ASCE NATIONAL CAPITAL SECTION

# eNewsletter

## National Capital Section

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# Report Card for D.C.'s Infrastructure

### June 15, 2021 – 12:00 PM

You are invited to join us virtually at noon on June 15, 2021 as the National Capital Section (NCS) reveals the grades for D.C.'s infrastructure. This event is free to attend for all members, nonmembers, and students. Visit our website and/or watch your email for the link to register.

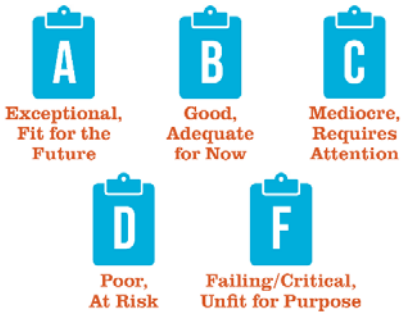
### Infrastructure Components Graded

The NCS DC Report Card Committee graded D.C.'s bridges, drinking water, energy, levees, rail, roads, transit, and wastewater.


(Grades to be revealed on June 15.)

### About the Grades

Infrastructure is graded based upon eight criteria: capacity, condition, funding, future need, operation and maintenance, public safety, resilience, and innovation. ASCE grades on the following scale and defines these grades as:

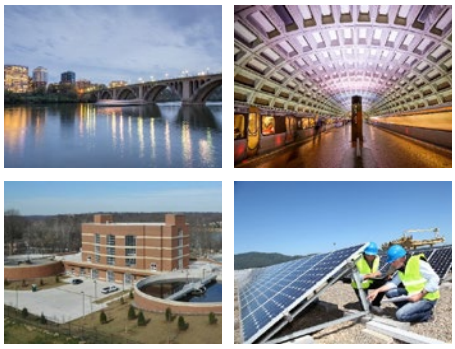



### Schedule

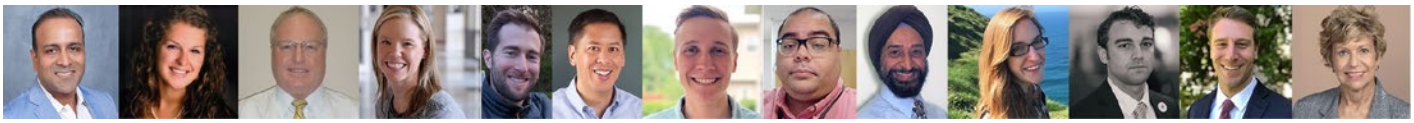
The Report Card Release event is expected to last between 30 and 45 minutes:

- **Welcome** by Mike Venezia, Section President
- **Opening Remarks** by Christian Manalo, Committee Vice Chair
- **Grades Revealed** by Ranjit Sahai, Committee Chair
- **Recommendations** by Hari Aamidala, Team Leader for Bridges and Roads
- **Q&A** moderated by ASCE


The Report Card gives you facts and grades on D.C.'s core infrastructure. The Report Card shows how it all stacks up – from roads to water to levees. It helps you engage with policy makers to help them with information necessary to take the big steps needed to prioritize infrastructure investments. After all, infrastructure serves as the backbone of our economy and quality of life. ■



### The D.C. Report Card Committee



(From left) Hari Aamidala, Gretchen Bruggeman, A. Scott Kiefer, Kari Kubista, Jason Levinn, Christian Manalo, Robert Principato, James Reynolds, Ranjit Sahai, Brenna Thorpe, David Townsend, Eric Uhl, Norine Walker. [Ken Klewicki not pictured.]

# May Section Meeting Recap

## *The U.S. Army Corps of Engineers, Delivering Innovation to the Nation's Toughest Challenges*

By Christian Manalo, P.E., F.ASCE

The U.S. Army Corps of Engineers employs approximately 37,000 civilian and military personnel. The Corps experienced unprecedented activity over the past few years, including recovery from major hurricanes, flooding, and wildfires. The past year had also seen the construction of alternate care facilities in response to COVID, the border wall, and other international and interagency support.

The Corps' Civil Works missions include Navigation, Flood and Coastal Storm Risk Management, Ecosystem Restoration, Environmental Stewardship, Recreation, and Water Supply. The Corps maintains more than 700 dams; 2,000 miles of levees; 13,000 miles of deep draft channels, and 1,100 harbors through which nearly half of U.S. consumer goods pass. The Corps is the nation's largest producer of renewable energy, generating 25-percent of all hydropower. The Corps is also the lead provider of outdoor recreation, managing 12 million acres, 55,000 miles of shoreline, and 93,000 campsites.

The U.S. Army Corps of Engineers traces its origin to June 16, 1775, two days after the formation of the Continental Army. In its early days, the Corps focused on military engineering, including construction of coastal fortifications. The Corps would later expand to include works "of a civil nature" with the construction of lighthouses, jetties, piers, and canals. The Corps played vital roles in the development of the Washington, D.C. area with dozens of accomplishments, including: the Washington Aqueduct, the Potomac and Anacostia Flats, the Washington Monument, Lincoln Memorial, and the Pentagon. It was Army Chief of Engineers' Brigadier General Alexander McKenzie who, in 1905, formed the Washington Society of Civil Engineers, later to become the ASCE National Capital Section.

The May Section meeting featured a presentation by Ms. Vanessa Bateman, PE, PG, D.GE, Chief of Civil Works Engineering for the Corps. Ms. Bateman is an ardent champion of innovation, which she has demonstrated consistently on major infrastructure projects, including Mosul Dam in Iraq and Wolf Creek Dam in Kentucky. Her presentation provided an overview of the Corps' missions and recent projects and innovations applied by the agency.

Ms. Bateman assumed her current role in February 2021 after more than 25 years of service to both the Corps and the Tennessee Department of Transportation. She has served in a variety of technical and managerial roles, including leading the Corps' Geotechnical, Geology, and Materials Community of Practice and as Chief of the Civil Design Branch for the Nashville District. Ms. Bateman holds a bachelor's degree in Geology from Middle Tennessee State University as well as a bachelor's and master's degrees in Geological Engineering from the University of Idaho. She is a licensed Professional Engineer, Professional Geologist, and Diplomate of Geotechnical Engineering. ■

## Upcoming Events

Until further notice, all in-person ASCE NCS events have been cancelled. Opportunities for virtual events will be announced as they are planned.

## Newsletter

**Maria Raggousis,** *Editor*

**September 2021 Issue Deadline:** August 16, 2021

**To Submit Articles:** newsletter@asce-ncs.org

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## National Capital Section

# A New World Record: Canakkale 1915 Suspension Bridge in Turkey will be Opened by March 2022

Suspension bridges are marvels of structural and architectural engineering. These structures aren't just useful, but also quite beautiful and elegant. The Canakkale 1915 is a new record-breaking suspension bridge being built in Turkey over the Dardanelles Strait in the Canakkale province. Located at the western end of the Marmara Sea, the bridge will be the longest span (L = 2023 meters) suspension bridge in the world. The length of the main span of the bridge is 2023 meters (6,637 ft) and it is 32 meters longer than the current record holder, Akashi Kaikyo Bridge in Japan. The total length of the bridge will be 3,563 m (11,690 ft).


Location of the Canakkale 1915 Bridge

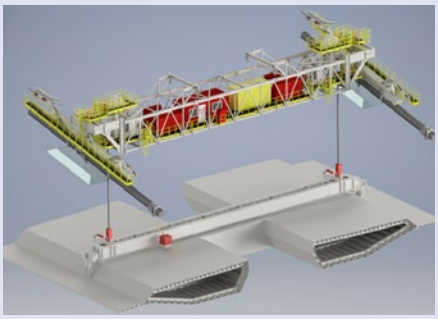
The 2023-meter span refers to the centennial of the Turkish Republic in 2023. In addition to the central span, the bridge will have two 770-meter long smaller side spans at each end connecting the towers to the land. The width of the Canakkale 1915 bridge deck will be 43.06 m (141 ft). The deck will carry six lanes (three in each direction) of motorway, together with two walkways on each side for maintenance. It will be 72-meter-high (236 ft) from water and will have a maximum thickness of 3.5 meters (11.5 ft).


The towers of Canakkale 1915 Bridge are 318 meters (1043 ft) tall, slightly shorter than the Eiffel Tower. Here, 318 is also symbolic and represents the victory of Turkish forces against invaders on March 18, 1919. Currently


Aerial view of the Canakkale 1915 Bridge, KSCE Journal of Civil Engineering

the construction of the towers has been completed. Ground-breaking for the Canakkale 1915 project took place on March 18, 2017 and the construction will be finalized by March 2022 to celebrate the 100th anniversary of the Republic of Turkey. The scale of the construction is quite large for a single project with a budget of $3 billion dollars.

Total 128,000 metric tons of steel products will be used in the Canakkale 1915 Bridge. For the bridge towers, 35,000 tons of steel plate, for the bridge deck, 52,000 tons and for the wire rods, 41,000 tons of steel will be used in main cables and suspenders. The suspension bridges have higher probability of suffering from wind-induced vibration than other types of structures due to its flexible structural characteristic. When the span of the bridge is long, the wind load becomes the dominant factor in the bridge design, and the accurate evaluation of wind load and safety from wind induced vibration become essential. For the suspension bridges, the wind tunnel tests are often designed to evaluate girders,



The Canakkale 1915 Bridge, Deck lifting gantry with 450-ton capacity, DLT Engineering

pylons, and cables, conducted on girders, pylons and cables, separately or together. The wind tunnel test of the full bridge aeroelastic model of the 1915 Canakkale Bridge was carried out at the Wind Engineering Experimental Research Center of the Southwest Jiaotong University in South Korea.

The structural design of the bridge is done by COWI A/S of Denmark. According to Wikipedia, COWI was founded in 1930 and it has been involved in more than 50,000 projects in 175 countries. The construction of the Canakkale 1915 Bridge is currently being carried out by the consortium of four companies; Daelim and SK E&C of South Korea, along with two major Turkish construction companies, Limak Holding and Yapi Merkezi. The project delivery method will be on a Build-Operate and Transfer (BOT) basis.

The consortium will manage and operate the completed bridge for 16 years and two months. The four companies will each have an equal share of 25% in the project. The bridge will be handed over to the Turkish Government after the completion of the operation period. Currently there are three bridges and two tunnels in Istanbul connecting the two continents, Europe and Asia.

## Mechanics of Suspension Bridges

Suspension bridges get their name from the fact that the roadway is suspended by cables from two tall towers. Most of the weight is supported by the towers and they pass the compression forces from the cables directly into the ground. The two main cables carrying the weight of the bridge are capable of withstanding tension forces but offer no resistance to compression.

Suspension bridges also have smaller cables called suspenders. These suspenders typically run vertically from the deck up to the main supporting cables. The suspenders are also under tension forces and they move the deck's compression forces to the towers through the main supporting

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## Dr. Z's Corner, continued

Main cables of Cannakale 1915 Bridge, Courtesy of COWI A/S Denmark

cables. Main cables create graceful arcs between the towers and anchorages. Typically, the towers of a suspension bridge are slim. That's because the compression forces are carefully distributed on each side of the towers. The force of the deck pulls inward on the towers. At the same time, the main support cables extend beyond the towers to anchor each end. These anchorages are usually solid rock or heavy concrete blocks secured underground.

The authors would like to thank Dr. Henrik Andersen, Senior Director of COWI A/S, Bridges and Transportation, Denmark

**Article by**
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### Longest span suspension bridges in the world (top six)

| | Name | Span | Year Opened or Will Open | Location | Country |
|---|---|---|---|---|---|
| 1 | **Canakkale 1915 Koprusu** | 2,023 m (6,637 ft) | 2022 | Canakkale Province | Turkiye |
| 2 | Akashi Kaikyō Bridge | 1,991 m (6,532.2 ft) | 1998 | Kobe | Japan |
| 3 | Yangsigang Yangtze River Bridge | 1,700 m (5,577.4 ft) | 2019 | Wuhan (Hubei) | China |
| 4 | Nansha Bridge | 1,688 m (5,538.1 ft) | 2019 | Dongguan (Guangdong) | China |
| 5 | Xihoumen Bridge | 1,650 m (5,413.4 ft) | 2009 | Zhoushan (Zhejiang) | China |
| 6 | Great Belt Bridge | 1,624 m (5,328.1 ft) | 1998 | Korsør – Sprogø (Region Zealand) | Denmark |

# Free STEM Career Exploration & Resume Builder Program

College science, technology, engineering, or math (STEM) students, recent STEM graduates, and exceptionally-motivated high school students are invited to join this summer program were students will gain valuable experience to include on their resume. 100% of hiring managers rated a resume with RePicture Program experience higher than one without. During the program, students will:

- Discover the actual work of STEM professionals while competing for prizes
- Improve the soft skills most valued by employers
- Meet STEM professionals and be part of a growing STEM community

Through generous support, students can attend at ***no cost***.

The course will be held from June 21 to July 30, 2021. Sessions will be live and recorded to fit students' schedules. The hours are flexible and students will typically spend 8–15 hours per week on activities, group assignments, and webinars. We'll explore STEM careers related to:

- Protecting the Health of People and the Planet
- Green Energy
- Designing our Communities
- Helping People Through Disaster Planning / Adapting to Climate Change

Weekly professional skills development topics will include:

- Online Personal Branding
- STEM Writing and Presentation Skills
- Professional Networking

To join, students should go to bit.ly/RePictureJoin2021 or for more information visit RePicture.com/Students.

RePicture is also looking for professionals that are willing to volunteer. You can volunteer at bit.ly/RePicture2021 or for more information go to RePicture.com/Professionals. ■

# The Abridged Calumet "K": Episode 8

***The fascinating novel Calumet "K" by Samuel Merwin and Henry Webster was published in 1901. Its hero? An efficacious engineer.***

An 8-episode condensed edition with text by Ranjit Sahai © 2021. All Rights Reserved. [Illustrations by Harry Edwards, from novel.]

## Putting Christmas off a week

The effect of the victory was felt everywhere. Not only were Max and Pete and Hilda jubilant over it, but the under-foremen, the timekeepers, even the laborers attacked their work with a fresher energy. It was like the first whiff of salt air to an army marching to the sea. Since the day when the cribbing came down from Ledyard, the work had gone forward with almost incredible rapidity; there had been no faltering during the weeks when Grady's threatened catastrophe was imminent, but now that the big shadow of the little delegate was dispelled, it was easier to see that the huge warehouse was almost finished. There was still much to do, and the handful of days that remained seemed absurdly inadequate; but it needed only a glance at what Charlie Bannon's tireless, driving energy had already accomplished to make the rest look easy.

When Charlie approached the summit of the marine tower where Pete was sledging down a tottering timber, Pete asked, "Ain't it time we was putting up the belt gallery?"

"There ain't three days' work in it, the way we're going," said Bannon thoughtfully, his eyes on the C. & S. C. right-of-way that lay between him and the main house, "but I guess you're right. We'll get at it now. There's no telling what sort of a surprise party those railroad fellows may have for us. The plans call for three trestles between the tracks. We'll get those up today." For Pete, the idea of building a 150-foot-long wooden box (belt gallery) held up 30-feet-high on three trestles, each consisting of four wooden posts and held together at the top with a corbel, was a formidable task. Bannon's nonchalant air of setting about it seemed almost an affectation.

In an incredibly short time, after Bannon gave the word, the fences were down and a swarm of men with spades, post augers, picks, and shovels had invaded the C. & S. C. right-of-way. Half an hour after the work was begun, Bannon saw a hand car spinning down the track as fast as six big, sweating men could pump the levers. The section boss had little to say; simply that they were to get out of there and put up that fence again, and the quicker the better. So, the posts were lugged out of the way and the fence was put up and the men scattered out to their former work again, grinning a little over Bannon's discomfiture.

Bannon wrote Minneapolis for information and instructions. MacBride, who had all the information, was out of town. After waiting a few days, Bannon spoke with MacBride from the telephone exchange. Porter, the railroad's vice president, had told MacBride they wouldn't object to building the gallery over their tracks. But not a word on paper. After three or four unsuccessful attempts to reach Porter, with wrath in his heart, Bannon started downtown. It was almost night when he came back, pulled a paper out of his pocket, and handed it to Hilda. "Read that." It was a formal permit for building the gallery, signed by Porter himself, and bearing the OK of the general manager. "Nice, isn't it?" Bannon commented. "Now read the postscript, Miss Vogel." It was in Porter's handwriting, and Hilda read it slowly. It forbade the erection of trestles or temporary scaffolding in the right-of-way, and the removal of any railroad property such as fences. Pete's face went blank. "A lot of good this darned permit does us then. That just means we can't build it." Bannon commented that's what Porter thought too. "I bet he's grinning yet," continued Bannon, "I wonder if he'll grin so much about three days from now."

"Do you mean that you can build it anyway?" Hilda demanded breathlessly. He nodded, and, turning to Pete, plunged into a swift, technical explanation of how the trick was to be done. "Won't you please tell me, too?" Hilda asked appealingly. "Sure," he said. He sat


It was a simple scheme

down beside her at the desk and began drawing on a piece of paper.

It was a simple scheme of Bannon's: the cantilever method of construction for a truss. A cable would be strung across the tracks, one end tied to the elevator and the other to the spouting house. The cable would be all the falsework

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## The Abridged Calumet "K": Episode 7

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they would need. As fast as the timbers were bolted together, the halves of the floor were shoved out over the tracks, each free end being supported by a rope which ran up over a pulley. The pulley was held by an iron ring fastened to the cable, but perfectly free to slide along it to accompany the end of the floor as it was moved outward.

With a day gone – fastening the cable and gathering timbers at each end – Bannon said they'd complete the gallery tomorrow. "Tomorrow," a man repeated. "We ain't going to work tomorrow, are we?" "Sure," he said. "Why not?" "It's Christmas." "Christmas!" he exclaimed, in perfectly honest astonishment. He ran his hand through his stubby hair. "Boys," he said, "I'm sorry to have to ask it of you. But can't we put it off a week? Look here. We need this day. Now, if you'll say Christmas is a week from tomorrow, I'll give every man on the job a Christmas dinner that you'll never forget; all you can eat and as much again, and you bring your friends, if we work tomorrow and we have her full of wheat a week from today. Does that go?"

It went, with a ripping cheer to boot. At four o'clock Christmas afternoon, the last bolt was drawn taught. The gallery was done.

### Talkers and doers

Before December was half gone the newspaper-reading public knew all the outside facts about the fight in wheat, and they knew it to be the biggest fight since the days of "Old Hutch" and the two-dollar-a-bushel record. Indeed, there were men who predicted that the two-dollar mark would be reached before Christmas, for the Clique of speculators who held the floor were buying, buying, buying – millions upon millions of dollars were slipping through their ready hands, and still there was no hesitation, no weakening. Until the small fry had dropped out the deal had been confused; it was too big, there were too many interests involved, to make possible a clear understanding, but now it was settling down into a grim fight between the biggest men on the Board. The Clique were buying wheat – Page & Company were selling it to them: if it should come out, on the thirty-first of December, that Page & Company had sold more than they could deliver, the Clique would be winners; but if it should have been delivered, to the last bushel, the corner would be broken, and the Clique would drop from sight as so many reckless men had dropped before.

The general opinion was that Page & Company could not deliver and register such an enormous quantity of grain in time, even if they had the wheat. But the public overlooked, indeed it had no means of knowing, one important fact. The members of the Clique were new men in the public eye. They represented apparently unlimited capital, but they were young, eager, overstrung; flushed with the prospect of success, they were talking for publication. They believed they knew of every bushel in the country that was to be had, and they allowed themselves to say that they had already bought more than this. If this were true, Page was beaten. But it was not true. The young men of the Clique had forgotten that Page had trained agents in every part of the world; that he had alliances with great railroad and steamer lines, that he had a weather bureau and a system of crop reports that outdid those of the United States Government, that he could command more money than two such Cliques, and, most important of all, that he did not talk for publication.

The young speculators were matching their wits against a great machine. Page had the wheat, he was making the effort of his career to deliver it, and he had no idea of losing. Already millions of bushels had been rushed into Chicago. It was here that the fight took on its spectacular features, for the grain must be weighed and inspected before it could be accepted by the Board of Trade, and this could be done only in "regular" warehouses.

The struggle had been to get control of these warehouses. It was here that the Clique had done their shrewdest work, and they had supposed that Page was finally outwitted, until they discovered that he had coolly set about building a million-bushel annex to his new house, Calumet "K". And so it was that the newspapers learned that on the chance of completing Calumet "K" before the thirty-first of December hung the whole question of winning and losing; that if Bannon should fail, Page would be short two million bushels.


Young men with snapshot cameras waylaid Bannon on his way to luncheon.

And then came reporters and newspaper illustrators, who hung about the office and badgered Hilda, or perched on timber piles and sketched until Bannon or Peterson or Max could get at them and drive them out. Young men with snap-shot cameras waylaid Bannon on his way to luncheon, and published, with his picture, elaborate stories of his skill in averting a strike – stories that were not at all true.

Far out in Minnesota and Montana and South Dakota farmers were driving their wheat-laden wagons to the hundreds of local receiving houses that dotted the railroad lines. Box cars were waiting for the red grain, to roll it away to Minneapolis and Duluth – day and night the long trains were puffing eastward. Everywhere the order was, "Rush!" Railroad presidents and managers knew that Page was in a hurry, and they knew what Page's hurries meant, not only to the thousands of men who depended on him for their daily bread, but to the many great industries of the Northwest, whose credit and integrity were inextricably interwoven with his. Division superintendents knew that Page was in a hurry, and they snapped out orders and discharged half-competent men and sent quick words along the hot wires that were translated by despatchers and operators and yard masters into profane, driving commands. Conductors knew it, brakemen and switchmen knew it; they made flying switches in defiance of companies' orders, they ran where

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## The Abridged Calumet "K": Episode 7

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they used to walk, they slung their lunch pails on their arms and ate when and where they could, gazing over their cold tea at some portrait of Page, or of a member of the Clique, or of Bannon, in the morning's paper. Elevator men at Minneapolis knew that Page was in a hurry, and they worked day and night at shovel and scale. Steamboat masters up at Duluth knew it, and mates and deck hands and stevedores and dock wallopers – more than one steamer scraped her paint in the haste to get under the long spouts that waited to pour out grain by the hundred thousand bushels. Trains came down from Minneapolis, boats came down from Duluth, warehouse after warehouse at Chicago was filled; and over strained nerves neared the breaking point as the short December days flew by. Some said the Clique would win, some said Page would win; in the wheat pit, men were fighting like tigers; everyone who knew the facts was watching Charlie Bannon.

It was just at dusk, after leaving the men to take down the cable, that Bannon went to the office. "Hello," he said coming into the enclosure. Hilda looked up, and he saw that she was a little excited; her eyes always told him. They were silent for a time – silences were not so hard as they had been, a few weeks before – both thinking that this was Christmas night. She turned and said, "Is it done – the belt gallery?" He nodded. "All done. We'll have the wheat coming in tomorrow, and then it's just walking downhill."

"Well…" she smiled; and he nodded again. He paused and looked at the window, where the rain was streaking the glass. "I've been thinking about my vacation. I've about decided to go to the St. Lawrence." It was the personal tone again, coming into their talk in spite of the excitement of the day and the many things that might have been said. She saw the memory coming into his eyes, and she leaned back against the desk, playing with her pen, and now and then looking up. Bannon took to walking again; and Hilda stepped down and stood by the window, spelling out the word "Calumet" with her finger on the misty glass. At each turn, Bannon paused and looked at her. Finally, he stood still, not realizing that he was staring until she looked around, flushed, and dropped her eyes. Then he felt awkward, and he began turning over the blueprints on the table.

"If I can pick up some good pictures of the river, I'll send them to you, and you can write and tell me how things are going."

"Max and I don't do much of anything. Max studies at night – a man he used to work for gave him a book on civil engineering. And I read some, and then I like to learn things about – oh, about business, and how things are done."

Bannon could not take his eyes from her – he was looking at her hair, and at the curved outline of one cheek, all that he could see of her face. They both stood still, listening to the patter of the rain, and to the steady drip from the other end of the office, where there was a leak in the roof. Once she cleared her throat, as if to speak, but no words came.

"I'll tell you what you do – you come along with me." "Come – where?" "Up to the St. Lawrence. We can start on the third just the same." She did not answer, and he stopped. Then, after a moment, she slowly turned, and looked at him. "I guess that's pretty plain, isn't it – what I mean?" She leaned back against the wall and looked at him; it was as if she could not take her eyes from his face. "I just thought if you felt anything like I did, you'd know pretty well, by this time, whether it was yes or no." She was still looking at him. He had said it all, and now he waited, his fists knotted tightly, and a peculiar expression on his face, almost as if he were smiling, but it came from a part of his nature that had never before got to the surface. Then he said, "You don't mean that that you can't do it?" She shook her head without looking at him.

By noon of the thirtieth, an hour or two after MacBride and young Page arrived from Minneapolis, it became clear that they would be through in time. At eight o'clock next morning, as Bannon and MacBride were standing in the superintendent's office, he came in and held out his hand. "She's full, Mr. Bannon. I congratulate you." "Full, eh?" said MacBride. Then he dropped his hand on Bannon's shoulder. "Well," he said, "will you come and talk business with me for a little while?"

## St. Lawrence? No, Indianapolis!

As soon as the last of the grain was in, on the thirty-first, Max took a northbound car and scoured South Chicago for a hall that was big enough. Before the afternoon was gone, he had found it, and had arranged with a restaurant keeper to supply the dinner. There was room for every man who had worked an hour on the job since the first spile had been driven home in the Calumet clay. To be sure most of the laborers had been laid off before the installing of the machinery, but Bannon knew that they would all be on hand, and he meant to have seats for them.

Early the next morning the three set to work, making long tables and benches by resting planks on boxes, and covering the tables with pink and blue and white scalloped shelf-paper. "Do you think Hilda would care to come around?" said Bannon. "You mean for her to help fix things up?" asked Max. "Yes," said Bannon. "I'll go get her, said Max." "Max," Bannon said, "hold on a minute." Max turned and came slowly back. "What are you going to do now, Max – when you're through on this job?" "Why – I don't know." "Have you got anything ahead?" "Nothing sure. I was working for a firm of contractors up on the North Side, and I've been thinking maybe they'd take me back." "You've had some experience in building before now, haven't you?" Bannon was speaking deliberately, as if he were saying what he had thought out before. "Yes, a good deal. It's what I've mostly done since I quit the lumber business." "When Mr. MacBride was here," said Bannon, "he told me that we've got a contract for a new house at Indianapolis. It's going to be concrete, from the spiles up – there ain't anything like it in the country. I'm going down next week to take charge of the job, and if you'd like to go along as my assistant, I'll take you." Max did not know what to say. At first, he grinned and blushed, thinking only that Bannon had been pleased with his work; then he grew serious. "Well," said Bannon, "what do you say?" Max still hesitated. At last, he replied: "Can I have till tomorrow to think about it? I – you see, Hilda and I, we most always talk things over, and I don't exactly like to do anything without…" "Sure," said Bannon; "think it over if you like. There's no hurry up to the end of the week."

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## *The Abridged Calumet "K": Episode 7*

*continued from page 7*

When Max and Hilda came in, Bannon and James were coming toward them, and she greeted them with a nod. "There's going to be plenty of room," she said. "That's right," Pete replied. "There won't be no elbows getting in the way at this dinner." He led the way to the platform, and they all followed. "This is the speaker's table," Pete went on, "where the boss and all will be" – he winked toward Bannon – "and the guest of honor. You show her how we sit, Max; you fixed that part of it." Max walked around the table, pointing out his own, Pete's, James', and Bannon's seats, and those of the committee. The middle seat, next to Bannon's he passed over. "Hold on," said Pete, "you forgot something." Max grinned and drew back the middle chair. "This is for the guest of honor," he said, and looked at Hilda. Pete was looking at her, too, and James – all but Bannon. The color, that had been leaving her face, began to come back. "Do you mean me?" she asked. "I guess that's pretty near," said Pete.

Bannon found opportunity to talk to her in a low voice, during the times when Pete was whistling, or was chaffing with the waiters. He told her, a few words at a time, of the new work Mr. MacBride had assigned to him, and in his enthusiasm, he gave her a little idea of what it would mean to him, this opportunity to build an elevator the like of which had never been seen in the country before, and which would be watched by engineers from New York to San Francisco. He told her, too, something about the work, how it had been discovered that piles could be made of concrete and driven into the ground with a pile driver, and that neither beams nor girders – none of the timbers, in fact – were needed in this new construction. He was nearly through with it, and still, he did not notice the uncertain expression in her eyes. It was not until she asked in a faltering under tone, "When are you going to begin?" that it came to him. And then he looked at her so long that Pete began to notice, and she had to touch his foot with hers under the table to get him to turn away. He had forgotten all about the vacation and the St. Lawrence trip.

Hilda saw, in her side glances, the gloomy expression that had settled upon his face; and she recovered her spirits first. "It's all right," she whispered; "I don't care."

"Will you go with me?" She did not look up, but her head nodded once with a little jerk. Bannon caught Max's signals to step out of hearing of the others and he went to join Max. Max made two false starts before he could get his words out in the proper order. "Say," he finally said; "I thought maybe you wouldn't care if I told James. He thinks you're all right; you know. And he says, if you don't care, he'd like to say a little something about it when he makes his speech. Not much, you know – nothing you wouldn't like – he says it would tickle the boys right down to their corns." Bannon looked around toward Hilda, and slowly shook his head. "Max," he replied, "if anybody says a word about it at this dinner I'll break his head."

That should have been enough, but when James' turn came to speak, after nearly two hours of eating and singing and laughing and riotous good cheer, he began in a way that brought Bannon's eyes quickly upon him. "Boys," James said, "we've worked hard together on this job, and one way and another we've come to understand what sort of a man our boss is. Ain't that right?" A roar went up from hundreds of throats, and Hilda, sitting next to Bannon, blushed. Bannon's hand groped for hers under the table. "We've thought we understood him pretty well, but I've just found out that we didn't know so much as we thought we did. He's been a pretty square friend to all of us, and I'm going to tell you something that'll give you a chance to show you're square friends of his, too." He paused, and then leaning forward with both hands on the table, and looking straight down on the long rows of bearded faces, "how about this, boys? Shall we stand it?" "No!" was the reply in chorus. "All right, then. Three cheers for Mr. Bannon. Now – Hip, hip..." There was no stopping that response.


***Novel's condensed text by***

Ranjit Sahai, ASCE-NCS Past President (2013–14), is a principal with RAM Corp serving State DOTs on projects in traffic engineering design, stormwater facility inspections, and information technology. ■

# ASCE 2021 National Election

By Thomas W. Smith III, P.E., ENV SP, CAE, F.ASCE, Society Secretary

The 2021 national election concluded on Tuesday, June 1, and the Tellers Committee convened this morning to validate the election results. Consistent with the Society's Bylaws, I am writing to give you formal notification of the results of this year's election which includes the following newly elected ASCE leaders and results of the constitutional amendment vote.

By a vote of 66.5% in favor and 33.5% against, the membership also defeated the proposed constitutional amendment intended to allow Student Members the right to vote. Amendments to the constitution require the affirmative vote of two-thirds (2/3) of those members voting.

If you have questions regarding the election results, please contact Patty Montgomery, Managing Director of Executive and Board Operations, at 703/295-6101 or pmontgomery@asce.org. ■

**President-elect Elect:**
Maria C. Lehman, P.E., ENV SP, F.ASCE

**Region Directors-Elect:**

| | |
|---|---|
| *Region 3:* | Kenneth R. Mika, P.E., M.ASCE |
| *Region 4:* | Findlay G. Edwards, Ph.D., P.E., D.WRE, BCEE, F.ASCE |
| *Region 8:* | Lawrence M. Magura, P.E., D.WRE(ret), F.ASCE |
| *Technical Region:* | Daniel F. Becker, M.ASCE |

**Region Governors-Elect:**

| | |
|---|---|
| *Region 1:* | Craig F. Ruyle, P.E., M.ASCE<br>Beth Ann Smith, P.E., BCEE, M.ASCE |
| *Region 2:* | Patrick J. Sullivan, Jr., P.E., M.ASCE |
| *Region 3:* | Jesse D. Jefferson, P.E., PTOE, M.ASCE |
| *Region 4:* | Colette Easter, P.E., M.ASCE<br>Maneesh Krishnan, P.E., M.ASCE |
| *Region 5:* | Robert L. Jackson, P.E., M.ASCE<br>Bradley M. Williams, P.E., M.ASCE |
| *Region 6:* | Sonya Leigh Cooper, Ph.D., P.E., M.ASCE<br>Lawrence D. Goldberg, P.E., ENV SP, F.ASCE |
| *Region 7:* | Molly K. Bennett, A.M.ASCE<br>Jennifer Jacka-Taylor, P.E., ENV SP, M.ASCE |
| *Region 8:* | Virginia J. Groeschel, A.M.ASCE<br>Robert B. Turner, P.E., F.ASCE |
| *Region 9:* | Patricia "Tricia" McColl, P.E., M.ASCE |
| *Region 10:* | Kamal Laksiri, Ph.D., P.E., F.ASCE<br>Saliu A. Lawal, C.Eng, M.ASCE |

Maria C. Lehman, P.E., ENV SP, F.ASCE

## Employment Clearinghouse

### Toole Design Group

The Toole Design Group in Silver Spring, MD is looking to hire a Senior Civil/Roadway Engineer with at least 10 years experience and a Civil/Roadway Project Engineer I/II with at least 4 years of experience. Candidates should have a broad knowledge base in civil engineering with a transportation focus. Click on the links above to learn more and to apply!

*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.*

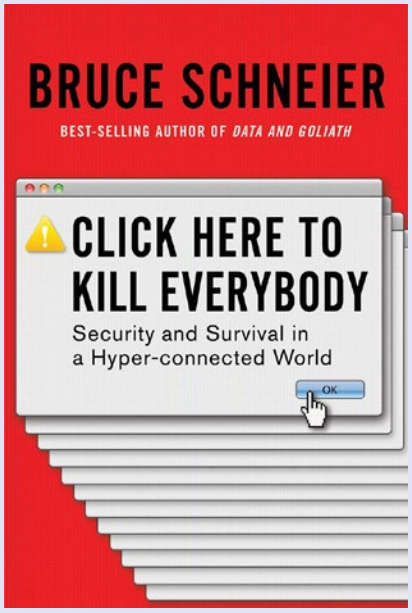
# Click Here to Kill Everybody

A book review by Ranjit Sahai, PE, F.ASCE

The week-long disruption of operations at the Colonial Pipeline on May 7, 2021, that elicited the declaration of emergency by the U.S. President two days later, is a grim reminder that technology cuts both ways. On the one hand, it enables the modern miracles of life such as smart pacemakers, connected vehicles, and vast pipeline networks. On the other, in the hands of cybercriminals, it can stop pacemakers, crash cars, and run gas stations dry – indeed kill everybody.

Bruce Schneier, a world-renowned computer security technologist, is a prolific and engaging author. In his book, *Click Here to Kill Everybody*, published in 2018, he makes the subject of security for connected devices and infrastructure, accessible – with vivid and commonplace examples – to any interested reader. What makes the book particularly valuable is his keen insight into the current state of security vulnerabilities, why they exist and what to do about them.

When "Security was largely about privacy, and entirely about bits," he writes, the current market-driven approach worked satisfactorily. However, when "threats are about life and property," that approach cannot work. The role of protecting life and property against aggressors, he continues, falls squarely on the shoulders of the government. He draws a parallel for how Internet safety can improve, with the process of how air travel safety improved. "Airplanes used to be incredibly dangerous, and fatal accidents were common. What changed was airplane safety regulation…in airplane design, flight procedures, pilot training, and so on. The result is




that today, commercial airplanes are the safest way to travel, ever."

The book is organized into two parts. Part I begins with a focus on the nature and evolutionary trends of computer hardware, software patching procedures, and user authentication; and concludes by identifying the main reason for the currently vulnerable state of security – the prioritization of surveillance and convenience over security and privacy – and by emphasizing why risks of staying the course are becoming catastrophic.

Part II focuses on solutions: "If we want more security, we're going to have to spend money to get it." Here, the author talks about private expenditures to secure hardware and software that result in higher prices; and about public expenditures to develop relevant regulations and global protections. "There's a joke that says technologists look to the law to solve their problems, while lawyers look to technology to solve their problems. In truth, to make any of this work, technology and law have to work together."

It is in the second part of the book do you gain the author's insights into design principles for devices, security principles for data, security principles for telecommunication networks, and the need to disconnect some systems vs "today's race to network everything."

The book is meticulously organized and contains a compelling collection of ideas that is sure to help you communicate about infrastructure security intelligently with stakeholders, policy makers and security vendors alike.

If your interest in internet security is more from a personal privacy perspective, you will find the author's book *Data and Goliath* (2015) more relevant than the book reviewed. If your interest is in understanding the encoding and decoding underpinning of security for digital signatures and the like, consider exploring his book *Applied Cryptography: Protocols, Algorithms, and Source Code in C, 20th Anniversary Edition (2015)*.

## About the Reviewer

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.

# Fenestration & Glazing Industry Alliance

### Registration now open for FGIA 2021 Virtual Summer Conference; Keynote speaker to link demographics and economy

Registration is now open for the 2021 FGIA Virtual Summer Conference, which will be held June 22–24, and is the last fully-virtual event on the FGIA conference calendar. Keynote speaker Ken Gronbach, president of KGC Direct, will give a presentation entitled, "Demographics Precipitate Economics: Profound Strategic Planning for the Post-Pandemic Era." Early bird registration rates are available through June 8. Register now.

Gronbach's presentation will explore the common sense, easy-to-understand, counter-intuitive and fascinating realm of demography. He will bring listeners into his world of counting people and accurately forecasting future markets and will provide thought-provoking ideas to prepare one's company for life after the pandemic.

Questions answered during the session will include:

- What products or services will fly or die?
- What countries and continents are demographically positioned to excel?
- How will workforces change?
- Where is the best source of talent?
- How do I write a post-pandemic strategic plan?

"Our keynote address is sure to offer great insights to support the industry's efforts to move forward from the pandemic and get back to work safely and efficiently. Also during the Summer Conference, we're excited to unveil details of our first ever hybrid conference coming up in October," said Janice Yglesias, FGIA Executive Director.

Other presentation topics include how to build one's workforce, OSHA's voluntary protection program, the benefits of daylighting, a U.S. and Canadian legislative and regulatory report and a codes report for both countries. The remainder of the conference schedule reflects discussion and work sessions addressing current association activities.

Through June 8, FGIA members can register for the conference at the member price of $249. Non-members can register for $499. An upgrade option, which allows for an unlimited number of a company's employees to participate from multiple locations, is also available.

Register for the FGIA 2021 Virtual Summer Conference now. Sponsorship opportunities are also available for the event. Learn more about sponsorship by contacting Florica Vlad.

### About the Keynote Speaker

Ken Gronbach is president of KGC Direct, LLC and is an internationally respected demographer who has been able to forecast societal, commercial, economic, cultural and political phenomena with uncanny accuracy. Gronbach's company offers high-value customized demographic research. He is the author of the best-selling book The Age Curve: How to Profit from the Coming Demographic Storm and several other books focused on demographics.

### FGIA to host hybrid Fall Conference with in-person and online options

In support of helping the industry continue to move toward re-opening, the Fenestration and Glazing Industry Alliance (FGIA) announces that its 2021 Fall Conference will offer an in-person event option. The conference will benefit from a hybrid format in which participants may choose to either attend physically at the Sheraton Grand at Wild Horse Pass in Phoenix, or connect virtually. The conference will be held Oct.18–21, with registration opening in early July.


"This new hybrid format seeks to continue serving our members in every capacity, whether they are located in the U.S. or Canada, and whether they prefer to gather in person or online," said Janice Yglesias, FGIA Executive Director. "The different options will offer two distinct but blended experiences that deliver the high value and interest that is customary of FGIA events."

To best serve members and meeting participants and to address safety concerns as FGIA transitions back to in-person gatherings, FGIA Meetings Manager, Florica Vlad, has become a Pandemic Compliance Advisor (PCA) through Health Education Services, in addition to being a Certified Event Planner (CEP). The PCA role is tasked with enforcing actions to assure participants and staff are protected within the scope of an event from contracting or spreading COVID-19. While FGIA, like any entity, is unable to guarantee zero levels of exposure, participants can be confident that all possible precautions will take place prior to, during and following the Fall Conference.

While the schedule for the conference is still being developed, author and body language expert Janine Driver will reprise her role as the event's keynote speaker.

"We are thrilled to welcome back Janine Driver as our keynote speaker for the Fall Conference," said Vlad. "Janine was a popular speaker at our event in 2017, and we look forward to sharing her expertise with both our in-person and virtual audiences."

New FAQs have been added to the FGIA website to address questions about the Fall Conference's hybrid format, including information about the U.S. Center for Disease Control's up-to-date guidance and the plan to ensure safety is the conference's first priority.

To learn more about upcoming FGIA events, visit FGIAonline.org/events. Contact Florica Vlad at fvlad@FGIAonline.org with any questions. ■

# WSSC Water Commissioners Approve Contract with Washington Gas to Advance Innovative Piscataway Bioenergy Project

## Project Transforms Sewage into Renewable Energy

WSSC Water Commissioners today approved an 18-year contract with Washington Gas (WGL) for the construction and installation of approximately 900 feet of natural gas pipeline and related infrastructure to supply natural gas to, and convey renewable natural gas from WSSC Water's Piscataway Bioenergy facility in Accokeek, Maryland in Prince George's County.

Washington Gas, a regulated utility that serves more than 1.2 million customers across Washington, D.C., Maryland and Virginia, will seek the Maryland Public Service Commission's approval of the project this summer. Once approved, construction of Washington Gas' infrastructure is expected to begin in spring 2022.

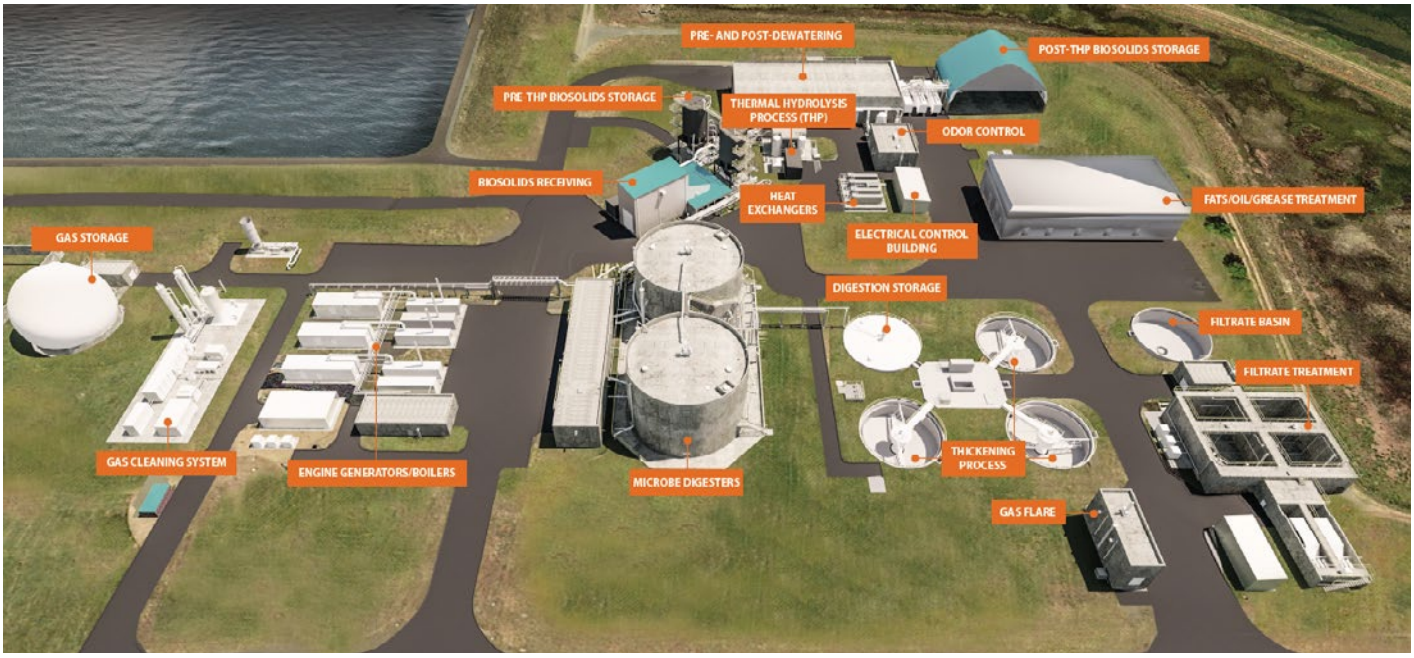
At the heart of the Piscataway Bioenergy project is how WSSC Water handles biosolids, the nutrient-rich organic materials resulting from the wastewater treatment process. Currently, WSSC Water's five major water resource recovery facilities produce about 8,000 tons of biosolids each month. Through innovative technology at the bioenergy facility, the amount of biosolids left over from the treatment process will be significantly reduced and cleaner (Class A). The process used to create these Class A biosolids will generate methane gas, which will be captured and upgraded to renewable natural gas (RNG) that WSSC Water will sell on the open market. Selling RNG will generate Renewable Fuel Credits, which can be sold to the petroleum industry – generating additional revenue for WSSC Water.

"This contract approval is a significant step in delivering a project for our customers that will reduce greenhouse gas emissions, help protect the Chesapeake Bay, create renewable energy and save our customers money," said WSSC Water General Manager and CEO Carla A. Reid. "I thank our Commissioners for approving this funding and Washington Gas for their partnership in delivering on a cleaner and greener future."

"We are pleased to partner with WSSC Water on our first innovative project to turn waste into energy so that we can further lower greenhouse gas emissions in our region," said Blue Jenkins, President of Washington Gas. "This project will enable us to continue to refine and learn more about this promising technology so that we can expand the use of RNG across our region as we all work together to create a cleaner energy future."

This bioenergy facility will **help** protect the Chesapeake Bay by reducing greenhouse gas emissions by 15 percent and save WSSC Water customers more than $3 million per year by reducing WSSC Water's operating costs. Construction of the $271 million facility began in May 2019, and is expected to be complete in fall 2024, weather permitting.

Learn more about the project at www.wsscwater.com/bioenergy. ■



# ASCE-NCS Committee and Branch News and Updates

ASCE NATIONAL CAPITAL SECTION
YOUNGER MEMBER FORUM

## Younger Members Forum

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

**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.

On May 5th the NCS YMF held their 5th virtual happy hour and on June 2nd, their 6th virtual happy hour of the year on Webex! We hope for a bigger turnout when the group hosts their next virtual happy hour tentatively scheduled for 6PM on July 7th on Webex, look out for some emails soon with registration details. We hope to virtually see you there and can't wait to see you all again in person as soon as we are able!

**Professional Development:** We have rescheduled the first part of a three-part Career Booster series for June. Part One will be held on Webex, look out for an email with registration details. Additionally, 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.

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

**Get Involved!** Are you interested in getting involved with more Younger Members activities? Do you have ideas for social events or volunteering activities? The NCS Younger Members Group is always looking for new members! Let us know if you are not already on our mailing list! If you would like to become more active with the YMF or would like more information on our events, please email the YMF President.

## Education Committee

By Jameelah Muhammad Ingram, P.E., M.ASCE

**Congratulations to ASCE NCS Student Chapter Graduates!**

The ASCE National Capital Section (NCS) Education Committee would like to extend our congratulations to graduates of the five student chapters within the National Capital Section. This includes the Catholic University of America; George Mason University; George Washington University; Howard University; and The University of the District of Columbia. You made it!

Your adventures with the American Society of Civil Engineers are just beginning. Whether you move across the country, travel internationally, or remain local to the National Capital Section, ASCE members are available to assist with your transition from student to professional member. ASCE even offers a free year of professional membership as a new graduate.

**To upgrade to professional membership, please visit: www.asce.org/upgrade-your-membership/.**

Your graduating class has endured additional challenges as the world continues to face a global pandemic. In searching for a silver lining, recall that a challenge can also become an opportunity to engineer meaningful change. It has been my absolute pleasure to be your Education Committee Collegiate Chair. As you continue your career path, please remember to enjoy the journey and reach out for guidance from your ASCE NCS family.

## Environmental & Water Resources Institute

**From Swine Lagoons to Space and Back**

On June 3rd, the EWRI committee hosted Bill Cumbie, PE, founder of Pancopia, Inc. who discussed their research on how swine wastewater has helped NASA and how NASA has improved the treatment of swine wastes.

Water is essential for life. It is the major component of virtually all creatures and its abundance on Earth is one of the major reasons life can thrive on Earth. We use water for travel, for recreation, for growing crops, and it plays a part in many aspects of our life. Water connects everything and we must recognize that interconnectedness if we are to have a clear vision of how to enjoy and preserve this resource.

The presentation started by discussing the challenges of supplying water for astronauts in space and then discussed the science of biological water recycling including the research being pursued at Pancopia using anammox, a recently discovered bacterium that can more than halve the cost of nitrogen removal from wastewater.

The discussion focused on how 'earth bound' systems and technologies can help resolve issues in space and how solutions to problems in space can improve systems on Earth. Bill explored how research from one field can be applied in another and how this paradigm has played out the research that NASA has sponsored.

Bill Cumbie, PE, is the founder and Chief Executive Officer of Pancopia, Inc., a research, development, and commercialization firm specializing in the identification and introduction of environmental technologies that transform wastewater from a liability to a productive asset. Bill has forty years' experience in water purification and reuse. He received his Civil Engineering degree from Old Dominion University and a Master's in Sanitary Engineering from Virginia Tech. He is a Registered Professional Engineer in Virginia with experience as a Plant Manager at Hampton Roads Sanitation District. ■