

Going Green in a Grey Industry

by Hugh C. Scott, PE, Engineer, Shea Concrete Products

Shea Concrete Products, Inc. began as a vision—a small family-owned and operated business with one delivery truck which, over 70 years of business, has progressed into the largest precaster in the area, headquartered in Amesbury, MA with four locations, a fleet of support and delivery vehicles, and over 120-employees.

Despite the tremendous growth the business has experienced in its seven decades in operation, Shea Concrete has remained a very close-knit operation with the same core values Mr. Shea instilled in 1949; those values being to produce the highest quality products, deliver industry-leading service, and offer market-competitive pricing. Additionally, the company has also remained committed to reinvestment into its manufacturing and supporting facilities as well as its workforce. Shea Concrete's secret weapon has always been its loyal employees, who go above and beyond on a daily basis.

In January 2018, the company's new headquarters facility opened at its Amesbury, MA location. The facility was designed with



Shea Concrete moved into their new HQ building in January 2018

sustainability as a main project objective, and once completed will apply for LEED certification. This project strived for minimal environmental impact in all aspects of its design, taking into account everything from its impact on the nearby environment and wetlands to what percentage of construction and demolition waste diverted from ending up in a landfill.

In taking on a LEED-driven project like this, Shea Concrete leadership showed their commitment to reducing unnecessary water usage, minimizing

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UPCOMING EVENTS

FHWA-NHI-130053 Bridge Inspection Refresher Training
October 1–3, 2019

2019 Fall Lecture Series: Resilience and Sustainability for Structural Engineers
October 3, 10, 17, 24 and November 7, 2019

Mixed-Use Trends: Converting Malls into Lifestyle Centers, A Panel Discussion
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October 21, 2019

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November 1, 2019

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President's Report

by Richard Maher, PE, Managing Associate, Perry Associates, LLC



Welcome to the 171st year of BSCES. I am honored to have been elected by the membership to serve as president during this exciting year.

The Boston Society of Civil Engineers Section (BSCES) is a section of the American Society of Civil Engineers (ASCE). BSCES was founded in 1848 and is the oldest engineering society in the United States, serving over 3,700 members across the Commonwealth of Massachusetts.

Our mission is to educate, support and empower our members, partners and the community by providing technical, professional, and outreach activities related to civil engineering.

It is very important to recognize that the vitality of BSCES is only possible with the hard work and efforts of members like you. It is your volunteer efforts, taking time out of your busy work and personal life, to serve the society, your colleagues, and our profession that enables us to thrive.

This year we continue the tradition at BSCES to provide a full calendar of over 40 events aimed

at providing technical programs, networking and diverse member services. BSCES has six technical institute chapters, 10 operational committees, 10 student chapters, publications, and its own television show. We support a legislative fellow at the state house who serves as an advisor to the state legislature's Joint Committee on Transportation. Each year, BSCES sponsors awards, donations, prizes, scholarships, and grants which typically exceed \$40,000 and hosts a variety of outreach activities geared towards educating the public about our

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construction waste, optimizing energy usage with on-site renewable energy generating sources, improving environmental air quality and comfort levels throughout the building, and making sure employees had a wealth of sustainable commuting options to reduce daily waste on all fronts. Together, these sustainable actions made for a safer, cleaner, and more efficient work environment for Shea Concrete employees to call home.

Shea developed a project plan around a location that met basic environmentally-friendly criteria which helped reduce the environmental impact through the entire construction process. Focus was placed upon minimizing power needs with a sound EAc2 On-Site Renewable Energy strategy, and by prioritizing water conservation within the on-site Stormwater Design Quality Control System.

The new headquarters facility was designed to reduce water consumption by over 30 percent compared to the 1992 baseline. This was accomplished primarily through water-efficient landscaping throughout the property, which reduces overall water use for landscaping purposes by more than 50 percent compared to baseline. By using native, drought-tolerant plantings throughout the site, Shea reduced the amount of water needed for irrigation. By capturing and storing rainwater in a 3,400-gallon cistern that Shea manufactured and installed, no potable water will ever be used for irrigation. Thanks to improved efficiencies across the project—from the electricity used by computers and lighting, ventilation, air conditioning, and water heating, to the robust reliance on renewable energy sources—Shea managed to improve energy performance by 12 percent compared to the baseline building performance rating.

The facility utilizes on-site renewable energy generation to provide at least 35 percent of the building's electricity from renewable sources to improve efficiency and reduce the ecological footprint for years to come. By achieving this goal, this project earned the maximum amount of LEED credits for on-site renewable energy.

Shea Concrete employees are now driving electric vehicles and awaiting electric vehicle charging stations that will be installed with the completion of the rear parking lot that is currently in construction. Current trends in the automotive market indicate that more people will be driving electric vehicles in the future, and with that Shea decided to make the financial commitment to ultimately provide this benefit to their employees.



Solar panels on the production facility produce 421,000 kWh per year

In 2013, Shea Concrete Products installed its initial 390,000 kW photovoltaic system consisting of 1,184 solar panels on the roof of their main production plant. The 421,000 kWh's produced annually by this system, combined with the array output associated with the headquarters facility, provide enough electricity to operate the Amesbury location without requiring additional sources on an annual basis. The company is very proud of this achievement and is constantly looking for ways to bring these benefits to its other facilities.

In a building designed with an eye toward providing healthy indoor air quality, developing and implementing an IAQ management plan for the construction and preoccupancy phases of the building was critical. Controlling dust, pollutants and volatile organic compounds during construction helped prevent contamination that could extend over the lifetime of the building.

Indoor carbon dioxide (CO₂) levels have a direct impact on productivity, comfort and health of individuals. Elevated levels can lead to drowsiness, dizziness and reduced cognitive functioning. By installing a permanent monitoring system to ensure that ventilation systems maintain healthy CO₂ levels, Shea ensured that employees have an optimal working environment.

Thermal comfort is also a significant factor in the way people experience their work environment, and it can affect mood, performance and productivity. Temperature preferences can be affected by metabolism, body type and clothing and are, as a result, highly personal. By providing individual controls in all the private offices and in each of the open office spaces, Shea gave their employees the ability to adjust the temperature in their immediate surroundings in order to achieve better thermal comfort.

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The Structural Engineers 2050 Challenge

by Teresa C. Vangeli, PE, Supervising Structural Engineer, WSP, BSCES Sustainability Committee & SEI Sustainability Committee

Structural engineers have an important role in the mitigation of climate change and lowering greenhouse gases (GHGs) in the atmosphere with regard to the built environment. The structural systems of building, bridges, and other infrastructure typically account for at least 50 percent of the greenhouse gases emitted in the production, delivery and installation of materials for new construction.

A common metric that can be used to determine the sustainability is called the project's carbon footprint. The carbon footprint of the project is a summation of the greenhouse gases that are released during the production of building materials, the delivery of building materials to the project site and the installation of building materials for new construction. This carbon footprint can also be considered the embodied carbon of the project. Lowering the embodied carbon results in reducing the GHGs released into the atmosphere.

The SE 2050 Challenge which sets a goal for the structural engineering community to reduce embodied carbon in structures in order to achieve Zero Carbon buildings by 2050. Structural engineers are challenged to use ingenuity, creativity and experience to reduce embodied carbon in the production, delivery and construction of structural systems. The Structural Engineers Institute (SEI) Sustainability Committee of ASCE is supporting

the SE 2050 Challenge and encouraging structural engineers to take on the challenge of reducing embodied carbon and achieving Zero Carbon buildings & infrastructure.

Working closely with the architects as well as other engineering disciplines and construction teams on an integrated design, the structural engineers can optimize structural systems, based on structural requirements. Sustainable design has been pushing the design industry to consider the impact new construction has on the environment. These considerations in the design include the materials selected, the distance that the materials traveled from production to installation and the emissions that are produced by this manufacturing, delivery and the construction of these material.

Another important factor for structural engineers to consider is resiliency. When designing a project, flood, seismic and other disaster events must be taken into consideration. Resiliency for flood events drives the design and placement of essential equipment to be moved above the flood zone. Resiliency for seismic events may require structures to stay in service after the seismic event, protecting property in addition to saving lives. At first, resiliency appears to be a hurdle to reducing embodied carbon. However, when a structure designed with resiliency in mind is compared to the process of demolishing and

reconstructing replacement structures after disastrous events, the resilient design can have considerably less embodied carbon.

Just as the market has responded to a call for sustainable design by innovating the design of products and materials, the SE 2050 Challenge encourages new ideas and technologies in the structural design and construction field. One of the key strategies listed in ASCE Policy Statement 488 is "Researching and implementing new technologies, manufacturing processes, and materials to conserve resources to further improve energy efficiency and reduce GHG emissions." The SE 2050 Challenge also aligns with the [AIA Architecture 2030 Challenge](#), and the work of the [Carbon Leadership Forum](#).

The SEI Sustainability Committee encourages all structural engineers to review the embodied carbon for the structural systems of their projects, implement embodied carbon reduction strategies, track reductions in the projects carbon footprint, and ultimately collaborate and share knowledge amongst peers so that everyone may improve. Reusing existing buildings, reducing cement quantity in concrete, or setting carbon reduction targets are examples of strategies to consider for your project.

Begin today. Take a new, refreshed look at your current projects. 2050 is around the corner.

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In designing and constructing this project, Shea balanced their commitment to environmental responsibility and sustainability with their commitment to seeking LEED certification for the building. From the very beginning of discussions about the project, Shea was dedicated to pursuing and achieving LEED certification,

but they also were not tied to achieving a specific certification level as their main focus was delivering the best and most efficient work environment for their employees.

Shea Concrete Products continues to look for ways to enhance all of its facilities in Massachu-

setts and New Hampshire and to be a leader in implementing environmentally friendly practices wherever possible. The facility's doors are always open for a "hard-hat" tour so folks can learn more about the precast concrete industry and value it provides to the New England construction market.

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Carbon Free Boston: Leveraging Advanced Energy Modeling to Help Make Boston Buildings Carbon Neutral by 2050

by Brian Swett, Principal, Arup

In 2016, Mayor Marty Walsh signed the Metro Mayors Climate Mitigation Commitment, formally pledging to make the City of Boston carbon neutral by the year 2050. To determine how best to accomplish this ambitious goal, Mayor Walsh turned to a group of business and civic leaders, the Boston Green Ribbon Commission (GRC), to study citywide emissions and develop scientifically-sound pathways to achieve carbon neutrality.

The Carbon Free Boston study was organized around four sectors of greenhouse gas (GHG) emissions: (1) buildings, (2) transportation, (3) waste and (4) energy supply. Boston University led the analysis for the latter two categories and released requests for proposals (RFPs) seeking technical consultants to head up the transportation and buildings components.

In 2017, Arup was selected to lead the building sector analysis.

Buildings currently account for roughly 75% of Boston's GHG emissions profile, making reductions in this sector critical to achieving carbon neutrality by 2050. The goal of Carbon Free Boston was to help the GRC identify practical, data-driven policies and pathways capable of achieving carbon neutrality by the deadline.

A new benchmark in energy modelling

To determine the most effective interventions, our sustainability experts first needed to find a way to accurately measure the performance of the city's entire building stock. The four-person Arup team began by defining building typologies that broke down Boston's 86,000+ structures into 15 distinct types, ranging from office buildings to warehouses to K-12 schools. These 15 types were then further subdivided into four age ranges (pre-1950 through post-2000s). The team also created an additional set of models to represent future growth that allowed them to model scenarios to determine the combination of strategies capable of delivering the most significant reductions.

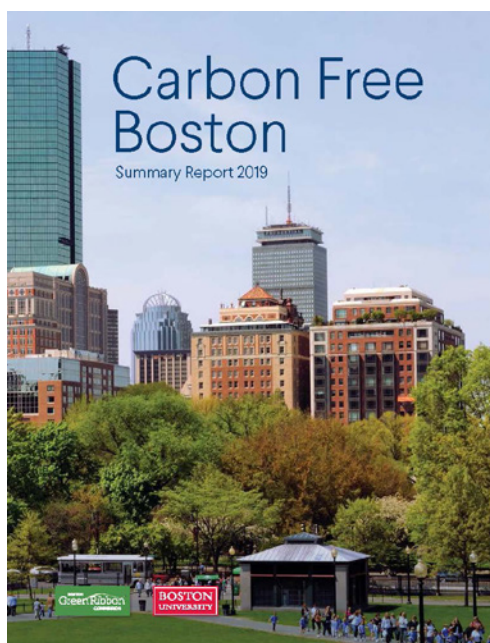
To ensure that the models' predictions were as accurate as possible, the team used anonymized data provided by Boston's utility providers to calibrate results at both the individual building type and macro citywide levels. This calibration reduced discrepancies between the models' performance projections and real-world building performance, thus ensuring that projections would be more accurate predictors of identified interventions.

Project Summary

75%
of Boston's GHG
emissions attributed to
buildings

75
distinct typological
building energy models
developed

86,000+
structures categorised



Reducing energy emissions associated with buildings was one component of the Carbon Free Boston report

Landing on the right solutions for Boston's buildings involved much more than simple number crunching, however. To identify the right strategies, first the team had to ask the right questions. For instance, how was each building type currently performing? How effective were the city's existing regulations at driving down emissions in various categories? And what combination of policies had the greatest chance of helping the city to achieve carbon neutrality—from a practical, economic and social equity standpoint? Arup's models allowed these questions to be investigated in depth, providing the data-driven insights needed to inform future policy.

Pathways to progress

In early 2019, the GRC released the Carbon Free Boston Summary Report, which included

an overview of our findings, along with detailed recommendations on how to transform the building sector through "a synergistic mix of regulatory requirements to drive performance, financial assistance to cover upfront costs where necessary, and workforce training to expand the labor force."

With the fact-finding and analysis phase of work now complete, the City of Boston is undertaking a climate action plan update and launching an extensive stakeholder engagement effort to build consensus around new building emissions policies. Convincing the public of the necessity of action is the first and most critical step in this process.

According to GRC Executive Director John Cleveland, our analysis makes an irrefutable case for change. "Arup's building sector modeling makes it clear that to achieve the 2050 carbon neutrality target, Boston will need to simultaneously dramatically increase the energy efficiency of the entire building stock, eliminate the use of fossil fuels for space and hot water heating, and convert all electricity to renewable sources," Cleveland said. "These are radical and aggressive goals. However, because of the sophistication of the analysis, the need for them was not questioned by any key stakeholder group. So now the question that needs to be addressed is not "What do we need to do? but rather "How are we going to do it?"

A template for change

Our building energy models will not only help catalyze emission reforms in Boston. They will also be disseminated to other cities by C40 Cities Climate Leadership Group on an open source platform. As a partial funder of Arup's work on the project, C40 is now free to share the models with others so they can serve as templates for similar efforts elsewhere.

ASCE Sustainable Development Award 2019: 21 Student Projects Impress the ASCE Judges at TechConnect World Innovation Conference and Expo, Boston

by Sulata (Arianna) Paul, EIT, Water Resource Engineer, Green International Affiliates and Sarah J. Simon, PE, Partner, Apple Creek Associates and Director, E2 New England Chapter

The ASCE Committee on Sustainability (COS) participated once again at the 15th Annual National Student Design Expo featuring the US Environmental Protection Agency's People, Prosperity and the Planet (P3) program at the TechConnect World Innovation Conference and Expo at Boston, 2019. The P3 student teams once again stepped forward and showcased their creative and innovative designs this year. They truly reflected future leaders working towards a more sustainable planet. ASCE COS selected one project from the 21 student teams' projects at US EPA People, Prosperity and the Planet (P3) Design Competition. By presenting a student team with the ASCE Sustainable Development Award, ASCE provided students an opportunity to pitch their sustainability projects to real-world professionals.

Danielle Spicer, Richard Costa, Sarah Simon and Sulata (Arianna) Paul of the Boston Society of Civil Engineers Section/ASCE (BSCES) Committee on Sustainability had a blast serving as judges for the ASCE Sustainable Development Award this year. The \$1000 award is given annually to a student sustainability project exhibited at TechConnect World Innovation Conference & Expo.

The national ASCE Committee on Sustainability created the Sustainable Development Award to encourage the expansion of mankind's collective body of knowledge necessary to prepare our



(Left to right) Sulata (Arianna) Paul, Sarah Simon, Danielle Spicer, Richard Costa, served as the judges for the ASCE Sustainable Development Award.

society for the mounting environmental, societal, and economic challenges that we all face together. Perhaps more importantly, the award educates ASCE's membership and the public about innovative ideas and techniques in sustainable development. Sustainable development priorities are not just to do the project "right", but to do the "right project", and also to transform the profession, and communicate and advocate for development that serves the future. All these values are also reflected in the Institute for Sustainable Infrastructure rating system, ENVISION.™

The BSCES judges applied ASCE's sustainability criteria, "The Triple Bottom Line" which considers the social, economic and environmental conditions that have the capacity to maintain and improve our quality of life, to the 21 student projects to find the one that best incorporated simple design, local materials and would be widely applicable to improving quality of life around the world.

The award went to the University of Oregon's project: "Sanitary Green Space: a closed-looped sanitation system for growing green communities." This team designed a simple, wastewater treatment pilot using local sand, gravel, plants, and healthy soil in a series of small containers. The system could be used as an alternative, non-pipe, local sanitation system adaptable to various landscape contexts and scales. In addition, it would create small green spaces when installed that are so badly needed in dense, urban developed areas.

All the student projects that were a part of the TechConnect World Innovation Conference & Expo were remarkable. They included advanced or real-time pollution monitoring, including a kite-based air quality and mapping system; advanced bio-polymer, nanomaterials, and other materials for water remediation; and a project developing green hemp processing to produce fiber for construction. More information can be found at the [USEPA website](https://www.epa.gov/).

President's Report

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profession and engaging pre-college people in programs such as the Future City, Model Bridge, and Online Bridge Competitions. This level of programming has earned BSCES national recognition by ASCE as one of the best ASCE sections and by winning awards year after year.

This year I look forward to working with each of you on making BSCES even better. Some of our initiatives this year include:

1. **Sponsorship Program:** Preeminent Society
2. **Technical Program:** Local and Worldwide Subjects
3. **Special Funds:** Scholarships and Professional Development
4. **Outreach Program:** Community Engagement in Civil Engineering

These initiatives can only be achieved with the generous donations of our industry partners and you, our members. BSCES is a 501(c)(3) nonprofit organization that relies on the support of our membership and sponsors for 55 percent of our operating budget. We thank our 2019–2020 sponsors for their generosity. You will find a listing of our Society and Program Sponsors in the *Recent News and Updates* page of this newsletter. Our programs and activities are extensive and cannot be sustained without your financial support.

I would especially like to thank Shea Concrete Products which is a Society Sponsor and the sponsor of this issue of *BSCESNews*. Please take the time to read their page 1 article entitled "Going Green in a Grey Industry."

The theme of this month's newsletter is "Climate Change Mitigation" and its featured group is the BSCES Committee on Sustainability. Be sure and read the page 8 article about 2019 BSCES Sustainability in Civil Engineering Award Winners—Boston Landing Station and Greenough Boulevard Greenway Expansion. This article was written by Melissa Carter from Stantec who is the long-serving chair of the Committee on Sustainability.

I am thrilled to serve you as president and I hope that you take advantage of the opportunities offered throughout the upcoming year. You can always reach me by email at President@BSCES.org with any questions. Please join us today in supporting BSCES.

What Role Do Civil Engineers Play in Preparing for and Reducing Extreme Weather and Water Cycle Changes?

by Sarah J. Simon, PE, Partner, Apple Creek Associates and Director, E2 New England Chapter

What climate will our infrastructure be subject to during its 50–100 year life span, well past the year 2100? To mitigate climate change and reduce extreme weather and water cycle changes, the American Society of Civil Engineers (ASCE) recognizes the need to lower the greenhouse gas (GHG) levels in the atmosphere. Using less energy and generating it with clean, local sources will decrease emissions and prevent more GHG loading. Energy generated by burning fossil fuels is the largest source of the greenhouse gas, CO₂ (aka “carbon”). The American Society of Civil Engineers supports public and private sector strategies and efforts to achieve significant reductions in greenhouse gas emissions through the planning, design, construction, renewal, operation, maintenance and decommissioning of existing and future infrastructure systems. ASCE Statement 489—Energy Policy, passed in July 2019, states: “Research to improve traditional non-renewable sources and development of renewable energy sources can yield a reduced environmental impact and a more economical and reliable source of energy for the future.”

To assure that infrastructure investment will serve its purpose during its many years of service, engineers have the responsibility to design for the future climate. Informing owners about the reasons for the uncertainty in predicting future flooding and drought, heat predictions and sea level rise is also important (ASCE Policy Statement 360, Jan 2018).

ASCE Statement 488—Greenhouse Gases (as revised July 2019), commits our profession to plan and construct projects that reduce greenhouse gas emissions, a mission beyond design that mitigates impacts. It says that design should improve the efficiency of both stationary and mobile systems over their entire life cycles, and it supports incentives for cleaner technology, cost-effective carbon capture, and exploration of natural systems as GHG sinks. The scientific research is clear that extracting carbon from the air can be done by bolstering healthier, balanced ecosystems and farming practices.

Engineers have a role to play in reducing energy use and emissions by designing more sustainable projects. The BSCES Committee on Sustainability promotes the ASCE guidance for all

professionals on what is sustainable development—doing the right project, the right way, communicating this to the public and making this approach common place in the profession. Sustainable design has Triple Bottom Line benefits—economic, environmental and quality of life. ASCE offers sustainability training on-line.

Energy demand in construction comes from material production, demolition or renovation of old structures, and transportation of materials. Concrete production is estimated to contribute eight percent of human greenhouse gas emissions. Steel making and the coke necessary emit approximately the same amount of carbon as well. While these direct factory emissions are in the GHG inventories, civil as well as structural and infrastructure projects create the demand for this energy input and emissions. As such, the energy and emissions are “embedded” in the beginning and end of each project’s life. The project’s own carbon inventory should consider these supply chain, energy emissions.

More efficient material use is a top factor in decreasing energy emissions, and it usually pays off over the life-span of the project and its demolition, as explained in the ISI ENVISION rating system. As designers, civil engineers can help reduce material quantities, through measures such as using high strength concrete, minimizing mass structural components, using high strength steel and reducing project size.

Optimizing runway and taxiway layout produced significant emissions reduction for the TF Green Airport Runway 5 Extension project in Rhode Island. Significant material reuse and construction waste diversion earned the Rhode Island Airport Corporation an Envision Gold award in 2016.

Better facility design includes more efficient building envelopes and energy efficient HVAC and water systems. More sustainable engineering can improve ecosystems with concepts such as stormwater raingardens, floodplain preservation, green roofs, and wetland restoration. Green International Affiliates’ low impact design (LID) of the Yentile Farm Recreational Facility in Wilmington, Massachusetts, preserved floodplain capacity and developed better stormwater

management systems, which earned the project the BSCES Sustainability in Civil Engineering Award in 2017 and the 2019 Engineering Excellence Silver Award from American Council of Engineering Companies of Massachusetts.

Transportation infrastructure plays an even bigger role in energy and greenhouse gas emissions. Because building energy efficiency and renewable energy development has progressed well, the transportation sector has become the largest emitter of GHG. When more vehicles are on the road, and they idle or operate slowly in traffic, they are burning more gasoline and diesel. With 80 percent of transportation GHG emissions now coming from cars and SUVs, designing for transit and other non-vehicle mobility is an effective way to reduce vehicle miles travelled and their emissions. The Boston Landing Station completed in 2017 is an example of a public-private partnership which earned an Envision Silver Award for returning better access to mass transit for a busy area of the Allston-Brighton neighborhood. NB Development Group funded and managed the design and construction in close collaboration with the Massachusetts Bay Transportation Authority (MBTA) and the Massachusetts Department of Transportation (MassDOT). The Boston Landing team earned sustainability credits in all five Envision categories because of forward-thinking design by the engineering firm, STV, and sustainability commitments from Skanska, the project’s contractor.

“Complete Street” design accommodates active mobility like walking and bicycling, as exemplified by the Greenough Greenway designed by VHB which created a shared use path along the Charles River from two lanes previously dedicated to cars. This result is a public/private collaboration between the Department of Conservation and Recreation (DCR) and the Lawrence and Lillian Solomon Foundation which earned an Envision Bronze award in 2017. In denser areas, Complete Streets can improve curb space use for the greater future demand in picking up people and packages and delivering them.

So, do civil engineers have a role in mitigating climate change? You bet we do!

Keeping Water Local: Community Looks to Rainwater Recharge as a Way to Address Multiple Challenges

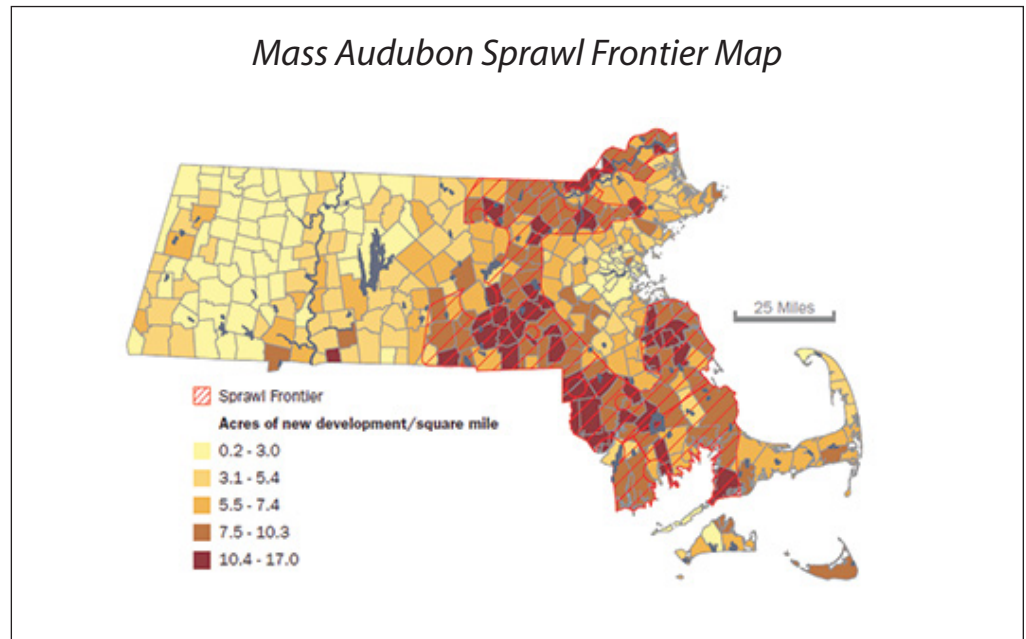
by Julie Wood, Deputy Director of Charles River Watershed Association; and Richard McCarthy, Norfolk Town Planner

The community of Norfolk, Massachusetts located, 20 miles southwest of Boston and 21 miles north of Providence, is a small but growing suburban community of close to 12,000 (2013) residents. Located along the Franklin Commuter Rail line, Norfolk sits within the outer Boston suburban ring designated by Mass Audubon as the “sprawl frontier.”

While new development can offer many opportunities for a community, it can also add stressors. Additional impervious cover results in increased stormwater runoff and reduced infiltration of groundwater for aquifer recharge and streamflow. The Town of Norfolk is located in the Charles River watershed which is subject to both nutrient and pathogen Total Maximum Daily Loads (TMDLs). As such, the new Massachusetts Municipal Separate Storm Sewer System (MS4) stormwater permit, administered by EPA, has special requirements for stormwater nutrient load reductions that apply to communities in the Charles River watershed.

The Town of Norfolk’s drinking water supply also faces numerous challenges which are compounded by continued requests from proposed developments and will be further exacerbated by climate change. The community is currently in the process of bringing a new wellfield online to allow it to better serve the community’s existing demand. Additionally, like most communities in Massachusetts, Norfolk is also planning for a changing climate. A recipient of a FY 2020 Municipal Vulnerability Preparedness (MVP) planning grant, the Town is kicking off a process to assess vulnerabilities to climate stressors, such as increases in intense rain events and hotter temperatures, and to develop local solutions. Finally, the community is also a member of the regional Charles River Climate Compact, a group dedicated to working on climate adaptation across municipal boundaries.

In March 2019, the Town of Norfolk and Charles River Watershed Association (CRWA) obtained funding to identify opportunities to increase local recharge of stormwater runoff in and around Norfolk Center using green stormwater infrastructure (GSI). Current stormwater runoff in the Town Center is primarily managed through catch basins and



pipes and is then discharged to a series of ponds to the east of the Town Center, which ultimately discharge to the Charles River. This runoff is typically not infiltrating into the ground, which is a missed opportunity to recharge local aquifers, reduce stormwater runoff volumes and improve water quality in local rivers and streams.

Using available information on local soil conditions, property ownership, topography, existing drainage patterns, and economic development plans, CRWA identified 28 GSI infiltration opportunities in the Town Center study area. CRWA developed conceptual level designs that include recommendations for system types, locations and sizes. For GSI system types, CRWA recommended both infiltrating rain gardens and surface or subsurface infiltration trenches. Most systems were sized to treat either a 1-inch or 2-inch water quality volume, although some systems have the potential to be designed for larger capacities and this may be desirable in certain locations as the Town works to address stormwater flooding in a changing climate. Based on the conceptual designs, CRWA used the Stormwater Calculator developed by Abt Associates, Inc. and CRWA in 2015, to estimate annual recharge for each proposed infiltration system. The average annual recharge per system was estimated to be 1.3

million gallons per year. The total annual estimated infiltration for all 28 systems is estimated to be about 36 million gallons. The Town’s public water supply provides approximately 165 million gallons to its customers annually.

Through the study described above, the Town and CRWA were able to identify multiple opportunity sites for groundwater infiltration in just one small section of Town. By using GSI, some systems may also add beauty and greenery to the Town Center where a town green and multiple, well-maintained gardens already create an idyllic atmosphere. In many ways, the movement away from so-called traditional piped storm water system is a return to Norfolk’s roots. Many rural communities like Norfolk relied on “country drainage” for many years or decades, which although not as sophisticated as today’s GSI, did use planted areas to slow down and infiltrate stormwater. Now we can design GSI to handle newer storm events with climate change that will provide environmental and aesthetic benefits and maintain the character of the town. Infiltrating more stormwater runoff will provide an opportunity to increase the health of the local water supply system and local water resources and reduce stormwater runoff pollution.

Featured Group

2019 BSCES Sustainability in Civil Engineering Award Winners: Boston Landing Station and Greenough Boulevard Greenway Expansion

by Melissa Carter, PE, Director of Project Management at Stantec and Chair of the BSCES Committee on Sustainability

The Committee on Sustainability selected two projects this year to receive a BSCES Sustainability in Civil Engineering Award. The Large Project award went to NB Development Group, LLC for Boston Landing Station, and the Small Project award went to MassDOT in close partnership with The Lawrence and Lilian Solomon Foundation for the Greenough Boulevard Greenway Expansion. The awards were presented at the BSCES annual awards dinner held on July 16 at the Royal Sonesta Boston. This is the fourth year that BSCES has solicited nominations for the Sustainability Award and selected esteemed recipients.

Boston Landing Station (Large Project Award)

Boston Landing Station is a Massachusetts Bay Transportation Authority (MBTA) Commuter Rail station that opened in May 2017. In a public-private partnership, NB Development Group funded and managed the design and construction of the approximately \$20 million station in close collaboration with the MBTA and the Massachusetts Department of Transportation (MassDOT). It is located along the Framingham/Worcester line as it runs along the Massachusetts Turnpike. The station includes an 800-foot long center island platform with canopies, stairs, elevators, a pedestrian overpass, and a bike storage area. There are two entrances to the new station, one from Arthur Street at the west end of the platform and one from Everett Street Bridge at the east end of the platform. Alterations were made to the existing tracks and communication system to accommodate the new station. These improvements were made while maintaining nearly uninterrupted mainline service.

The station itself represents a return of rail service to the Lower Allston-Brighton neighborhood that, until the 1960s, was well served by rail. After the closures of several stations including the Green 'A' Line in 1969, the neighborhood was left with only a network of bus routes and at least a 1-mile walk to any mass transit options. NB Development Group, recognizing a public need in the neighborhood of its new development, worked in partnership with MassDOT and the MBTA to fund the design, permitting, and construction of a new station in Brighton. Using an integrated Construction Manager At-Risk



Completed Boston Landing Station, 2018.

delivery, uncommon for infrastructure projects, the owner, engineer, contractor, and major stakeholders worked together to refine the design in terms of cost, functionality, and constructability a year before construction began. The preconstruction process resulted in a number of sustainable strategies including screening and reuse of existing track ballast, recycling of timber rail cross-ties, and construction re-phasing to maintain a safer work zone and streamlined schedule. Just over 50 percent of the materials used on the Boston Landing Station include recycled content. Around 95 percent of materials required for this project were sourced from local suppliers that are within the distance requirements built into the Envision framework.

Having recognized early on the many sustainable aspects of development, design, and construction, the team made the decision to pursue Envision verification from the Institute for Sustainable Infrastructure (ISI). In November 2017, the project earned the Envision Silver Award. The station is the first transit project in New England to achieve Envision verification, recognized in the Quality of Life category. The Envision system rates infrastructure projects across the full range of environmental, social, and economic impacts. The Boston Landing team earned credits in all five categories because of forward-thinking design by the engineering firm, STV, and sustainability commitments from Skanska, the project's contractor. The creation of the Boston Landing Station provides sustainable transportation options to a community that hasn't had rail access in 45 years.

Greenough Boulevard Greenway Expansion (Small Project Award)

Prior to 2016, Greenough Boulevard in Watertown was far less picturesque and inviting than the other roadways abutting the Charles River, such as Storrow and Memorial Drives. It consisted of four wide travel lanes, rusting twisted guardrails, and a crumbling, overgrown multi-use path on the river side of the road. Through a \$1.8 million public/private partnership beginning in 2015, the Department of Conservation and Recreation (DCR) and the Lawrence and Lillian Solomon Foundation worked together to reconfigure and right-size Greenough Boulevard to create a more balanced and appealing greenway along the corridor. The overall project also included development of the 8-foot Marsh Path, which provides connectivity along the boulevard, and an ADA compliant pedestrian ramp connecting the DCR parking lot on Greenough Boulevard to the existing path in the Cambridge Cemetery. Construction began in the Spring 2015 and was completed in Fall 2016.

The Greenough Greenway project's objectives included enhancing public safety along the river, providing a fully accessible multi-use path next to the river, reclaiming parkland and enhancing the scenic value of the Charles River Reservation, improving the environmental quality of the Charles River, and maintaining Greenough Boulevard as a fully functional parkway, as well as demonstrating an efficient and cost-effective public/private partnership.

VHB led the design effort, reducing the pavement from four lanes (two lanes in each direction) to two lanes (one lane with five-foot shoulders in each direction), while maintaining the existing lane configuration at intersections. The cross-section reduction allowed construction of a tree-lined, ten-foot wide, multi-use path, a substantial green buffer separating pathway users from automobile traffic, stormwater drainage improvements, and a generous strip of parkland to sustain the riverbank. The path links to a broad network of regional recreational paths and improves access to diverse land uses adjacent to the corridor. This project was designed to integrate with other elements of community infrastructure,

continued on page 10

A Living Shoreline: New Solution in Old Saybrook

by Hande McCaw, PE, Senior Technical Specialist, GZA GeoEnvironmental

Project Background

Beach and dune erosion are constant issues that plague shorelines all along the East Coast. The approximately 450 linear foot barrier spit that makes up the Hepburn Dune section of the Old Saybrook shoreline is no exception. The barrier spit shoreline project site is located along the Long Island Sound coastline located just east of the estate formerly owned by Katherine Hepburn in the borough of Fenwick, Old Saybrook, Connecticut. The coastline consists of an eroded dune, sandy beach and two small separate tidal marsh areas at the western and eastern edges of the project site. The existing dune, known locally as the “Hepburn Dune”, has been restored several times to prevent breaching of the dune and to protect the Lynde Point Marsh to the north. Despite the restoration efforts, the dune has continued to erode to a point at which the restored dune has nearly disappeared. The Borough of Fenwick has expended significant effort and cost to stabilize the shoreline during the last 10 to 15 years; however, erosion of the shoreline continues and there is concern that future storm events may cause additional breaching of the existing Hepburn Dune barrier spit.

The Lynde Point Marsh, located behind the Hepburn Dune, was restored by the Borough in partnership with the Connecticut Department of Energy and Environmental Protection (DEEP) Wetlands Restoration unit in 2003. The restoration included creation of 10 acres of tidal wetland and the removal of 60,000 cubic yards of dredge sediment placed within a former tidal marsh during the 1940's which converted the tidal wetlands to non-tidal uplands and were subsequently inundated with phragmites. Removal of dredge sediment as a part of this project returned the area to tidal wetlands, open water, panne and brackish meadow habitats that are beneficial to a number of wildlife species including migratory waterfowl, wading birds, shorebirds and nesting passerines. The marsh restoration project improved habitat for federally endangered shortnose sturgeon and the state threatened Atlantic sturgeon. Other species to benefit from this project included the bald eagle, northern harrier, northern diamondback terrapin, seaside and saltmarsh sharp-tailed sparrow, and willet and glossy ibis.

The barrier spit separating the marsh and tidal creek has been experiencing long-term shoreline erosion and the width of the spit is narrow and vulnerable to breach during coastal storm



Hepburn Dune Project Site in Fenwick, Connecticut. Existing Conditions



Conceptual Design of Hepburn Dune Site

events. A breach would have negative consequences for both improved property in the area and the recently restored tidal marsh and creek located inland of the barrier spit. A breach in the barrier spit would potentially result in: 1) creation of a tidal inlet, open to Long Island Sound; 2) erosion of the tidal marsh and creek; 3) change in the salinity of the marsh, resulting in ecological impact; and 4) damage to improved property including the existing drainage culvert under Mohegan Avenue, the roadway and erosion of both developed and undeveloped property. A permanent breach of the barrier spit would result in significant change to the nature of the southern shoreline of Fenwick. There is still concern that future storm events may breach

the dune and exacerbate the breach in the barrier spit. The Borough is currently looking to improve the resiliency of the site by applying a more sustainable and innovative, hybrid living shoreline design approach.

During 2017, GZA assisted the Borough with a successful grant application with the Connecticut Institute for Resilience & Climate Adaptation (CIRCA) to assist with funding for final engineering and design for the shoreline stabilization. As GZA and the Borough were in the middle of completing the final design for the living shoreline project in the winter of 2018, a coastal storm impacted the project area and

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A Living Shoreline: New Solution in Old Saybrook

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breached the dune. The breach was approximately 90 feet wide and the overwash material completely blocked tidal flows in and out of the tidal pond behind the Hepburn Estate. With the filled creek, the adjacent salt pond west of Mohegan Avenue has been slow to drain following rain events leading to increased water elevations in the pond. The Borough of Fenwick worked with DEEP's Wetland Restoration Unit to implement an emergency project. The emergency response plan included: 1) excavating overwash material from the creek and depositing dredge material within the original dune footprint; 2) installing a 36" pipe within the section of the creek previously filled to maintain tidal connection; and 3) anchoring drift trees within the footprint of the dune breach to provide some protection from future storm activity. The emergency response project was permitted on a temporary basis and will need to be removed from the site once the living shoreline project is constructed.

A Living Solution

Every coastal site is different with a unique set of needs and problems. GZA's priority is designing innovative solutions that address each site's needs in an environmentally conscious and economical way while planning for future threats such as intense storm events and the sea level rise. Throughout analysis and design phases of this project, a combination of field measurement data, advanced statistical analysis, and the state-of-the-art numerical modeling were used to determine environmental impacts under extreme events and normal conditions.

A Living Shoreline stabilization option was presented as a solution for the Hepburn Dune that would provide the benefit of a nature-based approach to shoreline stabilization, consistent with the existing barrier spit and marsh setting

and with minimal habitat impact. This approach would also address the erosive effects of existing, historical coastal structures located near the site. The project will be used as a demonstration and model for future shoreline stabilization projects with long term performance monitoring. With assistance from CIRCA and the University of Connecticut, this project will be used to establish empirical Living Shoreline performance criteria applicable to Long Island Sound.

The Living Shoreline approach was proposed to mitigate on-going erosion and reduce the potential for a breach of the existing barrier spit. Several alternatives were developed and evaluated relative to system performance, likelihood of permit acceptance as well as overall project cost. The performance of the Living Shoreline stabilization option was evaluated under a number of different criteria including prevailing wind, tide and wave conditions (to establish requirements for new wetlands survivability) and under storm conditions (storm surge and waves) representing different recurrence intervals. The conclusion of the site-specific evaluation led to a Living Shoreline stabilization option that incorporated the following items:

- 1) a nearshore wetland sill to attenuate prevailing wave heights;
- 2) new fill and tidal wetlands between the sill and the beach to provide necessary aeration to the marsh under normal tides;
- 3) reshaping of the cobble beach;
- 4) dune restoration (including planting beachgrass) to match a healthy reference dune located a few hundreds of feet to the east of the project site; and
- 5) relocation of Crab Creek inland to provide space for the dune to migrate and restore after storm events.

For this project, the Living Shoreline study included metocean data analysis to statistically characterize wind, water level and wave height and period; creation of a high resolution bathymetric Digital Elevation Model (DEM); and a very high resolution, 2-dimensional numerical wave model (SWAN) to characterize nearshore waves. The results of the wave modeling were used to: 1) determine the need for wave attenuation (for new marsh survivability); and 2) inform placement of the Living Shoreline features (e.g., wetlands sills) to conform to the existing shoreline geomorphology and tidal and wave currents.

GZA's approach to Living Shoreline and Hybrid System design for coastal shoreline stabilization has been to integrate ecology and coastal engineering technologies to develop a rational method for design. This approach to design utilizes a number of different assessments including the detailed statistical analysis of wind, water level and wave data; assessment of the environmental stress conditions required for new marsh survivability (based on tidal elevation and prevailing wave height and frequency); use of high resolution numerical wave and surge modeling; risk-based design which evaluates the system response under a range of conditions (from prevailing conditions to different recurrence interval coastal flood conditions); and consideration of the state and local regulatory agency goals for Living Shorelines during design. This approach provides a defensible, cost effective design that is capable of surviving a range of environmental load conditions and is consistent with the regulatory goal to increase the use of natural and nature-based shoreline stabilization.

2019 BSCES Sustainability in Civil Engineering Award Winners

continued from page 8

resulting in an overall improvement in infrastructure efficiency and effectiveness. The team hosted several community meetings to seek ways to improve connections to other major roadways, amenities and residential areas. The resulting project restores a previously sub-par pedestrian and cycling path along Greenough Boulevard and strengthens the final link in the recreational loop of trails connecting to Herter Park. In March 2017, the project earned the ISI Envision Bronze Award in recognition of its

transformation of an existing road into a greenway that protects water quality and public safety while attracting scores of park visitors to the banks of the river.

About the BSCES Sustainability in Civil Engineering Award

BSCES through its Committee on Sustainability will soon be seeking nominations for the 2020 BSCES Sustainability in Civil Engineering Award. This award will be presented at the

annual BSCES Awards Dinner in 2020. The award will recognize a Massachusetts based team leading design of a civil engineering project constructed within the last three years that exemplifies the principles of sustainability espoused by the Institute of Sustainable Infrastructure (ISI). Submission guidelines and evaluation criteria will be published in future newsletters and the BSCES web site online.

[Click here](#) to learn more about Envision.

The Scientific Backbone of the City of Boston's 2019 Climate Action Plan Update: Carbon Free Boston

by Peyton Siler Jones, Communications Manager & Katherine Eshel, Carbon Neutrality Program Manager, City of Boston's Office of Environment, Energy, & Open Space

Mayor Martin J. Walsh and the City of Boston are committed to addressing climate change and plan to achieve carbon neutrality in Boston by 2050—an ambitious yet necessary commitment in the face of climate change. Carbon neutrality means eliminating greenhouse gas emissions, and for Boston, this means reducing GHG emissions from buildings, transportation, waste management and energy supply.

Right now, the City is finalizing its 2019 Climate Action Plan Update. Boston released its first Climate Action Plan in 2007 and updates the plan every three to five years to reflect changes in policy, science, and technology. In light of recent reports, including the IPCC Special Report: Global Warming of 1.5 degree Celsius and the Fourth US National Climate Assessment, the 2019 Climate Action Plan Update will accelerate key actions to eliminate GHG emissions. The update brings together city leaders, experts, community members and advocates with the goal of building clear and actionable roadmaps for implementing the highest priority climate actions.

The 2019 Update is based on the findings of the Carbon Free Boston, commissioned by Mayor Walsh following his 2017 State of the City address. The report offers a variety of pathways for the City of Boston to achieve its goal of carbon neutrality by 2050. The report, from the Boston Green Ribbon Commission and the Boston University Institute for Sustainable Energy, provides the analytical foundation of the Climate Action Plan update, which the city will release in October of this year.

The report found that the city must pursue three strategies simultaneously to achieve carbon neutrality:

- **Maximize efficiency:** the city must minimize demand for energy. Every building needs to be high-performance, and travel needs to shift from single occupancy vehicles to shared modes including public transit, biking or walking, while also maximizing waste diversion.
- **Electrify (nearly) everything:** the city must convert systems that currently run on fossil fuels, such as cars, furnaces, and stovetops to use electricity instead as well as vehicles powered by electric motors.

- **Run on clean energy:** the city must fully utilize the city's potential for in-city renewable generation, such as rooftop solar, while purchasing the remainder of our electricity from 100 percent GHG free sources.

Boston's buildings account for more than two thirds of the city's total emissions. The analysis found that to effectively reach the goal of carbon neutrality, construction needs to shift to a zero net carbon standard. Indeed, any new building that is not net zero carbon becomes a costly future retrofit. Then, the report found that more than 80 percent of existing buildings will need to undergo deep energy retrofits and electrification; a paired approach is most cost-effective, and retrofits can pay for themselves over their lifetime.

The transportation sector accounts for the majority of the remaining third of the city's emissions. The analysis revealed that a massive mode shift from single occupancy vehicles to transit, biking and walking is critically important to reducing demand for fossil fuels. Through implementing Go Boston 2030, The City's long-term transportation plan, the Boston Transportation Department is already implementing projects and policies to improve transit accessibility and reliability, as well as deliver cleaner air and safer streets. Pairing the implementation of Go Boston 2030 with pricing signals like parking charges and support for vehicle electrification is essential in further reducing the number of cars on the road and ensuring that the remaining vehicles are free of fossil fuels.

While reducing waste is vital for a number of reasons, direct emissions from the incineration

of Boston's waste in waste-to-energy facilities account for one percent of our total GHG inventory. Zero Waste Boston, the City's plan to cut waste disposal by 90 percent by 2040, will eliminate 60 percent of direct waste emissions. For more information about Zero Waste, please read the City's Zero Waste Plan, released this summer.

Finally, the City's energy supply that powers buildings, transportation and waste management system must also transition to clean energy. The Carbon Free Boston report found that the faster the city transitions to 100 percent renewable energy, the faster Boston's other sectors will decarbonize. The City is already pursuing several strategies, such as municipal aggregation. Policies like the Smart Utilities Policy encourages large new development to assess and deploy district energy and micro grid systems, which will need to shift from gas-fires cogeneration systems to carbon-neutral technologies.

The path to carbon neutrality laid out in Carbon Free Boston is certainly ambitious, but it is achievable by 2050 through collective commitment and immediate action. The report modeled decarbonization pathways using only commercially available technologies that can be deployed today and that have been proven to reduce carbon.

This article is one of a two-part series about the City of Boston's Climate mitigation work. A second article highlighting the specific strategies within the upcoming 2019 Climate Action Plan will be released in a future edition of *BSCESNews*. If you have questions in the meantime, please feel free to reach out to greenovate@boston.gov.

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.

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BSCES Welcomes its New Members

The BSCES Board of Government is pleased to welcome the following new members who joined BSCES during June, July and August 2019:

Affiliate Members:

Ammar Alkass
Scott Forest

Associate Members:

Nicholas Campana, WSP
Blerina Doucette
Joseph Flaherty, CHA Consulting, Inc.
Peter Garland, Hayner-Swanson, Inc
Mustansir Jivanjee
Khoa Le, Sanborn Head
Ronelle R. Leblanc
Qi Wang, Northeastern University
Rohith Prakash Panthangi, AECOM

Member:

Bruce Wilson

Student Members:

Yuwei Zhao, Northeastern University

BSCES Diversity and Inclusion Task Force Looking for Volunteers

BSCES has reformed the Diversity and Inclusion Task Force after a few years of dormancy and appointed Alyson Stuer, PE, Alfred Benesch & Company, as its chair. The task force's primary objective is to create a culture within BSCES that values diversity, inclusion, and equity, whose members are reflective of the communities we serve. Ensuring that BSCES is inviting and open to all members of the civil engineering community is in line with the BSCES mission. If this excites you and you want to learn more, email Alyson at AStuer@benesch.com.

Call for Abstracts

The 2020 ASCE-EWRI International Low Impact Development (LID) Conference Steering Committee is looking for dynamic speakers to deliver innovative and informative educational talks to the EWRI membership and special guests attending the conference. Are you involved in a LID research effort that incorporates green infrastructure, sustainability, engineering or a related field, and want to share your ideas with your fellow engineers and academia? Your ideas may help with "Setting the Vision for the Next 20 Years!" [Click here](#) for more information including how to submit an abstract.

Update Your ASCE Profile

Have you moved lately, changed jobs, or do you have a new email address? It is very important that we receive your updated contact information. Please make sure you update your profile at ASCE National. Every month BSCES receives updated member information from ASCE that we utilize for all BSCES correspondence. You have a personal profile that you can access and update your contact information. Simply go to the ASCE "Membership & Communities" page and click on the "Log in..." bullet under the Already a Member section. Once you've logged in, you can edit your contact information. Members can also always call 800/548-2723 and have someone in Customer Service make updates for them over the phone.

Stantec Celebrates the Opening of the 6.5-mile Tri-Community Greenway

The Tri-Community Greenway, connecting the Greater Boston communities of Stoneham, Winchester, and Woburn, was opened on July 31, 2019 to residents as a multi-use trail for walkers, joggers, bikers, skaters, and more. First envisioned in the 1980s, this project has been in active development for the past ten years. Stantec provided survey, design, and permitting services for the 6.5-mile continuous pedestrian/bikeway and linear park. The Greenway, funded through federal and state highway grants, and constructed by MassDOT, is strategically located to serve as a connecting component of several other planned bikeways to enhance the multi-regional bikeway/pedestrian and public transportation system.

Rob Smedberg, PE Joins Tighe & Bond to Lead Institutions Sector Growth

Tighe & Bond Inc. welcomed Rob Smedberg, PE to its Client Sector group over the summer. He will assume the role of client sector leader for institutions and will be based out of their Providence office. In this role, Smedberg will continue expanding Tighe & Bond's work with institutions. Currently, the firm works on public and private K–12 and higher education projects and with hospitals and medical centers throughout the Northeast.

Upcoming Events

For more information and to register for events, please visit www.bsces.org

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.

Geo-Institute Social at Slumbrew

Sponsored by the Geo-Institute Boston Chapter

Friday, September 27, 2019

Somerville Brewing Company, Somerville MA

6:00 PM to 9:00 PM

Come join the Geo-Institute of BSCES to kick off 2019-2020 at our start of year social hosted at Somerville Brewing Company (Slumbrew). Enjoy appetizers and refreshments in a reserved space with colleagues from the geotechnical industry. Registration to this event includes appetizers and drink token. This event is open to anyone and everyone who is interested in learning about the Geo-Institute, how to become more involved, or just want to socialize with fellow geo-professionals.

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

Structural Lecture Series

Sponsored by the Structural Engineering Institute Boston Chapter

Thursday, October 3, 10, 17, 24 and November 7, 2019

Simpson Gumpertz & Heger, Waltham, MA

6:00 PM Registration/Refreshments

6:30 – 8:30 PM Lecture

ASCE SEI Boston Chapter is pleased to present the 24th Fall Lecture Series entitled *Resilience and Sustainability for Structural Engineers*. Lecture topics include:

October 3, 2019:

"Key Roles that Engineers Must Play in the Development and Integration of Future-Ready Infrastructure"

Speaker: Tom Lewis, PE, JD, President, Louis Berger U.S., a WSP Company

October 10, 2019:

"Offshore Wind and the Transition to Renewables"

Speakers: Eric Hines, Ph.D., PE, Professor of Practice, Tufts University and Dan Kuchma, Ph.D., Professor, Tufts University

October 17, 2019:

"Resilient Design - A New Paradigm in the High-Performance Building Movement"

Derek Kelly, PE, Principal, RWDI

October 24, 2019:

"Building Performance and Design for Multi-Hazard Resilience"

Speaker: Mehrdad Sasani, Ph.D., PE, Professor, Northeastern University

November 7, 2019:

"Current Efforts in Boston for Sea-Level Rise"

Speaker: Julie Eaton, PE, Lead Resiliency Engineer, Weston & Sampson

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

Mixed-Use Trends: Converting Malls into Lifestyle Centers, A Panel Discussion

Sponsored by the Southeastern Massachusetts Committee

Friday, October 18, 2019

Bridgewater Municipal Office Building, Bridgewater, MA

Registration & Breakfast 8:00 AM – 8:45 AM;

Presentation 8:45 AM – 11:45 AM

Moderator:

Robert R. Pellegrini, Jr., Esq., PK Boston Law

Panelists:

Judi Barrett, Planning Consultant,

Barrett Planning Group, LLC

John S. Barry, Town of Hanover Selectman,

Real Estate Developer

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 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 rkeen@engineers.org.

Edward Callahan, PECO Real Estate Partners, Hanover Mall Project

Christopher Carney, Thibeault Development, Silver City Galleria

Paul Cincotta, PE, New England Development, Westwood Station

John E. Dustin, Commercial/Project Insurance, J.E.D. Insurance Agency

Michele Grenier, Town Planner, Town of Hanover

Disruption and change to established industries are constants in our current age. With so much available via apps and home delivery, where does that leave the traditional retail mall? During this panel discussion, we will explore the current trends in mixed use development where new and existing retail spaces are (re)developed into "Lifestyle Centers" that encompass retail, restaurants, residential, entertainment venues,

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Upcoming Events *(continued from page 13)*

and office spaces. Where do these opportunities exist? How do the experts see these developments performing in the long term? How are municipalities and residents reacting to this change? We are expecting an open and lively discussion, please register today!

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

MA AEER TF Post-Disaster Building Safety Assessment Training

Sponsored by the MA AEER Task Force and BSCES

Monday, October 21, 2019

Marriott Center, Amherst, MA

8:00 AM to 4:30 PM

MA AEER Task Force is pleased to offer a full-day training seminar on the methods of assessment of the safety and usability of buildings after natural and man-made disasters. Professional architects, engineers, and building inspectors will become certified to assist local governments and perform safety evaluations of the built environment in the aftermath of a natural or man-made disaster. Upon completion of this training, participants will be able to consistently and safely assess structures habitability and will receive a nationally recognized Cal OES SAP registration ID card from the state of CA.

In addition to the training, MA AEER TF Director John Robinson will give a short presentation on how to organize an Architects & Engineers Emergency Response Task Force in your state.

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

Fall 2019 Public Private Partnership Workshop: Innovative Financing Methods for Large Projects in New England

Sponsored by the Construction Institute Boston Chapter, Transportation and Development Institute Boston Chapter, and Government Affairs & Professional Practice Committee

Friday, November 1, 2019

Connolly Center, Boston, MA

7:30 AM – 12:30 PM, Luncheon to Follow

The Workshop will focus managing large projects including market and organizational problems. How the project is organized and procured is a significant factor in possible delays and cost overruns. The "Legacy Benefit" will be discussed including efforts to form a multi-state non-profit corporation to evaluate mega projects that benefit multi-jurisdictions. A discussion of Congestion Pricing Initiatives for traffic control and revenue generation for transit projects will follow.

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

Save the Date!

November 21, 2019

The Third Charles C. Ladd Memorial Lecture

Geotechnical Lessons Re-learned from Hong Kong Airport Extension

Presented by Dr. David W. Hight
Senior Consultant and Founding Director
Geotechnical Consulting Group

Look to future BSCES emails for more information.

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For a full listing of ASCE Webinars, [click here](#).

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 400 to 900 words, BSCESNews featured articles are about technical topics or professional matters of interest to civil engineers. The November 2019 issue of the newsletter for example, will highlight the Structural Engineering Institute Boston Chapter and feature one or more articles on the theme of Structural Design Innovations.

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 Sean Horan at Sean.Horan@gza.com or BSCES Association Manager Rich Keenan at rkeenan@engineers.org or at 617/305-4110.

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Geo-Institute Social at Slumbrew

Friday, September 27, 2019

15 Ward Street, Somerville MA 02143

6:00 PM to 9:00 PM

Come join the Geo-Institute of BSCES to kick off 2019-2020 at our start of year social hosted at Somerville Brewing Company (Slumbrew). Enjoy appetizers and refreshments in a reserved space with colleagues from the geotechnical industry. Registration to this event includes appetizers and drink token.

This event is open to anyone and everyone who is interested in learning about the Geo-Institute, how to become more involved, or just want to socialize with fellow geo-professionals.

Registration Deadline: Wednesday, September 25, 2019

\$25 Members, \$30 Non-Members, \$15 Students and Public Sector

Information/Registration:

Register to attend this meeting and pay by credit card online at <http://bit.ly/2k0TA7W>. 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. You can also register for this event by mail or email. To do so, download and complete a [BSCES Event Registration Form](#) and follow the submission instructions. Cancellations received after Wednesday, September 25, 2019 and no-shows will be billed.

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2019 Fall Lecture Series

Resilience and Sustainability for Structural Engineers

Thursdays, October 3, 10, 17, 24 and November 7, 2019

Simpson Gumpertz & Heger, 480 Totten Pond Road, Waltham, MA

6:00 PM Registration/Refreshments, 6:30 – 8:30 PM Lecture

ASCE SEI Boston Chapter is pleased to present the 24th Fall Lecture Series entitled *Resilience and Sustainability for Structural Engineers*. Topics include 'Key Roles that Engineers Must Play in the Development and Integration of Future-Ready Infrastructure', 'Offshore Wind and the Transition to Renewables', 'Resilient Design - A New Paradigm in the High-Performance Building Movement', 'Building Performance and Design for Multi-Hazard Resilience', and 'Current Efforts in Boston for Sea-Level Rise'

Lecture 1 – Thursday, October 3, 2019

Key Roles that Engineers Must Play in the Development and Integration of Future-Ready Infrastructure

Tom Lewis, PE, JD, President, Louis Berger U.S., a WSP Company

Truly "Future-Ready" infrastructure must take into account many considerations well beyond just being compliant with codes, regulations and standard specifications associated with the particular owner and type of infrastructure. And no professional is in a better position to do this integration of considerations and solutions than engineers working for the infrastructure owner, its investors/funders its regulators, its consultants, its contractors, and its operators/maintainers. As such, a Future-Ready-focused infrastructure engineer - as well as planner, scientist, manager, etc. - should take every opportunity as early in the project life cycle as possible to ask and assess whether the right project scope is being proposed... before focusing on doing the initially proposed project scope right. This includes asking and answering many key questions like, is there an alternative approach or are there better materials and design elements that are: more efficient? ...more synergistic with other community needs? ...more innovative? ...more in line with future demands and conditions that may be very different than those that exist today? ...more sustainable? ...more resilient and enduring?lower in negative environmental and social impacts? ...lower in cost all-in (i.e., across the entire life cycle and not just capital cost)? ...better able to integrate "smart" sensors and monitoring as well as take into account other current and future "big data" resources that improve user experience, preventive maintenance, life-span, and overall asset management? This lecture presentation will further assess these types of questions and offer integrated Future-Ready solution scenarios, examples, and events/organizations/resources for consideration by infrastructure engineers.

Lecture 2 – Thursday, October 10, 2019

Offshore Wind and the Transition to Renewables

Eric Hines, Ph.D., PE, *Professor of Practice, Tufts University*

Dan Kuchma, Ph.D., *Professor, Tufts University*

Over the next 30 years, the US must expand and modernize its power grid while retiring half of its existing power plants and transitioning to a low-carbon energy system. Along the nation's coastlines, it is now realistic to imagine geographically distributed networks of privately developed but coordinated offshore wind plants as a major contributor to this evolution. However, the current project-by-project and short-term approach to developing this new US industry cannot deliver and sustain the anticipated deployment levels required to meet the demands of this transition. Bringing these new power networks to scale and realizing their maximum social value by 2050 will require harmonization of diverse domains and stakeholders.

Lecture 3 – Thursday, October 17, 2019

Resilient Design – A New Paradigm in the High-Performance Building Movement

Derek Kelly, PE, *Principal, RWDI*

Since the 1970's RWDI has seen a global five-fold increase in the number of catastrophic weather events and a twenty-fold increase in annual insured disaster claims. In Canada alone insurance claims resulting from extreme weather events have exceeded a billion dollars each year for the past 5-years, totaling \$8.25 billion over that time period. The June 2013 floods in Calgary, Alberta alone resulted in insurance claims exceeding \$1.7 Billion (preliminary). Are you ready? Since their inception in 1972 RWDI has been a leader in the development of advanced technics to understand and model the climate and have worked on all 7 continents and every climate zone to development climate responsive, resilient design solutions. In this session they will be sharing, through examples of their work, methods and means: to understand climate; develop resilient passive architectural solutions; design for wind, snow and rain; and the benefits of a low energy building in our every changing climate.

Lecture 4 – Thursday, October 24, 2019

Building Performance and Design for Multi-Hazard Resilience

Mehrdad Sasani, Ph.D., PE, *Professor, Northeastern University*

While safety and collapse prevention should remain the primary objectives in building design, it is important to recognize that building functionality and reparability, which are key factors to achieve multi-hazard resilience, are not explicitly addressed by current building codes and standards. Accounting for these key factors in design requires reliable evaluation of severity and frequency of hazards (e.g. hurricanes and earthquakes), associated building demands and capacities, and assessment of post-hazard conditions in metrics such as extent of damage and time to recover. These, along with identifying a desirable level of rapidity in bouncing back following hazardous events, can help develop provisions in future building codes that quantify and enhance multi-hazard resilience.

Lecture 5 – Thursday, November 7, 2019

Current Efforts in Boston for Sea-Level Rise

Julie Eaton, PE, *Lead Resiliency Engineer, Weston & Sampson*

This presentation will discuss infrastructure issues associated with potential sea rise due to climate change. The focus will be on guidelines prepared for the City of Boston. Currently, the City is preparing for 40 inches of sea level rise by 2070. The Climate Ready Boston initiative is working to identify vulnerabilities and provide conceptual solutions throughout neighborhoods in Boston; the Coastal Resilience Solutions for East Boston and Charlestown Final Report was completed in 2017, the South Boston coastal resilience report is underway, and more studies are planned to follow. The City experienced significant coastal flooding during two Nor'easters in 2018. Recent findings of the Feasibility of Harbor-wide Barrier Systems: Preliminary Analysis for Boston Harbor, prepared by the Sustainable Solutions Lab at UMass Boston, indicate that shore-based climate adaptation solutions have significant advantages over a harbor-wide strategy for the City. With the growing number of conceptual solutions, emphasis on shore-based flood protection, and urgency for action, the City proactively identified that a framework for designing and evaluating climate resilient projects was needed to protect the public right-of-way.

Note: No Lecture on October 31, 2019

SPEAKERS

Tom Lewis, PE, JD, *President, Louis Berger U.S., a WSP Company*



Mr. Lewis is President, in charge of Federal Programs and Logistics for WSP USA. Prior to its acquisition by WSP, he previously served as president of Louis Berger's U.S. Division, and prior to that as its senior executive lead on environment, renewables, climate resilience, disaster and emergency management, and hazardous materials and waste services for federal, military, state/local, and commercial sector clients. Mr. Lewis previously sat on Louis Berger's board of directors, was a founding board member for the Berger Charitable Foundation, and has held multiple other corporate, philanthropic and industry organization board and committee positions – including more than 15 years with the Transportation Research Board and with

the Zofnass Program for Sustainable Infrastructure Advisory Board at the Harvard University Graduate School of Design. He is a licensed professional engineer (PE) and passed the bar in multiple states, holds both a BS and MS in Engineering from the University of Connecticut, and holds a Doctorate of Jurisprudence with focus on environmental law/regulation from Rutgers. He has over 30 years of technical/management experience in the following services: transportation/infrastructure; emergency management; sustainability and climate change; contaminated sites investigation/remediation; environmental and IH/hazmat; geotechnical/geoenvironmental; environmental planning, assessments, impact statements; global infrastructure and development support projects; litigation, claims, permits and brownfields redevelopment; eco-restoration, sediments and water quality support; general civil and environmental engineering; and waste/landfills.

Eric Hines, Ph.D., PE, *Professor of Practice, Tufts University*



Mr. Hines, Ph.D., P.E., F.SEI has over 20 years of experience as a structural engineer designing innovative infrastructure and large-scale testing programs. Dr. Hines designed the Wind Technology Testing Center in Charlestown, MA and advised the Massachusetts Clean Energy Center on the development of the New Bedford Marine Commerce Terminal. As a Professor of Practice at Tufts University, he has led the POWER-US convening initiative and directs the Tufts University Offshore Wind Engineering Graduate Program. Formerly a partner of LeMessurier Consultants in Boston, Dr. Hines has over 70 publications and numerous awards related to systems design, industry-driven research and higher education. Dr. Hines completed his

Ph.D. at the University of California, San Diego after studying the relationship between engineering and public policy as an undergraduate at Princeton University and as a Fulbright Fellow in Germany.

Dan Kuchma, Ph.D., *Professor, Tufts University*



Mr. Kuchma has been a Professor of structural engineering at Tufts University since 2014. Prior to this, he was a professor at the University of Illinois for 17 years; he obtained his PhD at the University of Toronto. His research is primarily focused on the design, testing, and modeling of concrete structures. He serves on the Building Code committee of the American Concrete Institute (ACI), chairs an ACI committee on wind turbine support structures, and is a member of 8 other national and international technical committees. The areas of application of his research and instruction are in offshore wind energy, earthquake engineering, railway engineering, and more generally in the design of structural concrete

subjected to complex states of stress.

Derek Kelly, PE, *Principal, RWDI*



Mr. Kelly is a Principal and Project Manager at RWDI where he has been employed since 1998. He received his Bachelor of Engineering Science (Civil Engineering) from the University of Western Ontario, Canada, his Master of Engineering (Civil Engineering) from McMaster University, Canada and is a licensed Professional Engineer. He has vast experience having worked in projects in New York, Boston, Vancouver and Kansas City just to name a few. These include projects such as Yankee Stadium, Empire State Building, Verrazano Narrows Bridge, George Washington Bridge and the New Tappan Zee Bridge in New York, Millennium Tower and The Boston Gardens in Boston, The Golden Gate Bridge in San Francisco and the kclCON Bridge in

Kansas City.

Mehrdad Sasani, Ph.D., PE, *Professor, Northeastern University*



Mr. Mehrdad Sasani is a Professor at the Department of Civil and Environmental Engineering of Northeastern University. Sasani's research interests include progressive collapse of structures, earthquake engineering, and structural integrity, resilience and reliability. He is the principal investigator of a \$1.1M project on A Decision and Design Framework for Multi-Hazard Resilient and Sustainable Buildings, which is supported by the National Science Foundation. Sasani is a member of several professional committees, among which, he is the chair of American Concrete Institute Committee 377: Performance-Based Structural Integrity & Resilience of Concrete Structures, and a member of committee for General Structural

Requirements of ASCE 7. He is a fellow of American Concrete Institute; American Society of Civil Engineers; and Structural Engineering Institute.

Julie Eaton, PE, Lead Resiliency Engineer, Weston & Sampson



Julie is the Lead Resiliency Engineer at Weston & Sampson. For over a decade, her professional and academic ventures have focused on looking at climate change resiliency and adaptation from policy and design/engineering perspectives. She specializes in using a risk-based approach to identify and prioritize adaptation strategies. In addition to the resiliency program, she is also a Geotechnical and Dam Safety Engineer with Weston & Sampson. She has a Bachelor's degrees in Political Science (University of Rochester) and Civil Engineering (UMass Lowell), and a Master's degree in Civil Engineering (UMass Lowell). Climate change adaptation has been her passion since Hurricane Katrina hit New Orleans during her

freshman orientation at Tulane University. Shocked from the devastation, she dedicated her first undergraduate career to understanding why it happened and how it could have been prevented from a political science and urban planning standpoint. She started taking engineering classes to understand how the levees failed and the role of the Army Corps of Engineers, which led her to her second Bachelor's and Master's degree. She is a licensed Professional Engineer (Civil) and Municipal Vulnerability Preparedness (MVP) provider in Massachusetts.

Registration Deadline: Friday, September 27, 2019

Register to attend individual lectures or the full lecture series and pay by credit card online at <http://bit.ly/BSCESFallLectureSeries2019>. 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. To register for multiple lectures, please complete the registration form below and mail, email or fax it to BSCES, One Walnut Street, Boston, MA 02108, bscesreg@engineers.org or 617/227-6783, respectively. Cancellations received after September 27, 2019 and no-shows will be billed.

Directions to Lecture Hall and Parking:

Lecture Hall: SGH Lecture Space, 480 Totten Pond Road, Waltham, MA

Parking: Parking garage entrances off of Totten Pond Road and Prospect Hill Lane

Handouts: Registered attendees will be provided a website reference for downloading handouts/notes.

Pizza! We begin each evening with pizza starting at 6 pm during registration.

Registration Form BSCES SEI Boston 2019 Fall Lecture Series

Thursdays, October 3, 10, 17, 24 and November 7, 2019

SGH Lecture Space, 480 Totten Pond Road, Waltham, MA

6:00 PM Registration, 6:30 – 8:30 PM Lecture

Registrant Information

Name: _____
Company (if applicable): _____
Address: _____
City: _____ State: _____ Zip Code: _____
Phone: _____ Fax: _____ Email: _____

Registration Fees

Full Series of Five Lectures

- ☐ \$195 BSCES/ASCE Member
☐ \$245 Non-Member
☐ \$165 Public Employee Member
☐ \$195 Public Employee Non-Member
☐ \$70 Senior/Student

Single Lectures

- ☐ \$60 BSCES/ASCE Member
☐ \$75 Non-Member
☐ \$50 Public Employee Member
☐ \$60 Public Employee Non-Member
☐ \$25 Senior/Student

Check Lectures Attending: ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

Total Amount Enclosed

\$ _____

Make checks payable to "BSCES" and mail with completed form to: BSCES, The Engineering Center, One Walnut Street, Boston, MA 02108-3616

Or Pay with (Check one): ☐ Visa ☐ Master Card ☐ American Express

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Mixed-Use Trends: Converting Malls into Lifestyle Centers, A Panel Discussion

Panelists:

Michele Grenier, Town Planner, Town of Hanover
Jamie Kelliher, AIA, Architect, Axiom Architects, Inc.
Edward Callahan, PECO Real Estate Partners, Hanover Mall Project
Paul Cincotta, PE, New England Development, Westwood Station
Christopher Carney, Thibeault Development, Silver City Galleria
Judi Barrett, Planning Consultant, Barrett Planning Group, LLC
John E. Dustin, Commercial/Project Insurance, J.E.D. Insurance Agency

Moderator:

Robert R. Pellegrini, Jr., Esq., PK Boston Law

Friday, October 18, 2019

Bridgewater Municipal Office Building, 66 Central Square, Bridgewater, MA 02324

Registration & Breakfast 8:00 AM – 8:45 AM; Presentation 8:45 AM - 11:45 AM

Disruption and change to established industries are constants in our current age. With so much available via apps and home delivery, where does that leave the traditional retail mall? With this Panel Discussion, we will explore these current trends in mixed use development where new and existing retail spaces are (re)developed into “Lifestyle Centers” that encompass retail, restaurants, residential, entertainment venues, and office spaces. Where do these opportunities exist? How do the experts see these developments performing in the long term? How are municipalities and residents reacting to this change? We are expecting an open and lively discussion, please register today!

Registration Deadline: Tuesday, October 15, 2019

\$60 Members, \$70 Non-Members

\$50 Public Sector Members, \$60 Public Sector Non-Members

\$45 Senior Members (65+) and Students

Information/Registration:

Register to attend this meeting and pay by credit card online at <http://bit.ly/SEMACMixedUse>. 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. You can also register for this event by mail or email. To do so, download and complete a [BSCES Event Registration Form](#) and follow the submission instructions. Cancellations received after October 15, 2019 and no-shows will be billed.

MA AEER TASKFORCE

Post-Disaster Building Safety Assessment Training

Hosted by the MA Architects & Engineers Emergency Response (MA AEER) Task Force

6.5 HSW CEUs | 6.5 PDHs



Photos from the aftermath of Hurricane Sandy

Source: Rhode Island Architects & Engineers Emergency Response Task Force (AEER-7)

Monday, October 21, 2019 – 8:00am to 4:30pm

Light Breakfast and Lunch Included

The course will be held at the Marriott Center, UMass Amherst

Cost for Participants : \$185

Included are ATC-20 & ATC-45 field manuals & Cal OES SAP student manuals

More details can be found on the back of this page

MA AEER TF is pleased to offer a full-day training seminar on the methods of assessment of the safety and usability of buildings after natural and man-made disasters. Professional Architects, Engineers, and Building Inspectors will become certified to assist local governments and perform safety evaluations of the built environment in the aftermath of a natural or man-made disaster. Upon completion of this Training, participants will be able to consistently and safely assess structures habitability and will receive a nationally recognized Cal OES SAP registration ID card from the state of CA.

In addition to the training, MA AEER TF Director John Robinson will give a short presentation on how to organize an Architects & Engineers Emergency Response Task Force in your state.

You can register for this event online by visiting this link: <https://bit.ly/2M7lgEr> or by submitting this registration form to The Engineering Center Education Trust by mail, email, or fax. Questions? Contact The Engineering Center Education Trust at 617-227-5551 or email TECET@engineers.org. Fax: 617-227-6783

No shows will be billed. Cancellations must be received no later than two (2) business days prior to the event.

NAME: _____ ORGANIZATION/FIRM: _____

ADDRESS: _____

CITY: _____ STATE: _____ ZIP: _____ EMAIL: _____ PHONE: _____

☐ CHECK: MAKE PAYABLE TO THE ENGINEERING CENTER EDUCATION TRUST & SEND TO: ONE WALNUT STREET, BOSTON, MA 02108

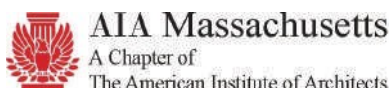
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NAME ON CARD: _____ CARD #: _____ EXP. DATE: _____

BILLING ADDRESS: _____

SIGNATURE: _____

This program is offered with cooperation from professional organizations, including the American Institute of Architects Massachusetts Chapter, the Boston Society of Architects, the Boston Society of Civil Engineers Section, the Structural Engineers Association of Massachusetts and The Engineering Center Education Trust.



Overview

This training program is being offered by the recently formed Massachusetts Architects & Engineers Emergency Task Force (MA AEER TF). The task force is a collaborative venture between AIA MA, the Boston Chapter of the Structural Engineering Institute (SEI), SEAMASS and TECET. Eligible participants including; Licensed Architects, Licensed Civil, Structural & Geotechnical Engineers and Certified Building Inspectors who complete the training will be certified to perform post-disaster assessments and receive a Cal-OES SAP ID Card. (Valid license numbers will be required for this certification.)

Based on the Applied Technology Council's well-accepted post-disaster methodologies and documentation guidelines ATC-20 and ATC-45 (for earthquake and wind/flood events, respectively), this SAP training course will provide engineers, architects and code-enforcement professionals with an understanding of the basic skills required to perform safety assessments of structures following disasters.

Case studies will be presented and discussed to illustrate examples of possible damage scenarios that a Second Responder could encounter and how to properly assess the damage and record it for later use by emergency management personnel. Attendees will be introduced to the FEMA Incident & Command requirements and protocols for responders operating in a post-disaster theater which will prepare them to take the self-study online courses required of Second Responders in most jurisdictions who wish to perform post-disaster assessments.

Presenters

Kenneth J. Filarski FAIA, AICP, LEED AP BD+C, Sites AP, CFM, SAP+AEER, NCARB

Architect | Filarski Architecture + Planning + Research, Providence, RI

Director, RI Architects and Engineers Emergency Response Task Force 7 (RI AEER TF7)

For Ken, SAP Training and serving as a second responder is somewhat of a fulcrum in the middle of his integrated work as a SITES Accredited Professional, as a Certified Flood Plain Manager and also his role as a member of the national ASCE/SEI 24 Committee which authored the 24-14 publication "Flood Resistant Design and Construction." Ken was also instrumental in setting up the RI Architects and Engineers Emergency Response Task Force 7.

Michael Fillion, PE, SECB

Principal | Fillion Group, Inc.

Director, MA Architects and Engineers Emergency Response Task Force (MA AEER TF)

Member, NCSEA SEER Committee

Chair, NCSEA Existing Buildings Code Committee

Member, Structural Advisory Committee - MA State Building Code

Michael, Founder and Principal of Fillion Group, Inc. Structural Engineering, has more than three decades of experience as a practicing structural engineer. His firm is involved in the design and evaluation of both new and existing commercial & residential structures. He has experience with the evaluation and repair of damaged structures due to the effects of snow, wind and floods. As chair of the Existing Buildings Committee, his goal is to consider the effects of natural disasters in our code provisions in an effort to create more resilient communities. In the aftermath of Massachusetts's Historic Hurricane Bob, Mr. Fillion provided both rapid and detailed assessment reports for structures damaged by the storm.

David Grandpre, PE, SECB

Structural Engineer | CA Pretzer Associates, Cranston, RI

Structural Specialist | RI Urban Search and Rescue (USAR) Team (2005-2016)

Co-founder, RI Architects and Engineers Emergency Response Task Force 7 (RI AEER TF7)

Mr. Grandpre's area of specialty is investigating damaged buildings to determine the scope and cause of damage along with how best to repair the structure. David was trained as a structural specialist with the Rhode Island Urban Search and Rescue (USAR) Team. He was a co-founder of the Rhode Island Architects and Engineers Emergency Response Task Force 7 (RI AEER TF7) and board member for the Structural Engineers Association of Massachusetts. He has travelled south to investigate damage to buildings from numerous hurricanes, most recently to the U.S. Virgin Islands following Hurricanes Irma and Marie.

John A. Robinson, AIA, NCARB

Architect | John A Robinson Architect, Amherst, MA

Director, MA Architects and Engineers Emergency Response Task Force (MA AEER TF)

John has over 40 years experience in project management, architectural design, and construction. He presently has his own consulting business specializing in facility assessment and providing owner representative services. He received his SAP training in 2011 and served on the National AIA Disaster Assistance Committee from 2015 to 2017. John has been instrumental in setting up the newly formed MA Architects and Engineers Emergency Response Task Force.



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Fall 2019 Public Private Partnership Workshop: Innovative Financing Methods for Large Projects in New England

Friday, Nov 1st, 2019

Connolly Center, Federal Reserve Bank, 600 Atlantic Avenue, Boston, MA
7:30 AM – 12:00 PM, Event program on the following page.

The Workshop will focus managing large projects including market and organizational problems. How the project is organized and procured is a significant factor in possible delays and cost overruns. The “Legacy Benefit” will be discussed including efforts to form a multi-state non-profit corporation to evaluate mega projects that benefit multi-jurisdictions. A discussion of the benefits of RPA in the Tri-state area of NY-NJ-CT. and a possible New England Plan Group which would work across state boundaries in New England.

Featuring: Fall 2019 Public Private Partnership Workshop

Tim McManus,

Global Infrastructure Advisor, former Vice President with McKinsey & Company

Dan McNichol,

Author and Journalist, Mega Construction Projects

Carolyn Ryan

Senior Vice President, Policy and Research, Boston Chamber of Commerce

Keith Craig & Chris Hersey

Director, NB Development & Project Manager, Skanska Corporation

Tom Wright

President and CEO, Regional Plan Association, NY, NJ and CT Tri-state Region

Registration Deadline: Friday, October 25th , 2019

\$45 BSCES & BSA Members, \$55 Non-Members

\$20 Public Sector Members, \$30 Public Sector Non-Members

\$20 Senior and \$20 Student Members

***Continental Breakfast and refreshments included in registration fee.**

Registration Information:

Register to attend this meeting and pay by credit card online at <http://bit.ly/LargeProjectsInNewEngland>. 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. You can also register for this event by mail or email. To do so, download and complete a [BSCES Event Registration Form](#) and follow the submission instructions. Cancellations received after Friday, October 25, 2019 and no-shows will be billed.



This presentation provides (Insert number of PDHs) Professional Development Hours (PDH)

Supported by the staff of The Engineering Center Education Trust



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Fall 2019 Public Private Partnership Workshop: Innovative Financing Methods for Large Projects in New England

Program:

7:30 AM – 8:15 AM

Registration & Continental Breakfast Welcome Remarks

Moderator: Dan McNichol Dan McNichol is a number one best-selling author and an award-winning journalist. His published books, articles and thought-leadership work focuses on mega construction projects in the United States and around the world.

8:15 AM – 8:45 AM

Speaker Presentation

Carolyn Ryan, Senior Vice President, Policy and Research, Boston Chamber of Commerce
Directs and manages the Chamber's policy priorities and strategizes for the team's long and short-term goals. She is a member of the Federal Reserve Bank's New England Public Policy Center Advisory Board and will briefly outline the work of the New England Public Policy Center.

8:45 AM – 9:30 AM

Speaker Presentation

Tim McManus, Global Infrastructure Advisor, former Vice President with McKinsey & Company

Managing Large Projects, A review of global infrastructure projects with focus on infrastructure demands in growing metropolitan areas. He is supportive of non-profit corporate multi-state regional planning groups. In his paper **Managing Big Projects**, Mr. McManus outlines five essential elements for successful projects. The lack of a few (if not all) of these elements will hinder project activities and cause suffering along the critical path.

9:30 AM – 10:00 AM

Speaker Presentation

Keith Craig, Director, NB Development and Chris Hersey, Skanska Corp.

The newly completed Boston Landing Station project in the Allston-Brighton neighborhood in Massachusetts is the recent recipient of the Envision® Silver Award. Constructed by Skanska, the project is part of a larger complex currently underway by NB Development Group, an affiliate of New Balance Athletics, Inc. In a public-private partnership that has been lauded by city and state officials alike, NB Development Group funded and managed the design and construction of the approximately \$20 Million station in close collaboration with the Massachusetts Bay Transportation Authority (MBTA) and the Massachusetts Department of Transportation (MassDOT).

10:00 AM – 10:15 AM

Break with coffee and refreshments

10:15 AM – 11:00 AM

Speaker Presentation

Tom Wright, President and CEO, Regional Plan Association, NY, NJ and CT Tri-state Region

The success of RPA on shaping the future of the New York City region is legend. Beginning in the 1920s with the RPA's recommendations on the location of the George Washington Bridge to its latest **Fourth Plan on a sustainable future for the next century**, the RPA is a model for effective multistate regional planning. Recent efforts to kick-start a **congestion pricing** solution which would help to fund tri-state public transit and rail projects will be presented.

11:00 AM – 12:00 PM

Workshop Panel

Speakers will lead a discussion of a possible New England Plan which include multi-state issues where large mega-projects extend benefits and costs across state boundaries. Many projects include transportation and energy issues. Q&A from the audience

12:00 PM Closing Remarks

Lunch menus from selected local restaurants will be available at the registration table.



This presentation provides 3 Professional Development Hours (PDH)

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