to the innovation of the geotechnical industry.

Thomas C. Dacanay

Hometown: Sterling, Virginia

Location of Undergraduate Studies: Virginia Tech

Awards/Recognitions: Graduated Summa Cum Laude; Dean's List, all semesters; Engineer-In-Training Certification; member of Chi Epsilon, Theta Tau and ASCE; Virginia Concrete Scholarship

Primary Area of Interest: Structures

Outside Work Experience: Structural engineering internship at Wiss, Janney, Elstner Associates, Inc. during the summer of 2014; undergraduate research at Virginia Tech during fall 2013 and spring 2014; technical internship at The MITRE Corporation from summer 2010 to winter 2013

Career Goals: Following completion of my master's degree, I plan to work for a structural forensics firm where I can obtain my professional engineer's license while solving challenging and complex problems. It is my goal to shape the future and push the envelope of structural engineering by using knowledge from different fields.

Paige Emanivong

Hometown: Arlington, Virginia

Location of Undergraduate Studies: Virginia Tech

Awards/Recognitions: Graduated Magna Cum Laude, New Horizons Scholar, member of Tau Beta Pi, Vecellio Scholar

Primary Area of Interest: Construction

Outside Work Experience: Internship with Federal Highways, undergraduate research assistant in the Civil Engineering Network Dynamics lab

Career Goals: After I complete my Master's degree in civil infrastructure engineering, I plan to gain experience in the industry then take my talents to developing countries to improve their infrastructural systems.

Fred T. Falcone

Hometown: Pembroke, Massachusetts

Location of Undergraduate Studies: Wentworth Institute of Technology

Awards/Recognitions: President's Award for Academic Excellence and Involvement in Civil Engineering; Wentworth Alumni Award in Civil Engineering; member of Tau Alpha Pi

Primary Area of Interest: Geotechnical

Outside Work Experience: Building technology co-op at Gale Associates; civil engineering co-op at Gale Associates; assistant project manager at Fred Falcone Roofing and Property Services

Career Goals: After graduating with a master's degree in geotechnical engineering I plan to obtain my professional engineering license while working for a geotechnical engineering firm. I would like to work on large geotechnical projects around the county, or even around the world. I may also one day pursue a Ph.D. in geotechnical engineering to hopefully work as a professor.

Samuel Ferrara

Hometown: Alexandria, Virginia

Location of Undergraduate Studies: Virginia Tech

Awards/Recognitions: Engineer In Training (EIT); Vecellio Scholar (2014-2015); Graduated Summa Cum Laude with a BS in Civil Engineering at Virginia Tech; CEE Department's Outstanding Senior

Primary Area of Interest: Construction

Outside Work Experience: Intern at The Architect of the Capitol (Washington, D.C.); Intern Assistant Engineer at Patner Construction Inc. (Fairfax, Virginia); Junior Project Engineer at Grunley Construction Inc. (Rockville, Maryland); Junior Field Engineer at Grunley Construction Inc. (Rockville, Maryland)

Career Goals: Upon my graduation from the CEM Master's program, I plan to work for a general contractor in a large city. I hope to eventually become a project manager for the construction of high-rise buildings. From a young age, vertical construction has always fascinated me. I look forward to building the skylines of tomorrow.

Chloe Greenberg

Hometown: Fairfax, Virginia

Location of Undergraduate Studies: Washington University in St. Louis

Awards/Recognitions: Tau Beta Pi – inducted into national engineering honor society, December 2012; Dean's List – achieved semester GPA of 3.5 or higher for all semesters at Washington University in St. Louis, 2009-2013; Mesmer Scholarship – awarded by Washington University for High School academic achievement, 2009-2013; Charles E. Griffin Physics and Engineering Scholarship – awarded by W.T. Woodson High, 2009

Primary Area of Interest: Environmental and Water Resources

Outside Work Experience: Tighe & Bond, Westfield, Massachusetts, Water and Wastewater practice group, staff engineer, September 2013 – January 2015; Tetra Tech, Fairfax, Virginia, Water Resources division, intern and tech services employee, Summer 2012-Summer 2013; Penn State Entomology Lab, State College, Pennsylvania, Research Assistant, Barbercheck Lab, Summer 2011; EMO Energy Solutions, Fairfax, Virginia, Intern, Summer 2010

Career Goals: To be determined!

VIA SCHOLARS: ***Masters***

Isaac Groshek

Hometown: Stevens Point, Wisconsin

Location of Undergraduate Studies: University of Wisconsin-Madison

Awards/Recognitions: Graduated first in class; Dean's List all nine semesters; Three-time recipient of John J. Reinhardt Memorial Scholarship; Department of Civil & Environmental Engineering Scholarship; ASCFCME Council 40 Scholarship; WTBA Scholarship; Thomas A. & Justine A. Rowley Scholarship; Wisconsin Academic Excellence Scholarship

Primary Area of Interest: Structures

Outside Work Experience: Structural Design Engineer I, AECOM; Civil Engineering Intern & Coop, AECOM

Career Goals: I aspire to work as a professional engineer within the field of structural engineering as a specialist in bridge design and analysis. Throughout my career I hope to serve as a leader within the industry for new and innovative ways to design and construct bridges with minimized impact on the public and environment.

Alexander Kormanos

Hometown: Nashua, New Hampshire

Location of Undergraduate Studies: Norwich University

Awards/Recognitions: New Hampshire licensed Professional Engineer, graduated Summa Cum Laude with honors, Dean's List all semesters, Tau Beta Pi Engineering Honor Society, Chi Epsilon Honor Society

Primary Area of Interest: Geotechnical

Outside Work Experience: U.S. Naval Officer in the Civil Engineer Corps with seven years of contingency engineering and construction management experience; served as a construction engineer in Nuristan, Afghanistan on provincial reconstruction operations and was selected as detail officer in charge of 25 sailors for a three month deployment to Tema, Ghana to construct an operations center for a multi-national exercise; lived and worked in Naples, Italy for my final tour of duty

Career Goals: I hope to obtain both a master's degree and a Ph.D. in geotechnical engineering and then apply those skills as a consultant on international projects. I would really welcome the challenge of living overseas again to work across multiple languages and cultures. Afterwards, I would like to return to academia to influence the next generation of engineers.

Christine Pankow

Hometown: Flint Hill, Virginia

Location of Undergraduate Studies: Virginia Tech

Awards/Recognitions: Graduated Summa Cum Laude; Dean's list all semesters; NOAA Ernest F. Hollings Scholarship; University Honors Robert A. Belz Scholarship; Cyrus H. McCormick Scholarship; Honor Society of Phi Kappa Phi Undergraduate Student Vice-President

Primary Area of Interest: Environmental and Water Resources

Outside Work Experience: NOAA North East Fisheries Science Center Marine Laboratory intern, Smithsonian Conservation Biology Institute's endocrine research laboratory intern, Virginia Tech undergraduate research assistant

Career Goals: After graduation, I hope to either pursue a Ph.D. in environmental engineering or a research career.

Gage Pepin

Hometown: Camano Island, Washington

Location of Undergraduate Studies: Washington State University

Awards/Recognitions: Graduated Summa Cum Laude; College of Engineering & Architecture Ceremonial Gonfalon Bearer, 2013 commencement; WSU College of Engineering & Architecture Outstanding Sophomore, Junior, and Senior Awards; Washington State Opportunity Scholarship; Robert F. Mast Civil Engineering Scholarship; Boeing Scholars Award; Keith Lamb Scholarship; President's Honor Roll, all semesters; University Achievement Award, as freshman and sophomore; 2013 WSU International Business Plan Competition, third place

Primary Area of Interest: Structures

Outside Work Experience: Structural Engineering Intern – PCS Structural Solutions; Structural Engineering Intern – BergerABAM; Value Engineering Intern – The Boeing Company

Career Goals: After receiving my master's degree from Virginia Tech, I plan to begin working for a structural engineering design firm. I will work towards obtaining my Professional Engineering License, and ultimately my structural engineering license. Though I am not particularly picky about the work I will be doing – nor even the firm I will be working for – it is very important to me that I work on innovative projects. I am eager to be at the forefront of advancing the structural engineering profession, and am excited for Virginia Tech to provide me with the tools and skills to do so.

James Reilly

Hometown: Morganville, New Jersey

Location of Undergraduate Studies: The College of New Jersey

Awards/Recognitions: Graduated Summa Cum Laude; Engineer in Training; member of Tau Beta Pi; Dean's List

Primary Area of Interest: Structures

Outside Work Experience: Woodward Construction Company, Matawan, New Jersey; Structural Engineering internship at HNTB Corporation, Newark, New Jersey; Geotechnical Engineering internship at HNTB Corporation, Parsippany, New Jersey

Career Goals: After completing my master's degree, I would like to work for a structural engineering design firm and obtain my professional engineering license.

Gordon Stone

Hometown: Edina, Minnesota

Location of Undergraduate Studies: University of Illinois at Champaign-Urbana

Awards/Recognitions: Graduated with honors; five time Dean's list recipient; James Scholar; Engineer in Training; minor in German

Primary Area of Interest: Geotechnical

Outside Work Experience: Worked for Clark Construction as project engineer Intern in Washington, D.C.; undergraduate researcher under Cassandra Rutherford at the University of Illinois; research assistant at the Technical University of Darmstadt, Germany

Career Goals: After completing my master's degree, I plan on working for a geotechnical design firm and will work towards becoming a Professional Engineer. After gaining some work experience, I plan on moving to Germany and working for a geotechnical engineering firm there.

VIA SCHOLARS: ***Masters***

Laurel Strom

Hometown: Arlington, Washington

Location of Undergraduate Studies: Washington State University

Awards/Recognitions: Graduated Magna Cum Laude (2014); Washington State Regents Scholar (2010-2014); Goldwater Scholarship National Finalist (2013); Outstanding Senior, Department of Civil & Environmental Engineering (2014); President's Honor Roll, all semesters; Member Tau Beta Pi Honors Society; Washington State University Honors College Graduate; Auvil Undergraduate Scholar Fellow (2012-2013); College of Engineering Scholarship (2010-2014); University Achievement Scholarship (2012) Engineer-in-Training

Primary Area of Interest: Environmental and Water Resources

*Outside Work Experience: T*acoma Water, Water Quality Intern (2013, 2014); Student Research Assistant, Washington State University Laboratory of Atmospheric Research (LAR) (2011-2014); Regional Approaches to Climate Change (REAACH) Student Intern (Summer, 2012); Stormwater Intern, Washington State University (2015)

Career Goals: Following my graduate studies I plan to pursue a career in environmental engineering particularly in relation to water quality in drinking water. I will work towards my Professional Engineering License and hope to continually be at the forefront of drinking water design technologies. My ultimate goal is to be an environmental engineering consultant on advanced projects where I will have the opportunity to be innovative and use the education I have gained to advance the world of environmental engineering.

Trevor Szabo

Hometown: Branchburg, New Jersey

Location of Undergraduate Studies: Pennsylvania State University

Awards/Recognitions: Graduated with high distinction; Dean's List every semester; The President's Freshman Award; Engineer In Training

Primary Area of Interest: Structures

Outside Work Experience: Undergraduate research assistant at Pennsylvania State

Career Goals: After obtaining my master's degree, I plan on working for a structural design firm. My goal is to become a licensed professional engineer. However, I am considering remaining in academia and obtaining a Ph.D.

Haseeb Tahir

Hometown: Christiansburg, Virginia

Location of Undergraduate Studies: Virginia Tech

Awards/Recognitions: Graduated Summa Cum Laude; Dean's List all semesters; Dewberry Scholarship; Class of '58 Scholarship

Primary Area of Interest: Structures

Outside Work Experience: Intern as Construction Inspector at ECS, Roanoke, Virginia.

Career Goals: I plan to work for a structural design firm upon completion of my master's degree. My goal is to obtain my Professional Engineer and Structural Engineer license so I can design earthquake resistant and sustainable buildings economically.

John C. Ward III

Hometown: Buckhannon, West Virginia

Location of Undergraduate Studies: University of Virginia

Awards/Recognitions: Graduated UVA with highest distinction (2012), William J. Thompson Award (2012), Louis T. Rader Civil Engineering Award (2012), Clark Construction Scholarship (2010-2012), Alwyn C. Lapsley Endowed Scholarship (2011-2012), Dean's List (2008-2012), Eagle Scout (2006)

Primary Area of Interest: Structures

Outside Work Experience: Two internships with WVDOH, construction management internship with Jacobs, two years in structural engineering with Jacobs Global Buildings Design

Career Goals: I want to enhance my knowledge of structural engineering through the completion of my master's degree, and then enter the workforce to pursue a job in structural design and consulting. I will work to obtain my Professional Engineer license while helping to create long lasting, maintenance friendly, and intriguing structures.

Robert K. Williams

Hometown: Richmond, Virginia

Location of Undergraduate Studies: George Mason University

Awards/Recognitions: Graduated Summa Cum Laude, Dean's list all semesters, graduated with the highest GPA in civil engineering class, Civil Engineering Institute Scholar, member of Chi Epsilon, member of ASCE, member of GMU Engineers for International Development

Primary Area of Interest: Environmental and Water Resources (especially water and wastewater quality)

Outside Work Experience: Worked with GMU Engineers for International Development on various water projects in Peru; private tutor in AutoCAD

Career Goals: After graduating I plan to pursue my professional engineering licensure. I also plan to seek employment at an environmental engineering firm that does work abroad so that I may help bring clean water to developing countries.

Samson Zhilyaev

Hometown: Ludlow, Massachusetts

Location of Undergraduate Studies: University of Massachusetts, Amherst

Awards/Recognitions: Mensa Scholarship, MALCSE Scholarship, graduated Summa Cum Laude, Dean's list recognition all semesters, Simon & Satenig Ermonian Memorial Scholarship, Hendrickson Scholarship for Civil and Environmental Engineering

Primary Area of Interest: Environmental and Water Resources

Outside Work Experience: Land surveyor and inspector at MassDOT; field crew member and research assistant at UMassSAFE; climate change modeling and programming during a research position at UMass

Career Goals: My short term goal is to complete my graduate education, ultimately leaving with a Ph.D. After and during which I hope to become involved in new technologies and research relating to my work. I wish to be on the leading edge of the field, either in the research of new solutions to our growing environmental problems, or in the implementation of these emerging methods.

VIA SCHOLARS: ***Doctoral***

Marcus F. Aguilar

Hometown: Houston, Texas

Location of Undergraduate Studies: University of Alabama

Awards/Recognitions: Environmental and Water Resources Institute/Coasts Oceans Ports and Rivers Institute at Virginia Tech, president (2012), treasurer (2011); recipient, Brian Bluhm Fellowship (2011)

Primary Area of Interest: Environmental and Water Resources

Outside Work Experience: Three years of summer internship experience with AECOM Water; 1.5 years EIT experience at AECOM Water

Career Goals: I plan to use my experience in research for innovation in the management of non-point source pollution and surface water hydrology. Pursuant with this goal is the notion of improved quality of life as a result of well-managed water. Since water is at the nexus of other natural resources (i.e. food, energy), I hope to extend my abilities into other, more diverse disciplines.

G. Allen Bowers, Jr.

Hometown: Woodstock, Virginia

Academic Level: Ph.D.

Location of Undergraduate Studies: Virginia Tech

Location of Master's Studies: Virginia Tech

Awards/Recognitions: College of Engineering Paul E. Torgersen Graduate Research Excellence Award, First Place (2015); National Science Foundation Graduate Research Fellowship; President, VT Geotechnical Student Organization (2014); Public Relations Chair, Student Leadership Council of the Geo-Institute (2014); VT College of Engineering First in Class (2012); Civil Engineering Outstanding Senior (2012); Civil Engineering Valedictorian (2012)

Primary Area of Interest: Geotechnical

Outside Work Experience: Research assistant working on integrating geothermal energy and deep foundations supported by the NSF, REHAU, Berkel, and the Deep Foundations Institute.

Career Goals: Upon graduation I hope to enter practice and obtain my P.E. I have a passion for interdisciplinary work, especially in developing sustainable and economic infrastructure systems that can be used in developing nations. I dream of touching lives through my engineering work. Ultimately, my desire is to use my education to glorify God and serve others as a missionary, practicing engineer, and/or an academic professor.

Emily D. Garner

Hometown: Swanton, Maryland

Location of Undergraduate Studies: West Virginia University

Awards/Recognitions: National Science Foundation Graduate Research Fellowship; Summa Cum Laude graduate of WVU; WVU Foundation Outstanding Senior

Primary Area of Interest: Environmental and Water Resources

Outside Work Experience: Undergraduate research intern at West Virginia University; engineering intern, City of Morgantown, West Virginia; intern, Highland Engineering & Surveying, Inc., Oakland, Maryland

Career Goals: Upon completion of my degree, I would like to use my acquired knowledge and skills in environmental engineering applications to pursue research opportunities either in academia or industry.

Kathryn A. Gunberg

Hometown: Ada, Michigan

Location of Undergraduate Studies: University of Michigan

Location of Master's Studies: University of Michigan

Awards/Recognitions: Chi Epsilon, F.E. Richart Fellowship, UM; Greene Fellowship, UM.

Primary Area of Interest: Geotechnical

Outside Work Experience: Soils & Structures, Inc.; City of Ann Arbor

Career Goals: Whether in academia or industry, I hope to teach others about geotechnical engineering and to continue to broaden my knowledge and experience in the field.

Ardalan Khosrowpour

Hometown: Shiraz, Iran

Location of Undergraduate Studies: Shiraz University, Shiraz, Iran

Location of Master's Studies: University of Illinois at Urbana-Champaign

Awards/Recognitions: Myers-Lawson School of Construction Ph.D. Fellowship award, the Myers-Lawson School of Construction at Virginia Tech; honored student of the council of "Shiraz University Gifted Students," Shiraz University

Primary Area of Interest: Construction

Outside Work Experience: I worked part-time as an interior designer in Trahan Atiyesaz Pars Pouya during my undergraduate studies; worked as an assistant project manager in Shayan Fars Inc. for project planning and controlling of Shiraz Especial Economic Zone (SEEZ) phase 1

Career Goals: My ultimate goal is to create smart software which could facilitate building-occupants interaction and be able to analyze the big data collected through an enormous network of sensors deployed in the next generation of buildings. Furthermore, this software could help building occupants not only save energy, but also be comfortable and productive. I plan to approach this problem through an artificial intelligence-based method where learning occupants' behavior and monitoring their ambient condition will identify and sustain the optimum point in an energy-comfort-productivity tradeoff.

Brett Maurer

Hometown: Geneva, New York

Location of Undergraduate Studies: Syracuse University

Location of Master's Studies: Syracuse University

Awards/Recognitions: EERI/FEMA NEHRP Fellow in Earthquake Hazard Reduction; NSF EAPSI Fellow; ADSC Industry Advancement Scholar; Best Graduate Student Paper, EERI; Best Graduate Student Presentation, SSA Eastern Meeting; 1st Place Posters, 2013 and 2014 ASCE Geo-Congress National Poster Competitions; Outstanding Teaching Assistant Award; Most Outstanding Graduate Student in Civil and Environmental Engineering; SU Chancellors Scholar; 1st Place Poster, Nunan Poster Symposium; SU Golden Transit Award; Summa Cum Laude graduate; Chi Epsilon; Tau Beta Pi

Primary Area of Interest: Geotechnical

Outside Work Experience: Staff geotechnical engineer, Parsons Brinckerhoff, Inc. New York, New York; intern at Appledore Engineering, Inc. Portsmouth, New Hampshire; lab assistant at the University of New Hampshire.

Career Goals: I would like to continue to be active in academia as a researcher, educator, and mentor. I am particularly interested in addressing emerging geotechnical issues pertaining to seismicity, energy, and the environment.

VIA SCHOLARS: ***Doctoral***

Ross McCarthy

Hometown: Corsicana, Texas

Location of Undergraduate Studies: Virginia Tech

Location of Master's Studies: Virginia Tech

Awards/Recognitions: Among top five presenters at the 11th Annual Inter-University Symposium on Infrastructure Management (AISIM 11) held May 22, 2015; awarded guaranteed presenter for a poster board-session at the 2016 Transportation Research Board Conference in Washington, D.C.

Primary Area of Interest: Transportation and Infrastructure Systems

Outside Work Experience: None as of yet for my profession, other than my Virginia Tech Masters Graduate Research Assistantship

Career Goals: Working for government or private industry, in managing infrastructure assets, with a specific interest in the field of safety.

Maria E. Nieves-Meléndez

Hometown: Arecibo, Puerto Rico

Location of Undergraduate Studies: University of Puerto Rico, Mayagüez

Location of Master's Studies: University of Puerto Rico, Mayagüez

Awards/Recognitions: Graduated Magna Cum Laude; recipient of the Etienne Totti Graduation Award in 2012 (most outstanding student of the civil engineering department); member of Tau Beta Pi

Primary Area of Interest: Construction

Outside Work Experience: Worked as summer intern in the Boeing Company, Everett, Washington, (2009); participant of the Summer Undergraduate Research in Engineering/Science (SURE) Program in Georgia Tech, Atlanta, Georgia, (2011); worked for private contractor Nieves & Nieves, Inc., Lares, Puerto Rico (2013); research assistant in the University of Puerto Rico, Mayagüez

Career Goals: I wish to become a professional engineer and work in challenging engineering projects. After gaining practical experience, I would like to become a college professor to teach and inspire young generations in their development as engineers.

Adam Phillips

Hometown: Chesapeake, Virginia

Location of Undergraduate Studies: Virginia Tech

Location of Master's Studies: Virginia Tech

Awards/Recognitions: O.H. Ammann Fellowship, Virginias-Carolinas Structural Steel Fabricators Association Scholarship, Garst-Walker Academic Scholarship, graduated Magna Cum Laude

Primary Area of Interest: Structures

Outside Work Experience: Intern with Retanaur Design Associates, 2007 & 2008; intern with Waterway Surveys & Engineering, 2009; intern with Collins Engineers Inc., 2010, 2011, and 2012

Career Goals: I plan to become a tenure-track faculty member at a research institution. My primary research interests are large-scale experimentation of structures and the development of economical earthquake engineering solutions. Additionally, I hope to be a good educator and a successful mentor to my future students.

Alex Reeb

Hometown: North Wales, Pennsylvania

Location of Undergraduate Studies: University of Rhode Island

Location of Master's Studies: Virginia Tech

Primary Area of Interest: Geotechnical

Awards/Recognitions: NSF EIGER Fellowship, September 2011 - June 2012; Volunteer leader for Teach for Jamie (after school German instruction at local elementary schools), September 2010 - May 2011; M.S. Via Fellowship, January 2010 - May 2011; Member/officer of Virginia Tech GSO (Geotechnical Student Organization), January 2010 – present; DAAD (German Academic Exchange Services) Scholarship for study and internship in Germany, September 2008 - July 2009; URI Centennial Scholarship, September 2005 - December 2009; Member of Chi Epsilon, Tau Beta Pi national engineering honor society, Theta Tau professional engineering fraternity, American Society of Civil Engineers - Geo-Institute

Outside Work Experience: Private Consulting, June 2011 – present; Ed. Züblin AG, March 2009 - August 2009; Institute für Grund und Bodenmechanik, November 2008 - February 2009; Schnabel Engineering, May 2008 - August 2008; U.S. Army Evaluation Center, December 2006 - January 2007; May 2007 - August 2007

Career Goals: Accepted a position with Golder Associates in Brisbane, Australia as a Geotechnical Engineer, commencing in January 2016.

William Joseph Rhoads

Hometown: Joplin, Missouri

Location of Undergraduate Studies: Purdue University

Awards/Recognitions: Undergraduate University Honors; Undergraduate Civil Engineering Honors; Dean's list, all semesters at Purdue; president of the Virginia section of the American Water Works Association at Virginia Tech

Primary Area of Interest: Environmental and Water Resources

Outside Work Experience: Undergraduate research on green roofs; intern at Olsson Associates in Joplin, Missouri; civil engineering ambassador at Purdue University

Career Goals: After earning my doctorate, I would like to gain practical experience before pursuing my desire to teach at the college level.

Colin Richards

Hometown: Tucson, Arizona

Location of Undergraduate Studies: University of Arizona

Awards/Recognitions: Arizona Board of Regents High Honors Endorsement Award, Dean's list every semester, award for best chemical engineering senior design project, Tau Beta Pi

Primary Area of Interest: Environmental and Water Resources

Outside Work Experience: Undergraduate research assistant at the University of Arizona on contaminants of emerging concern; Advanced Functional Membranes REU at Clemson University; Center for Energy and Sustainability REU at Cal State - Los Angeles

Career Goals: I plan to pursue a career at a national research institution or as a consultant in the field of potable water or wastewater treatment.

VIA SCHOLARS: ***Doctoral***

Craig M. Shillaber

Hometown: Deerfield, New Hampshire

Location of Undergraduate Studies: University of New Hampshire

Location of Master's Studies: Virginia Tech

Awards/Recognitions: Virginia Tech ICTAS Doctoral Scholar; Graduated Summa Cum Laude from the University of New Hampshire; University of New Hampshire Civil Engineering Graduate Achievement Award; University of New Hampshire Presidential Scholar; Tau Beta Pi

Primary Area of Interest: Geotechnical

Outside Work Experience: Staff geotechnical engineer, Parsons Brinckerhoff, Inc. New York, New York; intern at Appledore Engineering, Inc. Portsmouth, New Hampshire; lab assistant at the University of New Hampshire.

Career Goals: After completing my doctorate, I plan to pursue a career in academia where I hope to continue conducting research regarding the incorporation of sustainable development principles into geotechnical design and education, as well as educate and mentor upcoming generations of civil engineers.

Stephanie Smallegan

Hometown: Savannah, Georgia

Location of Undergraduate Studies: Undergraduate: Georgia Tech, Savannah campus

Location of Master's Studies: Georgia Tech, Savannah campus

Awards/Recognitions: Virginia Sea Grant Graduate Research Fellow, NSF Graduate Research Fellowship Program (GRFP) Fellow, NSF Research Experience for Undergraduates (REU) program graduate mentor, CREATE program graduate mentor, Summa Cum Laude graduate, member of Tau Beta Pi, ASCE, and SAME

Primary Area of Interest: Environmental and Water Resources

Outside Work Experience: Led teams of students in research projects involving renewable tidal energy, heavy metals assessment, and hydrodynamic measurements using remote sensing and in situ instrumentation

Career Goals: I want to continue developing as an independent and successful researcher and teacher in the field of coastal engineering.

Kristin Ulmer

Hometown: Corvallis, Oregon

Location of Undergraduate Studies: Brigham Young University-Provo

Location of Master's Studies: Brigham Young University-Provo

Awards/Recognitions: Graduated Magna Cum Laude; Heritage Scholarship Recipient; Tau Beta Pi Scholar; ASCE

Primary Area of Interest: Geotechnical

Outside Work Experience: Part-time employment with Kleinfelder, Salt Lake City, Utah

Career Goals: After completing my Ph.D., I plan to become a university professor so I can perform research in the field I love as well as encourage students to become excellent civil engineers.

VIA ALUMNI: *Where Are They Now?*

UNDERGRADUATES

Suzanne Ayres Angelo
Year Graduated: 2003; Master's 2006, Virginia Tech
Employer: Unknown

Doran J. Bosso
Year Graduated: 2006; Master's 2008, Virginia Tech
Employer: Skanska Infrastructure Development, Alexandria, Virginia

Chris English
Year Graduated: 1994; Master's 1996, University of Illinois, Urbana
Employer: CH2M Hill, St. Louis, Missouri

Brian P. Felker
Year Graduated: 2001
Current Status: Unknown

Kathryn Firich
Year Graduated: 2007
Employer: Brown and Caldwell, Alexandria, Virginia

R. Andrew Goodwin
Year Graduated: 1996
Current Status: U.S. Army Engineer Research and Development, Portland, Oregon

Chris Kaldahl
Year Graduated: 1995
Employer: Appalachian Mountain Club, Gorham, New Hampshire

Clint Martin
Year Graduated: 2015
Current Status: Pursuing a graduate degree at Virginia Tech

Stephen O. Meininger
Year Graduated: 1991
Employer: CH2M Hill - OMI, Clarksville, Maryland

Joshua Mouras
Year Graduated: 2006
Employer: Magnusson Klemencic Associates, Seattle, Washington

Joseph Schmitt
Year Graduated: 2001
Employer: Unknown

Paul Taylor
Year Graduated: 2004
Employer: ExxonMobil, Houston, Texas

Henry J. Theiss
Year Graduated: 1994
Employer: Unknown

Jennifer Verwest
Year Graduated: 2001
Current Status: Pursuing a graduate degree at Texas A&M University, College Station, Texas

Elliott Robert Wheeler
Year Graduated: 1996
Employer: Operations Management International, Inc., Englewood, Colorado

Ryan Willey
Year Graduated: 2000
Employer: Pathway California

The following students also received their undergraduate degrees while on a Via Scholarship and elected to pursue their master's degrees at Virginia Tech, also as Via Scholarship recipients. Their complete listings can be found in the alumni student section of this publication. These students are: **Randall Boe, William Scott Dewhirst, II, Charles M. Dietz, Jr., Greg Hensley, Peter D. Kauffmann, Jeffrey Kuttesch, Matthew Moore, John D. Riley, John Stephen Siczka, Jeffrey Snow, Marcia Votour Prowell, and Claire McKenzie White**.

GRADUATES

CONSTRUCTION

Frank Arcuri
Year Graduated: 2007
Degree Awarded: Master's
Employer: Fluor Corporation, New York, New York

Mary Jane Contos Bartlett
Year Graduated: 1992
Degree Awarded: Master's
Employer: O'Brien & Gere Engineering, Morrisville, North Carolina

Janet Sparks Chandler
Year Graduated: 2000
Degree Awarded: Master's
Current Status: Full-time mother

Allan D. Chasey
Year Graduated: 1995
Degree Awarded: Ph.D.
Employer: Del E. Webb School of Construction, Arizona State University, Tempe, Arizona

Kirsten Davis
Year Graduated: 2004
Degree Awarded: Ph.D.
Employer: Boise State University, Boise, Idaho

Martha Gross
Year Graduated: 2010
Degree Awarded: Ph.D.
Employer: Arup Infrastructure, Tarrytown, New York

Rimas Gulbinas
Year Graduated: 2014
Degree Awarded: Ph.D.
Employer: Cornell University, New York City, New York

Shannon P. Hapuarachy
Year Graduated: 2009
Degree Awarded: Master's
Employer: S.M.H. Construction, Bradley, West Virginia

Benjamin Hays
Year Graduated: 2002
Degree Awarded: Master's
Employer: L.A. Dept. of Public Works, Los Angeles, California

John Hildreth
Year Graduated: 2003
Degree Awarded: Ph.D.
Employer: University of North Carolina, Charlotte, North Carolina

Angel Ho
Year Graduated: 1993
Degree Awarded: Master's
Employer: Norfolk Naval Shipyard, Portsmouth, Virginia

Jennifer Firman McConnell
Year Graduated: 2002
Degree Awarded: Master's
Employer: Schoor DePalma, Kulpsville, Pennsylvania

Joshua P. Middleton
Year Graduated: 2004
Degree Awarded: Master's
Employer: American Infrastructure, Worcester, Pennsylvania

Francis Pesce
Year Graduated: 2012
Degree Awarded: Master's
Employer: Ulliman Schutte Construction, Roanoke, Virginia

VIA ALUMNI: *Where Are They Now?*

Juan C. Piñero
Year Graduated: 2004
Degree Awarded: Ph.D.
Employer: Barrett Hale & Alamo, Consulting Engineers, San Juan, Puerto Rico

Jeffrey Snow
Years Graduated: 2000 and 2002
Degrees Awarded: Undergraduate and Master's
Employer: American Infrastructure, Worcester, Pennsylvania

Robert C. Williams
Year Graduated: 2006 and 2008
Degrees Awarded: Master's and Ph.D.
Employer: Vecellio and Grogan Inc., Beckley, West Virginia

Terry L. Williams
Year Graduated: 1998
Degree Awarded: Master's
Employer: Allan A. Meyers, Inc., Worcester, Pennsylvania

Joshua Zilke
Year Graduated: 2014
Degree Awarded: Master's
Employer: Clark Builders Group< Arlington, Virginia

ENVIRONMENTAL & WATER RESOURCES

Nancy Lade Anderson
Year Graduated: 1999
Degree Awarded: Master's
Current Status: Full-time mother

William G. Ayers
Year Graduated: 2014
Degree Awarded: Master's
Employer: Mission Specialist at Palantir Technologies, Washington, D.C.

David Azinheira
Year Graduated: 2013
Degree Awarded: Master's
Employer: URS, Germantown, Maryland

Jason L. Beck
Year Graduated: 2008
Degree Awarded: Master's
Employer: Camp Dresser and McKee (CDM), Charlotte, North Carolina

Randall Boe
Years Graduated: 1991 and 1993
Degrees Awarded: Undergraduate and Master's
Employer: CH2M Hill, Gainesville, Florida

Elizabeth Claire Booth
Year Graduated: 2005
Degree Awarded: Master's
Employer: Arcadis, Lakewood, Colorado

Charles B. Bott
Year Graduated: 2001
Degree Awarded: Ph.D.
Employer: Hampton Roads Sanitation District, Virginia Beach, Virginia, and Adjunct Professor, Civil & Environmental Engineering, Virginia Tech

Nicolle S. Boulay
Year Graduated: 1999
Degree Awarded: Master's
Employer: Associate Engineer/Parson's Engineering, Nashville, Tennessee

J. Steven Brauner
Year Graduated: 2000
Degree Awarded: Ph.D.
Employer: Parsons Engineering, Denver, Colorado

Randi Lieberman Brazeau
Year Graduated: 2012
Degree Awarded: Ph.D.
Employer: Metropolitan State University of Denver, Denver, Colorado

Lee Davis Bryant
Year Graduated: 2010
Degree Awarded: Ph.D.
Employer: Assistant Professor, Department of Architecture and Civil Engineering, University of Bath, United Kingdom

Suzanne Ciavola
Year Graduated: 2011
Degree Awarded: Master's
Employer: AECOM Technology Corporation, Philadelphia, Pennsylvania

Brandi Clark
Year Graduated: 2015
Degree Awarded: Ph.D.
Employer: Virginia Tech

Bradley M. Coffey
Year Graduated: 1990
Degree Awarded: Master's
Employer: Metropolitan Water District of Southern California, Water Quality Division, Los Angeles, California

Joel Cohn
Year Graduated: 1993
Degree Awarded: Master's
Employer: Malcolm Pirnie, Norfolk, Virginia

Cynthia Crane
Year Graduated: 1999
Degree Awarded: Ph.D.
Employer: Hydro Geologic, Herndon, Virginia

Andrea Crowe Hargette
Year Graduated: 1997
Degree Awarded: Master's
Employer: Black & Veatch, Inc., Greenville, South Carolina

Christina Clarkson Davis
Year Graduated: 2000 and 2015
Degree Awarded: Masters and Ph.D.
Employer: Unknown

Jason Davis
Year Graduated: 2000
Degree Awarded: Master's
Employer: Carollo, Eagle, Idaho

William Scott Dewhirst, II
Years Graduated: 1993 and 1997
Degrees Awarded: Undergraduate and Master's
Employer: Newport News Water Works, Newport News, Virginia

Charles (Chuck) Dietz, Jr.
Years Graduated: 1989 and 1993
Degrees Awarded: Undergraduate and Master's
Employer: Virginia Tech, Blacksburg, Virginia

Daniel Dorsel
Year Graduated: 1998
Degree Awarded: Master's
Employer: Cardinal Newman School, Columbia, South Carolina

Mark Dougherty
Year Graduated: 2004
Degree Awarded: Ph.D.
Employer: Auburn University, Auburn, Alabama

Laura Duncan
Year Graduated: 2007
Degree Awarded: Master's
Employer: Arcadis, Knoxville, Tennessee

VIA ALUMNI: *Where Are They Now?*

Mary Facciolo
Year Graduated: 1994
Degree Awarded: Master's
Employer: Raleigh, North Carolina consulting firm

Ryan M. Fedak
Year Graduated: 1999
Degree Awarded: Master's
Employer: AECOM, Roanoke, Virginia

Jamie Fettig
Year Graduated: 1998
Degree Awarded: Master's
Employer: Parsons Engineering, New York

Scott A. Forsling
Year Graduated: 1994
Degree Awarded: Master's
Employer: Bowen, Collins and Associates, Draper, Utah

John Fripp
Year Graduated: 1991
Degree Awarded: Master's
Employer: U.S. Department of Agriculture, National Resources Conservation Service, Fort Worth, Texas

Wesley Geertsema
Year Graduated: 1992
Degree Awarded: Master's
Employer: Unknown

Kevin R. Gilmore
Year Graduated: 2008
Degree Awarded: Ph.D.
Employer: Bucknell University, Lewisburg, Pennsylvania

Aimee E. Greyshock
Year Graduated: 2004
Degree Awarded: Master's
Employer: Virginia Department of Health-Office of Drinking Water, Culpeper, Virginia

Matthew Gwaltney
Year Graduated: 2007 (posthumously)
Degree Awarded: Master's
Deceased

Orrick (Rick) Haney
Year Graduated: 1994
Degree Awarded: Master's
Employer: Haney Associates, Inc., Anderson, South Carolina

Gary Hinds
Year Graduated: 2015
Degree Awarded: M.S.
Employer: ARCADIS, headquartered in Amsterdam, The Netherlands

David Holbrook
Year Graduated: 2003
Degree Awarded: Ph.D.
Employer: National Institute of Standards and Technology, Gaithersburg, Maryland

Edward Brian Houston
Year Graduated: 2006
Degree Awarded: Master's
Employer: Black & Veatch, Gaithersburg, Maryland

Victoria Wheaton Hoyland
Year Graduated: 2012
Degree Awarded: Master's
Employer: CHA Consulting, Inc., Blacksburg, Virginia

Kari Husovitz Foy
Year Graduated: 1999
Degree Awarded: Master's
Employer: B.P. Barber and Associates, Inc., North Charleston, South Carolina

Angela Iatrou Simon
Year Graduated: 1991
Degree Awarded: Master's
Employer: Tutor Perini, Framingham, Massachusetts

Joshua A. Joseph, Jr.
Year Graduated: 2008
Degree Awarded: Ph.D.
Employer: CH2M Hill, Baton Rouge, Louisiana

Richard T. Kelly, II
Year Graduated: 2005
Degree Awarded: Ph.D.
Employer: Brown & Caldwell, Seattle, Washington

Ronald D. Kent
Year Graduated: 2015
Degree Awarded: Ph.D.
Employer: Geosyntec, A Global Company

Wendell O. Khunjar
Year Graduated: 2009
Degree Awarded: Ph.D.
Employer: Hazen and Sawyer, P.C., Fairfax, Virginia

Lashun K. King Thomas
Year Graduated: 2011
Degree Awarded: Ph.D.
Employer: Syracuse University, Syracuse, New York

William J. Kingston
Year Graduated: 2012
Degree Awarded: Master's
Employer: Gannet Flemming, Camp Hill, Pennsylvania

Rebecca Halvorson Lahr
Year Graduated: 2014
Degree Awarded: Ph.D.
Employer: Research Fellow at University of Michigan and Assistant Professor at Michigan State University

Jessica Hekl
Year Graduated: 2015
Degree Awarded: M.S.
Employer: Bowman Consulting, Denver, Colorado

Rebecca Lattyak
Year Graduated: 2007
Degree Awarded: Master's
Employer: Malcolm Pirnie, West Lafayette, Indiana

Katherine Linares
Year Graduated: 2004
Degree Awarded: Master's
Employer: HDR Engineering, Inc., Norfolk, Virginia

Erika Lubkowitz Bailey
Year Graduated: 1996
Degree Awarded: Master's
Employer: HDR, Inc., Raleigh, North Carolina

Donald C. Marickovich
Year Graduated: 1990
Degree Awarded: Master's
Employer: Draper Aden & Associates, Blacksburg, Virginia

Becki Marshall Rosenfeldt
Year Graduated: 2004
Degree Awarded: Master's
Employer: Hazen & Sawyer, Fairfax, Virginia

Katherine McArthur Leitch
Year Graduated: 1998
Degree Awarded: Master's
Employer: Merck & Co., Inc., Raleigh-Durham, North Carolina

VIA ALUMNI: ***Where Are They Now?***

Colleen McCloskey Rossmeisl
Year Graduated: 1995
Degree Awarded: Master's
Employer: Companion Animal Clinic, Blacksburg, Virginia

Brian McCormick
Year Graduated: 2003
Degree Awarded: Master's
Employer: Colorado Springs Utilities, Colorado Springs, Colorado

Laurie S. McNeill
Year Graduated: 2000
Degree Awarded: Ph.D.
Employer: Utah State University, Logan, Utah

Eduardo Mendez, III
Year Graduated: 2008
Degree Awarded: Ph.D.
Employer: U.S. Army

Peter B. Merkle
Year Graduated: 1995
Degree Awarded: Ph.D.
Employer: Sandia National Labs, Albuquerque, New Mexico

Jennifer H. Miller
Year Graduated: 2014
Degree Awarded: Ph.D.
Employer: Post-Doctoral Research Associate, Virginia Tech, Blacksburg, Virginia

Matthew C. Moore
Year Graduated: 1992 and 1994
Degree Awarded: Undergraduate and Master's
Employer: Sikland Engineering Associates, Van Nuys, California

Christopher D. Muller
Year Graduated: 2006
Degree Awarded: Ph.D.
Employer: Brown and Caldwell, Seattle, Washington

Jocelyn Fraga Muller
Year Graduated: 2006
Degree Awarded: Ph.D.
Employer: Unknown

Caroline Nguyen
Years Graduated: 2005 and 2010
Degree Awarded: Master's and Ph.D.
Employer: Washington Suburban Sanitary Commission, Laurel, Maryland

Julia Novak
Year Graduated: 2005
Degree Awarded: Master's
Deceased

Jeff Parks
Year Graduated: 2005
Degree Awarded: Ph.D.
Employer: Virginia Tech, Blacksburg, Virginia

John E. Petrie
Year Graduated: 2013
Degree Awarded: Ph.D.
Employer: Washington State University, Pullman, Washington

Kristina Perri
Year Graduated: 1997
Degree Awarded: Master's
Employer: GHD, Inc., Bowie, Maryland

Carrie Adam Phipps
Year Graduated: 2001
Degree Awarded: Master's
Current Status: Full-time mother

Noreen Poor
Year Graduated: 1996
Degree Awarded: Ph.D.
Employer: Kiymetrics, LLC, Melbourne, Florida

Caitlin Proctor
Year Graduated: 2014
Degree Awarded: Master's
Employer: Ph.D. Student at Eawag/ETH Zurich, Switzerland

Diana Rashash
Year Graduated: 1994
Degree Awarded: Ph.D.
Employer: North Carolina State University, Raleigh, North Carolina

Heather Veith Rectanus
Year Graduated: 2006
Degree Awarded: Ph.D.
Employer: Battelle, Columbus, Ohio

Sandra Robinson
Year Graduated: 2001
Degree Awarded: Master's
Employer: CH2M Hill, Redding, California

Jason Rushing
Year Graduated: 2002
Degree Awarded: Master's
Employer: Malcolm Pirnie, Fairfax, Virginia

Mary Rust Sadler
Year Graduated: 1998
Degree Awarded: Master's
Employer: Hazen and Sawyer, Raleigh, North Carolina

Emily A. Sarver
Year Graduated: 2010
Degree Awarded: Ph.D.
Employer: Virginia Tech, Blacksburg, Virginia

Paolo Scardina
Year Graduated: 2004
Degree Awarded: Ph.D.
Employer: Virginia Tech, Blacksburg, Virginia

Rachel M. Sellaro
Year Graduated: 2014
Degree Awarded: Master's
Employer: Unknown

Dipankar Sen
Year Graduated: 1995
Degree Awarded: Ph.D.
Employer: Santa Clara Valley Water District, San Jose, California

Vickie L. Singleton
Year Graduated: 2008
Degree Awarded: Ph.D.
Current Status: Full-time mother, New Bern, North Carolina

Brad Shearer
Year Graduated: 2001
Degree Awarded: Master's
Employer: CH2M Hill, Redding, California

Holly Shorney-Darby
Year Graduated: February 1992
Degree Awarded: Master's
Employer: Black & Veatch, Inc., Kansas City, Missouri

John S. Siczka
Years Graduated: 1994 and 1997
Degrees Awarded: Undergraduate and Master's
Employer: CH2M Hill, Brown Deer, Wisconsin

Aaron B. Small
Year Graduated: 1993
Degree Awarded: Master's
Employer: AES Consulting Engineers, Williamsburg, Virginia

VIA ALUMNI: *Where Are They Now?*

Sheryl D. Smith
Year Graduated: 2001
Degree Awarded: Master's
Employer: Camp, Dresser and McKee, Raleigh, North Carolina

Jeffrey A. Sparks
Year Graduated: 2008
Degree Awarded: Master's
Employer: Hampton Roads Sanitation District, Virginia Beach, Virginia

Justin St. Clair
Year Graduated: 2012
Degree Awarded: Master's
Employer: Blazer & Associates, Inc., Blacksburg, Virginia

James H. Stagge
Year Graduated: 2012
Degree Awarded: Ph.D.
Employer: Postdoctoral Researcher, University of Oslo, Oslo, Norway

Jonathan Stathis
Year Graduated: 1998
Degree Awarded: Master's
Employer: Cedar City Corp., Cedar City, Utah

Melissa Stewart
Year Graduated: 2011
Degree Awarded: Master's
Employer: ProChem, Inc., Elliston, Virginia

Amanda E. Strickhouser
Year Graduated: 2008
Degree Awarded: Master's
Employer: Watson Wyatt, San Francisco, California

Chris Tadanier
Year Graduated: 1997
Degree Awarded: Ph.D.
Employer: Black & Veatch, Denver, Colorado

Nicholas Taylor
Year Graduated: 2014
Degree Awarded: Master's
Employer: Unknown

Dan Waddill
Year Graduated: 1998
Degree Awarded: Ph.D.
Employer: Department of the Navy, Norfolk, Virginia

Diane Waters
Year Graduated: 2002
Degree Awarded: Master's
Employer: City of Miami, Public Works Dept., Miami, Florida

Edwin W. Watkins
Year Graduated: 1993
Degree Awarded: Master's
Employer: Ogden Environmental and Energy Services, Nashville, Tennessee

Katherine L. Weidner
Year Graduated: 2012
Degree Awarded: Master's
Employer: Black & Veatch, Charlotte, North Carolina

David Whichard
Year Graduated: 2001
Degree Awarded: Master's
Employer: International Paper, South Carolina

Claire McKenzie White
Year Graduated: 2011
Degree Awarded: Master's
Employer: Kimley-Horn and Associates, Virginia Beach, Virginia

Krista Rule Wigginton
Year Graduated: 2008
Degree Awarded: Ph.D.
Employer: University of Michigan, Ann Arbor, Michigan

Christopher A. Wilson
Year Graduated: 2009
Degree Awarded: Ph.D.
Employer: Greeley and Hansen Engineers, Inc., Richmond, Virginia

Christopher Wolfe
Year Graduated: 1993
Degree Awarded: Master's
Employer: Semcor, Washington, D.C.

Jennifer Wright
Year Graduated: 2006
Degree Awarded: Master's
Employer: Department of Environmental Quality, Richmond, Virginia

Katie Young
Year Graduated: 2014
Degree Awarded: Master's
Employer: CDM Smith, Virginia

Kevin D. Young
Year Graduated: 2006
Degree Awarded: Master's
Employer: Virginia Tech, Blacksburg, Virginia

Anna Zaklikowski
Year Graduated: 2006
Degree Awarded: Master's
Employer: HDR Engineering, Portland, Oregon

Lauren Zuravnsky-Wilson
Year Graduated: 2006
Degree Awarded: Master's
Employer: Greeley and Hansen, Richmond, Virginia

GEOTECHNICAL

Tiffany E. Adams
Year Graduated: 2011
Degree Awarded: Ph.D.
Employer: URS Corp., Denver, Colorado

Amanda Barngrover
Year Graduated: 2010
Degree Awarded: Master's
Employer: URS Corp., Denver, Colorado

William Bassett
Year Graduated: 1990
Employer: Federal Highway Administration, Washington, D.C.

Diane Yamane Baxter
Year Graduated: 2000
Degree Awarded: Ph.D.
Employer: GZA GeoEnvironmental Inc., Providence, Rhode Island

Craig Benedict
Year Graduated: 1997
Degree Awarded: Master's
Employer: Gannet-Flemming, King of Prussia, Pennsylvania

David Bentler
Year Graduated: 1993 and 1998
Degrees Awarded: Master's and Ph.D.
Employer: CH2M Hill, Englewood, Colorado

Kyle Blakley
Year Graduated: 2009
Degree Awarded: Master's
Employer: Stantec Consulting, Cincinnati, Ohio

G. Allen Bowers
Year Graduated: 2013
Degree Awarded: Master's
Current Status: Continuing Via Scholar Ph.D.

VIA ALUMNI: *Where Are They Now?*

Nathaniel Bradley
Year Graduated: 2015
Degree Awarded: M.S.
Employer: S&ME, Inc., Charlotte, North Carolina

Jeremy Britton
Year Graduated: 2001
Degree Awarded: Ph.D.
Employer: U.S. Army Corps of Engineers, Portland, Oregon

Pete Chenevey
Year Graduated: 1994
Degree Awarded: Master's
Employer: Dames & Moore, Cincinnati, Ohio

Jaime Colby
Year Graduated: 2006
Degree Awarded: Master's
Employer: Sanborn, Head & Associates, Inc., Westford, Massachusetts

Megan Cole
Year Graduated: 2001
Degree Awarded: Master's
Employer: GEI Consultants, Winchester, Massachusetts

Austin A. Cox
Year Graduated: 2015
Degree Awarded: M.S.
Employer: S&ME, Inc., Charleston, South Carolina

Jeramy Bruyn Decker
Year Graduated: 2007
Degree Awarded: Ph.D.
Employer: Kiewit Construction Co., Pacifica, California

Adam DePoy
Year Graduated: 2012
Degree Awarded: Master's
Employer: Stantec, Greater Grand Rapids, Michigan

Patricia (Trish) M. Gallagher
Year Graduated: December 2000
Degree Awarded: Ph.D.
Employer: Drexel University, Philadelphia, Pennsylvania

Betsy Godfrey
Year Graduated: 2014
Degree Awarded: Master's
Employer: Parsons Brinckerhoff, Washington, D.C.

Russell Green
Year Graduated: 2001
Degree Awarded: Ph.D.
Employer: Virginia Tech, Blacksburg, Virginia

George Filz
Year Graduated: 1992
Degree Awarded: Ph.D.
Employer: Virginia Tech, Blacksburg, Virginia

Rachel T. Finch
Year Graduated: 2009
Degree Awarded: Master's
Employer: S&ME, Huntsville, Alabama

Brendan Fitzpatrick
Year Graduated: 2001
Degree Awarded: Master's
Employer: GEOPIER Foundation Co., Inc., Mooresville, North Carolina

Laura Henry
Year Graduated: 1999
Degree Awarded: Master's
Employer: Haley & Aldrich, New Jersey

Wayne Herring
Year Graduated: 2000
Degree Awarded: Master's
Employer: ARM Group, Hershey, Pennsylvania

Randall Hickman
Year Graduated: 2004
Degree Awarded: Ph.D.
Employer: BP American, Inc., Houston, Texas

Michelle Hoy Sherwood
Year Graduated: 1997
Degree Awarded: Master's
Employer: Consulting Environmental Engineer, Anchorage, Alaska

Kenneth A. Huber
Year Graduated: 1997
Degree Awarded: Master's
Employer: Senior Pastor at Calvary Baptist Church, Riverhead, New York

Nicholas Izzo
Year Graduated: 2015
Degree Awarded: M.S.
Employer: Langan Engineering & Environmental Sciences, Elmwood Park, New Jersey

Laura M. Kosoglu
Year Graduated: 2011
Degree Awarded: Ph.D.
Employer: George Mason University, Fairfax, Virginia

Andrew Kost
Year Graduated: 2013
Degree Awarded: Master's
Employer: Cornforth Consultants, Portland, Oregon

Samuel Lasley
Year Graduated: 2015
Degree Awarded: Ph.D.
Employer: Kiewit Infrastructure Engineers, Omaha, Nebraska

Kenneth C. Maben
Year Graduated: 2015
Degree Awarded: M.S.
Employer: Terracon, Charlotte, North Carolina

Scott Mackey
Year Graduated: 1993
Degree Awarded: Master's
Employer: Central Connecticut State University, New Britain, Connecticut

Jessica R. (Marshall) Barbier
Year Graduated: 1990
Degree Awarded: Master's
Employer: Denver Water, Denver, Colorado

Michael P. McGuire
Year Graduated: 2011
Degree Awarded: Ph.D.
Employer: Lafayette College, Easton, Pennsylvania

Christopher L. Meehan
Year Graduated: 2006
Degree Awarded: Ph.D.
Employer: University of Delaware, Newark, Delaware

Dale Paul Miller
Year Graduated: 2015
Degree Awarded: M.S.
Employer: Shannon & Wilson, Inc. San Louis, Missouri

Clark Morrison
Year Graduated: 1995
Degree Awarded: Ph.D.
Employer: North Carolina Dept. of Transportation, Raleigh, North Carolina

VIA ALUMNI: *Where Are They Now?*

Bob Mokwa
Year Graduated: 1999
Degree Awarded: Ph.D.
Employer: Montana State University, Bozeman, Montana

Michael Navin
Year Graduated: 2005
Degree Awarded: Ph.D.
Employer: U.S. Army Corps of Engineers, St. Louis, Missouri

David Nevius
Year Graduated: 2001
Degree Awarded: Master's
Employer: Terra Costa Consulting, San Diego, California

Michael Nolden
Year Graduated: 2012
Degree Awarded: Master's
Employer: Geosyntec Consultants, Philadelphia, Pennsylvania

James Parkes
Year Graduated: 1999
Degree Awarded: Master's
Employer: Gannett Fleming, Harrisburg, Pennsylvania

Maysill G. Pascal
Year Graduated: 2003
Degree Awarded: Master's
Employer: Haley and Aldrich Inc., Parsippany, New Jersey

Craig Petranka
Year Graduated: 1997
Degree Awarded: Master's
Employer: Unknown

Michael Pockoski
Year Graduated: 2001
Degree Awarded: Master's
Employer: Geopier Foundation Company, Inc., Mooresville, North Carolina

Jonathan Porter
Years Graduated: 1991 and 1998
Degrees Awarded: Master's and Ph.D.
Employer: U.S. Government, McLean, Virginia

Marcia Votour Prowell
Years Graduated: 1992 and 1993
Degrees Awarded: Undergraduate and Master's
Employer: Virginia Geotechnical Services, PC, Richmond, Virginia

Brandon Quinn
Year Graduated: 2015
Degree Awarded: M.S.
Employer: Engineering Consulting Services, Roanoke, Virginia

Susan Rafalko
Year Graduated: 2006
Degree Awarded: Master's
Employer: Reinforced Earth Co., Reston, Virginia

Alan Rauch
Year Graduated: 1997
Degree Awarded: Ph.D.
Employer: Fuller, Stantec, Lexington, Kentucky

Alexander Reeb
Year Graduated: 2011
Degree Awarded: Master's
Current Status: Ph.D. Candidate, Virginia Tech, Blacksburg, Virginia

Nathan Reeves
Year Graduated: 2000
Degree Awarded: Master's
Employer: S&ME, Inc., Raleigh, North Carolina

John D. Rice
Year Graduated: 2008
Degree Awarded: Ph.D.
Employer: Utah State University, Logan, Utah

Andrew T. Rose
Year Graduated: 1995
Degree Awarded: Ph.D.
Employer: University of Pittsburgh, Johnstown, Pennsylvania

Jennifer A. Schaeffer
Year Graduated: 1997
Degree Awarded: Master's
Employer: CH2M Hill, Seattle, Washington

Kurt J. Schimpke
Year Graduated: 2009
Degree Awarded: Master's
Employer: Barr Engineering Company, Minneapolis, Minnesota

Craig M. Shillaber
Year Graduated: 2009
Degree Awarded: Master's
Current Status: Ph.D. Candidate, Virginia Tech, Blacksburg, Virginia

Matthew Sleep
Years Graduated: 2006 and 2011
Degrees Awarded: Master's and Ph.D.
Employer: Oregon Institute of Technology, Klamath Falls, Oregon

Joel A. Sloan
Year Graduated: 2011
Degree Awarded: Ph.D.
Employer: U.S. Air Force, Kunsan Air Base, Republic of Korea

Mark Tilashalski
Year Graduated: 2015
Degree Awarded: M.S.
Employer: Froehling and Robertson, Richmond, Virginia

Daniel R. Vanden Berge
Year Graduated: 2014
Degree Awarded: Ph.D.
Employer: Post Doc Researcher, Virginia Tech, Blacksburg, Virginia

Edward R. Ware III
Year Graduated: 2007
Degree Awarded: Master's
Employer: Michelin, Greenville, South Carolina

Kord Wissman
Year Graduated: 1995
Degree Awarded: Ph.D.
Employer: GEOPIER Foundation Co., Inc., Mooresville, North Carolina

STRUCTURES

Mary Sue Mouchka Abel
Year Graduated: 1993
Degree Awarded: Master's
Employer: EMCS Design Group, Milwaukee, Wisconsin

Shainur Ahsan
Year Graduated: 2012
Degree Awarded: Master's
Employer: Bechtel Power Corporation, Headquartered in San Francisco, California

Chad C. Alander
Year Graduated: 1998
Degree Awarded: Master's
Employer: Gannett Fleming, Harrisburg, Pennsylvania

Nick Amico
Year Graduated: 2005
Degree Awarded: Master's
Employer: Figg Engineering, Tallahassee, Florida

VIA ALUMNI: *Where Are They Now?*

Kevin Aswegan
Year Graduated: 2013
Degree Awarded: Master's
Employer: MKA, Seattle, Washington

Sasha Bajzek
Year Graduated: 2013
Degree Awarded: Master's
Employer: Parsons Corporation

Kirsten A. Baldwin Metzger
Year Graduated: 2006
Degree Awarded: Master's
Employer: Laurene & Rickher, P.C., Charlotte, North Carolina

Anthony Barrett, Major, USAF
Year Graduated: 2006
Degree Awarded: Ph.D.
Employer: United States Air Force Academy, Colorado Springs, Colorado

Phillip R. Bellis
Year Graduated: 2015
Degree Awarded: M.S.
Employer: Unknown

James Wescott (Wess) Bott
Year Graduated: 2005
Degree Awarded: Master's
Employer: HDR Alaska, Inc., Eagle River, Arkansas

Susan Bowers
Year Graduated: 2007
Degree Awarded: Master's
Employer: Whitman, Requardt & Associates, Baltimore, Maryland

Adam G. Bowland
Years Graduated: 2008 and 2011
Degrees Awarded: Master's and Ph.D.
Employer: DiGioia Gray & Associates, Monroeville, Pennsylvania

David Burchnall
Year Graduated: 2014
Degree Awarded: Master's
Employer: Unknown

J. Christopher Carroll
Year Graduated: 2009
Degree Awarded: Ph.D.
Employer: University of Louisiana at Lafayette, Lafayette, Louisiana

Jason Cawrse
Year Graduated: 2000
Degree Awarded: Master's
Employer: CH2M Hill, Alexandria, Virginia

Kevin R. Collins
Year Graduated: 1989
Degree Awarded: Master's
Employer: Lawrence Technological University, Southfield, Michigan

Luke T. Cronin
Year Graduated: 2012
Degree Awarded: Master's
Employer: Black & Veatch, Kansas City, Missouri

Benjamin T. Cross
Year Graduated: 2012
Degree Awarded: Ph.D.
Employer: FHWA, Turner Fairbank Highway Research Center, McLean, Virginia

Kacie C. D'Alessandro
Year Graduated: 2013
Degree Awarded: Ph.D.
Employer: Washington and Lee University, Lexington, Virginia

Amy Dalrymple Ryan
Year Graduated: 1999
Degree Awarded: Master's
Employer: Starzer, Brady, Fagan Associates, Inc., Atlanta, Georgia

D. Brad Davis
Year Graduated: 2008
Degree Awarded: Ph.D.
Employer: University of Kentucky, Lexington, Kentucky

Kyle Richard Dominisse
Year Graduated: 2004
Degree Awarded: Master's
Employer: Walter P. Moore, Kansas City, Missouri

Richard Drumm
Year Graduated: 1993
Degree Awarded: Master's
Employer: FHWA, Washington, D.C.

Michael Gangi
Year Graduated: 2015
Degree Awarded: M.S.
Employer: Gibbs & Cox, Arlington, Virginia

Keith Grubb
Year Graduated: 1995
Degree Awarded: Master's
Employer: American Institute of Steel Construction, Chicago, Illinois

Linda Morley Hanagan
Year Graduated: 1995
Degree Awarded: Ph.D.
Employer: Penn State University, State College, Pennsylvania

Andrew B. Hardyniec
Year Graduated: 2014
Degree Awarded: Ph.D.
Employer: Unknown

Matthew D. Harlan
Year Graduated: 2004
Degree Awarded: Master's
Employer: Clark Nelsen, Norfolk, Virginia

Devin K. Harris
Year Graduated: 2007
Degree Awarded: Ph.D.
Employer: University of Virginia, Charlottesville, Virginia

Greg Hensley
Years Graduated: 2004 and 2005
Degrees Awarded: Undergraduate and Master's
Employer: Magnusson Klemencic Associates, Seattle, Washington

Anne Himebaugh
Year Graduated: 2006
Degree Awarded: Master's
Employer: Simpson, Gumpertz, and Heger, Waltham, Massachusetts

Hunter Hodges
Year Graduated: 2006
Degree Awarded: Master's
Employer: Axiom Engineering, Boise, Idaho

Francis Homer
Year Graduated: 2006
Degree Awarded: M.S.
Employer: Whiting-Turner/Northern

William P. Jacobs, V
Year Graduated: 2002
Degree Awarded: Master's
Employer: Stan Lindsey and Associates, Atlanta, Georgia

Jared B. Jamison
Year Graduated: 1998
Degree Awarded: Master's
Employer: Hankins and Anderson, Glen Allen, Virginia

VIA ALUMNI: *Where Are They Now?*

Jordan A. Jarrett
Year Graduated: 2014
Degree Awarded: Ph.D.
Employer: Magnusson Klemencic Associates, Seattle, Washington

Patrick Joyce
Year Graduated: 2014
Degree Awarded: Master's
Employer: HDR Engineering, Inc., Missoula, Montana

Bernard L. Kassner
Year Graduated: 2004
Degree Awarded: Master's and Ph.D. Employer: Virginia Center for Transportation Innovation and Research, Charlottesville, Virginia

Ann E. Jeffers
Year Graduated: 2009
Degree Awarded: Ph.D.
Employer: University of Michigan, Ann Arbor, Michigan

Johnn P. Judd
Year Graduated: 2015
Degree Awarded: Ph.D.
Employer: University of Wyoming, Laramie, Wyoming

Stephanie A. Koch
Year Graduated: 2008
Degree Awarded: Master's
Employer: Parsons Brinckerhoff-Ohio Inc, Columbus, Ohio

Maria W. Lang
Year Graduated: 2011
Degree Awarded: Master's
Employer: Whitman, Requardt, & Associates, Richmond, Virginia

Adam R. Lease
Year Graduated: 2005
Degree Awarded: Master's
Employer: Cives Steel Company, Winchester, Virginia

Bryan J. Loflin
Year Graduated: 2008
Degree Awarded: Master's
Employer: Parsons Brinckerhoff, Raleigh, North Carolina

Marc J. Maguire
Year Graduated: 2013
Degree Awarded: Ph.D.
Employer: Utah State University, Logan, Utah

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Year Graduated: 2008
Degree Awarded: Ph.D.
Employer: Auburn University, Auburn, Alabama

James David Martin
Year Graduated: 2005
Degree Awarded: Master's
Employer: Walter P. Moore, Tampa, Florida

Timothy W. Mays
Years Graduated: 1997 and 2000
Degrees Awarded: Master's (1997) and Ph.D. (2000)
Employer: The Citadel, Charleston, South Carolina

Laurie Mazursky
Year Graduated: 2006
Degree Awarded: Master's
Employer: Sutton-Kennerly and Assoc., Asheville, North Carolina

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Year Graduated: 1991
Degree Awarded: Master's
Employer: Dominion Generation, Glen Allen, Virginia

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Year Graduated: 1998
Degree Awarded: Master's
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Degree Awarded: Master's
Employer: The LPA Group, Inc., Tallahassee, Florida

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Degree Awarded: Master's
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Degree Awarded: Master's
Employer: Bechtel, Frederick, Maryland

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Year Graduated: December 2003
Degree Awarded: Master's
Employer: Stanley D. Lindsey & Associates, Ltd., Nashville, Tennessee

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Employer: Unknown

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Employer: Self-employed

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Degree Awarded: Master's
Employer: Unknown

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Degree Awarded: Master's
Employer: Unknown

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Degree Awarded: Ph.D.
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Degree Awarded: Master's
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Degree Awarded: Ph.D.
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Mustapha Zmerli
Year Graduated: 1992
Degree Awarded: Master's
Deceased

TRANSPORTATION INFRASTRUCTURE AND SYSTEMS ENGINEERING (TISE)

Zaeinulabddin M. Adam
Year Graduated: 2012
Degree Awarded: Ph.D.
Employer: Parsons Corporation, Saudi Arabia

Sudarshana C.S. Bhat
Year Graduated: 1989
Degree Awarded: Master's
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Degree Awarded: Master's
Employer: Amec Foster Wheele, Beltsville, Maryland

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Year Graduated: 2006
Degree Awarded: Ph.D.
Employer: Virginia Tech Transportation Institute, Blacksburg, Virginia

Joshua (Josh) Diekmann
Year Graduated: 2000
Degree Awarded: Master's
Employer: A consultant in Seattle, Washington

Kelly M. Donoughe
Year Graduated: 2010
Degree Awarded: Master's
Employer: Ph.D. Candidate, Virginia Tech and employed by SAIC, Blacksburg, Virginia

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Degree Awarded: Master's
Employer: Parsons Transportation Group, Virginia

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Year Graduated: 2011
Degree Awarded: Master's
Current Status: Graduate Student, University of California, Berkeley

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Year Graduated: 2004
Degree Awarded: Master's
Employer: DLZ Michigan, Kalamazoo, Michigan

Peter D. Kauffmann
Years Graduated: 2009 and 2011
Degrees Awarded: Undergraduate and Master's
Employer: Gorove/Slade, Washington, D.C.

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Years Graduated: 2003 and 2004
Degrees Awarded: Undergraduate and Master's
Employer: Virginia Department of Transportation, Richmond, Virginia

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Years Graduated: 1997 and 1999
Degrees Awarded: Undergraduate and Master's
Employer: Bowman Consulting Group, Ltd., Richmond, Virginia

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Year Graduated: 2003
Degree Awarded: Master's
Employer: PBS & J, Inc., Newport News, Virginia

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Year Graduated: 1998
Degree Awarded: Master's
Employer: Naval Surface Warfare Center, Dalgreen, Virginia

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Year Graduated: 2012
Degree Awarded: Master's
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