ASCE NATIONAL CAPITAL SECTION

eNewsletter

National Capital Section

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January Section Meeting: The Arts and Industries Building

By Bernie Dennis, Chair, History & Heritage Committee

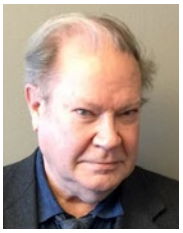
Opened in 1881, the Arts and Industries Building is the second-oldest of the Smithsonian museums on the National Mall. You may have observed the Arts and Industries Building under renovation over the last few years. Join us for a unique program that will examine the history of this iconic building and revitalization recent efforts.

Originally known as the National Museum, it was constructed to house many of the displays donated to the Smithsonian after the Centennial Exposition of 1876 in Philadelphia. After an architectural competition, the Board of Regents selected the architectural firm of Adolf Cluss and Paul Schulze to design the new building. Civil Engineer Montgomery C Meigs conducted a study of public museums in Europe and supervised the structural system design and construction.

The US National Museum Building was renamed the Arts and Industries Building in 1910. It was designated a National Historic Landmark in 1971. In 2006, the Arts and Industries Building was named as one of America's Most Endangered Places by the National Trust for Historic Preservation and the building was closed due to its deteriorating condition. In 2009, it received funding through the American Recovery and Reinvestment Act of 2009 for a first phase of revitalization.

After being closed for over 12 years, the Arts and Industries Building reopened for special events in the fall of 2015 and has hosted several activities, including the 2016 Smithsonian Folklife Festival.

Our speaker will be Architect Christopher Lethbridge who has managed the AIB Revitalization for the Smithsonian Institution. He will give us an overview of the project with insights into this historic structure. He is an Architect/Program Manager in the Office of Planning, Design & Construction and has been with the Office of Facilities Engineering and Operations for nearly fifteen years. His primary responsibility is the oversight of the Capital Program for the South Mall Campus: the Smithsonian Castle, the Freer Gallery of Art, the Sackler Gallery, the National Museum of African Art, the Ripley Center, and the Arts and Industries Building. He is leading planning for the revitalization of the Castle; has managed the AIB Revitalization, the first phase of which, renovating the building shell, has been completed; and is Program Manager for the South Mall Campus Master Plan. Before coming to the Smithsonian, he practiced architecture in Washington for nearly ten years as the principal of his own firm and was a project manager at American University. A native Washingtonian, he received a BA from Yale in 1975, having majored in architecture, and studied at the School of Architecture of the University of Virginia. ■



Please join us on **Tuesday, January 16**, 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 6–6:45 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. One Professional Development Hour is available to attendees. For questions, please contact Brian Barna. Please click here to register by **January 11**.

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

Resolve to be a Better Engineer

Happy New Year! Thank you for reading. We closed out 2017 strongly with our November Section Meeting where contractors from Turner Construction Company presented on the new home of the DC United soccer club, Audi Field. A few weeks later, our NCS Construction Institute planned a construction site tour of the new stadium. It was a fun and informative tour, and I was encouraged that we were booked to capacity within 8 hours of announcing it to our members. This speaks to the excitement surrounding the project, and also signals that there is considerable demand from our membership for interesting construction tours. We will take that into account and work to plan more tours of construction sites and other local civil engineering landmarks in the months ahead.

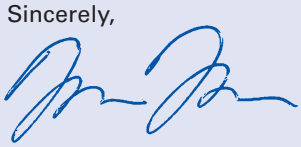
I would like to challenge everyone this year to make a New Year's Resolution that you can actually keep longer than that pact to exercise every day. No matter what stage you are in your career, there are likely some relatively simple steps that you can take to make yourself a stronger engineer. Here are some ideas:

■ Become a mentor (or a mentee): Of course, it is important to sustain the great Engineering Circle of Life. But apart from simply training someone who will one day replace a retiree, a good mentor-mentee relationship could be a symbiotic one in which both parties are learning from each other and growing as professionals. The benefits to the mentee are fairly obvious – to learn how to take everything studied in school and apply it to produce a rational, economical, real-world design. The mentor can learn a lot as well. One really must understand the material well to not just be able to apply it, but to teach it to someone else. Often, a question may arise that could spark the mentor to think of an old problem in a brand new way. Also, there's a good chance the young engineer is a whiz on the computer with skills that can help the transition to the increasingly technological world of engineering.

■ Educate yourself through self-study: OK, I'm as guilty as anyone of letting all of those trade magazines pile up in my inbox. It's difficult in the busyness of work and of life to find the time to try to expand your knowledge base when it is not necessarily related to what you are working on during that particular hour. However, it is very important to always be learning. If magazines or journals aren't your thing, then I would encourage you to sign up for a few civil engineering news compilers that can be delivered straight to your email inbox each day. *ASCE SmartBrief* is a great one, and it's free to sign up for ASCE members. These bite-sized blurbs educate and inspire by describing some of the most important and impressive projects of today. Set aside 5–10 minutes a day to work on expanding your knowledge base and to catch up on the latest project and trends and you will quickly see results.

■ Commit to regularly attending local ASCE events and other engineering functions outside of the office: One of the best ways to grow as an engineer is to get out there and attend some events outside of work where you will have a chance to interact with other engineers. NCS has built a wide range of activities and committees to appeal and cater to as much of our membership as possible. We have dinner meetings, we have lunch meetings, we have events on weekdays, we have events on weekends, we have events all across our geographical area from Washington, DC to Reston. We have volunteer activities, casual social events, and educational seminars. We have over 15 active committees that are designed to cater to specific fields of study and interests. Our monthly section meeting topics are carefully selected to touch on the various topics within the broad spectrum of civil engineering including structural, transportation, water resources, construction, and sustainability topics. So if you haven't been out to an event recently, take a look at our upcoming events and I'm confident you'll find something that is relevant to your interests and fits into your schedule. Come out and join us, and save your excuses for the gym!

Sincerely,



Brian M. Barna, PE
ASCE-NCS President

Newsletter

Jim Palmer, *Editor*
Sumon Chatterjee, *Editor-in-Training*

February 2018 Issue Deadline: January 17, 2018

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

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Lisa Anderson, *Reston Branch President*

Committee Chairs

Please refer to the NCS website for a current list of NCS committees and chairs.

ASCE-NCS Proud to Announce Formation of Reston Branch

By Lisa M. Anderson, PE, LEED AP, M.ASCE, President, Reston Branch

The National Capital Section Board of Directors and Region 2 Board of Governors have recently approved the petition for establishment of the Reston Branch of the National Capital Section.

Lisa Anderson
President

Shainur Ahsan
Vice President

Ting Shi
Treasurer

Matthew Bechtel
Secretary

Manuel Rosario
At-Large Director

For the remainder of the 2017–2018 term, interim officers were appointed to serve on the Reston Branch Board of Directors. The interim officers are ASCE-NCS members that have continuously supported the Reston Committee during our establishment period. I would like to personally thank all who volunteered their support to make our meetings a great success.

Region 2 Governors, Khaled Alamdeen and Bill Brittle, and NCS President Brian Barna announced the approval of the Reston Branch and introduced the slate of interim officers at the November Reston Committee meeting (pictured below).

For the first full term of the Reston Branch, in accordance with our bylaws, we will have an open call for nominations and a subsequent election for the Board of Directors.

The Reston Branch was initiated with the goal of serving current and potential members that live or work within our Section's footprint but are unable, or find it otherwise difficult, to commute to Section Meetings. We hold monthly technical meetings, typically at lunchtime at ASCE Headquarters in Reston, VA, where attendees earn 1 PDH.

Feel free to contact any of our officers for more information about the Reston Branch and be on the lookout for our January meeting announcement. ■

Civil Engineering and You

Design Model Enables Dynamic Construction

By Ranjit S. Sahai, PE, F.ASCE

The concept of having the electronic design model automate the construction of the proposed design is not new. It's been used by the manufacturing industry for many decades under the moniker Computer Aided Manufacturing (CAM). The interface between the design model and machine is known as CNC, an acronym for Computer Numerical Control. It is the language of machine control commands that control the movement of a machine in lieu of it being controlled by wheels and levers operated by hand. A 3D CAD model is processed by a CAM module to generate CNC code specific to the machine that will manufacture the model. The 3D printing technology gaining traction in the consumer/maker market is also an implementation of this concept.

In the manufacturing industry, the CNC interface between model and machine controls construction. In the construction industry, it is the emergence of the sensory-spatial interface between model and human intellect that will enable dynamic construction scenarios that couldn't be facilitated by models before.

The term construction, as used in this article, refers to a process that requires a human aided by visual senses and hand tools to build. Refer to the link to an 80-second video clip for an example of such construction that was discussed in the September 2017 installment of this article series: https://vimeo.com/189961433.

What differentiates Computer Aided Manufacturing from Mixed Reality is the interface between the design model and its target. When the target is a machine, it needs control instructions to guide its movement. When the target are humans, they need sensory input which is processed by the brain to accommodate construction scenarios that are dynamic in nature, such as assembling furniture from manufactured parts.

In civil engineering, for the task of grading earth during the sitework phase of a construction project, it is not uncommon to see earth moving machines driven by digital terrain models produced by an engineer from survey data. What will take hold in the emerging revolution is the embrace of mixed reality that enables workflows driven by sensory-spatial interfaces between the design model and human intellect.

The day is fast approaching when assembly instructions that have been predominantly printed on paper (or PDF) will be supplemented by models on electronic storage media that when inserted in projection devices facilitate construction like car navigation systems facilitate driving.

The final installment next month of this "emerging revolution" article series will weave together information from previous installments with new material into an integrated summary. ■

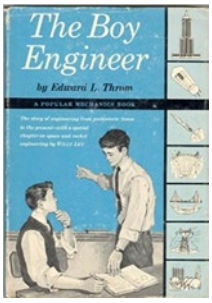
Editor's Note: This five-part article series was started in the September 2017 issue of this newsletter.

Life Members Forum: Reflections

Begun in 2017, NCS has published biographies and interviews to profile members within our civil engineering community. This initiative is organized and coordinated by our Life Members Forum (LMF) President, Mr Phillip Melville, PE, PhD, Fellow ASCE. NCS is excited to present reflections from Life Member, Mr Mike O'Connor, PE. Mr O'Connor graduated with an undergraduate degree in liberal arts, political science and economics with a minor in soviet studies. He had worked his way through college doing construction jobs during the summers. When Mike started his first year of college, tuition cost $1,100 a year and the minimum wage was $0.90 an hour. Mike quickly realized that he really had wanted to go into engineering and completed his graduate degree in civil engineering in 1975. He went onto earn his PE in 1978. Overall, Mike has five decades of engineering, construction and project management experience split equally between the public and private sectors. He managed his own engineering firm from 1979 to 1987 and in retirement started an engineering non-profit in 2015. Mike is the father of three children their thirties and is the proud grandfather of two beautiful grandchildren, Jack and Hannah. He has had a lifelong interest in engineering history and railroads in particular. One of his fond memories was operating a PCC streetcar in Philadelphia in the early 1970s on Germantown Avenue (Route 23), then one of the longest streetcar routes in North America. Mike is a member of both the California and Maryland Sections of ASCE.

Why did you choose to become a civil engineer and how prepared were you for the profession?

As a child I read books about engineering where I could though there were almost no books. I found many books on the history of science but almost none on engineering. There were a few out there such as a popular mechanics book entitled the *Boy Engineer*. Obviously, the profession was not recruiting a diverse membership at that time. My family had several engineers, electrical and, unbeknownst to me at that time, an uncle who was also a civil. My grandfather was a para-professional in the early 20th century, practicing in the emerging high-tech industry of "tool design." He worked in the early radio and television programs first at Philco Corporation and then at RCA. RCA was typical of the "boom and bust" in engineering programs whereas Philco was an old school Philadelphia firm. My grandfather changed over to RCA right before the stock market crash of 1929 and then got laid off early in the Depression. His old co-workers at Philco worked throughout the depths of Depression. My father was deeply affected by this loss and developed a negative opinion of engineering. His view was that one needed a stable occupation to raise a family on, so he discouraged me from going into the engineering profession. It didn't help that my math skills were weak coming out of high school, so all my counselors and parents encouraged me to look at something else like law. Then I found work in construction, masonry work specifically, and I loved it. I worked on one of the last high-rise masonry projects in Philadelphia. It was six stories high and all masonry construction. It was built like the pyramids with a ramp for moving materials up the building.



After I graduated from college, I started working with a public transit agency in their facilities department. I got the job offer largely on my practical experience in construction. I had managed large crews of laborers in masonry construction and that impressed the hiring manager. I started working with a graduate civil engineer and began to realize that although I thought I knew construction it wasn't nearly enough to actually do the job and build projects. This was when I went to grad school for civil engineering.

I feel my graduate education gave me a great preparation for practice. I went through all the structural coursework for steel, wood and what was then called "soil mechanics." I completed one structural design capstone class and two capstone classes in soils, one for dams and another for deep foundations.

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Life Members Forum: Reflections

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Although I felt that my technical training was excellent, my introduction to professional practice and the role of ASCE on furthering the profession was lacking. Unlike today, there was no younger member section within the ASCE membership. Younger members like me were discouraged from seeking post graduate membership in ASCE being told in short, "come back when you have more experience." As a result, I channeled my energy into other non-engineering organizations including Project Management Institute (PMI) and American Association of Cost Engineers (AACE). I didn't come back to ASCE until very late in my career. The result of this was that I was very unprepared to contribute to the profession and my ability to network was poor. I eventually developed the skills I needed; however, this was later in my career and unfortunately, only after I had missed many opportunities that were never offered again.

I realized that within fifteen years after graduation I had lost almost all the technical proficiency I had acquired in structures and soils. I had missed the shift from moment distribution methods over to matrix methods for indeterminate structures, working stress to ultimate strength, use of finite element methods, using FORTRAN to do CPM scheduling which at that time was a mainframe program, the list goes on.

I also found that several tasks that had required PEs, including designing concrete mixes or formwork and shoring design were no longer available. By the year 2000, I found myself at a point where virtually every skill I had learned in engineering was obsolete, from surveying, structures and construction. To adapt, I became more and more focused on program and project management as well as engineering support for construction procurement. I finished my career working in program management. The biggest challenge was to remain working in a professional capacity in the last ten years of my career, and several of my colleagues were unable to. In the end, I spent fifty years in one form or another in this industry and have always considered myself a "dirt kicking" civil engineer.

What do you reflect back on as major accomplishments or highlights of your professional life?

As human beings, we all need affirmations that our efforts have been for the good of society, our community, and our family. I am no different. However, I have had the good fortune to experience several moments in my career in which, looking back, I clearly hit the high notes, from marketing construction work where the competition couldn't touch my numbers on schedule or cost to managing my own business. But, I found my public service to be most satisfying. I was associated with a public transit in San Francisco that had a large ($3 billion) civil program. Several other US metro areas also had similar but usually smaller programs. We were one of the few that didn't send people (including some engineers) to jail for corruption. I played a part in that by my focus on business principles and engineering ethics. I also advocated for legislation that increased the authority our agency had to conduct business faster and simpler in terms of awarding construction contracts. We developed some innovative approaches to managing $500 million design-build contracts in a public works environment.

In my federal experience, I acted as program COTR for an $85 billion portfolio of public transit construction dealing with oversight requirements and complex problems in project delivery. I had the pleasure of developing major risk management processes and components for my agency and navigating the regulatory process for a project management rule update, the first in thirty years.

What advice do you give to younger members or students about a career in civil engineering?

Do not go into this field of work if you're not passionate about engineering. The money doesn't follow your bliss, the ups are intoxicating but the downs are brutal. You don't survive in this work unless you have that burn in your gut. My professional training and knowledge lasted me twenty to twenty-five years. Yours will be obsolete in a fraction of that time. I was unaware of any lifecycle concepts for managing my career. I wasn't prepared to manage through some of the biggest changes in the field including the slowdown in infrastructure in the '70s, stagflation in the '80s, downsizing in the '90s, and the accelerating pace of automation in recent decades.

You must use your professional association with ASCE to network, seek mentors and maintain your professional competencies. This was true for me and even more so for today's graduates. Be aware of the choices for civil engineering careers and varieties in practice: look at Brazil, India and China as examples. China by mid-century will possess an economy three to four times that of the US today. The focus of civil engineering will shift from the US, and that will affect you career. What will you do about that?

Any advice on retirement or if you're still working, any advice on continuing?

Retirement is a challenge. Many people assume they will work to a certain age, some say seventy or older. The truth is that, even with longer life spans, our ability to work at the same pace as we get older diminishes. Even as our mental acuities sharpen, our physical stamina drops. Worse, barring any miracle cures in the future, some 30–50% of you will be given a diagnosis that alters your whole life course. This forces you to look at yourself in a way that you've never done before. We all talk about achieving balance in life, but the dark secret is that as long as we work we have a license that allows us to avoid it. I had many "urgent" projects that required me to work long hours… even in the last few years before I retired I had several instances where I had to work over 24 hours to meet a deadline. I did that without any hesitation or attention to the personal consequences of that action. Retirement takes away that license and requires one to develop a sense of self that isn't identified by the work you do. Retirement forces you to find new ways to engage. From new intellectual challenges to new relationships, we must adapt.

Civil Engineering is a great retirement gig because you do the same thing you have always done, you just do it for other people for different reasons. You have the gift of time. Bill Gates, Jeff Bezos and I have one thing in common: we all wake in the morning and try to figure out what we want to do with the day. For Bill, Jeff and I, every day is our favorite day of the week. Mine is Wednesday. What's yours?

Best wishes to all. ■

New Specifications (2018) for Structural Engineering (SE) Exams, Part-1

We wish all our readers a happy and prosperous new year. This month we would like to talk about some significant changes that will take place in the SE exams in 2018. The National Council of Examiners for Engineering and Surveying (NCEES) will be using new specifications for the Structural Engineering (SE) exams next year. Effective beginning with the April 2018 examinations the NCEES Structural-I and Structural-II exams will be administered as a single 16-hour exam given in two days.

Unlike the computer-based Fundamentals of Engineering (FE) exam, the Structural Engineering (SE) exam is still administered in a pencil-and-paper format and is an open-book test.

The SE exam consists of two modules BREADTH and DEPTH and is offered in two 8-hour components on two successive days. It includes integrated design, analysis and detailing questions. No single component of the exam is a sufficient stand-alone exam for any purpose. We recommend our readers to see the NCEES website for exact specifications.

The 8-hour Vertical Forces (Gravity/Other) and Incidental Lateral component is offered only on a Friday. It focuses on gravity loads and lateral earth pressures. The 8-hour Lateral Forces (Wind/Earthquake) component is offered only on a Saturday and it focuses on wind and earthquake loads.

The 16-hour SE exam uses separate vertical and lateral components to test the applicant's ability to safely design buildings or bridges, especially in areas of high seismicity and high wind. It is important to remember that the exam uses the US Customary System (USCS) of units only.

The breadth modules are in the morning sessions. These modules contain questions covering a comprehensive range of structural engineering topics and all questions in the morning are multiple-choice. The depth modules are in the afternoon sessions. These modules focus on a single area of practice in structural engineering. The examinee will choose either buildings or bridges, but must work the same topic area on both components. All questions in the afternoon depth modules are essay-type problems, constructed response (essay).

The examinee is required to obtain acceptable results on both 8-hour components of the SE exam in a single exam administration. It is acceptable to sit for and obtain acceptable results on one component, and then sit for and obtain acceptable results on the second component at a later date. The examinee must obtain acceptable results on both 8-hour components within a five-year period in order to pass the Structural Engineering exam.

New Structural Engineering BREADTH Exam Specifications

The 4-hour Vertical Forces (Gravity/Other) and Incidental Lateral breadth examination is offered on Friday morning and focuses on gravity loads. It contains 40 multiple-choice questions. The exam uses the US Customary System (USCS) of units. The breadth exam is developed with questions that will require a variety of approaches and methodologies, including design, analysis, and application. The knowledge areas specified as examples of kinds of knowledge are not exclusive or exhaustive categories. Score results are combined with depth exam results for final score of this component.

Topics and approximate number of questions of BREADTH exams

Analysis of Structures

Design and Details of Structures

1 – Analysis of Structures part has a total of 13 multiple-choice questions and consists of two categories. The first category is Generation of Loads with total 5 questions. Topics include: dead loads, live loads, moving loads, impact loads, vessel collision, earth pressure, differential settlement, hydrostatic and hydrodynamic loads, flood, snow, rain, ice, thermal, shrinkage and load combinations.

2 – Load Distribution and Analysis Methods with a total of 8 questions. Topics include: static (e.g., determinate and indeterminate, location of forces and moments, free-body diagrams), shear and moment diagrams, code coefficients and tables, truss analysis methods, approximate beam or truss analysis methods and approximate frame analysis methods.

The Design and Details of Structures section has a total of 27 questions and includes the following five categories:

A-) General Structural Considerations, 3 questions
B-) Structural Systems Integration, 2 questions
C-) Structural Steel, 5 questions
D-) Cold-Formed Steel, 1 question
E-) Concrete, 5 questions
F-) Wood, 4 questions
G-) Masonry, 3 questions
H-) Foundations and Retaining Structures, 4 questions

For detailed topics in each category, our readers should consult with www.NCEES.org. But to give an idea about the topics covered in structural steel for example, the subject-list includes: tension members, columns and compression members, trusses, flexural members, plate girders, secondary support systems, shear in steel members, combined axial and flexural members, composite design, bolted and welded connections, base and bearing plates, thermal effects and bridge piers. You can find Dr Z's practice problems for this month here.

In our February article we will talk about the Design Standards and Structural Engineering DEPTH Exam Specifications.

And finally stay relaxed and confident. Always keep a good attitude, focus on the ultimate goal and remind yourself that you are going to do your best!

Until next time,
Ahmet Zeytinci, P.E.
az@akfen.com

ASCE-NCS Committee News and Updates

ASCE NATIONAL CAPITAL SECTION
YOUNGER MEMBER FORUM

Younger Member's Forum

By Haley Carpenter, EIT

The ASCE-NCS Younger Members Forum (YMF) holds monthly happy hours in Arlington, VA or Washington, D.C. Happy hours are typically held the first Wednesday of each month unless a holiday falls during that week.

The ASCE-NCS YMF held our November Happy Hour at World of Beer in Arlington, VA. Approximately 25 members attended the event. We closed out the year at Front Page in Ballston, VA for our annual holiday gathering with a "Toys for Tots" toy drive. The next upcoming monthly happy hour will take place in Adams Morgan, Washington, DC at The Mellow Mushroom on Wednesday, January 10th.

Stay Connected! Check out photos and stay up-to-date with YMF events by visiting the new YMF Facebook page: http://www.facebook.com/ASCENationalCapitalYMF. Also, follow us on Twitter (@asce_ncsYMF) at https://twitter.com/asce_ncsYMF.

Sustainability Committee

By Alex Rosenheim

Excerpts from ASCE Five-Year Roadmap to Sustainable Development (Part 1 in a series)

The Four Priorities for Change

- Priority 1: Sustainable Project Development (Do the Right Project)
- Priority 2: Standards and Protocols (Do the Project Right)
- Priority 3: Expand Technical Capacity (Professional Transformation)
- Priority 4: Communicate and Advocate (Collaborate with a Cohesive Voice)

ASCE has long considered sustainability a critical strategic issue confronting practicing civil engineers. Its integration into professional practice is required to address changing environmental, social, and economic conditions ethically and responsibly. Although challenging issues such as climate change, urbanization, and the rapid pace of technological advancement create opportunities, they also require serious re-evaluation of current professional practice and standards. To address this state of affairs, ASCE created the Committee on Sustainability (COS), one of three Strategic Initiative Committees that report directly to the Board of Direction.

As such, the Committee is charged with two tasks on behalf of the Board: (1) Together with the Committee on America's Infrastructure, the COS directs, oversees, and coordinates ASCE's implementation of the Sustainable Infrastructure Strategic Initiative. Since its founding in 2009, the COS has focused on transforming the civil engineering profession to embrace the principles of sustainable development. (2) The COS oversees ASCE's involvement with the Institute for Sustainable Infrastructure (ISI). The COS provided critical support to ISI in developing the Envision rating system. Given the evolving relationship between ISI and ASCE at the onset of Envision implementation, the COS will continue to support Envision as one of the tools of choice for implementing sustainable development.

At its July 2016 meeting, the Board of Direction approved the strategy, strategic issue, desired outcomes, key priorities, and guiding principles presented in the COS's 2016 Annual Report. These statements represent progress toward development of a roadmap for ASCE to transform the profession and form the basis for the ASCE Five-Year Roadmap to Sustainable Development.

This Roadmap takes a two-pronged, "bottom-up/top-down" approach comprising (1) four strategic priorities and (2) key requests for Board action. The four strategic priorities refine and realign the previously approved priorities for better definition, management, and measurement during implementation. Providing bottom-up support and leadership, the COS will oversee the more detailed Priority Committees' Charges and Plans, presented in Appendix A, on behalf of the Board to ensure consistency in implementing the principles of sustainable development society wide. The key requests for Board action, providing the top-down vision and leadership, aim to align ASCE and its associated entities (including divisions, sections, branches, institutes, and committees) with the vision of sustainability.

Additional appendices include Appendix B. The Case for Sustainability, which presents and justifies the urgency for the transformation noted; Appendix C. The COS Call to Action, including the COS Statement of Urgency, Purpose Statement, and Goals, approved March 2015, which provides supporting documentation and background for the strategic approach taken in developing this Roadmap; and Appendix D. ASCE Sustainability Summit, January 2016, which summarizes the significant input that informed the development of the four priorities for change.

Over the coming months the priorities for change listed above, the COS goals, guidelines and ASCE's Case for Sustainability will be explored in more detail in the ASCE National Capitol Section Newsletters. For more information contact Alex Rosenheim, Chairman NCS-ASCE Sustainability Committee at tcc-sus@asce-ncs.org or for more information on the ASCE Committee on Sustainability, please visit: http://www.asce.org/sustainability/

Education Committee: K-12 Update

By Vic Crawford

The National Capital Section will be out recruiting for future Civil Engineers at two major Science, Technology, Engineering, and Math (STEM) Events this year. We expect to talk about what we do and the benefits from becoming a Civil Engineer to several thousand students, parents, and teachers. However, our success in promoting our Profession requires your help, so please sign up on the volunteer sheets for these events when they come out.

In addition to these major events, we are developing a roster of STEM volunteers. The Section receives more requests for representing our profession at K-12 (Elementary to High School) events than we can support due to the short lead time for the event. Therefore, this roster will be used to quickly assign a STEM Volunteer to represent our profession by sharing their experiences and benefits as a civil engineer at STEM events held at various K-12 schools across the DC Area. So, if you are interested in influencing the next generation, while having a lot of funny working with students excited about science and engineering,

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please contact victor.crawford51@gmail.com to add your name to the roster.

You will be supported in this outreach with several tools to support your volunteering, such as Handouts provided by ASCE and a video that shows how recent civil engineering graduates are making the world better. In addition, you will be providing copies of our excellent and award-winning Book, Engineering the Nation's Capital to the STEM program at the school where you volunteer or make a presentation during a STEM event.

As discussed in pervious Newsletter, the National Capital Section continues to support the American Association for the Advancement of Science (AAAS) program for STEM, which has been bring engineers and scientists into classrooms for over eleven years (http://www.aaas.org/senior-scientists-and-engineers/programs-dc). This program works particularly well for retires, that can devote one day a week to volunteering. Understanding the needs of the educators, we are focusing on the elementary schools where your expertise in civil engineering would be very welcome by teachers introducing science concepts to young students.

Therefore, please consider becoming an AAAS volunteer in supporting STEM in the school districts in the DC metro area, including surrounding counties in both Virginia and Maryland. If you are interested in giving back to the profession while sharing the joy of engineering to eager young minds, please contact Victor I Crawford at victor.crawford51@gmail.com.

Education Committee: Collegiate Update

By Jameelah M Ingram, PE, M.ASCE, Chair, Education Committee

The season of giving is upon us! In November, ASCE-NCS announced the call for nominations for the 2018 ASCE-NCS Scholarship Application to all ASCE-NCS Student Chapter Faculty Advisors and Civil Engineering Department Chairs. College students should consider reaching out to the Faculty Advisor at their university for application packages and eligibility requirements. The deadline is February 2, 2018.

Also in November, the Vice President of the University of the District of Columbia (UDC) ASCE Student Chapter, Mohammed Fallatah, attended the ASCE-NCS Board Meeting. He presented the chapter's plans for the 2017–2018 school year. Updates prepared by President Stacey Lockerman are included in this update as well. The UDC ASCE Student Chapter plans to compete in the Steel Bridge, Hardy Cross, and Marr competitions at the Virginias' Section Regional Conference. They are developing a mentor/mentee program, to pair seniors with juniors, sophomores, and freshmen. UDC ASCE also plans to hold TechTalks, where outgoing seniors hold weekly seminars to share information and teach software programs to younger students. This year, they look forward to empowering self-development for their members, as well as expanding the chapter's presence on campus. Off campus, UDC ASCE members plan to volunteer at elementary and middle schools to cultivate student interest in STEM fields.

Editor's Note: Congratulations to Jameelah on having an article featured in the November 2017 edition of Civil Engineering Magazine. *Read it online with your ASCE subscription credentials by pasting the following link into your browser:* http://www.civilengineering-digital.com/civilengineering/november_2017/MobilePagedReplica.action?pm=2&folio=18#pg20

Construction Committee

By Kunqi Zhang, PE, Vice Chair of ASCE-NCS Construction Committee

Construction Committee Meeting Minutes. The Construction Committee met at Starbucks Coffee, 1501 17th St N, Arlington, VA on Sunday, November 12th, 2017 to discuss plans of activities in December and the coming year. Ryan Witters, Kunqi Zhang, Alex Wang, and Ivan Carrasco attended the meeting.

The attendees elected Ivan as the Vice Chair for Outreach. Kunqi will be responsible for communication and Alex will assume the role treasurer.

The committee discussed co-hosting a happy hour with the YMF on Wednesday, January 10th, 2018 and hosting four professional development workshops next year with the earliest event taking place at the end of January 2018. Stay tuned for more updates on the exact time/date. Topics will likely include new technologies, construction litigation, and public-private partnerships. The meeting assigned responsibilities with regards to these events. The committee has just been approved as the National Capital Section of the ASCE Construction Institute. The next meeting will be on January 14th, 2018.

Upcoming Events. The next happy hour – co-hosted by the Construction Committee – will be on Wednesday, January 10th, 2018 and the next professional development workshop will be at the end of January 2018. Details of these events will be sent out later in the Google Group, the link to which is provided below.

Call for Committee Members. Please reach out to Ryan (rwitters@litcon-group.com) for information regarding the Construction Committee and how to join. Also, please join the committee mailing list at this link https://groups.google.com/forum/#!forum/asce-ncs-cc to stay up to date on events, job openings, and construction news, etc. The committee is seeking individuals interested in joining the leadership team. Prospective individuals should be able to regularly attend meetings in person or by phone and should be comfortable sharing ideas in group settings. ■

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 and visit our jobs page.

Upcoming Events *(Also available on the NCS website under the Events tab.)*

January 10
YMF Happy Hour, 6:00–8:00 pm, Mellow Mushroom, Washington DC. Celebrate our monthly happy hour and network with fellow engineers. Look for an email announcement with more details.

January 14
Construction Committee Meeting. Sign up for membership in the Construction Committee mailing list here to receive updates on upcoming meetings.

January 16
Section Meeting. 6:30–8:30 pm, Hilton Arlington. The Dinner will feature Architect Christopher Lethbridge discussing the Arts and Industries Building renovation.

January 23
Sustainability Committee Meeting and Trivia Night. 6:30–7:30 pm, Rhodeside Grill, Arlington, VA. Join the Sustainability Committee to plan for Spring/Fall 2018, including the Sustainable Project of the Year. We'll join District Trivia for their regular trivia night at Rhodeside Grill immediately following the meeting.

February 9–10
Regions 1, 2, 4 and 5 Multi-Region Leadership Conference in Buffalo, NY. The conference includes Workshop for Section and Branch Leaders (WSBL), the Eastern Region Younger Member Council (ERYMC) and the Workshop for Student Chapter Leaders (WSCL). More information will be available in October.

DC United Stadium November Section Meeting Recap and Construction Site Tour

By Kunqi Zhang, PE, Vice Chair of the ASCE-NCS Construction Committee

On Tuesday, November 14th, Tom Sawyer, Sr. Project Manager of Turner Construction and other representatives from Turner presented the new home of DC United, Audi Field to approximately 85 attendees. DC United Stadium, which will be formally named Audi Field, is located on a 13-acre former industrial site in the Buzzard Point neighborhood of Southwest DC. Slated to complete in mid-July 2018, the four-story, 19,000-seat facility will be the home stadium of D.C. United, a Major League Soccer team. The roughly $200 million project – with a goal of LEED Gold certification – features main canopies over the seating bowl on the east and west sides, a plaza in the northeast, street-level retail, and a bike valet. The venue is also ideal for football, lacrosse, concerts, and other entertainment and community events. The superstructure is comprised of 6,000 tons of steel framing and 600 pieces of precast concrete stadia. The foundation consists of 300 auger cast piles and 4,200 cubic yards of grade beams reinforced with 1,000 tons of steel.

Following-up on the November Section Meeting, on Saturday, December 2nd, thirty-six people participated in a tour of DC United's stadium construction site tour, sponsored by the ASCE-NCS Construction Committee. The group of professionals and students were given access to various locations around the site and learned of the many challenges encountered during construction. We are grateful for Turner Construction, the general contractor, and DC United, the Owner, for hosting the group.

Tom Sawyer began the tour with a brief recap presentation, highlighting the project's use of 36"– 48" auger cast piles to accommodate an existing Pepco easement and highlighting the tracking of steel erection. The attendees were divided into three groups. Tom Sawyer, Jessica Marine, Project Engineer, and Max Novick, Assistant Engineer, each led a group around the project site. They explained the fail-safe mechanism of the steel framing and the runoff water treatment pit in the field. Max Novick, Assistant Engineer, was a big help before and during the tour. At the conclusion of the tour, Ryan Witters, Chair of the Construction Committee, handed out PDH certificates to each participant.

"The tour was a success. We should do more like this in the future," said Brian Barna, President of ASCE-NCS, who helped set up the tour, "people are really excited."

The Construction Committee will host its next professional development workshop on February 1st, 2018. Event details will be sent out in January 2018. Please join our mailing list at https://groups.google.com/forum/#!forum/asce-ncs-cca and stay tuned. ■