

# eNewsletter

## National Capital Section

FOUNDED 1916

Summer 2016 Volume 62, Number 9

SPECIAL CENTENNIAL ISSUE

ASCE-NCS on the web: [asce-ncs.org](http://asce-ncs.org)

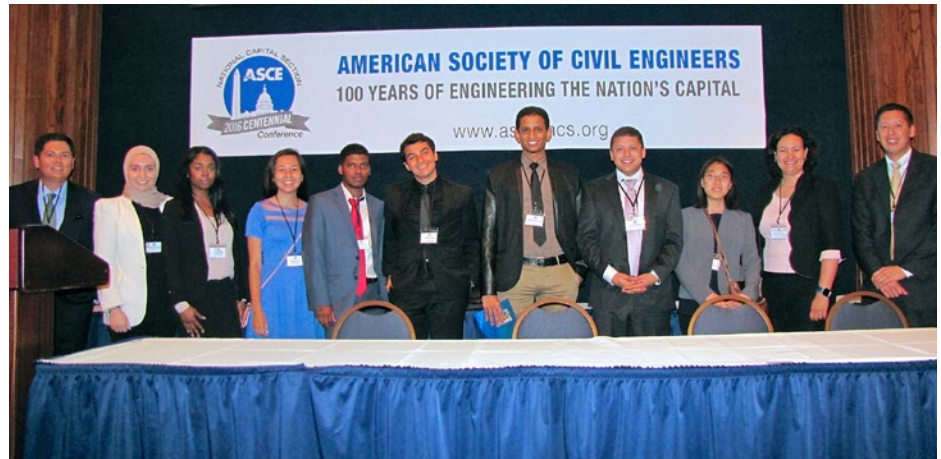
## What a Centennial Year We Have Had, and We Still Have Half a Year Remaining!

By Victor Crawford, PE, M.ASCE, Centennial Committee Chair, NCS

What could be more appropriate than having a special newsletter in June focused solely on our Centennial? On June 23, 1916, the Constitution of the District of Columbia Association of Members, recently formed, was approved during the American Society of Civil Engineers (ASCE) Annual Convention at the William Penn Hotel, in Pittsburgh, PA. As a result, the Association of Members, now the National Capital Section (NCS), has been engineering the nation's capital for 100 years this month.

Thank you to all of our volunteers that have worked so hard to make this year so successful. This begins with our June Centennial Engineer of the Month, Chris Manalo. His dedication and leadership made our Centennial Celebration possible, especially when you realize the first Centennial planning meeting was held in December 2013. In addition to serving as the first Chair of the Committee, he also served as the NCS President and worked diligently on the Report Card for the District of Columbia.

A major goal for the Centennial has been student outreach. In February, the NCS was at the Discover Engineering Family Day at the National Building Museum. Then in April, we reached out to over 350,000 students and their parents, along with teachers and the public by having students build bridges, by promoting the IMAX Dream Big movie premiering February 2017, and by showing how civil engineers support sustainability at the USA Science and Engineering Festival. A special thanks to Dean Westman for being our leader for these outstanding outreach events, to Jeannine Finton for her hard work along with family and co-workers from ASCE Headquarters,



The NCS thanks our Centennial Conference student volunteers.

and thanks to all the volunteers that came out to support these excellent opportunities for Science, Technology, Engineering, and Math (STEM), where the NCS directly reached over 4,000 attendees.

The Centennial Commemorative Book Subcommittee "Engineering the Nation's Capital – A Century of Innovation and Promise for the Future" has exceeded all our expectations. David Smith, Norine Walker, and L.J. Sauter, your long hours have paid off, we are indebted to you and the many volunteers that worked so hard on this legacy of our Centennial. If you did not receive your message for purchasing this outstanding book, [order now](#). We want all our members to have their own copy so you can let your family and friends know about your profession and local accomplishments. Buy as many as you like, we can always have more printed. We are also seeking members to work with local libraries to have a book shown in the local interest display case. Please let us know if you are interested, our grant from ASCE will pay

for the book, but we need volunteers to contact their local library.

Since there are many write-ups on our very successful Centennial Conference in this newsletter, I will not go into detail except to say it was exceptional. Our keynote speaker was Major General Mark Yenter from the USACE, who not only discussed the history of the USACE work in engineering the Nation's Capital, but also represented General Alexander MacKenzie, a former Chief of the Corps, who in 1905 led a five-member committee to form the Washington Society of Civil Engineers. This action resulted in our Charter being approved at the ASCE National Convention in 1916. Mark Woodson, ASCE President, represented the Society at the conference. This Conference was simply the Civil Engineering event of our Centennial Year. This was made possible by the dedicated work of many, but especially Chris Manalo, Lucy Menon, Alan McDonald, Summer Guerrero, Emily Dean, Ranjit Sahai, Alex Rosenheim, Mike Henry, Hari Aamidala, Stuart

*continued on page 2*

Crooks, Gillian Love, Brian Barna, and Dirk Bouma, along with our student volunteers.

So how are we filling the second half of our Centennial Year? By continuing our outreach, so we are requesting NCS members become STEM volunteers. The American Association for the Advancement of Science (AAAS) has been bringing STEM volunteers into the classrooms for over ten years, and the NCS is collaborating with their superb student outreach program. Please see the write-up on this exceptional program, and consider signing up, so we can bring your knowledge and experience into the classrooms in the fall. NCS will be sending volunteers with three copies "Engineering the Nation's Capital – A Century of Innovation and Promise for the Future" to leave in the science/engineering classrooms.

Another STEM experience for students is the NCS Centennial interactive map of engineering accomplishments in the Nation's Capital. This map will allow students, by clicking on an internet accessible map, to obtain descriptions for our engineering achievements along with photos and fun facts. The interactive map provides a way to show off the accomplishments of civil engineers and inspire them to consider joining our profession. The Centennial Committee is seeking volunteers for this project.

"One of the best full-day symposiums that I have ever attended. It was packed with a well-orchestrated balance of quality topics, represented by leading engineering managers. The attendees were energized all day long. Congratulations to the NCS for executing this memorable event. Not only did they carry this out, but they also did a fantastic job with their 100th Anniversary book and their recently released, first area regional report card. The Region 2 and Society leaders are very proud of the NCS's accomplishments."

*Attendee Christopher J. Menna, PE, F.ASCE, Region 2 Director, ASCE*



The NCS thanks all of our Centennial Conference volunteers for making the Conference a success!

Finally, we are planning a public outreach by hosting a Centennial Celebration Tour for all. Still in the planning stage, we are looking for civil engineers to develop and present topics at stations set up around the Mall, where using historical photos you will

explain how our profession transformed a swamp into the "front yard" of the Nation.

Remember, the NCS represents the ASCE in the Capital area. To meet our obligation to the profession, we have already had many Centennial Celebration activities, and we have several additional ones. This includes our STEM outreach to schools, our interactive map to highlight our profession's accomplishments, and a Centennial tour open to the public. Your assistance will help make these ongoing endeavors a success. So, whether you are a Young Member, a Life Member, or somewhere in between, we need your help. Please join us by contacting the Centennial Committee at [vicris51@verizon.net](mailto:vicris51@verizon.net). ■

**The NCS thanks all of the Centennial Conference speakers, session recap authors, and our photographer, Dirk Bouma, PE, M.ASCE.**

## Newsletter

**Rachel Schneider**, Editor

**Next Issue: September 2016**, Articles Due: August 15, 2016

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### Committee Chairs

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

## Volunteer Opportunity for Supporting Science, Technology, Engineering, and Math (STEM)

By Victor Crawford, PE, M.ASCE, Centennial Committee Chair, NCS

The NCS is working with the American Association for the Advancement of Science (AAAS), which has been bringing engineers and scientists into the classrooms for over ten years (<http://www.aaas.org/senior-scientists-and-engineers/programs-dc>) in supporting STEM in DC area schools. Recognizing the importance of STEM for the continuance of the civil engineering profession, NCS has embraced this educational outreach program and is preparing for the fall 2016 semester.

Volunteers will use their experience and knowledge to assist K-12 teachers in bring civil engineering concepts to young students. This program works

particularly well for retirees that can devote one day a week to volunteering.

We are focusing on the elementary schools where your expertise in civil engineering would be very welcome by teachers introducing science concepts to young students. However, there are also many programs at all class levels including Project Lead the Way,



which has a civil engineering component. The NCS is providing three copies of "Engineering the Nation's Capital – A Century of Innovation and Promise for the Future" to leave in the science/engineering classrooms.

If you are interested in giving back to the profession while sharing the joy of engineering with eager young minds, please contact Victor I Crawford at [vicris51@verizon.net](mailto:vicris51@verizon.net). ■

## Centennial Program and Conference Overview: Christian Manalo, PE, BCEE, M.ASCE, NCS Past President

Recap by Emily Dean, PE, MASCE, NCS Treasurer

Chris Manalo kicked off the Centennial Conference with a brief history of the section and the planning of our Centennial Celebration.

The earliest Washington Post articles that mention the NCS reference an event in 1955 to celebrate the Section's 50<sup>th</sup> Anniversary, which would suggest that the Section was established in 1905. Further research discovered that the Washington Society of Civil Engineers



was established in 1905. So why are we celebrating our Centennial in 2016 and not 2005?

At first, the NCS members were concerned that we had missed our Section's centennial, but since everything from ASCE National referenced 1916 as the NCS founding year some members continued digging. They discovered that while the first meeting of the Washington Society

of Civil Engineers was held in April 1905, the NCS was not officially chartered until 1916.

Fast forward to winter 2013 and planning for the NCS Centennial Conference begins. An overall Centennial Committee was formed with four subcommittees: Dream Big, Centennial Commemorative Book, Conference Planning, and Sponsorship. The committees planned several events and activities including tours of the area, a report card that rated the area's infrastructure, an Engineer of the Month series for Section meetings and newsletters, and the Centennial Commemorative Book and water bottles for members to remember the Centennial Celebration. ■

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# Engineering the Nation's Capital – A Century of Innovation and Promise for the Future

Presented by David Smith, PE, NCS Centennial Commemorative Book Sub-Committee Chair

Recap by Emily Dean, PE, MASCE, NCS Treasurer

While the Centennial Celebration was designed to celebrate the NCS and its 100-year history, the Centennial Committee thought a book that celebrated civil engineering projects from around the area would be a great way to highlight accomplishments of the civil engineers that helped make our Section what it is today.

The Centennial Commemorative Book subcommittee, led by David Smith, LJ Sauter, and Norine Walker, designed the book to highlight the history of the area, the accomplishments of local

civil engineers, the beauty of our Nation's Capital, and hope for the future of the National Capital area and the engineers who work here.

The final product is a tangible representation of how much engineers in the area



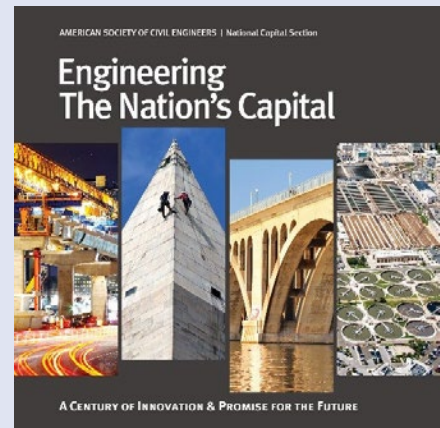
have accomplished in the past 100 years and would be a great addition to anyone's coffee table. While there are very technical projects described in the book, it is written for people with little or no engineering background to enjoy. ■

## Engineering the Nation's Capital – A Century of Innovation and Promise for the Future

The Centennial Celebration Committee proudly presents, after more than two years in the making, this 130-page hardcover book in coffee-table format. The book, suitable for home or office, will inspire generations of civil engineers through its stories and images of some of the most notable infrastructure in the Washington, DC area. [ORDER NOW](#), and order as many as you want, we can always print more.

Featured projects and initiatives include

- D.C.'s Metrorail
- Reagan and Dulles Airports
- Washington Monument
- U.S. Capitol
- Woodrow Wilson Bridge
- The Capital Beltway
- D.C.'s Clean Rivers Project
- The Pentagon
- Springfield Mixing Bowl
- George Washington Memorial Parkway
- Francis Scott Key Bridge
- Arlington Memorial Bridge
- Monocacy Aqueduct



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## Highways: Walter “Butch” Waidelich, Jr., PE, Executive Director of the Federal Highway Administration

Recap by Brain Barna, PE, M.ASCE, NCS Secretary

Walter “Butch” Waidelich, Jr., spoke on the current state and future of our highways in the United States. He stated the NCS Centennial in 2016 coincides with the 100-year anniversaries of the Federal Highway Act and the establishment of American Association of State Highway and Transportation Officials (AASHTO), as well as the 60-year anniversary of the establishment of the Interstate Highway System. Our national roads have come a long way since the dirt roads of 100 years ago, and Mr. Waidelich expects the passage of Moving Ahead for Progress in the 21<sup>st</sup> Century Act (MAP-21) in 2012 and the FAST Act of 2015 to have a “transformative”



effect to prepare our highways for the next century. The FAST Act allocates \$225 billion for highways and \$60 billion for transit over the next 5 years and earmarks money specifically for the deployment of innovations in road technology studied by the Federal Highway Administration. Mr. Waidelich thanked ASCE for its advocacy to encourage Congress to pass these laws to fund highway infrastructure after several years of stagnant funding.

Mr. Waidelich offered several goals for his agency to help to improve our nation’s highways. It is important to accelerate project delivery, and the government has

responded by reducing environmental review for highway projects from 72 months to 46 months. Other goals are to improve condition assessments, communication and idea sharing between agencies, and to optimize the investment of public funds. He stressed the importance of communicating how we are using these investments to illustrate why infrastructure is important and how the nation’s tax dollars are being used. President Barack Obama and Secretary of Transportation Anthony Foxx consider transportation to be a “pillar of opportunity” – it increases citizens’ ability to achieve the American Dream. The U.S. Department of Transportation recently released *Beyond Traffic 2045*, a draft framework for the next 30 years of highway progress to underscore critical decisions facing the country using analysis, research, expert opinions, and public engagement. ■

## WMATA: An Engineering Feat and Challenge

Presented by Andrew Off, PE, PMP, Assistant General Manager for Rail Services, Washington Metropolitan Area Transit Authority

Recap by Stephen C. Powers, PE, and Paul A. Berman

Founded with the groundbreaking at Judiciary Square in 1969, Washington Metropolitan Area Transit Authority (WMATA) has connected the Washington D.C., Virginia, and Maryland region for almost 50 years. Since its inception, Metrorail has become the integral vehicle for economic growth and development in the region accounting for more than eight percent of the district’s gross domestic product. So, the looming question is: *Why is Washington D.C.’s Metrorail undergoing the largest rehabilitative effort the company has seen since its launch?* In the 1980s, the average weekly window for maintenance was 54 hours, but with increased use over the past 36 years, some of the lines are experiencing more than three times their designed load capacity, consequently lowering the maintenance window to 33 hours while placing an amplified stress on the infrastructure. Therefore, with over 234 miles of track and 91 interconnected stations, there has been a mounting backlog of facility maintenance issues facing

Metrorail. However, beginning summer 2016, WMATA is taking action to unplug the drain. Starting June 3, the program SafeTrack began three years of work accelerated into one year; hoping to accomplish vital repairs to the system. Line segment shutdowns will be implemented in order to gain greater access, allowing engineers to address the current challenges that face the rail, according to Andy Off.

There were three distinct challenges discussed by Mr. Off; water infiltration, which is the principle cause of insulator fires, corrosion of rail materials, and the loss of operational flexibility. Rail fasteners, rail curves, along with several other pieces of the track (boots and seals,



insulators, wooden ties, etc.) have not met their respective service lives mainly due to the rapid increase in use of the system. To solve these problems, along with SafeTrack, WMATA is issuing \$950 million in the upcoming fiscal year for the rehabilitation of its infrastructure, totaling more than \$5.3 billion from fiscal year 2011 to fiscal year 2017. Metro still forecasts several challenges ahead including maintenance engineering and retrofitting the existing infrastructure to meet their future desires. To accomplish these goals, the company proclaims that it still needs help with expedient means for water mitigation, direct fixation fasteners, and arcing prevention. ■

# Bridges from the District to NOVA: Where We Are Today and Challenges That Lie Ahead DDOT Bridges

Presented by Konjitt Eskender, PE, Bridge Engineer, District Department of Transportation

Recap by Jameelah Muhammad Ingram, PE, MASCE, Lead Structural Engineer, WSP | Parsons Brinckerhoff

The District of Columbia Department of Transportation (DDOT) manages the transportation system in the District of Columbia. The Department strives to achieve an exceptional multi-modal transportation system that makes the city livable, sustainable, prosperous, attractive, and one that allows goods and people to move easily. DDOT is dedicated in serving the public who live, work and visit the nation's capital.

DDOT is responsible for 232 bridges (six of which are historic) and 15 tunnels and underpasses. Although the inventory may seem small, it includes major river crossings and freeways. In recent years, DDOT has successfully reduced the number of structurally deficient bridges in the District from 10 to 5 by ensuring bridge replacement or rehabilitation projects were programmed and funded. Completed projects include the replacement of 11<sup>th</sup> Street Bridge, 16<sup>th</sup> Street Bridge over Military Road, and of the 27<sup>th</sup> Street Bridge over Broad Branch Stream. In addition, the bridge maintenance and repair program has helped to delay and reduce deterioration of

bridge elements. Construction for most of the remaining structurally deficient bridges will begin between 2017 and 2018.

The average Washington, D.C. bridge age is 58 years. One in four bridges (25%) has a deck, superstructure, and/or substructure condition rating of five in the National Bridge Inventory (NBI), which gives the bridge an overall "Fair" rating. Two of the District's major bridges with NBI ratings of five include the H Street Bridge over Washington Terminal Yard and the Theodore Roosevelt (TR) Bridge over the Potomac River. Undertaking large projects like H Street and TR Bridge, planning and implementing new programs and maintaining existing ones with a limited funding source will be a challenge.



Challenges bring opportunities. With that in mind, DDOT continues to implement new technologies on bridge projects through collaborations with the Federal Highway Administration and private industries. Examples of these technologies include the use of prefabricated bridge elements, Ultra High Performance Concrete, fiber-reinforced polymer bridge deck, and Geosynthetic Reinforced Soil-Integrated Bridge System. In addition, DDOT is also planning to have a robust program to implement Transportation Performance Management and the National Highway Performance Program Asset Management Plan.

Working together as One DDOT, the agency is optimistic about the future of our infrastructure in Washington, D.C. ■

# VDOT: Structure & Bridge Asset Management, NOVA District

Presented by Gary A. Runco, PE, PS, District Structure & Bridge Engineer, Northern Virginia District

Robert E. Simon, Jr. founded Reston, a town in Northern Virginia. He was integral in transforming acres of fields and wilderness into the thriving community it is today. Mr. Runco challenged the NCS challenged to model Mr. Simon's example and to continue embracing a forward-looking approach with respect to



infrastructure. The Virginia Department of Transportation (VDOT) consists of nine highway districts, including the Northern Virginia (NOVA) District. The Structure and Bridge Section of the NOVA District consists of 45 members, which will grow to 54 in the near future.

bridges and culverts. Twenty-seven of these bridges and culverts were realized in the last 8 to 9 months. Concerning bridge condition, 98.2% of the bridges and culverts have NBI ratings of 5 or above and are not structurally deficient. Approximately 13% of the bridges and

culverts in the NOVA District's inventory are on the cusp of becoming structurally deficient, which will occupy future efforts. Other assets in the NOVA District consist of sound walls, retaining walls, and ancillary structures, such as luminaires, signs, and signal structures.

The NOVA District – Structure and Bridge Section manages support contracts ranging from bridge inspection to culvert clean up. They also manage statewide contracts such as Bundled Interstate Maintenance Services and Mega Projects. Other duties include coordination with agencies, design reviews, providing expert advice, and review of developer requests for new bridges and air rights. Other responsibilities include handling damage from errant vehicles, utilities on bridges, and the Rosslyn Tunnel in particular.

*continued on page 7*

The budget for the NOVA District – Structure and Bridge Section includes construction and maintenance funding. The budget allocated to construction varies and is often supported by funds from multiple sources, including localities. Maintenance dollars range from \$22M to \$24M annually and will be reduced to \$20.1M\* in FY17. Furthermore, \$10.36M in State of Good Repair funding for 2 bridges

has been added for FY17.\* A notable project currently in construction is Route 7 over the Dulles Toll Road. It is a \$44M design-build project in Fairfax County, which consists of a bridge deck replacement and widening. The Route 27 (Washington Boulevard) Bridge over Route 110 (Jefferson Davis Highway) is another project under construction. It is located adjacent to the Pentagon in Arlington

County and is being rehabilitated at a cost of \$31.5M.

In alignment with Mr. Simon’s vision, the Northern Virginia District – Structures and Bridge Section is fully engaged in advancing the state of its infrastructure as maintenance, design, and construction work continues.

\*Values updated since date of presentation

## A Challenge to ASCE: The Need for a New Solution to the Federal Gas Tax

By Gary A. Runco, PE, PS, District Structure & Bridge Engineer, Northern Virginia District

*Editor’s note: Due to space constraints, we had to omit part of this article. To read the entire challenge, please visit our [website](#).*

When I became President of the ASCE Pittsburgh Section, a previous president told me that every President was entitled to one crazy idea. I did not have one back then...but now I do. I am putting this out there for others to support or reject, but I am hoping it gets the dialogue started. I hope that it causes others, who are smarter than I am, to visualize a new direction; and ASCE leaders step forward and champion a new direction.

When The **Intermodal Surface Transportation Efficiency Act of 1991** (Public Law 102-240; **ISTEA**, pronounced *Ice-Tea*) came into existence it posed a major change to transportation planning and policy, as the first U.S. federal legislation on the subject in the post-Interstate Highway System era. ISTEA signaled a *New Era* in transportation planning. Now it is time for the next chapter; we need a change.

Every organization, including ASCE and the Transportation Construction Coalition (TCC), representing 31 national associations and labor unions, have been pushing Congress to fund transportation. Alternately, about 30% of Senators favor removing the federal government from the highway business, based on recent votes on devolution. This article is about a hybrid approach to devolution. Where there is a restructuring of transportation from the perspective of both funding and ownership, we can learn from examples and think differently.

Starting points for a new solution

1. With the FAST Act (Fixing America’s Surface Transportation Act) in place, we now have **4.5 years to develop a plan**.
2. For years congress has debated **Devolution** (Devolution is returning nearly all transportation revenue raising and responsibilities to the states.)
3. Beginning with The Intermodal Surface Transportation Efficiency Act (ISTEA) in 1991
  - The Act presented an overall intermodal approach to highway and transit funding with collaborative planning requirements, giving significant additional powers to Metropolitan Planning Organizations (which are Regional).

This is just one idea... from one ASCE member...

I simplified it.

- I left out transit,
- I left out rail,
- I left out all the agreements, grants, and loans that are in-place.

These can all be worked out. The Highway Trust Fund was once used only for highways. Aviation is a form of transportation and it is not bundled. Highways should be separate from transit and rail. The public is clamoring for a new way of business in

Washington. We need to simplify the way we do business by creating programs, policies and funding streams that make sense.

We need to do something different. We are smart enough to find a better solution.

This is the Challenge to ASCE:

1. Think of a Long Term Sustainable Solution
2. Think of New Ownership Models (This is happening with P3s)
3. Think of Authorities or Public Utilities
4. Think about a Paradigm Shift

### **My Challenge to ASCE:**

Develop this solution or a better one over the next 4.5 years. Do not just beg the federal government to fund highways. As ASCE, we need to lead in identifying a long-term sustainable solution to transportation funding. We can lead or we can follow...WE NEED TO LEAD and we need to think! We need to think of a better way. We need a paradigm shift to **user fees** and away from taxes. Funds come from the same pool, the citizens of the United States. It is simply a function of how it is collected and distributed and what is logical and more palatable. I see ASCE as the leaders in this effort. I know ASCE can lead the charge. We publish the Report Card on America’s Infrastructure and that has become the standard by which infrastructure is judged. We need to lead Congress and the consortium of 31 organizations to a **New Era in Transportation!**

## Leadership, Value, and Innovation at DC Water – A Water and Wastewater Utility

Presented by Liliana Maldonado, PE, BCEE, Director of Engineering and Technical Services, DC Water

Recap by Alex Porteous

Ms. Liliana Maldonado outlined DC Water's vision, values, and mission in securing the district's water infrastructure. Ms. Maldonado is the Director of DC Water's Department of Engineering and Technical Services. In this role, she is responsible for implementing DC Water's \$3.66 billion, 10-year capital improvement program, which includes wastewater treatment improvements at the Blue Plains Advanced Wastewater Treatment Plant and renewal of the water and sewer infrastructure throughout D.C. Ms. Maldonado described the DC Clean Rivers Project and its purpose to reduce combined sewer overflows

in the District. She also introduced the topic of community engagement, stakeholder buy-in, and managing expectations for water sector improvements. The Blue Plains Water Treatment Plant is the largest advanced wastewater treatment plant in the world and DC Water is implementing a project using



thermal hydrolysis and anaerobic digesters. The project efficiently provides clean, green renewable power by converting collected sewage solids into methane, which is cleaned, and then sent through turbines to produce electric power and recoverable heat. ■

## Reengineering the Future of Water Resources Protection and Management

Presented by Jeffrey Lape, Deputy Director, EPA Office of Science and Technology

Recap by Alex Porteous

Mr. Jeff Lape, a self-described "water evangelist" at the Environmental Protection Agency (EPA), delivered a presentation espousing a "one-water" approach to water resource management. He has devoted his entire career to the protection and restoration of water resources and the environment, at the watershed scale, local, state, and federal levels of government, and in the private sector. Mr. Lape helps lead national programs for water quality and human health criteria, water



quality standards and technology-based standards. His presentation provided a description of environmental regulatory history in the U.S. and then gave a summary of the challenges facing water resources today. Mr. Lape advocated for the need for change in

the water sector when addressing water quality and quantity issues and being more proactive instead of reactive to water sector challenges. He thoughtfully proposed potential solutions, including expanding green/natural infrastructure, increasing water reuse, and greater availability of real-time monitoring data. Mr. Lape closed with his predictions for a sustainable water future, including real-time wireless sensor networks and wastewater treatment facilities being able to produce more energy than they consume. ■



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## Sustainability and Civil Engineers – Promoting Sustainable Development from our Nation’s Capital

Presented by **Fernando Pons, PE, M.ASCE, NCS Past President, Founder and Managing Principal of Pons& Associates**

Recap by Taylor Phillips

Fernando Pons provided an overview of ASCE sustainability efforts in the past, present, and future. Mr. Pons described sustainability as “long term viability in everything we do.” He highlighted that civil engineers have a special role to play in sustainability, because they are entrusted by society to create a



sustainable world and enhance the global quality of life.

ASCE introduced the idea of sustainability into its Code of Ethics in 1976, and founded the ASCE Committee on Sustainability in 1994. Following the formation of the committee, member produced several publications on sustainability in efforts

to convince the larger civil engineering community to embrace sustainability. One of the key thought leaders in these efforts was Albert Grant, who encouraged sustainability efforts at the grassroots level. The NCS organized the first grass-roots ASCE sustainability committee in the U.S., and the Section continues to be a leader in advancing sustainability within ASCE. Future ASCE opportunities in sustainability include the D.C. Infrastructure Report Card, and the Envision Sustainable Infrastructure Rating System. ■

## Report Card for D.C.’s Infrastructure – Raising the Grade

Presented by **Brittney Kohler, Senior Manager for Infrastructure Initiatives at ASCE Headquarters; Ranjit Sahai, PE, F.ASCE, RAM Corporation President and leader of NCS’ DC Report Card effort; and Mike Jelen, PE, AECOM Vice President**

Recap by L.J. Sauter, Jr., M.ASCE, Centennial Book Subcommittee and former eNewsletter Editor

Brittney Kohler started the presentation by explaining how the Report Card began as a 1988 Reagan Administration report on the status of our country’s infrastructure. As it became clear that this was a “one-time” assessment, ASCE adopted the Report Card as a way of keeping the country’s infrastructure on the “front-burner” and evaluating progress. Today, the ASCE helps state and regional teams through the process, leveraging lessons-learned and assuring consistent methodology and evaluation criteria are applied to infrastructure assessment nationwide. Brittney concluded by sharing how both state and federal policymakers use the Report Cards. Of the 16 state report cards issued, 13 states have used the report cards to successfully call for and support infrastructure legislative victories.

Ranjit Sahai’s portion of the presentation highlighted the timeline for the development of the NCS Report Card for D.C.’s Infrastructure. He acknowledged the vital role of Infrastructure Initiatives at ASCE Headquarters in providing documentation and grading templates that ensure consistency of methodology among Sections and with



the ASCE Report Card for America’s Infrastructure. The effort, from the time Ranjit made a commitment to the Section to lead the Report Card development effort, to the time it was released to the public, took 18-months. He applauded the effort the two dozen volunteers from the Section put in to develop the Report Card, as it would not have been possible without their invaluable contribution. Ranjit concluded by enumerating the benefits of participating in such an effort and encouraged

members to consider volunteering for preparing the next edition of the D.C. Report Card.

Mike Jelen concluded the presentation with a discussion of the condition of D.C.’s roads (grade D+), and how federal responsibility for the National Highway System (454 miles in D.C.) and the D.C. Department of Transportation’s responsibility for everything else (690 miles of local roads and 364 miles of alleys) contributes to road conditions in D.C. ■

# State of the Society

Presented by Mark W. Woodson, PE, LS, D.WRE, F.ASCE, 2016 ASCE President

Recap by Alex Rosenheim, PE, LEED AP, M.ASCE, NCS Sustainability Committee, Chair

ASCE-NCS Centennial Committee was proud to welcome our 2016 ASCE President, Mark Woodson, to describe the status of the

ASCE nationally and around the world.

Mr. Woodson began by pointing out that ASCE is driven by recognizing problems and sharing solutions. Although, ironically, he related a quote from comedian, John Oliver, who pointed out “If we do our job right, no one knows it.”

So, one of the most important things that ASCE can provide to our society is to

provide a forum where we can increase recognition for the importance of civil engineering to our society and the role that civil engineers play in improving the built environment.

Mr. Woodson discussed the many ways that ASCE members can meet, collaborate, and enrich themselves. Multi-region Leadership Conferences with over 1200 attendees have been an important opportunity for growth. The focus of this year’s leadership conferences have been Innovation and Adaptation. ASCE’s technical institutes and younger member forums allow for targeted technical discussions. Mr. Woodson highlighted the newest ASCE institute focused on Utility Engineering and Surveying (UESI) (read the [NCS March 2016 Newsletter](#) for more information on ASCE’s newest institute).

Mr. Woodson also discussed ASCE’s international presence. With members in 171 countries and 87 international agreements of cooperation, ASCE continues to provide worldwide leadership and participation in the ever-changing environment and social challenges that face us all.

Looking forward, ASCE asked what roles civil engineers will be playing in our radically transforming world to a gathering of 60+ thought leaders from diverse backgrounds and

countries – civil engineers, engineers from other disciplines, architects, educators, and other leaders. The result

was ASCE’s Vision for Civil Engineering in 2025. This Vision results in initiatives that include “Raise The Bar” to elevate the professional requirements and status of civil engineers and ASCE’s “Grand Challenge,” which charges our profession to influence major policy changes and infrastructure funding levels, while challenging civil engineers to focus on innovation,

rethink life cycle costs, and drive transformational change – from planning to design to delivery.

ASCE strives to remain a leader in sustainable infrastructure. Mr. Woodson highlighted outstanding sustainable civil engineer projects, such as the San Diego International Airport Green Build program, which achieved the highest rating awarded by the Institute of Sustainable Infrastructure, the Envision Platinum rating. ASCE’s Committee on Sustainability has pioneered these efforts with meeting such as the recent Sustainability Summit and the first-ever International Conference on Sustainable Infrastructure, held in Long Beach, California in 2014. Plans are underway for the second conference is scheduled for Shenzhen, China in October 2016.

The ASCE’s Quadrennial American Infrastructure Report Card has become a critical communication tool to provide actionable advice and professional guidance for our nation’s infrastructure needs. The 2013 Report Card grades show the significant backlog of overdue maintenance across infrastructure systems, a pressing need for modernization, and an immense opportunity to create reliable, long-term funding. It also shows that we can improve the current condition of our nation’s infrastructure when investments are made and projects move forward, the grades rise.

With a grade of “D+,” the 2013 report recommends that a \$3.6 trillion investment is needed by 2020.

Infrastructure solutions will require increased leadership, promotion of sustainable and resilient solutions and the development of funding methods. The signing of the Fixing America’s Surface Transportation Act (the “FAST Act”) was designed to provide long-term funding certainty for surface transportation, meaning states and local governments can move forward with critical transportation projects, like new highways and transit lines, with the confidence that they will have a federal partner over the long term.

To encourage practical solutions to the challenges we are facing, ASCE has developed a crowd contest, the ASCE Innovation Contest. This contest offers professionals, educators, and students the opportunity share their best ideas for transforming the future of our nation’s infrastructure. Mr. Woodson concluded his remarks by stressing that people are the foundation of infrastructure.

**Speaker Biography:** 2016 ASCE President, Mark Woodson, PE, LS, D.WRE, F.ASCE, started Woodson Engineering in Flagstaff, Arizona over 20 years ago. His firm specializes in helping communities across the southwest achieve success. Mark’s primary focus is consulting in City Engineering and Public Works management. Prior to starting Woodson Engineering, Mark was the Flagstaff City Engineer. While at the City, Mark was part of the leadership that put in place the standards to become the country’s first Dark Sky City. He also worked on the development of the award winning Flagstaff Urban Trail System and modern Sign Code. Today Mark serves as the ASCE President, is on the Board of Engineers Without Borders-USA, is a Governor appointee to the Arizona Land Department Land Planning Committee and was a Flagstaff City Council member. Mark received his BS in Civil Engineering and an MBA from the University of Arizona in Tucson. Mark is a licensed civil engineer and surveyor in California and Arizona. ■



# Keynote Presentation: Transforming the Federal City: The U.S. Army Corps of Engineers in Washington, DC

Presented by Major General Mark Yenter, PE, Deputy Commanding General for Military and International Operations, U.S. Army Corps of Engineers

Recap by Piers Causton, PE, PMP, NCS Director

The NCS was happy to welcome Major General Mark Yenter, PE from the U.S. Army Corps of Engineers (USACE) as the keynote speaker of the Centennial Anniversary Conference. Major General Yenter is responsible for policy, programming, and technical support in the execution of more than \$18 billion of design, construction, and environmental programs for the U.S. Army, the U.S. Air Force, other Department of Defense and federal agencies, and foreign countries. Given the prominent history of the USACE in the development of Washington DC, Major General Yenter's presentation was a fitting tribute to the history and legacy of engineering in the District.

In addition to providing insight into the current structure and funding of the USACE, Major General Yenter spoke of that legacy during his keynote address. This included the important role of the USACE played in the creation of Washington DC, including the construction of the

- Washington Aqueduct by Captain Montgomery Meigs in 1859;
- Capitol Dome in 1857;
- Library of Congress in 1892;
- State, War and Navy Building in 1886;
- Smithsonian Natural History Museum in 1909;
- Lincoln Memorial in 1916;
- Grant Memorial Dedication in 1922;
- Arlington Memorial Bridge in 1930; and
- White House renovations in 1950.

In addition, the USACE was critical to the creation of the National Mall, as we know it today with its expansion west and the creation of the Tidal Basin to increase flow in the Potomac River thereby reducing sedimentation and resulting floods. We thank Major General Yenter for taking time out of his busy schedule to speak to us and we look forward to another 100 years of collaboration between the USACE and ASCE.

**Speaker Biography:** Major General Mark W. Yenter assumed responsibility as the Deputy Commanding General for Military and International Operations, Headquarters, USACE in Washington, DC, in July 2015. Major General Yenter received his commission as an Engineer officer from the University of Nevada in 1981. He holds a BS in Civil Engineering from the University of Nevada, a MS in Civil Engineering from the University of Colorado, and a Master of Strategic Studies from the U.S. Naval War College. His military education includes the Engineer Officer Basic and Advanced Courses, Combined Arms Services and Staff School, Command and General Staff College, the U.S. Naval War College, Sapper Leader Course, Ranger Course, and Airborne School. He is a Registered Professional Engineer in the Commonwealth of Virginia.

Major General Yenter's command assignments include Commanding General, U.S. Army Maneuver Support Center of Excellence and Fort Leonard Wood, Fort Leonard Wood, Missouri; Commander, Transatlantic Division

(Forward), Kabul, Afghanistan, OPERATION ENDURING FREEDOM; Commanding General, USACE Pacific Ocean Division, Fort Shafter, Hawaii; Commander, 20th Engineer Brigade (Combat)(Airborne Corps). His staff assignments include Assistant Chief of Staff, U-3/C-3/J-3, United Nations Command/Combined Forces Command/ United States Forces, Seoul, Republic of Korea; Director, Joint Engineering Directorate, United States Forces-Afghanistan, OPERATION ENDURING FREEDOM; Executive Officer to the Deputy Chief of Staff, G3/5/7, United States Army; C-7 (Engineer), Multi-National Corps-Iraq, OPERATION IRAQI FREEDOM.

His awards and decorations include the Distinguished Service Medal, Defense Superior Service Medal, Legion of Merit, Bronze Star Medal, Defense Meritorious Service Medal, Meritorious Service Medal, Joint Service Commendation Medal, the Army Commendation Medal, the Army Achievement Medal, Silver Order of the de Fleury Medal, Master Parachutist Badge, Army Staff Identification Badge, Ranger Tab, and Sapper Tab. ■



## ASCE-NCS Newsletter Patrons

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## **Building Washington: Civil Engineering in the New Federal City 1790-1840:**

**Presented by Robert Kapsch, PhD, Hon. AIA, Author, and 2016 ASCE History and Heritage Award Winner**

By Mike Venezia, PE, M.ASCE, YMF Secretary

Robert Kapsch, PhD, Hon AIA, presented on the developmental history of our nation's capital from its inception in the late 1700s. The area known today as Washington, DC was selected as the new capital city of the United States back in 1790. At the time, this area was largely undeveloped with the exception of the independent port cities of Georgetown and Alexandria, VA. To form the capital in the newly established District of Columbia, a capitol city needed to be constructed; an undertaking initially spearheaded by both George Washington and Thomas Jefferson who sought to create a new commercial center and port city along the banks of the Potomac and Anacostia Rivers. Washington's and Jefferson's

plan of a commercial hub never did quite materialize as, not long after the establishment of the capital city, changes in the river no longer made the city's ports a viable option for large ocean going vessels.

At the time when the new capital city was established, civil engineering was just beginning to emerge as a profession. Buildings for the new city were required to house congress, the president, and other

government entities all needed to be constructed. Due to the city's location along the banks of two rivers, construction of bridges was essential for success of the city. Bridge construction across the rivers proved to be challenging at times due to flooding, with the replacement certain bridges several times over. Flooding, a major concern in the early days was alleviated after construction of the tidal basin, which still exists today. ■



## **First Street Tunnel: Design and Construction in Frozen Ground**

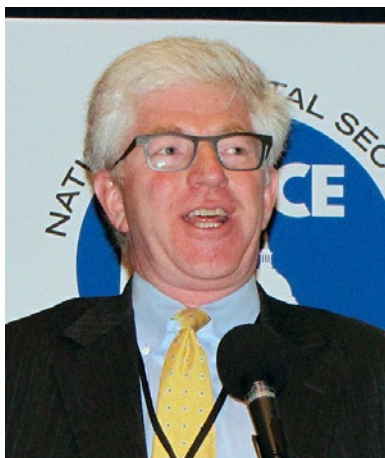
**Presented by Brian Zelenko, PE, NCS Past President, WSP Parsons Brinckerhoff, and Scott Hoffman, PE, Skanska USA Civil**

By Mike Venezia, PE, M.ASCE, YMF Secretary

Brian Zelenko, PE, and Scott Hoffman, PE, discussed the ongoing construction of the First Street Tunnel, a component of the overall DC Water Clean Rivers Project. The Clean Rivers Project is an infrastructure project currently underway, which once completed will greatly reduce combined sewer overflow into District area waterways. The First Street Tunnel will also mitigate flooding in the Bloomingdale and LeDroit Park neighborhoods. The 20-foot diameter tunnel is currently being constructed below First Street,

NW, using a tunnel boring machine, and will extend approximately 2,700 linear feet from Rhode Island Avenue to Channing Street. In addition to the tunnel itself, the project also entails the construction of access shafts, diversion

chambers, adit connection shafts, and utility relocation. One of the more challenging aspects of the project was accomplishing the foregoing whilst mitigating impacts to residents living directly adjacent to the construction in a heavily congested area of the city. The use of innovative excavation support techniques, such as ground freezing, contributed to the overall success of the project and mitigation of construction related impacts to area residents. ■



# Project of the Year Award: Washington Suburban Sanitary Commission's (WSSC) Bi-County Water Tunnel

Recap by Jordan Pitt, PE, M.ASCE, NCS Vice-President 2015-2016

Every year, the NCS honors local projects and engineers who have contributed to our section and our community. The Project of the Year 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 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.

The 2016 Project of the Year was awarded to the Washington Suburban



2016 Project of the Year Award Winners: the WSSC Bi-County Water Tunnel team (Black and Veatch and WSSC accepting).



Aerial view of Water Tunnel Shaft

Sanitary Commission's (WSSC) Bi-County Water Tunnel project. The Bi-County Water Tunnel is a 5.3 mile, 84 inch diameter water main constructed within a 10-foot diameter tunnel that is up to 200 feet below grade. The new tunnel will enhance the WSSC's ability to serve 1.8 million customers with a capacity to deliver 100 million gallons of water per day. Conceptualized in the 1960s, the new pipeline meets the current and future water requirements for Montgomery and Prince George's

counties in Maryland. Other members of the project team included Black and Veatch, Renda, Southland, and SAK (Joint Venture), and Macmillan Jacobs Associates and Louis Berger (Joint Venture). John Mitchell, PE, WSSC Project Manager, accepted the award on behalf of the project team. He led this project from the planning stage in 2004, through detailed design, and finally construction completion in 2015. John has nearly 30 years of project management experience with WSSC. ■

## ASCE and NCS Current and Past Presidents

The NCS Centennial Conference brought together 100 years of ASCE and NCS current and past presidents. This includes, (standing), from left to right, the current ASCE President, Mark Woodson (2016), and current NCS President, Scott Wolf (2016), with NCS Past Presidents Bernie Dennis (1996), Qamar Kazami (2013), Christian Manalo (2015), John Casana (2012), Brian Zelenko (2002), W. Campbell Graevb (1973), and Fernando Pons (2009). The sitting NCS Past Presidents include (left to right) Dr. Robert Efimba (1983), Dean Westman (2008), Mark Leeman (2011), and Ranjit Sahai (2014). ■



# Annual Sustainability Award: DC Department of Energy & Environment RiverSmart Water Resources Restoration

Recap by Alex Rosenheim, PE, LEED AP, M.ASCE, NCS Sustainability Committee, Chair

The NCS Sustainability Award recognizes private-industry outreach initiatives and projects or public legislation/programs in the metropolitan Washington, DC area. The project shall advance or promote the responsible and sustainable development of infrastructure, the built environment, or the conservation of natural resources. Sustainable development is the challenge of meeting human needs for natural resources, industrial products, energy, food, transportation, shelter, and effective waste management while conserving and protecting environmental quality and the natural resource base essential for future development. This requires a long-term view, cognizant of the triple-bottom line of environmental, social, and economic implications while emphasizing the impact of choices made now on succeeding generations.

The DC Department of Energy and Environment (DOEE) RiverSmart Program is the recipient of the 2016 ASCE-NCS Sustainability Award. The RiverSmart programs help to reduce stormwater runoff that harms the District's waterways and the Chesapeake Bay. The programs provide

financial incentives to help District property owners install green infrastructure such as rain barrels, green roofs, rain gardens, permeable pavement, shade trees, and more. These practices allow rainwater to stay on site and soak into the ground, where natural processes help remove pollutants.

The RiverSmart program is available for single-family homes, condominiums, co-ops, apartments, locally owned businesses, and houses of worship within the Bloomingdale sewershed. Portions of several District neighborhoods (including Bloomingdale, LeDroit Park, Cardozo/Shaw, Columbia Heights, Pleasant Plains, and Logan Circle) are within the boundaries of the Bloomingdale sewershed. The selection committee was excited about the RiverSmart program's recent innovative urban stormwater retrofits/stream restoration projects in the Broad Branch/Linnean Park Rock Creek Tributary, Alger Park and restoration of the MacFarland and Lafayette sewersheds in the District of Columbia.

Alger Park is in Southeast Washington, DC, north and east of Hillcrest Drive.

## Alger Park – Stream Restoration and Upland LID



The park is home to a 1,300-foot stretch of stream making up one of the two headwater streams of the Texas Avenue tributary of the Anacostia River. The District estimates that roughly nine acres (41%) of the watershed is impervious, most of which is single-family homes and roadways. The soils in the park are subject to high rates of erosion. The velocity and quantity of stormwater runoff from the surrounding area contributes significantly to the stream's severe erosion. RiverSmart homes installations on private property will help to slow retain, and treat stormwater before it reaches Alger Park.

Accepting the award on behalf of Tommy Wells, Director, DOEE, was Steve Saari, Planning and Restoration Branch Chief of DOEE Watershed Protection Division. Steve has overseen a wide range of projects at DD OE. These include incentivizing homeowners to upgrade landscaping for improved drainage; stream restoration within the Rock Creek watershed; drafting an urban tree canopy plan for the District; writing DOEE's Watershed Implementation Plan for Rock Creek; and co-authoring the District's plan to restore its portion of the Anacostia River. His work has included installation of low impact development techniques that use stream restoration methods to slow storm water velocities, infiltrate storm water, recharge groundwater, and treat pollutants through chemical and biological processes. Steve has a M.S. in ecology from Pennsylvania State University and has been in the watershed restoration field for seventeen years. ■



NCS 2016 Sustainability Project of the Year Award Winner DOEE's RiverSmart Program. Pictured (left to right) Alex Roseinheim, NCS Sustainability Committee Chair, Steve Saari, Planning and Restoration Branch Chief of DOEE Watershed Protection Division, and Scott Wolf, NCS President.

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## Monumental Changes: Two Centuries of the U.S. Army Corps of Engineers in Washington, DC

Presented by Joe Manous, PhD, PE, D.WRE, F.ASCE, F.EWRI, Institute for Water Resources, U.S. Army Corps of Engineers

Mr. Manous presentation picked up where Major General Mark Yenter's speech on the USACE's history in Washington, DC's formation. Mr. Manous recounted that George Washington chose Washington, DC to be the nation's capital because he saw it as the center of trade, and, coincidentally, his home (Mt. Vernon) was only 14 miles away. However, originally built on swampland; Washington, DC was not an ideal spot for the capital. Until the 1850s, times were rough in the capital; however, the Civil War and the period from 1850 to 1880 was a time of expansion in the area. The influx of union soldiers and freed men brought the much needed growth in infrastructure, and it was often the Army engineer who was responsible for this.

In 1853, responsibility for constructing permanent water supply facilities for Washington, DC fell upon Lieutenant Montgomery C. Meigs. His project included two bridges later to carry



traffic as well as water pipes over Cabin John and Rock creeks. Both bridges were engineering feats in their day. The Cabin John Bridge, built between 1857

and 1864, remained the world's longest masonry arch for more than 40 years and is still in use.

In 1867, Congress gave control of public parks and monuments to the Office of Public Buildings and Grounds under the chief of engineers and in 1878, replaced Washington's elected government with a

three-man commission. An Army engineer holding the title of engineer commissioner for the District of Columbia served on that board and had responsibility for the city's physical plant until Congress approved the district's current home rule charter in 1967. During the last half of the 19th century, the USACE improved navigation on the Potomac River and its tributaries; expanded the local water supply system; completed the Washington Monument; and helped design and construct numerous structures including the Lincoln Memorial,

the Library of Congress, State, War, and Navy Building, and even the Pension Building.

As the capital expanded and grew, so did the role of the USACE and engineer. The USACE developed building codes (many of which are still used today), and they began to look at single projects serving multiple purposes, such as swamp reclamation, which resulted in the Tidal Basin. The USACE focused on navigation, sanitation, flood control, and recreation. For example, they also developed Rock Creek Park as a major urban recreation area.

Over time, the role of the federal engineer has evolved and is continuing to do so. Infrastructure development no longer means large construction and maintenance operations, but also developing management techniques, new approaches, and new technology to use our resources more efficiently and to reduce resource depletion. Engineers must work with multiple agencies and organizations to develop effective responses to ecological crises such as oil spills, drought, and fire. In all these areas, the federal engineer began developing expertise a century or more ago, what role with the federal engineer fill in the 21<sup>st</sup> century? ■

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## Bechtel Partners with ASCE to Dream Big

Presented by Barbara Rusinko, PE, President, Bechtel National, Inc.

Recap by Brain Barna, PE, M.ASCE, NCS Secretary

*Dream Big* is an upcoming IMAX movie release slated for release in February 2017. This film, the first ever IMAX movie focused on engineering, will use stunning film footage of some of the world's most impressive civil engineering feats. It is intended to inspire the next generation of students to pursue careers in civil engineering. Bechtel has partnered with ASCE on this production, and Bechtel has also provided funding for the project. The Society of Women Engineers and the National Society of Black Engineers are also partners in the project, and one of the goals of this project is to increase diversity within the engineering field.

Conference attendees were treated to a 90-second movie trailer, for which filming and script writing is still in progress. The trailer featured footage of the pyramids in Egypt, the Golden Gate Bridge in San Francisco, and the tallest building in the world, the Burj Khalifa, projected far above the clouds. While this film will be best experienced



on an IMAX screen, the team recognizes that not everyone has access to this technology. This is true in the United States, but especially true for countries beyond our borders. Therefore, a DVD version of the movie will be available. Please visit [www.DreamBigFilm.org](http://www.DreamBigFilm.org) for more information, and watch for the movie's release early next year. ■

## An Interview with Christian Manalo, PE, BCEE, M.ASCE, NCS Past President: Centennial Engineer of the Month

*Editor's Note: Beginning October 2015, the NCS began publishing interviews of prominent members of our Section, asking them to reflect on their career and profession. The NCS Centennial Committee, including Dr. Phillip Melville, PE, PhD, F.ASCE, and Ms. Lucy Menon, PE, M.ASCE, of the Dream Big Subcommittee, have organized the interviews. We hope you enjoy reading these interviews and gain insight from these leaders in civil engineering.*

The Centennial Engineer of the Month for June 2016 is Mr. Christian Manalo, PE, BCEE, a member of the NCS Board of Directors since 2009. He formed the NCS Centennial Anniversary Committee in 2013 and served as NCS President in 2014 to 2015. Since 2014, NCS has been active with planning for the Section's 100-year anniversary, including release of the book, *Engineering the Nation's Capital*, hosting the Centennial Anniversary Conference, and issuing the first-ever *Infrastructure Report Card for Washington, DC*. Currently at Booz Allen Hamilton, he co-leads the firm's water infrastructure, resources and security practice. Prior to Booz Allen he worked for AECOM in support of water and wastewater utilities and as a generating systems engineer for the Potomac Electric Power Company. Mr. Manalo holds both MS and BS degrees in Civil and Environmental Engineering from the University of Maryland and Rutgers University, respectively. He is a Licensed Professional Engineer in Virginia and a Board Certified Environmental Engineer. He is also active with the American Water Works Association and American Water Resources Association.

### **What do you consider your major achievement(s) in civil engineering in our Section area?**

As a practicing engineer for more than 20 years, I have had many engagements, all of which have been very satisfying and impactful in different ways. In my early career, I worked for the New Jersey-American Water Company and Pepco where I gained a good understanding and appreciation for public utilities, including their challenges in operations, management, and planning.

Later as a consultant for AECOM, I led and supported planning and design for many utilities, including Baltimore City Department of Public Works (DPW), Arlington County WPCD, DC Water, LADWP, and others. Now at Booz Allen Hamilton, I am engaged in a number of initiatives, including leading the firm's water business growth strategy. I led a comprehensive utility rates study for New York City, helped develop an expeditionary water treatment capability for the U.S. Army, and created a widely used chemical-biological-radiological assessment process for the U.S. Air Force. Currently Booz Allen is supporting DoD, EPA, FEMA, and many others, including developing the national water security strategy for United Arab Emirates. I also oversee a large full-time R&D team working to improve emergency water supplies.

Serving as an NCS Officer has been among my most satisfying experiences. The NCS centennial anniversary has been a great experience for not only myself but also hopefully many of our local members whom we advocate for and support. NCS members have had and continue to have an incredible impact on our infrastructure and environment, not only locally but also globally, perhaps more than any other profession. Bringing our members' stories to light and calling attention to what civil engineers do has been highly rewarding professionally and personally.

The past two years have been particularly busy for our Section. This January, we released our D.C. Infrastructure Report Card, which was a top story on television, print, radio, and online, including with the national press. In May, we published our long-awaited book, *Engineering*



*the Nation's Capital*. Among the book's goals is to inspire our community, educate the public, and lead many to join our ranks. It is already having a profound impact on those who have seen it. Our highpoint of the year has been the Centennial Anniversary Conference at the National Press Club in June. The conference included 25 speakers whom collectively oversee more than \$100 billion in infrastructure spending each year.

The report card, book, and conference were three great achievements but only part of the story. We also organized a very popular centennial tours program to visit local engineering achievements, including the C&O Canal, Washington Aqueduct, Dulles Airport, Walkersville Railroad, and the D.C. bridges by boat. At the same time, we maintained 19 active management and technical committees, including six new ones. Our Younger Members Forum, Transportation Committee, and Construction Committee have been particularly active. All of these initiatives resulted in an almost continuous slate of meetings and planning. There were many times when we would host two to three speaker events in a single week.

This has been a very good two years, and being a major part of this, and leading such a talented and  
*continued on page 17*



motivated team of volunteers ranks among my top professional achievements. I am hopeful that we can use this energy to propel our Section for years to come. That would surely be a nice achievement that I can look back on in the future.

### **Why did you decide on a career in civil engineering?**

Unlike some people, I did not come out of my freshman year in engineering school with a definite secure feeling that I've chosen the best career path for my future. It would actually be years later that I would look back and truly appreciate having made this decision. I have many people to thank for helping guide my earlier decisions, including ASCE who promoted and supported the profession for more than 150 years. I recall a survey of the most satisfying careers and civil engineering was the top engineering field on the list. Looking at many of those that I know in other professions, I would have to agree. It is difficult to imagine other career fields where the profession as a whole has such a large impact both locally and globally on the welfare of society.

One only has to see the impact that civil engineers are making just in our own communities to realize that this is a highly valued profession. Nearly everywhere people look from their own home that they live in to the bridges they cross, trains they ride, and the utility services they receive required civil engineers. A major driver for creating *Engineering the Nation's Capital* was to showcase this impact of civil engineers and encourage people to enter the profession. Many do not realize that its civil engineers creating this infrastructure and that has to change. We provide the book free to all the K12 schools that we visit and received a grant for this purpose. When people see the construction photos and read the stories behind the infrastructure that they see every day, then I am certain we will create new civil engineers

in the process. The book was not an easy endeavor but I believe it was necessary. One thing that the book does not do as much is discuss the global impact that our local civil engineers are having. A great many of us here in the DC area in particular work nationally and internationally and this is something that I would like to highlight. Our Section members have worked on the Hoover Dam, Panama Canal, the federal highway system, for our military, and in international development, and I know there are great stories here yet to come out, perhaps in our next edition!

### **What do you consider the best guidance to young people for a future career in civil engineering?**

For those that are already in the civil engineering profession, I would advise people to be open and flexible. All experience is valuable. I recall at times when some of the work that I was performing was not enlightening but looking back, I really appreciate having gone through that. It is just like engineering school when you were learning so much detail on the basic sciences. These experiences make you a much better rounded engineer and more secure in your footing. For those looking at their options within the civil engineering profession, certainly look to ASCE for help. There are countless ways to open doors for you through the Society, whether its participation on a technical committee or networking through NCS and our 3,400 local members.

For those that have not yet decided on a civil engineering career, I would strongly encourage people to learn and understand what we do and the potential for what they can do in this profession. Read our book. Talk to those in the profession. Read ASCE's Code of Ethics and our seven canons. Canon One, in particular, requires civil engineers to *hold paramount the safety, health, and welfare of the public*. If you hold these same values, definitely consider a career in civil engineering.

### **What do you consider the major challenges to a career in civil engineering?**

Civil engineers should strive to incorporate innovation in all that they do. There are great innovations occurring all around us both within civil engineering and outside our profession, and we can learn a lot from this. Civil engineers should always seek better ways to do things whether it is in planning, design, construction, operations, or finance. Identify these innovations, embrace them, and promote them. This will make you stand out as a civil engineering professional.

For the profession as a whole, both innovation and excellence need to be part of our identity. ASCE's *Raise the Bar* initiative aims to improve the competency of our members by requiring education beyond the traditional bachelor's degree. Having completed graduate school and personally witnessing its value, I am in full agreement that additional formal education will help one's career in civil engineering.

I also see that the challenges that civil engineers face in their career have as much to do with challenges in society itself. Civil engineers are highly aware of the infrastructure challenges that we face as discussed in our infrastructure report cards. Many people feel that securing these investments is out of their hands, but for many of those active within ASCE it is not. If the civil engineering community is not out there leading the charge for this investment, who will? Our future, our careers, depend on these investments in infrastructure. The high return on infrastructure investment is well documented and holding off on these investments only makes the challenge and overall societal costs greater. In the meantime, the public is underserved, their safety is put at risk, and their welfare severely impacted. The Washington, DC, area is a prime example of this where we ranked #1 for lost commuter time, out of 471 urban areas! We have our work cut out for us.

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