

The Charles E. Via, Jr. Department of
Civil and Environmental Engineering

2016 Via Report - No. 30

“Science is about
finding the truth.”

-Marc Edwards

Department Head's Message



G

reetings from Blacksburg! Once again it is our pleasure to present the annual edition of the Via Report. This year's report is especially memorable because it is the 30th edition. We will have the opportunity to recognize the current Via scholars, and

alumni of the program at our annual Via Banquet in December. I know that the Via family would be proud of the work these students are doing and their service to society in general. I hope you enjoy the excellent articles on several of the outstanding research efforts that are in progress within the department.

We, as alumni and friends of the university, have always known the influential work that Hokies do and the difference Hokies make by living out Ut Prosim. This year, the rest of the world has seen that through the extensive media coverage of the Flint Water Crisis. The team, led by Marc Edwards, and comprised of several other students and faculty, is continuing to help the citizens of Flint, Michigan and test the water for safety. You can read more about the experience in Flint on page four of this document.

The exceptional Via Scholars are the highlight of this document each year. I hope that the student biographical sketches contained in the report help you get to know them. Hopefully, you will have the opportunity to interact with the Via Scholars when you visit campus, through professional activities, or as future employers.

This year brought a lot of changes to the university. President Timothy Sands completed his second year in that role. Several other vice president roles turned over, including Thanassis Rikakis as executive vice president and provost, Charles Phlegar as vice president for advancement, Tracy Vosburgh as associate vice president for university relations and Theresa Mayer as vice president for research and innovation. And of course, we can't forget about Justin Fuente entering his first season as the head football coach for the Hokies.

We have several new faces in the College of Engineering and our department as well. Former dean Richard Benson has started his role as the President

of University of Texas at Dallas. Don Taylor is serving as interim dean of the College of Engineering. An international search for the next dean has begun and we look forward to the upcoming change in leadership within the college.

Within our department, we welcome Susan Hotle as assistant professor in the transportation infrastructure and systems engineering group. Gabriel Isaacman-VanWertz will soon be joining us as assistant professor in environmental and water resources and Maryam Shakiba will be joining the structural engineering and materials group. We also welcome Professor of Practice Claire White and Research Assistant Professor Clay Hodges on board.

Virginia Tech is in the midst of identifying a new curriculum within the university, known as Destination areas. The goal is to create an interdisciplinary education that will leverage existing and emerging resources and strengths, while having the potential to distinguish Virginia Tech as a top institution and advance our scholarship.

While there are many changes happening within the department and the university, we take pride in the consistency of hard work and outstanding research that our faculty, students, and alumni have shown for years. They continue to represent the Hokie nation and the civil and environmental engineering department well!

With kind regards,

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

Sam Easterling

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Marc Edwards, Charles P. Lunsford Professor of
civil and environmental engineering



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This publication of the 2016 Via Report is dedicated to and in memory of Lynn Nystrom who was instrumental to the success of the report for 29 years. As the longtime Director of News and External Relations for the College of Engineering, her talents and contributions will be remembered for many years to come.

What's next for Flint, Michigan?

“The trust issue is critical and cannot be underestimated,” wrote Marc Edwards. “After what occurred in Flint from 2014 to the present day, if residents decide to never use tap water again for cooking, bathing, or showering, who could blame them?” The Flint Water crisis team, led by Edwards and comprised of several civil and environmental engineering students and faculty, stepped in and has worked to gain the trust of the residents in Flint.

“It really says something when our out-of-state team of students and researchers is the most trusted authority for water testing in a town in Michigan,” stated sophomore Margaret Carolan. “While we are there to test their drinking water, we want Flint residents to know that we care about them and their families.”

After working on a similar issue in Washington, D.C. almost 15 years ago, Edwards is familiar with working alongside citizens to gain the trust that they lost in government agencies. In 2001, lead contamination was discovered in Washington D.C.’s public water system. Levels were so high that they were beyond the range of standard detection equipment even when the samples were diluted by a factor of ten.

Edward’s interactions with government agencies in Washington, D.C. prepared him for the work he is doing in Flint. “I was not surprised when Flint

occurred,” he noted. “I was expecting a Flint to occur.”

In the first round of water testing in Flint, the average lead level was 2,000 parts per billion (ppb), well above the “actionable” level of 15 ppb established by the Environmental Protection Agency (EPA). The highest sample was more than 13,000 ppb.

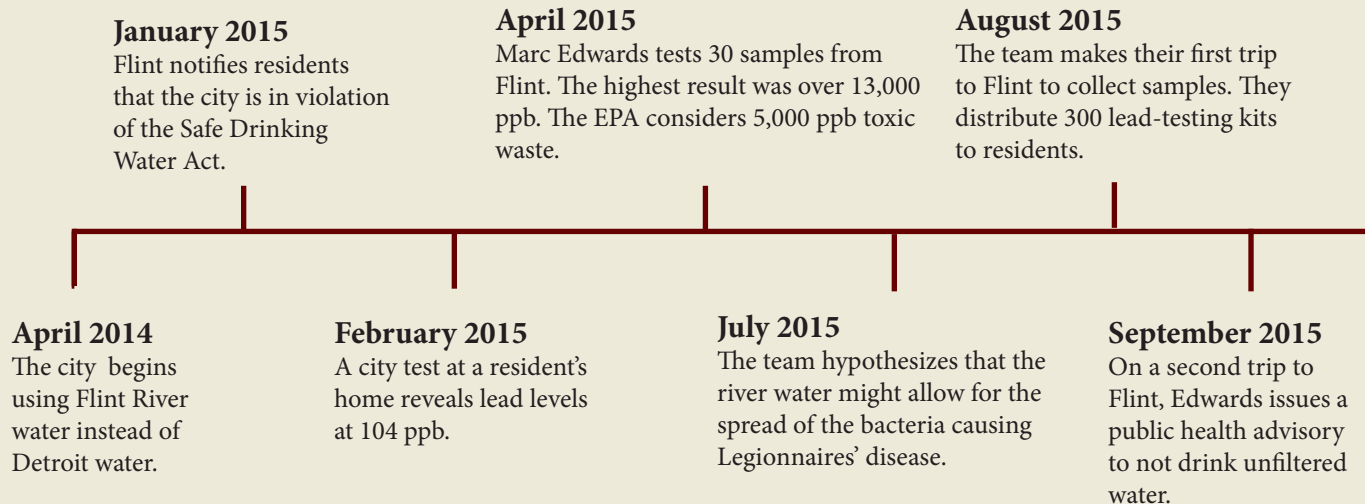
In April 2016, the team returned for a second round of water testing. The levels of lead had significantly decreased, but were still not deemed acceptable to drink, according to EPA standards.

As a result of the work that Edwards and the team have done, Flint has become an international news spotlight, prompting state and federal intervention and igniting a national debate on water safety.

“The most valuable thing I have learned is that, in order to do our job better, engineers and scientists need to learn to listen to the public and to communicate with them,” said Min Tang, graduate student and Flint Water team member. “The first thing and maybe the most important thing is that we need to talk to the public and listen to their issues carefully.”

It is that commitment to the citizens of Flint that has contributed to the citizens trust in the Flint Water team from Virginia Tech.

Timeline of Events



So what's next?

Since the switch back to Detroit water, along with extra corrosion control treatment chemicals and intensive water quality monitoring, the team revealed that lead levels are dropping. However, the water is still not safe to drink. Residents are advised to use bottled water and lead filters.

In July 2016, the team conducted the third citywide lead sampling, which revealed a significant reduction in discoloration, lead, and iron in the water. Additionally, it found that *Legionella* colonization rate in Flint homes was very low.

“Residents insist that they will not trust the water until all lead pipes are replaced,” said Siddhartha Roy, CEE doctoral student and Flint Water team member. So far, \$128 million from the state and \$20 million from the federal government have been approved for Flint. Some of that money will go toward lead pipe replacement, while other portions of that money will go to the purchase of water filters and nutrition programs to mitigate the effects of lead exposure.

So does this mean the water will soon be safe to drink? “There will still be homes where lead is found in the tap. And the bigger question of the citizens regaining trust in their tap water still stands,” concluded Roy.

A more concerning issue is that Flint is one of many cities in the same situation. A new set of data from the EPA found that 18 million Americans live in communities where water systems contain unsafe levels of lead.

To read more about Flint in the spring edition of Virginia Tech Magazine, visit vtmag.vt.edu/spring16.

5 Questions with Marc Edwards



Where is your hometown?

Ripley, New York

When you aren't working, what are you doing?

Fishing on the New River with my son Ethan and dog Curry. I also like to train for marathons, triathlons and 5ks with my daughter Ailene, try to grow exotic temperate fruit trees at my home and conduct research just for fun.

What did you want to be when you were a kid?

Dolphin Trainer, Marine Biologist, Veterinarian and then Medical Doctor, but just before graduate school, I found my true calling in environmental engineering.

What is your favorite thing to do in Blacksburg?

Aside from coming to work at VT every day? Running on the rails through Jefferson Forest.

Tell us something that people would be surprised to hear

I've read the Wall Street Journal for 27 years and am fascinated by practical studies of human behavior, economics, and ethics.

December 2015

The Flint mayor declares a state of emergency.

February 2016

The water study team wins an \$80,000 EPA grant for new testing. Edwards gives opening statement to the U.S. House Oversight and Government Reform Committee.

April 2016

The team released results of samples collected over spring break and states that water is still not safe to drink.

January 2016

Gov. Snyder names Edwards to the Flint Water Interagency Coordinating Committee.

March 2016

The team spends spring break volunteering in Flint. Edwards testifies at a second hearing on Capitol Hill.

July 2016

The team returns to Flint for a third round of lead-in-water testing and finds that lead levels are continuing to drop.

Undergraduate Scholarships

Alumni Golf Tournament Scholarship

Margaret King

Andrew “Tripp” McDavid Memorial Scholarship

Beth Demyanovich

Balzer and Associates Scholarship

John Tedesco

Mahyar Zarat-Basir

Charles and Patricia Brown Scholarship

Tyler James Mueller

Charles E. Via, Jr. Scholarship

Dan Peets

Michelle Helsel

Ryan Stevens

Charles S. Hughes Scholarship

Cole Jaconski

Molly Thomson

Chelsey A. Godfrey Scholarship

Alexander Papp

CE Alumni Board Scholarship

Helen Chen

Emily Garbera

Brian Hensel

Adrianna Weber

Samuel Winter

Mary Douglas

CE Class of ‘58 Scholarship

Stefany Flores

Eric Hoey

Judith Skinker

David Woodson

Tyler Straumanis

Dennis and Sherry Kamber Scholarship

Michael Yeomans

Kyle Hogan

Dewberry Scholarship

Anna Bosco

Sasha Redmon

Donald and Mary Wiebke Scholarship

Elizabeth Zeigler

Everett Carter Memorial Scholarship

Elizabeth McElhinney

Harry S. And Patsy B. Williams

Scholarship

Maria Haas

Hersie B. & Ethel G. McCauley

Scholarship

Jarrett Bullano

Jessica Ishihara

George A. Stewart Scholarship

Margaret Wilcher

Sarah Busch

Daniel Jones

Katelyn Karis

Archit Manuja

Kelsie McKenna

Alexander Papp

Jenna Ritchie

Joseph Spaziani

Raul Avellaneda

Howell and Ann Simmons Scholarship

Andrew Hanson

J. Stuart Franklin, Jr. Civil Engineering Scholarship

Adam Dandridge

Michele Mackey

James L. Bland Civil Engineering

Scholarship

Natalie Ebreo

John DeBell Scholarship

Adam DiMatteo

John E. Pruitt, Jr. Scholarship

Eric Daly

Joseph & Jane Christenbury Memorial

Scholarship

Allison McEntee

Kelso Baker Scholarship

Tomas Bonsembiante

Elizabeth Clark

Connor Leslie

Aimane Najmeddine

Kenneth R. Ayer’s ‘80 Memorial

Scholarship

Zachary Burns

Ian Pierce

Kenton & Liliana Meland Scholarship

Dawos Chatha

Lewis John Turner and William Scot

Dewhirst Scholarship

Louis Hatcher

Kristine Irene Mapili

Lingerfelt Family Foundation Scholarship

Joseph Camisa

Philip Gotthelf

Lois Cox and Edna Goodwin Scholarship

Molly Weingord

Michael Baker Corporation Engineering Scholarship

Haley Gardner

Newport News Shipbuilding Scholarship

Kate Kindig

Ralph P. Hines ‘59 Scholarship

Joshua Dolinger

Richard Quarterman Scholarship

Joshua Rosenthal

Stanley and Francis Cohen Scholarship

Joshua Dolinger

Mark Remmey

Grisha Santuryan

Stantec Award for Excellence in Education Scholarship

Jordan Fleming

Catherine McNicol

Vecellio Scholarship

Katelyn Karis (CEE)

Jordan Kawulicz (CEM)

James Martin (CEM)

Kelsie McKenna (CEE)

Jue Wang (CEE)

Elizabeth Zeigler (CEE)

Verne and Jewel Williamson Scholarship

Paul Miller

Daniel Ott

Virginia Concrete Scholarship

Kevin Lee

Zachary McIntyre

Walter W. Duncan and Mary Ruth Duncan Scholarship

Nina Kempic

Nicholas Kenah

Christopher Klemmtz

Warren F. Cline Scholarship

Cassandra Harvey

Hayden Tse

Williams A. Joyner Scholarship

Holly Tache

Williams Industries Scholarship

Taylor Bolte

Matthew Williams

William A. Caruthers Scholarship

Jason Chow

Stephen Taylor

Graduate Scholarships and Fellowships

Abel Wolman Doctoral Fellowship (AWWA)
Emily Garner

ADSC Jack Watson Scholarship
Erik Lehe McConnell Fender, Jr.

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

Brian R. Bluhm Memorial Fellowship
Thomas Westfall

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

Davenport Leadership Scholar
Katherine Santizo

DFI At-Large Scholarship
Roberto Nevarez-Garibaldi

Dwight David Eisenhower Transportation Fellowship
Alexandria Marie Noble

Edna Bailey Sussmann Award
Benjamin Ahlswede
Jill M. Derwin
Chelsea G. Drum
Chloe Greenberg
Anne Hillborn
Yi Liu
Victoria Nystrom
Yewei Sun
Ramola Vaidya
Keegan Waggener

Edward L. Beale Fellowship
Arman Izadi

Fulbright Fellowship
Daniel Linares
Muhammad B. Mumtaz
Carlos Vega-Naranjo

Global Perspectives Scholar
Emily Garner
Jeena Jayamon

G.V. Loganathan Memorial Fellowship
Morgan DiCarlo
Amaiana McEwen

Matthew Gwaltney Memorial Fellowship
Kathryn Little

Hampton Roads Sanitation District
Peter Buehlmann
Timothy Kent
Stephanie Klaus
Jeff Nicholson
Robert Pearce

Hawkins Fellowship
Kaitlynn Gessner
Qishen Huang
Basit Zuhaib Qayyum

Interdisciplinary Graduate Education Program (IGEP)
Matthew Chan (VT SuN)
Metcan Geyin (Disaster Resilience)
Mohammad Kohsravi (Disaster Resilience)
Anurag Mantha (BioBuild)
Katherine Phetxumphou (Water INTERFace)
Marjorie Willner (VT SuN)

Jacqueline Shields Memorial Scholarship for Waste Management
Syeed Md Iskander

Larsen Aquatic Research Support Scholarship (AWWA)
Chloe Greenberg

Mid-Atlantic Coastal Storms Graduate Research Fellowship
Yi Liu

Myers-Lawson School of Construction Fellowship
Jose Guevara
Yasaman Shahtaheri

Multicultural Academic Opportunities Program (MAOP)
Carlos Fernando Mantilla Pena
Jeannie Purchase

National Science Foundation (NSF) Fellows
Marian Alicea
Emily Garner
Nora Harris

National Science Foundation (NSF) EAPSI Fellowship
Pedro Omar Bengochea-Stauffer

New Horizon Graduate Scholarship
Marcus Aguilar
Marian Alicea
Taylor Bradley
Christian Figueroa
Antonio Fuentes
Adrienne Hill
Jeannie Purchase
Freddie Salado Martinez
Katherine Santizo
Kristin Ulmer
Kenneth Velez-Rodriguez
Katherine Yoana Santizo Cojulun

Pratt Engineering Fellowship
Mertcan Geyin
Akshay Jain
Kaisen Lin

Pratt International Study Abroad Fellowship
Freddie Salado Martinez

Raymond and Madeline Curry Fellowship
Milad Afzalan
Diana Franco-Duran

Smith, Curry, Hancock Graduate Scholarshp
Edwin Edgardo Gonzalez-Montalvo

Terracon Fellowship
Evan Grant
Michael Hammond
Mitchell Youmans

Vecellio Fellowship
Wooyoung Jung

Vietnam Education Foundation
Duc Nguyen
Duc Tran

Virginia Sea Grant Graduate Scholarship
Yi Liu

Virginia Tech Diversity Scholar
Alexandria Marie Noble
VWEA Sonny Sonny Memorial Scholarship
Catherine Vyvian Grey

Walker Graduate Research Fellow
Carlos Mantilla Pena

Ph.D. Degrees

The following doctoral degrees were awarded to CEE students between Summer II 2015 and Summer I 2016.

Name: Ebrahim Abbas

Dissertation Title: A Low Cycle Fatigue Testing Framework for Evaluating the Effect of Artifacts on the Seismic Behavior of Moment Frames

Advisors: **Matthew Eatherton**

Name: Beena D. Ajmera

Dissertation Title: Factors Influencing the Post-Earthquake Shear Strength

Advisors: **Thomas Brandon**

Name: George A. Bowers

Dissertation Title: Ground-Source Bridge Deck Deicing and Integrated Shallow Geothermal Energy Harvesting Systems

Advisors: **Guney Olgun**

Name: YouYou Cao

Dissertation Title: System Redundancy Evaluation for Steel Truss Bridge

Advisors: **Roberto Leon**

Name: Ray David

Dissertation Title: Impact of Meteorological Conditions and Maturity of Perithecia on the Release of Fusarium Graminearum Ascospores

Advisors: **Linsey Marr and David Schmale**

Name: Kelly Donoughe

Dissertation Title: Applications of Connected Vehicle Technology to Address Issues of School Bus and School Bus Stop Safety

Advisors: **Hesham Rakha and Bryan Katz**

Name: Chia-hung Fang

Dissertation Title: The Seismic Behavior of Steel Structures with Semi-Rigid Diaphragms

Advisors: **Roberto Leon**

Name: Christopher L. Galitz

Dissertation Title: The Effects of Early-Age Stress on the Elastic and Viscoelastic Behavior of Cement Paste

Advisors: **Carin Roberts-Wollmann**

Name: Yu Gao

Dissertation Title: Innovative Self-Centering Connection for CCFT Composite Columns

Advisors: **Roberto Leon**

Name: Mohammadreza M. Gargari

Dissertation Title: Development of Novel Computational Simulation Tools to Capture the Hysteric Response and Failure of Reinforced Concrete Structure under Seismic Loads

Advisors: **Randy Dymond**

Name: Zheng Ge

Dissertation Title: Energy-efficient Wastewater Treatment by Microbial Fuel Cells: Scaling Up and Optimization

Advisors: **Jason He**

Name: Daniel Ricardo Salinas Guayacundo

Dissertation Title: Nonlinear Truss Analysis of Non-Ductile Reinforced Concrete Frames with Unreinforced Masonry Infills

Advisors: **Ioannis Koutromanos and Roberto Leon**

Name: Clayton C. Hodges

Dissertation Title: Optimization of BMP Selection for Distributed Stormwater Treatment Networks

Advisors: **Randy Dymond**

Name: Arash Jahangiri

Dissertation Title: Investigating Violation Behavior at Intersections using Intelligent Transportation Systems: A feasibility Analysis on Vehicle/Bicycle-to-Infrastructure Communications as a Potential Countermeasure

Advisors: **Hesham Rakha and Tom Dingus**

Name: Samuel J. Lasley

Dissertation Title: Application of Fatigue Theories to Seismic Compression Estimation and the Evaluation of Liquefaction Potential

Advisors: **Adrian Rodriguez-Marek and Russell Green**

Name: Jian Li

Dissertation Title: Challenge and Opportunities of Membrane Bioelectrochemical reactors for Domestic Wastewater Treatment

Advisors: **Jason He**

Name: Abhilasha Maurya

Dissertation Title: Experimental and Computational Investigation of a Self-Centering Beam moment Frame (SCB-MF)

Advisors: **Matthew Eatherton**

Name: Walter McDonald

Dissertation Title: Stormwater Monitoring: Evaluation of Uncertainty due to Inadequate Temporal Sampling and Applications of Engineering Education

Advisors: **Randy Dymond**

Name: Mark W. Miller

Dissertation Title: Optimizing High-Rate Activated Sludge: Organic Substrate for Biological Nitrogen Removal and Energy Recovery

Advisors: **Charles Bott and Greg Boardman**

Name: Shahriar Najafi

Dissertation Title: Pavement Friction Management (PFM) - A Step Toward Zero Fatalities

Advisors: **Gerardo Flintsch**

Name: Paramjeet Pati

Dissertation Title: Sustainable Nanotechnology: Life Cycle Thinking in Gold Nanoparticle Production and Recycling

Advisors: **Peter Vikesland and Sean McGinnis**

Name: Manisha Rai

Dissertation Title: Topographic Effects in Strong Ground Motion

Advisors: **Adrian Rodriguez-Marek**

Name: Alexander B. Reeb

Dissertation Title: Response of Pile-Supported T-Walls to Fill Loading and Flood Loading Based on Physical Model Studies and Numerical Analyses

Advisors: **George Filz**

Name: John Sangster

Dissertation Title: Operational Analysis of Alternative Intersections

Advisors: **Hesham Rakha**

Name: Craig M. Shillaber

Dissertation Title: Toward Sustainable Development: Quantifying environmental Impact via Embodied Energy and CO2 Emissions for Geotechnical Construction

Advisors: **Joseph Dove and James Mitchell**

Name: Gargi Singh

Dissertation Title: Effect of Surface Modifications on Biodegradation of Nanocellulose and Microbial Response

Advisors: **Amy Pruden-Bagchi**

Name: Stephanie M. Smallegan

Dissertation Title: Morphological Change of a Developed Barrier Island due to Hurricane Forcing

Advisors: **Jennifer Irish**

Vecellio Construction Engineering and Management

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

Environmental & Water Resources Engineering

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, Associate Professor
Clay Hodges, Research Assistant Professor
Jennifer L. Irish, Professor
Gabriel Isaacman-VanWertz, Assistant 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, W. Thomas Rice Professor
Robert Paolo Scardina, Assistant Professor of Practice
Kyle Strom, Associate Professor
Peter J. Vikesland, Professor
Zhiwu (Drew) Wang, Assistant Professor (NCR)
Claire White, Assistant Professor of Practice
Mark A. Widdowson, Assistant 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, 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

Structural Engineering and Materials

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

Transportation Infrastructure and Systems Engineering

Montasir Abbas, Associate Professor
Gerardo W. Flintsch, Professor
Kathleen L. Hancock, Associate Professor (NCR)
Kevin P. Heaslip, Associate Professor (NCR)
Susan Hotle, Assistant Professor
Bryan J. Katz, Assistant Professor of Practice
Pamela M. Murray-Tuite, Associate Professor (NCR) and Program Coordinator
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
Antoine G. Hobeika, TISE
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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Faculty Honors and Achievements



Greg Boardman
Named Diplomat, Water Resources Engineer (D. WRE) for the Academy of Water Resources Engineers (AAWRE)



Andrea Dietrich
2016 Distinguished Alumna for the Department of Environmental Sciences and Engineering at the University of North Carolina at Chapel Hill



Randel Dymond
Outstanding Faculty Service Award in the Virginia Tech Program in Real Estate



Jesus M. de la Garza
2016 Construction Industry Institute (CII) Outstanding Researcher Award



Sam Easterling
Reappointed Montague-Betts Professor of Structural Steel Design



Matt Eatherton
Moisseiff Award, ASCE

College of Engineering Faculty Fellow Award



Marc Edwards
Dean's Award for Outreach Excellence
Alumni Award for Outreach Excellence
Named one of world's 50 greatest leaders by Fortune Magazine
Named one of 100 Most Influential People in the World by Time Magazine
Reappointed Charles P. Lunsford Professor
David P. Rall Award for Public Advocacy in Public Health



George Filz
ASCE Geo-Institute's Wallace Hayward Baker Award
ASCE Geo-Institute Cross-USA Lecturer for 2016-2017
Virginia Tech Chi Epsilon Chapter Honor Member
Reappointed Charles E. Via Jr. Professor



Bryan Katz
College of Engineering Certificate of Teaching Excellence
Received Favorite Faculty nomination
Eugene Arnold, Jr. Outstanding Individual Activity Award



Roberto Leon
American Concrete Institute Design Award



Amy Pruden
Appointed as the W. Thomas Rice Professor in Engineering



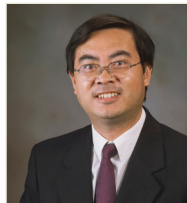
Carin Roberts-Wollmann
G.V Loganathan Faculty Achievement Award



Denise Simmons
College of Engineering Dean's Award as Outstanding New Assistant Professor



Kevin Young
College of Engineering Sporn Award



Linbing Wang
Scholar of the Week by the Office of the Vice President for Research



Mark Widdowson
2016 CEE Alumni Teaching Excellence Award

Alumni Board

Jessie Berg, P.E.

Director
DC Land Development

Thomas A. Broderick, P.E.

Bureau Chief
Department of Environmental Services

Young Ho Chang

President
ATCS, P.L.C.

David Clarke

Resident Engineer
Virginia Department of Transportation

Bernie Deneke, P.E.

Director
NAVFAC Engineering Criteria and Programs

Brian K. Diefenderfer, Ph.D, P.E.

Senior Research Scientist
Virginia Department of Transportation

Betsy Ennis Dulin, Esq, P.E.

Attorney
Coates & Davenport, P.C.

Martha Gross, Ph.D., P.E.

Senior Infrastructure Manager
Arup

Govindan Kannan

Senior Vice President
Volvo Group North America

Charles Kilpatrick, P.E.

Commissioner
Virginia Department of Transportation

Jeffrey N. Lighthiser, P.E.

CEO/President
Draper Aden Associates

Herbert Morgan, P.E.

Vice President, Operations
Fluor Enterprises, Inc.

Aaron Muck, P.E.

Principal and Geotechnical Department Manager
Terracon Consultants, Inc.

Robert S. Notte, P.E., Alumni Board Co-Chair

Vice President - Business Unit Manager
Dewberry

Maysill Pascal, P.E.

Business Development Manager
Menard-USA

James W. Patteson, P.E.

Director, Department of Public Works and
Environmental Services
Fairfax County, Virginia

Ann E. Piazza, P.E.

Principal
L.A. Fuess Partners, Inc.

Katherine Plasket, P.E., Alumni Board Chair

Project Engineering Manager
Bechtel Nuclear, Security and Environmental

Beth Turner

Retired
DuPont

Edward C. Westerman, P.E.

Senior Structural Engineering - Principal
Clark Nexsen, Inc.

Meet the New Faculty



Susan Hotle

Transportation Infrastructure and Systems Engineering

Susan Hotle received her bachelor's degree, master's degree and Ph.D. from the Georgia Institute of Technology. Her dissertation focused on airline demand and applications of clickstream information in estimating online user behavior. Upon obtaining her doctorate, Hotle served as the Operations Research Analyst for the Office of Performance Analysis with GRA, Incorporated in Washington, D.C. She has been awarded a number of prestigious honors including the Gordon W. Schultz Graduate Fellowship and the Airport Cooperative Research Program (ACRP) Graduate Research Fellowship.



Clayton Hodges

Environmental and Water Resources

Clay Hodges joins the Environmental and Water Resources Engineering faculty as a Research Assistant Professor. His areas of research include urban stormwater quality and quantity, hydrology, hydraulics, and land development. He earned his B.S, M.S., and Ph.D. in civil engineering from Virginia Tech. He has also served as Vice President of Altizer, Hodges, & Varney, Inc. in Christiansburg, Virginia, as well as Anderson and Associates Inc. in Blacksburg.



Gabriel Isaacman-VanWertz

Environmental and Water Resources

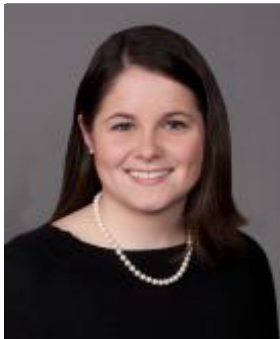
Gabriel Isaacman-VanWertz earned his B.S. in Earth and Environmental Science and Chemistry from Wesleyan University. He continued on to earn his Ph.D. in Environmental Science, Policy, and Management from the University of California, Berkeley. Prior to joining Virginia Tech, he was a Postdoctoral Research Fellow at Massachusetts Institute of Technology where he designed and conducted laboratory studies of the fate of atmospheric compounds using a wide range of state-of-the-art instrumentation and methods.



Maryam Shakiba

Structural Engineering and Materials

Maryam Shakiba comes from her position as a Postdoctoral Research Associate at the University of Illinois at Urbana-Champaign where she developed a mechanistic approach to calculate environmental effects of pavements structure and incorporated it into Life Cycle Assessment (LCA) analysis. She earned her B.S. and M.S. from Amirkabir University of Technology in Tehran, Iran. She earned her Ph.D. from Texas A&M University where her dissertation focused on multi-physics modeling of thermo-hydro-mechanical damage mechanisms of porous viscous composite media at different scales.



Claire White

Environmental and Water Resources

Claire White is an Assistant Professor of Practice in Land Development within the department and also works in the Real Estate program. Her primary role in the department is teaching as part of the undergraduate curriculum. She graduated with a B.S. in civil engineering from Virginia Tech as a Via undergraduate scholar in 2009 and with an M.S. in Environmental and Water Resources in 2011. She worked for Kimley-Horn Associates in Virginia Beach prior to joining the faculty in this department.

Construction Engineering and Management

The reputation and strength of the Vecellio Construction Engineering & Management Program (VCEMP) was evident this year as the program welcomed one of its largest classes of new graduate students enrolling five Ph.D. and 20 M.S. students. The program's alumni, faculty and students continued to garner recognition for their achievements and performance. VCEMP welcomed new administrative assistant Rachel Hill, but said good-bye to John (JT) Taylor, who accepted the Frederick Law Olmsted endowed professorship at Georgia Tech. Additional program area highlights during this year included:

- The 2016 Vecellio Distinguished Lecture was presented by the Honorable Thomas Davis Rust, PE, FAICP (see page 15);
- The recognition of Doran Bosso, Director of Asset Management at Skanska Infrastructure Development, as one of the Department's Outstanding Young Alumni;
- The recognition of Gunnar Lucko, Associate Professor at Catholic University, as Outstanding VCEMP Alumnus and C. Grant Howerton, P.E., Construction Project Engineer at RK&K, as Outstanding VCEMP Young Alumnus

- The recognition of María Nieves-Meléndez, a Via PhD Fellow, as Outstanding VCEMP PhD student, and Sam Ferrara, a Via MS Fellow, and Adrienne Hill, a New Horizons Scholar, as Outstanding VCEMP MS students;
- Scholarship awards for PhD students: Edwin Gonzalez (Construction Management Association of America) and Yilong Han (Construction Management Association of America)
- Six 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: Katelyn Karis, Jordan Kawulicz, James Martin, Kelsie McKenna, Jue Wang, Elizabeth Zeigler, and Wooyoung Jung.

Jesus M. de la Garza, the Vecellio Professor in Construction Engineering and Management, had the amazing honor of presenting a TED Talk at the TEDx Herndon on May 21, 2016; his Talk was entitled: America's Lifelines (<https://www.youtube.com/watch?v=7hXy4W9PZrY>). This TEDx

Talk "highlighted the critical role that physical lifelines play in defining our standard of living (quality of life). Physical lifelines include, power, water, highways, waterways, railways, airports, and seaports. The Talk argued that as a result of use, aging, and neglect, America's Lifelines are crumbling, and so is America's standard of living. The Talk suggested that Resilient Lifelines are

the immune system of our Economy, our Safety, and our Quality of Life and, that as a society, we must make steady and serious investments to constantly renew and expand our Lifelines—our lives depend on them. The idea worth sharing was that we need to orchestrate a grassroots, bottom-up, ordinary-people movement towards renewing America's Lifelines—our standard of living is on the line. This movement is to supplement the traditional top-down process. As a society, we cannot afford to remain at an arm's length with the crises. Solving the crises with America's Lifelines requires all-hands-on-deck." As for service to the profession, de la Garza is now on his sixth year as Editor-in-Chief for ASCE's Journal of Construction Engineering and Management. He continues to serve in the Membership Committee of the National Academy of Construction, and is member of the National Research Council's Committee on Defense Materials, Manufacturing, and Infrastructure.

Deborah Dickerson, Myers-Lawson School of Construction, had an active year of scholarship, while on maternity modified duties due to the birth of her son Theodore. She has submitted seven journal article manuscripts for publication; four of which have appeared in print and three of which are in revision. Dickerson presented at the International Conference for Sustainable Design, Engineering, and Construction in Tempe, AZ and moderated a panel at the Construction Research Congress in San Juan, Puerto Rico. Actively seeking research funding, she has submitted nine grant proposals to external agencies to continue her work in public school maintenance management, construction health hazard control, and bio-inspired



building design. Dickerson has embarked on a collaboration with Andrew McCoy and the Virginia Center for Housing Research, to expand the Healthy Homes work of that center. The team has recently received funding to study radon-resistant construction techniques in the housing industry.

Michael J. Garvin was invited to present his work on public perceptions of public-private partnerships at 4th Annual International Conference on Public-Private Partnerships in New York City. He also taught a session on “financial risk management in large-scale infrastructure projects” at a workshop focused on overcoming infrastructure challenges at the Wharton School at the University of Pennsylvania. Garvin was engaged to provide on-going advisory services related to the President’s Build America Initiative for the US Federal Highway Administration. He received a one year grant from Virginia’s Office of Public-Private Partnerships (VAP3) to develop case studies of public-private arrangements experiencing bankruptcy or financial distress, and he continued his National Science Foundation collaborative research with Stanford University studying governance in public-private partnerships. Garvin also directs the BioBuild IGEP, which includes faculty and students from the Colleges of Engineering, Architecture

& Urban Studies, and Science. One highlight for this program was the rainwater impacts and management sessions delivered to 25 middle school students as part of Virginia Tech’s IMAGINATION summer program. He continues to serve as a College of Engineering Liaison and as the CIB Student Chapter’s co-advisor.

Farrokh Jazizadeh works at the intersection of civil infrastructure management and data science on adaptive environments, human-building interaction, and infrastructure operational analytics using data-driven techniques. In the last year, he has initiated three new projects on video-image-based quantification of thermal comfort for adaptive buildings, physics-based model predictive HVAC control, and urban energy efficiency assessment through remote sensing. Pursuing these projects, he has initiated collaborations with colleagues in mechanical engineering and computer science. As a result of his research efforts, he has published and presented five peer-reviewed papers in International Conference on Computing in Civil and Building Engineering (ICCCBE2016), Construction Research Congress, and International Conference on Sustainable Design, Engineering, Construction (ICSDEC2016), and is currently working on six journal articles. He has

been invited to serve on multiple review panels at NSF and DOE. Moreover, he has served on Technical Committees on ICSDEC2016, IWCCE2015, and ACM BuildSys2016 conferences and acted as a reviewer for multiple journals. He contributed in outreach activities through VT CEED center including CTech2 and Imagination programs.

Tripp Shealy began a collaborative research project with Princeton University, Columbia University, and Clemson University studying interventions to alleviate biases in upstream, multi-stakeholder decisions for sustainable infrastructure funded by the National Science Foundation and a Virginia Tech sponsored project through the Institute for Creativity, Arts and Technology to measure the formation of engineering design and problem solving skills using cognitive neuroscience methods in collaboration with Psychology and Engineering Education faculty at Virginia Tech. He developed a new undergraduate course titled Sustainable Infrastructure plus redeveloped the Estimating, Production and Cost Engineering course to incorporate project based learning. He assisted with two programs for middle school and high school students interested in STEM careers offered through the Center for the Enhancement of Engineering Diversity. Shealy also joined the editorial board for ASCE’s Journal of Construction Engineering and Management as assistant specialty editor. He was an invited speaker at Universidad de Quito, Ecuador conference on the United Nation’s Habitat III initiative for urban sustainable development and hosted a workshop for industry professionals about assessing infrastructure sustainability at the International Conference on Sustainable Design, Engineering and Construction.

Denise R. Simmons, Myers-Lawson School of Construction, is the 2016



recipient of the College of Engineering Dean's Award for Outstanding New Assistant Professor and the Black Graduate Student Organization's Lisa Tabor Award for Community Service. Through three NSF-funded projects, she is looking at ways to address complex human resource challenges and sustain a diverse construction workforce by exploring what students do when not in class, how leadership is defined, and who and what resources students access. Simmons is leading efforts to partner with industry and prepare students who will lead, design and build sustainable, intelligent infrastructure. She is doing so in innovative ways by using a mix of qualitative and quantitative research tools to gather rich data allowing nuanced understandings that inform workforce strategies. Simmons is

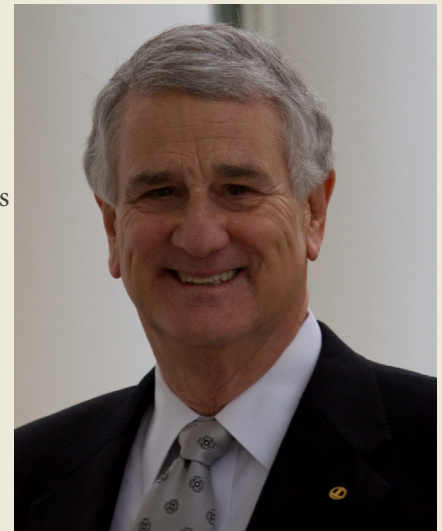
shaping practices and policies in retention, informal learning, pedagogy and professional competency.

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 the spring, respectively. Sinha continued work on his Water Infrastructure Database (WATERiD) and Pipeline Infrastructure Database (PIPEiD) that supported research in the areas of water infrastructure management for resiliency and sustainability. The development of this research program stems from EPA's Sustainable Water Infrastructure Initiative and U.S. Bureau of Reclamation Pipeline Performance

Project. He is also directing to research projects related to advanced asset management of Wastewater and Stormwater infrastructure systems funded by Water Environment Research Foundation (WERF). Sinha serves as vice-chair of NIST Community Resilience Standing Committee for Water and Wastewater and he is chair of ASCE Asset Management Division. Sinha's research group currently consists of five Ph.D. students, and seven M.S. students. Several papers were published in research journals and conference proceedings. Sinha continues to serve as the Director of SWIM Center at Virginia Tech and faculty advisor for North American Society for Trenchless Technology (NASTT) Student Chapter.

Vecellio Distinguished Lecture was presented by the Honorable Thomas Davis Rust, PE, FAICP

Thomas Davis Rust's Vecellio Lecture was entitled: Infrastructure – Our Nation and Virginia's Future. This lecture discussed the issues from a public policy issue, an engineering issue and a "political" issue in the current polarized political atmosphere in which we live. Our nation and Virginia depend on our public infrastructure such as roads, bridges, sewer, water, transit, rail and communications to move people, goods and services on which our economy depends. There is little disagreement on this, but very little has been done for decades to improve, maintain, and operate these facilities. Recent examples include the Flint Michigan water crisis where Virginia Tech was in the forefront of discovering the issue and the Washington Metropolitan Area Transit Authority System, which every day we hear of still another safety, reliability, or maintenance issue. Why has nothing of consequence been done? It takes leadership, not words, and political courage to adequately find our infrastructure needs - in other words money! No elected official wants to raise taxes for fear of losing their jobs, but it costs money to do what is necessary. As civil engineers and citizens what can we do? First and foremost, we are experts in the field of infrastructure so it is our responsibility as professionals to be engaged in the infrastructure debate. While adequate funds are essential, that is not the only answer to infrastructure issues. In the area of transportation, alternatives to the daily commute such as telework, staggered work hours, four-day work weeks, drones for delivery, car/van pooling, are a few examples. Alternative project delivery methods to supplement design-bid-build such as design-build and Public Private Partnerships (P-3's) are also areas in which civil engineers can be opinion leaders. Generally, water, sewer infrastructure are paid for by the local governments/authorities thru user fees, i.e. monthly/quarterly charges based on usage. Communication infrastructure for telephone, internet, fax, email, are generally privately owned and paid for by a user fee in the form of a monthly or so bill. Roads and bridges can be a shared responsibility, federal, state and local. Funding is generally through an imposed user tax, such as a fuel tax. Rail and transit can be shared with costs among users and public entities. Are there better ways to fund transportation? This lecture concentrated on the subject of transportation though it is but one area of critical infrastructure needs. Many actions in the past were transformation and the "inside" politics explored in depth in this lecture as how something thought to be "impossible" were accomplished.



Environmental and Water Resources

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 2016 the EWR Program was once again tied for #7 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 115 graduate students. They help sustain a thriving research program across more than a dozen research labs. 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 environmental and water resources engineering focus through the Commonwealth Graduate Engineering Program. The EWR program in Blacksburg continues to receive extremely high-quality service and support from Julie Petruska and Jody Smiley who each see that our research laboratories and analytical equipment

remain among the best available in the U.S. Special commendation is given this year to Jody for her efforts to develop and validate new chemical testing methods for novel and unregulated environmental contaminants that do not have approved USEPA methods. Her contributions in these areas resulted in her being an author on six peer-reviewed publications that went forward from the EWR program.

Twelve EWR staff (with an average length of service of nearly 18 years) are detailed to the Occoquan Laboratory, located in Manassas, Virginia. Led by Dongmei Alvi, the accredited environmental laboratory is staffed by Joan Wirt, Curt Eskridge, and Scott Downs. 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 critical water bodies of northern Virginia. 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 office in Annapolis, Maryland, where his work supports

the preservation of the Chesapeake Bay. All lab and field 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. Barbara Angelotti and Alicia Tingen continue to be responsible for all aspects of administrative support of the lab, including managing the Occoquan Laboratory facility consisting of wet lab, shop, and office spaces. Jeanie Taylor does a wonderful job keeping the entire facility looking its best.

Special mention is made of Kevin Young, an Assistant Professor of Practice in the EWR Program. He was selected as the 2016 College of Engineering Sporn Award recipient. This award is given annually to only one engineering faculty member (out of over 300 faculty members in the College) who has demonstrated excellence in undergraduate instruction.

Greg Boardman served as the advisor or co-advisor for 14 graduate students this past year. He and his



students worked on a diverse set of projects, which included the evaluation of biological filters, use of biosolids in planter pots, treatment of mining waters, removal of siloxane from biogas, evaluation of onsite wastewater systems, thermal hydrolysis of fatty acids, effects of high strength wastes on anaerobic digestion, and strategies for replacing water meters. He continues to serve as Director of the VT Short School for Operators, a member of two Department of Health committees, a member of the Water Authority Board, and advisor for VT's Student Chapter of the VWEA and VA AWWA. As part of his outreach efforts, he chaired and taught in 17 short courses, coordinated efforts to offer nine televised lectures, and served as co-coordinator of the education sessions for a VWEA conference. In October 2015, he was recognized as a Diplomat of Water Resources Engineering by AAWRE.

Andrea M. Dietrich continues to excel at interdisciplinary endeavors that integrate engineering, chemistry, and health. She co-directs the VT Water INTERface that unites students and faculty in three colleges to focus on water and health. During the past year, she traveled through the USA, Europe, and China presenting research on water contamination and resulting disruption to society and ecosystems. She published 13 peer-

review articles on diverse topics from effective communication of drinking water quality to detailed modeling of human exposure to volatilized contaminants during showering. With her VT collaborators Boardman, Gallagher, Godrej and Bagdley (CSES), she is investigating water quality and ecology in Virginia's Dan River, with emphasis on evaluating impacts from the Duke Energy Coal Ash spill. Another new project is focused on assessing human exposure to aerosols. As the Alumna of the Year at her Alma Mater, the University of North Carolina Environmental Science and Engineering Department, she enjoyed seeing former faculty and friends and meeting the next generation of environmental professionals.

Randy Dymond has been very active in both teaching and research efforts in the areas of urban stormwater, land development, and geospatial information technology. Seven of Randy's 11 graduate students finished this year with projects including optimization of selection of Best Management Practices for stormwater quality, new methods to evaluate areas with potential illicit discharges to storm sewers, and analysis of a stormwater utility rates. He has active stormwater research projects with Blacksburg, Roanoke, NSF, and VDOT. During the past year and a half, Randy has

had five conference and 12 journal papers published, with two more accepted for publication and another eight papers under review. Besides teaching Urban Hydrology, Land Development Design and Sustainable Land Development, Randy has been working with Lohani in Engineering Education on LEWAS (Learning Enhanced Watershed Analysis System), a real-time, high-resolution, web-accessible water quantity and quality data collection system for a stream on the VT campus. Dymond also remains active on the Steering Committee of the new BS Program in Real Estate. In addition, the Land Development Design Initiative (LDDI) continues to grow with 37 sponsoring companies. More information is available at www.lddi.cee.vt.edu.

Marc Edwards efforts in 2016 revolved around the Flint water disaster. Edwards led a team of 25 faculty, graduate and undergraduate students, who were generally either from his own research group or that of collaborator Amy Pruden. Edwards, Pruden, and Falkinham wrote an emergency rapid response grant to the National Science Foundation that supported about 10% of the initial Flint efforts, and much of the remaining discretionary funding spent to support the work was eventually recouped by generous donations from a GoFundMe



campaign and the generosity of the Hokie Nation (Thanks to everyone at Virginia Tech, alumni and well-wishers around the country for supporting our Flint relief efforts!) Edwards made over 100 presentations on the Flint disaster, including twice testifying to the U.S. Congress and the 2016 VT Commencement co-address with Mona Hanna-Attisha from Michigan. Edwards was ranked the 31st greatest leader in the world by Fortune magazine, and amongst the 100 most influential people (along with Hanna-Attisha) in the world by Time magazine. Edwards and colleague LeeAnne Walters from Flint tracked the recovery of the Flint water system via EPA grants, and Pruden co-led investigations of Legionella associated with disease outbreaks in 2014 and 2015.

Dan Gallagher continues his work on quantitative microbial risk assessments that informs national food safety policy for the USDA. He serves on the Executive Management Team for USDA's Shiga Toxin-producing E. coli in Beef project, and chaired the risk assessment session at their annual meeting. He was an invited speaker at FDA's Joint Institute for Food Safety and Applied Nutrition workshop on Listeria monocytogenes. He and his students also worked on environmental exposure assessments for chemical spills with his VT colleagues Brian Badgley, Greg Boardman, Andrea Dietrich, and Adil Godrej. He collaborated with Sue Duncan in the Food Science and Technology department to develop techniques for automated facial expression analysis and together they presented the results at the international Pangborn conference in Sweden. He developed a new undergraduate course on statistics and reliability for CEE.

This academic year was one where **Adil Godrej** delved into some things that are not in his regular research areas. He was co-author of a paper (first author was Kathleen

Alexander in the College of Natural Resources and the Environment) entitled "Greywater Disposal Practices in Northern Botswana--The Silent Spring?" He teamed up with colleagues in electrical engineering to explore research in the collection of water quality data in reservoirs using a fleet of jellyfish-like robots (a research proposal is forthcoming). His research team completed a website system for the Metropolitan Washington Council of Governments to retrieve and display water quality data, including concentrations and loads, for a Potomac River station that is operated by the Occoquan lab. Meanwhile, Godrej continued his work in the water quality modeling area, with a focus on expanding it to answer questions on sustainability and water reuse systems.

Zhen (Jason) He's group has published 25 journal papers and graduated two Ph.D. students and four M.S. students during the past year. He received one U.S. patent about integrated photo-bioelectrochemical systems. He gave an invited talk at the 4th International Conference on Environmental Simulation and Pollution Control at Tsinghua University, and invited lectures at Renmin University of China and North University of China. A new project was started to develop anammox systems for mainstream treatment. His collaboration with the biologists at University of Wisconsin-Milwaukee was supported by a new NSF grant for studying integrated photo-bioelectrochemical system. His lab has hosted the visiting researchers from Spain, Chile, China, and Thailand. He is leading a cluster of Food, Energy and Water in the newly establish Energy and Material Initiative (EMI) by VT ICTAS. He has developed a new graduate course CEE 5984 Advanced Water and Wastewater Treatment.

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. He is leading a project sponsored by the National Science Foundation (NSF) in collaboration with Widdowson to study natural attenuation of contaminants in riverbeds and how this can be enhanced by engineering practices. Hester is also directing another NSF sponsored project to evaluate the effect of preferential flow in riverbanks on pollutant migration from uplands to rivers. He was elected to the Board of Directors of the Consortium of Universities for Advancement of Hydrologic Science (CUAHSI), an organization of most major U.S. research institutions which organizes community-level efforts to expand research infrastructure for the water resources community. Hester received tenure this year, and he continues to serve as associate editor for the journal Water Resources Research.

Jennifer L. Irish and her group continued coastal hazards research, focusing on the physics of and risk posed by coastal floods and on the use of nature-based infrastructure to manage these risks. Irish authored four journal papers on topics including hurricane-induced barrier island breaching and impacts of coastal wetlands on wave dynamics. In 2015, she was invited to join the United Nations World Meteorological Organization's Coastal Inundation Forecasting Demonstration Project. Irish continues to be active with ASCE, as Incoming Chair of the Committee on Technical Advancement, which among others oversees ASCE's Wind Engineering, Infrastructure Resilience, and Forensics Divisions, and as a member of the Coastal Engineering Research Council. She continues 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 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 also continues to serve as the EWR Program Coordinator and to serve as advisor to all CEE distance learning students who are enrolled in the Commonwealth Graduate Engineering Program around Virginia. During the past year his primary research and outreach focus related to manganese control in drinking water treatment. He served as one of two technical consultants to Health Canada (the Canadian equivalent of the US EPA) in the development of technical guidance documents for Mn treatment in anticipation of the first health-related Mn standard for drinking water in Canada. He continues to work to translate the research on manganese control done at Virginia Tech into new design practices for the water industry.

During the last year, **John Little** focused on sustainability, writing a paper titled “Assessing and Enhancing Environmental Sustainability – A Conceptual Review” which was published in *Environmental Science & Technology* with Erich Hester and Cayelan Carey as co-authors. The review identifies the collective limitations of the existing assessment approaches, showing that there is not a consistent definition of sustainability, that the approaches are generally not comprehensive, that there is no connection between bottom-up and top-down approaches, and that the field of sustainability is largely fragmented,

with a range of academic disciplines pursuing similar goals, but without much formal coordination. The review concludes with a proposal for a more comprehensive systems approach. Based on the review, an existing course on sustainability was revised, changing the title to Environmental Sustainability – A Systems Approach. John gave invited presentations on the topic of sustainability at Tsinghua University in Beijing, China and Tongji University in Shanghai, China.

Linsey Marr leads the Applied Interdisciplinary Research in Air (AIR2) group, which currently focuses on the dynamics of airborne microbes and exposure to organic compounds. She gave seminars at the University of Michigan and the University of South Carolina and attended the Sloan Foundation’s Microbiome of the Built Environment meeting in Boulder, Colorado. As part of her and Amy Pruden’s project on the potential for aerosolization of Ebola virus surrogates from wastewater systems, she presented results at National Science Foundation workshops in Alexandria and at the American Water headquarters near Philadelphia. She joined the editorial advisory board of *Environmental Science & Technology Letters*. She is excited about the growth of air quality research in the Department with the addition of new faculty member Gabriel Isaacman-Van Wertz.

Glenn Moglen is finishing his second year as the director of the Occoquan Laboratory, Manassas, Virginia. The main accomplishments of this past year have been a re-structuring of the funding model for the laboratory and the successful return of some stakeholder sponsorship to the Occoquan monitoring program after many years. Moglen’s research continues to focus on the joint effects on surface water from combined urbanization and climate change. Moglen is serving as a reviewer for Virginia’s Water

Resources Plan assessing the long-term sustainability of the Commonwealth’s water resources. Moglen continues to aggressively contribute through service to the professional community, especially the ASCE and the Environmental and Water Resources Institute (EWRI). In October 2015 he became Chair of the ASCE/EWRI Watershed Management technical committee and also Secretary on the ASCE/EWRI Watershed Council. He is currently one of two candidates running for Vice President of EWRI. He was elected as a Fellow of EWRI in 2016.

Amy Pruden had a busy year of teaching, research, service, and leadership in interdisciplinary education. Together with Peter Vikesland, she helped launch a new \$3.6 M National Science Foundation Partnership in International Research and Education (PIRE) project, which is sending students overseas to study the global problem of antibiotic resistance, with the kickoff meeting held in Chennai, India in March 2016. She also delivered a keynote lecture at the International Water Association LET Conference in Jerez, Spain, focusing on how wastewater treatment and water reuse infrastructure can be re-tooled to combat antibiotic resistance. She continued her work tracking antibiotic resistance from farm to fork with her USDA team and co-led an interdisciplinary expert workshop on Legionnaires’ disease sponsored by the Alfred P. Sloan Foundation. Finally, she was honored to serve as a member of the Flint Water Study team, where she assisted in co-advising students in revealing high levels of Legionella bacteria in the water, which was later linked to a Legionnaires’ disease outbreak in the community.

Paolo Scardina continues to have an active teaching schedule instructing approximately double the typical number of courses each year. Paolo continues managing the

civil engineering hydraulics teaching laboratory, which is used extensively with many CEE courses. He also continues to advise the VT Chapter of ASCE.

Kyle Strom leads the fluid and sediment dynamics research group, which focuses on improving fundamental understanding and modeling of the movement of sediment and water in rivers, estuaries, and deltas. Much of their work is carried out in the Baker Environmental Hydraulics Laboratory. This past year the lab has seen substantial growth in student research activity as well as the development of a novel apparatus for studying stratified river plumes. Kyle and his colleagues published journal papers and gave university and conference talks on topics related to sedimentation in river mouth discharges and the transport of fine sediment in rivers and estuaries. Kyle also taught undergraduate and graduate courses in fluid mechanics, environmental fluid mechanics, and open channel flow this past year. He continued to serve as an associate editor of the *Journal of Hydraulic Engineering*, and organized conference sessions for the American Geophysical Union fall meeting and ASCE's EWRI.

Peter Vikesland is the co-director of the Virginia Tech Sustainable Nanotechnology Center and the director of the graduate school supported Sustainable Nanotechnology Interdisciplinary Graduate Education Program (IGEP). As integral members of these interdisciplinary programs his group continues to conduct work examining the environmental applications and implications of nanotechnology. Over the past year his group has published 11 peer-reviewed journal papers and gave in excess of 15 presentations at national and international conferences. In March, Vikesland

joined Amy Pruden and two of their co-advised students at the kickoff meeting of the NSF funded project Halting Environmental Antimicrobial Resistance Dissemination (HEARD) in Chennai, India. This exciting five-year project seeks to globally assess the role of wastewater treatment in antimicrobial resistance dissemination. Along with colleagues from Rice University, the University at Buffalo, the University of Michigan the Vikesland, Pruden, and Edwards groups are collaborating with researchers from Switzerland, Sweden, Portugal, Hong Kong, China, India, and the Philippines in this effort.

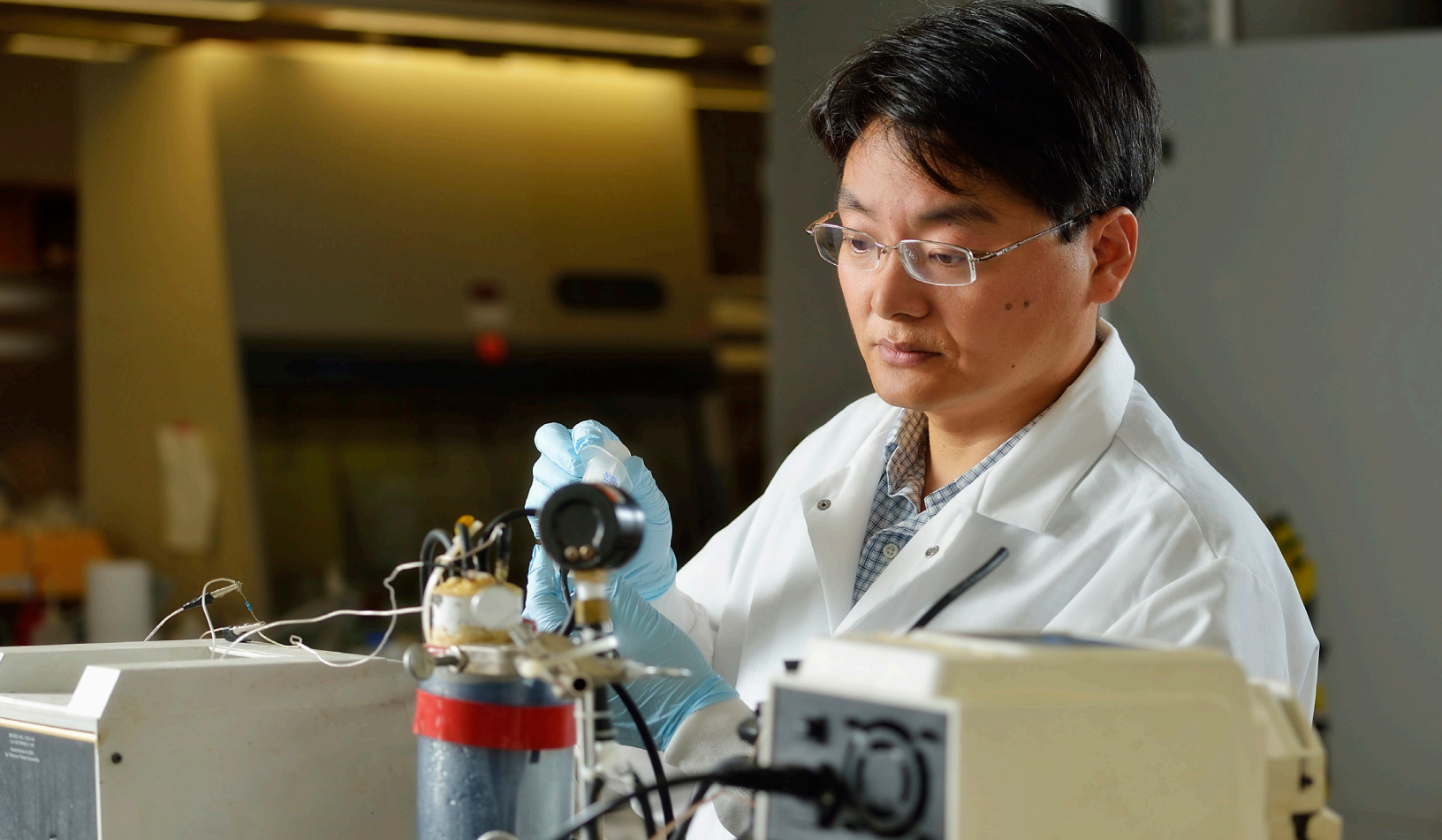
Zhiwu (Drew) Wang joined the Occoquan Laboratory in NCR in August 2015. Since joining, he has been working on student recruitment and laboratory establishment in preparation for his research on the themes of bioenergy/bioproduction and stormwater/wastewater treatment. Over the past year, he presented research papers at several national conferences, and published four articles in peer-reviewed journals including one in *Progress in Energy and Combustion*. Wang is the recipient of a 4-VA research grant aiming to address nitrogen pollution

in stormwater through collaborative partnerships between Virginia Tech, George Mason University, and Old Dominion University. In addition to teaching CEE 4174 Solid & Hazardous Waste Management, Wang developed and delivered a new course to CEE and BSE students entitled, CEE 5894 - Stormwater Treatment. Wang continued to serve on the editorial board of the *Journal of Environmental Sciences*.

Mark Widdowson and colleagues presented papers at several meetings including the International Conference on Chlorinated and Recalcitrant Compounds and the Virginia Water Conference. Widdowson recently completed a study on the sustainability of groundwater supply in Eastern Virginia for the Joint Legislative Audit and Review Commission in conjunction with the Virginia Water Resources Research Center. He served on the Steering Committee of the National Ground Water Association's regional conference on Groundwater in the Central Atlantic Region held in Virginia Beach. He is also serving on the Advisory Committee of the Northern Shenandoah Valley Regional Commission for regional water planning. Widdowson continued his administrative role as Assistant Department Head and Graduate Chair.

Kevin Young continues to maintain a busy teaching schedule, while also serving as Assistant Coordinator of the Land Development Design Initiative (lddi.cee.vt.edu) and advising the Sustainable Land Development Club. During the past academic year, Kevin taught two sections of CEE 2814 - Civil & Environmental Engineering Measurements, two sections of CEE 3274 - Intro. To Land Development Design, and one section of CEE 4274 - Land Development Design. He is pictured to the left receiving the Sporn Award from the College of Engineering.





Finding Energy in Unlikely Sources

Where is the future? Can we really apply it now? Those are questions that Zhen (Jason) He, Associate Professor of Environmental Engineering, frequently asks himself. “This is always a question for researchers. We can work in labs and it is nice to publish results in a journal, but where is the future?” he said. “I want to work on research that can be implemented, not just studied in a lab.”

One of those experiments that he hopes to be implemented is finding sources of renewable energy from wastewater. “Wastewater should be considered a resource other than just waste,” said He. “There are a lot of resources and organic materials that can be converted into energy.” The ultimate goal is to make

wastewater treatment centers self-sustaining in the energy that they use. Every day, millions of gallons of wastewater are produced and end up in treatment plants. Those treatment plants currently consume five percent of the country’s total output.

While ammonia is of great value in agriculture, it is considered a pollutant in wastewater. A huge amount of energy is used to remove ammonia from wastewater to eliminate the potential of harming aquatic ecosystems. “A system that recovered the ammonia for later use, instead of just removing it, would be of great interest to sustainable wastewater treatment,” said He.

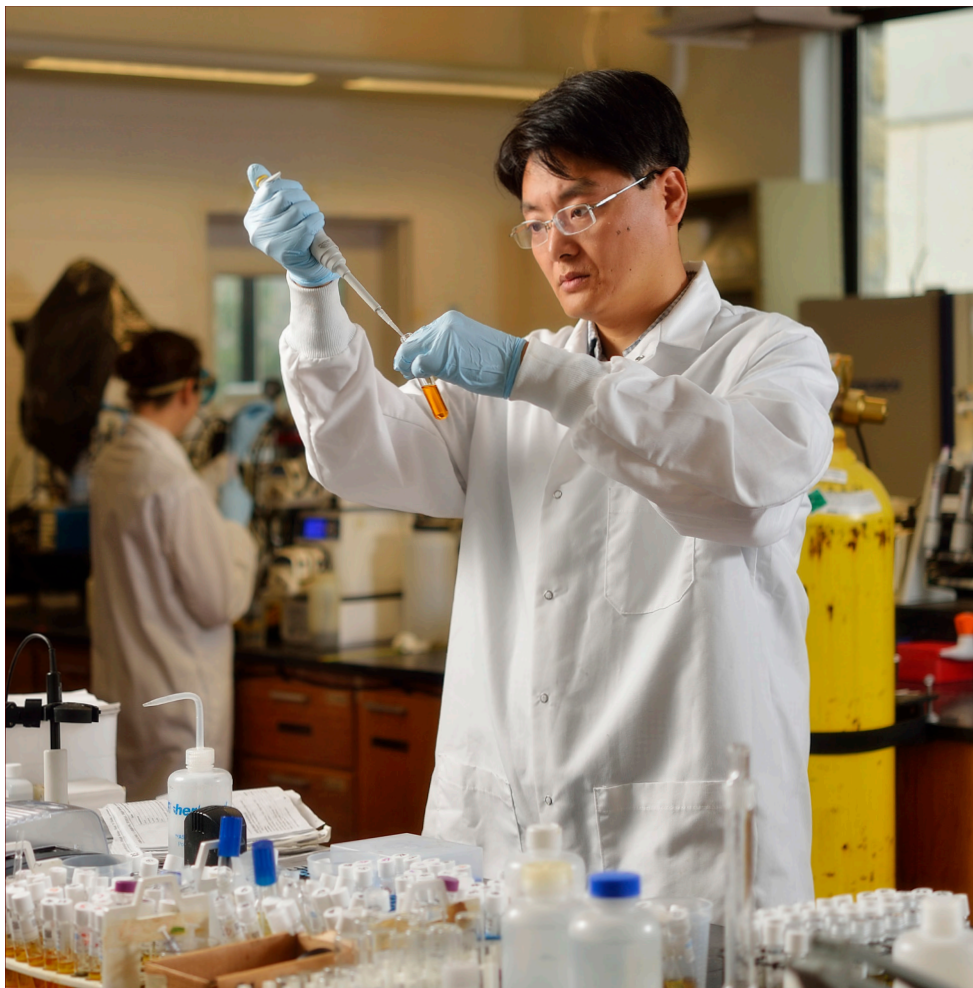
He, along with Xueyang Feng, Assistant Professor in

Biological Systems Engineering, has discovered a way to harness the energy from wastewater using two distinct methodologies: using a novel tracing technology to determine which bacteria work well together to chew through waste, and also which ones are good conductors of energy.

They discovered, through tracing bacteria, that when two specific substrates work together, they produce more energy than either do separately. Some substrates, called lactate, work because they are food to the electricity-generating bacteria, while others, known as formate, are good at conducting energy. When used together, the output of energy is significantly greater than when they are working separately. The

unique methodology that allowed them to trace the metabolic pathways of the different strains of bacteria, called carbon 13 pathway analysis, was the first time this type of isotope labeling process was used in measuring metabolism in microbes, the researchers said. The analysis works by creating a non-radioactive isotope on a carbon group that is visible through a mass spectrometry. This new treatment system they are working to develop is called a microbial fuel cell. While researching involving fuel cells is not new, the work that He and Feng are doing is innovative in generating electricity because they were able to measure the symbiotic nature of the two particular organics.

He just wrapped up a project operating a 200 liter microbial fuel cell system at the Peppers Ferry Wastewater Treatment Facility. His goal is to evaluate the long term performance with actual wastes to ultimately find out the feasibility of implanting this research into mainstream practice among wastewater facilities.



“One of my focuses is scaling up and making these experiments bigger,” He noted. “As a researcher we tend to look beyond the lab to see if it can work on a larger scale.”

He has worked for 12 years on converting wastewater into energy. While his final goal is to implement this into practice at wastewater facilities nationwide, he admits that the wastewater industry as a whole is hesitant to change. “There is technology that has been working pretty well for a long time and the only downside is that it costs a lot of energy,” he said. “Unless there is pressure from outside the industry, it will not change. If resources become limited, or there is economic or regulatory pressure, then the industry will be forced to look to

different options.” With energy costs on the rise, using electricity from nitrogen could become too costly, and experts may be forced to turn to other sources of energy, like wastewater. “That’s the role of the researcher,” He said. “To look beyond the current situation.”

That is the goal he sets each day as he enters his Environmental BioTechnology and BioEnergy Lab located in Hancock Hall. He has 20 environmental engineering graduate students that also work in his lab. He’s path through academia has led him to cherish the partnerships that he forms with the graduate students he advises. “I like to see students develop and evolve because I’ve been on the path they are on.” He said. “Each student is different. I like to see them each develop their own research personalities and find their own results.”

He earned his B.S. in Environmental Engineering from Tongji University in China, his M.S. in Environmental Engineering for the Technical University of Denmark, and Ph.D from Washington University in St. Louis. He has been at Virginia Tech since 2013.

Geotechnical Engineering

The Geotechnical Engineering program has enjoyed another successful year as it continues to excel in its teaching, research, and service missions. This success has been reflected at a national and international stage by a number of high-level recognitions. Professor Russell Green received the Normal Medal from the ASCE for a paper that he co-authored with his Ph.D. student Brett Maurer and two other colleagues from New Zealand. This medal is given to the best paper in all of ASCE's peer reviewed journals. Professor George Filz received the Wallace Hayward Baker Award from ASCE for ingenious innovation in the field of ground modification and was selected to be the next ASCE Geo-Institute Cross-USA lecturer. Professor Nina Stark will be featured as a Keynote speaker at the International Conference on Geotechnical and Geophysical Site Characterization in Queensland, Australia. In addition, our faculty are involved in service activities at the highest level of our profession. For example, Professor Tom Brandon is part of the organizing committee of the 2017 GeoCongress and Professor Adrian Rodriguez-Marek is the chair of the Earthquake Engineering and Soil Dynamics Committee of the Geo-Institute.

The education of our students continues to be the core mission of the geotechnical engineering program. Our graduates are highly sought by consulting companies and our 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. The student's appreciation for our faculty was exemplified by the elevation of Professor George Filz to Honor Member in Virginia Tech's chapter of the Chi Epsilon Honor Society, a recognition by

the student members of Chi Epsilon given to only two faculty per year.

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 benefit both the academic and professional communities. The impact of our 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.

Tom Brandon has been busy as the co-chair of the technical programs at Geotechnical Frontiers 2017, which will be held March 12 to 15 in Orlando, FL, and is the main Geo-Institute conference of 2017. Brandon continues his work with the US Army Corps of Engineers regarding transient seepage analysis, and has been a member of the



review team for the new Corp levee design manual. Brandon also has been involved in the development of the new NAVFAC geotechnical manual for the Naval Facilities Engineering Command. On the consulting side, he has been a part of the investigation of the failure of the 240 ft tall MSE slope at the Yeager Airport in Charleston, WV. Along with Dr. Duncan, Brandon has also been working on the design and analysis of two earth dams in Texas.

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 CO₂ 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.

Emeritus Distinguished Professor

Mike Duncan worked with George Filz as co-director of the CGPR, and supervised CGPR and Civil Engineering Department student research projects on design of working platforms and movements of excavation bracing systems. He gave the opening lecture at the University of California, Davis program to honor the lifetime contributions of I. M. Idriss to the Civil Engineering profession. With Professor Tom Brandon and Tennessee Tech Professor Dan VandenBerge, he taught a course on shear strength of soils for the Northern New Jersey Section of ASCE. During the past year he served on consulting boards for Oconee Dam in South Carolina, for design of a new off-channel reservoir on the Lower Colorado River in Texas, and for design of a proposed hydroelectric project at

Livingston Dam in Texas.

George Filz's research projects and sponsors include: foundation support for bridge abutments using geosynthetic-reinforced soil (VCTIR/VDOT); stability of embankments and slopes reinforced with various types of vertical columns, with and without horizontal geosynthetic reinforcement (CGPR); design procedures for pile-supported floodwalls (USACE); stress-strain and strength properties of soil-cement mixtures for deep mixing applications (DFI); braced excavation support (CGPR); and construction working platforms (CGPR). Filz and his students made presentations based on their research in New Orleans, Orlando, Phoenix, and Sacramento. He served as Assistant CEE Department Head, co-director with Mike Duncan of VT's Center for Geotechnical Practice and Research (CGPR), faculty advisor of VT's Geotechnical Student Organization, member of VDOT's Geotechnical Research Advisory Committee, member of the ASCE Geotechnical Soil Improvement Committee, and consultant on geotechnical design and construction projects, including infrastructure upgrades at Kennedy Space Center and land reclamation for the Third Runway at Hong Kong International Airport.

Russell Green has been actively working on a couple continuing research projects and a couple of new ones. Most notably, he is continuing his work studying the 2010-2011 Canterbury, New Zealand earthquake sequence. Towards this end, Green spent June through August 2016 at the University of Canterbury in Christchurch, New Zealand, as Erskine Fellow giving lectures and performing collaborative earthquake research. Green, along with Virginia Tech doctoral student Brett Maurer and two professors from the University of Canterbury, were awarded the 2016 Norman Medal from ASCE for their

collaborative work on the earthquakes. Russell is also continuing his work on an 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. He is also involved in an international collaboration with the Earthquake Engineering Research Centre, University of Iceland assessing the seismic hazard of northeast Iceland; Green attended the second meeting for this project in Husavik, Iceland in June 2016. Russell 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 US nuclear weapons facilities and issues related to induced seismicity. He is an Associate Editor/Editorial Board Member for two journals, Earthquakes and Structures and the International Journal of Geotechnical Case Histories.

Matthew Mauldon focuses his research on engineering problems involving materials of geologic complexity. Projects include development of field-based techniques for capturing key engineering attributes of fractured rock masses, with application to slope reinforcement, tunnels and rock foundations. He gave two talks on the west coast in summer 2015. The first of these, presented at the 49th US Rock Mechanics / Geomechanics Symposium in San Francisco, was on the analysis of rock fractures for adaptive design of tunnel support systems. The second, which had the title "Engineering Geology in Flatland" was an invited lecture at the R. E. Goodman Geological Engineering Symposium. In his teaching, Mauldon maintains an emphasis on inference of the engineering-geologic environment

and its consequences for geotechnical design and construction. He also serves as one of the department's undergraduate advisors.

Emeritus Distinguished Professor **Jim Mitchell** continued co-advising Ph.D. research on methods for evaluating sustainability aspects of ground improvement projects. He presented a Distinguished Lecture on "Induced Seismicity Considerations in Geo-Energy Resource Development" at the 1st International Conference on Geo-energy & Geo-environment in Hong Kong in December 2015, The Donald Burmister Lecture at Columbia University in April, and was a speaker at the I.M. Idriss Symposium at UC Davis in June, 2016. Professor Mitchell served as a member of the National Academies Committee on State of the Art and Practice for Assessment of Earthquake Induced Soil Liquefaction. He was appointed to the Science Advisory Board for the new NSF-sponsored Center for Bio-mediated and Bio-inspired Geotechnics, comprised of four universities (Arizona State, UC Davis, New Mexico State and Georgia Tech) working together. 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, MS, and chairing a board of consultants investigating the damage to the Upper Tamakoshi Hydroelectric Project caused by the 2015 Nepal earthquakes and reviewing proposed remedial actions.

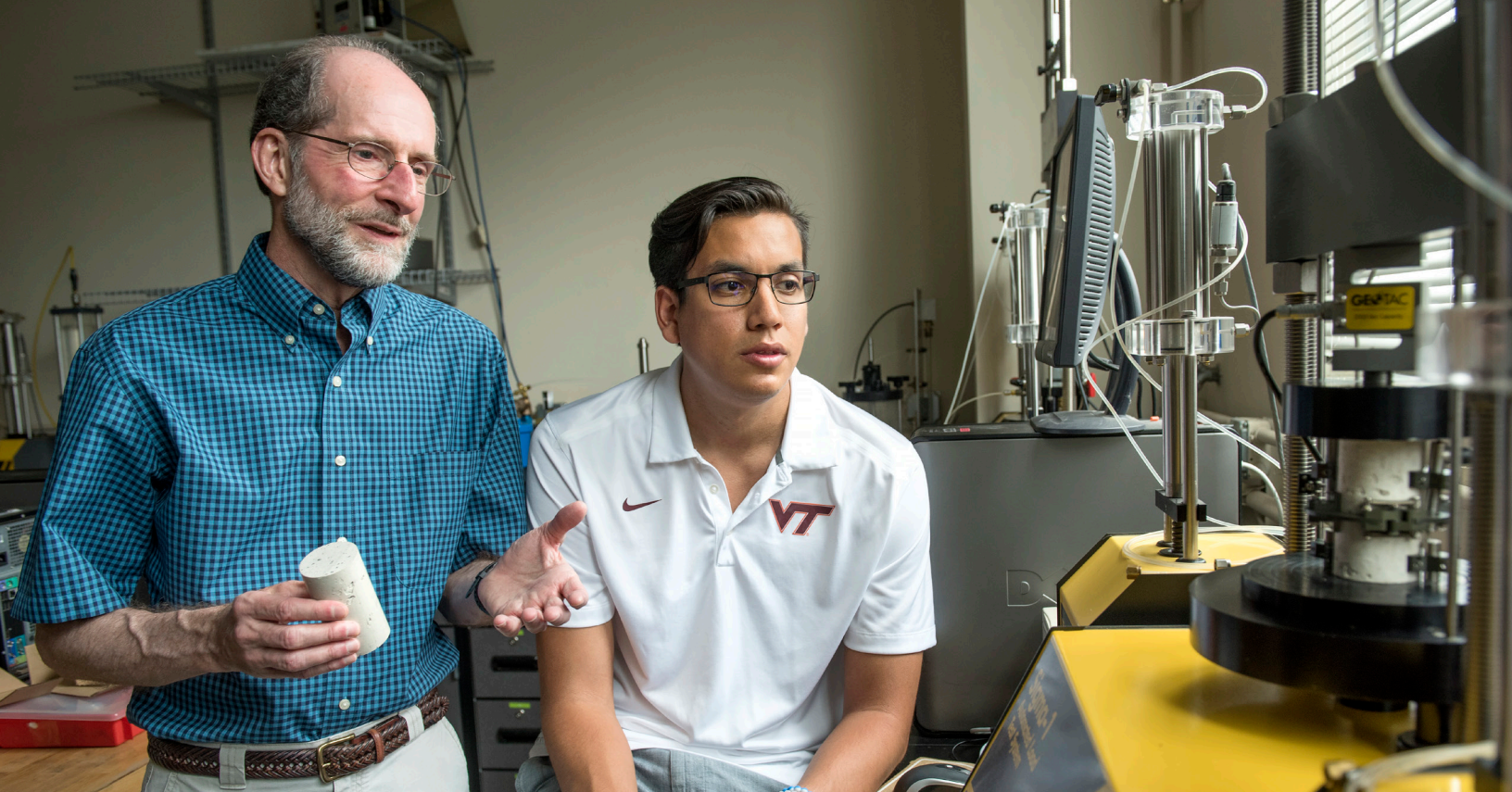
Guney Olgun is continuing his research and outreach efforts on energy geotechnology spanning a wide range of areas from energy piles to energy geostorage. He is active in the leadership of the technical committee on Energy Geotechnics and is currently the thrust leader on energy geostructures. He is 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 leading another NSF funded project to study the use of soil-mix panel elements for ground reinforcement during earthquakes. This study is led by Virginia Tech and it 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 is a collective effort 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 seismic hazard assessment on projects funded by the USGS and the French national power company. His work focuses on the study of site effect and the characterization of uncertainty. 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. Other projects include a CGPR-funded project on construction working platforms and a project with Olgun on site response in the Capitol region. Professor Rodriguez-Marek spent two

summer months in the University of Canterbury in New Zealand as an Erskine Fellow. His consulting work has been on seismic hazard assessment projects for nuclear power plants and on hazard related issues in induced seismicity. He serves as the chairman of the Earthquake Engineering and Soil Dynamics committee chair of the Geo Institute of ASCE and is an editorial board member for the journals Earthquake Spectra, Soils and Foundations, and ASCE's Journal of Geotechnical and GeoEnvironmental Engineering.

Nina Stark and her research group have completed the last field survey in her ICTAS-funded project on the development of cost-effective geotechnical survey strategies for early site assessment for ocean renewable energy converters, featuring penetrometer measurements, and pore pressure monitoring in Yakutat, Alaska. In the framework of her NSF-funded project on the development of an active sediment layer sampler as an add-on unit for a lightweight penetrometer, they succeeded in designing and manufacturing three different prototypes which are currently being tested in the laboratory. In conclusion of Stark's NSF-funded project on the in-situ geotechnical investigation of the Arctic nearshore zone, she presented results at three international conferences, and a manuscript is in peer review. In May 2016, Stark was granted an award from the Office of Naval Research to develop a method for the rapid and remote assessment of lower bound bearing strength at sandy beaches.



Restoring Safety at Buckeye Lake

Buckeye Lake in Millersport, Ohio, is one of the state's most popular lakes and state parks. It was created in the 19th century as a part of the Ohio and Erie Canal project, but was later shifted to be used primarily for recreation. The lake brings tourism and economic development to the area, and more than 370 vacation and permanent homes have been built directly on, and actually within, the dam that retains the lake.

In 2015, the results of a comprehensive assessment of existing conditions at Buckeye Lake Dam showed that the 4.1-mile-long earthen dam has high-hazard potential, meaning that many lives would be lost and substantial property damage would occur in the event of a catastrophic dam failure. The lake is 3,030 acres in size and holds more than 4.5

billion gallons of water, which poses a significant risk to residents in the area. The assessment found deterioration of the dam and excessive seepage through the dam. When the lake level rose, water was seen seeping out of the downstream slope, which is a dangerous condition. In addition, hundreds of excavations have been made in the dam for basements of houses, which reduces the dam's stability, increases seepage and erosion potential, and makes safety inspections difficult. Following the assessment, the Ohio Department of Natural Resources (ODNR) worked with local emergency management officials and first responders to plan, train, exercise, and evaluate readiness capabilities. A warning system was established, and other safety measures were taken, including lowering the water level in the lake.

After considering several options to mitigate the risks so the lake level can be restored, a two-phase approach has been implemented. The first phase includes a berm along the upstream side of the dam and a 3-ft-thick seepage barrier constructed through the berm and the foundation soils. The second phase includes stabilizing the berm and the upper portion of the foundation soils. Both the seepage barrier and the stabilization are being done by the "deep mixing method," which produces a soil-cement mixture by blending augers or other specialized mixing equipment to increase strength and decrease hydraulic conductivity.

George Filz has conducted extensive research on deep mixing at Virginia Tech and he was called upon to assist with the

Buckeye Lake Dam project. The design team, which was led by the engineering firm Gannett Fleming, made use of Filz's research findings to determine the soil-cement property values, design the seepage barrier and dam stabilization system, and develop quality control and quality assurance measures for construction. The first phase of remedial work has been completed, which has allowed for partial restoration of the lake level. The second phase of construction is expected to begin in 2017.

Other infrastructure projects that have relied upon Filz's research on deep mixing include: San Pablo Dam, Chabot Dam, and Perris Dam, which are all in California; the Portage Lakes Dams in Ohio; Linville Dam in North Carolina; the Choctawhatchee Bay Bridge and Causeway in Florida; several post-Katrina levee improvement projects in Louisiana; a new waterfront bulkhead in Tuxpan, Mexico; and the Third Runway Reclamation Project at Hong Kong International Airport.

Filz has been widely recognized for his work on deep mixing. "Today, deep mixing is a vibrant technology in the US, and I believe that this is due in large part to Dr. Filz's contributions," said David Yang, Senior Vice President at JAFEC USA, Inc., who is a leader of the deep-mixing industry but was not involved with the construction at Buckeye Lake Dam. In recognition of Filz's work on deep mixing, seepage barriers, and other ground improvement technologies, he has been honored with the 2016 Wallace Hayward Baker Award from the American Society of Civil Engineers (ASCE), and he has been named the ASCE

Geo-Institute's Cross-USA Lecturer for 2016-2017.

Separate from these recent national recognitions by ASCE, Filz was inducted as a 2016 Honor Member in Virginia Tech's chapter of the Chi Epsilon Honor Society. This is especially meaningful to Filz because honor members are selected by Virginia Tech students. In July 2016, Filz was reappointed as the Charles E. Via, Jr. Professor of Civil and Environmental Engineering. Filz and University Distinguished Professor Emeritus Mike Duncan serve as the co-directors of Virginia Tech's Center for Geotechnical Practice and Research, which has 26 corporate and agency members. Filz also serves as an Assistant Head of the Civil and Environmental Engineering Department.



Structural Engineering and Materials



The SEM graduate program has over 70 new and continuing graduate students, with more than 25 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 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. They have been working with Vickie Mouras, Matt Eatherton and Roberto Leon to upgrade the lab with two new 10-ton cranes, which will provide twice the capacity of our current cranes.



The group welcomed Debbie Cooper as our new administrative assistant, and we are looking forward to the arrival of Maryam Shakiba, who will join the group as an assistant professor in January of 2017.

Finley Charney has been active in a variety of areas including collaborative international research, teaching, building code development, and continuing education. His current research focus is on numerical modeling of steel, concrete, and wood structures under extreme seismic and wind loads.



In international activities, Charney has continued his association with Pontificia Universidad de Catolica in Santiago Chile, and spent the first half of 2016 in Santiago working as a Visiting Professor. He also initiated collaborations with the University of Chile, also in Santiago, and with Austral University in Valdivia, Chile.

In the area of building code development Charney is working with a task committee of the Building Seismic

Safety Council to update seismic load analysis provisions for the 2020 NEHRP Recommended Seismic Provisions, and ultimately for ASCE 7-22. He is also participating in an ASCE committee that is developing guidelines for performance based wind engineering.

Charney, together with Justin Marshall of Auburn University, developed a new ASCE self-guided course “Earthquake Engineering for Buildings”. Also, working with coauthor Thomas Heausler, he completed the third edition of the ASCE Press book “Guide to the ASCE 7-16 Seismic Load Provisions”.

Matthew Eatherton’s research group has continued its focus on developing new structural systems with enhanced earthquake performance and improving resilience and sustainability of structural systems. The group is working on several ongoing multi-year research projects including a multi-university collaborative project on seismic behavior of steel deck diaphragms, an NSF CAREER project related to high ductility steel shear panels, a collaborative project on optimizing resilience and sustainability of building systems, a collaborative project working on computational simulation of steel fracture in structures, a project developing new bolted end plate moment connections for metal buildings, 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 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-Tech², 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 years in other ways such as authoring design examples to be used by practicing structural engineers.

Madeleine Flint has continued her focus on the assessment of the resiliency, sustainability, and durability of built infrastructure. She leads an effort with several of her colleagues in the Department—as well as other departments at VT—on a multi-year NSF project that is developing a decision support system for multi-hazard performance-based design of resilient, sustainable buildings. The goal of the project is to support practicing engineers in selecting optimal soil, foundation, structural and envelope systems during early design. Flint continues to actively research issues related to bridge design and management. Her research group is working with the Virginia Transportation Research Center to support the implementation of durability design methods for reinforced concrete bridge decks across Virginia, with the aim of ensuring a 100-year service life for all new structures. A new project supported by ICTAS is looking at data-driven climate adaptation strategies for bridges exposed to riverine and coastal flooding.

In addition to research, Flint is active in professional service, education, and outreach. Her efforts in design of buildings for multi-hazard resilience are complemented by her participation in the ASCE Infrastructure Resilience Division Risk and Resilience Metrics Committee, where she is leading an effort to select methods for hazards characterization that can support next-generation community resilience-based structural performance standards.

She shared her research with variety of international conference travel. Flint and her research group supported several outreach activities, including through presentations to students of Hypatia, students in a summer bridge program, and the C-Tech² and Blast summer camps, supporting a growing interest in interactive data visualizations aimed at a general audience.

Matt Hebdon’s research is on steel structures, fatigue and fracture related issues, and their application to highway and railroad bridges. His work on the evaluation of fracture critical bridges with built-up steel members has shown their resilience to fracture and gives guidance on the remaining fatigue life of partially failed structures. He has worked on finding a reliable non-destructive method for determining rivet strength for historical bridges for the assessment of current capacity. He has also worked with Roberts-Wollmann, and VDOT on a project to perform a live load test of a deteriorating interstate bridge in a corrosive environment. Hebdon is active in steel bridge committees for AREMA, TRB, and AASHTO, and is currently a collaborator on the effort to revise code requirements for the inspection of fracture-critical bridges to maintain safety while preserving critical transportation structures.

Ioannis Koutromanos worked on the development of computational simulation methods for capturing the behavior and failure of structural systems subjected to extreme loading events such as earthquakes. His work was focused on finite element analysis of reinforced concrete structures such as bridge piers, walls and three-dimensional building systems. The simulation methods have been validated with experimental tests on actual concrete structures. He has been developing simplified simulation tools, based on the nonlinear truss analogy, for masonry-infilled reinforced concrete

Structural Engineering

frames, in collaboration with Leon. The work was part of the dissertation of two doctoral students who graduated under his supervision (one of the two students was co-advised with Leon). It also resulted in the publication of three journal papers, and publication and presentation of two conference papers in the United States and abroad. Koutromanos has also been working, in collaboration with Eatherton, to develop and calibrate analytical simulation tools for capturing inelastic deformation and fracture of structural steel members due to low-cycle fatigue. The specific research project is supported by a grant from the NSF.

Koutromanos was the lead organizer and moderator for a pair of sessions, titled “Calibration and Validation of Analytical Models for Concrete Structures” which took place in the Spring 2016 Convention of the American Concrete Institute (ACI) at Milwaukee, WI. He recently completed his two-year term as the inaugural faculty advisor of the VT Student Chapter of the Earthquake Engineering Research Institute (EERI). The Chapter has organized a series of seminars from academic and professional leaders.

Roberto Leon continues his research on resilient steel and composite connections, behavior of unreinforced masonry structures with infills, and reinforced concrete beam-column joints under seismic loads. His work on composite structures focuses on local buckling of composite elements with high strength materials and on composite beams with low levels of partial interaction. The work on reinforced concrete joints aims to

determine better anchorage rules for beam and column bars under large cyclic load reversals. Leon organized and edited the proceedings for the 2nd Conference on Improving the Seismic Performance of Existing Bridges and Other Structures (SEI/ATC) that brought over 400 practitioners and researchers to San Francisco in December. Leon was inducted as a Distinguished Member of ASCE in October 2015, and will join the ASCE Awards Committee and the Advisory Committee on Structural Safety of the Department of Veteran Affairs (VA) as part of his professional activities in the coming year.



Vickie Mouras was promoted to Associate Professor of Practice this year. As a Professor-of-Practice, Vickie continues to focus her attention on teaching in the undergraduate program. In addition to teaching all the seniors in the Professional & Legal Issues (P&L) course, Vickie also teaches our undergraduate structural engineering courses: Theory of Structures, Steel I (a design project course) and Concrete I. Vickie led a SEM group that was awarded a grant to develop an on-line version of the Theory of Structures course. This grant included participating in training to learn the fundamentals of providing

very high quality on-line instruction. The first offering of the on-line Theory of Structures course was offered during the 2016 summer session; this course enjoyed almost a four-time increase over the number of students who enrolled in the same course last summer.

Carin Roberts-Wollmann focuses her research on implementing high performance materials and innovative construction techniques to improve concrete bridge behavior, durability and constructability. This year, a detail she and her students developed for the connection between adjacent precast box beams was used to retrofit an existing box beam bridge near Staunton, VA. The new connection should extend the life of the bridge by eliminating the reflective cracking at the joints between adjacent beams. She completed a project investigating Carbon Fiber Reinforced Polymer (CFRP) grids as end zone and shear reinforcement in prestressed concrete beams, and another performing live load tests on the approaches to the Hampton Bay Bridge –Tunnel to investigate the influence of corrosion of prestressing on bridge performance. Her ongoing research is to continue to develop and refine the Inverted T-Beam Bridge System for short to medium span bridges for VDOT. Roberts-Wollmann continues to serve the American Concrete Institute (ACI) as the chair of Committee 423 – Prestressed Concrete and as a voting member of Committee 318 – Building Code.



How does climate change affect structures?

Madeleine Flint, Assistant Professor in structural engineering, has been collecting data that, if integrated, have the potential to increase the accuracy of assessing the impact of climate change on transportation infrastructure and adaptation planning. In particular, a database of hydraulic bridge failures, high-resolution coupled regional climate and hydrological reanalyses and projections, and methods for bias correction have the potential to greatly increase the accuracy of data used to assess the impact of climate change on bridge failures and their associated economic, social, and environmental impacts. This offers a data-driven approach for adapting bridges to climate change and increasing the resilience of the transportation infrastructure.

This project was one that she started as a post-doctoral student and it would be the first to integrate cutting-edge climate science and hydrological modeling with data-driven predictions of bridge failures and robust decision-making and optimization approaches. This could transform transportation asset management at the policy and local levels.

“We don’t know what the future of climate change is going to be,” said Flint. “There is so much uncertainty.”

Prior to Flint, nobody had studied how severe the floods were when bridges failed. While individual engineers that oversee the bridge do detailed studies, it hadn’t been looked at on a national scale. There was a voluntary national database of failed bridges,

but since it was voluntary, it wasn’t comprehensive and wasn’t accurate in the location of the bridges. “I spent a lot of time matching up these bridges and developing algorithms to match the bridges to another database,” she said.

Through her matches, she found approximately 350 failed bridges and 35 of those reported a flood at the time of failure. Flint used techniques from hydrology to figure out if the flood was the cause of the bridge failure.

“All of the previous climate impact assessments that looked at how floods affect bridges have made the assumption that bridges actually perform the way that we think they do,” Flint noted. “However, the results show that there is actually a lot of uncertainty in what sorts of floods will cause

failure. The change in failure rate is probably more sensitive to climate change than had been previously thought.”

Flint’s research aim is to quantify long-term costs and environmental impacts to support the rational allocation of resources for infrastructure rehabilitation and development. She hopes to put her findings toward a decision framework that account for climate projections and hydrological projections in an effort to quantify what the change in risk is.

Although her interactive map locates bridge failures across the United States, she does note that there are approximately 504,000 bridges over water in the United States and, while bridge collapses are rare, the 35 bridges that she located are not geographically representative of the frequency of collapse in the United States. The database from which she collected the data has more data for some states in the New England and Mid-Atlantic area than for others. You can view the interactive map at <https://mflint.shinyapps.io/FailMap/>.

A second project that Flint is collaborating on, with several

other faculty members within the department, is a resilience sustainable buildings project. Together, through this four-year study, they are working to develop a decision support system to help engineers and architects in the very early design stages of the building.

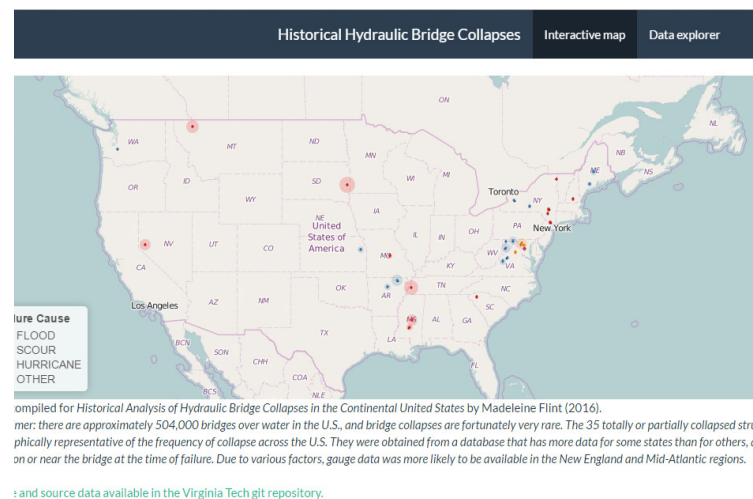
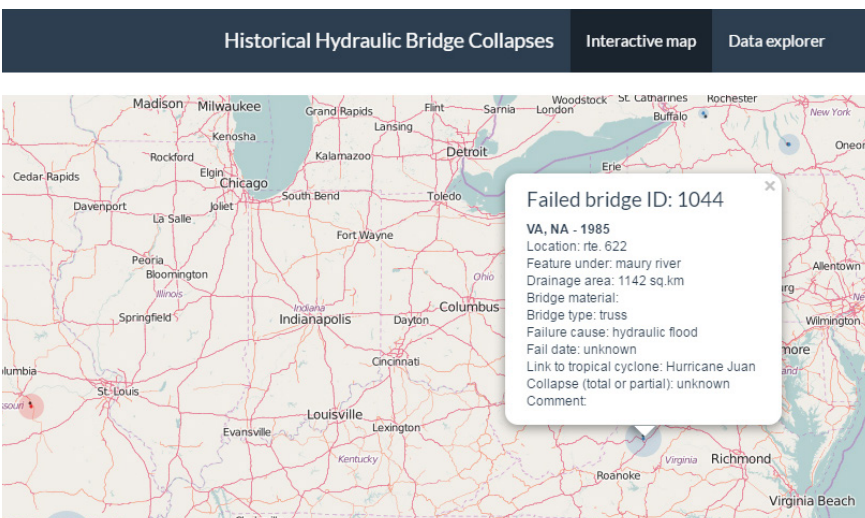
“We are trying to develop something that will help clients figure out what is the most resilient and sustainable system for their site,” Flint said.

Currently, they are doing a case study in Charleston, South Carolina that looks at earthquakes, tsunamis, and hurricanes as hazards as they compile 2500 different combinations of soil foundations, structure and envelope systems that could be possible. From that data, the group is working to come up with the top couple of combinations for that site. Building on existing framework from earthquake engineering and hurricane engineering, as well as methodology for durability engineering that she worked on while obtaining her Ph.D, they are adding in consideration of operation, which is not usually taken into account in these studies.

“It is a problem that can only be answered through multiple disciplines,” Flint said. “I want to find the interdisciplinary problems and figure out a holistic framework that is efficient enough to consider all of the uncertainties without needing to rely on really simplified models that can sometimes give results that are not trustworthy.”

In order to work through these interdisciplinary problems, she is collaborating with experts in specialty areas, such as construction, earthquake engineering, and hurricane engineering. Others at Virginia Tech that are involved in the project are Roberto Leon, Matt Eatherton, Jesus de la Garza, Jen Irish, and Georg Reichard.

Flint joined as a faculty member at Virginia Tech in 2015, following a postdoctoral year in the Woods Institute for the Environment at Stanford University. She earned her M.S. and Ph.D. in environmental engineering from Stanford, and her B.S. in structural engineering from the University of California San Diego.



Transportation Infrastructure and Systems

The Transportation Infrastructure and Systems Engineering Program (TISE) had a 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). TISE Program is comprised of 11 faculty members and 65 graduate students. The group has representation in both Blacksburg and the National Capital Region. Several TISE faculty are affiliated with the Virginia Tech Transportation Institute (VTTI). The group welcomed Sandi Wagener as the group's new administrative assistant.

Montasir Abbas graduated one Ph.D. and five MS students this year. He worked on seven research projects funded by VCTIR, MATS, and NSF, bringing five 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. He published six peer-reviewed journal papers and six peer-reviewed conference proceedings. He currently supervises six graduate students and is involved with several Transportation Research Board (TRB) committees. Abbas served as the Faculty Senate Vice President and the Chair on the Commission on Faculty Affairs this past year, bringing important and significant changes to the Faculty Governance at VT and introducing new faculty ranks to the VT community. He has been elected as the upcoming President of the Faculty Senate.

Gerardo Flintsch continued his efforts on the Accelerated Pavement Testing facility at VTTI using a heavy vehicle simulator acquired by VDOT. He has also been working on 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 demonstrate Continuous Friction Measurement Equipment (CFME), and the NCHRP Project 15-55, Guidance to Predict and Mitigate Dynamic Hydroplaning on Roadways. This year also marked the 11th anniversary of CSTI-led Pavement Surface Properties Consortium.

During the past year, **Kathleen Hancock** has expanded her work in highway safety analysis and visualization. Projects include developing a systemwide method for identifying crash factors at complex facilities like interchanges, creating sketch planning models for safety planning and visualization, and studying the effect of transportation network companies on crashes involving alcohol. She continues her work with Virginia DMV 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 is continually enhancing her use of technology to enriched teaching and learning for her on-line education and to explore new ways to effectively



interact with remote students. As co-director of the Smart Urban Mobility Laboratory in the National Capital Region, she is strategically enhancing the environment and capabilities of the lab. Hancock also acts as the Department coordinator for the CEE program in the National Capital Region.

Kevin Heaslip was 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. His research in Automated Vehicle Security examines the safety and efficiency degradation due to adversarial attacks on vehicle platoons. His work for the Utah Department of Transportation 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 the Virginia Department of Transportation on their sign retroreflectivity measurement procedures. In partnership with Kitty Hancock and Pam-Murray Tuite, the transportation faculty in the National Capital Region established the Smart Urban Mobility Laboratory to advance research in urban transportation.

Antoine Hobeika 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. Antoine retired at the end of this academic year and has been granted emeritus status.

Bryan Katz continues to serve as an Assistant Professor of Practice, teaching

Transportation Infrastructure and Systems

Civil Engineering Drawings and CAD, Introduction to Transportation Engineering, Geometric Design of Highways, and Transportation Safety. In addition, he advises the Virginia Tech Institute of Transportation Engineers (ITE) student chapter. The ITE student chapter's Traffic Bowl Team won the State section and competed at the Southern District ITE meeting in Nashville, Tennessee. Katz was awarded with a Certificate of Teaching Excellence from the College of Engineering and was the recipient of the Eugene D. Arnold, Jr. Outstanding Individual Activity Award from the Virginia Section of ITE. He brings practical experience into the classroom through his position at toXcel where he serves as the Vice President of Engineering. Katz remains active as a member of two Transportation Research Board Committees and as a voting member on the National Committee on Uniform Traffic Control Devices (NCUTCD).

Pamela Murray-Tuite continued her work in evacuation, disruptive events, emergency vehicle modeling, transportation resilience, risk, and network analysis. In the past year, she received four new interdisciplinary research grants, three of which are from the National Science Foundation and the other is from the Mid-Atlantic Transportation Sustainability Center. Two of the NSF projects are related to evacuation and the third is related to connected vehicles for emergency response. The MATS project focuses on warning and re-routing for connected vehicles in flooding situations. Murray-Tuite also continued her work on examining (1) the transportation system impact of MetroRail's new Silver Line, (2) the impact of sea level rise on evacuation, (3) travel changes people make during flu epidemics. She is supervising a high school intern through the Urban Alliance program. She is also an Associate Editor for Transportation Research – Part C.

Hesham Rakha, with researchers and students in the Center for Sustainable Mobility, 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, the Virginia Department of Transportation and the Department of Energy. Rakha published four book chapters, 20 peer-reviewed journal publications (15 published and five accepted), 41 peer-reviewed conference publications (23 published and 15 accepted), and had over 850 citations. In addition, they made 23 conference presentations. Rakha serves as an Associate Editor for the IEEE Transactions on Intelligent Transportation Systems, the Journal of Intelligent Transportation Systems, and 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 continued teaching the Highway Transportation Safety course. Aside from teaching, he is active in the development and promotion of the Human Factors Guideline for Road Systems, NCHRP report 600, with emphasis on wholistic 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 was 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 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 on genome of stone-based infrastructure materials, energy harvesting, and green and sensing technologies. He and his colleagues have established the Center for Smart and Green Civil Systems with endorsements of the department and the university. Wang has led the organization of a large international conference-the Transportation Research Congress in June 2016 in Beijing, China. He also chaired the International Workshop on Genome of Stone-based Infrastructure Materials, which was sponsored by the National Science Foundation. In the spring, Wang taught a new course on Integration of Renewable Energy in Transportation Infrastructure. As a departmental representative, he actively served the Engineering Faculty Organization of the College of Engineering. He has been recognized as the Virginia Tech Researcher of the Week.



Leading the race in pavement testing

“Many existing infrastructure systems, including roads, do not provide the level of service that society demands,” said Gerardo Flintsch, director of Virginia Tech Transportation Institute (VTTI)’s Center for Sustainable Transportation Infrastructure and professor in civil and environmental engineering. “They have deteriorated because of use, misuse, and environmental factors, or they have become functionally obsolete because of changing demands.”

To help remedy this problem, the Center for Sustainable Transportation Infrastructure, which is a joint program between CEE and VTTI, is working to improve pavement-vehicle interaction, manage pavement

assets more effectively, and make pavement systems and managing approaches more sustainable. Research projects within the center, which also has a strong partnership with Virginia Department of Transportation (VDOT) and the Virginia Transportation Research Council, include approaches for managing the pavement friction and methods to assess and mitigate splash and spray potential of pavement surfaces. This can enhance road safety and reduce road-related fatalities. Flintsch is also working to enhance pavement strength and allow for more accurate estimates of future maintenance and rehabilitation needs. This includes creating better tools to evaluate the life cycle cost and environmental

impacts of pavement materials, systems, and management approaches.

Pavement longevity is constantly being tested by engineers to find techniques and materials that can achieve long-term results on the roads. The challenge is that it takes years to assess the strength of the roads under heavy traffic. The accelerated pavement testing program was unveiled in November as a way to significantly speed up this pavement testing. The 54-ton heavy vehicle simulator will model the wear and tear of excess trucks and traffic by applying a heavily weighted load to test a 10-foot-wide by 100-foot-long pavement section continuously for several months. This technology will speed

up the time needed to test roads and learn the impact of traffic on those roads, which will also reduce the costs in terms of road maintenance and rehabilitation projects. VDOT estimates that over half a billion dollars are spent each year on replacing pavement in Virginia. Other states that have a similar accelerated pavement testing program have cited significant savings, as much as a 20-1 benefit to cost ratio. This testing machine could decrease costs from quick implementation of recommended changes in pavement designs and paving schedules. Ideally, the machine can produce the same wear and tear of heavy traffic in a few months rather than several years.

“My long-term vision is to find innovative and efficient solutions for making our infrastructure more sustainable and resilient,” Flintsch said. “I hope to work toward this goal through the development of a strategic, long-term, multi-million dollar pavement research program.”

According to VDOT, the unveiling of this structure allows Flintsch and other pavement experts to develop better methods of placing instrumentation in new and rehabilitated pavements to monitor their response to heavy vehicle traffic. The program will enable VDOT to determine the way that pavement designs and materials respond to load testing before putting them on roads. Engineers have been challenged for years with ways to test pavement, since they do not want to test high-risk things with the traveling public. Instead, testing can occur at VDOT’s testing facility, which is located at VTTI in Blacksburg. It consists of six lanes, each 300 feet long, which can be divided into smaller test cells to test different variables. Some specific factors that they will be testing include pavements with recycled pavement materials, adding different binders to increase a pavement’s service life, and improved configurations of pavement layers under the driving surface to provide

better service. Additionally, in a controlled testing environment, researchers can test for cracking at very hot and cold temperatures. Even more importantly, it will increase the safety for road workers and the traveling public.

Flintsch is the Director of VTTI’s Center for Sustainable Transportation Infrastructure, as well as a professor in civil and environmental engineering. His research focuses on pavement engineering, management, evaluation and performance. He seeks to find sustainable pavement solutions and analyzes pavement-vehicle interaction and design. He has served as a consultant to several national and international organizations and has more than 150 publications. Flintsch currently leads a strategic research partnership between the Virginia Tech College of Engineering and the University of Nottingham in the United Kingdom. The program promotes research cooperation and an exchange program for Ph.D. students.



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 30th 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 30 years and continue to fulfill the mission set by the Via family.

Undergraduate

Michelle Helsel



Hometown: Gaithersburg, Maryland

Awards and Recognitions: Deans List with Distinction, Advanced Research Skills Certificate, Merit Recognition from American Council of Engineering Companies of Maryland (ACEC MD)

Work Experience: National Institute of Standards and Technology, D.R. Horton Land Development and Construction Intern

Career Goals: I hope to pursue a graduate degree in Structural Engineering Materials. My research and course work has piqued my interest and I hope to expand my understanding of structural materials as I continue my education. Following a master's degree, I plan to begin a career in structural health monitoring to help improve the struggling state of the current U.S. transportation infrastructure.

Dan Peets



Hometown: Sacramento, California

Awards and Recognitions: Virginia Space Grant Consortium Community College Scholarship, Valley Proteins Fellow, Wytheville Community College Student of the Year, ASCE-Virginia Scholarship

Work Experience: Sole Proprietor of residential construction business in Sacramento, CA; volunteer with Prosim Engineering, LLC; Intern and Design Technician with Gay and Neel, Inc.

Career Goals: I plan to utilize civil engineering to help underserved people both domestically and abroad. I want to combine extensive field experience with academic training to avoid common mistakes and offer superior site designs, as well as integrate lean and value engineering principles in all design-build projects. Another priority is to increase efficiency in design methods, project phasing, and building systems and overall, apply a holistic understanding of civil engineering to real estate development.

Ryan Stevens



Hometown: Signal Mountain, Tennessee

Awards and Recognitions: Dean's List with Distinction, Eagle Scout Award, Member of Tau Beta Pi, Member of Chi Epsilon, George A. Steward Scholarship recipient, RSAP participant

Work Experience: Construction technician at URS Corporation, Civil intern at AECOME Corporation, Project Management Co-op at Crowder Construction Company, Design and prototyping engineer at Card Isle.

Career Goals: Ultimately, I would like to work for a general contractor or design firm on transportation infrastructure projects like roads, bridges, tunnels, airports and shipping ports in the Arctic.

Masters

Matthew Blair



Environmental and Water Resources

Hometown: Clear Spring, Maryland

Location of Undergraduate Studies: Mississippi State University

Awards and Recognitions: MSU Presidential Scholar, Goldwater National Research Scholarship Honorable Mention, John E. Pearson Prize in Civil Engineering, Spirit of State Honorary, Mississippi Engineering Society's Outstanding Engineering Senior

Work Experience: ReNUWit National REU program researcher, UC Berkeley; MSU's Engineers without Borders Expedition Member, Undergraduate Researcher at MSU

Career Goals: I plan on completing my master's degree, 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.

Robert Cole



Structural Engineering and Materials

Hometown: Arlington, Virginia

Location of Undergraduate Studies: Virginia Tech

Awards and Recognitions: Pratt Engineering Scholarship for Outstanding Achievement, Graduated Summa Cum Laude, Dean's list for all semesters, member of Chi Epsilon

Work Experience: Internship as a field technician with Engineering Consulting Services, Undergraduate Research Assistant, Forensic Engineering Internship with Wiss, Janney, Elstner Associates, Inc.

Career Goals: In the future, I plan to work for a structural forensics firm to combine my engineering knowledge with a love for problem solving and investigation. I plan to earn my professional engineering license and hope to continue learning and innovating over the course of my career.

Charles Conran



Transportation & Infrastructure Systems

Hometown: Fairfax, Virginia

Location of Undergraduate Studies: Virginia Tech

Awards and Recognitions: Engineer in Training (EIT), Graduated Summa Cum Laude with Honors, Undergraduate George A. Stewart Scholar, member of Chi Epsilon

Work Experience: Internship with Gorove-Slade Associates, Internship with Virginia Department of Transportation

Career Goals: Following my graduate studies, I plan to pursue a career in traffic engineering specifically in the context of urban mobility. Mobility can no longer be improved solely by expanding vehicle capacity. Mobility requires proper consideration of all travel modes and transportation equity must be ensured for all people groups. I want to be on the forefront of this shift - engineering solutions to maximize both our new and current infrastructure.

Anthony DiGiantommaso



Geotechnical

Hometown: North Attleboro, Massachusetts

Location of Undergraduate Studies: University of Rhode Island

Awards and Recognitions: Graduated Summa Cum Laude, University Academic Excellence Award, Tau Beta Pi Nagel Scholarship, Deep Foundations Institute Educational Trust At-Large Scholarship

Work Experience: Engineer Technician II Intern at GZA GeoEnvironmental Inc.; Assistant Project Manager Intern at Page Building Construction Company

Career Goals: After earning my master's degree, I hope to combine my interests of geotechnical and structural engineering and work as a Professional Engineer designing foundations for buildings and off-shore structures. My ultimate goal is to have the opportunity to work on unique projects and give back to the profession through teaching.

Rebecka Gilbertson



Structural Engineering and Materials

Hometown: Granite Falls, WA

Location of Undergraduate Studies: University of Washington

Awards and Recognitions: NASA Space Grant Scholar, Recipient of the 2015-2016 Frank and Barbara Robinson Endowed Engineering Scholarship, Presenter at the 2016 Mary Gates Undergraduate Research Symposium, Graduated Cum Laude from University of Washington

Work Experience: Traffic Management Intern at the Washington State Department of Transportation, Undergraduate Researcher in the UW Structural Engineering Laboratory

Career Goals: I will strongly consider a Ph.D following completion of this master's program. After graduate school, I would like to enter into the professional engineering world and obtain my PE, but I want to stay involved with research. I am looking at both industry and government positions as options.

Chloe Greenberg



Environmental and Water Resources

Hometown: Fairfax, Virginia

Location of Undergraduate Studies: Washington University in St. Louis

Awards and Recognitions: Larson Aquatic Research Support Scholarship, Sussman Fellowship, Tau Beta Pi member, Washington University Dean's list for all semesters, Washington University Mesmer Scholarship for all semesters

Work Experience: Tighe & Bond, Westfield Massachusetts, Water and Wastewater practice group, staff engineer, Tetra Tech, Water Resources division, intern and tech services employee

Career Goals: I am interested in getting my Professional Engineering license while working as a consulting engineer on wastewater and resource recovery-related projects.

Isaac Groshek



Structural Engineering and Materials

Hometown: Stevens Point, Wisconsin

Location of Undergraduate Studies: University of Wisconsin-Madison

Awards and Recognitions: Graduated first in class, Three-time recipient of John J. Reinhardt Memorial Scholarship, Department of Civil and Environmental Engineering Scholarship, ASCFCME Council 40 Scholarship

Work Experience: Structural Design Engineer I, AECOME, 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.

Nora Harris



Construction Engineering and Management

Hometown: Rock Hill, South Carolina

Location of Undergraduate Studies: Clemson University

Awards and Recognitions: Graduated Magna Cum Laude from Clemson, National Science Foundation Graduate Research Fellowship,

Work Experience: Global Silicon Valley Sustainability Partners Intern, Clemson University Parking and Transportation Services Envision Consultant, Clemson University Glenn Department of Civil Engineering Undergraduate Research Assistant, BMW Manufacturing Co-op

Career Goals: In the future, I plan to devote my career to the improvement of the sustainability of buildings and infrastructure with a focus on energy use. I intend to be an expert in managing energy projects involving retrofits and the implementation of new, more efficient technologies which have a proven sustainable return on investment

Nathan McWhirter



Construction Engineering and Management

Hometown: Madison, AL

Location of Undergraduate Studies: Auburn University

Awards and Recognitions: Graduated Summa Cum Laude in Mechanical Engineering, Dean's List for all semesters, Member of Tau Beta Pi, Earned O'Neal Austin Best Student Awards for three classes, Recipient of National Merit Scholarship, O'Rourke Scholarship, Buris R. Boshell Honors Scholarship, and Mechanical Engineering Annual Scholarships

Work Experience: Intern with Miltec Corporation in Huntsville, AL, internship with Auburn University Office of Sustainability

Career Goals: After graduating, I will seek to develop my knowledge and experience in civil engineering by working in industry. In the long term, I would like to serve a faith-based or nonprofit organization that focuses on sustainable infrastructure projects for those who are most in need.

Melissa Mika



Environmental and Water Resources

Hometown: Boulder, Colorado

Location of Undergraduate Studies: Iowa State University

Awards and Recognitions: Graduated Summa Cum Laude, Honors program, Dean's List, Pak-Liu Fung research scholar

Work Experience: Internship with Kimley-Horn and Associates in Denver, Colorado for civil engineering consulting in land development. Undergraduate research assistant in agricultural water quality.

Career Goals: I aim to work as a consulting engineer after completing my Master's degree and obtaining my professional engineering license. My interests are primarily in sustainable watershed planning, wetland mitigation, and urban stormwater management. Ultimately, I hope to improve urban water systems and work in mixed industry and academic settings

Pat O'Brien



Structural Engineering and Materials

Hometown: Miami, Florida

Location of Undergraduate Studies: Virginia Tech

Awards and Recognitions: Graduated Magna Cum Laude, AISC Education Foundation Scholarship, Dewberry Scholarship, Kenton E. Meland Scholarship, Deans List with Distinction

Work Experience: Research Assistant at Virginia Tech's Thomas M. Murray Structures Laboratory

Career Goals: My current aspirations are geared toward earthquake engineering. I'd like to gain experience in seismic design and make meaningful and innovative contributions to structural engineering by helping make cost-effective buildings safer and more resilient in disaster-prone areas. My career goals are not completely defined, but my five-year plan is to expose myself to the multifaceted earthquake engineering industry and obtain my Professional Engineering license.

Amy Olson



Environmental and Water Resources

Hometown: Metairie, Louisiana

Location of Undergraduate Studies: Louisiana State University

Awards and Recognitions: Graduated Summa Cum Laude, Engineer in Training, LA ASCE Distinguished Civil Engineering Senior Student, BASF Team Chemistry Award, Global Leaders Scholarship from the LSU Alumni Association

Work Experience: Co-op, Louisiana Transportation Research Center, Field Engineer Intern for Barriere Construction Company, Undergraduate Research Assistant

Career Goals: Upon completion of my graduate studies, I hope to gain experience at an environmental engineering firm and obtain licensure as a professional engineer. Ultimately, I would like to work in some capacity to train and mentor other engineers.

Christine Pankow



Environmental and Water Resources

Hometown: Flint Hill, Virginia

Location of Undergraduate Studies: Virginia Tech

Awards and 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

Work Experience: NOAA North East Fisheries Science Center Marine Laboratory intern, Smithsonian Conservation Biology Institutes 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

Jonathan Paquette



Structural Engineering and Materials

Hometown: Vienna, Virginia

Location of Undergraduate Studies: Virginia Tech

Awards and Recognitions: Graduated Summa Cum Laude, Dean's List all semesters, ASCE VT Thompson Award, William A. Caruthers Scholarship, Engineer in Training (EIT)

Work Experience: Structural Engineering Intern, Gibbs & Cox, Inc. in Arlington, VA.

Career Goals: After obtaining a master's degree, I hope to get practical working experience and receive professional engineering licensure. I would prefer working on bridge design, but I'm always open to new experiences. I am considering furthering my education with a Ph.D. after gaining work experience.

Logan Perry



Structural Engineering and Materials

Hometown: Raleigh, North Carolina

Location of Undergraduate Studies: Virginia Tech

Awards and Recognitions: Graduated Summa Cum Laude, Deans List, Thompson Memorial Scholarship, Outstanding Leadership and Service Award, member of Chi Epsilon

Work Experience: I have worked in consulting, construction and residence life. I was an intern with the structures team at Kimley-Horn and Associates where I worked as a full-time analyst with clients including the Atlanta Falcons and Live Nation Entertainment.

Career Goals: My goal is to become an engineering consultant. My desire to work in this field originates from the coupling of my civil engineering theory and problem solving in a people-centered environment. Consulting allows me to use my knowledge to serve those around me and make a direct impact on my community.

James Reilly



Structural Engineering and Materials

Hometown: Morganville, New Jersey

Location of Undergraduate Studies: The College of New Jersey

Awards and Recognitions: Graduated Summa Cum Laude, Engineer in Training, Member of Tau Beta Pi, Deans List

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

Laurel Strom



Environmental and Water Resources

Hometown: Arlington, Washington

Location of Undergraduate Studies: Washington State University

Awards and Recognitions: Inaugural Ut Prosim Award, 2016 Citizen Scholar Recipient by the Virginia Tech Graduate School, Graduated Magna Cum Laude from Washington State University, CEE Outstanding Senior at Washington State University, member of Tau Beta Pi Honor Society

Work Experience: Water Quality Intern at Tacoma Water, Student Research Assistant in the Washington State University Laboratory of Atmospheric Research, Regional Approaches to Climate Change Student Intern

Career Goals: Following graduation, I will either decide to further pursue graduate study or I will follow a path toward consulting and obtain my PE. My ultimate goal is to work in the consulting field to solve problems, both chemical and microbial, in drinking water, using innovation and the skills I have obtained in graduate school.

Trevor Szabo



Structural Engineering and Materials

Hometown: Branchburg, New Jersey

Location of Undergraduate Studies: Pennsylvania State University

Awards and Recognitions: Graduated with high distinction, Dean's list ever semester, The President's Freshman Award, Engineering in Training

Work Experience: Undergraduate Research Assistant at Penn State

Career Goals: After obtaining my master's degree, I plan on working for a structural design firm. There, I will work toward becoming a licensed professional engineer.

Amanda Weikmann



Environmental and Water Resources

Hometown: Charlotte, North Carolina

Location of Undergraduate Studies: Virginia Tech

Awards and Recognitions: Graduated Summa Cum Laude as a Virginia Tech Honors Scholar, Dean's List for all semesters, member of Chi Epsilon, member of Society of Women Engineers

Work Experience: Civil engineering and land development internships at McAdams Company and LandDesign, Inc. in Charlotte; Undergraduate research assistant at Virginia Tech

Career Goals: Once I finish my Master's degree, I hope to work at a water resources firm for the US Army Corps of Engineers. Eventually, I would like to work in a capacity, either as a teacher or with an outreach program, where I can influence people to pursue STEM careers.

Robert Williams



Environmental and Water Resources

Hometown: Richmond, Virginia

Location of Undergraduate Studies: George Mason University

Awards and Recognitions: Graduated with the highest GPA in civil engineering, Civil Engineering Institute Scholar, Member of Chi Epsilon, member of *GMU Engineers for International Development*

Work Experience: Worked with GMU Engineers for International Development on various water projects in Peru, private turo 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.

Doctoral

Marcus Aguilar



Environmental and Water Resources

Hometown: Houston, Texas

Location of Undergraduate Studies: University of Alabama

Awards and Recognitions: Environmental and Water Resources Institute/Coasts, Oceans Ports and Rivers Institute at Virginia Tech President, Treasurer, Recipient of Brian Bluhm Fellowship

Work Experience: Intern for three years with AECOM Water, 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.

Vincent Bongioanni



Transportation and Infrastructure Systems

Hometown: Sacramento, California

Location of Undergraduate Studies: US Air Force Academy

Awards and Recognitions: Defense Meritorious Service Medal for managing largest-ever NATO construction program in Afghanistan, Society of American Military Engineers Annual Sustainability Award, Air Force Space Command Space and Missile Systems Center team of the year

Work Experience: Civil Engineer in the US Air Force for 11 years. Served as executive officer to a commander of every level in the military. Led Airfield Pavement Evaluation team. Instructor at the USAF Academy in Colorado Springs, Colorado.

Career Goals: Improvement of Air Force asset management and design practices in a resource-constrained environment.

Emily Garner



Environmental and Water Resources

Hometown: Swanton, Maryland

Location of Undergraduate Studies: West Virginia University

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

Work Experience: Undergraduate research intern at WVU, engineering intern for the City of Morgantown, intern at Highland Engineering & Surveying, Inc.

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.

Brett Maurer



Geotechnical

Hometown: Geneva, New York

Location of Undergraduate Studies: Syracuse University

Awards and Recognitions: ASCE Norman Medal, EERI/FEMA NEHRP Fellow in Earthquake Hazard Reduction, NSF EAPSI Fellow, ADSC Industry Advancement Scholar, Best Graduate Student Paper, EERI, Best Graduate Student Presentation, 2014 and 2015 SSA Eastern Meeting

Work Experience: Staff engineer, Passero Associates, Rochester, New York

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 natural hazards, energy, and the environment.

Ross McCarthy



Transportation and Infrastructure Systems

Hometown: Corsicana, Texas

Location of Undergraduate Studies: Virginia Tech

Awards and Recognitions: Among top five presenters at the 11th Annual Inter-University Symposium on Infrastructure Management, awarded guaranteed presenter for a poster board-session at 2016 Transportation Research Board Conference

Work Experience: 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 Nieves-Melendez



Construction Engineering and Management

Hometown: Arecibo, Puerto Rico

Location of Undergraduate Studies: University of Puerto Rico, Mayaguez

Awards and Recognitions: Graduated Magna Cum Laude; recipient of the Etienne Totti Graduation Award, member of Tau Beta Pi

Work Experience: Intern at Boeing Company, Everett Washington, participant of the Summer Undergraduate Research in Engineering/Science Program at Georgia Tech, worked for private contractor Nieves & Nieves, Inc., Lares, Puerto Rico, research assistant at the University of Puerto Rico, Mayaguez

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.

Jeannie Purchase



Construction Engineering and Management

Hometown: Ellenwood, Georgia

Location of Undergraduate Studies: Clemson University

Awards and Recognitions: New Horizons Scholar, MAOP Graduate Scholar, Calhoun Honors College Graduate at Clemson, Jacquelyn Willis Anthony PEER Award, LEED Green Associate

Work Experience: Intern for Center for STEM Opportunity and Diversity at Clemson, Co-Op for Charleston Water System Wastewater Collection Department, Intern for Programs for Education Enrichment and Retention, Tutor for Residents in Science and Engineering,

Career Goals: I aspire to obtain my master's and Ph.D. in construction engineering and management and pursue an industry career in project management of a sustainable building design and retrofits. I also would like to return to academia as a professor that bridges STEM fields with sustainability concepts.

Adam Phillips



Structural Engineering and Materials

Hometown: Chesapeake, Virginia

Location of Undergraduate Studies: Virginia Tech

Awards and Recognitions: O.H. Ammann Fellowship, Virginias-Carolinas Structural Steel Fabricators Assoc. Scholarship, Garst-Walker Scholarship

Work Experience: Intern with Retanaur Design Associates, intern with Waterway Surveys & Engineering, intern with Collins Engineers, Inc.

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. I also hope to be a good educator and a successful mentor to my future students.

Tyler Quick



Geotechnical

Hometown: Lexington, Kentucky

Location of Undergraduate Studies: Brigham Young University

Awards and Recognitions: Professional Engineer License, Innovation of the Year Award by the US Army Corps of Engineers, BYU Civil Engineering Outstanding Graduate, Tau Beta Pi Engineering Honor Society member

Work Experience: Geotechnical engineer for the US Army Corps of Engineers, Seattle District, Geotechnical engineer for the Army Corps Risk Management Center Dam Safety Northwest Division Risk Cadre

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.

William Rhoads



Environmental and Water Resources

Hometown: Joplin, Missouri

Location of Undergraduate Studies: Purdue University

Awards and Recognitions: Purdue University Civil and Environmental Engineering Honors Graduate, AWWA's Larson Aquatic Research Doctoral Scholarship recipient, Citizen Scholar Engagement Recognition from Virginia Tech.

Work Experience: Land surveyor at Olsson Associates

Career Goals: After earning my doctorate, I would like to pursue a career as an academic researcher and educator.

Kristin Ulmer



Geotechnical

Hometown: Corvallis, Oregon

Location of Undergraduate Studies: Brigham Young University - Provo

Awards and Recognitions: Graduated Magna Cum Laude, Heritage Scholarship Recipient, Tau Beta Pi Scholar

Work Experience: Worked at Kleinfelder in 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, Va.

Chuck Conran

Year Graduated: 2016
Employer: Pursuing Master's at
Virginia Tech

Chris English

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

Brian P. Felker

Year Graduated: 2001
Current Status: Unknown

Kathryn Firich

Year Graduated: 2007
Employer: Brown and Caldwell,
Alexandria, Va.

R. Andrew Goodwin

Year Graduated: 1996
Current Status: U.S. Army Engineer
R&D Center, Portland, Ore.

Chris Kaldahl

Year Graduated: 1995
Employer: Appalachian Mountain
Club, Gorham, N.H.

Clint Martin

Year Graduated: 2015
Employer: Currently pursuing a
graduate degree at Virginia Tech

Stephen O. Meininger

Year Graduated: 1991
Employer: CH2M Hill - OMI,
Clarksville, Md.

Joshua Mouras

Year Graduated: 2006
Employer: Magnusson Klemencic
Associates, Seattle, Wash.

Joseph Schmitt

Year Graduated: 2001
Current Status: Unknown

Paul Taylor

Year Graduated: 2004
Current Status: ExxonMobil, Houston

Henry J. Theiss

Year Graduated: 1994
Employer: Unknown

Jennifer Verwest

Year Graduated: 2001
Current Status: Currently pursuing
a graduate degree at Texas A&M
University, College Station, Texas

Casie Venable

Year Graduated: 2016
Employer: Pursuing a Master's at
University of Colorado at Boulder

Elliott Robert Wheeler

Year Graduated: 1996
Employer: Operations Management
International, Inc., Englewood, Colo.

Ryan Willey

Year Graduated: 2000
Employer: Pathway CA

The following students also received their undergraduate degrees while on a Via Scholarship and pursued their master's degrees at Virginia Tech, also as Via Scholarship recipients. Their complete listings can be found in the alumni student section: 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, and Marcia Votour Prowell, Claire McKenzie White

Graduates

Construction

Frank Arcuri

Year Graduated: 2007
Degree Awarded: Master's
Employer: Fluor Corporation, New
York, N.Y.

Mary Jane Contos Bartlett

Year Graduated: 1992
Degree Awarded: Master's
Employer: O'Brien & Gere
Engineering, Morrisville, N.C.

Janet Sparks Chandler

Year Graduated: 2000
Degree Awarded: Master's
Employer: Full-time mother

Allan D. Chasey

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

Kirsten Davis

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

Samuel Ferrara

Year Graduated: 2016
Degree Awarded: Master's
Employer: Unknown

Martha Gross

Year Graduated: 2010
Degree Awarded: Ph.D.
Employer: Arup Infrastructure,
Tarrytown, NY

Rimas Gulbinas

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

Shannon P. Hapuarachy

Year Graduated: 2009
Degree Awarded: Master's
Employer: S.M.H. Construction,
Bradley, W.Va.

Benjamin Hays

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

John Hildreth

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

Via Alumni: Where Are They Now?

Angel Ho

Year Graduated: 1993
Degree Awarded: Master's
Employer: Norfolk Naval Shipyard,
Portsmouth, Va.

Ardalan Khosrowpour

Year Graduated: 2016
Degree Awarded: Ph.D.
Employer: Unknown

Jennifer Firman McConnell

Year Graduated: 2002
Degree Awarded: Master's
Employer: Schoor DePalma,
Kulpsville, Pa.

Joshua P. Middleton

Year Graduated: 2004
Degree Awarded: Master's
Employer: American Infrastructure,
Worcester, Pa.

Francis Pesce

Year Graduated: 2012
Degree Awarded: Master's
Employer: Ulliman Schutte
Construction, Roanoke, Va.

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, Pa.

Robert C. Williams

Year Graduated: 2006 and 2008
Degree Awarded: Master's and Ph.D.
Employer: Vecellio and Grogan Inc.,
Beckley, W.Va.

Terry L. Williams

Year Graduated: 1998
Degree Awarded: Master's
Employer: Alan A. Meyers, Inc.

Joshua Zilke

Year Graduated: 2014
Degree Awarded: Master's
Employer: Clark Builders Group

Environmental and Water Resources

Nancy Lade Anderson

Year Graduated: 1999
Degree Awarded: Master's
Employer: Full-time mother

William G. Ayers

Year Graduated: 2014
Degree Awarded: Master's
Employer: Mission Specialist at
Palantir Technologies

David Azinheira

Year Graduated: 2013
Degree Awarded: Master's
Employer: URS, Germantown, MD

Jason L. Beck

Year Graduated: 2008
Degree Awarded: Master's
Employer: Camp Dresser and McKee
(CDM), Charlotte, NC

Paul Bender

Year Graduated: 2016
Degree Awarded: Master's
Employer: Dewberry, Baltimore, MD

Randall Boe

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

Elizabeth Claire Booth

Year Graduated: 2005
Degree Awarded: Master's
Employer: Arcadis, Lakewood, CO

Charles B. Bott

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

Nicolle S. Boulay

Year Graduated: 1999
Degree Awarded: Master's
Employer: Assoc. Engineer/Parson's
Engineering

J. Steven Brauner

Year Graduated: 2000
Degree Awarded: Ph.D.
Employer: Parsons Engineering,

Denver, CO

Randi Lieberman Brazeau

Year Graduated: 2012
Degree Awarded: Ph.D.
Employer: Metropolitan State
University of Denver

Ayrton Alexander Bryan

Year Graduated: 2016
Degree Awarded: Master's
Employer: Anheuser-Busch,
Williamsburg, VA

Lee Davis Bryant

Year Graduated: 2010
Degree Awarded: Ph.D.
Employer: Assistant Professor,
Department of Architecture and Civil
Engineering, Univ of Bath, UK

Suzanne Ciavola

Year Graduated: 2011
Degree Awarded: Master's
Employer: Mott MacDonald,
Philadelphia, PA

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

Joel Cohn

Year Graduated: 1993
Degree Awarded: Master's
Employer: Malcolm Pirnie, Norfolk,
VA

Cynthia Crane

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

Andrea Crowe Hargette

Year Graduated: 1997
Degree Awarded: Master's
Employer: Black & Veatch, Inc.,
Greenville, SC

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, VA

Charles (Chuck) Dietz, Jr.

Years Graduated: 1989 and 1993
Degrees Awarded: Undergraduate and Master's
Employer: Virginia Tech, Blacksburg

Daniel Dorsel

Year Graduated: 1998
Degree Awarded: Master's, ENE
Employer: Cardinal Newman School, Columbia, SC

Mark Dougherty

Year Graduated: 2004
Degree Awarded: Ph.D.
Employer: Auburn University, Auburn, AL

Laura Duncan

Year Graduated: 2007
Degree Awarded: Master's
Employer: Arcadis, Knoxville, TN

Mary Facciolo

Year Graduated: 1994
Degree Awarded: Master's
Employer: Raleigh, NC consulting

Ryan M. Fedak

Year Graduated: 1999
Degree Awarded: Master's
Employer: AECOM, Roanoke, VA

Jamie Fettig

Year Graduated: 1998
Degree Awarded: Master's, ENE
Employer: Parsons Engineering NY

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. Dept. of Agriculture, National Resources Conservation Service, Ft. Worth, TX

Wesley Geertsema

Year Graduated: 1992
Degree Awarded: Master's
Employer: Van Dyke Technology Group, Washington, DC

Kevin R. Gilmore

Year Graduated: 2008
Degree Awarded: Ph.D.
Employer: Bucknell University, Lewisburg, PA

Aimee E. Greyshock

Year Graduated: 2004
Degree Awarded: Master's
Employer: Virginia Department of Health-Office of Drinking Water, Culpepper, VA

Matthew Gwaltney

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

Benjamin Hammond

Year Graduated: 2015
Degree Awarded: Master's
Employer: RBA Group, Philadelphia

Orrick (Rick) Haney

Year Graduated: 1994
Degree Awarded: Master's
Employer: Haney Associates, Inc., Anderson, SC

Gary Hinds

Year Graduated: 2015
Degree Awarded: M.S.
Employer: ARCADIS, Albany, NY

David Holbrook

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

Edward Brian Houston

Year Graduated: 2006
Degree Awarded: Master's
Employer: Black & Veatch, Gaithersburg, MD

Victoria Wheaton Hoyland

Year Graduated: 2012
Degree Awarded: Master's
Employer: Public Works Department, Blacksburg, VA

Kari Husovitz Foy

Year Graduated: 1999
Degree Awarded: Master's

Employer: B.P. Barber and Associates, Inc., N. Charleston, SC

Angela Iatrou Simon

Year Graduated: 1991
Degree Awarded: Master's
Employer: Tutor Perini, Framingham, MA

Joshua A. Joseph, Jr.

Year Graduated: 2008
Degree Awarded: Ph.D.
Employer: CH2M Hill, Baton Rouge, LA

Richard T. Kelly, II

Year Graduated: 2005
Degree Awarded: Ph.D.
Employer: Brown & Caldwell, Seattle, WA

Ronald D. Kent

Year Graduated: 2015
Degree Awarded: Ph.D.
Employer: Geosyntec

Wendell O. Khunjar

Year Graduated: 2009
Degree Awarded: Ph.D.
Employer: Hazen and Sawyer, P.C., Fairfax, VA

Lashun K. King Thomas

Year Graduated: 2011
Degree Awarded: Ph.D.
Employer: Syracuse University, Syracuse, NY

William J. Kingston

Year Graduated: 2012
Degree Awarded: Master's
Employer: Gannet Flemming, Camp Hill, PA

Rebecca Halvorson Lahr

Year Graduated: 2014
Degree Awarded: Ph.D.
Employer: Research Fellow at Univ of Mich and Asst. Prof. at MSU

Jessica Hekl

Year Graduated: 2015
Degree Awarded: M.S.
Employer: Bowman Consulting, Denver, CO

Rebecca Lattyak

Year Graduated: 2007
Degree Awarded: Master's
Employer: Malcolm Pirnie, West Lafayette, IN

Via Alumni: Where Are They Now?

Katherine Linares

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

Erika Lubkowitz Bailey

Year Graduated: 1996
Degree Awarded: Master's
Employer: HDR, Inc., Raleigh, NC

Philip Maldonado

Year Graduated: 2014
Degree Awarded: Master's
Employer: City of Santa Barbara,
California

Donald C. Marickovich

Year Graduated: 1990
Degree Awarded: Master's
Employer: Draper Aden & Associates,
Blacksburg, VA

Becki Marshall Rosenfeldt

Year Graduated: 2004
Degree Awarded: Master's
Employer: Hazen & Sawyer, Fairfax

Katherine McArthur Leitch

Year Graduated: 1998
Degree Awarded: Master's
Employer: Merck & Co., Inc., Raleigh-
Durham, NC

Colleen McCloskey Rossmeisl

Year Graduated: 1995
Degree Awarded: Master's
Employer: Companion Animal Clinic,
Blacksburg, VA

Brian McCormick

Year Graduated: 2003
Degree Awarded: Master's
Employer: Colorado Springs Utilities,
Colorado Springs, CO.

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, NM

Jennifer H. Miller

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

Matthew C. Moore

Year Graduated: 1992 and 1994
Degree Awarded: B.S. and Master's
Employer: Sikland Engineering
Associates, Van Nuys, CA

Christopher D. Muller

Year Graduated: 2006
Degree Awarded: Ph.D.
Employer: Brown and Caldwell,
Seattle, WA

Jocelyn Fraga Muller

Year Graduated: 2006
Degree Awarded: Ph.D.
Employer: University of Washington

Caroline Nguyen

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

Julia Novak

Year Graduated: 2005
Degree Awarded: Master's
Deceased

Ijeoma Nzewi

Year Graduated: 2014
Degree Awarded: Master's
Employer: Thayer School of
Engineering, Hanover, NH

Jeff Parks

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

John E. Petrie

Year Graduated: 2013
Degree Awarded: Ph.D.
Employer: Washington State
University, Pullman, WA

Kristina Perri

Year Graduated: 1997
Degree Awarded: Master's
Employer: GHD, Inc., Bowie, MD

Carrie Adam Phipps

Year Graduated: 2001
Degree Awarded: Master's
Employer: Full-time mother

Noreen Poor

Year Graduated: 1996
Degree Awarded: Ph.D.
Employer: Kiyometrics, LLC,
Melbourne, FL.

Caitlin Proctor

Year Graduated: 2014
Degree Awarded: Master's
Employer: PhD Student at Eawag/
ETH Zurich

Diana Rashash

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

Heather Veith Rectanus

Year Graduated: 2006
Degree Awarded: Ph.D.
Employer: Battelle, Columbus, OH

Sandra Robinson

Year Graduated: 2001
Degree Awarded: Master's
Employer: CH2M Hill, Redding, CA

Jason Rushing

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

Mary Rust Sadler

Year Graduated: 1998
Degree Awarded: Master's
Employer: Hazen and Sawyer, Raleigh,
NC

Emily A. Sarver

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

Paolo Scardina

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

Rachel M. Sellaro

Year Graduated: 2014
Degree Awarded: Master's
Employer: Greer Industries,
Morgantown, WV

Dipankar Sen

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

Vickie L. Singleton

Year Graduated: 2008
Degree Awarded: Ph.D.
Employer: Full-time mother, New Bern, NC

Brad Shearer

Year Graduated: 2001
Degree Awarded: Master's
Employer: CH2M Hill, Redding, CA

Holly Shorney-Darby

Year Graduated: February 1992
Degree Awarded: Master's
Employer: Black & Veatch, Inc., Kansas City, MO

John S. Siczka

Years Graduated: 1994 and 1997
Degrees Awarded: Undergraduate and Master's
Employer: CH2M Hill, Brown Deer, WI

Aaron B. Small

Year Graduated: 1993
Degree Awarded: Master's
Employer: City of Williamsburg, Williamsburg, VA

Stephanie Smallegan

Year Graduated: 2016
Degree Awarded: Ph.D.
Employer: University of South Alabama

Sheryl D. Smith

Year Graduated: 2001
Degree Awarded: Master's
Employer: Camp, Dresser and McKee, Raleigh, NC

Jeffrey A. Sparks

Year Graduated: 2008
Degree Awarded: Master's
Employer: Hampton Roads Sanitation District, Virginia Beach, VA

Justin St. Clair

Year Graduated: 2012
Degree Awarded: Master's
Employer: AppTech Solutions, LLC, Salem, VA

James H. Stagge

Year Graduated: 2012
Degree Awarded: Ph.D.
Employer: Postdoctoral Researcher, Utah State University Water Laboratory, Logan, UT

Jonathan Stathis

Year Graduated: 1998

Degree Awarded: Master's
Employer: Cedar City Corp., Cedar City, UT

Melissa Stewart

Year Graduated: 2011
Degree Awarded: Master's
Employer: ProChem, Inc., Elliston, VA

Amanda E. Strickhouser

Year Graduated: 2008
Degree Awarded: Master's
Employer: Watson Wyatt, San Francisco, CA

Chris Tadanier

Year Graduated: 1997
Degree Awarded: Ph.D.
Employer: Black & Veatch, Denver, CO

Nicholas Taylor

Year Graduated: 2014
Degree Awarded: Master's
Employer: CDM Smith

Dan Waddill

Year Graduated: 1998
Degree Awarded: Ph.D.
Employer: Dept. of the Navy, Norfolk

Diane Waters

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

Edwin W. Watkins

Year Graduated: 1993
Degree Awarded: Master's
Employer: Ogden Environmental and Energy Services, Nashville, TN

Katherine L. Weidner

Year Graduated: 2012
Degree Awarded: Master's
Employer: Black & Veatch, Charlotte

David Whichard

Year Graduated: 2001
Degree Awarded: Master's
Employer: International Paper, SC

Claire McKenzie White

Year Graduated: 2011
Degree Awarded: Master's
Employer: Virginia Tech

Krista Rule Wigginton

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

Christopher A. Wilson

Year Graduated: 2009
Degree Awarded: Ph.D.
Employer: Greeley and Hansen Engineers, Inc., Richmond, VA

Christopher Wolfe

Year Graduated: 1993
Degree Awarded: Master's
Employer: Semcor, Washington, DC

Jennifer Wright

Year Graduated: 2006
Degree Awarded: Master's
Employer: Department of Environmental Quality (DEQ), Richmond, VA

Katie Young

Year Graduated: 2014
Degree Awarded: Master's
Employer: CDM Smith, Northern VA

Kevin D. Young

Year Graduated: 2006
Degree Awarded: Master's
Employer: Virginia Tech, Blacksburg

Anna Zaklikowski

Year Graduated: 2006
Degree Awarded: Master's
Employer: HDR Engineering, Portland, OR

Samson Zhilyaev

Year Graduated: 2016
Degree Awarded: Master's
Employer: Virginia Tech

Lauren Zuravnsky-Wilson

Year Graduated: 2006
Degree Awarded: Master's
Employer: Greeley and Hansen, Richmond, VA

Geotechnical

Tiffany E. Adams

Year Graduated: 2011
Degree Awarded: Ph.D.
Employer: AECOM, Denver, CO

Julia Baaklini

Year Graduated: 2016
Degree Awarded: Master's
Employer: Mueser Rutledge Consulting Engineers, New York, NY

Via Alumni: Where Are They Now?

Thomas Barham

Year Graduated: 2016
Degree Awarded: Master's
Employer: AECOM, Denver, CO

Amanda Barngrover

Year Graduated: 2010
Degree Awarded: Master's
Employer: AECOM, Denver, CO

William Bassett

Year Graduated: 1990
Employer: Federal Highway
Administration, Washington, DC

Diane Yamane Baxter

Year Graduated: 2000
Degree Awarded: Ph.D.
Employer: GZA GeoEnvironmental
Inc., Providence, RI

Craig Benedict

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

David Bentler

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

Kyle Blakley

Year Graduated: 2009
Degree Awarded: Master's
Employer: Stantec Consulting,
Cincinnati, OH

G. Allen Bowers

Year Graduated: 2013 and 2015
Degree Awarded: Master's and Ph.D.
Employer: Schnabel Engineering

Nathaniel Bradley

Year Graduated: 2015
Degree Awarded: M.S.
Employer: S&ME, Inc., Charlotte, NC

Jeremy Britton

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

W. Lake Carter

Year Graduated: 2016
Degree Awarded: Master's
Employer: GEOPIER Foundation Co.,
Inc., Mooresville, NC

Pete Chenevey

Year Graduated: 1994
Degree Awarded: Master's
Employer: Dames & Moore,
Cincinnati, OH

Jaime Colby

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

Megan Cole

Year Graduated: 2001
Degree Awarded: Master's
Employer: GEI Consultants,
Winchester, MA

Austin A. Cox

Year Graduated: 2015
Degree Awarded: M.S.
Employer: S&ME, Inc., Charleston, SC

Jeremy Bruyn Decker

Year Graduated: 2007
Degree Awarded: Ph.D.
Employer: Kiewit Construction Co.,
Pacifica, CA

Adam DePoy

Year Graduated: 2012
Degree Awarded: Master's
Employer: Stantec, Greater Grand
Rapids, MI

Patricia (Trish) M. Gallagher

Year Graduated: December 2000
Degree Awarded: Ph.D.
Employer: Drexel University,
Philadelphia, PA

Betsy Godfrey

Year Graduated: 2014
Degree Awarded: Master's
Employer: Parsons Brinckerhoff,
Washington DC

Russell Green

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

Kathryn A. Gunberg

Year Graduated:
Degree Awarded:
Employer: Unknown

Fred T. Falcone

Year Graduated: 2016
Degree Awarded: Master's
Employer: ECS, Chantilly, VA

George Filz

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

Rachel T. Finch

Year Graduated: 2009
Degree Awarded: Master's
Employer: S&ME, Huntsville, AL

Brendan Fitzpatrick

Year Graduated: 2001
Degree Awarded: Master's
Employer: GEOPIER Foundation Co.,
Inc., Mooresville, NC

Laura Henry

Year Graduated: 1999
Degree Awarded: Master's
Employer: Haley & Aldrich, NJ

Wayne Herring

Year Graduated: 2000
Degree Awarded: Master's
Employer: ARM Group, Hershey, PA

Randall Hickman

Year Graduated: 2004
Degree Awarded: Ph.D.
Employer: BP American, Inc.,
Houston, TX

Michelle Hoy Sherwood

Year Graduated: 1997
Degree Awarded: Master's
Employer: Consulting Environmental
Engineer, Anchorage, AK

Kenneth A. Huber

Year Graduated: 1997
Degree Awarded: Master's
Employer: Senior Pastor at Calvary
Baptist Church, Riverhead, NY

Nicholas Izzo

Year Graduated: 2015
Degree Awarded: M.S.
Employer: Langan Engineering &
Environmental Sciences, Elmwood
Park, NJ

Alexander Kormanos

Year Graduated: 2016
Degree Awarded: Master's
Employer: Haley & Aldrich, Boston,
MA

Laura M. Kosoglu

Year Graduated: 2011
Degree Awarded: Ph.D.
Employer: George Mason University,
Fairfax, VA

Via Alumni: Where Are They Now?

Andrew Kost

Year Graduated: 2013
Degree Awarded: Master's
Employer: Cornforth Consultants,
Portland, OR

Samuel Lasley

Year Graduated: 2015
Degree Awarded: Ph.D.
Employer: Kiewit Infrastructure
Engineers, Omaha, NE

Kenneth C. Mabon

Year Graduated: 2015
Degree Awarded: M.S.
Employer: Terracon, Charlotte, NC

Scott Mackey

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

Jessica R. (Marshall) Barbier

Year Graduated: 1990
Degree Awarded: Master's
Employer: Denver Water, Denver, CO

Michael P. McGuire

Year Graduated: 2011
Degree Awarded: Ph.D.
Employer: Lafayette College, Easton,
PA

Christopher L. Meehan

Year Graduated: 2006
Degree Awarded: Ph.D.
Employer: University of Delaware,
Newark, DE

Dale Paul Miller

Year Graduated: 2015
Degree Awarded: M.S.
Employer: Shannon & Wilson, Inc.
San Louis, MO

Clark Morrison

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

Robert Mokwa

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

Michael Navin

Year Graduated: 2005
Degree Awarded: Ph.D.

Employer: US Army Corps of
Engineers, St. Louis, MO

David Nevius

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

Michael Nolden

Year Graduated: 2012
Degree Awarded: Master's
Employer: Geosyntec Consultants,
Philadelphia, PA

James Parkes

Year Graduated: 1999
Degree Awarded: Master's
Employer: Parsons Brinckerhoff,
Baltimore, MD

Maysill G. Pascal

Year Graduated: 2003
Degree Awarded: Master's
Employer: Haley and Aldrich Inc.,
Parsippany, NJ

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, NC

Jonathan Porter

Year Graduated: 1991 and 1998
Degrees Awarded: Master's and Ph.D.
Employer: U.S. Government, McLean

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

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Year Graduated: 2015
Degree Awarded: M.S.
Employer: Engineering Consulting
Services, Roanoke, VA

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Year Graduated: 2006
Degree Awarded: Master's
Employer: Reinforced Earth Co.,
Denver, CO

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Year Graduated: 1997
Degree Awarded: Ph.D.
Employer: Fuller, Stantec, Lexington,
KY

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Year Graduated: 2011 and 2015
Degree Awarded: Master's and Ph.D.
Employer: Golder Associates,
Brisbane, Australia

Nathan Reeves

Year Graduated: 2000
Degree Awarded: Master's
Employer: S&ME, Inc., Raleigh, NC

John D. Rice

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

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Year Graduated: 1995
Degree Awarded: Ph.D.
Employer: University of Pittsburgh,
Johnstown, PA

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Year Graduated: 1997
Degree Awarded: Master's
Employer: CH2M Hill, Seattle, WA

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Year Graduated: 2009
Degree Awarded: Master's
Employer: Barr Engineering
Company, Minneapolis, MN

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Year Graduated: 2009 and 2016
Degree Awarded: Master's and Ph.D.
Employer: Northeastern University

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

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Year Graduated: 2011
Degree Awarded: Ph.D.
Employer: U.S. Air Force, Cannon
AFB, NM

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Year Graduated: 2016
Degree Awarded: Master's
Employer: SME, Grand Rapids, MI

Via Alumni: Where Are They Now?

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Year Graduated: 2015
Degree Awarded: M.S.
Employer: Froehling and Robertson,
Sterling, VA

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Year Graduated: 2014
Degree Awarded: Ph.D.
Employer: Tennessee Tech, Cookeville,
TN

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Degree Awarded: Master's
Employer: Michelin, Greenville, SC

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Degree Awarded: Ph.D.
Employer: GEOPIER Foundation Co.,
Inc., Mooresville, NC

Structural Engineering and Materials

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Employer: EMCS Design Group,
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Employer: MKA, Seattle, Washington

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Degree Awarded: Master's
Employer: Parsons Corporation

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

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Year Graduated: 2016
Degree Awarded: Master's
Employer: Unknown

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

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Year Graduated: 2015
Degree Awarded: M.S.
Employer: Unknown

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Year Graduated: 2005
Degree Awarded: Master's
Employer: HDR Alaska, Inc., Eagle
River, Arkansas

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Year Graduated: 2007
Degree Awarded: Master's
Employer: Whitman, Requardt &
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Degrees Awarded: Master's and Ph.D.
Employer: DiGioia Gray & Associates,
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Year Graduated: 2014
Degree Awarded: Master's
Employer: Duke Energy Corporation,
Southport, North Carolina

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Year Graduated: 2009
Degree Awarded: Ph.D.
Employer: Saint Louis University, St.
Louis, Missouri

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

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Degree Awarded: Master's
Employer: Lawrence Technological
University, Southfield, Michigan

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Degree Awarded: Master's
Employer: Black & Veatch, Kansas
City, Missouri

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Degree Awarded: Ph.D.
Employer: FHWA, Turner Fairbank
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Year Graduated: 2013
Degree Awarded: Ph.D.
Employer: Washington and Lee
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Degree Awarded: Master's
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Degree Awarded: Master's
Employer: Starzer, Brady, Fagan
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Degree Awarded: Ph.D.
Employer: University of Kentucky,
Lexington, Kentucky

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Degree Awarded: Master's
Employer: Walter P. Moore, Kansas
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Degree Awarded: Master's
Employer: FHWA

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Degree Awarded: M.S.
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Degree Awarded: Master's
Employer: American Institute of Steel
Construction, Chicago, Illinois

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

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Year Graduated: 2014
Degree Awarded: Ph.D.
Employer: Unknown

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Degree Awarded: Master's
Employer: Clark Nelsen, Norfolk, Virginia

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

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

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

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Degree Awarded:
Whiting-Turner/Northern

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Year Graduated: 2002
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Year Graduated: 2014
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Year Graduated: 2009
Degree Awarded: Ph.D.
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Degree Awarded: Master's
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Degree Awarded: Master's
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Degree Awarded: Master's
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Year Graduated: 2014
Degree Awarded: Master's
Employer: Unknown

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Year Graduated: 2007
Degree Awarded: Ph.D.
Employer: ExxonMobil, Fairfax

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Degree Awarded: Master's
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Year Graduated: 2013
Degree Awarded: Ph.D.
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Degree Awarded: Master's
Deceased

Transportation

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Degree Awarded: Ph.D.
Employer: Atkins-Qatar Central Planning Office, Doha, Qatar

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Year Graduated: 1989
Degree Awarded: Master's
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Year Graduated: 2006
Degree Awarded: Ph.D.
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Year Graduated: 2012, 2014
Degree Awarded: Master's and Ph.D.
Employer: University of Nottingham, United Kingdom

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

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Year Graduated: 2000
Degree Awarded: Master's
Employer: A consultant in Seattle, Washington

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

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Degree Awarded: Master's
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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, Dalgren, Virginia

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Year Graduated: 2012
Degree Awarded: Master's
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Degree Awarded: M.S.
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