

2019 VIA REPORT

NUMBER 33



COLLEGE OF ENGINEERING
THE CHARLES E. VIA, JR. DEPARTMENT OF
CIVIL AND ENVIRONMENTAL ENGINEERING
VIRGINIA TECH.

DEPARTMENT HEAD'S MESSAGE

Looking back on my first semester as the Charles E. Via, Jr. Department of Civil and Environmental Engineering Interim Department Head, I am proud of the accomplishments of our students and faculty and am excited about the potential future ahead of us.

We just welcomed a new group of undergraduate and graduate students to CEE at the start of the semester, with our highest enrollment numbers in several years. It is very rewarding to see the popularity of our program and we look forward to helping these students excel in their education and beyond.

Many of the accomplishments of our students are from our outstanding Via Scholars. I know that the Via family would be proud of the work these students are doing and their service to the profession and society. I encourage you to look through their profiles starting on page 20 to learn more about each of them. Hopefully, you will get the chance to interact with them when you visit campus, through professional activities, or as future employers. It is students such as these that help us remain ranked among the top CEE departments in the country year after year.

Our faculty also contribute to the strength of our department and this semester we added three faculty members to our team. Dr. Hosein Foroutan and Dr. Siddharth Saksena joined the Environmental and Water Resources Program and Dr. Scott Case joined the Structural Engineering and Materials Program.

One component of our CEE department mission statement is to “provide civil and environmental engineering leadership and service to the state, the profession, and society at large.” I think you will agree that our faculty are certainly doing that. You can read about the numerous accomplishments and honors of our faculty on page eight. Each and every day, our faculty and students are bringing the future into focus as they solve problems and invent solutions and techniques that will drive society forward. I hope you take the chance to read about a few of these throughout this report.

I'm looking forward to another exciting year and, once again, thank you for your support. The innovative work we do would not be possible without the support of our more than 11,000 living alumni. Your generosity and dedication to our efforts are helping to develop a



new generation of engineers ready to improve the world we live in.

Please visit cee.vt.edu and join us on Facebook and Twitter to follow the latest news and research going on in the department.

With kind regards,

A handwritten signature in black ink that reads "Mark A. Widdowson". The signature is written in a cursive, flowing style.

Mark Widdowson
Professor and Interim Department Head

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INTERIM DEPARTMENT HEAD	Mark Widdowson
EDITOR AND DESIGNER	Courtney Sakry
COVER PHOTO: Occoquan Reservoir - Photo taken by Stanley Grant.	

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UNDERGRADUATE SCHOLARSHIPS

CE Alumni Board Scholarship

Daniela Charles
Victoria Easley
Louis Hatcher
Danielle Kassel
Justin Wingenfield

Kenneth R. Ayers '80 Memorial Scholarship

Nathaniel Clark
Analee Szuszman

Kelso Baker Scholarship

Charles Hampton
Kenneth Morrison
William Roxby
Benjamin Stipes

Michael Baker Corporation Engineering Scholarship

Frank Mazzola

Balzer & Associates Scholarship

Ahmed Ahmed

James L. Bland Civil Engineering Scholarship

Andrew Manion

Charles and Patricia Brown Scholarship

Duncan Sims

Everett Carter Memorial Scholarship

Kase Poling

William A. Caruthers CE Scholarship

Jack Buchanan
Daniela Charles

Joseph and Jane Christenbury Memorial Scholarship

Drew Ayers

Civil Engineering Class of '58 Scholarship

Julia Cadman
Emily Potter
Peter Schwartz
Connor Smith

Warren F. Cline Scholarship

Elliot Idio
Jenna Woyner

Stanley and Francis Cohen Scholarship

Henry Brown
Michael Gee

John DeBell Civil Engineering Scholarship

Malcolm Carter

Dewberry Scholarship

Zabih Safi

Walter and Mary Ruth Duncan Scholarship

Conor Doane
Eric Radecki

Vernon and Rebecca Duncan Scholarship

Sophia Schenk

Doug and Laurie Fahl Family CEE Excellence Scholarship

Carly Federman
Benjamin Roston

J. Stuart Franklin, Jr. Civil Engineering Scholarship

Andrew Brown
Sean Foley
Bradley Gritz
Kate Lord
Victor O'Toole
Lillie Saba
Brandon Vellozzi

Lois Cox and Edna Goodwin Scholarship

Daniel McKillop

Ralph P. Hines '59 Scholarship

Jonathan Epperson

Charles S. Hughes Scholarship

Ethan Obenrader
Kandace Williams

Williams A. Joyner Scholarship

Lauren Epps
Erin Hrovatic

Dennis & Sherry Kamber Scholarship

Jack Popelka
John Zeglarski

Lingerfelt Family Scholarship

Alexie Jean Jacques
Jordan Staley
Jenna Woyner

Hersie B. & Ethel G. McCauley Scholarship

Michael Harper
Jonathon Neeble

Andrew "Tripp" McDavid Memorial Scholarship

Evan Jones

Kenton & Liliana Meland Scholarship

Joshua Artz

Newport News Shipbuilding Scholarship

Connor Smith

John E. Pruitt, Jr. Scholarship

Kyrsten Dallanegra
Henry Hutcheson

Richard Quarterman '04 Memorial Scholarship

Noah Clark

Howell & Ann Simmons Land Development Design Scholarship

Ann Tkacik

Stantec Award for Excellence in Engineering

Sydney Greenspan

George A. Stewart Scholarship

Alyssa Ard
Adam Caretti
Genevieve Davis
Rosa Dixon
Carly Edwards
William Hiatt
Marcella Kaplan
Jamie Timmer

L.J. Turner & W.S. Dewhirst Scholarship

William Cole
Wesley Yeung

Vecellio Scholarship

Catherine McClain
Carolyn Olmstead
Jamie Timmer
Victor O'Toole

Virginia Concrete Scholarship

Jaclyn McCarthy
Carl Moquillaza
Rodrigo Teran Montero

Donald and Mary Wiebke Scholarship

Lydia Grayson

Harry S. & Patsy B. Williams Scholarship

Aleia Warren

Williams Industries Scholarship

Kathryn Bruckner
Miranda Tison

Verne & Jewel Williamson Scholarship

Simer Choudhary

GRADUATE SCHOLARSHIPS AND FELLOWSHIPS

American Institute of Steel
Construction (AISC) Education
Foundation Scholarship
Eric Bianchi
Seth Caudle
Allison McEntee
Ryan Stevens

American Association of University
Women (AAUW) Selected Professions
Fellowship
Amanda Darling

Ann N. and Thomas N. Hunnicutt, III
Fellowship
Seth Caudle
Sungwoo Kim
Ronald Slaven

AWWA Graduate Student Scholarship
Anmol Vishwakarma
Ishi Keenum

Davenport Leadership Scholarship
Eric Bianchi
James Boykin

Deep Foundation Institute's John
O'Malley Civil Engineering
Scholarship
Prakash Ghimire

Edna Bailey Sussman Fellowship
Zhaohui An
Kyung Sun Chung
Sahil Dargan
Brandon Dillon

Edward L. Beale Civil Engineering
Fellowship
Stephanie Attallah
Navid Mirmohammadsadeghi

Fulbright Scholarship
Muhammad Ali
Julio Cesar Copana Paucara
Mohammad Yunus Naseri
Martin Scavone
Marie Carmen Landivar Guartatanga

Gates Foundation Scholarship
James Boykin

GEM Associate Fellowship
E. Wendell Grinton
Dwayne Jefferson
Jalen Johnson
Daniel Keku
Kathryn Lopez

Grizzard Scholarship
Yewei Sun
Ishi Keenum

G.V. Loganathan Memorial Fellowship
Matthew Ferby
Kory Wait

ICTAS Doctoral Fellowship
Rebecca Kriss
Krista Liguori

John and Natalie Hawkins Memorial
Fellowship
Collin Sweeney

Kappa Alpha Theta Scholarship
Amanda Darling

Multicultural Academic Opportunities
Program (MAOP)
C. Wendell Grinton
Dwayne Jefferson
Jalen Johnson
Jeannie Purchase

Myers-Lawson School of Construction
Doctoral Fellowship
Emma Coleman

National Research Traineeship, Disaster
Resilience and Risk Management
Anmol Haque
Steven Hoagland
Michael Lee

National Science Foundation Graduate
Research Fellowship
Brooke Baugher
Abraham Cullom
Ayella Maile-Moskowitz
Hanniyah Majeed
Erin Milligan

New Horizon Graduate Scholar
Maria Amaya
Stefany Baron
James Boykin
Benjamin Davis
Matthew Ferby
C. Wendell Grinton
Emily Jannace
Joel Javier
Dwayne Jefferson
Jalen Johnson
Daniel Keku
David Kormos
Michael Lee
Krista Liguori
Kathryn Lopez

Hanniyah Majeed
Cristopher Montalvo
Ryan Osborn
Julia Paprocki
Jeannie Purchase
Katherin Santizo
Kaleigh Yost

Pratt Graduate Fellowship
Abdelrahman Alsardi
Amin Moghadam
Aimane Najmeddine

Raymond G. and Madelyn A. Curry
Graduate Fellowship
Stacey Bonderer
Seifeldeen Eteifa
Fubin Liu

Terracon Fellowship
Alie Vuper

Torgersen Research Excellence Award
Sogand Hasanzadeh

Vecellio Fellowship
Milad Afzalan
Diana Franco Duran
Mo Hu

Virginia Lake and Watershed
Association Leo Bourassa Scholarship
Meredith Bullard Martinez
Amelia Flanery

Virginia Sea Grant Graduate Research
Fellowship
Michael Lee

Virginia Space Grant Consortium
Graduate Fellowship
Kaleigh Yost

Walts Fellowship
Matthew Florence
Samantha Hogar

PH.D. DEGREES

The following doctoral degrees were awarded to CEE students between Summer II 2018 and Summer I 2019:

Name: Mohammed Almannaa
Dissertation Title: Optimizing Bike Sharing Systems: Dynamic Prediction Using Machine Learning and Statistical Techniques and Rebalancing
Advisor: **Hesham Rakha**

Name: Huthaifa Ashqar
Dissertation Title: Strategic Design of Smart Bike-Sharing Systems for Smart Cities
Advisor: **Hesham Rakha**

Name: Kaveh Bakhsh Kelarestaghi
Dissertation Title: A Risk Based Approach to Intelligent Transportation Systems Security
Advisor: **Kevin Heaslip**

Name: Ayden Baran
Dissertation Title: Integrated Model-Based Impact Assessment of Climate Change and Land Use Change on the Occoquan Watershed
Advisor: **Adil Godrej**

Name: Vincent Bongioanni
Dissertation Title: Enhancing Network-Level Pavement Macrotexture Assessment
Advisor: **Gerardo Flintsch**

Name: Sina Dabiri
Dissertation Title: Application of Deep Learning in Intelligent Transportation Systems
Advisor: **Kevin Heaslip**

Name: Lakshmi Narasimha Somayajulu Dhulipala
Dissertation Title: Bayesian Methods for Intensity Measure and Ground Motion Selection in Performance-Based Earthquake Engineering
Advisor: **Madeleine Flint**

Name: Alireza Farzampour
Dissertation Title: Evaluating Shear Links for Use in Seismic Structural Fuses
Advisor: **Matt Eatherton**

Name: Antonio Fuentes
Dissertation Title: Proactive Decision Support Tools for National Park and Non-Traditional Agencies in Solving Traffic-Related Problems
Advisor: **Kevin Heaslip**

Name: John Gray
Dissertation Title: Trapping Efficiencies for Four Types of Pressure-Difference Bedload Samplers
Advisor: **Adil Godrej**

Name: Miguel Andres Guerra Moscoso
Dissertation Title: Prototyping as a User-Centered and Risk Reduction Approach to the Planning, Design, and Construction of More Sustainable Infrastructure
Advisor: **Tripp Shealy and Denise Simmons**

Name: Gaby Joe Hannoun
Dissertation Title: Optimization of an Emergency Response Vehicle's Intra-Link Movement in Urban Transportation Networks Utilizing a Connected Vehicle Environment
Advisor: **Pamela Murray-Tuite and Kevin Heaslip**

Name: Lee Hixon
Dissertation Title: Potential and Quantification of Street Sweeping Pollutant Reductions towards addressing TMDL WLAs for MS4 Compliance
Advisor: **Randy Dymond**

Name: Syeed Md Iskander
Dissertation Title: Advanced Technologies for Resource Recovery and Contaminants Removal from Landfill Leachate
Advisor: **Jason He**

Name: Dlya Ismael
Dissertation Title: Goal Framing to Encourage More Sustainable Engineering Design Decisions for the Build Environment Across Cultures
Advisor: **Tripp Shealy**

Name: Adnan Lodhi
Dissertation Title: A Decision Support System for Indirect Potable Reuse Based on Integrated Modeling
Advisor: **Adil Godrej**

Name: Alfonso Rivera Rojas
Dissertation Title: Lateral Response of Stiff Column-Supported Shallow Foundations
Advisor: **Guney Olgun and Tom Brandon**

Name: Jonathan Walker
Dissertation Title: An Empirical Method of Ascertaining the Null Points from a Dedicated Short-Range Communication (DSRC) Roadside Unit (RSU) at a Highway On/Off-Ramp
Advisor: **Kevin Heaslip**

Name: Qichao Wang
Dissertation Title: Street Traffic Signal Optimal Control for NEMA Controllers
Advisor: **Monty Abbas**

Name: Chenxi Xing
Dissertation Title: An Analytical Study on the Behavior of Reinforced Concrete Interior Beam-Column Joints
Advisor: **Roberto Leon and Ioannis Koutromanos**

Name: Shiqiang Zou
Dissertation Title: Advancing Forward Osmosis for Energy-efficient Wastewater Treatment towards Enhanced Water Reuse and Resource Recovery
Advisor: **Jason He**

FACULTY

VECELLIO CONSTRUCTION ENGINEERING AND MANAGEMENT

Michael J. Garvin, Associate Professor
Farrokh Jazizadeh Karimi, Assistant Professor
Frederick Paige, Assistant Professor
Tripp Shealy, Assistant Professor
Sunil K. Sinha, Professor

ENVIRONMENTAL & WATER RESOURCES ENGINEERING

Andrea M. Dietrich, Professor
Randel L. Dymond, Professor
Marc A. Edwards, University Distinguished Professor
Hosein Foroutan, Assistant Professor
Daniel L. Gallagher, Professor
Adil N. Godrej, Research Associate Professor (OWML)
Stan Grant, Professor (OWML)
Zhen (Jason) He, Professor
Erich T. Hester, Associate Professor
Jennifer L. Irish, Professor
Gabriel Isaacman-VanWertz, Assistant Professor
William R. Knocke, Professor
John C. Little, Charles E. Via, Jr. Professor
Linsey C. Marr, Charles P. Lunsford Professor
Amy J. Pruden, W. Thomas Rice Professor
Megan Rippy, Assistant Professor (OWML)
Robert Paolo Scardina, Assistant Professor of Practice
Siddharth Saksena, Research Assistant Professor
Kyle Strom, Associate Professor
Peter J. Vikesland, Nick Prillaman Professor / Program Coordinator
Zhiwu (Drew) Wang, Assistant Professor (OWML)
Claire White, Assistant Professor of Practice
Mark A. Widdowson, Interim Department Head and Professor
Kevin Young, Assistant Professor of Practice

GEOTECHNICAL ENGINEERING

Thomas L. Brandon, Professor
Joseph E. Dove, Associate Professor of Practice
George M. Filz, Charles E. Via, Jr. Professor
Russell A. Green, Professor
Matthew Mauldon, Associate Professor
Adrian Rodriguez-Marek, Professor/Program Coordinator
Nina Stark, Associate Professor and Anthony and Catherine Moraco Faculty Fellow
Alba Yerro Colom, Assistant Professor

STRUCTURAL ENGINEERING AND MATERIALS

Scott W. Case, Reynolds Metals Professor
Finley A. Charney, Professor
Matthew R. Eatherton, Associate Professor and Raymond G. and Madelyn Ann Curry Faculty Fellow in Structural Engineering
Madeleine M. Flint, Assistant Professor
Matthew H. Hebdon, Assistant Professor
Eric Jacques, Assistant Professor
Ioannis Koutromanos, Associate Professor
Robert T. Leon, David H. Burrows Professor/Program Coordinator
Carin L. Roberts-Wollmann, Professor
Rodrigo Sarlo, Assistant Professor
Maryam Shakiba, Assistant Professor

TRANSPORTATION INFRASTRUCTURE AND SYSTEMS ENGINEERING

Montasir Abbas, Professor
Alexander S. Brand, Assistant Professor
Gerardo W. Flintsch, Professor
Kathleen L. Hancock, Associate Professor
Kevin P. Heaslip, Associate Professor and CACI Faculty Fellow/Program Coordinator
Susan Hotle, Assistant Professor
Bryan J. Katz, Associate Professor of Practice
Hesham A. Rakha, Samuel Reynolds Pritchard Professor of Engineering
Antonio A. Trani, Professor
Linbing Wang, Professor

EMERITUS FACULTY

Gregory D. Boardman, EWR
Thomas E. Cousins, SEM
William E. Cox, EWR
Donald R. Drew, TISE
J. Michael Duncan, GEOT
W. Samuel Easterling, SEM
Antoine G. Hobeika, TISE
Robert C. Hoehn, EWR
Siegfried M. Holzer, SEM
J. Martin Hughes, EWR
David F. Kibler, EWR
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

FACULTY HONORS AND ACHIEVEMENTS



Gregory Boardman

- Dr. Kenneth D. Kerri Excellence in Workforce Development Award from the Association of Boards of Certification



W. Samuel Easterling

- Beedle Award from the Structural Stability Research Council (SSRC)



Marc Edwards

- Hoover Humanitarian Medal



Randy Dymond

- W.S. "Pete" White Innovation in Engineering Education Award from the College of Engineering



Gerardo Flintsch

- Appointed to the executive committee of the World Road Association



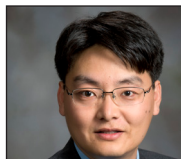
Russell Green

- Certificate of Teaching Excellence from the College of Engineering



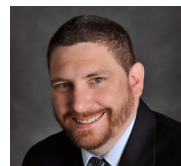
Kitty Hancock

- 2019 Governor's Transportation Safety Award



Jason He

- Dean's Award for Excellence in Research from the College of Engineering.
- 2018 highly Cited Researcher by Clarivate Analytics



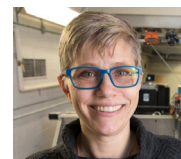
Kevin Heaslip

- Named CACI Fellow
- G.V. Loganathan Award



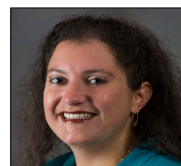
Matt Hebdon

- 2019 Robert J. Dexter Memorial Award Lecture
- Early Career Award by the American Institute of Steel Construction (AISC)



Jennifer Irish

- Elected into the Virginia Academy of Science, Engineering, and Medicine (VASEM)



Kara Lattimer

- 2018-2019 Award for Excellence in Career Advising



Linsey Marr

- Excellence in Teaching Award from the Center for Excellence in Teaching and Learning (CETL)



Paolo Scardina

- 2019 Alumni Teaching Excellence Award

MARC EDWARDS HONORED WITH HOOVER HUMANITARIAN MEDAL

Marc Edwards, University Distinguished Professor in the Charles E. Via Jr. Department of Civil and Environmental Engineering at Virginia Tech, will be awarded the 71st Hoover Humanitarian Medal at the American Society of Civil Engineers annual meeting Oct. 12 in Miami, Florida.

The award recognizes “great, unselfish, non-technical acts by engineers,” who have “advanced the well-being of humanity” and contributed to “development of a richer and more enduring civilization,” according to the society’s website.

Edwards, who joined the Virginia Tech community in 1997, is being honored for tenacious investigative science research that exposed environmental injustices in Washington, D.C.; Flint, Michigan; Denmark, South Carolina; and related work in dozens of other communities that helped assuage concerns about water quality.



By melding citizen science, applied ethics, investigative journalism, and activism if environmental crimes were revealed, Edwards helped instigate over a half billion dollars of relief funding, congressional hearings, criminal charges, new regulations, lawsuits, documentary films, and national conversations about antiquated water infrastructure and the role of scientists in society.

His volunteer efforts were largely self-funded and in direct collaboration with citizen scientists and parents of affected children - exposing the truth in the face of government intransigence. His decade-long battle to expose health harm from drinking water in Washington, D.C., was previously recognized by the IEEE Barus Award for “courageously defending the

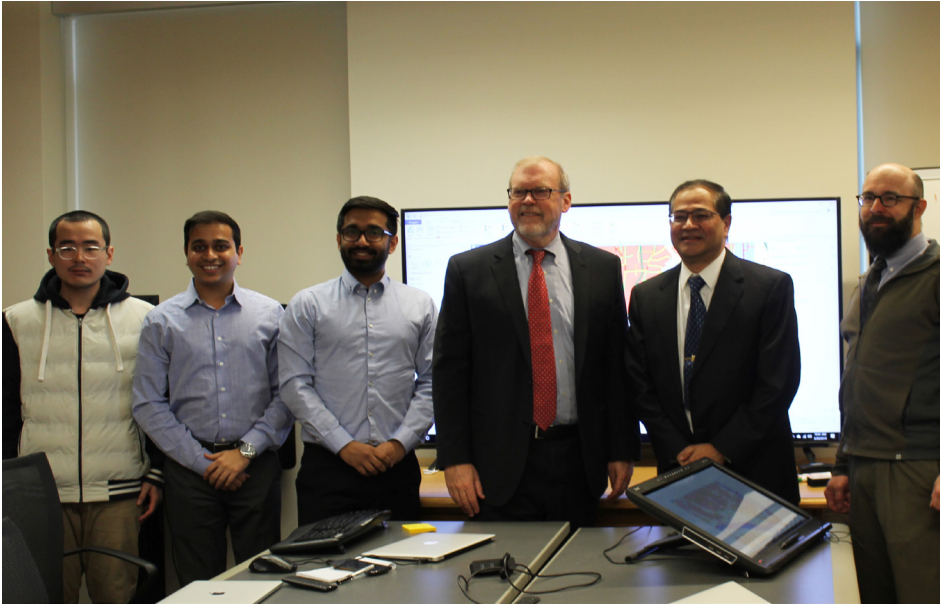
public interest at great personal risk” and a MacArthur genius grant in 2008.

Edwards was named amongst TIME Magazine’s 100 Most Influential people in the World, the World’s 50 Greatest Leaders by Fortune Magazine, Politico Magazine’s Top 50 Visionaries who have transformed American politics, Foreign Policy Magazines 100 World’s Greatest Thinkers, and was short-listed amongst Flint whistleblowers as Time person of the year. He was co-recipient of the inaugural 2017 MIT Disobedience Award and most recently received the AAAS Scientific Freedom and Responsibility award.

Herbert Hoover accepted the first medal in 1930, stipulated its purpose: to “mark the public service of individuals who have gone outside of their strictly professional work to interest themselves in civic and humanitarian affairs.” Previous recipients include Dwight Eisenhower, Jimmy Carter, David Packard, and Stephen Wozniak.

Edwards earned a bachelor’s degree in biophysics from the State University of New York at Buffalo in 1986 and master’s and doctoral degrees in environmental engineering at the University of Washington in 1988 and 1991, respectively.

CONSTRUCTION ENGINEERING AND MANAGEMENT



Professor Sunil Sinha and students hosted Congressman Morgan Griffith to share about the Sustainable Water Infrastructure Management (SWIM) Center.

The Vecellio Construction Engineering and Management Program said good-bye to Chema de la Garza after serving on the faculty for over 30 years. Chema became the Chair of the Glenn Department of Civil Engineering at Clemson University, and the program wishes him all the best in his new position.

Yet, the prominence and excellence of the program continues. VCEMP welcomed one of its largest graduate classes in recent years in the fall, and it now has over 50 current M.S. and Ph.D. students. In addition, the 2019 Vecellio Distinguished Lecture will be presented by Ross Myers, Chairman and CEO of Allan Myers, Inc. the Mid-Atlantic's largest heavy civil construction and construction materials company. Four undergraduate Vecellio Scholarships and three Vecellio Fellowships were awarded to highly-qualified students who have demonstrated leadership, academic excellence and an interest in pursuing a career in the construction industry. Scholars are Catherine McClain, Carolyn Olmsted, Victor O'Toole and Jamie Timmer while Fellows are Milad Afzalan, Diana Franco Duran and Mo Hu.

VCEMP also recognized several students and alumni:

- Outstanding VCEMP Graduate students: Milad Afzalan, Sogand Hasanzadeh, Farnaz Khaghani and Armin Rahimi-Golkhandan
- Outstanding VCEMP Alumnus: Dr. Pardis Pishdad-Bozorgi (MSCE'12) who is now an Assistant Professor in the School of Building Construction at Georgia Tech

Faculty from the program remain very active in research, teaching, and outreach. Michael J. Garvin is participating in a \$2.5 million research project for the Federal Highway Administration to develop a tool to support public agencies in their selection of alternative project delivery methods. Mike also co-edited a book on Public-Private Partnerships with Dr. Ray Levitt and Dr. Dick Scott of Stanford University published by Edward Elgar, and he established a new departmental center – the Center for Infrastructure Delivery Excellence. Farrokh Jazizadeh Karimi secured funding from the National Science Foundation, Virginia Tech ICTAS, and the American Association of Railroads while publishing eight journal

and eight conference papers. Farrokh also organized and chaired the first workshop on Building Blocks for Smarter Cities, which brought 35 participants together including researchers from universities and national labs, as well as program managers from the National Science Foundation (NSF), the Department of Energy (DOE), and the National Institute for Standards and Technology (NIST).

Freddy Paige continued working with Housing Virginia to develop solutions for reducing energy consumption in affordable senior housing. The team monitored energy consumption behaviors and provided energy education interventions for a 39-unit community in Richmond, VA. The team found that technology solutions need to be augmented by social interventions. Freddy also worked with VCEMP graduate student Brooke Baugher to lead a successful service-learning trip to Rilima, Rwanda. Through a partnership with Fondazione Marcegaglia Onlus (FMO), Virginia Tech students successfully built a composting latrine as an alternative to existing pit latrines. Tripp Shealy continued working with researchers at Purdue to learn what engineering students believe about climate change. The team surveyed more than 4,000 senior engineering students across the country. More than 80 percent of students recognize humans are contributing to climate change but less than 5 percent fully understand how to prevent it or prepare for it. Tripp also continued working with colleagues at Princeton, Columbia, and UVA to study engineering decision making methods. Recent results that demonstrate how to encourage more sustainable engineering design were published in the journal *Nature Sustainability*.

Finally, Sunil Sinha is working with more than 700 water utilities across the country for water pipeline performance analysis and artificial intelligence applications. Sunil received a National Science Foundation (NSF) Engineering Research Center (ERC) planning grant for Smart One Water (SOW) Cyber-Physical-Environmental-Social Digital Platform to Operationalize Sustainability and Resilience.



Freddy Paige is helping residents across Virginia reduce their energy consumption

Frederick Paige, assistant professor of civil and environmental engineering, is on a mission to improve the quality of life for the residents of Virginia and nationwide. He's producing an academic contribution by improving energy education and feedback for affordable housing communities. Building upon a statewide longitudinal study by the Virginia Center for Housing Research (VCHR), Dr. Paige and his research team is developing solutions to improve the energy performance of buildings that do not meet their energy goals. The ideal solution is education. Data from previous studies showed that residents that were educated on their housing unit were consuming less energy and saving more money. A year after providing an educational intervention, energy performance goals have not been reached, but the community's understanding of energy has changed, and their motivation to save energy improved.

"Studies like this can be difficult to make sure everything goes well," Paige said. "It has just as much value to see that certain things don't work so we can steer away from that and move in a different direction."

As they aim to set up similar studies in the future for family housing situations and campus housing at Virginia Tech, they plan to experiment with a variety of energy education and feedback protocols. New energy monitors will allow Paige and his team to see data in real-time and provide customized feedback messages to the residents along the way, rather than waiting until the end of the data collection to give feedback. "With this new way, we are hoping to keep people informed and help them live the best way they can," said Paige.

Paige is currently working in affordable housing communities because it is more systematic and community-based. "If you can make changes on a community scale, you

can get closer to also implementing it in other housing situations for the greater good of all," he said. This data also has the potential to influence policy and allow leaders in Virginia to make more informed decisions about societal, economic, and environmental impacts of infrastructure.

"This is a good example of how Virginia Tech research does impact communities, and we are truly influencing how buildings are going to be built in the future," he said. "This is not laboratory work. It got us out into the community to meet people and make a difference in their personal lives."

Paige's paper titled "fIEECe, an Energy Use and Occupant Behavior Dataset for Net Zero Energy Affordable Senior Residential Buildings" on this project is going to be published in *Scientific Data*, the peer-reviewed open access scientific journal published by the Nature Publishing Group.

ENVIRONMENTAL AND WATER RESOURCES

The Environmental and Water Resources (EWR) Program is one of the most highly respected graduate programs in environmental engineering in the United States. This recognition strongly reflects the dedicated work of the EWR faculty, staff, and students both on the Blacksburg

Biomedical Engineering and Mechanics at Virginia Tech prior to its reorganization. With the addition of Foroutan, the air group – already consisting of Linsey Marr and Gabriel Isaacman-Van Wertz – is poised to become a major center of

Science Professors (AEESP) awards for best dissertation or thesis. Haoran Wei (advised by Peter Vikesland) and Emily Garner (advised by Amy Pruden and Marc Edwards) each received one of the two best dissertation awards and Timothy Kent (advised by Zhiwu 'Drew' Wang) received one of the Master's Thesis awards. Jun-Whan Lee (advised by Jen Irish) was the recipient of a highly competitive Virginia Sea Grant Graduate Fellowship.

In addition, student teams strongly represented EWR on the podium at the 2019 WaterJAM (the joint meeting of the Virginia Section of the American Water Works Association and the Virginia Water Environment Association) awards in Virginia Beach.

EWR faculty received both internal and external recognition for their efforts this past year. As described in detail elsewhere in this Report, Marc Edwards was the 2019 recipient of the prestigious Hoover Humanitarian Medal in recognition of his extensive civic and humanitarian work. At the 2019 VT College of Engineering Dean's awards, Randy Dymond received the Pete White Innovation in Engineering Education award. This was the first time a member of CEE had received this honor. Also in 2019, Linsey Marr received the Excellence in Teaching Award from the VT Center for Excellence in Teaching and Learning and Jen Irish was elected into the Virginia Academy of Science, Engineering, and Medicine (VASEM).

The year saw Jen Irish conclude her U.S. Fulbright Senior Fellowship in Israel, John Little return from a sabbatical in China and France, and Amy Pruden conclude her tenure on the National Academy of Sciences Committee on Legionella in Built Water Systems.



Students were honored with awards and scholarships at WaterJam 2019

campus and in Northern Virginia at the Occoquan Watershed Monitoring Laboratory (OWML) in Manassas. You can read more about the work done at OWML and the upcoming expansion on page 14.

During 2019, EWR welcomed Hosein Foroutan to the faculty. Dr. Foroutan specializes in the development and application of advanced computational techniques for the study of environmental flow systems, particularly those related to atmospheric transport and air quality. He was formerly in the Department of

air pollution research in the country. In addition, OWML recently welcomed Art Grocholski as the new Administrative Operations Manager to replace Barbara Angelotti who retired after 35 years at the Occoquan Watershed Monitoring Laboratory.

The high quality of the work done by students within EWR was recognized by a number of external awards and fellowships. EWR students captured three of the four 2019 Association of Environmental Engineering and

Jen Irish was recently selected as a member of the Virginia Academy of Science, Engineering, and Medicine (VASEM). VASEM provides non-partisan, objective guidance to decision-makers in the Commonwealth of Virginia. Members are selected if they have an outstanding record of scientific accomplishments, national and international recognition, and willingness to participate in the activities of the Corporation. Irish was honored at a reception at the National Academy of Sciences on October 2.



SWIFT IS WORKING TO REPLENISH GROUNDWATER IN EASTERN VIRGINIA ENVIRONMENTAL AND WATER RESOURCES

The average American uses 80-100 gallons of water a day. When that number is multiplied by the 8.47 million residents of the Commonwealth of Virginia, there is a huge amount of water being used daily. Specifically, groundwater is being used in eastern Virginia at rates faster than it is being replaced. Homes and industries in eastern Virginia remove approximately 155 million gallons of groundwater from the Potomac Aquifer every day, leading to depletion of the aquifer. In addition, groundwater withdrawals in eastern Virginia contribute to the sinking of land in parts of the region. Sinking land subjects the region to the impacts associated with rising sea levels.

The Sustainable Water Initiative for Tomorrow (SWIFT) is a major replenishment project that is working to recharge the Potomac Aquifer with up to 100 million gallons of drinking water daily. SWIFT is an innovative infrastructure project headed up by the Hampton Roads

Sanitation District (HRSD) involving the addition of advanced water treatment processes to seven HRSD wastewater treatment facilities. The HRSD provides service to 18 cities and counties in southeast Virginia with a population of 1.7 million people.

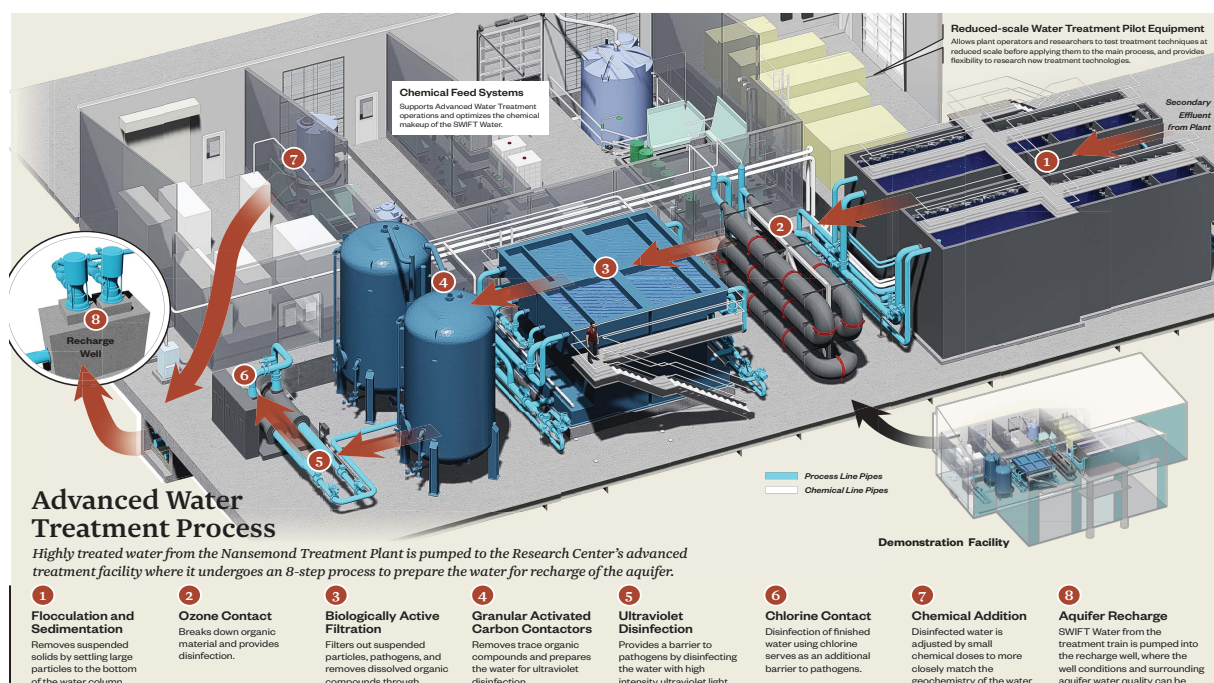
The Virginia Tech Via Department of Civil and Environmental has a number of graduate students and EWR faculty working closely with engineers and affiliate faculty member Charles Bott at HRSD to protect the region's environment and enhance the sustainability of long-term groundwater supply. To ensure SWIFT is protective of groundwater quality, the Commonwealth of Virginia established the Potomac Aquifer Recharge Monitoring Laboratory (PARML) modeled in part after the Occoquan Watershed Monitoring Laboratory. Professor Mark Widdowson is the Co-Director of PARML.

SWIFT uses a carbon-based advanced water treatment process and is carefully monitored to meet

strict drinking water safety standards. The SWIFT Research Center is located at the Nansemond Treatment Plant in Suffolk where a full-scale advanced water treatment system replenishes the Potomac Aquifer with up to one million gallons of drinking water quality SWIFT Water daily.

"SWIFT will recycle highly treated water, which would otherwise be discharged into the Elizabeth, James or York rivers, by instead purifying it through advanced water treatment technologies to meet drinking water quality standards," said Amy Pruden, W. Thomas Rice Professor.

Overall, SWIFT will provide a number of benefits by helping the Bay significantly reduce the amount of nutrients that HRSD discharges to rivers, replenishing the dwindling groundwater supply, fighting sea level rise, and protecting groundwater from saltwater intrusion. These contribute to the support of Virginia's economy by providing businesses with the water that they need to operate.





The future of the Occoquan Watershed Monitoring Laboratory

Since the Occoquan Watershed Monitoring Laboratory (OWML) was established in 1972, it has been helping to provide a drought-proof, environmentally sensitive, and high-quality source of drinking water for over one million residents in Northern Virginia. The lab was part of the nation's first deliberate indirect potable reuse program. "That experiment has been functioning well for over forty years," says Stanley Grant, professor and co-director of the OWML. Grant came to Virginia Tech from the University of California Irvine in 2018, and now serves as co-director for the OWML, along with Associate Research Professor Adil Godrej (CE, 1982) who was been at the lab for 30 years. Building on that long and successful history, the lab is working with stakeholders and faculty, inside and outside the Department of Civil and Environmental Engineering at Virginia Tech, to tackle the next grand challenges in urban water sustainability.

The lab is located in Manassas, Virginia, and monitors the Occoquan Watershed, encompassing portions of Fairfax County, Fauquier County, Loudoun County, Prince William County, City of Manassas, and the City of Manassas Park.

In the 1960s, urban and residential growth in the greater DC area began to negatively impact both the quality and quantity of drinking water available for the northern Virginia region. Many of the new residential developments in the Occoquan watershed had their own small sewage treatment plants, and nutrient discharges from these plants was starting to fuel algal blooms in the Occoquan Reservoir, one of the primary sources of drinking water for Fairfax County. "Something had to be done to solve the twin challenges of too many nutrients and too little water," says Dr. Godrej. After much drama and wrangling—it took Noman M. Cole, Jr., a civic activist and nuclear

engineer who led investigations into both the Three Mile Island nuclear accident in Pennsylvania and the near meltdown of Chernobyl Unit No. 4 in the Ukraine, to make it happen—the various parties came up with a radical solution still being replicated around the nation and throughout the world: "deliberate indirect potable reuse".

In the Occoquan, this involved consolidating all sewage treatment plants discharging to the reservoir into one large and high-tech facility known as the Upper Occoquan Service Authority (UOSA). Product water from this flagship facility mixes with freshwater from the Bull Run and Occoquan Rivers, flows into the Occoquan Reservoir, and sits there for a time before being pumped to the Fairfax County drinking water treatment plant, or discharged over the dam to the Potomac River. Because this idea—of deliberately supplementing the water supply with highly treated wastewater, or "reclaimed water"—was untested,



a neutral third-party was needed to monitor the system, provide operational advice to the various stakeholders, and ensure that this grand experiment protected human and ecosystem health. From this “Occoquan Policy,” which was legislatively mandated as 9VAC25-410, Virginia Tech’s OWML was born. Under the leadership of Tom Grizzard (CE 1968), the lab was a vital part of the Occoquan experiment for 40 years.

Today, the OWML is a unique mix of academic and professional staff that monitor and study stream flow and water quality in the rivers that feed the reservoir, and in the reservoir itself. Based on measurements and models, they provide information and technical support to local jurisdictions and the water supply and reclamation entities. “It is not a normal academic enterprise,” said Grant. “Mostly what I’ve done in my career is figure out how to get the next article published, the next student graduated, or the next research grant funded. This is a much bigger scale, more exciting, focus.”

In the early years the lab focused on novel approaches for controlling nitrogen and phosphorus in the

reservoir, to keep algal blooms from occurring. Then the focus was on human pathogens. More recently, there is increasing concern about rising sodium and chloride concentrations in the reservoir. If sodium levels get too high, it can affect the taste of the drinking water. Chlorides impact surface water quality and riparian habitat for sensitive species, like fish and the invertebrates they feed on.

The sources of these inorganics are still being worked out, but no doubt include the use of

deicers on roads and parking lots in the watershed, and various discharges from homes and industrial facilities that eventually find their way to the sewage collection system and UOSA. “The problem with sodium and chloride,” says Dr. Godrej, “is that these ions pass right through the treatment systems we have in place, both in the sewage treatment plant and in the water treatment plant. The only way you can get rid of them is by employing reverse osmosis, which is energetically expensive. In effect, you have to desalinate the water to bring the sodium and chloride concentrations down to an acceptable level.”

In fact, in many arid areas of the US, for example in the arid Southwest, dissolved salt concentrations do dictate the unit processes selected for indirect potable reuse, including reverse osmosis where it is merited. “The issue of salt in potable reuse is not a new one,” says Bob Angelotti (CE 1985), Executive Director of Technical Services at UOSA.

While salt has been an elemental part of potable reuse planning for decades, rising salt concentrations

in surface waters across the Occoquan Watershed are posing new questions about impacts to all of its major urban water systems, including sewage collection and treatment, water recycling, drinking water treatment and distribution, and protection of surface water quality and critical watershed habitat. Rising salt concentrations in the Occoquan also mirror broader trends for surface waters across the Northeastern US. The trend is so pervasive it has a name: the Freshwater Salinization Syndrome.

“On the positive side,” says Grant, “if we can make progress addressing the Freshwater Salinization Syndrome in the Occoquan, it puts the lab in a leadership position both nationally and globally.”

“It is a really exciting time for the lab. The lab has played an important historical role in urban water sustainability and is positioned well to play an important role going forward,” said Godrej.

Virginia Tech is renovating the lab, and expanding its footprint, from 10,500 square feet of laboratory and office space to 16,600 square feet. The goal is to kick-start a National interdisciplinary research and teaching program that leverages the long-term collaboration between the OWML and stakeholders in the DC area, focused around addressing increasing salt concentrations in the reservoir. To celebrate the grand opening of the new space, and with funds from the National Science Foundation, Grant and Godrej will be hosting a workshop to bring together VT faculty and DC stakeholders, with the goal of defining an urban water research agenda for the coming decades.

“While we’ll continue doing what we’ve done well for the last 40 plus years, I’m quite excited for the future of the lab,” says Grant. “I’m looking forward to working with municipalities, utilities, industry and the world-class faculty at Virginia Tech to make progress on this, and other, pressing challenges to our urban water systems.”

GEOTECHNICAL ENGINEERING

The Geotechnical Engineering Program enjoyed another successful year in its research, teaching, and service missions. On the research side, faculty activity is illustrated by multiple active grants, with funding from several institutions including the National Science Foundation (NSF), the Department of Defense, Électricité de France, and the United States Geological Survey (USGS), among others. Some examples include:

- Nina Stark recently conducted a survey of the Potomac River in Maryland in collaboration with the Virginia Institute of Marine Science on a project funded by SERDP.
- Russell Green and Adrian Rodriguez-Marek continue to work on projects related to liquefaction triggering using energy-based methods on projects funded by NSF and the USGS.
- With the leadership of Alba Yerro-Colom, Virginia Tech has been promoted from Associate to Board Member of the Anura3D MPM Research Community. The Material Point Method (MPM) is an advanced numerical technique, for modeling large deformations and soil-water-structure interaction problems.
- Tom Brandon, Dan VandenBerge, Bernardo Castellanos, and other VT geotechnical alums have nearly finished updating the legacy manual NAVFAC DM 7.01 Soil Mechanics. They will soon start updating the second manual in the series, NAVFAC DM7.02 Foundations and Earth Structures.

- Joe Dove is conducting research to improve the engineering properties of soils, detection of voids in the subsurface using geophysical methods, construction-induced ground vibrations, and the future of big data in geotechnical engineering.

Contributions of the Geotechnical Faculty have been acknowledged through various keynote lectures and invited lectures. Among the awards won by the faculty, George Filz received the American Council of Engineering Companies of Florida Engineering Excellence Award for his work at Kennedy Space Center in support of

NASA's Space Launch System; Nina Stark was named the Anthony and Catherine Moraco Faculty Fellow; Jim Mitchell was honored at U.C. Berkeley with a Distinguished Lecture Series celebrating his 60 Years as an engineering educator and mentor; and Russell Green received the COE Certificate of Teaching Excellence. Among the students, Kristin Ulmer, a Ph.D. student working with Russell Green and Adrian Rodriguez-Marek, won the GeoPoster competition at the 2019 GeoCongress.

Our graduate students again enhanced their professional development by attending the annual GeoCongress, which was in Philadelphia this year. The Duncan Endowment for Graduate Student Travel provides financial support to help make this possible. More information about the endowment and ways to contribute can be found at cee.vt.edu/duncan-endowment. During the conference, we hosted the annual Virginia Tech Alumni and Friends Reception, and more than 100 people attended, an attendance level that may well be a record for U.S. geotechnical programs. Please send your email address to Rachel Atwell (raesquivel@vt.edu) if you would like to be added to our

alumni listserv to receive invitations to future events and for other program information.

VT's Center for Geotechnical Practice and Research (CGPR) continues to have profound impacts on professional practice and on our program. The CGPR is our industry affiliate organization, which includes engineering consulting firms, construction companies, and government agencies. This year, 45 representatives of our member organizations attended the annual CGPR meeting, which many of our members describe as the most unique and valuable professional forum they attend each year.

The coming year will see some changes in our faculty with the retirements of Matthew Mauldon and George Filz. George will continue his engagement with the geotechnical group and the CGPR. We also welcome Dr. Sherif Abdelaziz, who will join the program in January 2020. Sherif is a graduate from Virginia Tech (Ph.D., 2013). He returns after a stellar start to his academic career at Stony Brook University in New York.



Virginia Tech faculty and students attended the ASCE geo-congress in Philadelphia.

STRUCTURAL ENGINEERING AND MATERIALS

The SEM graduate program continues to thrive with over 70 graduate students, with most of them involved in experimental, analytical or design research projects. Highlights for the program this year include:

- The SEM group welcomed Professor Scott Case. Dr. Case's expertise is in the area of composite materials, including the response of lightweight structural materials to combined fire and mechanical loading as well as accelerated test method development to support long-term durability predictions for adhesives and fiber-reinforced composites.
- Dr. Matt Hebdon was recognized with the American Institute of Steel Construction (AISC) Early Career Faculty Award and presented his research on accelerated galvanic corrosion testing of bridge steels as the 2019 Robert J. Dexter Memorial Award Lecture from the American Iron and Steel Institute (AISI), the National Steel Bridge Alliance (NSBA), and the American Association of State and Highway Transportation Officials (AASHTO) T-14.
- Dr. Matthew Eatherton was named as the Raymond G. and Madelyn Ann Curry Structural Engineering Faculty Fellow in recognition of his teaching and research excellence.
- Four of our graduate students (Eric Bianchi, Seth Caudle, Ryan Stevens and Allison McEntee) received prestigious fellowships from the American Institute of Steel Construction.
- Dr. Madeine Flint was named as the ASCE Natural Hazard Review's Reviewer of the Year for 2018.
- Dr. Eric Jacques has installed and commissioned the Virginia Tech Shock Tube Testing Facility, a large-scale gas-detonation blast simulator designed to produce high pressure blast waves that simulate those generated by accidental explosions and terrorist bombings. The facility is capable of subjecting targets to blast pressures up to 30 psi with a duration of 25 milliseconds.
- The Bridges and Society course, which is team-taught by almost the entire SEM faculty, took 17 undergrads and 4 faculty members through the Netherlands, Germany and Switzerland looking at the bridges designed by Maillart, Menn, Schleich and other major European engineers. The trip included visits to the labs at the Technical University of Delft (NL), the Technical University of Darmstadt (GE) and

a cruise on the Rhine River.

- Selected to host the 2020 American Institute of Steel Construction (AISC) Student Steel Bridge Competition (SSBC) National Finals. May 22-23, 2020. Alumni and friends of CEE are encouraged to volunteer and/or sponsor this opportunity to showcase Virginia Tech Civil Engineering on a national level (email: ssbc2020@vt.edu.)
 - New graduate design course offerings in wind (Dr. F. Charney) and blast design (Dr. E. Jacques) which makes our graduate SEM curriculum amongst the most comprehensive and diverse in the country.
 - Addition of a course on Experimental Methods and Signal Processing (Dr. Sarlo) dealing with structural health monitoring, infrastructure instrumentation and data processing.
 - Addition of a course on advanced structural mechanics (CEE 5490), which focuses on mechanics of materials and elements, specifically as applied in civil engineering design, and provides the basic topics in continuum mechanics, mechanics of materials, and energy methods
 - Addition of a non-destructive la component in CEE 3684 (Dr. A. Brand) exposing undergraduate students to techniques commonly used in the field as part of QA/QC controls.
 - Addition of an undergraduate section for Forensic Structural Engineering (Dr. Leon), which will become a generic, CEE-wide Forensic Engineering course next year.
 - Continuous strong participation by SEM faculty (Drs. M. Flint, R. Sarlo, M. Shakiba, C. Wollman-Roberts, M. Hebdon, M. Eatherton) on summer K12 camps for C-Tech², Blast summer camp, Engineering Open House, and others.
- Murray Structure Labs Highlights:
- Testing of full-scale bridge beams removed from the Lesner Bridge, the Aden Road Bridge and the Hampton Roads Bridge Tunnel approaches to determine residual strength and evaluate repair techniques for corrosion damaged prestressed concrete bridges (Drs. C. Roberts_Wollmann, I. Koutromanos and M. Hebdon).
 - Testing of 1/3-scale three-span, two-way post-tensioned flat plates reinforced with steel fibers under gravity loads to determine

the beneficial effects of the fibers on service level behavior and ultimate strength.(Dr. C. Roberts-Wollmann).

- Tested full-scale deteriorated steel bridge members, railroad bridge strength, repaired steel bridge members using CFRP, and inspection of bridges using Artificial Intelligence and drones (Dr. M. Hebdon).
- Lab operations run smoothly thanks to the efforts of B. Farmer, D. Huffman, and David Mokarem. D. Huffman retired this year after 35 years at the lab and was replaced by Garret Blankenship.

Other faculty highlights include:

- Dr. M. Eatherton helped host a workshop in San Francisco with leading west coast engineers to map out the future of seismic diaphragm design as part of the Steel Diaphragm Innovation Initiative (SDII).
- Rodrigo Sarlo's research focuses on monitoring methods for infrastructure assessment and management. He currently is working on a VDOT-sponsored project, in collaboration with Matt Hebdon, on wireless displacement monitoring of ancillary highway structures subject to heavy winds.
- Dr. F. Charney authored an ASCE prestandard that presents a recommended alternative to the prescriptive procedures for wind design of buildings contained in the nationally adopted standard Minimum Design Loads and Associated Criteria for Buildings and Other Structures (ASCE 7) and in the International Building Code (IBC).
- ASCE recognized two SEM faculty members for their work as technical reviewers: Dr. Madeleine Flint was named the Natural Hazard Review's Reviewer of the Year and Dr. Finley Charney was similarly recognized ASCE Journal of Structural Engineering Outstanding Reviewer" in 2019.
- Dr. Jacques introduced a new course on Blast Analysis & Protective Design. This project-based class was supported by active industry members who shared their knowledge through in-person and telepresence guest lectures, as well as advising project groups, thus providing students the opportunity to work on real-world problems to industry and gain exposure to protective design processes commonly found in practice.



the end of the shock tube is monitored using high speed data acquisition equipment and high speed video cameras.

“The Shock Tube is intended to evaluate the resilience of structural and non-structural building components subjected to extreme blast loads,” said Jacques. “It not only supports cutting-edge research but also provides Virginia Tech graduates with hands-on experiential learning in blast protection to develop technical skills that are much needed by the protective design community.”

The overall goal is to use the data from the Shock Tube to develop structural engineering tools and technologies to better

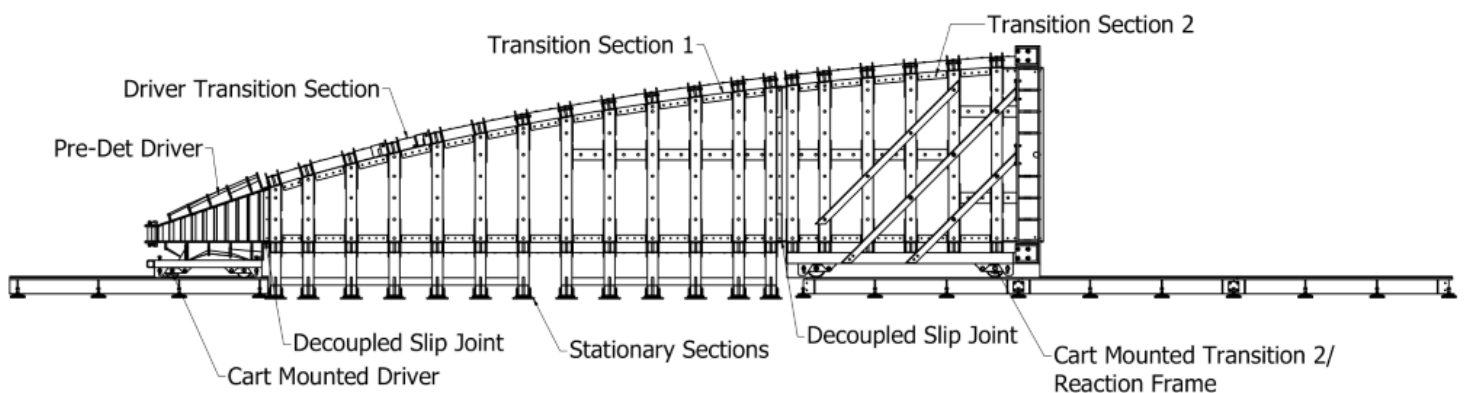
protect vulnerable infrastructures. This can have significant impacts on safeguarding the physical security and socio-economic well-being of the public against terrorist bombings and accidental industrial explosions.

Beyond his work using a Shock Tube, Jacques has also developed several blast analysis software tools. Prior to joining the Virginia Tech faculty, he was an Assistant Research Officer at that National Research Council of Canada, which is Canada’s premier research and technology organization.

Eric Jacques is working to protect people and infrastructure against explosions

Our faculty are known for cutting-edge research analyzing how structures hold up during earthquakes, extreme loads, and other natural and man-made hazards. A new addition to CEE’s extensive research infrastructure will allow Assistant Professor Eric Jacques and his research group to test how structures will hold up to explosive blast loads. The Virginia Tech Shock Tube Testing Facility is located at the Thomas M. Murray Structures Laboratory and is equipped with a large-scale gas-detonation blast simulator and state-of-the-art high-

speed data acquisition system and cameras. This unique facility, the only one of its kind at a university in the United States, The facility works by safely and economically producing high pressure blast waves that accurately simulate those generated by accidental industrial explosions and terrorist bombings. As much as 45 ft³ of oxy-acetylene gas can be detonated in the chamber which causes shock wave expansion in the transition sections, whose shape and transition are designed to ensure the shock wave planarity at the test section. The behavior of test specimens fixed to



TRANSPORTATION INFRASTRUCTURE AND SYSTEMS

This year was an active one for the Transportation Infrastructure and Systems Engineering (TISE) group.

- Dr. Montasir Abbas was promoted to full professor.
- Antonio Trani celebrated his thirtieth year of service on the faculty at Virginia Tech.
- Alex Brand joined the group as an assistant professor and had several achievements in his first year including being the keynote speaker for the 17th Euroseminar on Microscopy Applied to Building Materials and winning first place in the Microscopy Photo Contest at that conference.
- Susan Hotle's student Stephanie Attallah received the Airport Cooperative Research Program Graduate Research Award on Public-Sector Aviation Issues
- Kitty Hancock and the Center for Geospatial Information Technology received the 2019 Governor's Transportation Safety Award for Innovation in Highway Safety.
- Gerardo Flintsch and his group had a very active year. Ross McCarthy (PhD student) and Esther Lizasoain Arteaga (visiting scholar, pursuing her PhD at University of Cantabria) received 2019 Executive Fellowships from the International Road Federation. Dr. Flintsch was appointed chair of the Committee TC 3.4 Asset Management of the World Road Association (PIARC) (Cycle 2020-23, representing AASHTO). He also delivered a Transportation Research Board Webinar, Comprehensive Pavement Assessments Using Continuous Deflection on May 30, 2019. Flintsch's Center for Sustainable transportation Infrastructure (CSTI) partnered with VDOT to initiate and lead a 3 million dollar pooled fund that is supporting the implementation of traffic speed deflectometers (TSDDs)

across the US. To facilitate the effective implementation of TSDDs and the incorporation of the TSDD data in pavement management decision-making, the research team is developing guidance on (1) data collection protocols, (2) data interpretation guidelines for network and project level applications, and (3) developing a framework to implement continuous deflection measurements as part of the agency's pavement management system (PMS). Dr. Flintsch also partnered with VTRC to instrument and monitor a section on I-64 to quantify the response of recycled pavement sections subjected to known loadings and monitor the performance for one year. This will help to understand the behavior of the recycled materials and facilitate their use throughout the state. Hesham Rakha's student Mohammed Almannaa won a scholarship to attend the 37th annual Lifesavers National Conference on Highway

- Safety Priorities in Louisville, KY.
- Dr. Rakha was also an active member of the National Science Foundation funded Research Trainee Program titled UrbComp, a program dedicated to enhancing urban computing.
- Linbing Wang served as the president of the Engineering Faculty Association for the 2018-2019 academic year.
- Bryan Katz continued to teach the Introduction to Civil Engineering course providing a great gateway for students entering CEE.
- Kevin Heaslip was awarded the G.V. Loganathan Award for Excellence in Civil Engineering Education and was named a CACI Faculty Fellow by the College of Engineering. Dr. Heaslip was also a Co-Principal Investigator on a \$3,000,000 United States Department of Energy grant researching the cybersecurity of eXtremely Fast Charging (XFC) for electric vehicles.

The Virginia Tech traffic bowl team beat UVA to advance and compete in the Southern District Traffic Bowl.



MEET THE VIA SCHOLARS

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 received more than \$20 million in support.

We are proud to acknowledge that this is the 32nd year of the Via endowment and the Via Report. We want to take this opportunity to recognize the current Via scholars as well as alumni that have come through the program for the last 32 years and continue to fulfill the mission set by the Via family.

UNDERGRADUATE

Steven Hall



Hometown: St. Paul, Virginia

Career Goals: I hope to pursue a Ph.D. relating to environmental modeling and simulation or work as an engineer for the Environmental Protection Agency. I believe I can make a meaningful difference with either choice.

Derek Lawrence



Hometown: Annandale, Virginia

Career Goals: After I graduate, I plan to pursue an M.S. in Structural Engineering at a German technical university. Eventually, I would love to work on large projects with an international civil engineering company, such as the next Burj Khalife or Shanghai Tower.

Carolyn Olmstead



Hometown: Onancock, Virginia

Career Goals: My civil focus is in structural engineering and construction. I plan on going into industry work after graduation and am interested in careers in mass transit or structural forensics.

UNDERGRADUATE

Liz Smith



Hometown: Auburn, Alabama

Career Goals: I am currently planning on pursuing an M.S. degree in geotechnical engineering.

Delaney Snead



Hometown: Forest, Virginia

Career Goals: I want to get my PE license and pursue a career at either an engineering consulting firm or in research with the intention of maximizing water treatment techniques so they are more economically feasible to implement and more effective at filtering out and eliminating harmful bacteria.

Lucy Travers



Hometown: Roanoke, Virginia

Career Goals: I want to acquire my PE and combine my passion for construction and design in a unique career path.

MASTERS

Stefany Baron



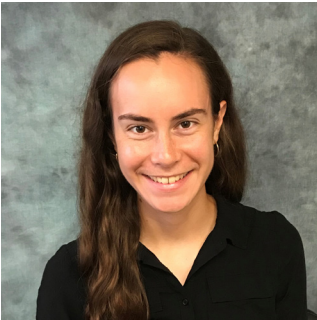
ENVIRONMENTAL AND WATER RESOURCES

Hometown: Seven Fields, Pennsylvania

Location of Undergraduate Studies: Penn State University

Career Goals: I would like to work on the design and implementation of stormwater management systems to ensure that towns and cities are able to mitigate the pollutants that enter streams and rivers while also ensuring that there is sufficient flood protection.

Kayla Bauhs



ENVIRONMENTAL AND WATER RESOURCES

Hometown: Middleton, Wisconsin

Location of Undergraduate Studies: University of Wisconsin-Madison

Career Goals: After completing my Master's degree, I would like to work for a consulting engineering firm with a focus on water and wastewater projects. I also hope to obtain my PE license along the way.

Rachel Brodsky



STRUCTURAL ENGINEERING AND MATERIALS

Hometown: Norfolk, Virginia

Location of Undergraduate Studies: Virginia Tech

Career Goals: After completing my Master's degree, my goal is to work in an engineering design firm as a structural engineer. I would like to obtain my PE license and work my way up to managing projects and other engineers.

Abby Burke



GEOTECHNICAL ENGINEERING

Hometown: Hardinsburg, Kentucky

Location of Undergraduate Studies: University of Kentucky

Career Goals: After earning my Master's degree, I plan to work for a geotechnical consulting firm and obtain my PE license. Eventually, I may return to school for a Ph.D. and pursue a career in academics.

MASTERS

Michael Calfe



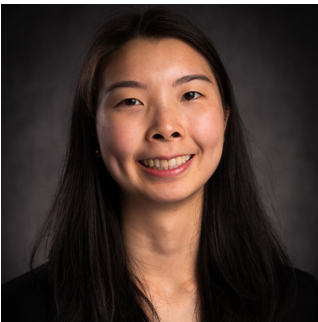
ENVIRONMENTAL AND WATER RESOURCES

Hometown: Pittsburgh, Pennsylvania

Location of Undergraduate Studies: Clemson University

Career Goals: My career goals are to graduate with my Master's degree and go to work professionally as a stream restoration designer.

Helen Chen



ENVIRONMENTAL AND WATER RESOURCES

Hometown: Fairfax, Virginia

Location of Undergraduate Studies: Virginia Tech

Career Goals: I plan to work in design and consulting to address hydrologic and hydraulic impacts of development, eventually obtaining my PE. I hope to continue to be inspired by new ideas.

Amanda Darling



ENVIRONMENTAL AND WATER RESOURCES

Hometown: Aurora, Illinois

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

Career Goals: After earning my master's degree, I hope to pursue research opportunities applying technologies for sustainable development of water infrastructure, including systems for wastewater treatment and water supply.

John Gergel



STRUCTURAL ENGINEERING AND MATERIALS

Hometown: West Chester, Pennsylvania

Location of Undergraduate Studies: Penn State University

Career Goals: I plan to work for an engineering firm doing design and analysis of structures, including working on many exciting and innovative structural design projects. I also plan to earn my PE license.

MASTERS

Kyle Horsham



GEOTECHNICAL ENGINEERING

Hometown: Fallston, Maryland

Location of Undergraduate Studies: University of Delaware

Career Goals: To work at a professional engineering firm upon earning my Ph.D. and becoming a licensed professional engineer. I have goals of returning to academia and becoming a professor to aid in the engineering education of future engineers.

Morgan Jenkins



STRUCTURAL ENGINEERING AND MATERIALS

Hometown: Knoxville, Tennessee

Location of Undergraduate Studies: University of Tennessee, Knoxville

Career Goals: I plan to complete my Master's degree and then go into industry with a focus on sustainability in respect to structures or continue to pursue a Ph.D. I would like to take my experience from industry into academia as a professor after acquiring my PE license.

Alex Juliano



GEOTECHNICAL ENGINEERING

Hometown: Lynnfield, Massachusetts

Location of Undergraduate Studies: Merrimack College

Career Goals: After earning my masters degree, I hope to return to geotechnical consulting in Boston and have the opportunity to work on complex and unique projects, while working to achieve my PE.

Tanner Keene



CONSTRUCTION ENGINEERING AND MANAGEMENT

Hometown: Riner, Virginia

Location of Undergraduate Studies: Virginia Tech

Career Goals: I hope to earn my PE license and oversee construction of large highway and bridge projects.

MASTERS

Roger Knittle



GEOTECHNICAL ENGINEERING

Hometown: Ringtown, Pennsylvania

Location of Undergraduate Studies: Bucknell University

Career Goals: My career goal is to become a professional engineer and ultimately take on a management role in a firm or start my own company.

Pamela Kryschtal



TRANSPORTATION AND INFRASTRUCTURE SYSTEMS

Hometown: Falls Church, Virginia

Location of Undergraduate Studies: Virginia Tech

Career Goals: Undecided. Perhaps something in freight operations, but also interested in academia or consulting.

Christian Lytle



ENVIRONMENTAL AND WATER RESOURCES

Hometown: Liberty Township, Ohio

Location of Undergraduate Studies: Case Western Reserve University

Career Goals: I plan on conducting research in academia or the private sector after completing my doctorate degree. My end goal is to teach and mentor the next generation of environmental engineers.

Justin Macmanus



ENVIRONMENTAL AND WATER RESOURCES

Hometown: Harlingen, Texas

Location of Undergraduate Studies: Texas A&M University

Career Goals: I plan to work at a private consulting firm as a design engineer and project manager on water treatment and wastewater treatment projects. I hope to eventually work my way up to a management position in a large firm or start my own firm.

MASTERS

Eric Matynowski



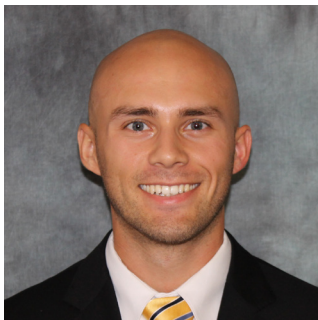
ENVIRONMENTAL AND WATER RESOURCES

Hometown: Clarkston, Michigan

Location of Undergraduate Studies: Michigan State University

Career Goals: Work in the water resources field with a focus in engineering and public policy.

Ryan Osborn



ENVIRONMENTAL AND WATER RESOURCES

Hometown: Galesburg, Illinois

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

Career Goals: My career goal is to work as a water resources engineer for a company that focuses on stream and watershed restoration.

Casey Peloquin



GEOTECHNICAL ENGINEERING

Hometown: Gig Harbor, Washington

Location of Undergraduate Studies: United States Air Force Academy

Career Goals: My goal is to make the Air Force a career and serve my 20 years. I am currently a 1st Lt. as a civil engineer officer and I love my job.

Jenna Ritchie



GEOTECHNICAL ENGINEERING

Hometown: Manahawkin, New Jersey

Location of Undergraduate Studies: Virginia Tech

Career Goals: My goals are to become a professional engineer, lead a multidisciplinary team of engineers to solve slope stability issues before they become emergencies, and ensure quality control to the point where no liability work has to be done on implemented projects.

MASTERS

Ryan Stevens



STRUCTURAL ENGINEERING AND MATERIALS

Hometown: Signal Mountain, Tennessee

Location of Undergraduate Studies: Virginia Tech

Career Goals: After earning my Master's degree, I would like to work in the structural steel industry, with either a fabricator or contractor. Eventually, I would like to work for an engineering firm designing buildings and other structures.

Joshua Trump



CONSTRUCTION ENGINEERING AND MANAGEMENT

Hometown: Manassas, Virginia

Location of Undergraduate Studies: Virginia Tech

Career Goals: My interests are split. I'm very interested in continuing research but I'm also considering my future in industry. I'm excited to see where this year takes me as I explore more of my research and experience academia.

DOCTORAL

Maria Amaya



ENVIRONMENTAL AND WATER RESOURCES

Hometown: Columbus, Ohio

Location of Undergraduate Studies: The Ohio State University

Career Goals: Become a PE and apply my knowledge in an international setting as part of my professional practice in water resources and environmental engineering.

Brooke Baugher



CONSTRUCTION ENGINEERING AND MANAGEMENT

Hometown: Charlottesville, Virginia

Location of Undergraduate Studies: Virginia Tech

Career Goals: Once I finish my Ph.D., I want to work on international development projects and teach engineering students about international engineering practices. My goal is to help create a more effective system within engineering which benefits student learning and impacts communities around the world.

Matthew Blair



ENVIRONMENTAL AND WATER RESOURCES

Hometown: Clear Spring, Maryland

Location of Undergraduate Studies: Mississippi State University

Career Goals: After graduation, I would like to continue my work with water reuse systems and ultimately work in both industry and academic settings.

Conrad Brendel



ENVIRONMENTAL AND WATER RESOURCES

Hometown: Elizabethtown, Pennsylvania

Location of Undergraduate Studies: Iowa State University

Career Goals: I would like to be involved in teaching or public service related to water quality and quantity.

Nick Brill



GEOTECHNICAL ENGINEERING

Hometown: New Orleans, Louisiana

Location of Undergraduate Studies: Virginia Tech

Career Goals: Obtain an M.S. and Ph.D. in civil engineering and eventually make a career doing research in coastal engineering.

DOCTORAL

Meredith Bullard Martinez



ENVIRONMENTAL AND WATER RESOURCES

Hometown: Garner, North Carolina

Location of Undergraduate Studies: North Carolina State University

Career Goals: I want to be a consulting engineer and return to teach at a university. My ultimate goal is to teach, mentor, and inspire young engineers.

Emma Coleman



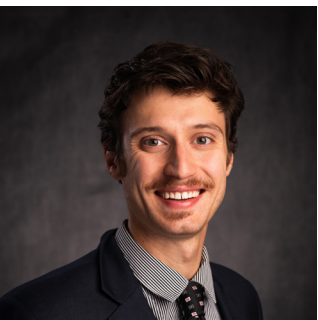
CONSTRUCTION ENGINEERING AND MANAGEMENT

Hometown: Columbia, South Carolina

Location of Undergraduate Studies: Clemson University

Career Goals: I study the impact of transportation mode on chronic disease. I would like to work for a government or consulting organization that prioritizes public health through the construction of sustainable cities and analysis of public data. For my dissertation, I am researching U.S. cities' transportation network effects on bicycle commuting and connections to cardiovascular disease outcomes.

Abraham Cullom



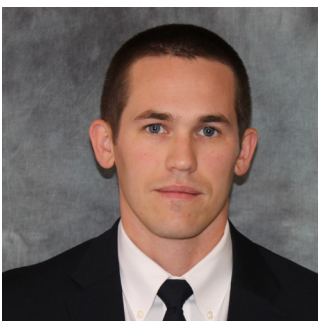
ENVIRONMENTAL AND WATER RESOURCES

Hometown: Leawood, Kansas

Location of Undergraduate Studies: University of Pittsburgh

Career Goals: I want to pursue an academic career through teaching and researching environmental microbiology.

Steven Hoagland



ENVIRONMENTAL AND WATER RESOURCES

Hometown: Lexington, Kentucky

Location of Undergraduate Studies: University of Kentucky

Career Goals: I would like to perform research and help educate young engineers as a university faculty member.

DOCTORAL

James Hurley



ENVIRONMENTAL AND WATER RESOURCES

Hometown: Durango, Colorado

Location of Undergraduate Studies: University of Colorado at Boulder

Career Goals: Research scientist or engineer focusing on air pollution and air quality

Rebecca Kriss



ENVIRONMENTAL AND WATER RESOURCES

Hometown: Landenburg, Pennsylvania

Location of Undergraduate Studies: Johns Hopkins University

Career Goals: After earning my doctorate degree, I would like to pursue a career in research, potentially in academia or the public sector.

Michael Lee



ENVIRONMENTAL AND WATER RESOURCES

Hometown: Seoul, Republic of Korea

Location of Undergraduate Studies: Hanyang University, Seoul, Republic of Korea

Career Goals: I would like to be a professional in the field of coastal engineering as a researcher and/or educator.

Krista Liguori



ENVIRONMENTAL AND WATER RESOURCES

Hometown: King of Prussia, Pennsylvania

Location of Undergraduate Studies: Penn State University

Career Goals: I hope to become a professor to continue working with motivated students and formulating original research with global impact.

DOCTORAL

Kathryn Lopez



ENVIRONMENTAL AND WATER RESOURCES

Hometown: Miami, Florida

Location of Undergraduate Studies: Florida State University

Career Goals: I plan to become a professor to continue conducting research on aquatic contaminants and shape the learning experiences of young engineers. I also aim to become involved in environmental policy.

Seth Lotts



ENVIRONMENTAL AND WATER RESOURCES

Hometown: Richmond, Virginia

Location of Undergraduate Studies: US Military Academy at West Point

Career Goals: My goal is to be a university professor and make a significant contribution in the field of environmental engineering.

Ayella Maile-Moskowitz



ENVIRONMENTAL AND WATER RESOURCES

Hometown: Mount Rainier, Maryland

Location of Undergraduate Studies: University of Maryland, College Park

Career Goals: I plan on continuing my research in academia or in a national laboratory.

Ross McCarthy



TRANSPORTATION INFRASTRUCTURE AND SYSTEMS

Hometown: Corsicana, Texas

Location of Undergraduate Studies: Virginia Tech

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

DOCTORAL

Erin Milligan



ENVIRONMENTAL AND WATER RESOURCES

Hometown: North Canton, Ohio

Location of Undergraduate Studies: Ohio University

Career Goals: A career in research studying the environmental microbiome and contaminant transport, especially in rural communities.

Julie Paprocki



GEOTECHNICAL ENGINEERING

Hometown: Mingo Junction, Ohio

Location of Undergraduate Studies: University of Cincinnati

Career Goals: Work for a geotechnical design company working on large-scale projects and obtain my professional engineering license. Outside of work, volunteer with Engineers Without Borders and serve on international projects.

Emily Parker



ENVIRONMENTAL AND WATER RESOURCES

Hometown: Stockton, California

Location of Undergraduate Studies: University of California, Los Angeles

Career Goals: I hope to become an expert in urban water sustainability and help communities achieve more sustainable water practices through science/engineering, policy, and outreach

Jeannie Purchase



ENVIRONMENTAL AND WATER RESOURCES

Hometown: Ellenwood, Georgia

Location of Undergraduate Studies: Clemson University

Career Goals: My goal is to continue in the field of academia as a professor of civil engineering with an emphasis of water remediation strategies, citizen science, and communicating science. I hope to inspire the next generation of engineers through teaching, mentorship, and outreach.

DOCTORAL

Tyler Quick



GEOTECHNICAL ENGINEERING

Hometown: Lexington, Kentucky

Location of Undergraduate Studies: Brigham Young University

Career Goals: I plan on continuing in academia as a university professor. I would like to continue researching while teaching and mentoring future civil engineers.

Samuel Sherry



STRUCTURAL ENGINEERING AND MATERIALS

Hometown: Allentown, Pennsylvania

Location of Undergraduate Studies: University of Oklahoma

Career Goals: I would like to pursue a career in academia as a researcher. I hope to apply my knowledge to advance research in the field of structural engineering, as well as instill my passion for learning and knowledge in future engineers.

Storme Spencer



ENVIRONMENTAL AND WATER RESOURCES

Hometown: Columbia, South Carolina

Location of Undergraduate Studies: Clemson University

Career Goals: I plan to pursue a career working toward purifying and providing clean water supplies in developing countries.

Kristin Ulmer



GEOTECHNICAL ENGINEERING

Hometown: Corvallis, Oregon

Location of Undergraduate Studies: Brigham Young University

Career Goals: 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.

DOCTORAL

Kory Wait



ENVIRONMENTAL AND WATER RESOURCES

Hometown: Seymour, Indiana
Location of Undergraduate Studies: Purdue University
Career Goals: Continue my Ph.D. research investigating potential sources of groundwater contamination and specifically focusing on the effects of contamination on drinking water supplies from private wells.

Lucas Walshire



GEOTECHNICAL ENGINEERING

Hometown: Kalona, Iowa
Location of Undergraduate Studies: University of Iowa
Career Goals: Contribute to the US Army Corps of Engineers mission by providing technical support through practical and cost effective means.

Kaleigh Yost



GEOTECHNICAL ENGINEERING

Hometown: Princeton, New Jersey
Location of Undergraduate Studies: University of Notre Dame
Career Goals: I plan on dedicating my career to furthering the understanding of earthquakes and reducing earthquake risk worldwide. I aspire to become a leader in the field of geotechnical earthquake engineering and plan to pursue a career in academia.

VIA ALUMNI: WHERE ARE THEY NOW?

To see a list of Via alumni through the years, visit our website at https://www.cee.vt.edu/via-alumni-where-are-they-now/. If you would like to update your information, contact Courtney Sakry at csakry@vt.edu or call the CEE main office at 540-231-0635.

2018-2019

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		Harold W. Bohannon.....	1968	Steven T. Capito.....	1995
		Michelle E. Bolding.....	2005	Thomas M. Cardman.....	2011
		Kyle T. Bollinger.....	2008	Valerie L. Carpenter-Ho.....	1999
		Taylor C. Bolte.....	2017	Michael C. Carper.....	1993
		Mary Ann S. Bonadeo.....	1995	R.D. Carson.....	1971
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		Raymond A. Booth.....	1969	Bernardo A. Castellanos.....	2014
		Anna Bosco.....	2018	Kelly A. Cave.....	1984
		Doran J. Bosso.....	2006	Jung-Yeon S. Chang.....	1988
		H.B. Bowles.....	1985	Young H. Chang.....	1987
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		Austin A. Bradley.....	1983	Xiaojun Chang.....	2011
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		Anita W. Branch.....	1994	Craig A. Cheney.....	2004
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Christy Connors 1991	Erin P. Donovan..... 1999	Adil Godrej.....1982
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Harry G. Cooke 2000	David C. Dunbeck1979	Kyle E. Goode 1969
Fred O. Cornett.....1995	Barry T. Dunkley1971	William H. Gordon.....1967
Timothy Coughlin 1999	Robert L. Earl..... 1966	Alan K. Gordon1978
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James F. Cruise1974	Dwight L. Farmer1974	Donald R. Grubbs.....1971
Robert D. Curfman1983	Charles B. Feagans.....1972	Mark J. Gutberlet.....1993
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Arthur D. Dailey 1981	Michael R. Field 2009	Charles D. Hall.....1970
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Stephen R. DeLoach.....1978	Michael M. Flaherty1967	Brandon C. Harrison..... 2006
Greg R. Deubler..... 1994	Theron R. Fluker..... 1999	Luther L. Hash 1969
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Pablo A. Hernandez..... 1989	Christine S. Kelly..... 1984	Mercer R. MacPherson.....1963
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Eric T. Hirschmann.....2015	Jason F. Kennedy..... 2008	Peter Manning 1981
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Edward G. Horstkamp 1986	Kenneth J. Kohut.....1971	Darryl E. Mayton.....1978
Charles S. Hughes1958	Evangelos Kontozoglou.....2015	William C. McAllister1965
Kimberly C. Hughes.....1985	Akshay M. Krishnan..... 2016	Avery McClellan 1968
Jeffrey M. Hugney1988	Kevin D. Kumordzie 2019	R.J. McCracken.....1973
Thomas N. Hunnicutt.....1959	Jeffrey Kuttesch.....2003	David I. McCready1973
Matthew C. Hurst1997	Kevin T. Laptos1988	Brian K. McDermott 2019
Larry W. Ingalls 1966	Kara E. Lattimer.....2002	Jay T. McGinnis1997
Matthew C. Jackson.....1993	William F. LaVecchia.....1952	Jeffrey A. McInnis..... 1996
Nonish Jain2015	Steven R. Lavinder.....1985	Garland H. McKenzie 1981
Robert F. Jansen 1980	Peter T. Lazarevich 2006	Michael W. McLaughlin1976
Benjamin C. Jarosz..... 1999	James L. Leeth.....1974	Nathan D. McWhirter.....2017
Jimmie D. Jenkins1970	Danielle V. Lehman..... 2019	David F. Meadows.....1987
James T. Johnson1978	Benny E. Lenox1979	Ronald L. Meng 1996
Paul B. Johnson 1974	Thomas F. Lester.....1975	Babur Mian1992
Elizabeth V. Jones..... 2014	Jerry C. Lester1975	Ronald L. Miller1974
James R. Jones1970	Milton J. Lewis..... 1981	Ann B. Miller 1984
John H. Jones.....1973	Zhuncheng Li 2016	Robert J. Miller 1994
Meredith T. Jones 1994	Jeffrey N. Lighthiser.....1977	Robert S. Miller.....1967
Malcolm F. Jones1953	Hai Lin.....2015	Barry S. Milstone1985
Paul A. Jordan..... 1980	Charles R. Linamen.....1971	Richard O. Mines1983
Williams A. Joyner 1966	Alan T. Lingerfelt1976	Alvin S. Mistr 1969
William E. Junda..... 2000	Jon O. Loker1958	Sarah O. Mitchell 2019
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David W. Mokarem 1996	Benjamin C. Parrish.....2012	Jeffrey W. Reynolds1982
Michael C. Moon..... 1984	Maysill G. Pascal2003	Allen W. Reynolds1962
Steven T. Moore.....1982	James W. Patteson 1984	James B. Richards..... 1969
Anthony J. Moraco1982	Gerald W. Peaks 1969	Richard E. Richman 1966
Herbert W. Morgan1975	Michael R. Perschbacher..... 1994	Joseph B. Riding1979
Joe M. Morgan 1968	Melinda H. Peters.....1995	Joseph P. Riley-Ryan20131975
Laura M. Morillo..... 1984	Kelly L. Pettersen..... 2014	Jack E. Rinker..... 1960
David C. Morris 1990	Ann E. Piazza..... 1981	Randolph P. Rivinus..... 1968
Michelle E. Motchos 1996	Michael C. Peitrzyk.....1976	Robert M. Roberts.....1975
Michael P. Mozingo.....1965	Matthew C. Pillow..... 2009	Joseph A. Robinson 1960
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Michael P. Muron..... 1984	Warren E. Poarch1965	Kip M. Robinson..... 1968
Gary M. Murphy 1986	Elizabeth S. Podbelski1979	James W. Ronner.....1975
Kenneth H. Murray1965	Sean N. Poling 2019	Erin A. Rooney..... 2009
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David R. Myzie..... 1986	Jessie Ponce de Leon..... 2008	Joshua T. Rosenthal..... 2016
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Charles D. Newhouse1992	Don M. Powell.....1977	David Rothenberg1978
Alex J. Nice.....1993	David B. Powers..... 2000	Richard A. Ruckman 1981
Albert L. Nichols1963	Danielle D. Poyant2003	Jacob H. Rudisill..... 2019
James M. Nichols..... 1943	Joshua L. Pratt..... 2009	Heather L. Rugnetta2003
Paul R. Nichols.....1975	Katie A. Price 2004	Charles E. Runyon..... 1961
Christopher L. Nolan..... 2016	David E. Proctor1977	Thomas D. Rust1965
Robert S. Notte.....1997	Robert A. Proffitt 1984	John P. Ruth 1969
Michelle K. Nye2012	John E. Pruitt 1964	John W. Ryan.....1956
Raymond J. O'Donnell..... 1980	Archie D. Pugh..... 1991	Amit Sachan2003
Max A. O'Krepki 2016	John M. Quantz1995	Dallas W. Safriet1967
David J. Oshinski..... 1981	Michael J. Quillen1970	Alexander J. Sarant 2014
Daniel W. Osmun.....1988	Robert R. Radspinner.....2007	Vernon R. Schaefer.....1987
Zachary T. Pace 2008	Michael D. Ramsey.....1979	Kent W. Schellinger 1980
Ethan M. Pacifico.....2017	Walter J. Rawls 1966	Rebecca M. Schneider.....2007
George T. Paris.....1975	Michael A. Rayl..... 2006	Richard J. Seabrook..... 1984
James E. Parkes..... 1998	Harold M. Raynor.....1962	Stephen M. Seay..... 1986
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James E. Sherring.....1985	Jianhua Tang.....1997	Christopher C. Weaver2005
Cliff C. Shieh..... 1980	Boris O. Taran.....1970	A.S. Weber.....1977
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Berry A. Simmerman.....1985	Dominic M. Tiburzi.....1975	Brian L. Wheeler.....1971
Larry M. Simmons.....1970	John A. Tice..... 1966	Claire M.. White 2010
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William M. Skeen 1972	Robert W. Timberlake..... 1969	John L. Whitney..... 1966
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Christopher S. Smith1993	Dennis D. Truax1976	Wililam C. Wilson1971
Daniel R. Smith1979	William I. Truitt.....1972	Philip L. Winters.....1978
Elizabeth F. Smith..... 1986	Steven J. Tschetter.....1992	Kord J. Wissmann.....1987
Mark S. Smith..... 1998	Kwong T. Tse1978	Daniel J. Woeste2013
Paul J. Smith1988	Elizabeth A. Turner.....1972	Farley E. Wolford.....1958
Richard B. Snoddy 1990	Frederick J. Turner.....1959	Christopher D. Woodling 1999
David M. Soares..... 2009	Colette T. Turner..... 1980	Nicholas W. Woolery2017
Arnold E. Somers..... 1974	Terry J. Tyler.....1985	Marilyn E. Worley.....2005
Dewey D. Spangler1987	Kristin J. Ulmer..... 2019	William E. Worrall.....2005
William W. Spears2018	Sneha Upadhyaya2018	James M. Wright..... 1960
Guy R. Sproles1971	Eileen A. Van Aken1988	Chenxi Xing..... 2014
Sarah B. Stedfast.....1983	Natasha O. Vance 1994	Kevin D. Young 2000
Bryan W. Stevenson..... 1996	Ronald G. Vann.....1965	Nicholas R. Young..... 2008
Jack H. Stewart 1957	Steve M. Varner1987	Shiqiang Zou2017
William Stewart.....2007	Leo A. Vecellio..... 1968	Matthew W. Zurad1993
Frank D. Stidham1965	Javier I. Vega.....1988	Dennis L. Zurakowski1977
Harvey E. Strawsnyder.....1970	Anthony R. Verdi..... 2004	Michael T. Zuravel..... 1984
Lester I. Sutphin 1977	Daniel M. Vickstrom 1980	
Todd W. Swanson 1974	James H. Viox1965	
Joseph B. Swanson 1998	Susan Z. Wadsworth.....1985	
Richad D. Swartout..... 1969	Samuel S. Waldo1975	
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