ASCE NATIONAL CAPITAL SECTION

eNewsletter

National Capital Section

FOUNDED 1916

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Slope Stabilization with Deep Foundation Elements

Slope stabilization with deep foundations elements is a relatively new cost-effective technique that has been used successfully in recent years. In some cases, it may not be the most economical option compared to traditional methods such as slide removal and embankment reconstruction, but it is often the most cost-effective solution in cases with limited accessibility, concerns regarding safety of excavation, ownership of right-of-way, and closure of communication corridors. Although this technique has been used frequently in the last decade, there is not a standard code or design manual that covers an accepted design methodology. The Deep Foundations Institute (DFI) has developed numerous conferences during the last decade where many practitioners and academics have presented general ideas and consensus regarding this topic. These ideas have been gathered on DFI conference proceedings and publications. The presentation covers some of the main design ideas through the design implementation and construction of slide remediations developed by the author. One example illustrates the case of rockslides where micropiles were used on an emergency job, while a second example considered a soil slide where drilled shafts were utilized. The case studies are explained from the design, construction, and performance of these systems, highlighting the lessons learned.

About the Speaker

Sebastian Lobo-Guerrero, Ph.D, P.E., D.GE is a Geotechnical Project Manager/Laboratory Manager for American Geotechnical & Environmental Services, Inc. in Pittsburgh, Pennsylvania as well as an Adjunct Lecturer at the University of Pittsburgh. Sebastian received his Bachelor's Degree in Civil Engineering from the Universidad Los Andes in Bogota, Colombia where he was born and raised and then he received his Master's Degree and Ph.D in Geotechnical Engineering from the University of Pittsburgh. Sebastian has 21 years of experience in Geotechnical Engineering, specializing in the design of shallow and deep foundations, earth retaining structures, and landslide stabilization. He has authored more than 100 technical papers and presentations published in scientific journals, geotechnical magazines, and conference proceedings worldwide. Sebastian is the Former Chair of the Pittsburgh ASCE Geo-Institute and Former Director of the ASCE Pittsburgh Section. He is also a member of the Deep Foundations Institute (DFI) Anchored Earth Retention Committee, and Conference Chair for DFI-45 2020 and DFI-47 2022 in National Harbor, Maryland. Sebastian has also received the following distinguished awards from ASCE including the 2021 Pittsburgh Section Lifetime Achievement, 2020 Pittsburgh Section Civil Engineer of the Year, 2016 Geo-Institute Distinguished Reviewer, 2006 Geo-Institute Best Paper on Numerical Modelling, and is a certified Diplomate, Geotechnical Engineering by the Academy of Geoprofessionals. ■

Please join us on **Tuesday, January 24th, 2023** at the Hilton Arlington, 950 North Stafford Street, Arlington, VA, on the second floor in the Gallery Ballrooms. Parking is available at the hotel ($10), at the Ballston Mall garage ($1 after 6 pm), and on the street (free after 6 pm). The Hilton is on the same block as the Ballston Station on Metro's Orange and Silver lines. Registration and networking will be from 6:00 to 6:45 pm, followed by dinner. The program will end by 8:30 pm. The cost is $45 for those preregistering, $10 for students and $55 for walk-ins, as space allows. For questions, please contact Elizabeth Wheeler. Please click here to register by **Friday, January 20th**.

Note that no-shows will be charged the full registration fee. We welcome walk-ins, including any registrations made after the guaranteed number of guests is provided to the hotel. However, the cost for walk-ins is higher because the Section is charged accordingly by the hotel for late registrations.

President's Corner

Happy New Year, National Capital Section! I hope you all had a wonderful holiday season and hope you were able to enjoy some time off with friends and family. While the holidays can present a hectic time with planning get-togethers, finishing all of your shopping, and eating more food than we should, it is always a nice time to reflect on the past year and appreciate the experiences we have had.

Looking back on 2022, it was a very eventful year for the Section. We hosted 10 section meetings, with the last two being our first in-person meetings since the start of the pandemic in 2020. Overall, our average number of attendees was around 63 people. Wow! We have a very active membership, and these numbers show that. In addition, our committees were also hard at work with hosting social events, community outreach activities, walking tours, and webinars. Out of the different events the NCS held this past year, were there any you attended and thought were executed very well? I'd love to hear your feedback so that we can aim at continuing those practices in 2023.

Our last Section Meeting of the year provided our members with an overview of non-destructive testing, which I personally found extremely interesting. During one of my internships in college, my research team and I studied the use of Piezoelectric Transducers in damage detection on aircraft systems such as a Boeing 737. There were many hours spent on researching the background of non-destructive testing, and it was so exciting to see how this technology can be used in our career field.

Looking ahead, I am excited to see what 2023 will bring for the National Capital Section. While we discussed many goals during the 2022–2023 planning meeting, one of the main goals was to help bridge the gap between college memberships and YMF/NCS professional memberships. Currently, the Section does not have a formal mentor program in place, and that has been a reoccurring suggestion offered to us. I'd be interested to hear the Section's thoughts on ways we can achieve this goal.

As we continue to host in-person meetings, I hope to see more of you at the Hilton in Arlington. Our January Section Meeting will feature a presentation on Slope Stabilization with Deep Foundation Elements on January 24, 2023. The speaker, Sebastian Lobo-Guerrero, has been heavily involved with ASCE over the course of his career, including roles as the Former Chair of the Pittsburgh ASCE Geo-Institute and Former Director of the ASCE Pittsburgh Section. We're excited to have him present at our January Section meeting, and we're looking forward to having a large turn-out.

Sincerely,

Elizabeth M. Wheeler, P.E., M. ASCE
ASCE NCS President

Call for Nominations: ASCE-NCS Innovation in Sustainable Engineering Award

Entries for the ASCE-NCS Innovation in Sustainable Engineering Award are due to the ASCE-NCS Sustainability Committee by 8:00 AM Eastern Time, February 1, 2023.

Criteria for consideration is as follows:

- Projects must demonstrate Innovation in Environmental, Economic and Social Sustainability
- Project must have been implemented in the six-year period preceding the year of award and
- Projects must be located within boundaries of ASCE-NCS.

To request full rules, criteria and nomination form, please contact Alex Rosenheim at tcc-sus@asce-ncs.org. ■

Newsletter

Maria Raggousis, *Editor*

February 2023 Issue Deadline: January 20, 2023

To Submit Articles: newsletter@asce-ncs.org

NCS eNewsletter Archives: go to www.asce-ncs.org and view along the sidebar.

Address Changes: Call 1-800-548-ASCE, e-mail member@asce.org, visit www.asce.org, or write: ASCE – Membership, 1801 Alexander Bell Drive, Reston, VA 20191. Include your membership number.

National Capital Section

November Section Meeting Recap

Nottoway Bridge Condition Assessment…and the role of NDE in Decision Making

On Tuesday, November 29th, 2022, Travis Greene, PE presented to the ASCE NCS members on the Nottoway Bridge for the November Section Meeting at the Hilton Arlington.

The Nottoway Bridge is an existing bridge on Route 46 over the Nottoway River near Blackstone, Virginia. The case study reviewed visual observations, NDE and SM results, materials testing, and bridge deck service life modeling. The assessment was part of a decision making process regarding the construction of a new bridge versus rehabilitating the old bridge.

Travis Green, PE is a Principal at Wiss, Janney, Elstner Associates, Inc. (WJE). Since joining WJE in 2000, Travis Green's experience has included structural investigations, evaluations, load tests, and repair designs for low – and high-rise commercial buildings and parking structures. Prior to joining WJE, Mr. Green worked for an architect, at a precast concrete plant, and as a research assistant at the University of California at Los Angeles. Mr. Green is a certified Bridge Construction Inspection Instructor. ■

Metro College Intern Program Applications are Open!

Calling all undergraduate and graduate students! Get ready for Summer 2023! Applications are open for the 2023 Metro College Intern Program. If you are an undergraduate or graduate student studying engineering, construction management, maintenance management, planning, or a related field – apply today to join us! The Office of Infrastructure at Metro works every day to improve our passenger experience by making significant investments in system safety, reliability, and customer service, while bolstering the region's economy through our unprecedented 6-year, $12.3 billion Capital Improvement Program.

We are looking for multiple interns to support the capital portfolio and our asset management in the areas of Construction Management, Asset Management, Maintenance, Engineering, Project Controls, Project Management, Project Planning, Procurement, Cost Estimating and Scheduling, and Market Research. As an intern in any of these areas you can expect hands-on experience while working alongside our teams, networking events with key executive leaders, exposure to a wide range of career pathways, organized field visits, and a fast-paced work environment. Previous interns have performed interesting and meaningful work to help scope and deliver major capital projects that fulfills WMATA's mission of moving people within the DC Metropolitan region.

A few key details are outlined below. But, please feel free to reach out with any questions.

- Application: Submit your application online
- Application Deadline: Due by January 9, 2023
- Experience Level: We are accepting applications from rising sophomores – graduate-level students
- Salary: Competitive, paid salaries are provided
- Program Calendar: The internship runs June 5 – August 18, 2023
- Additional Information: Available on our website
- Location: Students must reside in the greater DMV area during the duration of the program ■

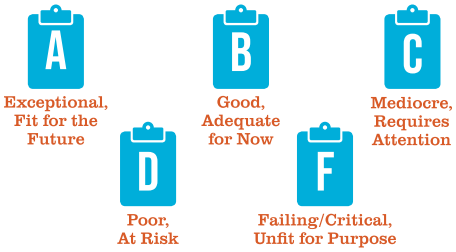
Virginia Infrastructure Report Card 2022

The Virginia Report Card Release was held on December 6th, 2022 at the Lynnhaven Boat Ramp and Park in Virginia Beach, where the attendees included a State Legislator and Representatives from VDEQ, VDOT, and Virginia Passenger Rail Authority. The press coverage was even shown on the nightly News. Check out the news article here and the excerpt below:

Brendan Ponton of WTKR reports: "Virginia's infrastructure has been graded as a "C," according to a report card released Tuesday by the American Society of Civil Engineers. Virginia's grade is higher than the national average of a "C-." The grade means Virginia's infrastructure is considered mediocre and needs attention. Eleven categories were scored for an overall "C" rating. "The rating may seem a little bit low, but as we talked about in our presentation, it's higher than the national average in many of the categories. If you come in and rate it too high or too low you kind of lose the value of identifying where those concerns are so resources can be put to those deficiencies to correct them," said Victor Crawford, the lead engineer for Virginia's report card.

The report does note some important improvements, though. For example, the report says 3-percent of Virginia's bridges are in poor condition, compared to 7.5-percent in 2015."

The 2022 Report Card includes 11 chapters assessing a separate infrastructure category to inform the public and provides your expert recommendations to decision-makers to raise the grades with funding and policy changes.



On behalf of the Report Card Committee Chairs and Co-Chairs Vic Crawford, Mike Bumbaco, Shainur Ahsan, and Amit Tilak, we want to thank you all for the excellent work on the Virginia Section 2022 Report Card on Infrastructure.

The next action will be the upcoming Drive-In to be held in January where the Report Card will be a Reference Tool for discussions with State Legislators.

In the newsletter we include the Brochure which was presented at the Release and provides an overview of the report card. The full Report Card is available at: www.infrastructurereportcard.org/virginia. ■

VIRGINIA GRADES

Bridges — B

Dams — C+

Drinking Water — C+

Public Parks — C

Rail — C-

Roads — C-

Schools — C-

Solid Waste — B-

Stormwater — C-

Transit — C-

Wastewater — D+

GPA — C

About the Grades

The 2022 Report Card for Virginia's Infrastructure was written by a committee of more than 75 civil engineers across Virginia who volunteered their time to collect and analyze data, prepare and review their findings and present their conclusions. The committee worked with staff from ASCE National and ASCE's Committee on America's Infrastructure to provide a snapshot of our state's infrastructure, as it relates to us locally and on a national level. The Report Card Sections are graded based on the following eight criteria: capacity, condition, funding, future need, operation and maintenance, public safety, resilience and innovation. ASCE defines these grades as follows:

- **A** — Exceptional, Fit for the Future
- **B** — Good, Adequate for Now
- **C** — Mediocre, Requires Attention
- **D** — Poor, At Risk
- **F** — Failing/Critical, Unfit for Purpose

SOLUTIONS TO RAISE THE GRADE

As Virginia seeks to continue improving our infrastructure, ASCE in Virginia offers some suggestions to raise the grade:

1. **AMBITIOUSLY SEEK FEDERAL FUNDING AVAILABLE FROM RECENT FEDERAL LEGISLATION**
   The Bipartisan Infrastructure Law and American Rescue Plan Acts of 2021, plus the Inflation Reduction Act and CHIPS+ laws from 2022, provide limited time opportunities to close the infrastructure gaps identified in this report: 1,800 dams without safety identification, deferred parks maintenance topping $111 million annually, 52% of school buildings in the Commonwealth over 50 years old.

2. **FOLLOW THROUGH ON PLANS TO ADVANCE TRANSPORTATION AND WATER PROJECTS**
   Virginia's authorized plans at the state and metropolitan level feature actions to raise the grade of every infrastructure category. However, plans to spend money in the next few years won't amount to positive change unless decision-makers at those state and local levels appropriate and allocate the funds during a likely upcoming economic downturn.

3. **CONSIDER EQUITY AND CLIMATE CHANGE WHEN IMPLEMENTING INVESTMENT**
   Many projects are "shovel ready," but a smaller group is "shovel-worthy." When making that judgement, historical and present-day equity data – as well as the threats from climate change – should be centered. This begins with technical assistance and cross-jurisdictional collaboration. A central constraint to improving Virginia's infrastructure are the resource and staffing levels at smaller and disadvantaged communities.

About ASCE-VIRGINIA

ASCE Virginia Section was founded in 1922. Our objective shall be the advancement of the science and profession of Civil Engineering. The ASCE Virginia Section has seven branches: Blue Ridge Branch (1967); Bull Run Branch (1969): Counties of Frederick, Clarke, Warren, Loundoun, Fauquier, Prince William, Stafford, Spotsylvania, Culpeper, and Rappahanock; Lynchburg Branch (1975); Norfolk Branch (1955): Counties of Accomack, Greensville, Isle of Wight, Nansemond, Northampton, Southampton, Surry, and Sussex. Cities of Chesapeake, Norfolk, Portsmouth, Suffolk, and Virginia Beach; Peninsula Branch (1966); Richmond Branch (1955); Roanoke Branch (1955).

Five Student Chapters are located within the Virginia Section. Student Chapters are located at University of Virginia, Virginia Military Institute, Virginia Polytechnic Institute and State University (Virginia Tech), Old Dominion University, and Liberty University.

CONTACT US

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infrastructurereportcard.org/virginia

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ASCE
AMERICAN SOCIETY OF CIVIL ENGINEERS

REPORT CARD FOR VIRGINIA INFRASTRUCTURE

2022

INFRASTRUCTURE MATTERS

Virginia's infrastructure forms the foundation for health, wealth, and safety for 8.6 million residents, more than 200,000 businesses, and over 100 million annual visitors. The Commonwealth moves people and goods along the critical I-95 corridor. It boasts expanding rail service connecting 127 million pounds of freight and 1.5 million passengers annually between the Northeast Corridor and mid-American transportation nodes. The Port of Virginia shuttles increasing volumes of goods on tracks, rather than trucks, with improved dockside infrastructure. Water systems for collecting rainfall and reducing floods are improving faster than national benchmarks.

Yet, infrastructure in the Commonwealth struggles from challenges like other growing states. Northern Virginia's job creation and workforce cluster provide economic growth and increased tax revenue, but also increase the complexity of operations and maintenance, and demands on transportation systems. Virginia's roads are increasingly clogged with drivers who lack feasible transit connections and comfortable bike routes for essential trips. The Tidewater region is growing fast as well, but the proximity of inland water, increasingly severe weather, and agricultural or industrial land uses pose contamination risks. Communities in rural Southwestern Virginia struggle to expand and upgrade infrastructure systems. Across the Commonwealth, inflation, workforce struggles, and political gridlock threaten infrastructure stewardship.

Virginia, however, has a lot to celebrate on infrastructure. The Commonwealth is sticking to its ambitious plans for passenger rail expansion drawn up before COVID-19 and they can be further enhanced using historically large funding from 2021's Bipartisan Infrastructure Law. Transit systems in urban, suburban, and rural areas of Virginia lost customers due to the pandemic – and rail transit struggles to pull ridership back up to normal. But bus systems like the Virginia Breeze have already attracted riders more numerous than before COVID. AMTRAK passenger rail routes in the state are b reaking records. An innovative treatment facility in Hampton Roads treats wastewater to drinking water quality standards for injection into the aquifer to control saltwater intrusion and land subsidence – a national model countries. Traffic deaths in the Commonwealth have steadily increased since 2018 but decision-makers at the Commonwealth Transportation Board are putting safety high on the priority list with their cornerstone budget and planning documents.

How You Can Get Involved

1. **Get the full story behind this Report Card at www.infrastructurereportcard.org/virginia.**

2. **Ask your elected leaders what they're doing to keep up with your neighborhood's infrastructure. Use your zip code to get your list of elected officials' at www.infrastructurereportcard.org/take-action.**

2022 REPORT CARD FOR VIRGINIA'S INFRASTRUCTURE

The 2022 Report Card on Virginia's Infrastructure gave the state an overall g.p.a. of C. Virginia's civil engineers studied eleven infrastructure categories. Of those eleven, two infrastructure categories are in good condition, nine are in mediocre condition, and one is in poor condition.

The good news is there are solutions to all these challenges, and we can raise the grades of Virginia's infrastructure. By learning more today about the conditions of the infrastructure you use every day, you too can help raise the grade.

BRIDGES — B

Of the 21,250 bridges in the Commonwealth, 698 – or about 3% – are considered structurally deficient (SD, or "poor"), much better than the national average of 7.5%. This also marks a dramatic improvement from 2015, in which 1,550 SD bridges – about 7.5% - were structurally deficient. In 2015, the Virginia Legislature enacted a series of reforms and increased available revenue for its surface transportation program. It also enacted the State of Good Repair (SGR) program that mandates 30% of construction funding be provided for deteriorated pavements and structurally deficient bridges maintained and owned by VDOT and localities. The condition of Virginia's bridges improved significantly since those reforms and thanks to the additional revenue. Looking forward, Virginia should emphasize preservation projects that keep aging bridges from continuing to fall into a state of disrepair.

DAMS — C+

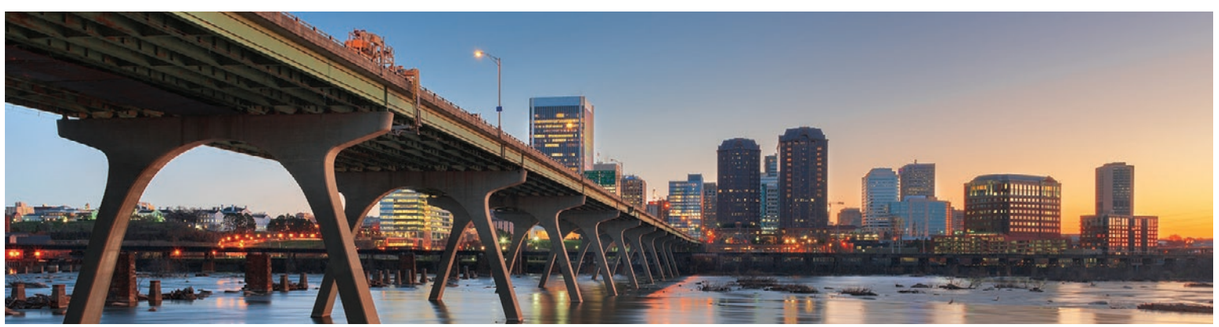
There are 2,634 state-regulated dams in the Commonwealth of Virginia. They're pillars of water supply, flood control, irrigation, and recreation. Inspection of and emergency planning for these structures – particularly the 359 high hazard potential dams – is crucial. Over 50% of all state regulated high hazard dams have been inspected annually since 2017, a significant improvement from 2008 to 2012, when just 25% of high hazard potential dams were inspected each year. Ninety seven percent of the high hazard inventory have Emergency Action Plans, higher than the national average of 81%. Additionally, funding for state dam safety inspections has increased over the past decade. However, the average age of Virginia's dams as of 2020 is 74 years old, significantly older than the national average of 57 years. Data for most Virginia dams is unavailable, meaning the problem could be much worse than known. Meanwhile, there are 1,842 dams in the state that report an undetermined hazard classification.

DRINKING WATER — C+

Over the last six years, annual funding increases from $28 million to $33 million from the federal Drinking Water fund helped the Virginia's drinking water infrastructure owners improved physical conditions. In addition, the General Assembly allocated $100 million from the federal COVID-19 American Rescue Plan to improve drinking water infrastructure in the Commonwealth. State funds are available for lead service line replacement, and since 2017, the City of Richmond, Washington County, Henry County, and the City of Chesapeake have received funding for these projects. The City of Alexandria has reduced lead pipes by 25% over the last four years. As populations grow, particularly in Northern Virginia and along the coast, municipalities are building new treatment plants and up-grading distribution networks. However, legacy systems are aging, and there are anecdotal reports of some pipes being over 100 years old. These systems require robust maintenance and regular funding for modernizations.

PUBLIC PARKS — C

Almost all of Virginia's 95 counties and 38 cities contain park facilities, and visitors to these parks generate significant economic benefits to the Commonwealth's economy. According to the Virginia Department of Conservation and Recreation (DCR), Virginia state parks saw 7.9 million visitors in 2021, a 15% increase over 2019 and a 1.5% increase over 2020. Despite growing numbers of visitors, park maintenance at facilities is underfunded. Deferred maintenance at Virginia state parks is estimated at $111 million annually. DCR and localities are also challenged to hire sufficient staff to operate equipment and manage resources.



WWW.INFRASTRUCTUREREPORTCARD.ORG/VIRGINIA

RAIL — C-

Virginia's rail system consists of 3,037 miles of active lines served by two Class I and nine Class III freight railroads, up to 26 national and regional Amtrak passenger routes, and Virginia Railway Express intercity rail. Annually, over 127 million tons of freight and nearly 1.5 million passengers travel through Virginia. Inadequate capacity in the Richmond to Northern Virginia corridor is a constraint to Commonwealth rail infrastructure. This includes the dangerously old two-track Long Bridge; it operates at 98% capacity during peak times on weekdays. Public-private partnerships, such as the Transforming Rail in Virginia program, can increase and expand passenger service while improving freight performance on tracks they share. Meanwhile, the Port of Virginia is expanding rail capacity, and new federal and state funding is available to enhance the condition of passenger rail infrastructure and improve service.

ROADS — C-

The Virginia Department of Transportation (VDOT) is responsible for the third-largest state-maintained highway system in the country. VDOT is a national leader in transportation asset management and has fully integrated the practice into its budgeting process and investment strategies. This has garnered positive results; the percentage of pavement condition that was in good condition rose from 48% to 51% from 2018 to 2022. 968 road users were killed in crashes on Virginia roads in 2021, a 21% jump from 796 in 2020 – despite only 8% more miles driven – and nearing Virginia's previous peak of 1,026 in 2007. Roadway engineering to prioritize safety over speed is the most effective countermeasure. A 2020 Omnibus Transportation Bill mandates new funding for safety projects, including hundreds within the $672 million Commonwealth Transportation Board investment plan for FY2023-2028.

SCHOOLS — C-

Beginning the 2021-2022 school year there were a total of 2,381 public schools operating in the Commonwealth of Virginia serving over 1.25 million students. Many of those students spend their days in older, outdated buildings that need replacement. The most recent assessment of schools, performed in 2021, determined that 52% of Virginia's public school buildings are over 50 years old and estimated renovation costs exceed $24 billion. Virginia is currently faced with aging school infrastructure, shortfalls in funding for repairs/maintenance and operation of existing school facilities, a shrinking tax base in rural areas, and overcrowding in metropolitan areas. The Covid-19 pandemic has exacerbated the situation, making it more difficult for school systems across Virginia to properly maintain, repair, or upgrade school infrastructure.

SOLID WASTE — B-

There are 202 permitted waste facilities in Virginia that manage municipal solid waste and several other waste streams. Existing capacity is generally sufficient and due to open real estate for landfill operations, Virginia can maintain competitive disposal fees. Per capita solid waste generation rates in Virginia exceeded the national average by some 44 percent which was an increase of 11% from the amount reported in the 2015 Report Card. However, Virginians recycling rates are very high; in 2018, communities with populations over 100,000 achieved a recycling rate of 46%, approximately 11% higher than the national average of 34.7%. The grade stayed at B- after seven years. This reflects the balance between concerns for an 11% increase in per capita waste generation rate with the continued improvement in the per capita recycling rate which exceeded the national average by nearly 11 percent.

STORMWATER — C-

Increased development, aging infrastructure, more intense rainstorm events, and rising sea levels are all placing demands on the Commonwealth's infrastructure systems susceptible to flooding. Fortunately, there is some limited funding available for capacity and condition improvements such as bioswales with native plants. Richmond, Portsmouth, Norfolk, Virginia Beach, Hampton, Chesapeake, Newport News, Lynchburg, Roanoke and Alexandria have stormwater user fees paid by residents. These fees serve as dedicated funding source for existing stormwater management services and new capital projects. In FY 2021, Virginia financed approximately $205 million in project loans targeted at 14 projects through the Virginia Clean Water Revolving Loan Fund, however, future needs are significant. More than 70% of the commonwealth's population lives in coastal areas. Meanwhile, it is estimated that 1 inch of water in a home can cause upwards of $25,000 in damages.

TRANSIT — C-

The Commonwealth's 41 transit agencies provided almost 172 million trips in FY 2019, the last year before the COVID-19 pandemic. That year, the Commonwealth's 16 commuter assistance programs removed almost 3.3 million automobile trips and 937 vanpools provided almost 2 million trips. Nineteen transit agencies reported ridership increases. Since the onset of the pandemic, transit agencies are fighting to win back riders with investments in capacity and condition. In FY21, the Commonwealth Transportation Board provided funding for 137 replacement revenue vehicles, 17 expansion vehicles, and the rehabilitation of 42 buses. The second phase of the Silver Line extension from Falls Church to Dulles Airport opened November 2022 adds high-quality transit options to growing communities in Northern Virginia. While this is encouraging, the 2022 Virginia Department of Rail and Public Transportation (VDRPT) needs assessment shows a 5-year, $208 million gap between projected available funds and what is needed to deliver transit services and modernize the existing system.

WASTEWATER — D+

There are an estimated 584 municipal wastewater treatment facilities in Virginia serving a population of over 8.5 million. Virginia's three cities with combined sewer systems – Richmond, Lynchburg, and Alexandria – have made considerable progress in reducing combined sewer overflows, but remaining remediation will cost an estimated $700 million to $900 million. A 2012 survey estimated Virginia's wastewater infrastructure needs exceeded $6.4 billion, probably much higher today due to inflation, aging physical infrastructure, and worsened threats from climate change such as infiltration and inflow. Utilities are raising their rates to meet this challenge: $44.70 was the Commonwealth average in 2018, compared to $42 nationally. Virginia water systems continue to innovate, including AlexRenew, the first North American utility to implement mainstream deammonification: a system that pumps drinking water quality out of wastewater treatment plants directly into the Potomac Aquifer.

ASCE INSPIRE Conference 2023

Arlington, VA | November 16–18, 2023

ASCE INSPIRE 2023: offers an opportunity to connect with, share knowledge, and learn from experts actively bringing the future to life with plenary speakers, technical sessions, local tours of engineering projects, and the Hall of Inspiration.

Conference Focus

Future-Ready Infrastructure involving nature-based design and technological advancements in materials, energy use, and system-to-system communication and adaptive planning and management capabilities that respond to the risks from increasingly interconnected infrastructure. Understanding and adapting to risks such as changes in the earth's temperature, increasing frequency of natural hazards, and the impact of sea level rise drive the need for civil engineers to design and build equitable, smart, hazard-resilient, people-centric engineering projects.

As the United Nations and governments across the globe are implementing requirements and regulations for public and private entities to disclose carbon impacts, civil engineers will be ready to respond, helping to mitigate carbon emissions, and respond to the demand for resilient infrastructure and community designs.

For more information, visit: https://inspire.asce.org/.

ASCE INSPIRE Call for Abstracts

The ASCE INSPIRE conference committee invites proposals from infrastructure owners, academia, practitioners, federal agencies, state agencies, and other interested entities to share their research, case studies, and best practices to plan, design, and deliver more resilient and more sustainable infrastructure systems to help our communities adapt.

The deadline for submissions is January 13, 2023.

Types of Presentations (each with optional Paper Submissions)

- Panel Session
- Full Session
- Individual Technical Presentation
- Poster

ASCE INSPIRE 2023 Submission Topics

- Climate-readiness
- Energy Efficiency & Power Production
- Emerging Technologies for Resilient & Sustainable Infrastructure
- Infrastructure Digitalization
- Infrastructure Financing, Risk Management & Disaster Mitigation
- Materials
- Measuring & Maintaining Sustainable & Resilient Infrastructure
- Nature-based Design
- Public Policies & Government Action
- Resilient Infrastructure Systems
- Social Justice, Ethics, Equity, & Health
- Sustainability
- Sustainable Future through Global Engagement
- Or Interdisciplinary or discipline specific sustainability, resilient, climate, or energy focused topics within transportation, water, geotechnical construction, structural, utilities, etc. ■

Important Dates

OCT 19 2022	Call for Abstracts Open
JAN 13 2023	Abstract Submission Deadline
MAY 5 2023	Optional Final Draft Papers Due
JUN 14 2023	Registration Opens
JUN 30 2023	Optional Final Papers Due
NOV 16 2023	ASCE INSPIRE 2023 Begins

Fairfax County Library Talk on American Legion Bridge

This past December 6th at 2:00 PM at the Vienna Branch of the Fairfax County Library, Frederick Gottemoeller, architect of the Woodrow Wilson Bridge, discussed the goals in the design of the new American Legion Bridge. The program is summarized on the library website.

Frederick Gottemoeller notes: "The pattern of travel in our region is changing. The work-from-home movement has changed the journey to work. And the multi-centered nature of newer parts of the region has changed daily travel. People in the Tysons-Dulles Corridor aren't coming to the District anymore; when they travel outside their corridor they are headed to Springfield or Bethesda or even Frederick. People at Virginia Tech's new campus in Arlington won't be coming into the District, they are already there; they will be headed out to Ft. Belvoir or Dulles or Columbia. Our future region will be even more multi-centered and travel will be in all directions at all times of the day and into the night.

That change underlines the importance of the American Legion Bridge. It will no longer be just a link in the region's Beltway. It is about to become the linchpin holding together two corridor cities, the Tysons/Dulles Corridor and the Bethesda/Frederick Corridor. It won't be enough to ensure that it has sufficient capacity. It should also have the visual presence to symbolize the connection of these two regional powerhouses."

Mr. Gottemoeller is considered America's most distinguished bridge architect, an accolade sealed by the universal acclaim for his award-winning Woodrow Wilson Bridge in Washington, DC. He has designed bridges over many of the country's most important rivers, including the Mississippi, Missouri, Ohio, Colorado, Potomac, Susquehanna and Niagara. His bridges include two over National Wild and Scenic Rivers, the St. Croix and the Wekiva and one over a World Heritage Site, Canada's Cataraqui River and Rideau Canal. Bridgescape, his book on bridge aesthetics, is a 'bible' for bridge designers.

If you are interested in reaching out to Mr. Gottemoeller directly for more information or to schedule a presentation related to the aesthetics and societal goals of bridges, you can reach out to him at: fred.gottemoeller@gmail.com. ■

FGIA Announces 2023, 2024 Conference Schedule

The Fenestration and Glazing Industry Alliance (FGIA) has formalized its 2023 and 2024 conference schedule, beginning with the FGIA 2023 Annual Conference taking place February 13–16 in Coronado, CA. Registration for this event is now open.

"FGIA is excited to share a new slate of host cities, which we feel is a great mix of both member favorite locales and new sites for the Association to visit," said Florica Vlad, FGIA Meetings Manager. "Be sure to register for the first 2023 event, the FGIA Annual Conference, to connect with industry peers in beautiful Southern California."

FGIA
Fenestration & Glazing Industry Alliance

2023 FGIA Events

- FGIA Annual Conference: February 13–16 – Loews Coronado Bay Resort in Coronado, CA
- FGIA Summer Conference: June 12–15 – Sheraton Vancouver Wall Centre in Vancouver, BC
- FGIA Fall Conference: September 18–21 – The Westin Westminster in Denver, CO

2024 FGIA Events

- FGIA Annual Conference: February 19–22 – Omni Amelia Island Resort on Amelia Island, FL
- FGIA Summer Conference: June 3–6 or June 10–13 – Le Westin in Montreal, QC
- FGIA Fall Conference: September 16–19 – Hyatt Regency Minneapolis in Minneapolis, MN

Event sponsorships at various levels are available for the FGIA Annual Conference. Learn more about sponsorship or contact Florica Vlad.

For more information about FGIA and its activities, visit FGIAonline.org. ■

ASCE-NCS Committee and Branch News and Updates

ASCE NATIONAL CAPITAL SECTION
YOUNGER MEMBER FORUM

Younger Members Forum

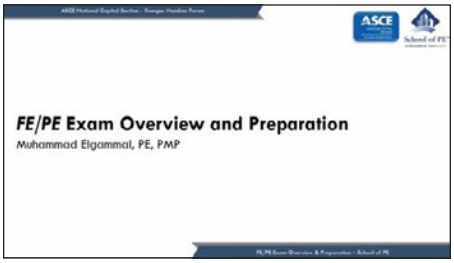
By Kush Vashee, P.E., CAPM, M. ASCE

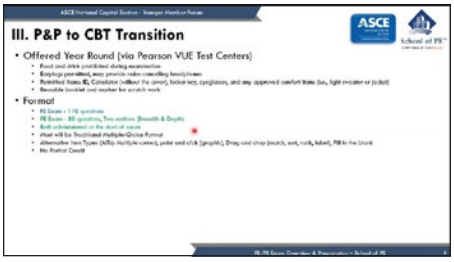
The group is active and has a bunch of exciting events planned for this year. I hope you are all ready for what is in store next year! The National Capital Section was represented at the Region 2 Assembly in Camp Hill, PA on November 5th and connected with other chapters in the region to brainstorm ideas and listen to insightful presentations!

Monthly Happy Hour: The NCS Younger Members Forum (YMF) holds monthly happy hours, alternating between Arlington, VA and Washington, DC. Happy hours are usually the first Wednesday of each month unless a holiday falls during that week.

Holiday Social: The group held their annual Holiday Social on Wednesday December 7th at Whino! We hope everyone had a great time and wish you all the best for the new year! We will have our next in-person happy hour starting at 6PM on January 4th at Penn Social in Chinatown. Look out for some emails soon with registration details and location information. We hope to see you there!

Professional Development: On December 1st, we held our first of many professional development events scheduled for this year. The event was an FE/PE Exam Overview and Prep with Muhammad Elgammal from School of PE. We learned about how to prepare for the FE, best times to take the FE and PE, study strategies, benefits to licensure as well as the changes to the PE transitioning from paper to CBT (Computer Based Testing) format. Please share suggestions of any professional development activities you would like us to organize in the future.





Stay Connected! Check out photos and stay up-to-date with YMF events by visiting the new YMF Facebook page (ASCE National Capital Section Younger Members Forum), following us on Twitter (@ASCE_NCS_YMF), LinkedIn (ASCE National Capital YMF), and Instagram (@asce_ncs_ymf)

Get Involved! Are you interested in getting involved with more Younger Members activities? Do you have ideas for social events or volunteering activities? The NCS Younger Members Group is always looking for new members! Let us know if you are not already on our mailing list!

Reston Branch

By Michael J. Magyarics, P.E., M. ASCE, Reston Branch Vice President

On October 19, 2022, the Reston Branch hosted J. Kent Holland, JD, founder and president of ConstructionRisk, LLC, for his presentation entitled, "Ethical Challenges for Engineers." His presentation discussed ethical challenges for engineers. He presented several recent Board of Ethical Review decisions issued by the National Society of Professional Engineers. Learning Objectives including the following, on how to:

1. Become more familiar with the National Society of Professional Engineers (NSPE) Code of Ethics for Engineers;
2. Learn lessons from review of recent BER ethics decisions;
3. Learn to recognize potential issues that might create violations of the code of ethics; and
4. Learn some ideas for negotiating with clients to avoid violating ethical obligations.

J. Kent Holland, J.D. is a construction lawyer located in Tysons, Virginia where his practice focuses on representation of design professionals and design-builders. He is also founder and president of ConstructionRisk, LLC, a consulting firm providing risk management services to design professionals, design-builders and insurance carriers. This includes assistance with contract drafting, review and negotiation; change order and claims analysis (preparation and/or defense); risk management counseling; and Program Risk Management for project specific professional liability policies on projects around the country. ConstructionRisk, LLC reviews, redlines and provides advice on well over 2,000 design professional contracts per year.

On November 9, 2022, the Branch hosted Gilbert Chlewicki, PE, NOVA District Traffic Engineer at VDOT, for his presentation entitled, "A New Innovative Approach to Address Pedestrian and Bicycle safety at Intersections." His presentation discussed the safety of

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non-motorized users as a major concern in the country, but particularly in Northern Virginia. On average, there is more than one fatality of a pedestrian or cyclist in Northern Virginia per week. Many of these fatal crashes are occurring at intersections, and these locations can vary significantly in terms of the volume of pedestrian traffic. The presentation provided a new innovative approach to design safer intersections for pedestrians and cyclists. It also discussed a new process that examines "design flags" that can affect the crash risk for vulnerable users, and some misconceptions on what are the most important elements when deciding how to design pedestrian and bicycle crossings.

Gil Chlewicki became the new NOVA District Traffic Engineer in September 2021 after spending over 20 years as an international consultant. Gil is most known internationally for his expertise and innovation on intersections and interchanges for all users.

While working continuously on the practice side, Gil also has spent a lot of time on transportation research, publishing dozens of technical papers and documents. His latest publication was as a co-author of NCHRP Report 948 – Guide for Pedestrian and Bicyclist Safety at Alternative and Other Intersections and Interchanges. Gil spent the maximum three full terms on the TRB Operational Effects of Geometrics Committee and was the chair of the Intersection Joint Subcommittee until that subcommittee merged into the Roundabouts Committee. Gil is now the Research Chair of the Access Management Committee.

On November 10, 2022, the Reston Branch hosted a field trip to Traffic Systems & Technology (TS&T) in Manassas, VA. Participants learned about traffic signal control and lighting

equipment and intelligent traffic infrastructure, as well as the state-of-the-art technology with a presentation and hands-on experience. For the traffic devices seen on the roads, they were able to take a closer look and learn how they work. TS&T has been founded since 2000 as a traffic equipment supplier to the DMV for numerous projects and has staff with shop and field knowledge of operations and installation to share with you. It was a great opportunity for participants to see what is drawn on the design plan in real life at TS&T.

In December 2022 and over the first several months of 2023, the Reston Branch will continue to pursue STEM activities with Chantilly High School, in Chantilly, VA. The planned activities include presenting civil engineering related topics to students in Fall and Spring semesters; setting up a booth and providing interactive engineering activities with students at Tech Fair; and providing judges and mentors at Technology Student Association (TSA) competitions. If the school desires, a field trip to ASCE headquarters may be planned in the near future. The following events are planned over the next several weeks:

On December 9, 2022, Shainur Ahsan, Reston Branch past president, gave a presentation to students, discussing the general duties of a civil engineer, different career paths, and life as a young engineer. He also talked about which classes students interested in civil engineering should focus on, such as math and science.

On January 14, 2023, Chantilly High School will host a TSA STEM Tech Fair. Several Reston Branch board members will participate by running a booth highlighting aspects of civil engineering and by creating interactive engineering activities for students.

Finally, on January 10, 2023, the Reston Branch will host Jennifer Greenawalt, PE, SE, Senior Project Engineer at Thornton Tomasetti in Washington, DC, for her presentation entitled, "Capital One Hall." This event will be in person only. Her presentation will discuss the new, high-end corporate event and performing arts center, named Capital One Hall, which includes a 1,600-seat main theater, 225-seat black box theater, and large atrium. It is located in the heart of the Capital One Center campus in Tysons, VA, just inside the capital beltway. The venue, with its more than 3,000-ton steel frame, is topped with a sprawling landscaped public park on the roof and sits above retail, an 18,000-square-foot loading dock and parking, which are shared with the adjacent grocery store

and hotel tower. Some of the notable structural challenges were supporting the heavy, active rooftop over the column-free atrium and theater spaces, ensuring patron comfort at the aggressively cantilevered seating balconies, and supporting the signature saw-tooth marble and glass façade. The venue hosts a wide range of programs, from Broadway shows, concerts, and entertainment arts to local arts groups, partnering with ArtsFairfax.

Jennifer Greenawalt, P.E., S.E., LEED Green Associate is a senior project engineer at Thornton Tomasetti in Washington, D.C. Her experience includes analysis and design as well as renovations of concrete and steel structures in the Washington, D.C. metro area, including a multitude of commercial, government, residential,

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performing arts, and sports projects. She holds bachelor's and master's degrees in civil engineering with a focus in structures from The Pennsylvania State University. Jen has been working as a structural engineer with the firm since graduating in 2015. She is a licensed structural engineer in Illinois and a licensed professional engineer in Maryland and California.

The Reston Branch has launched a group on LinkedIn to provide regular updates for the Branch as well as offer a place for branch members to connect. See the following link for additional information: https://www.linkedin.com/groups/13759693/

Upcoming Events:

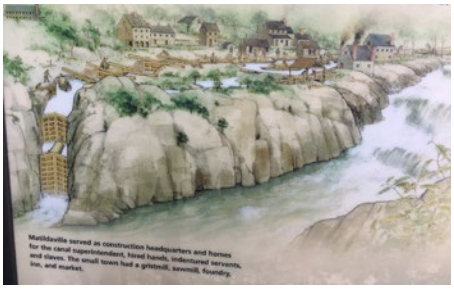
- January 10, 2023, at 12 PM – Virtual Meeting – Capital One Hall
- January 14, 2023 – Chantilly High School TSA STEM Fair

History and Heritage Committee

On Veterans Day, Nov 11th, the NCS H&H Committee hosted the VA Section in a joint activity as part of the VA Section Centennial. The Sections share a National Civil Engineering Landmark (NHCEL); the Canal & Locks at Great Falls in McLean, VA. This was one of 5 river by-pass canals in George Washington's Patowmack

Despite Rain, 17 people attended the tour. (Vic Crawford photo)

ASCE National Executive Director, Tom Smith and Tour Leader Bernie Dennis. (Tom Smith photo)



Matildaville & Canal Locks By-passing Great Falls (Bernie Dennis photo of NPS Kiosk)

Tour stop for View of Lock 1 (Gordon Evans photo)

Canal constructed from 1785 to 1802 and operated until 1821. Remnants of the canal are preserved in Great Falls National Park. Taking advantage of the National Park's free entry day, 35 people signed up for a site visit/tour of the canal & locks. Despite a rainy day, 17 people in rain gear and with umbrellas showed up – what's a little rain for Civil Engineers, right? Even ASCE Executive Director, Tom Smith, joined us. We hiked 2.5 miles along the canal route observing remnants of the wing dam, canal walls, the Holding Basin, 5 locks, and Matildaville. We also viewed the Great Falls overlook; the impressive flood record marker; plus, the 1969 ASCE NHCEL Plaque mounted on a bolder face adjacent to Lock 1. Afterwards we gathered in the parking lot for refreshments provided by the Bull Run Branch.

Upcoming Activities: We will continue our virtual meetings in January, so you don't want to miss out on notifications. Steve Pennington will enlighten us on the Zero Milestone. Subsequent talks will address Chain Bridge and CE Legends. To be notified of future H&H activities and receive virtual meeting links, please email Bernie Dennis (berniedennisjr@gmail.com) to get on our email list – include contact cell phone number that will help for future site visits.

Hope you can join us for future H&H Activities.

Environmental & Water Resources Institute

Please join EWRI NCS as we welcome Dr. Hossain Azam, an Assistant Professor of Environmental Engineering at the Department of Civil Engineering of the University of the District Columbia (UDC), to our monthly webinar series on Thursday, January 5, 2023, 12:00 – 1:00 pm EST.

Dr. Azam completed his PhD degree in Environmental Engineering from University of Illinois at Urbana Champaign (UIUC), MSc degree in Water Resources and Environmental Engineering from North Carolina State University (NCSU) and BSc degree in Civil Engineering from Bangladesh University of Engineering and Technology (BUET). Currently, he teaches different undergraduate and graduate environmental engineering courses. He is leading different applied and fundamental research projects in the field of water and wastewater as well as water-energy-food-climate nexus at UDC.

We will be hearing from Dr. Azam on sustainable wastewater treatment practices involving resource recovery. Traditional wastewater treatment processes require a significant amount of energy input and have limited resources recovery systems. Therefore, sustainable wastewater treatment systems focus on resource recovery and efficient energy utilization in addition to reduction of global warming gasses, wastewater reuse and treatment of emerging contaminants. Anaerobic digestion systems can provide significant support to achieve those goals by recovering energy as methane as well as phosphorus and nitrogen as struvite. One major drawback observed in the anaerobic digestion systems is uncontrolled phosphorus mineral struvite precipitation. Although struvite is a problem when left uncontrolled and unmonitored; it has different benefits (e.g. slow release fertilizer) when recovered in a controlled environment. Therefore, we (a) investigated effective ways of energy recovery as methane and (b) explored effective strategies to prevent uncontrolled precipitation of struvite to recover it in a controlled environment.

First, Dr. Azam utilized several substrates (waste activated sludge, cheese whey, grease interceptor waste, and pulped food waste) for methane

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recovery from anaerobic co-digestion in both lab-scale anaerobic digesters and biochemical methane potential (BMP) assays. The results showed that using fat, oil and grease (FOG) significantly increased the methane production in both settings compared to traditional anaerobic digestion systems (using primary sludge and waste activated sludge). Second, his team utilized biodegradable chelating agents (e.g. GLDA, MGDA etc) to ensure dissolution of struvite in lab scale anaerobic systems. They found that biodegradable chelating agents were successful to prevent uncontrolled precipitation and ensure dissolution of struvite. In addition, Dr. Azam reported the evidence of microbial degradation of Mg-chelant complex with no adverse effects of chelating agents on anaerobic digestion systems. We are further conducting experiments to recover struvite from the released Mg+2 from the Mg-chelant complex in a controlled system. Thus, his research provided major guidelines for different effective resources recovery techniques from next generation anaerobic digestion systems. ■

ASCE NCS Committee Volunteering Opportunities and Leadership Roles

In addition to the Board positions, we also have other opportunities to take on leadership roles and become more active with NCS. The following roles are not elected positions. These leadership roles are great opportunities to take a stake in ASCE's local presence and activities.

If you are interested or would like more information, please email nominations@asce-ncs.org or president@asce-ncs.org.

Treasurer-In-Training

The Treasurer-In-Training works with the current Treasurer to learn their responsibilities and role with the intention (but no obligation) of becoming the Treasurer once the current Treasurer's term has ended. The Treasurer shall attend meetings of the Board. The Treasurer shall be responsible for the maintenance and disbursement of all funds. The Treasurer shall prepare reports on the financial condition of the Section monthly or at a frequency requested by the President, and shall maintain the membership roster, authenticating all paid dues with the Society. The Treasurer shall assist in preparation of the Section's annual budget and be responsible for submission of the Section's annual tax return. Each Treasurer shall serve a two (2)-year term; the Treasurer-In-Training shall serve a one (1)-year term during the current Treasurer's second term.

Newsletter Editor-In-Training

The Newsletter Editor-In-Training works with the current Newsletter Editor to learn their responsibilities and role with the intention (but no obligation) of becoming the Newsletter Editor once the current Newsletter Editor's term has ended. The Newsletter Editor is responsible for issuing calls for articles, assembling and editing articles, coordinating publication, and issuance of each newsletter. The Newsletter Editor is considered a Director on the Board. Each Newsletter Editor shall serve a two (2)-year term and is eligible for re-election.

Committees

NCS has over twenty committees. All committees are open to members who are interested in taking a leadership role. Committees include the Architectural Engineering Institute; Annual Awards Banquet Committee; Boundary Stone Committee; By-law Committee; Communications Committee; Construction Committee; Corporate Relations Committee; Education Committee; Environmental & Water Resources Institute; Engineers Week Committee; Geo-Institute; History and Heritage Committee; Life Members Forum; Management & Best Practices Committee; Newsletter Editor; Report Card Committee; Reston Branch; Section Meeting Planning; Structural Committee; Sustainability Committee; Transportation Committee; Younger Member Forum; and Webmaster.

The Sustainability Committee and Structural Committee are both seeking Chairs. The Communications Committee is seeking a volunteer to assist with social media for the ASCE National Capital Section.

Volunteering

We have opportunities to take on leadership roles and become more active with NCS. We are always looking for volunteers to champion section meetings, participate in STEM events, plan a social event, host a tour, etc.

Appointments

There are opportunities to serve as a Practitioner Advisor at universities within NCS, upon authorization by the Board of Directors and recommendation of the Faculty Advisor. A Practitioner Advisor should support the Faculty Advisor and be an example of high-caliber professional performance to students. Contact nominations@asce-ncs.org for details and requirements. ■

Employment Clearinghouse

The NCS provides the Employment Clearinghouse as a free service to its membership. The Clearinghouse allows members to post short notices for available positions or candidates seeking employment. All employers listed herein are equal opportunity employers. If you have questions, are seeking employment or would like to post a position please contact the newsletter editor.