

# VIA REPORT 2024

ISSUE 38



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



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## LETTER FROM THE DEPARTMENT HEAD

One of the greatest joys in my role as department head has been getting to know the remarkable individuals who make up our community. I am continually amazed by the talent, commitment, and impact that our students, faculty, and alumni are making in our society. Each conversation I have affirms our dedication and the leadership role of Virginia Tech in advancing the future of civil and environmental engineering. It is for this reason that I am especially honored to share some of these accomplishments

through our annual Via Report. Among them, our faculty continue to lead their fields with groundbreaking and innovative research. A number of faculty achievements are spotlighted throughout the report, with a full listing of these on page seven. I also encourage you to get to know the three new faculty members joining our department: Admin Husic, Ryan Beemer, and Hongrui Yu. You can read more about them on page six.

Our Via scholars are the heart of this report. Their biographies on page 16 offer a glimpse into the bright future they are shaping through their work. I look forward to recognizing their achievements in person at a special reception this December in Blacksburg. This event is a cherished tradition, honoring both the accomplishments of our scholars and the generosity of the Via family whose support makes it all possible.

I am proud to share that our department continues to be ranked among the nation's best in both graduate and undergraduate civil and environmental engineering departments. We are ranked #5 in environmental engineering graduate programs, #9 in civil engineering graduate programs, and #9 and #7 in civil and environmental engineering undergraduate programs, respectively.

To stay informed about departmental news and initiatives, I invite you to visit our website at [cee.vt.edu](http://cee.vt.edu) and follow us on social media. There are many exciting developments ahead, and I look forward to continuing our journey together in the coming year.

I would like to extend a special thank you to all of our alumni, friends, and colleagues who generously support the department. Your contributions of time, expertise, and resources enable us to equip the next generation of engineers to tackle future challenges and reshape the nation's essential systems and structures.

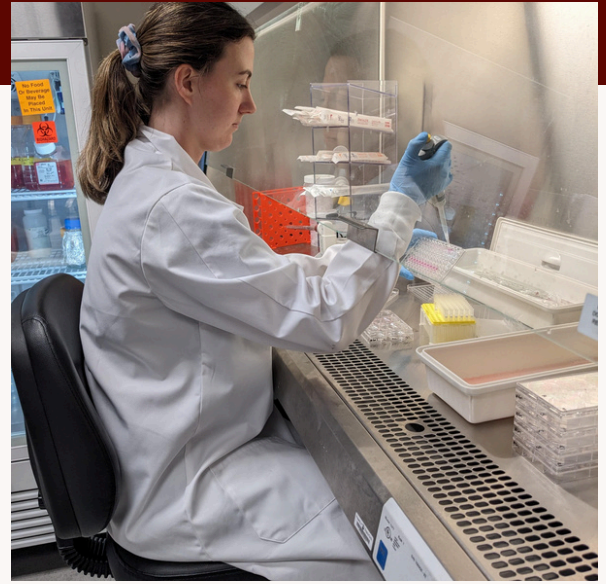
Best Regards and Go Hokies!  
Mark Widdowson

# PROGRAM AREA HIGHLIGHTS



## VECELLIO CONSTRUCTION ENGINEERING AND MANAGEMENT PROGRAM

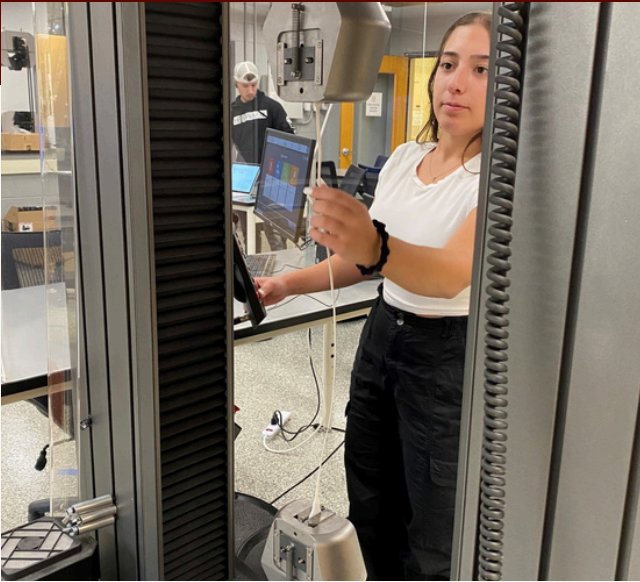
For the 2024-2025 academic year, Corinne Barr, Max Greeney, Zachary Lowicki, and Lindsey McNulty were named Vecellio Scholars, while Avinash Aruon, Jessica Fikac, Sarah Helms, and Tianzhi He were named Vecellio Fellows. Avinash Aruon and Yueyan Gu were named outstanding Ph.D. students, and Charlotte Clyde and Sherlock Banks II as outstanding M.S. students. The 23rd annual Vecellio Lecture on Nov. 1 featured Ryan Banas discussing the Hampton Roads Bridge Tunnel Project. Under the guidance of Freddy Paige, the construction team placed second at the 2024 ASCE competition. Paige was also awarded the Tremayne Waller Student Advocacy Award. Farrokh Jazizadeh chaired the ASCE i3CE 2024. He also received the XCaliber Award for innovative use of technology to improve student learning and the USC Sonny Astani Alumni Award. Tripp Shealy co-edited an issue for the Journal of Construction Engineering and Management. He also gave the Liles Distinguished Lecture at Clemson University and was named a College of Engineering Dean's Fellow. Mike Biscotte led an LED lighting upgrade project for Patton Hall, and Mike Garvin chaired the National Academy of Construction's Scholarship Committee. Hongrui Yu received the best paper award from the ASCE International Conference on Computing in Civil Engineering 2024 (i3CE 2024). Several faculty members, including Jazizadeh, Garvin, and Shealy, were honored for their teaching, research, and advocacy efforts.



## ENVIRONMENTAL AND WATER RESOURCES

This year was filled with a number of faculty honors and recognitions in the environmental and water resources group. Admin Husic was awarded the prestigious National Science Foundation CAREER Award, and Jingqiu received the 2024 ORAU Ralph E. Powe Junior Faculty Enhancement Award. After 46 years of full-time service, Bill Knocke transitioned to a half-time faculty role, focusing on teaching undergraduate and graduate courses for the next two years. Hosein Foroutan leads the interdisciplinary Plastic Pollution Working Group at the Global Change Center, with Peter Vikesland as a core member. Linsey Marr co-authored several papers on the future of buildings and indoor air quality, published in the Journal of Environmental Engineering, Environmental Health Perspectives, and Science. Marr is also a key investigator at the new Center for the Transmission of Airborne Pathogens at Emory University, advancing research on influenza transmission. Additionally, Landon Marston was named Faculty Fellow by the College of Engineering, recognizing his contributions to the academic community.

# PROGRAM AREA HIGHLIGHTS



## GEOTECHNICAL ENGINEERING

The Geotechnical Program at Virginia Tech has seen several noteworthy developments. Ryan Beemer joined the faculty, bringing expertise in coastal and offshore geotechnics. After 39 years of service, Tom Brandon retired and has been honored with emeritus status. Alba Yerro-Colom was promoted to associate professor with tenure and received the CAREER award for her research on rainfall-triggered landslides and their interaction with vegetation in the context of climate change. She also launched a project with the U.S. Army Corps of Engineers to study the settlement of water-retaining embankments. Russell Green and Adrian Rodriguez-Marek were co-recipients of the ASCE Collingwood Prize for their work on the "True Liquefaction Triggering Curve." Joe Dove was inducted into the CEE Academy of Distinguished Alumni, recognizing his contributions to the field. Russell Green delivered a lecture on seismic-induced liquefaction at GeoVirginia 2023, while Adrian Rodriguez-Marek presented at a workshop commemorating major earthquakes in Taiwan. Sherif Abdelaziz began a project with the U.S. Army Corps of Engineers to investigate freeze-thaw effects on geo-structures, potentially reducing these impacts with anti-freeze hydrogels, and Joe Vantassel is leading a large, multi-disciplinary project on multi-physics, intelligent sensing systems for drilling for underground utilities, funded by the Advanced Research Project Agency.



## STRUCTURAL ENGINEERING AND MATERIALS

The SEM group had a remarkable year of awards and recognitions. Carin Roberts-Wollmann received the T.Y. Lin Award for contributions to prestressed concrete. Rodrigo Sarlo won an NSF CAREER award for research on structural digital twins. Eric Jacques was named the inaugural Thomas M. Murray Faculty Fellow, a meaningful honor following the passing of Professor Emeritus Tom Murray. Matt Eatherton earned an AISC Special Achievement award for research on steel building diaphragms. Debbie Cooper received the Jenny Frank Award for outstanding staff in the College of Engineering. The student teams excelled, with the steel bridge and concrete canoe teams finishing 1st regionally and 7th and 4th nationally. Key research projects include Adam Phillip's study of steel-timber hybrid diaphragms, Monica Arul's tornado forecasting, and Eric Jacques's investigation of the deepest concrete box culvert in the U.S., as well as ongoing work to protect critical infrastructure from weaponized unmanned aerial systems. Ioannis Koutromanos is studying FRP retrofit strategies for reinforced concrete shear walls. Scott Case is working to develop bench-scale techniques to evaluate the fire performance of wood-based construction materials. Roberto Leon appeared on news programs as a leading forensic expert on the Francis Scott Key Bridge collapse.

# PROGRAM AREA HIGHLIGHTS



## BOWMAN SUSTAINABLE LAND DEVELOPMENT PROGRAM

During the last academic year, nine land development course sections were offered, with nearly 350 students, including eight graduate students, completing at least one course. For the first time, two concurrent sections of the senior design course (CEE 4274) were offered in spring 2024. The advanced course (CEE 4284), taught by industry professionals, was offered in consecutive spring semesters for the first time in over a decade. The Sustainable Land Development graduate program, launched in 2021, now enrolls nearly 20 students. Practitioner engagement activities included career mixers, a professional development workshop, a design charrette, and product exhibitions. Faculty and students actively participated in the ASCE Virginias Symposium, with competition teams qualifying for national events. The Land Development Design Initiative (LDDI) completed its first full year within the Bowman program, supported by 43 corporate sponsors. LDDI remained engaged through its five active committees and hosted two industry outreach meetings in Arlington and Fairfax. The third annual practitioner recognition event took place in Virginia Beach in July 2024.



## TRANSPORTATION INFRASTRUCTURE AND SYSTEMS ENGINEERING

Alex Brand gave an invited talk at the 10th International Congress on Ceramics in Canada, focusing on transportation and infrastructure. He is also leading a \$1.1M project with the Myers-Lawson School of Construction to explore 3D printing of concrete for low-income housing construction. Sami Hasnine is developing a mileage-based user fee model for the North Carolina Department of Transportation and received a Policy Research Fellowship from Virginia Tech's ISCE, where he is creating a tool to evaluate cycling infrastructure in Blacksburg. Toni Trani, overseeing the Air Transportation Systems Lab, is developing an FAA model for estimating runway length needs and collecting data from 50 airports to optimize runway exits. Hesham Rakha was honored as a Fellow of the International Artificial Intelligence Industry Alliance. Gerardo Flintsch, an ASCE Fellow, chaired the 6th International Symposium on Pavement Life Cycle Assessment. Flintsch, as part of the The Center for Sustainable and Resilient Infrastructure, started a new project to identify, test and evaluate emerging "big data" technologies that may enhance the process used to evaluate the performance of pavement. Susan Hotle's work with USDOT automates tarmac time estimations to support regulatory enforcement. Kathleen Hancock marks the 14th year of collaboration with Virginia DMV's Highway Safety Office.

# NEW FACULTY

## ADMIN HUSIC

Associate Professor  
Environmental and Water Resources

Husic's research aims to understand how human and climatic forces impact water quality variation in rivers. He leverages aquatic sensing, geochemical tracing, deep learning, and explainable artificial intelligence to solve vexing problems in hydrology and ensure the equitable access and security of water for all people.



## RYAN BEEMER

Assistant Professor  
Geotechnical Engineering

Beemer's expertise encompasses the study of problematic carbonate and glauconite marine sediments, the development of offshore foundation and anchoring systems, and advanced techniques such as geotechnical centrifuge scale modeling and X-ray microtomography.



## HONGRUI YU

Assistant Professor  
Construction Engineering and Management

Yu's work is about equipping construction robots with the necessary craft skills with imitation learning, cloud robotics, and virtual reality. Her work shapes an ergonomic and inclusive robotic construction future for workers who have diverse physical capabilities and educational backgrounds.



# FACULTY HONORS AND AWARDS



**Alexander  
Brand**

**National  
Science  
Foundation  
CAREER Award**



**Matthew  
Eatherton**

**Montague-Betts  
Professor in  
Structural Steel  
Design**



**Gerardo  
Flintsch**

**Wilbur S. Smith  
Award,  
American  
Society of Civil  
Engineers**



**Erich  
Hester**

**Alumni Teaching  
Excellence  
Award**



**Eric  
Jacques**

**Thomas M.  
Murray Family  
Junior Faculty  
Fellow**



**Amy  
Pruden**

**Member of the  
Virginia Academy  
of Science,  
Engineering, and  
Medicine**



**Rodrigo  
Sarlo**

**National  
Science  
Foundation  
CAREER Award**



**Alba  
Yerro Colom**

**National Science  
Foundation  
CAREER Award**



# VIRGINIA TECH'S COLLEGE OF ENGINEERING LEADS THE WAY IN U.S. NEWS & WORLD REPORT GRADUATE SCHOOL RANKINGS



Faculty members and students from civil and environmental engineering test the strength of concrete diaphragms in the Thomas M. Murray Structural Engineering Laboratory. Photo by Luke Hayes for Virginia Tech.

Virginia Tech's ongoing commitment to research, teaching, and engagement continue to be reflected in university rankings, as several of the institution's College of Engineering graduate programs were rated highly in the latest U.S. News & World Report's annual graduate school rankings.

The university's top 100 global effort, named Virginia Tech Global Distinction, seeks to make the university a destination for the best faculty, students, and partners from the commonwealth, the nation, and the world. The engineering graduate school rankings reflected that priority.

Overall, U.S. News & World Report ranked Virginia Tech's engineering graduate programs at tied for No. 31. U.S. News & World Report ranked four of Virginia Tech's College of Engineering individual graduate programs in the top 10:

- Environmental: Tied for No. 5
- Civil: No. 9
- Industrial and systems: No. 5, up from No. 6
- Biological/agricultural: Tied for No. 10, up from No. 12

# VIRGINIA TECH TEAM LEADS STUDY ON LUMP SUM CONTRACTING PRACTICES



Michael Garvin. Photo by Peter Means for Virginia Tech

The American Council of Engineering Companies (ACEC) Research Institute, in partnership with Virginia Tech, conducted a study led by Michael Garvin to understand the benefits of lump sum contracting for engineering services. Researchers interviewed 14 organizations, including nine state Departments of Transportation, three federal agencies, and two public transportation authorities, along with nine engineering firms, to gather opinions on this contracting method.

Lump sum contracting is a way for clients to pay for engineering projects by setting a fixed amount of money for the entire project. The client defines what needs to be done, and the engineering firm decides how to design and complete the project, using the latest technology and methods.

The study found that lump sum contracting works best for certain types of projects, like road resurfacing, bridge inspections, culvert replacements, and improving intersections. It is less suitable for more complex projects that involve a lot of third-party input, complicated traffic management, or unpredictable challenges.

Some public agencies, like DOTs, don't use lump sum contracts often, but others, such as the Army Corps of Engineers, have used them successfully for years. According to the report, lump sum contracts can help clients save money, reduce paperwork, and manage costs better. For engineering firms, this method allows more flexibility in hiring staff and makes it easier to use advanced technologies like artificial intelligence (AI) to improve project outcomes.

The report notes that switching to lump sum contracting can help firms adapt to a rapidly changing technology landscape. It encourages companies to focus on delivering value rather than sticking to traditional measures of success, like hours worked or materials used.

The full report can be found at <https://www.acec.org/resource>.

# TRANSATLANTIC PROJECT WORKS TO FORTIFY COASTAL RESILIENCE AGAINST RISING SEAS



(From left) Sherif Abdelaziz, associate professor of civil and environmental engineering, and graduate students Alex Zubrow and Tanner Whitesell. Photo by Peter Means for Virginia Tech.

Climate change is increasing sea levels, putting millions of people in danger of severe coastal flooding in coming years.

Sherif Abdelaziz, associate professor, is collaborating with researchers from Heriot-Watt University in Edinburgh, Scotland, to find solutions to keep coastal areas safe by enhancing the resilience of sea walls against increasing flooding. The PIONEER project is funded by the Engineering and Physical Sciences Research Council and is aiming to be the initial step in a global collaboration to strengthen coastal defenses.

With climate change-driven increases in sea levels, coastal flooding events are predicted to rise in frequency and severity. In the United States, coastal sea levels are expected to rise by 0.25 to 0.30 meters by 2050. This is the same amount that was measured between 1920 and 2020. Approximately 148 million people worldwide are currently exposed to coastal flooding events, which underscores the urgency to bolster coastal defenses.

The collaboration was triggered by the ongoing research of Abdelaziz's group, utilizing Virginia Tech's retaining wall research facility at the Prices Fork Geotechnical Research Laboratory to assess the impact of temperature on earth retaining structures, which are engineered structures that are built to prevent erosion of the shoreline.

This study combines, probably for the first time, the interactions for the effect of the water flooding on soils and, on shoreline protective structures," Abdelaziz said. "We will be able to assess how these factors interact so we can better design our shoreline protective structures to sustain intensity of waves and floods."

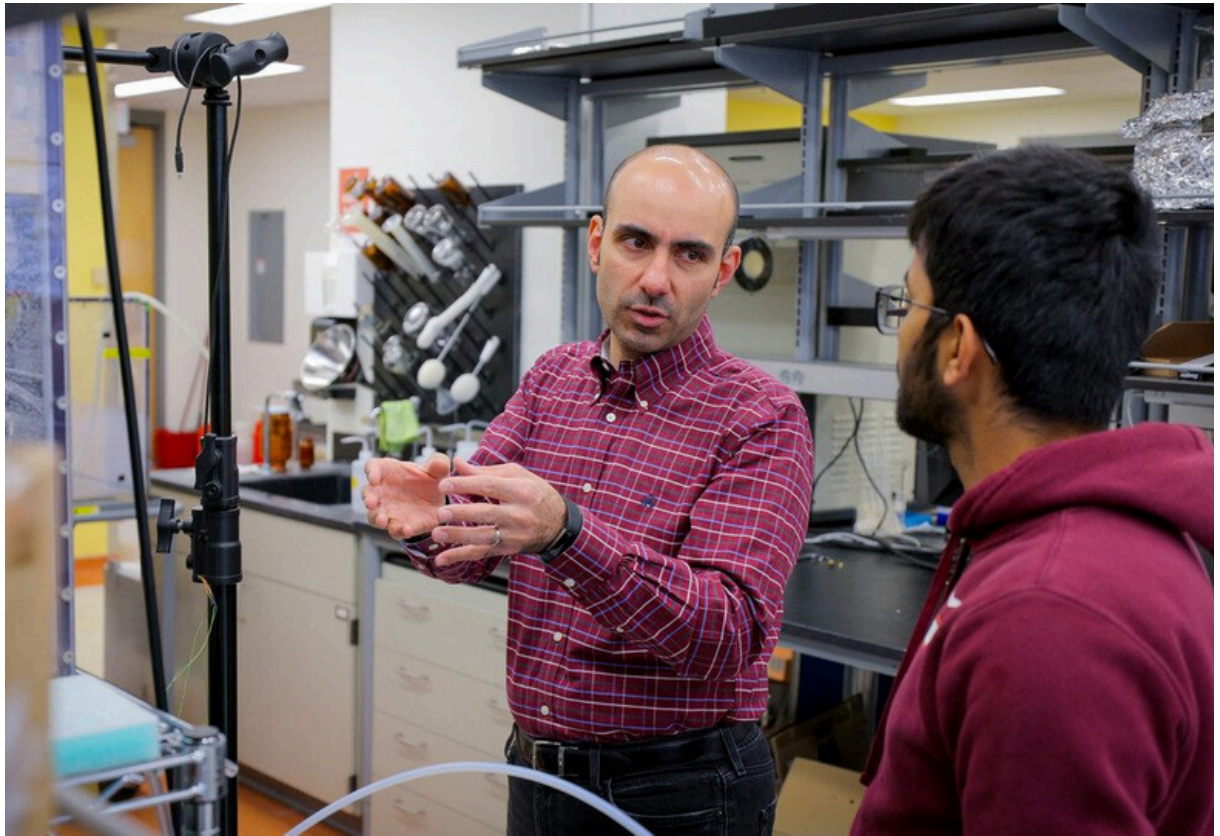
The United States and the United Kingdom both face challenges, such as loss of land near the shoreline, threatened coastal communities, and inadequate stability of near-shore infrastructures, due to potential sea level rises. By pinpointing vulnerable areas, researchers aim to enhance the design and resilience of sea walls.

The PIONEER project involves laboratory testing using a thermos-hydro-mechanical direct shear interface device at Heriot-Watt, to simulate various climate change and emission scenarios. Then Virginia Tech will complement those lab-scale tests with experiments on a full-sized, four-meter-high retaining wall to investigate the effects of temperature, water pressure, and other parameters.

"Investing our efforts into sea wall research is not just safeguarding coastal communities, but it is building resilience that ensures the stability and prosperity of those communities for years to come," noted Abdelaziz.

# RESEARCHER TACKLES HIDDEN CLIMATE IMPACTS IN THE SOIL AND AIR

Hosein Foroutan is on a mission to reduce the uncertainty regarding climate change. While many people think of the effects of greenhouse gases such as carbon dioxide, there are other aspects of climate change that are less familiar to the general public. Foroutan, associate professor in civil and environmental engineering and



Hosein Foroutan will be working on two innovative projects to address the effects of climate change. Photo by Ray Meese for Virginia Tech

an affiliated faculty of the Global Change Center in the Fralin Life Sciences Institute wants to bring these impacts to the forefront.

With two innovative projects totaling nearly \$1.4 million, Foroutan is focusing on airborne mineral dust and nitrous oxide from soil. He will also address aspects of climate change including the Earth's radiation balance and agricultural greenhouse gas emissions.

Foroutan has been awarded \$680,000 by the NASA Science Mission Directorate for research on the evolution of mineralogy and geochemistry of dust plumes in an effort to find ways to fully capture atmospheric dust plumes' dynamics and processes. This information can refine the understanding of dust's role in the Earth system and to advance scientific knowledge in this area.

His second project seeks to address challenges in estimating nitrous oxide emissions from agricultural soil on a national scale. He has been awarded \$715,000 by the U.S. Department of Agriculture to evaluate and update the atmospheric component of agroecosystem models to better understand nitrogen cycling and greenhouse gas emissions.

As these projects continue to unfold, their findings are expected to play a crucial role in addressing pressing environmental challenges, ultimately paving the way towards a more resilient and sustainable future.

# RODRIGO SARLO RECEIVES NATIONAL SCIENCE FOUNDATION CAREER AWARD TO CREATE STRUCTURAL DIGITAL TWINS ON CAMPUS



Rodrigo Sarlo. Photo courtesy of Renata Carneiro.

Rodrigo Sarlo, assistant professor, has been awarded a \$674,582 National Science Foundation Faculty Early Career Development (CAREER) award to drive the digitization of the civil engineering industry. His research will facilitate the conversion of sensor data to structural models, which has applications in structural monitoring for safety and maintenance. Sarlo will use the award to partner with Virginia Tech's Division of Campus Planning, Infrastructure, and Facilities to create a living laboratory on the Blacksburg campus for students and researchers to explore new and emerging technologies.

Civil engineers now have an unprecedented ability to measure large volumes of data on the built environment. One example is 3D geometric models from drone images, which are used in architecture and construction to take measurements, create maps, and visualizations. These technologies have not revolutionized the industry as many predicted they would. In practice, “big data” takes up a lot of space, and engineers are often unsure about how to make the best use of it.

Why?

Sarlo believes it is because data does not necessarily equal information. Distilling data to information requires engineering domain knowledge and concerted effort, which is not always practical.

“Right now, researchers are focusing on different types of data separately,” he said. “I want to put all of this data together to make a detailed model that covers everything from the external geometry to what’s inside the structure and how it behaves in the real world.”

Sarlo's research will allow future structural engineers to solve complex societal challenges. “Giving a programming angle to assignments in existing engineering courses hopefully will make students more comfortable with this approach to solving problems,” he said. “I also want to bring examples of artificial intelligence research into the classroom so students can appreciate both its potential and limitations. Sooner or later, they will encounter AI in the workplace, and I want them to understand realistically what it can and can’t do.”

# VIRGINIA TECH AND UNIVERSITY PARTNERS AIM TO PROTECT, TOUGHEN, AND AUGMENT TRANSPORTATION NAVIGATION SYSTEMS



Hesham Rakha. Photo by Peter Means for Virginia Tech.

We don't realize how heavily dependent we are on GPS in our car navigation systems, our location-based smartphone apps, the timing of our access to cell towers – until the technology experiences interference and failures. Global navigation satellite system (GNSS) signal interference, which can be accidental or intentional, has the potential to cause widespread delays in taut supply chains and cascading failures across GPS-timing-based networks. Jamming occurs when GPS signals are overpowered locally by other radio frequency signals so that the receiver can no longer operate. Spoofing can be even more dangerous, as the receiver is tricked into calculating a false position. While this may be a mild annoyance for some, jamming or spoofing signals can wreak havoc across multiple modes of transportation infrastructures, including commercial ships, trains, and shipping trucks. In 2021 alone, a major aircraft manufacturer reported more than 10,000 GNSS interference events.

To enhance the resilience of transportation infrastructure against such cyber-physical threats and develop advanced countermeasures for GPS jamming and spoofing, the Department of Transportation has awarded a multi-university partnership \$10 million in federal funding and \$5 million in cost-share to create a new Tier 1 University Transportation Center.

Hesham Rakha, the Samuel Reynolds Pritchard Professor of Engineering and an expert in large scale transportation optimization, modeling, and assessment, is part of this team.

The team also will prepare current and future transportation professionals to tackle such interference challenges. Building upon existing cybersecurity programs at the National Security Institute at Virginia Tech, training for undergraduates, graduate students, and professionals will be held to address current cyber-physical threats and anticipate future attacks on position, navigation, and timing in transportation systems.

*Written by Jama Green*

# VIRGINIA TECH STUDENTS PLACE 2ND NATIONALLY IN THE ASCE SUSTAINABLE SOLUTIONS COMPETITION



On June 19-23, 2024, 25 Virginia Tech civil engineering students traveled to Provo, Utah to compete in the American Society of Civil Engineers (ASCE) Civil Engineering Student Championships. Virginia Tech's Sustainable Solutions, Survey, and Concrete Canoe teams all earned a bid to compete in the national

competition hosted by Brigham Young University after successfully winning the ASCE Virginias Conference Student Symposium hosted by Virginia Tech at the end of March. Virginia Tech's steel bridge team also participated in their national competition hosted by Louisiana Tech earlier in June.

While all of Virginia Tech's teams performed well and finished in the top 10 for each of their respective competitions, the Sustainable Solutions Competition team's second place finish among 18 national teams was the highest of all. In addition to achieving second place overall, Virginia Tech also placed first in two of the four sub-categories for technical proposal and sustainability. This was Virginia Tech's first year participating in this competition, which began in 2021.

Virginia Tech's team formed the development company, Tiger Claw Incorporated, whose motto is "from Clawmarks to Landmarks." They prepared a proposed mixed-use redevelopment project in the City of ASCE called "Rising Silo," a nod to the former grain silos present onsite. The existing site was formerly a manufacturing hub that the team classified as a brownfield. Using the Institute for Sustainable Infrastructure' ENVISION framework, Tiger Claw Inc. created a resilient design that carefully considered all three aspects of the sustainability triangle: people, planet, and profit. Features of the site included multi-family residential apartments, commercial spaces, a repurposed rail line for a farmer's market and community events, recreational fields, a waterfront boardwalk, and a restaurant in a reconstructed silo along the Big Brown River. As part of the competition, the team prepared a technical proposal, site plan and calculations, poster, and oral presentation.

*Written by Claire White*

*Team Members -  
pictured above at the  
national competition  
in Utah in June 2024*

- Nichole Dorn (team captain)
- Brooke Dashiell
- Alex Price
- Ethan Valera
- Lucas Alexander (graduate advisor)
- Natalie Romero (graduate advisor)
- Claire White (faculty advisor)

# 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 38th 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 38 years and continue to fulfill the mission set by the Via family.



# VIA SCHOLARS

## UNDERGRADUATE

### SAI ASHRAYA CHEGU

**Hometown:** Monroe Township, New Jersey

**Career Goals:** One of my main career goals is to be able to work at superfund sites working on water pollution remediation. However, my main overall goal is simply to do something environmental-related, whether that means working on renewable energy or water pollution issues.



### ANDREW DONALDSON

**Hometown:** Midlothian, Virginia

**Career Goals:** I hope to work on complex and innovative construction projects that make a positive impact on my community. I aim to earn my P.E. and eventually start my own company with a focus on solutions to complex construction engineering problems.

### AARON JOSHUA GITELMAN

**Hometown:** New Hyde Park, New York

**Career Goals:** Secure a full time construction job as a superintendent in New York City after graduation and possibly return for a master's degree after a couple of years in the industry. Ultimately, my goal is to become a professor of construction engineering at Virginia Tech.



# VIA SCHOLARS

## MASTERS



### ELIZABETH BEYER

#### ENVIRONMENTAL AND WATER RESOURCES

**Hometown:** Durham, North Carolina

**Location of Undergraduate Studies:** North Carolina State University

**Career Goals:** After earning my M.S., I plan to continue my graduate studies by pursuing a Ph.D. I aim to work in a water resources policy position in the future so I can help solve complex water issues around the world.

### EMME BINA

#### ENVIRONMENTAL AND WATER RESOURCES

**Hometown:** Wichita, Kansas

**Location of Undergraduate Studies:** University of Kansas

**Career Goals:** After graduate school, I plan to work for a non-profit organization aimed at helping communities facing water insecurity.



### MEGAN BLUMENAUER

#### ENVIRONMENTAL AND WATER RESOURCES

**Hometown:** Middletown, Maryland

**Location of Undergraduate Studies:** University of Maryland, College Park

**Career Goals:** After earning my M.S., I want to continue research on the provisioning of ecosystem services to enhance human health and well-being. I hope to work in the public sector, leveraging engineering and social sciences to improve social quality by working with policy makers.

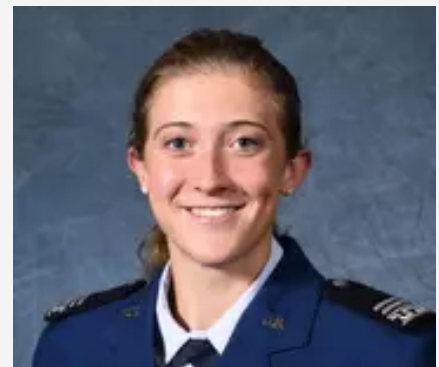
### MASON BROWN

#### STRUCTURAL ENGINEERING AND MATERIALS

**Hometown:** Charlotte, North Carolina

**Location of Undergraduate Studies:** United States Air Force Academy

**Career Goals:** To teach at the United States Air Force Academy as a Captain in the Air Force, and to make civil engineering practices in the Air Force more sustainable. Upon completion of Military Service, I would like to get into city planning to improve public transit, walkability, and building codes to make cities both more livable and sustainable.



# VIA SCHOLARS



## JOHANNA CAPONE

### ENVIRONMENTAL AND WATER RESOURCES

**Hometown:** Cranford, New Jersey

**Location of Undergraduate Studies:** Virginia Tech

**Career goals:** My research has inspired me to continue research after graduation, whether at a national lab, consulting firm, or in a doctoral program. I hope to investigate how policymakers can manage water allocations and develop cities in a way that conserves resources for the environment and future generations.

## PHILLIP CRISPELL

### GEOTECHNICAL ENGINEERING

**Hometown:** Ellicott City, Maryland

**Location of Undergraduate Studies:** Virginia Tech

**Career Goals:** I plan to begin working at a geotechnical design or design-build firm focusing on the design of deep foundations and solutions to geological hazards. I plan to work towards obtaining my professional engineering license and gain experience that will further my career.



## WILL DAWSON

### ENVIRONMENTAL AND WATER RESOURCES

**Hometown:** Virginia Beach, Virginia

**Location of Undergraduate Studies:** Old Dominion University

**Career goals:** To expand scholastic attention to environmental resource engineering, conjoining water treatment practices with K-12 learning opportunities.



## PAUL DEBOLE

### ENVIRONMENTAL AND WATER RESOURCES

**Hometown:** Cranford, New Jersey

**Location of Undergraduate Studies:** Virginia Tech

**Career Goals:** I would like to continue studying water usage and conservation as a doctorate student and eventually as a professor.



## MADELINE DECK

### ENVIRONMENTAL AND WATER RESOURCES

**Hometown:** Blacksburg, Virginia

**Location of Undergraduate Studies:** Virginia Tech

**Career Goals:** I strive to help empower the public with the knowledge required to improve their drinking water quality either through consulting or new policy creation and implementation.



# VIA SCHOLARS

## ALEXANDRA DIBERNARDI

### ENVIRONMENTAL AND WATER RESOURCES

**Hometown:** Manasquan, New Jersey

**Location of Undergraduate Studies:** Virginia Tech

**Career Goals:** My goal is to work for the New York City government to research and address various environmental issues, like air pollution associated with the growing population or the storms that flood the subways and roadways. I hope to prepare cities for the challenges we expect to face in our future, while mitigating those we currently experience.



## NICHOLE DORN

### SUSTAINABLE LAND DEVELOPMENT

**Hometown:** Audubon, Pennsylvania

**Location of Undergraduate Studies:** Virginia Tech

**Career Goals:** After completing my M.S., I hope to work for a land development consulting firm where I can apply the principles of sustainability into engineering design projects to help create healthy, long-lasting, and resilient communities.

## JAD EL-RAFEY

### ENVIRONMENTAL AND WATER RESOURCES

**Hometown:** Reston, Virginia

**Location of Undergraduate Studies:** Virginia Tech

**Career Goals:** After completing my graduate studies, I hope to continue my education and pursue a Ph.D. or travel abroad and gain experience in industry.



## ERIKA GALLUS

### GEOTECHNICAL ENGINEERING

**Hometown:** Rathdrum, Idaho

**Location of Undergraduate Studies:** United States Air Force Academy

**Career Goals:** After earning my M.S., I will be heading to pilot training to fly helicopters for the Air Force. Post Air Force career, I hope to pursue geotechnical engineering in some capacity.

# VIA SCHOLARS

## CAITLYN HARRIS

### ENVIRONMENTAL AND WATER RESOURCES

**Hometown:** Midlothian, Texas

**Location of Undergraduate Studies:** The University of Texas at Austin

**Career goals:** Upon completing my M.S. degree, I hope to pursue a career as a wastewater treatment process engineer or a design consultant with a focus in resource recovery and reclamation, solids handling, and energy.



## ANDREW JOSEPH

### TRANSPORTATION INFRASTRUCTURE AND SYSTEMS ENGINEERING

**Hometown:** McLean, Virginia

**Location of Undergraduate Studies:** Virginia Tech

**Career goals:** After finishing my M.S., I plan to work for a civil engineering consulting firm focusing on rail and transit projects as I work toward earning my professional engineer's license. Long term, I would love to serve as the general manager of a major metropolitan area's public transit system and retire to Blacksburg to reprise my role as a bus operator at Blacksburg Transit.



## AMELIA KETELHOHN

### ENVIRONMENTAL AND WATER RESOURCES

**Hometown:** Cedarburg, Wisconsin

**Location of Undergraduate Studies:** Marquette University

**Career Goals:** After completing my M.S., I hope to obtain my professional engineering license and work in the industry or government agency. I am interested in water, ranging from the accessibility of safe drinking water to discovering and mitigating contaminants in wastewater.



## JACK MAYS

### STRUCTURAL ENGINEERING AND MATERIALS

**Hometown:** Mount Pleasant, South Carolina

**Location of Undergraduate Studies:** University of South Florida

**Career Goals:** After obtaining an M.S., I hope to work towards a Ph.D. on a structural engineering topic. I also hope to obtain my P.E. and work in structural engineering.



# VIA SCHOLARS

## HENRY MCKLIN

### STRUCTURAL ENGINEERING AND MATERIALS

**Hometown:** Decatur, Georgia

**Location of Undergraduate Studies:** The University of Alabama

**Career goals:** I plan to pursue a career as a structural engineer with a strong emphasis on sustainable design. I hope to design and preserve structures for future generations while lowering the carbon footprint.



## MADISON MILLSPAUGH

### ENVIRONMENTAL AND WATER RESOURCES

**Hometown:** Virginia Beach, Virginia

**Location of Undergraduate Studies:** Old Dominion University

**Career goals:** I plan to begin my research at an advanced oxidation treatment facility for indirect potable re-use via managed aquifer recharge. I plan to stay in the Hampton Roads region consulting as an Environmental Engineer aiding in water resource management and improving treatment processes for the health and welfare of society and environment.



## JONATHAN MOORE

### ENVIRONMENTAL AND WATER RESOURCES

**Hometown:** Fairfax, Virginia

**Location of Undergraduate Studies:** Virginia Tech

**Career goals:** After earning my M.S., I want to continue learning about the physics of coastal environments and sediment mechanics so that I can be a resource to coastal communities. To accomplish that goal, I plan to earn a Ph.D.

## KAITLYN PARKER

### ENVIRONMENTAL AND WATER RESOURCES

**Hometown:** Gloucester, Virginia

**Location of Undergraduate Studies:** University of Mary Washington

**Career Goals:** After earning my M.S., I plan to pursue a career in monitoring and preserving drinking water supply integrity while helping build trust between consumers and providers.



## MEGAN SCHANTZ

### ENVIRONMENTAL AND WATER RESOURCES

**Hometown:** Charlottesville, Virginia

**Location of Undergraduate Studies:** Virginia Tech

**Career goals:** After my completing my M.S., I would like to work for a consulting firm performing groundwater monitoring, contamination investigations, and remediation.

# VIA SCHOLARS

## JOHN STERN

### TRANSPORTATION AND SYSTEMS ENGINEERING

**Hometown:** Hershey, Pennsylvania

**Location of Undergraduate Studies:** Virginia Tech

**Career goals:** After graduating with my M.S., I would like to contribute to the nation's transportation infrastructure with a focus on traffic engineering in either the private or public sector. I also intend to become a professional engineer.



## ILLIANA WALTERS

### STRUCTURAL ENGINEERING AND MATERIALS

**Hometown:** Fredericksburg, Virginia

**Location of Undergraduate Studies:** Lehigh University

**Career goals:** My goal after completion of my M.S. is to work in industry in protective design or forensic engineering while working toward obtaining my professional engineering license.

## DOCTORAL

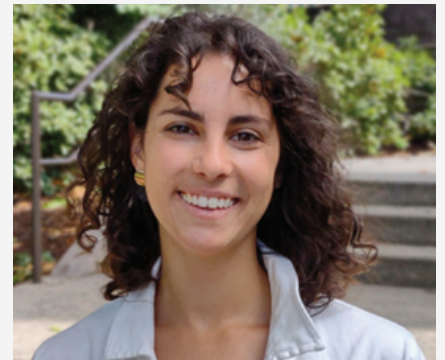
## ANN ALBRIGHT

### STRUCTURAL ENGINEERING AND MATERIALS

**Hometown:** Louisville, Colorado

**Location of Undergraduate Studies:** University of Washington, Seattle

**Career goals:** Innovating novel structural engineering designs and methodologies is critical for improving our infrastructure - both for sustainability and longevity. I hope to research reinforced concrete, retrofitting existing structures to improve performance under earthquake loads, simultaneously pursuing a teaching career to interact with the newest civil engineers.



## MEGAN BEEVER

### ENVIRONMENTAL AND WATER RESOURCES

**Hometown:** Stratham, New Hampshire

**Location of Undergraduate Studies:** Virginia Tech

**Career Goals:** I hope to continue my research in academia or the federal government after graduating.

# VIA SCHOLARS



## THOMAS CARNES

### ENVIRONMENTAL AND WATER RESOURCES

**Hometown:** Lake Milton, Ohio

**Location of Undergraduate Studies:** Youngstown State University

**Career goals:** After graduating, I hope to continue in academia as professor. As a professor, I would like to positively impact the civil engineering community by furthering the understanding of structural engineering through research and teaching future generations of civil engineering.

## AMANDA DARLING

### ENVIRONMENTAL AND WATER RESOURCES

**Hometown:** Aurora, Illinois

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

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



## FRED FALCONE

### GEOTECHNICAL ENGINEERING

**Hometown:** Pembroke, Massachusetts

**Location of Undergraduate Studies:** Wentworth Institute of Technology

**Career goals:** After completing my Ph.D., I want to continue work in research. My plan is to either continue in academia and work as a professor or to work for a research facility.

## MEGAN HARRIS

### ENVIRONMENTAL AND WATER RESOURCES

**Hometown:** San Antonio, Texas

**Location of Undergraduate Studies:** University of Texas at Austin

**Career goals:** I aim to harness my modeling expertise to shape governmental policies, working on international projects that drive sustainable change in infrastructure and environmental practices.





# VIA SCHOLARS



## STEVEN HOAGLAND

### ENVIRONMENTAL AND WATER RESOURCES

**Hometown:** Lexington, Kentucky

**Location of Undergraduate Studies:** University of Kentucky

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

## JOSEPH JAMES

### CONSTRUCTION ENGINEERING AND MATERIALS

**Hometown:** Columbia, South Carolina

**Location of Undergraduate Studies:** Clemson University

**Career goals:** I want to excel in teaching students, conducting research related to creating societal change, collaborating with other faculty members, receiving grants, and creating a pathway for future black engineers to feel welcome and know that they can achieve any level of greatness.



## KRYSTIN KADONSKY

### ENVIRONMENTAL AND WATER RESOURCES

**Hometown:** Clearwater, Florida

**Location of Undergraduate Studies:** University of South Florida

**Career Goals:** My main goal in my career is to help others, and Virginia Tech has provided me the opportunity to focus my expertise on pathogens in drinking water and wastewater. Throughout my career after graduation, I would like to provide mentorship to younger aspiring engineers, and help solve public health crises for communities in need. I would also like to write my own version of "Kitchen Confidential" one day, perhaps after I'm retired.

## ALEXANDRA LONGEST

### ENVIRONMENTAL AND WATER RESOURCES

**Hometown:** Oakland, Maryland

**Location of Undergraduate Studies:** Bucknell University

**Career goals:** After earning my doctorate, I would like to work at a national laboratory to continue to pursue research into issues concerning public health and the air.



# VIA SCHOLARS



## CLAYTON MARKHAM

### ENVIRONMENTAL AND WATER RESOURCES

**Hometown:** Syracuse, New York

**Location of Undergraduate Studies:** University at Buffalo

**Career goals:** I would like to be a professor of environmental engineering concomitantly performing cutting-edge research and educating the next generation of environmental engineers to protect both planet and people.

## FRANK MAZZOLA

### ENVIRONMENTAL AND WATER RESOURCES

**Hometown:** Sterling, Virginia

**Location of Undergraduate Studies:** Virginia Tech

**Career goals:** I hope to continue researching problems in drinking water systems and developing solutions to help communities receive safe water. I aspire to teach the next generation of environmental engineering students.



## LILLIAN MCINTOSH

### ENVIRONMENTAL AND WATER RESOURCES

**Hometown:** Abilene, Texas

**Location of Undergraduate Studies:** Abilene Christian University

**Career Goals:** Upon completing my degree, I plan to pursue consulting as a wastewater treatment process engineer. My goal is to help communities on the municipal scale to have access to sustainable wastewater treatment. Later in my career journey, I hope to become a professor in an effort to lead future generations of rising engineers.

## TOLULOPE ODIMAYOMI

### ENVIRONMENTAL AND WATER RESOURCES

**Hometown:** Westfield, Indiana

**Location of Undergraduate Studies:** Purdue University

**Career Goals:** I plan to pursue a career in academia centered around conducting community focused research on water quality and sustainability in the built environmental to protect public health. I hope to address modern environmental concerns and equip the next generation of engineering professionals to do the same.



# VIA SCHOLARS



## MIA RIDDLEY

### ENVIRONMENTAL AND WATER RESOURCES

**Hometown:** Byram, Mississippi

**Location of Undergraduate Studies:** Iowa State University

**Career goals:** I want to pursue research opportunities within academia and government agencies that address environmental sustainability, ecosystem health, and environmental justice.

## FERNANDO ROMAN

### ENVIRONMENTAL AND WATER RESOURCES

**Hometown:** Monteray, California

**Location of Undergraduate Studies:** University of California, Merced

**Career goals:** After graduating from Virginia Tech, I would like to work as a drinking water/wastewater treatment plant designer, operator, and lab technician. I also hope to publish a collection of poems along the way.



## BENJAMIN ROSTON

### ENVIRONMENTAL AND WATER RESOURCES

**Hometown:** Newport News, Virginia

**Location of Undergraduate Studies:** Virginia Tech

**Career Goals:** I hope to explore opportunities in flood hazard management to improve the safety, welfare, and well being of communities impacting our hazardous floodplains and coastal zones. I look forward to exploring new perspectives on the relationships between water and society throughout the master's program and my future career.

## CAROLINE SEAR

### ENVIRONMENTAL AND WATER RESOURCES

**Hometown:** Libertyville, Illinois

**Location of Undergraduate Studies:** Saint Louis University

**Career Goals:** I plan to use what I have learned through classes and research to combat novel environmental issues in water quality and availability, either through continued research and development, non-profit work, or in a government position.



**THE CHARLES E. VIA, JR. DEPARTMENT OF  
CIVIL AND ENVIRONMENTAL ENGINEERING**

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