

### Spy on Spy

#### The Building Enclosure Secrets of the International Spy Museum Revealed

The new International Spy Museum at L'Enfant Plaza is an architectural masterpiece, and like the secrets in the artifacts contained within, the building has many of its own secrets. The building façade plays on the hidden in the shadows and viewed in plain sight aspect of the trade and craft. And part of that is truly hidden, in the air tightness and waterproofing system that keeps the elements out, but was also needed for backlighting of the metal façade. HVAC interaction in the Atrium space with the complex glazed atrium façade also introduced challenges that the speakers will cover. Come hear from Erin McNamara of



some of the hidden secrets of the building enclosure at Spy.

Paul E. Totten is a Vice President at WSP and leads the Building Enclosures Division. He has over 23 years of experience in the fields of structural engineering, building enclosure design and commissioning, and building science. He has concentrated his expertise on the evaluation and analysis of heat, air, and moisture



transfer, and the cumulative effect these elements have on building components and building operation. He is a member of NIBS, ASHRAE and the USGBC EA TAG.



Erin McNamara is an Associate with Hickok Cole, which she joined in 2006. Erin served in the role of lead Project Architect for exterior systems as part of the

Architect of Record team for the new International Spy Museum. She has extensive experience with design and detailing of interiors and exteriors, and

Please join us on **Tuesday, February 18** 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 6:45pm, 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 [Kerry Cronin](mailto:Kerry.Cronin@hilton.com). Please [click here](http://www.asce-ncs.org) to register by **Wednesday, February 12**.

*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.*

a variety of building types. Her expertise includes work on other notable projects including NPR Headquarters, and several office and multifamily residential buildings in both DC and VA. ■

## ASCE NCS Call for Project of the Year Nominations

During the ASCE NCS Annual Banquet held annually in March, the NCS will be awarding our Project of the Year winner.

This award recognizes a civil engineering project within the National Capital region that demonstrates the greatest civil engineering skills and represents the greatest contribution to civil engineering progress. The project must have

been substantially completed within the preceding three years. The Awards and Nominations Committee considers the contribution to the well-being of individuals, the resourcefulness in planning, the solution of design problems, the pioneering use of materials and methods, innovations in construction, impact on the physical environment, unusual aspects, and aesthetic values.

If you have a project, or know of a project that you think should be nominated, please let us know; we love to highlight local engineers and their projects and would love to hear from you. Please contact ASCE NCS Vice President, Michael D. Venezia, P.E. ([MVenezia@ecslimited.com](mailto:MVenezia@ecslimited.com)) for additional information and for a copy of the Nomination Form. ■

## President's Corner

This is personally my least favorite time of year. It is still cold outside and as a mother of two young children, everyone in my house is getting stir-crazy. This is also the time of the year where I do not have any federal holidays off at work. I have time off over the holidays but my next day off is Memorial Day. What helps me get through this time of year is by giving myself small achievable tasks and by planning day trips/events with my family.

Use this time of year to work on things that you have been putting off. It feels good when you know you have accomplished something, no matter what size. Update your resume, look up conferences to attend, take a seminar or class to learn something new, read a book, fix that light bulb that has been out for weeks!

I also like to plan day trips with my family or meet-ups with friends. These activities give me something to look forward to as cold winter days drag on. We are fortunate that there are so many things to see and do in our area: museums (Smithsonian is in



our back-yard!), wineries/breweries, Mount Vernon, ice skating, theater, great restaurants, Building Museum (it was designed by Montgomery Meigs – a fellow civil engineer!), etc.

ASCE-NCS has activities that can help you! Our section meeting in February is on the new Spy Museum. Come learn about the design and construction of the new museum – while getting continuing education credit and catching up with fellow NCS members – and then plan a trip to the museum with friends and/or family – where you can share the new information you learned!

In February we will also be conducting another Order of the Engineer Ceremony before the section meeting. The Order of the Engineer is an opportunity to pledge to uphold the duties of an engineer to work ethically and build a better society. If this is something you have thought about doing, now is your chance!

Did you know that when you renew your ASCE membership you get ten one-hour free webinars? You can sit

on your couch in your PJs and get continuing education credit. A perfect way to spend an hour on a cold day!

In addition, our various committees, forums, and branches have events that will give you something to look forward to and enjoy! Looking ahead, we have many events planned including our annual March Awards Banquet (we are currently accepting nominations for Project of The Year), monthly Younger Member happy hours, a family boat cruise, summer baseball game, the OPAL awards, the USA Science and Engineering Festival, committee meetings, and more.

Please feel free to reach out to me at [president@asce-ncs.org](mailto:president@asce-ncs.org) to learn more about upcoming events. I am always happy to listen to ideas or feedback you may have. I look forward to seeing you!

Sincerely,



Kelly Cronin, PE  
ASCE NCS President

## Newsletter

**Maria Raggousis**, Editor

**March 2020 Issue Deadline:** February 15, 2020

**To Submit Articles:** [newsletter@asce-ncs.org](mailto:newsletter@asce-ncs.org)

**NCS eNewsletter Archives:** go to [www.asce-ncs.org](http://www.asce-ncs.org) and view along the sidebar.

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

## National Capital Section

### Officers (2019–2020)

**Kelly Cronin**, President  
**Mike Venezia**, Vice President  
**Vic Crawford**, Treasurer  
**Jameelah Ingram**, Secretary  
**Emily Dean**, Past President  
**Brian Barna**, Previous Past President  
**Maria Raggousis**, Newsletter Editor  
**Joe Whartenby**, YMF President

**Norine Walker**, Director  
**Elizabeth Wheeler**, Director  
**Lisa Anderson**, Director  
**Tricia Wolfbauer**, Director  
**Shainur Ahsan**, Reston Branch President

### Committee Chairs

Please refer to the [NCS website](http://www.asce-ncs.org) for a current list of NCS committees and chairs.

## Region 2 Director's Report

**Help Students Transition to Associate Membership & Add a Visit to ASCE Landmarks in your Travels!**

Happy Holidays to everyone in Region 2! Our region includes over 11,000 members from Pennsylvania, Maryland, Delaware, Washington, D.C. and north-eastern Virginia. We have 11 Sections and Branches as well as 27 Student Chapters who add hundreds of student members to our ranks.

I am excited to start my 3-year term as Region 2 Director and you should know that I will work hard to help you matter more and enable you to make a bigger difference. I would like to hear from you. Feel free to contact me anytime. I look forward to seeing you at ASCE events.

- MRLC in Philadelphia, PA, Jan. 31–Feb. 1, 2020,
- National Engineers Week, Feb. 16–22, 2020
- ASCE National Convention in Anaheim, CA, Oct. 28–31, 2020
- And your Section and Branch meetings

While I make my commitments to you, I ask for your support and your investment of time in ASCE.

- **Help students transition from student membership to associate membership** after their graduation. Stay in touch with students while they transition to regular employment and assist in their applying for ASCE membership. Also talk with new civil engineers at your workplace about the benefits of ASCE. <https://www.asce.org/join/>

- **Visit an ASCE designed historic site.** These sites illustrate the creativity and innovative spirit of civil engineers. Visit <https://www.asce.org/landmarks> to find sites near you. Share photos of your travels with me and I will post in Region 2 correspondence and on our Region's social media pages.

Over this past year, ASCE has added to its member benefits. These are tangible items with real cost values that enhance membership. <https://www.asce.org/member-benefits/>

- 10 Fee PDH's
- Conference, Webinar and Publication discounts



Jack Raudenbush at City Hall, Philadelphia, PA: a National Historic Civil Engineering Landmark

- Podcasts – ASCE Plot Points – <https://news.asce.org/category/asce-plot-points-podcast/>
- Mentor Match and Career by Design – especially for Students and Younger Members

Jack A. Raudenbush, P.E., F.ASCE  
Director, Region 2  
[jraudenbush@navarrowright.com](mailto:jraudenbush@navarrowright.com)  
717.944.0883

### ASCE-NCS Newsletter Patrons



## Delco's 2020 Engineer of the Year

### Carol Martsof

The Delco Chapter of the Pennsylvania Society of Professional Engineers (PSPE) is pleased to announce Carol Martsof as the 2020 Engineer of the Year. The award is given each year to a candidate who resides or is employed in Delaware County or Southern Chester County, and is evaluated against a rigorous criteria including professional achievement and contributions to community.



International Association for Continuing Education and Training (IACET).

A graduate of Temple University, and a licensed Professional engineer (PA) with 26 years of experience, Martsof found a passion for helping others, and switched gears into Training and Development midway in her career. Her enthusiasm and passion for engineering is exemplified through her work, and her involvement both within her community and in the engineering world.

Since 2013, Martsof has been the Director of Urban Engineers' Training Institute – the national, corporate-wide training function of Urban Engineers, including programs for clients. Martsof has developed over 150 technical courses for PDHs for engineers and has issued over 15,000 PDH credits to students. She currently chairs The Council on Standards Development for the

As Region 2 Governor of the American Society of Civil Engineers (ASCE), she also serves to provide ASCE with leadership in all matters of diversity and inclusion within the civil engineering community.

A long-time resident of Lansdowne, and Chairing the Lansdowne Environmental Advisory Council, she advises

the Borough on ways to conserve resources, and strive for a 100% renewable energy future. The Council has been a great way to combine her interest in the environment and nature, and give back to the community.

When not busy with her work, and serving on countless committees, Martsof enjoys exercising, is a four-time marathon runner, and enjoys renovating her home in Lansdowne with her daughter Catherine.

Martsof will be recognized during the nation's celebration of Engineers Week at a banquet on Feb 20, 2020 at the Concordville Inn, (780 Baltimore Pike, Glen Mills, Pa).

For Reservations contact Mike Ciocco at 610-532-2884, [mjcengr@verizon.net](mailto:mjcengr@verizon.net), or register online at <https://www.delcopspe.org/> ■

## Call for Nominations! Sustainable Project of the Year

Criteria for ASCE-NCS's 2020 Innovation in Sustainable Engineering Award.

### Rules

I. The award is known as the "ASCE-NCS Innovation in Sustainable Engineering Award".

II. The award may be made annually to a civil engineering project in recognition of creativity in the form of innovative sustainability. The project must be located within the geographic regions covered by the National Capital Section

of ASCE. Projects may be any that demonstrate innovation in sustainability. Innovation means new approaches, new technique and results. The lessons of this project must promise broad application to future projects.

III. To be eligible for consideration, projects must, first and foremost, demonstrate adherence to the principles of economic, social and environmental sustainability. Projects developed or implemented in the six-year period preceding the year of award and

not a candidate for the ASCE-NCS Outstanding Civil Engineering Project of the Year are eligible.

IV. The criteria used to evaluate projects are:

- a) the extent to which innovative design or construction methods improve economic, social and environmental sustainability;
- b) the promise shown by the innovation to extend future developments in sustainability which may be evidenced in part by Envision rating

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## Are You Ready for the New Computer Based Fundamentals of Engineering (FE) Exam?

Finally, the National Council of Examiners for Engineering and Surveying (NCEES) made the important announcement regarding the new Fundamentals of Engineering Civil-Computer Based exam specifications. For our new readers, before discussing

the new changes, we would like to start with a brief overview of the FE exam.

The FE exam is a computer-based test (CBT). It is closed-book with an electronic reference (FE Ref. Handbook, v.9.5). Examinees have 6 hours to

complete the exam, which contains 110 questions. The 6-hour time also includes a tutorial and an optional scheduled break. The FE exam uses both the International System of Units (SI) and the U.S. Customary System (USCS).

### New Exam Specifications: Modified Knowledge Areas and Number of Questions

(Published by NCEES [here](#))

#### I. Mathematics and Statistics (Number of Questions: 8–12)

- A. Analytic geometry
- B. Single-variable calculus
- C. Vector operations
- D. Statistics (e.g., distributions, mean, mode, standard deviation, confidence interval, regression and curve fitting)

#### II. Ethics and Professional Practice (4–6)

- A. Codes of ethics (professional and technical societies)
- B. Professional liability
- C. Licensure
- D. Contracts and contract law

#### III. Engineering Economics (5–8)

- A. Time value of money (e.g., equivalence, present worth, equivalent annual worth, future worth, rate of return)
- B. Cost (e.g., fixed, variable, direct and indirect labor, incremental, average, sunk)
- C. Analyses (e.g., break-even, benefit-cost, life cycle, sustainability, renewable energy)
- D. Uncertainty (e.g., expected value and risk)

#### IV. Statics (8–12)

- A. Resultants of force systems
- B. Equivalent force systems
- C. Equilibrium of rigid bodies
- D. Frames and trusses
- E. Centroid of area
- F. Area moments of inertia
- G. Static friction

#### V. Dynamics (4–6)

- A. Kinematics (e.g., particles, rigid bodies)
- B. Mass moments of inertia
- C. Force acceleration (e.g., particles, rigid bodies)
- D. Work, energy, and power (e.g., particles, rigid bodies)

#### VI. Mechanics of Materials (7–11)

- A. Shear and moment diagrams
- B. Stresses and strains (e.g., diagrams, axial, torsion, bending, shear, thermal)
- C. Deformations (e.g., axial, torsion, bending, thermal)
- D. Combined stresses, principal stresses, and Mohr's circle

#### VII. Materials (5–8)

- A. Mix design of concrete and asphalt
- B. Test methods and specifications of metals, concrete, aggregates, asphalt, and wood
- C. Physical and mechanical properties of metals, concrete, aggregates, asphalt, and wood

#### VIII. Fluid Mechanics (6–9)

- A. Flow measurement
- B. Fluid properties
- C. Fluid statics
- D. Energy, impulse, and momentum of fluids

#### IX. Surveying (6–9)

- A. Angles, distances, and trigonometry
- B. Area computations
- C. Earthwork and volume computations
- D. Coordinate systems (e.g., state plane, latitude/longitude)
- E. Leveling (e.g., differential, elevations, percent grades)

#### X. Water Resources and Environmental Engineering (10–15)

- A. Basic hydrology (e.g., infiltration, rainfall, runoff, watersheds)
- B. Basic hydraulics (e.g., Manning equation, Bernoulli theorem, open-channel flow)
- C. Pumps
- D. Water distribution systems
- E. Flood control (e.g., dams, routing, spillways)
- F. Stormwater (e.g., detention, routing, quality)
- G. Collection systems (e.g., wastewater, stormwater)
- H. Groundwater (e.g., flow, wells, drawdown)
- I. Water quality (e.g., ground and surface, basic water chemistry)
- J. Testing and standards (e.g., water, wastewater, air, noise)
- K. Water and wastewater treatment (e.g., biological processes, softening, drinking water treatment)

#### XI. Structural Engineering (10–15)

- A. Analysis of statically determinate beams, columns, trusses, and frames
- B. Deflection of statically determinate beams, trusses, and frames
- C. Column analysis (e.g., buckling, boundary conditions)
- D. Structural determinacy and stability analysis of beams, trusses, and frames

- E. Elementary statically indeterminate structures. Loads, load combinations, and load paths (e.g., dead, live, lateral, influence lines and moving loads, tributary areas)
- F. Design of steel components (e.g., codes and design philosophies, beams, columns, tension members, connections)
- G. Design of reinforced concrete components (e.g., codes and design philosophies, beams, columns)

#### XII. Geotechnical Engineering (10–15)

- A. Index properties and soil classifications
- B. Phase relations
- C. Laboratory and field tests
- D. Effective stress
- E. Stability of retaining structures (e.g., active/passive/at-rest pressure)
- F. Shear strength
- G. Bearing capacity
- H. Foundation types (e.g., spread footings, deep foundations, wall footings, mats)
- I. Consolidation and differential settlement
- J. Slope stability (e.g., fills, embankments, cuts, dams)
- K. Soil stabilization (e.g., chemical additives, geosynthetics)

#### XIII. Transportation Engineering (9–14)

- A. Geometric design (e.g., streets, highways, intersections)
- B. Pavement system design (e.g., thickness, subgrade, drainage, rehabilitation)
- C. Traffic capacity and flow theory
- D. Traffic control devices
- E. Transportation planning (e.g., travel forecast modeling, safety, trip generation)

#### XIV. Construction Engineering (8–12)

- A. Project administration (e.g., documents, management, procurement, project delivery methods)
- B. Construction operations and methods (e.g., safety, equipment, productivity analysis, temporary erosion control)
- C. Project controls (e.g., earned value, scheduling, allocation of resources, activity relationships)
- D. Construction estimating
- E. Interpretation of engineering drawings

As we always remind our readers, FE and PE are very fast-paced exams and you will have little time to look up information. Therefore, make sure you are familiar with your reference material and begin with the subject areas you know best. This will give you more time and build your confidence. Also,

it is always a good idea to consider reverse engineering the problems by substituting the answers and seeing which one works. And finally, stay relaxed and confident. Always keep a good attitude and remind yourself that you are going to do your best!

Until next time,  
Ahmet Zeytinci, (Dr. Z.)  
[az@akfen.com](mailto:az@akfen.com)



## The Future of Professional Engineer Seals: The Conclusion

By Ranjit S. Sahai, PE, F.ASCE

Why, when you can scan a signed paper document to a PDF, would you consider implementing digital signatures? Consider the following scenario.

### The under-utilized contract

Wes Brown watched the brand-new Mercedes pull away from the ceiling-high windows of his corner office. He breathed in slowly with a twinge of envy as he thought of his ten-year old car parked in the spot reserved for the Chief of Public Works. Jim Beach, owner of the up-and-coming firm JB Geotech and Surveys (JBGS), had just left Wes' office upon reviewing the report of recommendations prepared by his office for the sprawling complex of buildings the city was planning.

The city's chief engineer Bob, a competent and independent thinker who reserved his compliments for only the deserving, had been invited to the review meeting by Wes. "That's a brilliant concept Jim. It's sure to save the city nearly 30% from its original cost estimate for the project," Bob had said of Jim's report.

Jim and his team had worked tirelessly on the assignment these last few months. The soil borings had revealed the soil to be clay, known to sink or swell with enough force to move foundations. However, the borings had revealed the presence of minerals that, according to an article in a foreign engineering journal, could be treated to prevent foundation movements. JBGS had imported the chemical and run tests in collaboration with the local engineering college. The tests had proved true to the vendor's claim. This had been a key to Bob's esteem for recommendations in the JBGS report.

Jim was optimistic about winning other tasks under their two-year contract due to the value Bob recognized in their work. However, no new task proposals had been solicited by the city, though work on the sprawling complex was moving forward.

Then one afternoon, Jim's secretary rushed into his office. "There is sheriff's deputy in the reception area.

He doesn't have an appointment but wants to see you right away," she said nervously.

"Did he say what it's about?"

"It's about the contract with the city. The procurement office found irregularities related to our task proposals."



"Alright, show him in," said Jim, puzzled.

He heard the clicking sound of her heels slowly diminish and then rise again as she escorted the deputy to his office. Jim nodded in acknowledgement when her gaze met his as she left.

"Please take a seat," said Jim as he greeted the deputy with a relaxed smile. "What can I do for you?"

"Do you recognize the signature on these?" asked the deputy as he handed Jim six task proposals.

"Why yes, it's my signature," said Jim as he thumbed through them. "But we never prepared these sub-par proposals," Jim continued.

"We thought so. Will you be willing to testify, should we need to call you as a witness at Mr. Brown's trial?"

"Why, what happened?"

"Sorry," said the deputy. "I can't answer questions on an active case. I don't want to take up any more of your time," he said graciously as he placed the proposals back into his briefcase and rose to go.

### The news

A month went by, and Jim saw a story in the local newspaper about a scandal at the city's public works department. No wonder he had not heard back from the deputy. No testimony had been needed. Wes had accepted a plea deal for a shortened jail sentence and debarment of employment from public office. The mystery of his signature on the unwritten proposals had become clear.

Wes had secured a partnership stake in a firm with the promise of awarding lucrative tasks. The firm had been second of two firms awarded the same IDIQ contract as Jim, making them eligible to bid on task proposals.

Because the city's procurement regulations required each of the two IDIQ awarded firms to submit a proposal for each task, Wes had created fictitious proposals and copied the image of Jim's signature from his first proposal. This had allowed Wes to send two proposals to the procurement office – the fraudulent inferior one, ostensibly from JBGS, and the other from the firm he had tied up with. His recommendations to award tasks to the second firm had been accepted by the procurement office due to the inferior fraudulent proposals, uncharacteristic of those expected from JBGS.

The use of digital signatures, thought Jim, would have set a significantly greater barrier against such fraud because digitally signed documents are tamper-evident. He moved quickly to implement digital signature technology for use on all future proposals and contracts.

### About the Author

Ranjit, a Past President (2013–14) of ASCE-NCS, is a principal and founder of RAM Corporation, a firm serving State DOTs with a focus on traffic engineering design, stormwater facility inspections, and IT solutions for engineering workflows. He is also an [author](#) and speaker.



# ASCE-NCS Committee and Branch News and Updates

## Education

### Committee – Collegiate

By Jameelah M. Ingram, PE, M. ASCE

#### The Second Month of the Year

The month of February marks the annual observance of African-American History Month in the United States and hosts Engineers Week from February 16th to the 22nd. The month is an opportunity to celebrate contributions made possible by engineering and to spread a good word about the profession. Here are some ways to get involved:

**1) ASCE Mentor Match** – ASCE offers a career resource for members called ASCE Mentor Match. Through this program, mentees can request a mentor as they embark on their career journey. Mentors can volunteer to share the knowledge they have learned along the way. To sign up and for additional information, please visit: <https://collaborate.asce.org/mentoring/home>

#### 2) Student Chapter Involvement

Are you interested in becoming more involved with one of ASCE NCS's Student Chapters? If so, please consider becoming a Practitioner Advisor for one of the schools under ASCE NCS's purview. This includes: Catholic University of America, George Washington University, George Mason University, Howard University, and the University of the District of Columbia. The role of a Practitioner Advisor is to offer support and guidance to the student chapter as they plan activities and prepare for competitions throughout the school year. Please contact [jameelah.muhammad@wsp.com](mailto:jameelah.muhammad@wsp.com) to express your interest.

**3) Engineering Websites** – ASCE partners with DiscoverE (formerly the National Engineers Week Foundation) during Engineers Week. The DiscoverE website is a great resource with useful materials for school visits: <http://discovere.org/our-programs/engineers-week>. ASCE also has a webpage featuring contributions of African-American Civil Engineers throughout history: <https://www.asce.org/black-history-month/>

#### 2020 ASCE NCS Scholarship Applications Due February 7, 2020

In Winter 2019, ASCE-NCS announced a call for nominations for the 2020 ASCE-NCS Scholarship Application to Faculty Advisors and Civil Engineering

Department Chairs. Students should consider reaching out to the Faculty Advisor at their college or university for the application package and eligibility requirements. Applications are due on February 7, 2020. Scholarships will be awarded at the ASCE NCS Annual Banquet in March 2020.

#### Breaking News – Howard University students win 1st, 2nd, and 3rd place EPA scholarships for Environmental Engineering 2020!

Please join me in congratulating Emilda Gwerengwe, Jhanelle Davy and Kamau Sykes for winning EPA Scholarships based on their knowledge, concern and vision for global environmental health!

- 1st Place Environmental Engineering, Emilda Gwerengwe
- 2nd Place Environmental Engineering, Jhanelle Davy
- 3rd Place Environmental Engineering, Kamau Sykes

#### ASCE-NCS Reston Branch

By Christopher J. Friend, P.E., Reston Branch Vice President

On January 27th, the Reston Branch will host Shana Carroll, P.E. (Associate at DW Kozera) and Valerie Merida, P.E. (Vice President of Engineering for GeoStructures) for a lunch technical presentation. DW Kozera is a geotechnical firm specializing in solving geotechnical, geostructural, and environmental challenges for clients throughout the mid-Atlantic United States. GeoStructures is a design/build contractor which provides engineered earth structures and ground improvement technologies.

Shana and Valerie will present on the design and interaction of Geopier Ramped Aggregate Pier (RAP) & Rigid Inclusion systems with shallow spread footing and slab on grades. These systems are ground improvement technologies that can be used to increase bearing capacity and control settlement of buildings, tanks, retaining walls, and embankments to close tolerances. Depending on site requirements, Geopier systems can be installed using replacement or displacement methods. RAP systems are used to reinforce good to poor soils, including soft to stiff clay and silt; loose to dense sand; organic silt and peat; variable, uncontrolled fill; and soils below the ground water table.

They can be used as an alternative to deep foundations or over-excavation, and provide cost and time savings on sites where building on existing poor soils and/or undocumented fill present unacceptable risk to the owner.

The Reston Branch has recently 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/>

#### Transportation Committee

##### Join us at the February

##### Transportation Committee Meeting! *Understanding and*

*Harnessing Smarter Mobility for Smarter Cities*, Presented by Neil J. Pedersen, Executive Director of the Transportation Research Board

WHEN: Tuesday, February 18, 2020, 11:45 AM – 1:15 PM EST

WHERE: WSP USA, 1015 Half Street SE, Suite 650, Washington, DC 20003

COST: \$20 per person (ASCE member) \$25 (nonmember)

Register Online: <https://asce-ncs.org/index.php/committees/transportation>

*Attendees will receive (1.0) Professional Development Hour (PDH)*



#### Younger Members Forum

By Sarah Shay, YMF Secretary/Newsletter

**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.

In January, the NCS YMF rang in the new year with a networking happy hour at [Penn Social](#) in Washington, DC. The group hosted a photographer to take updated professional headshots at the event. Several members attended and shared great conversation over appetizers. Other NCS YMF events included

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hosting a guest speaker focusing on the role of mentors, role models, and sponsors in engineering, presented by Ms. Lynn Mayo, PE. Thank you to all who attended our events this month!

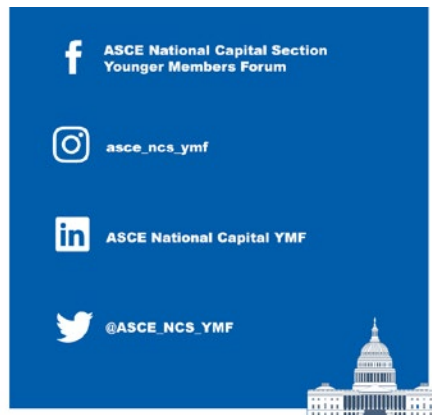
The group will host their next happy hour starting at 6PM on February 5th at the [Blue Jacket Restaurant and Brewery](#) in Washington D.C. near the Navy Yard metro stop. We hope to see you there!

**Professional Development:** If you have suggestions for professional development meeting topics, or would like to become more involved with the YMF in other areas, please contact the YMF President at [ncsymfpresident@gmail.com](mailto:ncsymfpresident@gmail.com).



**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), connecting with us on LinkedIn (ASCE National Capital YMF), and following us on 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! If you would like to become more active with the YMF or would like more information on our events, please email the YMF President.



**Life Members' Forum  
Order of the Engineer Ring  
Ceremony**

Your National Capital Section, understanding the importance of having a visible symbol of our profession, has made arrangements for you to become a member of the Order of the Engineer. The Section will host a Ring Ceremony on February 18, 2020, during Engineers Week. This ceremony will precede our monthly meeting held at the Hilton Hotel in Arlington, Virginia.

The Order of the Engineer was initiated in the United States to foster a spirit of pride and responsibility in the engineering profession. The goal is to bridge the gap between training and experience, and to present to the public a visible symbol identifying the engineer. ASCE is an official Link of the Order of the Engineer, which means it is allowed to conduct Ring Ceremonies at national events and in conjunction with sections and branches. Eligibility requirements are established by the Order of the Engineer organization, which governs



the program. For more information visit [Order of the Engineer](#) or [ASCE.org/order-of-the-engineer](http://ASCE.org/order-of-the-engineer).

**National Capital Section Ceremony**

The Section will host the Ceremony where members will take the Obligation of the Engineer and receive a steel ring to be worn as a reminder of their commitment to high ethics and professionalism. The cost for the ring has been subsidized by the Section, so you will only pay a one-time fee of \$20.00. You can begin the Certification process and pay the one-time fee by registering for the Ceremony at: [Registration Page](#)

**Notes:**

- 1) To assist in finding your ring size, refer to the full page cut-out on page 11.
- 2) You are welcome to join us for networking and dinner where a special table will be reserved for Members of the Order of the Engineer. You will need to register separately for the Monthly Dinner meeting, watch for the Dinner Meeting announcement in early February.

**Construction Committee**

By Ivan Carrasco, Construction Committee Chair

The Construction Committee held its first meeting of the year on December 5th, 2019 at Cosi-Ballston. Eight people were in attendance having a very productive planning and greeting evening.



The Construction Committee would like to invite you to Visit the DC Water Northeast Boundary Tunnel under construction and see Chris, the tunnel boring machine (TBM), in action!

*continued on page 9*



The site visits, sponsored by Lane Construction, are planned as part of the Construction Committee activities on the following dates:

- January 16, 2020 at 5:00 pm
- February 13, 2020 at 5:00 pm

These events are limited to 10 people, and sign-ups ([at this link](#)) have quickly filled up for both dates

**Project Description:** The Northeast Boundary Tunnel is part of a \$2.7 billion program by DC Water to mitigate Combined Sewer Overflow (CSO) discharges into the Anacostia and Potomac Rivers and bring flood relief to NE Washington, D.C. The tunnel is a challenging alignment with 15 curves, shaft entry and exit, and only one shaft online in 26,737 ft to check alignment. TBM muck removal occurs by conveyor belt in the tunnel and by a 17 cubic yard clamshell at the shaft. The tunnel and all associated structures have a 100 year design life.

### Architectural Engineering Institute Committee

By Camile Stefani

On February 6th the AEI committee and Illumination Engineering Society DC section will be hosting an ice skating meet-up event at the Washington Harbor Ice Rink in Georgetown. Join us for the chance to network with local professionals in the lighting industry, as well as icy fun and hot chocolate. [Register to attend the event here.](#)

The AEI committee also invites you to join us in February for a presentation on the design and construction on the Heights school in Arlington, VA. The presentation will include members of the structural engineering team from Silman, who will discuss the design challenges associated with the iconic five story pivot that gives the new school its distinctive fan shape. Watch your inbox for a link to register for the event, registration is first-come-first-served and space is limited.

COMING SOON – an ASCE-NCS Section Meeting like you’ve never experienced before. On May 19th the Architectural Engineering committee is hosting a series of fast-paced, engaging presentations by members of the civil and building engineering community. We’re looking for presenters with all levels of experience who are interested in giving a 5 minute presentations, with the option to follow the PechaKucha style. The presentation can be on anything related to the presenter’s career as an engineer, including collaborative project experiences or knowledge gained. If you have a topic you think would benefit from this fast-paced presentation style, please fill out the form to let us know. Please email us at [aei.washingtondc@gmail.com](mailto:aei.washingtondc@gmail.com) with any questions. Thank you to those who have already expressed interest in presenting – watch you inbox for upcoming events to discuss additional information on the event. To find out more about

PechaKucha, visit the link below: <https://www.pechakucha.com/about>

To learn more about upcoming events and information please check out our website or email us at [aei.washingtondc@gmail.com](mailto:aei.washingtondc@gmail.com). For your dose of interdisciplinary design and engineering in your feed, don’t forget to follow us on Instagram @aei\_dc!

### Membership & Survey Committee

By Norine Walker

#### ASCE Membership Upgrades

How long has it been since you joined ASCE? 5 years, 10 years, 20 years, more? If you joined as a Student Member and then just paid your dues each year as your career advanced, maybe it is time to take a look. Membership benefits change with the different grades. An application process is required for advancement which requires member action, it is not automatic. See more at [www.asce.org/join](http://www.asce.org/join)

*Student to:*

**Affiliates are ASCE members** have an interest in advancing the purpose and objectives of ASCE and are not students or classically trained engineers or scientists

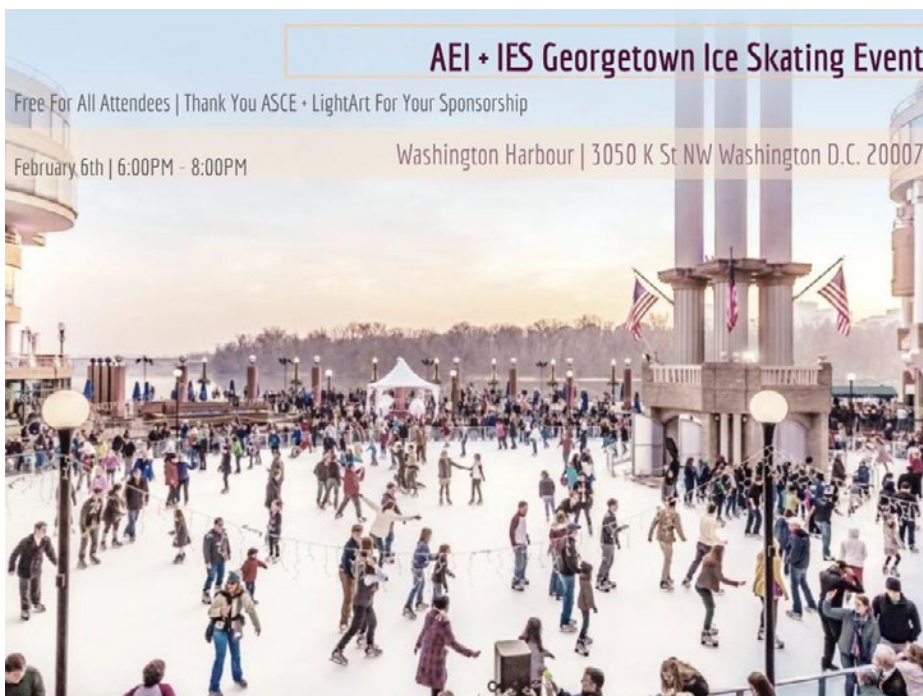
*Student to:*

**Associate are ASCE members** who either hold at least a 4-year degree in a civil or related engineering program OR are a certified Engineer-in-Training (EIT) or Surveyor-in-Training (SIT).

*Student, or Affiliate, or Associate to:*  
**Member Grade is for ASCE members** with a PE or PLS or:

1. BS from ABET/EAC accredited or Substantially Equivalent CE or related engineering program plus 5 years of responsible charge AND 3 qualified references with 1 from an ASCE Member or higher grade.
2. BS from non-ABET/EAC engineering, engineering technology, or related science acceptable to the Membership Application Review Committee (MARC) AND at least 5 years of responsible charge of engineering experience if licensure is unavailable.
3. Master’s or doctorate degree in civil engineering from an ABET/EAC accredited or Substantially Equivalent school plus 4 years of responsible charge of engineering

*continued on page 10*



experiences (3 years with Ph.D.) AND 3 qualified references, at least 1 of which shall be from an ASCE Member or higher grade of membership

*Member to:*

**Fellows are** in a prestigious group of about 3% of ASCE members. Fellow status must be attained by professional accomplishments via application and election by the Membership Application Review Committee (MARC).

1. Hold a current PE or PLS, AND,
2. 10 years of responsible charge in the grade of Member, AND,
3. Have made celebrated contributions and developed creative solutions that change lives around the world, AND
4. Nomination by ASCE organization leader, AND
5. Support statements from three references, AND
6. Apply for successful election by the MARC.

*Member to:*

**Life Member** has made a lifetime commitment to ASCE and the civil engineering profession by remaining a member for the full length of their professional career.

**Geo-Institute Committee February Luncheon**

The Geo-Institute will be presenting "A Comparison of Predicted and Actual Results from the US-301 Test

Pile Program" on February 19th. [Register Now!](#)

This presentation will focus on the Delaware US-301 corridor project test pile program. This project involves construction of a new four lane highway from the Maryland-Delaware line to South of the C and D Canal. The Project involved construction of 29 bridges, several conventional retaining walls, and Mechanically Stabilized Earth (MSE) walls. A design phase test pile program was conducted in 2010 to assist the design team in selection of the most economical pile type for these structures and the design geotechnical soil resistance.

A case history involving the field results and analysis of the test pile program will be presented. The following types of piles were evaluated as part of this test program: HP14x73 steel pile, 355 mm square prestressed concrete pile, 355 mm diameter open and closed end pipe piles, and a 355 mm diameter Monotube pile. The variation in the axial capacities and drivability of these pile types will be presented, and the effects of soil set up, relaxation, development of pile plug on the drivability, and long-term capacity of these piles will be compared. Pile capacities predicted using static analysis methods will be compared against the field measured capacities obtained using the Pile Driving Analyzer (PDA) and Case Pile Wave Analysis Program (CAPWAP) software programs.



**About the speaker:** Gunaratnam Gnana, PE., a Principal with D.W. Kozera, Inc., is a graduate of Johns Hopkins University, where he received his Masters degree in Civil Engineering. Mr. Gnana is a registered Professional Engineer in the State of Maryland, Delaware and New Jersey. As a research assistant at Johns Hopkins University, Mr. Gnana assisted in developing a numerical method to back-calculate dynamic soil properties from Lateral Statnamic Test data. Mr. Gnana is proficient in Support of Excavation design methods, deep foundation analysis and testing, geotechnical instrumentation and numerical modeling and analysis. ■

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**Call for Nominations! Sustainable Project of the Year**

*continued from page 4*

- and/or institute, section or branch sustainability awards;
- c) the degree to which the project extends public understanding of sustainability in construction as demonstrated by working with the public at the planning, design, construction, and operations stages in the development of the project; and
  - d) collaboration was an important aspect of the project as demonstrated by significant participation by other disciplines on the team.

V. Entries for the award should include a rationale statement describing how the project exemplifies the economic, social and environmental principles of sustainability, the merits and title of the project,

a clear description of the innovation in sustainability, the anticipated advantages to be obtained, and a statement of how the sustainable project met the client's needs.

VI. Each nomination shall also include:

1. Designer's and client's names and contact information;
2. The names of others who collaborated and to what extent they collaborated.

VII. The recipient of this award shall be recommended by the ASCE-NCS Sustainability Committee to the Board of Directors of ASCE-NCS for final approval. Entries nominated for the award that are not selected to receive

the award will be notified and may be carried over for reconsideration in the following year provided they remain eligible within the six-year completion period.

VIII. The award shall consist of a recognition plaque or similar.

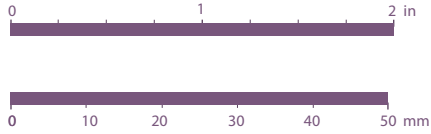
IX. The descriptive text of the winning project will be transmitted to ASCE-NCS Newsletter for inclusion with possible editorial treatment.

X. Please submit nomination by e-mail to Sustainability Committee <[tcc-sus@asce-ncs.org](mailto:tcc-sus@asce-ncs.org)> by Monday, February 24, 2020. Award ceremony will take place on Tuesday, March 17, 2020 at 6 PM. ■

# HOW TO DETERMINE YOUR RING SIZE

Please carefully read all instructions as the measurement may not be accurate if not done properly.

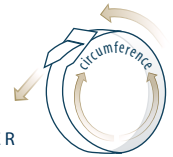
## CONFIRM PRINTED PAPER SIZE



1. PRIOR TO PRINTING, ENSURE THAT PAGE SCALING IS SET TO "NONE" ON YOUR PRINT DIALOG BOX.
2. MEASURE THE BAR ON THE LEFT TO ENSURE IT IS EXACTLY 2 INCHES, OR 50 MM LONG.
3. IF MEASUREMENT IS NOT ACCURATE, CHECK THAT YOU ARE PRINTING THE PAGE AT FULL SIZE AND REPRINT BEFORE CONTINUING.

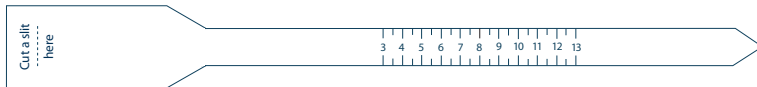
## METHOD A – MEASURE FINGER WITH PAPER SIZER

1. Carefully cut along the outline of the sizer. Make a small slit in the left end of the sizer.
2. Wrap the sizer around the intended finger with the numbers facing out.
3. Slide the pointed end of the sizer through the slit.
4. Move the sizer to the largest part of the finger, this may be the knuckle.
5. **Pull tightly. The sizer must fit snugly to produce an accurate size.**
6. The number that lines up at the slit represents the ring size for that finger.



### RING SIZE to MILLIMETER (circumference)

Size 3	44.0 mm	Size 8.5	58.4 mm
Size 3.5	45.2 mm	Size 9	59.7 mm
Size 4	46.5 mm	Size 9.5	60.9 mm
Size 4.5	47.8 mm	Size 10	62.2 mm
Size 5	49.0 mm	Size 10.5	63.5 mm
Size 5.5	50.3 mm	Size 11	64.7 mm
Size 6	51.7 mm	Size 11.5	66.0 mm
Size 6.5	53.1 mm	Size 12	67.2 mm
Size 7	54.3 mm	Size 12.5	68.5 mm
Size 7.5	55.6 mm	Size 13	69.7 mm
Size 8	57.2 mm	Size 13.5	71.0 mm

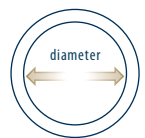


### NOTES FOR ACCURATE MEASURING

- Avoid measuring cold fingers as this is when fingers are at their smallest.
- Measure your finger when it is at its largest, at the end of the day.

## METHOD B - MEASURE CURRENT RING

1. Select a ring that properly fits the intended finger. The "ring finger" is located between the little finger and middle finger. Engagement and wedding rings are traditionally worn on the ring finger on the left hand in the United States.
2. Place the ring over the circles below, matching the inside edge of the ring to the circle nearest in size. This measurement refers to the *diameter* of the ring.
3. If the ring falls between two sizes, order the larger size.



Size 5.5 16.0 mm	Size 6 16.45 mm	Size 6.5 16.9 mm	Size 7 17.3 mm	Size 7.5 17.7 mm	Size 8 18.2 mm	Size 8.5 18.6 mm	Size 9 19.0 mm	Size 9.5 19.4 mm
Size 10 19.8 mm	Size 10.5 20.2 mm	Size 11 20.6 mm	Size 11.5 21.0 mm	Size 12 21.4 mm	Size 12.5 21.8 mm	Size 13 22.2 mm	Size 13.5 22.6 mm	

## Upcoming Events

### January 8

#### YMF Happy Hour

- Wednesday, January 8th at 6 PM
- [Penn Social](#) near [Gallery Place/Chinatown Metro](#)
- Happy hour networking will include a professional photographer!

### January 27

#### Reston Branch Lunch Technical Meeting

- Monday, January 27th at 11:45 AM to 1 PM
- [ASCE National Headquarters](#)
- *Design and Structural Interaction of Geopier Rammed Aggregate Pier ® (RAP) and Rigid Inclusion System* presented by Shana Carroll, P.E. and Valerie Merida, P.E.

### February 1

#### Washington Architectural Foundation STEM Fair

- Saturday, February 1 at 10 AM to Noon
- [District Architecture Center](#)
- For students ages 10 through high school presented by AIA DC – [Learn more and register here!](#)

### February 5

#### YMF Happy Hour

- Wednesday, February 5th at 6 PM to 8 PM
- [Blue Jacket Restaurant and Brewery](#) in Washington, DC

### February 6

#### AEI DC Ice Skating Social

- Thursday, February 6th at 6 PM to 8 PM
- [Washington Harbour Ice Rink](#) in [Georgetown](#)
- Watch your email for a registration link! To join our mailing list, visit us at <https://aeiwashingtondc.wixsite.com/home> and click subscribe

### February 7

#### ASCE-NCS Scholarship Application Deadline

- Friday, February 7th
- Reach out to your Faculty Advisor for application package

### February 11

#### Reston Branch Lunch Technical Meeting

- Tuesday, February 11th at 12 PM to 1 PM
- [ASCE National Headquarters](#)
- Topic TBD

### February 13

#### Construction Committee Site Visit

- Thursday, February 13th at 5 PM
- DC Water Northeast Boundary Tunnel escorted by Lane Construction
- Spots are limited to 10 people, watch your email for more information

### February 18

#### Transportation Committee Lunch Meeting (1 PDH)

- Tuesday, February 18 at 11:45 AM to 1:15 PM
- [WSP USA](#) (1015 Half Street SE, Suite 650, Washington, DC 20003)
- *Understanding and Harnessing Smarter Mobility for Smarter Cities* presented by Neil J. Pedersen, Executive Director of the Transportation Research Board
- [Register Here!](#) \$20 per person (ASCE member) \$25 (nonmember)

### February 18

#### ASCE NCS February Dinner Meeting + Order of the Engineer

- Tuesday, February 18, 2020 at 6 to 8:30 PM
- [Hilton Arlington](#) (950 N. Stafford Street, Arlington, VA)
- *The Building Enclosure Secrets of the International Spy Museum Revealed* presented by Paul E. Totten (WSP) and Erin McNamara (Hickok Cole)
- The Order of the Engineer Ceremony will be held during the dinner meeting

### February 19

#### Geo-Institute Committee Luncheon

- Wednesday, February 19th from 11:30 AM to 1:30 PM
- [Maggiano's Little Italy](#) Tysons Corner (2001 International Drive, McLean, VA 22102)
- *A Comparison of Predicted and Actual Results from the US-301 Test Pile Program* presented by Gunaratnam Gnana, PE
- [Register Here!](#)

## 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](#).