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Transforming Communities through Sustainable Infrastructure Design

by Kari Hewitt, Project Manager, VHB

In the past, much of our infrastructure prioritized the automobile over other modes of transport that allow for enhanced health, livability, community connectivity, and environmental sustainability. As we upgrade this aging infrastructure and approach new infrastructure we have the opportunity to develop healthier, more economically vibrant, resilient communities, as well as minimize their environmental impact. One such opportunity to demonstrate these principles arose in recent years along the Charles River in Massachusetts.

Faced with a struggling and underutilized corridor along the Charles River, residents and community leaders of Boston, Cambridge, and Watertown were determined to transform the Greenough Boulevard into a unique multi-use greenway that would offer recreational opportunities and promote non-vehicular modes of transportation. The result is a safer, more active Greenway that better connects these communities.



Greenough Boulevard shared use path construction

Constructed in 1965, Greenough Boulevard is part of the Charles River Reservation corridor, a 17-mile-long urban preserve and public recreation area. With four travel lanes, rusting guardrails, pavement drains dumping into the Charles River, and a crumbling, multi-use path, Greenough Boulevard was far less picturesque and inviting than other roadways abutting the Charles. The aging of this region's 20th century roadway

UPCOMING EVENTS

ASCE and BSCES Sponsored Seminar July 27–28, 2017 Younger Member Group Social Event August 2, 2017 Further Details Inside



2016-17 Society Sponsors:



network forced a decision either to repair existing roads or to institute a more balanced and sustainable approach to transportation, the environment, and quality of life in the city. Greenough Boulevard represented a perfect chance to implement this fresh approach.

Today, the Greenough Boulevard Greenway, now the Greenough Greenway, creates an *continued on page 2*

President's Report

by Brian A. Morgan, Esq., Legal Counsel, CDM Smith Inc.



June 30 marks the end of the BSCES fiscal year and my tenure as president. Over the past year, my focus was to steer BSCES to creating a sustainable Society for our members for years to come. By making a few significant

changes this year, we broke from the "business as usual" approach of offsetting any projected operating deficit in the budget with earnings from our managed funds. First, we elected to restructure the services offered by The Engineering Center Education Trust (TECET) by not filling the role of executive director and streamlining certain services that TECET offers BSCES. Rich Keenan worked as the Society's association manager and did a fantastic job. With this change, our Society realized a significant cost savings, which allowed us to reduce our projected deficit. Second, the Finance Committee revised the BSCES sponsorship program. By streamlining the program, we were able to offer more advantages to two new categories of sponsors-Society and Program Sponsors. This past year, we had six Society Sponsors and 21 Program Sponsors. Thus, we were able to increase revenue to support our Society and reduced our operating deficit. Third, I worked with all facets of the organization to create new programs and resources while focused on a sustainable business model. I am hopeful that this trend continues for the next few years as we work to create a Society business model that is based on a near balanced budget and excellent programs that will ensure that BSCES provides great benefits to our members, while building our Society reserves.

In fact, BSCES' institute chapters, technical groups, committees and board sponsored over 50 events including technical presentations, social/ networking activities, Special Fund events, major outreach events, multi-day training courses, student chapter meetings, single day workshops, younger member group-sponsored community service activities, awards dinners, a student dinner, fall and spring professional engineer refresher courses, a Southeastern Massachusetts Committee event, and a government affairs activity throughout the year. Not included in this event total are the numerous student tours of Boston bridges and classroom visits undertaken by members of the

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Sustainable Infrastructure Design

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inviting shared-use path and space for people to enjoy the view of the Charles River. The route links to the broader network of regional paths and improves non-motorized access to the diverse land adjacent to the corridor. The Greenough Greenway connects to the Herter Park trails across the river, completing a stunning new five-kilometer recreational loop that rivals Fresh Pond and the Esplanade —now considered one of the best 5k walking and running loops in Greater Boston.

Innovative and Sustainable Design

For years, the physical scale of the roadway crowded the riverbanks, degraded the environment, and discouraged walkers, runners, and cyclists from making their way along the shore. To create larger green space for users, the project designers reduced the roadway from two lanes in each direction to one lane in each direction, while maintaining the existing lane configuration at intersections. A 10-foot shared-use path was constructed within the new limits of the Greenway, making more room to welcome multimodal travel. The project also included the development of an eight-foot Marsh Path and an ADA-compliant pedestrian ramp connecting the parking lot on Greenough Boulevard to the existing path comprised of a pervious surface and incorporated resilient material for the tough terrain surrounding the new path.

Collaborating with the Watertown Conservation Commission and the City of Cambridge, designers identified an appropriate open mitigation system for stormwater drainage for the roadway and new path by utilizing the restored natural landscape. Catch basins were installed and surface collection of stormwater utilized grassed swales to treat runoff and prevent erosion. The bike path constructed in the Riverfront Area was designed as a "country drainage" system, allowing runoff to sheet flow onto adjacent vegetated surfaces. East of the Grove Street intersection, a grass-lined channel collects and directs runoff surface flow east to a catch basin. Narrowing the roadway also reduced the amount of pavement by 1.4 acres, enhancing stormwater quality and groundwater recharge. Invasive and mass brush were removed and replaced with native landscape elements. Additionally, 165 trees and wild flowers replaced distressed highway scenery with an open view of the Charles River-welcoming back the riverfront to Greenough Boulevard.



Bird's eye view of the completed Greenough Boulevard Greenway Expansion from Cambridge toward Watertown, Massachusetts along the Charles River

P3 Model Contributes to Project Success

A key piece of the Greenway project was the public-private partnership (P3) that was developed to improve the roadway. What started as a conversation and concept sketches of a vision eventually became a design contract between VHB, the consultant who led the planning, design, engineering, environmental permitting, and construction phase services, and The Lawrence and Lillian Solomon Foundation. The vision transformed into a \$2.4 million construction project when the Massachusetts Department of Conservation and Recreation (DCR) joined the efforts. With the driving force of the foundation, economic support from DCR, and VHB's innovative design ideas, the collaboration between the three entities presented an opportunity that would not have otherwise been possible.

Greenway Achieves First Ever ISI Envision Award in Massachusetts

The Institute for Sustainable Infrastructure (ISI), a nonprofit organization based in Washington, DC, was created to develop and maintain a sustainability rating system for all civil infrastructure projects. The Envision[™] rating system offers valuable insights from assessing costs and benefits over the project lifecycle to evaluating environmental benefits. Using Envision[™] on the Greenway project provided a framework and set of best practices for the team to look across socioeconomic and environmental issues in a way that improved the environmental quality of the Charles River, as well as the quality of life for the thousands of users.

The rating system consists of five categories: Quality of Life; Leadership; Resource Allocation; National World; and Climate and Risk.

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Achieving performance points across all categories, Greenough Greenway received a bronze Envision Award from ISI, the first project in Massachusetts to earn an Envision award. Herb Nolan, Deputy Director of the Solomon Foundation, recently highlighted the benefits of the project to ISI Magazine stating, "This project provides a triple bottom line for the tens of thousands of people who use the Charles River parks every year. First, by narrowing a dangerous boulevard, pedestrian safety has been significantly increased with minimal impact to roadway capacity. Secondly, adding new verdant parkland where once there was crumbling pavement and broken guardrails has transformed the experience of every pedestrian, cyclist, driver, or boater along this stretch of the Charles River. Finally, reducing impervious pavement and adding close to 200 new shade trees will cool the park and filter stormwater runoff for generations to come. All of this has been made possible through a strong public/private partnership and the intelligent work of the interdisciplinary team at VHB."

The Envision[™] rating brings a transparent s ystem to infrastructure projects and helps us examine both socioeconomic and economic issues. VHB's cross discipline approach, integrating civil engineers and environmental scientists, enabled a more innovative and costefficient project delivery.

Sustainability at the Core of VHB

As demonstrated from the success of the Greenough Greenway project, VHB is a recognized leader in embracing sustainability. Our purpose is to deliver value to our clients and help shape our communities.

"VHB's ownership is passed on to future generations of employee-owners. Each generation of managers



Park benches, trees, and plantings line the shared use path and the Charles River

is responsible for leaving the company in better condition than it was received. Stewardship is inherent in this generational company model." —Bob Brustlin, VHB co-founder & chairman of the board.

A dedicated advocate for sustainability, Bob Brustlin, PE, LEED AP, ENV SP, VHB co-founder and chairman of the board, was recently appointed as a Board Member of ISI. "Sustainability is at the core of who we are and what we do at VHB. Our support of ISI and Envision further enhances VHB's efforts to incorporate sustainability into the delivery of services to our clients and into day-to-day operations," said Brustlin.

While VHB has engaged in many sustainabilityrelated activities, it became clear that formalizing the program in 2015 gives it structure and provides accountability and enhanced transparency to its people, clients, and communities. The program reflects a comprehensive view of sustainability focusing on the firm's people, projects, operations, and communities.

"We seamlessly integrate the right people and resources, and coordinate the many moving parts—transportation, development, environ-



Greenough Boulevard access open for multimodal and recreational use

ment, political and social—to turn visions into reality," says Mike Carragher, VHB's chief executive officer. "By considering the context, we are able to do so much more. We transform communities and improve the quality of people's lives."

Kari Hewitt is director of sustainability and a project manager with VHB's Environmental Planning & Sustainability Practice. She sits on the ISI's Envision Review Board, which is charged with maintaining the integrity of the rating system and guiding development of future versions. She has extensive experience supporting local governments, airports, and state agencies with sustainability planning and reporting services, climate action and strategic energy planning, resiliency planning, and stakeholder engagement. Kari oversees a team of environmental and sustainability planners that provide comprehensive sustainability planning, as well as technical planning services, including vulnerability assessments, greenhouse gas assessments, energy savings, and cost savings from existing and proposed strategies. In addition, Kari oversees VHB's corporate sustainability program, which aims to integrate sustainability throughout the company's projects and operations. She holds a master's degree in Urban and Environmental Policy and Planning from Tufts University and a bachelor's degree in Sociology from Smith College. Kari's passion for sustainability extends outside the workplace having taught an Intro to Sustainability Studies course to undergraduate students and regularly guest lecturing on sustainability topics.







BSCES Runs Successful Floodplain Management Program

by Ryan M. McCoy, PE, Pare Corporation, COPRI Boston Chapter Chair and Peter A. Richardson, PE, CFM, LEED AP, ENV SP, Green International Affiliates, Inc., BSCES Program Committee

On May 25, 2017, the BSCES Program Committee and COPRI Boston Chapter cosponsored a successful half-day Floodplain Management program in the Haley & Aldrich Room at The Engineering Center. The program drew participants of all ages and experience levels, from college graduate students to public sector veterans. The program provided participants with an overview of floodplain management relative to compliance with Federal Emergency Management Agency (FEMA) regulations under the National Flood Insurance Program (NFIP), 44 CFR60.3 and the Massachusetts Wetland Protection Act 310 CMR 10.00. The course included a history of flood mapping, an overview of how FEMA flood maps are prepared, the different types of flood zones shown on the maps and the design requirements for the different types of flood zones (coastal and riverine).

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The instructors included: Peter Richardson, executive vice president of Green International Affiliates, Inc., who is a Certified Floodplain Manager (CFM) and has been involved with producing FEMA flood studies for over 25 years as a FEMA Study Contractor; Joy Duperault,

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BSCES Public Awareness & Outreach Committee. Additionally, BSCES awarded thousands of dollars in scholarships, grants and awards. BSCES participated in Engineers and Land Surveyors Day at the Massachusetts State House and the ASCE Fly-In in Washington DC, hosted several mentoring and caucus events for our ten student chapters, supported the Steel Bridge and Concrete Canoe Competitions at Northeastern University and Wentworth Institute of Technology, and much more.

Our outreach efforts geared to the K–12 community have always been robust and this year was no exception thanks to Public Awareness & Outreach Committee Chair Olivia Richards from Gill Engineering Associates. Olivia and her team organized the Model Bridge Competition (65 schools made and load tested bridges constructed from popsicle sticks), the Future City Competition (30 teams built sustainable cities of the future), and the Ralph Salvucci Online Bridge Competition (80 students participated). They also held a Spring Awards Banquet to celebrate student contest winners and honor BSCES and ASCE Life Members.

For the fifth time in six years, BSCES was honored to receive an Outstanding Section and

CFM, who is the director of the MA DCR Flood Hazard Management Program and the Massachusetts state NFIP coordinator & hazard mitigation officer; Eric Carlson, who is the assistant director of the MA DCR Flood Hazard Management Program; and John Grace, CFM, a coastal engineer from the FEMA Regional office (Region I) in Boston. In addition to the presentations, the program allowed plenty of opportunities for questions and answers.

Commenting on the workshop, attendee Danielle Goudreau, EIT, from Pare Corporation stated: "the AEC industry relies heavily on the FEMA flood maps for design and construction projects. As a waterfront engineer, I personally reference them on an almost daily basis and I'm amazed at the level of detail in the updated mapping. This course showed me that there is still more for me to learn, and I look forward to seeing what future courses can provide."

Based on the interest level of this year's program and the willingness of DCR and FEMA Region I to work with BSCES, more floodplain management workshops will be planned in the future. Mother Nature in action in Augusta, ME



FEMA digital flood mapping products from the Map Service Center

Branch Award for Very Large Sections from ASCE. Additionally, we were the recipient of the ASCE Section and Branch Diversity and Inclusion Award.

I would like to thank Michael Cunningham from Kleinfelder who has dedicated his time over the last four years to make BSCESNews a success. Mike led the Newsletter Editorial Board, which selected the content and organized this publication. His efforts were essential to helping our Society communicate with its members. However, with Mike stepping down as editorial board chair at the end of the current fiscal year, the position of chair is open. We are looking for volunteers to serve on and lead the Newsletter Editorial Board. If you are interested, please contact Rich Keenan at 617/305-4110 or at rkeenan@engineers.org for more information.

I also want to thank all of the TECET staff who make all of our work possible. Association Manager Rich Keenan is involved with every aspect of the organization and his institutional knowledge of BSCES is greatly appreciated.

Of course, BSCES is a volunteer-led organization and we are indebted to our member volunteers and the organizations that support them. Our Board of Government, which includes the technical group and institute chapter chairs, steers the direction of the organization. Thank you to everyone who has volunteered and supported our efforts.

Lastly, I would like to thank all of our Society and Program Sponsors, whose financial support helps enable BSCES and its committees, institute chapter and technical groups to host the numerous networking and professional development events that are planned for this year.

The theme of this month's newsletter is Emergency Preparedness and I urge you learn more about this issue's featured group, the Coasts, Oceans, Ports and Rivers Institute Boston Chapter, which is chaired by Ryan McCoy of Pare Corporation. This issue of *BSCESNews* contains a page 6 article that was written by Ryan. We are very appreciative of VHB which is a BSCES Society level sponsor. Please be sure to read VHB's article written by Kari Hewitt titled "Transforming Communities through Sustainable Infrastructure Design," which starts on page 1.

It has been an honor to serve as BSCES president for the past year. Much has been accomplished and I am excited about the future of the organization and its leadership. President-Elect Malek Al-Khatib from Louis Berger has been actively involved with the various elements of BSCES and we are fortunate to have him as our incoming president. I look forward to assisting him, the Board of Government, and the organization as we continue to grow and I thank all of you for your support.

Massachusetts launches the Municipal Vulnerability Preparedness Program

Peter A. Richardson, PE, CFM, LEED AP, ENV SP, Vice President, Green International Affiliates, Inc.

Several months ago, BSCESNews reported on Governor Charlie Baker's Executive Order (EO) 569, Establishing an Integrated Climate Change Strategy for the Commonwealth, which was signed in October of last year. Under EO 569, the Massachusetts Executive Office of Energy and Environmental Affairs (EOEA) has Municipal developed the Vulnerability Preparedness grant program (MVP) that will provide assistance to cities and towns in order to help them complete climate change vulnerability assessments and resiliency planning. EOEA will award communities with funding "to complete vulnerability assessments and develop action-oriented resiliency plans. Communities will be able to define extreme weather and natural and climate related hazards, identify existing and future vulnerabilities and strengths, develop and prioritize actions for the community, and identify opportunities to take action to reduce risk and build resilience." The MVP program will be headed up by Katie Theoharides, director of climate and global warming solutions. MVP Grant applications were due to EOEA on May 22, 2017.

In addition to grants, EOEA will also provide training for "MVP certified providers" who will be trained in workshops across the state on how to provide technical assistance to communities in completing their assessments and resiliency plans. Municipalities will be able to choose MVP providers from a list of EOEA certified providers. A community that completes the MVP program will become certified as an MVP community and will be eligible for follow-up grant funding and other opportunities.

MVP Plans will be developed through an open/ public process following the <u>Community</u> <u>Resilience Building (CRB)</u> Workshop framework. The CRB Workshop framework has been used by over 45 communities to help them assess their vulnerabilities and develop resiliency plans. The process is very similar to that used in the FEMA Hazard Mitigation Grant Program to develop Pre-Disaster Mitigation Plans. Through a community driven process, participants will identify top hazards, current challenges, strengths, and priority actions to improve their community's resilience to natural and climaterelated hazards today, and in the future. The process involves seven steps as outlined below:

A. Prepare for the Workshop

- Establish a core team with goals
- Engage stakeholders
- Prepare materials for workshop
- Decide on participant arrangements

B. Characterize Hazards

- Identify past, current, and future impacts
- Determine the highest-priority hazards

C. Identify Community Vulnerabilities and Strengths

• Identify infrastructural vulnerabilities and strengths



Fighting the 2001 flood in Kenmore Square

- Identify societal vulnerabilities and strengths
- Identify environmental vulnerabilities and strengths

D. Identify and Prioritize Community Actions

- Identify and prioritize infrastructural actions
- Identify and prioritize societal actions
- Identify and prioritize environmental actions

E. Determine the Overall Priority Actions

- Identify highest-priority actions
- Further define urgency and timing

F. Put It All Together

• Generate final workshop products.

G. Move Forward

- Continue community outreach and engagement
- Secure additional data and information
- Inform existing planning and project activities

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Featured Group

ASCE COPRI Boston Chapter

by Ryan M. McCoy, PE, Senior Project Engineer, Pare Corporation and COPRI Boston Chapter Chair

Created in 2000, the Coasts, Oceans, Ports, and Rivers Institute (COPRI) is a semi-autonomous institute of the American Society of Civil Engineers. COPRI serves as a multidisciplinary and international leader in improving knowledge, education, development and practice of civil engineering and associated disciplines in the sustainable management of coastal, ocean, port, waterway, riverine and wetland resources for the benefit of society. By working to sustainably develop, protect and restore these resources, COPRI serves its members and society by uniting the disciplines to advance the technological state of art, integrating the key stakeholders into decision making processes, and influencing public policy. Now, more than ever, the nation's waterfront is susceptible to the effects of climate change such as sea level rise, increased precipitation, and extreme storm events. Emergency preparedness and coastal storm risk management are key to ensuring the continuity of waterfront facilities during and after storm events and rising seas.

The socioeconomic impacts of climate change are significant to coastal regions across the nation. New England has over 450 miles of coastline with an estimated 85,000 homes and \$32 billion in property value at risk. In a country that thrives economically from coastline businesses and international trade, it's imperative that resilient design measures be taken to manage potential risk. To that end, the region has demonstrated a commitment to understanding the impacts of climate change to waterfront sites and implementing resilient solutions through millions of dollars in grants, state of the art research and coastal technology from the Woods Hole Oceanographic Institute and Sea Grant, and the development of nationally-recognized technology such as STORMTOOLS in Rhode Island.

Identifying the risks of climate change and limiting damage to waterfront facilities and communities is a necessity for New England. As waterfront facilities continue to require repair or rehabilitation over time, the designer and owner must consider predicted climate change trends and the unique constraints or restrictions of each structure to yield the optimal site-specific resilient solution. While the basic design concepts for structures such as bulkheads, seawalls, piers, and revetments have remained consistent for centuries, relying on historical data and previous experience may no longer yield an accurate estimation of a structure's design life. For example, raising the top elevation of a seawall may be a feasible design option to protect the landside from sea level rise and coastal storms, but raising a fixed pier in a port facility for future conditions may render the structure unusable under current tidal conditions. Other possible design measures used to create a more resilient site include the incorporation of robust structures, sacrificial elements, and floating structures; and addressing building code upgrades, redundancy, relocation of equipment and operations outside of hazard areas.

Once the potential risks to infrastructure have been identified, it falls on the professional engineer to evaluate those risks and educate the stakeholders of potential implications. The engineer must consider the impacts to infrastructure over the design life, estimating the upfront construction costs versus the cost of potential repairs incurred by storm damage. Although resilient designs may have a higher initial construction cost, the infrastructure will be robust and reliable, and will ensure minimal post-storm recovery time. To support the emergency preparedness planning and resiliency efforts the region has begun to undertake, the Federal Emergency Management Agency (FEMA) currently provides the Pre-Disaster Mitigation Grant Program to assist states, territories, federally recognized tribes, and local communities to implement sustained predisaster natural hazard mitigation programs. The goal of the program is to reduce the overall risk to the infrastructure and, in turn, the population from future hazard events, while also reducing reliance on federal funding after disasters. Mitigation planning is a key process used to break the cycle of disaster damage, reconstruction, and repeated damage, thereby creating more economical and sustainable infrastructure.

As storm events continue to increase in severity and intensity, the professionals of COPRI are called upon to aid in the design of the nation's coastal infrastructure for the future uncertainty associated with climate change. The COPRI Boston Chapter is a forum for professionals in the industry to discuss and progress the field of coastal and riverine engineering. The COPRI Boston Chapter and BSCES Program Committee recently co-hosted a technical course on floodplain management, delving into the FEMA flood maps, interactive GIS flood mapping tools for Massachusetts (MORIS) and building code regulations and updates. The COPRI Boston Chapter continues to recognize the importance of emergency preparedness and resilient design by supporting the growth and development of its members through professional development events, networking, etc. For more information regarding the COPRI Boston Chapter, please contact me at rmccoy@parecorp.com.

Become a BSCESNews Contributor

Would you like to contribute to the newsletter of the oldest civil engineering society in the country? The BSCES Newsletter Editorial Board is seeking members who are willing to write articles for publication in *BSCESNews* or to join the Editorial Board.

Typically 300 to 700 words, *BSCESNews* featured articles are about technical topics or professional matters of interest to civil engineers. The September 2017 issue of the newsletter for example, will highlight the Transportation & Development Institute Boston Chapter and feature one or more articles on the theme of Transportation.

Editorial Board members meet monthly via conference call to plan upcoming issues of the newsletter. They also solicit, write and/or review newsletter articles.

For more information on how you can become a BSCESNews contributor, contact BSCES Newsletter Editorial Board Chair Mike Cunningham at mcunningham@kleinfelder.com or BSCES Association Manager Rich Keenan at rkeenan@engineers.org.



BSCES Honors Life Members and Student Award Winners

by Rakaia El-Kasaby, Membership Associate, Boston Society of Civil Engineers Section/ASCE

The BSCES Spring Awards Banquet was held Friday, May 12, 2017 at the office of Louis Berger in Needham. At this annual event, the BSCES Board of Government honored the professional engineers who have achieved BSCES and ASCE Life Membership this year, as well as the student winners of the Ralph Salvucci Online Bridge Contest, the Model Bridge Competition, and the New England Regional Future City Competition. ASCE President-Elect Kristina L. Swallow delivered the evening's keynote address.

The following individuals have been awarded BSCES Life Membership in 2017. This distinction is given to Subscribing Members of the Section who have paid Section dues for a period of 30 years or more.

Edward E. Adams, PE Robert N. Block, PE Ronald R. Bourne, PE Edward Boyajian Michael L. Brainerd, PE Dominique N. Brocard, PhD, PE Thomas R. Carabine, PE

Matt A. Card, PE Stephen M. Chapman Jennie Lee L. Colosi, PE Scott W. Costa, PE Gustaaf Driessen, PE Donald O. Dusenberry, PE Thomas K. Follett, PE John H. Goodhall, Jr., PE Robert J. Guay, Jr., PE Varoujan Y. Hagopian, PE David N. Hayes, PE Rupert K-Y Hon, PE William H. Hover, PE Mark H. Johnson, PE Steven R. Kraemer, PE Cary McGuire, PE David J. Michniewicz, PE Leonard J. Morse-Fortier Mikel E. Murga, PE Michael A. Nicoloro, PE Kenneth J. Petraglia, PE James J. Rivard Joseph A. Salvia, PE Robert P. Schreiber, PE James Shuris, PE Michael A. Sorrentino, PE Arthur A. Spruch, PE Paul J. Stoller Mark J. Thompson, PE Richard F. Tobin, PE Peter J. Williams, PE Lawrence A. Williamson, PE The following individuals have been awarded ASCE Life Membership in 2017. This distinction is given to members of the Society who have paid dues in any membership grade except student for at least 35 years and have had 10 years of continuous membership immediately preceding this achievement.

Alleyn A. Alie, PE Garry P. Balboni, PE Glenn R. Bell, PE, SE Marco D. Boscardin, PhD, PE Ronald R. Bourne, PE Robert Brungraber, PhD, PE Stephen M. Chapman Peter J. Cheever, PE Arthur N. Church Christopher J. Cullen, PE Edward Demone, PE David A. Devine Tyler C. Dunn, PE Neil M. Fennessey Robert H. Fitzgerald, PE Mark M. Flaherty, PE John Glossa, PE Wildridge H. Green, PE Michael Haire, PE Whitney W. Hall, PE John M. Hoar, PE Lenny R. Laakso, PE

David E. Langseth, PhD, PE S. D. Daniel Lee, PE Alan Lutenegger, PhD, PE William S. Mac Leod Stephen G. Makris, PE Stephen T. Mc Neice, PE Michael E. Mc Neice, PE Barry S. Mc Neilly John B. Miller Michael E. Minior Gregory J. Patterson Roger N. Poisson, PE Tarek M. Selim Vincent W. Spada, PE Mark J. Thompson, PE Peter Tunnicliffe, PE Alfredo Urzua Allen D. Waller, PE James R. Wheeler, PE Peter J. Williams, PE Ray L. Wooten, PE Joseph J. Zona, PE

The elevated status of Life Member is awarded in recognition of years of dedicated service to the civil engineering profession and support of the Society. The names of this year's BSCES and ASCE Life Members will also be recognized at the 169th Annual Awards Dinner scheduled to be held this fall.

BSCES at Cambridge Science Festival

by Jessica DeBellis, PE, Geotechnical Engineer, GEI Consultants, Inc.

The Science Carnival and Robot Zoo was held Saturday April 15, 2017 at the Cambridge Rindge and Latin School as a part of the 10day Cambridge Science Festival, which is in its 11th year. The event was a family-friendly expo with over 100 exhibitors including BSCES, Boston University Graduate Women in Science and Engineering, Geomorphology @ MIT, Robotix USA LLC, and many other groups from local colleges, community programs, private companies, professional societies, and more. The event had over 15,000 visitors!

At the BSCES booth, we had two activities in which kids could participate to learn about civil engineering. One activity was to assemble a model of the Zakim Bridge made of PVC pipes, rope, and cardboard. BSCES volunteers gave some background on how cable stayed bridges work while budding engineers put the bridge together.

Our other activity was to build a 5-foot tall arch structure out of durable blocks that BSCES special ordered for events like this. Each block was numbered to help the kids assemble them in the correct order. The kids were amazed when they realized the arch could stand up on its own without any glue! Although most kids were more excited about destroying the arch so we could rebuild it again.

The event was full of energy and a bit chaotic at times, but it was a great way to share our profession with future engineers.



BSCES' Arch at Cambridge Science Carnival and Robot Zoo

Member Profile

Bryon Clemence, PE, Named BSCES Legislative Fellow

by Bonnie Ashworth, Quincy, MA

The BSCES welcomes Bryon Clemence as the 2017-2018 Legislative Fellow to the Massachusetts Legislature. He joins a distinguished list of fellows, starting with David Westerling, who served twice, followed by, Anatoly Darov, Tony Centore, Melvin Jones, Heather Ford, Michael Hurley, William Lyons, Sudhir Murthy and most recently, Michael Sullivan. The Legislative Fellow program was established in 2001 to provide technical engineering resources on a broad range of current issues of importance to the engineering profession.

Bryon feels that his interest in public policy and experience in environmental engineering, which he notes is shaped largely by legislation and regulation, are strengths he brings to the position. Other applicable assets he lists are an ability to work with others on complex engineering problems and looking beyond strictly technical issues when necessary. He is also adept at communicating issues to government officials, the public, and other design professionals. "When I first heard of the Legislative Fellow program, I hoped I would be able to participate someday," he said.

Bryon received an AS degree from Northern Essex Community College in 1982 and a BS from Cornell University in 1984. He then went to work at CDM Smith as a project engineer/manager from 1985 to 2006. He was responsible for water resource engineering for infrastructure and environmental projects. He conducted design and construction oversight of stormwater and dredging projects, hydrologic and hydraulic investigations, water quality modeling and feasibility studies, sediment surveys, watershed management plans, permitting, impact mitigation, proposal development, and FEMA mitigation grant applications.

Managing a team that planned, designed, and constructed town-wide stormwater improvements for Marblehead was a key project for him at CDM Smith. Others were conceptual design of the drainage system and stormwater mitigation for MWRA's 17-acre water storage tank at Norumbega Reservoir and the downstream mitigation plan for releasing 240 MGD (370 cfs) of water during startup and testing of MWRA's Walnut Hill Water Treatment Plant. He coordinated with outside transportation consultants, and presented projects to clients, regulatory agencies, and the public. Bryon worked for municipal and private clients, MWRA, and MassPort, among other state and federal agencies in Massachusetts and seven other states.

Ten years ago Bryon started his own consulting practice. He provides environmental engineering and planning services for clients that include marinas and airports. His areas of expertise include water resources, stormwater management, regulatory compliance, and farmland preservation. He said, "It's not as exciting as the big regional infrastructure projects you get with a large firm, but it allows me to diversify my services, and I feel like I know my clients better."

Bryon has a Massachusetts PE license and is a member of BSCES, ASCE and the Water Environmental Federation/NEWEA. He's a past chair of the BSCES Hydraulics and Water Resources Group (now EWRI Boston Chapter). His community service and government activities include membership on the Boxborough Water Resources Committee from 2006 to 2013, when it disbanded; Boxborough Master Plan Update Committee (2014–2016); Boxborough DPW Search Committee; and the Metropolitan Area Planning Council (MAPC) since 2006. Since 2015, he has been a member of the Boxborough working group for the MAPC MAGIC (Minuteman Advisory Group on Interlocal Coordination) climate resilience plan for this inland area. He also contributes to other regional, state, and federal policies in the fields of stormwater management, transportation, and public health. He regularly provides review comments to EPA and DEP on draft NPDES Stormwater General Permits. For transportation, he provided review comments to MEPA on the latest Boston Garden



Bryon Clemence, engineer and farmer, is serving as the BSCES Legislative Fellow for 2017–2018.

development and its legislative authorization, North Station easements, and public access in 2013.

Bryon is not only an engineer, he's also a farmer, an unusual combination. He is the manager and majority owner of Burroughs Farm, a 50-acre farm in Boxborough that the family has preserved for agriculture. It has been in the family for over 150 years. He said, "My engineering background was helpful in preserving the farm. We had to survey the property, identify wetlands, prepare site plans, negotiate preservation restrictions with the state Department of Agricultural Resources, obtain approvals from municipal boards, and design a postand-beam barn."

Bryon looks forward to working with the staff of the Joint Committee on Transportation. The Legislature will consider a wide range of proposed legislation. He expects that key issues for the Joint Committee could be the South Coastal Rail Project, the increased use of technology in motor vehicles, and transportation financing.

The BSCES is happy to welcome Bryon as the newest Legislative Fellow in a line of fellows who have served the organization, members of the legislature, and community well.



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Recent News and Updates

BSCES Welcomes its New Members

The BSCES Board of Government is pleased to welcome the following new members who joined BSCES during the month of May, 2017:

BSCES NEWS

Members Paula S. Kulis, PE, CDM Smith Jeremiah O'Neill, PE, Hayes & O'Neill Students Gisell A. De La Cruz, Hoyle & Tanner Associates Sulata Paul, Northeastern University

ASCE Election Results

For the first time in Society history, women will hold all three levels of presidential leadership. Robin Kemper, PE has been elected by ASCE's 2018 President-Elect by a majority of voting Society members in a month-long election that closed on June 1. She will be inducted at the Annual Business Meeting this fall at the ASCE 2017 Convention in New Orleans, joining 2018 ASCE President Kristina L. Swallow, PE and 2018 ASCE Past President Norma Jean Mattei, PhD, PE. Former BSCES president Danielle H. Spicer, PE, from Green International Affiliates, Inc., was also elected Region 1 Governor-Elect for the 2017-2020 term. Anthony L. Cioffi, PE was elected Region 1 Director-Elect for the 2017-2020 term. For a full listing of ASCE election results, click here.

Engineers and Land Surveyors Day

On Tuesday, May 23, 2017, BSCES, American Council of Engineering Companies of Massachusetts and Massachusetts Association of Land Surveyors and Civil Engineers members gathered at the Massachusetts State House for the annual Engineers and Land Surveyors Day at the State House along with leaders from other engineering and designrelated associations. Engineers and Land Surveyors Day is the one day each year when engineers and land surveyors gather in force at the State House and present our industry's viewpoints in person to our local legislators. It is a chance for participants to meet with their state representative and state senator to discuss issues pertinent to our industry and to them as professionals and citizens. For more information about this year's Engineers and Land Surveyors Day, or to see our 2017 Issue Briefing Sheets, click here.

Massachusetts Board of Registration Professional Competency Committee Report

The Massachusetts Board of Registration of Professional Engineers and Professional Land Surveyors Continuing Professional Competency Committee issued its report to the Board of Registration in April 2017. The Board is expected to discuss this report at its July 27, 2017 meeting. The Committee has developed very draft regulations on continuing education for PE and PLS license renewal that would potentially be added to 250 CMR.

The committee has been reviewing the NCEES Model Law on continuing education and considering such issues as the potential number of Professional Development Hours to require, policy issues about retired engineers and surveyors and the impact of potential continuing education requirements on small businesses.

The Board's July 27 meeting, like all Committee and Board meetings, is open to the public. Before planning to attend a meeting, please confirm that it is being held on the Board's website.

Designer Selection Board Seeks Professional Engineer for Board

The Massachusetts Designer Selection Board (DSB) is seeking resumes from diverse candidates who are professional engineers (structural) licensed in Massachusetts for an opening on the DSB. While their preference is for an electrical, mechanical, or structural PE, they will also consider resumes from civil engineers licensed in and living in Massachusetts, who do not have conflicts of interest. The DSB is an autonomous 11 member board that selects designers for public building construction throughout the Commonwealth. If you are interested in applying to serve, please click here for further details.

In Memory of Harold William "Bill" Moore, PE, LS

BSCES is sad to report that Harold William "Bill" Moore, PE, PLS passed on Monday, June 12, 2017, at the age of 90. Bill founded H. W. Moore Associates, an engineering firm in Boston, MA. He was an accomplished PE in 14 states and a Life Member of ASCE. His obituary may be viewed here.

In Memory of Rubin M. Zallen, PE

BSCES is sad to report the passing of Rubin M. Zallen, PE, principal of Zallen Engineering in Framingham, MA. Rubin was a Fellow and Life Member of ASCE, as well as a remarkable structural engineer during his years of practice. He will be remembered particularly for his passionate concern about maintaining integrity within the profession, and for his decades of work on The Massachusetts State Building Code. Rubin's obituary may be viewed here.

SEND US YOUR NEWS! Looking to strengthen the community that is BSCES, the BSCES Executive Committee and Newsletter Editorial Board has decided to expand the content of this *BSCESNews* Recent News and Updates column by including more member news. Have you recently been recognized for a professional accomplishment, passed the Professional Engineer Exam, received a promotion, or changed employers? If so, send your news items to BSCES Newsletter Editorial Board Chair Michael R. Cunningham, PE, Kleinfelder, at mcunningham@kleinfelder.com.



Simpson Gumpertz & Heger Inc. (SGH) is a national engineering firm that designs, investigates, and rehabilitates structures and building enclosures. We are always looking for talented engineering candidates for all of our offices.

SGH is an equal opportunity employer and values diversity in our work force. We are committed to providing equal opportunities to all job applicants and employees. We consider all qualified applicants, and encourage individuals with disabilities and protected veterans to apply.

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Upcoming Events

For more information and to register for events, please visit <u>www.bsces.org</u>

To register online for an event at the BSCES member rate you must login using your BSCES assigned username and password. If you do not know your BSCES member login information, call 617/227-5551.

ASCE and BSCES Sponsored Seminar

Thursday, July 27 – Friday, July 28, 2017 Embassy Suites By Hilton At Logan Airport 207 Porter Street, Boston, MA

8:30 AM – 4:30 PM

Bridge Rehabilitation

Jim J. Zhao, PhD, PEng, PE, Senior Program Manager, WMATA

This two-day seminar will discuss essential bridge rehabilitation topics, including: structure condition evaluation, bridge load rating calculations, load testing and health monitoring, fatigue life analysis and repairs, rehabilitation techniques, new material applications, seismic retrofit, and decision models. Upon completion of this seminar, attendees will be able to conduct or supervise bridge inspections for bridge rehabilitation projects, perform a bridge load rating analysis per AASHTO The Manual for Bridge Evaluation or using load test and finite element analysis, predict remaining fatigue life, perform fatigue damage repairs, use decisionmaking tools to select the best bridge rehabilitation alternative and perform a detailed bridge rehabilitation design using materials and new techniques.

For more information, or to register for this seminar and pay online, <u>click here</u>.

Younger Member Group Social Event

Wednesday, August 2, 2017 Fenway Park Pregame 5:30 PM – 6:45 PM Game 7:10 PM

Younger Member Group Red Sox Outing

Join the Younger Member Group for a baseball game featuring the Boston Red Sox vs. the Cleveland Indians at the Outfield Grand Stand Seats. Tickets will be handed out at a pregame social. Details will be emailed to the group two weeks prior to the game. Food will be included at the social. Here's to a great 2017 season!

Please see the Insert at the end of this month's newsletter for further details.

continued on page 11

Save the Date!

October 20, 2017

Business Issues for Engineers

Sponsored by the Southeastern Massachusetts Committee

Bella's Restaurant, Rockland, MA

Featuring Bernard Heine from The Professional Business Coaches

<u>Click here</u> for more information about Mr. Heine. See future BSCES email updates for additional details.

Mark Your Calendar!

Tuesday Evenings October 3 – November 7, 2017

2017 Fall Lecture Series

Sponsored by the Structural Engineering Institute Boston Chapter

Tufts University, Medford, MA

Construction Aspects of Structural Engineering—"If You Design It, Can They Build It?"

For more information about this upcoming lecture series, click here. See future BSCES email updates for additional details.

Suggest a Seminar Topic

Is there an engineering topic that you would like BSCES to feature in an upcoming seminar? If so, members of the BSCES Program Committee would like to hear from you.

Charged with developing technical training programs that address members' professional development needs, the Program Committee oversees the Society's National Highway Institute training, spring and fall Professional Engineer Refresher Courses and other topical workshops. If you have a technical topic that you would the like the Program Committee to consider, send your suggestion to BSCES Program Committee Chair Jeff Lewis at jlewis@garofaloassociates.com or BSCES Association Manager Rich Keenan at rkeenan@engineers.org.

2016–2017 BSCES Program Sponsors

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Upcoming Events (continued from page 10)

ASCE Webinars

ASCE WEBINARS

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ASCE | CONTINUING

Are you planning to take an ASCE webinar? Sign up with the code WEBBOSSEC and 20% of your registration fee will be donated to the Boston Society of Civil Engineers Section/ASCE.

For a full listing of ASCE Webinars, click here.

Need to Take FHWA-NHI-130055 Safety Inspection of In-Service Bridges?

The BSCES Program Committee is trying to determine whether there is enough member need to host the two week-long FHWA-NHI-130055 Safety Inspection of In-Service Bridges course this year. If you need to take this course, please contact Katya Gonzalez-Willette at kgonzalez-willette@engineers.org.

The Aldrich Center—where history and technology meet on Beacon Hill...



Two blocks from the State House and overlooking Boston Common, the Aldrich Center is the perfect venue for your next event. This historic building accommodates private functions and business meetings. BSCES members receive a 20% discount off our room rental rates.

Visit www.aldrichcenter.org for more information.



Classifieds

Harriman — Auburn & Portland, ME, Portsmouth NH and Boston MA

Mid-level Structural Engineer—Harriman is seeking a Structural Engineer to work in our office. Harriman is one of northern New England's largest A/E firms, with a commitment to excellence that began in 1870, and a reputation for award-winning designs throughout the region.

- Bachelor's degree in civil/structural engineering from a ABET accredited program.
- Minimum 5 years of related structural experience in the design and construction of new and existing buildings.

- Professional Engineering license.
- Experience managing multiple projects with minimal supervision.
- Knowledge of both current and historic building materials, along with field investigation methods as it relates to the evaluation and design of existing and new structures.
- Familiar with all State and National building codes and standards.
- Active in professional engineering organizations.

We offer completive salaries and a full benefits package including medical, dental, 401K program and a friendly, collaborative work environment. Harriman is an equal opportunity employer. All qualified applicants will receive consideration for employment without regard to race, color, religion, sex, national origin, disability or veteran status. Application must be submitted through the <u>www.workable.com</u> site to be accepted.

Milone & MacBroom, Inc.

Senior Geotechnical Engineer/Project Manager—Milone & MacBroom, Inc. offers a full integration of specialty practices in water resources engineering, community planning, landscape architecture, water and wastewater engineering, civil/structural engineering, transportation engineering, geotechnical engineering and construction administration to bring projects from the planning level through construction.

We are seeking a **Senior Geotechnical Engineer/Project Manager** to assist the firm by providing geotechnical engineering support services for environmental, water resources, transportation, and infrastructure-related projects. The qualified candidate should hold a BS in Civil Engineering with 15 years' experience in geotechnical engineering with 8+ years in project management. CT Professional Engineer licensure required.

For more information on this opportunity, go the careers section at www.miloneandmacbroom.com

Milone & MacBroom, Inc. is an Affirmative Action/Equal Opportunity Employer M/F/D/V.



Please join us!

YMG Red Sox Game at Fenway Park

Wednesday, August 2, 2017

Wednesday, August 2, 2017 Red Sox vs. Cleveland Indians 7:10 PM Outfield Grand Stand Seats

Pregame 5:30 PM to 6:45 PM Location TBD

Registration Fees:

Students - \$32/Ticket Members - \$38/Ticket Non-members - \$44/Ticket

To Register:

Register online here: bit.ly/YMGRedSox Contact 617/227-5551 if you have difficulties registering online. Registration Deadline: July 19, 2017

Tickets will be handed out at a pregame social. Details for the pregame social will be emailed to the group two weeks prior to the game. Food will be included at the social.

Here's to a great 2017 Season!

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McMillen Jacobs Associates

N.E. Bridge Contractors, Inc.

Northeastern University

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Skanska Civil

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TranSystems

Tufts University

Weston & Sampson Engineers, Inc.

Mark Your Calendars & Watch for Future Announcements!

2017 Fall Lecture Series Construction Aspects of Structural Engineering -"If You Design It, Can They Build It?"

Tuesday Evenings October 3 – November 7, 2017 Tufts University, Medford, Massachusetts

Virtual Design and Construction

David Odeh, SE, *Principal, Odeh Engineers* October 3, 2017

Blurred Lines

Joseph P. Gill, PE, *President, Gill Engineering Associates, Inc.* Kevin Lampron, Jr., *Area Manager, J. F. White Contracting Co.* October 10, 2017

Structural Issues during Construction

Alan Fisher, PE, *Construction Structures Group Leader, Cianbro Corporation* October 17, 2017

Legal Aspects / Risk Management

David Hatem, PC, Partner, Donovan Hatem LLP Paul Kelley, PE, Senior Principal, Simpson Gumpertz & Heger October 24, 2017

You Want to Build It How?

Tom Zieman, PE, SE, *Principal, Zieman Engineering* November 7, 2017

Note: No Lecture on October 31, 2017



Supported by the staff of The Engineering Center Education Trust