

## Rapid Repurposing: Facility Strategies for Airborne Disease Outbreaks Including Coronavirus

by Michael Clements, Bio-Containment Lead, Americas, Greg Mare, Healthcare Sector Lead, Americas, and Alastair MacGregor, Vice President, Engineering, AECOM

The global response to the coronavirus pandemic has shifted from preparedness to response and mitigation. In the US, our recent national guidelines are the largest mitigation actions ever enacted in this country. As the virus spreads around the world, each community has responded in their own ways, and some have seen vastly different results. Underpinning every effort, however, is the healthcare system. Resources are being stretched as healthcare services are called upon to the test for disease, contain the outbreak, treat the ill, and administer preventative measures, medicine and vaccines—as they become available.

Given the scale of the coronavirus pandemic, projecting need for and accommodating beds is difficult beyond one to two weeks. With this in mind, **our recommended first response is to free up additional capacity within that one- to two-week timeframe using existing resources that can be rapidly modified for quarantine,**

**treatment, and recovery.** This can be done with minor modifications to existing hospitals, followed by assembling equipment solutions from non-traditional supply chains (residential or commercial rather than specialist healthcare supply chains) for ad hoc quarantine units in high school gymnasiums or other large assembly facilities.

### Rapid Repurposing

There are strategies that you can deploy now, using facilities that exist and equipment that is available in your community to fight Coronavirus immediately. We can help.

### Preparing a Response

Hospitals are not set up to deal with the anticipated surge in patients, meaning ad hoc solutions will be required both to address this outbreak and to allow hospitals to continue treating patients suffering from other ailments.

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## President's Report

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



**171 Years.** In 1848, a group of like-minded individuals, civil engineers by training, formed the Boston Society of Civil Engineers. This was an uncertain time when revolutions were occurring in Europe and it was only thirteen years before the American Civil War. BSCES persevered during these early years of existence and continued to strengthen into the 3,400-member strong organization that it is today.

The exhibited endurance of BSCES members and the organizations they work for have come together and worked through 171 years of

historical events. Major events of war, financial depressions and recessions, natural disasters, pandemics, political and social unrest have shaped civil engineering industry as we know it in this moment. The events of the past six months will once again turn the direction of the profession. BSCES technical groups, institute chapters, and committees remain ready for the challenges ahead and welcome members to participate in this change.

Many of our past members have made significant contributions to BSCES to ensure its financial viability and ongoing ability to effectively serve its members. These donations and board-designated funds allow named grants, scholarships, and

## UPCOMING EVENTS

*Permeable Reactive Barriers for Groundwater Nitrate Treatment*  
July 8, 2020

*BSCES & SEAMASS Virtual Game Night*  
July 16, 2020

*AWIA Risk and Resilience Assessments at the MWRA*  
July 23, 2020

*FHWA-NHI-130053 Bridge Inspection Refresher Training*  
September 29 – October 1, 2020

*FHWA-NHI-130055 Safety Inspection of In-Service Bridges*  
November 30 – December 10, 2020

[Further Details Inside](#)



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lectures to be maintained year after year in honor of the named individual. There is no better example of the importance of this forethought to donate than the current COVID-19 situation and the fiscal unknowns it presents. These funds allow for a minimum level of BSCES activity to be guaranteed into the future.

Annually, BSCES requests donations from members and sponsorships from their employers to support over 30 technical and community outreach events. These sponsorships are needed to help our members stay competitively technically, promote STEM and community

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**Facility Strategies for Airborne Disease Outbreaks***continued from page 1*

With coronavirus and other airborne virus outbreaks, there are two types of patient: presumptive cases and known cases. Both groups have different facility requirements and put unique stresses on the hospitals.

There are two critical levels of containment to consider:

1. **Quarantine:** Containing presumptive-case patients from each other and the general population; and
2. **Isolation:** Containing confirmed-case patients from the general population.

Confirmed-case patients can be housed together en masse while presumptive-case patients must be individually quarantined.

**For healthcare systems and for our communities in general, finding more available and readily adaptable space becomes a priority—often in non-traditional places.** Readily adaptable space can include facilities outside of the traditional healthcare portfolio. The following could become available and be adapted using our quick implementation solutions:

- School closures mean high school or college gymnasiums can offer durable, cleanable surfaces, large open spaces and locker rooms.
- High school or college campuses often have ample open outdoor space to accommodate temporary structures, emergency power and parking.
- Hotels and universities/colleges dormitories can be converted using recommended strategies for patient and treatment accommodation.
- Community centers can offer accessible facilities, with durable, clean surfaces, with separate room for those with cognitive vulnerabilities.

**OUTBREAK CONTAINMENT:**

To contain this outbreak, and defend against future outbreaks, we must respond in three stages:

- Near-term (7–14 days): to ensure immediate response at the treatment facility level requires nominal readiness based on projections of patient load;
- Mid-term (14–28 days): to ensure large-scale readiness requires short-term response at a larger community level based on projections of patient load;
- Long-term: to ensure appropriate-scale readiness for future outbreaks requires response at the population at large level.

**Immediate Containment Response Measures**

*Adapting existing spaces: immediate response at the treatment facility level to ensure nominal readiness based on near-term projections of patient load.*

Hospitals can convert blocks or wings of existing non-critical patient rooms to quarantine or isolation rooms by changing the ventilation and the room entry conditions and standard operating procedures (SOPs). A negative-pressure room is required to isolate a patient who is either suspected of having or who has been diagnosed with an airborne infectious disease so that the number of airborne infectious particles is reduced to prevent cross-infection of other people.

Isolation rooms need to be negatively pressurized to their adjacent, communicating spaces, and they need to have a buffer zone between the isolation room and the corridor outside of the space. Where true anterooms aren't present to serve as this buffer zone, polyethylene plastic sheeting (Visqueen®) can be hung from the ceiling to create a space where personnel can spray down their personal protective equipment (PPE) with disinfectants such as Lysol® or Virkon®. This allows time for air changes in the anteroom, before removing PPE at the point of exit.

While traditional anterooms are positively pressurized to both the corridor and the patient room, this is not required if adequate use of SOPs and disinfectants are employed.

**ADAPTING WHAT EXISTS:**

- Readily convert blocks or wings of non-critical patient rooms by changing ventilation, entry conditions and SOPs.
- Train, retrain and use occupational safety point-and-call methods real time to eliminate errors.
- Create a network of support facilities through appropriate community buildings retrofitted for treatment.

The main patient room can be re-balanced as negatively pressurized if the heating, ventilation and air conditioning (HVAC) system is non-recirculating. Otherwise, windows should be opened or removed, and temporary fans shall

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## Facility Strategies for Airborne Disease Outbreaks

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be installed at the window, and sealed up with a barrier such as rigid plastic or epoxy-painted plywood.

The window barrier should be sealed around the edges and at the point of ventilation penetration to ensure a tight containment boundary. The use of tell-tales at door undercuts is advised for a quick visual check of directional airflow.

This room setup will work for presumptive- and confirmed-case patients. Room signage, SOPs, and other guidance should be marked on each patient room door as clearly as possible to minimize human error. Training, retraining, and using the pointing-and-calling method for actions as they occur is recommended to eliminate errors as well.

### GETTING TECHNICAL:

A minimum MERV-16A filter should be applied to the exhaust airstream and shall be operated at a velocity of less than 500 fpm. For the room balance, the ideal differential pressure is between -0.05" and -0.10" w.g. from the corridor to the patient room.

### Short-term Containment Response Measures

*Short-term response at the community level to ensure large-scale readiness based on mid-term projections of patient load.*

As hospitals begin to reach capacity, municipalities should work with healthcare organizations to make a network of support zones that are typically distributed with existing community densities. To further expand your community's capacity to quarantine presumptive cases, explore opportunities to transition other building types that are similar in structure to a hospital patient wing, including university dormitories or hotels, where similar strategies could be quickly deployed. Additionally, academic health centers pose an opportunity to have nearby healthcare and flex space using large open spaces like gymnasiums and dining halls.

Each location should be setup with check-in, open-space queueing, and triage. From here,

presumptive-case patients should be taken into a dedicated isolation bay. Several bays can be co-located in a large area such as a cafeteria or dining hall. Isolation bays can be constructed with PVC plastic frames and polyethylene plastic sheeting (Visqueen®). Confirmed-case patients should be taken into a large isolation suite, such as a gymnasium. Here, the entire space can be open to the patients who are co-located en masse.

### GETTING TECHNICAL:

Each isolation bay must be negatively pressurized with MERV-16A filtered exhaust that is operated at less than 500 fpm and is not recirculated into any space. Each isolation bay is provided with an ante room for donning and doffing of PPE. The negative pressure of the isolation bay will cause air to cascade from the large open space, through the ante room, and into the isolation bay. A minimum of 500 CFM is recommended for each isolation bay. In large isolation suites, the entire space is conditioned and ventilated without recirculation to maintain a pressurization between -0.05" and -0.10" w.g. from the clean spaces to the isolation suite.

PVC and polyethylene plastic sheeting can be used to create clean corridors between entry and exit points and the locker spaces that are to be used by the healthcare workers. The locker rooms are where the workers can change from street clothes into PPE, and then back into street clothes at the end of the day. No scrubs or PPE should be taken off-site. Healthcare workers should shower before changing into street clothes and leaving the site.

*Provide supporting site infrastructure:* Emergency power can be provided for critical equipment such as ventilators via a generator or a dedicated uninterruptable power supply (UPS) at each point of use. Waste and materiel flows should be mapped to avoid cross-contamination.

Further, care should be taken to use waste bagging and wipe-down sterilization until the waste can be autoclaved or otherwise safely sterilized.

### Justice Facilities

*As with the community at large, the criminal justice system will need to find more available and readily adaptable space for treatment options as a priority—often in non-traditional places.*

With minor modifications existing justice facilities could be repurposed to provide ad hoc quarantine units in alternate spaces such as day rooms, food service facilities and/or gymnasiums. These can be furnished, according to need, with equipment from non-traditional supply chains (residential or commercial rather than specialist healthcare supply chains), scaling up as required.

The following spaces could be adapted using our quick implementation solutions:

- Gymnasiums, day rooms, classrooms, or food service areas within secure facilities can offer durable, cleanable surfaces and large open spaces; and
- Dormitories and cells can be converted using recommended strategies for patient and treatment accommodation.

The main in-custody patient room can be re-balanced as negatively pressurized if the heating, ventilation and air conditioning (HVAC) system is non-recirculating. Otherwise, windows can be removed, the openings secured, and temporary fans installed. The use of tell-tales at door undercuts is advised for a quick visual check of directional airflow.

This room setup will work for presumptive- and confirmed-case patients. Room signage, SOPs, and other guidance should be marked on each patient area door as clearly as possible to minimize human error. Training, retraining, and using the occupational safety pointing-and-calling method for actions as they occur is also recommended to eliminate errors.

As treatment facilities begin to reach capacity, jurisdictions might consider working with the facility administration and healthcare organizations to create a network of support zones encompassing the detention facility and the wider community. Academic health centers could also be part of this network, with the advantage of having auxiliary healthcare professionals available.

## Historic New England Infrastructure: The Granite Railway

by Michael Sullivan, PE, Sr. Project Manager & Business Development Lead, CME Associates, Inc.

Who knew the first constructed commercial railway in the United States was located right in our backyard in Quincy and East Milton? Hidden in a Quincy neighborhood cul-de-sac are the remnants of the inclined portion of what many historians believe to be one of the first railways in America, the Granite Railway, incorporated in 1826 and designed by engineer Gridley Bryant. The inclined portion of the railway is an ASCE Historic Civil Engineering Landmark. The primary role of the railway was to provide granite from a quarry in Quincy to be used for the construction of the Bunker Hill Monument in Charlestown.

How did the railway come about? Solomon Willard, chosen by the Bunker Hill Monument Association to be the lead architect in charge of the construction of the Bunker Hill Monument, performed a thorough search of suitable quarries throughout New England to provide granite for the monument. The quarries in Quincy were selected and while the quality of granite in this location was excellent, transporting the material would be difficult. At the time, granite hauled over roadways by horse or ox team was very difficult and expensive. Using a railway would reduce traction and expedite transportation. Gridley Bryant had been studying some of the early railways in England and concluded that the best way to move the stone would be via this emerging technology. Bryant was a self-educated mason and engineer and had previously worked on the construction of the Mill Dam. The Massachusetts legislature was petitioned to provide incorporation for the Granite Railway Company but faced much opposition over right-of-way and liability concerns. On March 4, 1826, the charter for the company was granted, with T.H. Perkins, a prominent Boston merchant, serving as the company president. The first contract in the United States for the carriage of freight by rail was signed on March 27, 1827, to provide the stone from Bunker Hill



Granite Railway Incline, Quincy, Massachusetts

Quarry to the Neponset river by rail, and then by water to Charlestown.

Construction on the railway began on April 1, 1826. The survey of the route was performed by Loammi Baldwin, Jr., a prominent civil engineer who worked on many important infrastructure projects in New England including Fort Strong, Mill Dam, and perhaps his most important work, the naval dry docks at Boston Navy Yard in Charleston and Norfolk Naval Shipyard in Portsmouth (also ASCE Historic Civil Engineering Landmarks). The railway was approximately three miles in length between the quarries in Quincy to the Neponset River. The wooden rails were laid five feet apart on stone cross-ties spaced every eight feet. The wagons used on the railway had wheels six feet in diameter, were pulled by horses, and could transport nearly 16 tons! Nearly all items used on the railway were designed by Bryant, including the cars, tracks, frogs, switches, wheels, turntables and load transfer equipment. Many of these technologies were already in use

in England, however, Bryant modified many of these items to allow for heavier, more concentrated loads to accommodate the heavy granite blocks.

The railway was also involved in one of the first rail fatalities in the United States when in 1832 a wagon carrying four passengers was ascending the incline. A cable snapped and threw the passengers from the vehicle over a cliff and down about 35 feet, killing one of the occupants. The Old Colony and Newport Railway took over the right-of-way in 1871 and was later absorbed into the New York, New Haven and Hartford Railroad. The inclined portion of the railway continued to operate until the 1940's. So, the next time you're in the Boston area and see the Bunker Hill Monument, just think that its construction launched the Granite Railway and helped usher in the rail industry in our country! Many thanks to David C. Garcelon for sharing an excerpt on the Granite Railway from his upcoming book on the Hoosac Tunnel.

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# Bouncing Back: Five Steps to Ensure Your Water Systems Recover from Unexpected Disasters

by Vinoth Manoharan, PE, Project Manager, AECOM

In August 2017, Hurricane Harvey hit Houston, devastating the city and disrupting many of its services. Water expert, Vinoth Manoharan explains how foresight and planning kept safe drinking water flowing in Houston during this time of extreme need.

When Hurricane Harvey made landfall in Houston, it brought more than 40 inches of rain—the equivalent of almost an entire year's worth—to parts of the city. The result was calamitous, with city-wide economic losses estimated at between US\$70 billion and US\$200 billion.

Yet, amongst the devastation, Houston's drinking water system remained up and running during and after the hurricane, ensuring Houston's residents continued to have access to safe, clean drinking water. Essential to this was the East Water Purification Plant, which is the largest of Houston's three major drinking-water facilities and supplies drinking water to most of the city's residents.

So, how did the East Plant team maintain service during this record-breaking storm? The seeds of this capability were planted by the foresight of the facility's engineers. The management team at the East Plant, working with AECOM, recognized the importance of preparing for a possible event like this, for example, planning for the care of frequently overlooked ancillary facilities, such as storm sewers, stormwater pump stations, fuel tanks and command centers, well in advance of any potential disaster.

With critical infrastructure around the world vulnerable to an increasing range of threats, such as climate change and extreme weather events, here are five steps that water treatment plant managers and engineers can take to build resilience—based on lessons learnt from Hurricane Harvey.

## 1. Evaluate Current Function

Understanding your water system's effectivity is the first step towards resilience. In 2010, the City of Houston and AECOM undertook a study that assessed the sustainability and vulnerability of the entire East Plant facility. The study evaluated the treatment process, hydraulic

capacity, solids process and ancillary facilities, confirming the critical role that the East Plant's interior stormwater conveyance system and pump station play in the facility's functionality as it collects, conveys and pumps rainfall out of the plant site. Further, it was determined that without this system, the plant would flood during record storm events.

## 2. Investigate risk for failure

If understanding functionality is the first step, analysis is the next. For example, the East Plant team analyzed the potential for the facility's failure and the factors that could contribute to it. Among the observations was one stark, highly-concerning finding: the current stormwater system was inadequate in terms of its ability to handle the water resulting from a record-setting storm. The East Plant is surrounded by a levee that protects it from rising flood waters, but also traps rainfall inside the levee and within the plant's boundary. If the stormwater system could not handle the rainfall, it was clear that the East Plant's treatment equipment could flood and be forced to shut down and the team committed to take steps to address this issue.

## 3. Pinpoint vulnerabilities

Working from the precept that knowledge is power, it is important to evaluate the impact of a potential significant storm and the exposure and risks that such a storm could present. At the East Plant, AECOM performed a hydrologic and hydraulic study to gauge the impact of a major rainfall, and followed up by identifying the improvements required to control flood waters within the plant boundary.

## 4. Target solutions

Once the vulnerabilities and risks are uncovered, it is essential to work toward finding solutions that protect operations. At the East Plant, this meant: identifying and targeting ways to add pumps within the existing stormwater pump station: reserving open green space within the plant site to detain storm water; raising curb heights around critical equipment vaults; identifying critical equipment that needed to be elevated above expected flood waters; and developing redundant power sources for the stormwater facilities.

## 5. Mitigate the Risks Identified

Once the vulnerabilities are detected, corrective actions must be quickly implemented. The East Plant is the largest and oldest drinking water facility in Houston, so it was imperative to begin immediate mitigation. After the required design and construction improvements were identified and approved by city leadership, they were implemented on an expedited schedule. For example, the engineers delivered a hydraulic and hydrologic study predicting rainfall amounts over time as well as the amounts of water flowing across the site during a storm. Pump station improvements were designed based on these results and were ready for bid in less than three months.

## The Results

Taking action ahead of time can make all the difference to the resilience of critical infrastructure during and after a storm. The East Plant team's due diligence enabled the facility to maintain its functions throughout and beyond Hurricane Harvey.

Despite experiencing unprecedented rainfall, the East Plant's stormwater system prevailed—remaining at full capacity and suffering only minor damage. The continued successful operation of the East Water Purification Plant when disaster struck is a reminder that, often times, it is ancillary facilities that make the difference in water system resilience. And AECOM continues to work with the [City of Houston](#) and other partners to build the resilience of this and other critical infrastructure in the city.

This article is part of AECOM's ongoing series examining the top water issues that need to be solved in the state of Texas and beyond.

## For Further Reading

[Making Cities Resilient: Houston Takes a Cyber Stress Test](#)

[Water in Texas: Top Five Issues We Need to Solve Now](#)

[Six Alternative Water Sources for Texas](#)

[Safe Drinking Water that Doesn't Break the Bank](#)

[Creating More Resilient Flood Plains in Texas](#)

## BSCES Announces 2020–2021 BSCES Board of Government and Nominating Committee

by Emily Devane, Membership Associate, BSCES

BSCES is pleased to announce the results of the 2020–2021 BSCES Board of Government elections which concluded on May 15, 2020. Members of the 2020–2021 Board of Government took their oath of office during the board video conference that was held on Tuesday, June 23, 2020 and will officially assume oversight of BSCES with the commencement of the 2020 BSCES fiscal year on July 1, 2020. Thank you to everyone who voted in the election.

The members of the 2020–2021 BSCES Board are as follows:

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#### Geo-Institute Boston Chapter:

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#### Structural Engineering Institute Boston Chapter:

Scott R. Brusio, PE, Weston & Sampson

#### Transportation & Development Institute Boston Chapter:

Tyler deRuiter, PE, PTOE  
BETA Group, Inc.

#### Younger Member Group:

Mark Ruberti, PE, Sanborn Head & Associates

As part of the 2020–2021 election process, BSCES members who are eligible to vote also elected three members who will serve a two-year term as members of the BSCES Nominating Committee. They are:

Brendan Casey, PhD, PE  
Massachusetts Bay Transportation Authority

Michael A. Cruz, PE  
Green International Affiliates, Inc.

Kayla (Arruda) Sousa, EIT  
Howard Stein Hudson

These newly elected members will be joining a Nominating Committee that includes three BSCES past presidents and three BSCES members who are serving the second year of a two-year term.

### BSCES Past-Presidents

Malek A. Al-Khatib, PE (Retired)

Geoffrey B. Schwartz, PE  
GZA GeoEnvironmental, Inc.

Richard D. Maher, PE, PMP, LEED AP  
Perry Associates, LLC

### Additional Committee Members

Lucy C. Jen, PhD, PE, Jen Geotechnical, LLC

Richard Matson, PE, AECOM

Bryan Zimolka, PE, Nitsch Engineering

## President's Report

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outreach, and support ten civil engineering student chapter programs. This diverse and high-quality programming is not possible without annual support. Please see the insert at the end of the newsletter for program details and consider donating and sponsoring BSCES now for its upcoming 172nd year.

Each year in June, BSCES wraps up its fiscal year and ushers in a newly elected Board of Government for one-year term. During this past year, COVID-19 disrupted our plans for many exciting meetings and events. However, it did not stop the Society from providing a feeling of community and valuable content to its members through the free lunchtime webinar series. I am especially proud of the volunteer members of our Executive Committee and Board of Government for participating in emergency meetings, brainstorming, and pivoting into the new way of doing business during the past four months. I owe them all a great deal of gratitude for their passion and willingness to help during

this time of great unknowns. I have been inspired during this period of transition by members of the outgoing board and confident that the incoming board members will embrace change, and yet again strengthen BSCES.

The closing event for the 171st year of BSCES is the Annual Meeting and Awards Ceremony. The purpose of this meeting is to reflect on the past year's accomplishments, present the strategic plan going forward, thank the Board of Government and financial supporters, and to announce society award recipients and honorees. This celebration of the year's accomplishments in civil engineering is typically a memorable evening dinner event. Given the current situation, a virtual program is being planned to take place in late summer. BSCES leaders remain hopeful that the energy and excitement of in-person events will be able to return during our 172nd year.

Thank you and it has been an honor and pleasure to serve as president during this past year.

BSCES always welcomes new members and participation in creating event and media content. Please contact us at [bsces@engineers.org](mailto:bsces@engineers.org) for

more information of how to get involved and support BSCES.

BSCES is continuing to progress through the changing times by conducting Zoom webinars. These programs are being offered as a no cost member benefit. Please consult the [BSCES events webpage](#) for an updated list of Events.

This issue of *BSCESNews* is focused on Coasts, Oceans, Ports, and Rivers Institute (COPRI) and has a theme of 20th anniversary. Be sure to read page 7 featured group article written by COPRI Boston Chapter Chair Bryan Jones from HDR.

I would like to thank our Society Sponsors especially AECOM, which is sponsor of this June newsletter. Please be sure read the articles submitted by AECOM for publication in this issue of *BSCESNews*. Entitled "Rapid Repurposing: Facility Strategies for Airborne Disease Outbreaks Including Coronavirus" and "Bouncing Back: Five Steps to Ensure Your Water Systems Recover from Unexpected Disasters," these articles can be found on page 1 and page 5, respectively.

## Featured Group

### COPRI Update

by Bryan N. Jones, PE, Northeast Ports & Maritime Lead, HDR and COPRI Boston Chapter Chair

This year marks the 20th anniversary of the founding of ASCE's Coasts, Oceans, Ports, and Rivers Institute (COPRI). Created in 2000, COPRI is one of nine semi-autonomous institutes within ASCE. Its mission is to serve its members through improving knowledge, education, development and practice of civil engineering and other disciplines in the sustainable management of coastal, ocean, port, waterways, riverine, and wetlands resources for the benefit of society.

Over the past 20 years this highly specialized national institute has grown to more than 4,000 members; with 36 technical and sub-committees, 10 professional chapters, and 10 student chapters serving local, regional, national and international COPRI needs. Locally, the longstanding BSCES Waterways technical group was re-chartered in 2012 as the COPRI Boston Chapter. This group continues to provide events and programs with impressive and knowledgeable speakers that stimulate discussion and provide useful engineering and business ideas, as well as networking opportunities for sustainable development, protection and restoration of our coasts, oceans, ports, waterways, rivers and wetlands.

As a multidisciplinary and international leader in the sustainable management of coastal, ocean, port, waterways, riverine and wetlands resources for the benefit of society, COPRI seeks to integrate key stakeholders into decision-making processes; advance the technological state of art and practice; and influence public policy. COPRI does this through several key functions, including:

- Establishment and governance of numerous technical committees, which produce journals, standards, manuals of practice, and guidelines for this specialized profession. The principal technical committees in COPRI include:
  - **The Coastal Council**, which includes sub-committees focusing on Coastal and Estuarine Hydroscience, the Coastal Engineering Research Council, Coastal Structures, and Coastal Zone Management.
  - **Marine Renewable Energy Committee**—which works on the planning, design, construction, maintenance and operation of marine renewable energy facilities above and

below the water, including: anchoring to the seabed; mooring systems; transmission cable burial and protection; federal, state, and regional planning and regulation efforts; and port and harbor infrastructure to support the construction and maintenance of marine renewable structures and technology.

- **Ocean & Offshore Engineering Committee**—This committee is particularly concerned with understanding the interrelationships among hydrodynamics, structural design, structural dynamics, and geotechnical engineering in the offshore ocean environment.
- **Ports & Harbors Committee**—Consisting of 14 distinct technical subcommittees, the Ports & Harbors Committee seeks to lead the profession in advancing the planning, design, construction, maintenance, operation, pollution control, and technical functioning of ports and harbors infrastructure, including coordination with the appropriate committees of the American Association of Port Authorities and permanent International Association of Navigational Congress (PIANC). Areas of focus are on the engineering aspects of (1) waterborne transportation, commercial (including fishing) and recreational interests, (2) plans for expansion to meet future needs; (3) the environmental implications of such expansion; and (4) handling equipment and other port related facilities.
- **Waterways Committee**—This group studies and reports on methods and problems of planning, design, construction, maintenance, and operation of waterways, including dredging, stabilization, navigation, flood control and regulation, with consideration of their effects on the environment.

Each of these technical committees is comprised of professional volunteers nationwide, who collaborate to provide peer-reviewed articles, standards and manuals of practice that provide state-of-the-art guidance to practitioners and academics alike, including for example:

- *The Journal of Waterway, Port, Coastal, and Ocean Engineering*
- *Inland Navigation: Environmental Sustainability* (2019)

- *Waterfront Facilities Inspection and Assessment Manual of Practice* (2015)
- *Seismic Design of Piers and Wharves* (2014)
- *Planning and Design Guidelines for Small Craft Harbors* (3rd Ed. 2012)
- *Advances in Coastal Structure Design* (2003)
- *Underwater Investigations—Standard Practice Manual* (2001)
- The technical committees are also involved in producing and moderating nationally recognized technical conferences for knowledge transfer and networking, including a triennial *Ports Conference, the Coastal Structures Conferences*, and *Solutions to Coastal Disasters*, as well as collaborating with other organizations on international conferences being hosted in the U.S. such as the annual *Offshore Technology Conference* (OTC) and the *International Conferences in Coastal Engineering* (ICCE).
- COPRI also coordinates and sponsoring teams of technical professionals (volunteers) for post-disaster damage assessment of port infrastructure and coastal structures following major hurricanes, earthquakes and tsunamis. The work of these expert teams provides valuable forensic knowledge and “lessons learned” on the performance and failure of coastal and marine infrastructure, and is consolidated into published professional proceedings.
- Another function within COPRI is specialized Board Certification in the fields of Coastal Engineering, Port Engineering, Navigation Engineering and Ocean Engineering, which is administered through the Academy of Coastal, Ocean, Port, and Navigation Engineers (ACOPNE).
- And finally, COPRI seeks to recognize our colleagues who have contributed to the civil and harbor, coastal, and waterways engineering profession in significant ways; by administering national awards programs such as the annual Project Excellence Awards, the *John G. Moffatt-Frank E. Nichol Harbor and Coastal Engineering Award*, the *Kenny Childs Practitioner's Award*, the *Orville T. Magoon Sustainable Coasts Award*, and the *International Coastal Engineering Award*, among others.

## Recent News and Updates

### BSCES Announces 2020–2021 Sponsorship Program

BSCES leaders are pleased to unveil the 2020–2021 BSCES Sponsorship Program, which runs through June 30, 2021. We are looking forward to BSCES accomplishing more and continuing to advance the civil engineering profession. This can only be achieved with the continued support of our members and sponsor 2020–2021 BSCES Sponsors help BSCES achieve its financial goals while receiving great organizational visibility among thousands of professionals.

The 2020–2021 BSCES Sponsorship Program offers two sponsorship options—Society Sponsor and Program Sponsor. Looking to give sponsors maximum exposure, BSCES is offering a broad array of sponsor benefits. Please see the insert included at the end of this newsletter for program details.

### BSCES Thanks Donors

The BSCES Board of Government would like to thank the following members who made a donation to BSCES when they paid their dues during the current fiscal year:

Daniel R. Armstrong  
 Christopher R. Baker  
 Ryan D. Beemer  
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 Georgios Bouboulis  
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 Sarah J. Simon  
 Michael P. Soraghan  
 Ashley L. Sullivan  
 Mark G. Sullivan  
 Melissa Trombley  
 Dennis A. Verdi  
 Carl H. Weber  
 Stan W. Zagajeski

### BSCES Welcomes New Members

The BSCES Board of Government is pleased to welcome the following new members who joined BSCES during the months of April and May 2020:

#### Affiliate

Carrick Eggleston, PhD, Worcester Polytechnic Institute  
 Jennifer Green  
 Molly Obendorf

#### Associate

Kaoutar Diouri,  
 Abigail Ericson, EIT  
 Fernanda Fischer, EIT  
 Paul Kirchner, Stamski and McNary, Inc.  
 David Langlais  
 Michelle Meyer  
 Conor Hoey, EIT

Jessica Ormsby  
 Matt Soule

#### Member

David Comerford, Reading, MA

#### Student Member

Hakan Aboulay, Istanbul Technical University  
 Ahmed Alrediny, Wentworth Institute of Technology  
 Jaquelin Bermeo, Smith College  
 Jiarong Chen, Northeastern University  
 Tek Dhant, University of Massachusetts Lowell  
 Loundia Duperier, Bunker Hill Community College  
 Joshua Faigel, University of Massachusetts Lowell  
 Michael Gove, University of Massachusetts Lowell  
 Zachary Holman, University of Massachusetts Lowell  
 Sarvesh Jagtap, Northeastern University  
 Khaled Mahdi, Merrimack College  
 Daniel Paczuski, Wentworth Institute of Technology  
 Jonathan Paulino, University of Massachusetts Lowell  
 Pietra Souza, University of Massachusetts Lowell

### Massachusetts Board of Registration of Professional Engineers and Land Surveyors Issues Advisory on the Use of Job Titles that include the Term “Engineer” or “Surveyor”

In response to questions received from the engineering and land surveying business community, on June 8, 2020 the Massachusetts Board of Registration of Professional Engineers and Land Surveyors (“the Board”) issued an advisory opinion on the use of engineering or land surveying job titles by unlicensed individuals working within the engineering and land surveying business community. To view a downloadable copy of this advisory [click here](#).

*[continued on page 9](#)*

## Recent News and Updates *(continued from page 8)*

### Massachusetts Board of Registration of Professional Engineer and Land Surveyor Responds to FAQ on PEs Certifying Site Plans with Property Lines

During the month of June 2020, the Massachusetts Board of Registration of Professional Engineers and Land Surveyors announced the addition of a new website posting that answers the frequently asked question, Can a Professional Engineer (PE) certify a site plan which references a property line determination that was previously completed by a Professional Land Surveyor (PLS)? This answer is no, except in the limited circumstances that the Board describes. [Click here](#) to learn more.

### ASCE Election Results

Thanks to all of you who voted in the annual ASCE election. BSCES would like to congratulate Dennis D. Truax for being elected 2021 ASCE President Elect. Truax, Ph.D., P.E., DEE, D. WRE, FNSPE, FASCE, has spent four decades on the civil engineering faculty at Mississippi State University. Since 2006, he's served as the James T. White Endowed Chair and Department Head.

He has also worked as a consulting engineer or managing principal of several firms. In addition, he has served as adviser and regulatory consultant with various governmental agencies.

BSCES would also like to congratulate Danielle H. Spicer, P.E., LEED AP, ENV SP, M.ASCE who has been elected to another term as Region 1 Governor. As part of the 2020 ASCE election, the membership also approved, by the required two-thirds vote, proposed constitutional amendments intended to improve the organization's flexibility, nimbleness and responsiveness, as well as giving voting equity to dues-paying Affiliate member. To learn more about the 2020 ASCE election, [click here](#).

### Encourage Others to Join ASCE and See the Rewards

Do you have colleagues that have not yet joined ASCE? Participate in ASCE's Member Referral Program and receive a \$50 Amazon gift card for each new member that you recruit. [Click here](#) to learn more about ASCE's Member Get a Member Program.

### Stay Connected and Engaged with COVID-19 Resource Page

As the widespread coronavirus outbreak continues to impact daily life, you can still reach out to the ASCE community. The Society's COVID-19 Resource page has online tools and tips to work from home or office more effectively, as well as different ways to use free time you might have. This includes discussion threads with other members, career advancement opportunities and fun activities for families. [Click here](#) for more information.

### #DonateYourPPE if You Have Surplus Equipment

Join the movement to #DonateYourPPE and donate any surplus personal protective equipment to hospitals. [Click here](#) to find out what materials are needed and where to donate.

### Take Advantage of ASCE's Mentor Match

[Mentor Match](#) is a tool that brings together mentors and mentees to develop workplace and technical abilities, find a proper work/life balance, resolve dilemmas and in the process perhaps even become friends.

## COPRI Update

*continued from page 7*

• COPRI also offers several specialized guided on-line courses that provide specialized, practical knowledge beyond what engineers typically gain from undergraduate and graduate programs. These courses are developed by industry specialists including port engineers, maritime facility operators, environmental regulators, military engineers,

and private industry consultants. Upcoming courses opportunities include:

- [Introduction to Port Engineering](#)  
July 20–August 28, 2020
- [Marine Container Terminal Planning](#)  
September 21–December 11, 2020
- [Seismic Design of Piers and Wharves](#)  
September 21–December 11, 2020

I would encourage interested engineers, scientists, and regulators within private industry as well as government to check out your local COPRI Boston Chapter, and take advantage of the professional opportunities to participate within COPRI.

## 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 September 2020 issue of the newsletter for example, will highlight the BSCES Committee on Sustainability and feature one or more articles on the theme of Climate Change Mitigation.

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 Katie Swanson at [newsletter.board@bsces.org](mailto:newsletter.board@bsces.org) or BSCES Association Manager Rich Keenan at [rkeenan@engineers.org](mailto:rkeenan@engineers.org) or at 617/305-4110.

## Upcoming Events

For more information and to register for events, please visit [www.bsces.org](http://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.

### BSCES & SEAMASS Virtual Game Night

Sponsored by the Younger Member Group and SEAMASS Younger Member Group

**Thursday, July 16, 2020**

ZOOM WEBINAR

5:30 PM – 7:00 PM

The goal of the event is to encourage connections between engineers in the area and to provide a fun atmosphere for registrants to network. The event will feature breakouts into small groups with prompts for discussion and virtual games. There are two games on the itinerary—an online version of the popular card game Code Names and a virtual Pictionary styled game called skribbl.io. At the end of the event, there will be a virtual social with the whole group to allow everyone to co-mingle.

[Click here for more information.](#)

### FHWA-NHI-130053 Bridge Inspection Refresher Training

Sponsored by the Program Committee

**Tuesday, Sept. 29 – Thursday, Oct. 1, 2020**

Location to be determined

8:00 AM – 4:30 PM

The major goals of this course are to refresh the skills of practicing bridge inspectors in fundamental visual inspection techniques; review the background knowledge necessary to understand how bridges function; communicate issues of national significance relative to the nations' bridge infrastructures; re-establish

proper condition and appraisal rating practices; and review the professional obligations of bridge inspectors. This course is based on the "Bridge Inspector's Reference Manual," 2002 (updated 2006), with reference to the AASHTO Manual as defined by the National Bridge Inspection Standards regulation.

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

### FHWA-NHI-130055 Safety Inspection of In-Service Bridges

Sponsored by the Program Committee

**Monday, Nov. 30 – Friday, Dec. 11, 2020**

Hilton Garden Inn Worcester, Worcester, MA

8:00 AM – 4:30 PM

This two-week course is based on the 2015 FHWA "Bridge Inspector's Reference Manual" (BIRM) and provides training on the safety inspection of in-service highway bridges. Satisfactory completion of this course will fulfill the training requirements of the National Bridge Inspection Standards (NBIS) for a comprehensive training course. This course is not geared towards fracture critical, underwater, or complex structures. All participants must show that they passed either of the following pre-requisite courses: FHWA-NHI-130101, Introduction to Safety Inspection of In-Service Bridges or FHWA-NHI-130054 Engineering Concepts for Bridge Inspectors.

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

[continued on page 11](#)

### Mark Your Calendar!



Check out the official [ASCE Day page](#) for ideas on how to celebrate.

### ASCE Webinars

ASCE WEBINARS

**SUPPORT OUR SECTION**

Use WEBBOSSEC to have  
**20% of your purchase**  
donated to our Section.

ASCE | CONTINUING EDUCATION

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

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

### 2019–2020 BSCES Sponsors

**SOCIETY SPONSORS:** AECOM | EarthSoft | Keller | Perry Associates LLC | Shea Concrete Products

**PROGRAM SPONSORS:** Alfred Benesch & Co. | CDM Smith Inc. | Dewberry | GEI Consultants, Inc. | Geocomp/GeoTesting Express  
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Tufts University—Department of Civil and Environmental Engineering | VHB | Wentworth Institute of Technology | Weston & Sampson | WSP USA

## Upcoming Events *(continued from page 10)*

### BSCES FREE LUNCHTIME ZOOM WEBINAR SERIES

Having taken the COVID-19 risk mitigation measure of canceling or rescheduling a number of spring events, BSCES leaders are pleased to offer a series of free lunchtime webinars. These programs will be occurring on a weekly basis throughout the month of June. Listed below are webinars confirmed to date. Due to technology constraints, participation for each webinar is limited to 100 so register early.

#### Permeable Reactive Barriers for Groundwater Nitrate Treatment

**Wednesday, July 8, 2020**  
ZOOM WEBINAR

12:00 PM – 1:30 PM

*Marcel Belaval, Hydrologist, EPA Region 1*  
*Tom Parece, Associate Vice President, Water New England AECOM*

*Matt Charette, Senior Scientist*  
*Woods Hole Oceanographic Institution*  
*Jessica Thomas, UMass Dartmouth*  
*Brian Howes, UMass Dartmouth*

Please join the Southeast New England Coastal Program (SNEP) and the Boston Society of Civil Engineers (BSCES) for a webinar on Permeable Reactive Barriers (PRBs) for Groundwater Nitrate Treatment on July 8 from 12–1:30 PM EST. The webinar will feature an overview of PRB use for passive treatment of groundwater nitrogen, recommend site assessment approaches, and case studies focusing on PRBs in different stages of implementation from pre-injection planning to post installation and monitoring. Speakers include scientists, engineers, and project managers with direct experience implementing PRBs for nitrogen treatment on Cape Cod and the Islands.

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

#### AWIA Risk and Resilience Assessments at the MWRA

**Thursday, July 23, 2020**  
ZOOM WEBINAR

12:00 PM – 1:00 PM

*Marckenley Joseph, Staff Engineer, MWRA*  
*Nathan Loomis, Project Engineer, MWRA*  
*Nathan Little, Project Manager, MWRA*

The Massachusetts Water Resources Authority (MWRA) is a public authority that provides wholesale water and sewer services to 3.1 million people and more than 5,500 large industrial users in 61 metropolitan Boston communities. Because MWRA serves a population greater than 100,000, it was tasked by America's Water Infrastructure Act (AWIA) to certify that Risk and Resilience Assessments have been performed on the drinking water system by March 31, 2020. The presentation will review the requirements of AWIA, risk and resiliency assessment (RRA) methodology, tools for performing RRAs, and MWRA's approach to performing RRAs and complying with AWIA.

[Click here to register.](#)

### Save the Date!

**Wednesday, June 15, 2020**

**BSCES Free Lunchtime Webinar:  
Economic Impact of the  
COVID-19 Shutdown**

*Sponsored by the Southeastern  
Massachusetts Committee*

SPEAKERS:

Gregory DiMarzio, CFA  
Vice President, Portfolio Manager  
Investment Management Group  
Rockland Trust

Bryan M. Gitlin, Managing Partner  
Cambridge Capital Advisors, LLC

*Look to the BSCES Website and future events  
emails for more information.*

### 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](mailto:jlewis@garofaloassociates.com) or BSCES Association Manager Rich Keenan at [rkeenan@engineers.org](mailto:rkeenan@engineers.org).

## Classifieds



Haley & Aldrich is looking to hire a **BIM/CAD Services Manager** into our Boston or Manchester office. This individual will be managing the AutoCAD Civil 3D and BIM design needs throughout 30 US offices, collaborating with staff to develop design drawings and provide management, leadership, and training companywide.

Candidates can apply online or via email by sending their resume to [sbrooks@haleyaldrich.com](mailto:sbrooks@haleyaldrich.com).

For more information, visit [www.haleyaldrich.com/join-us](http://www.haleyaldrich.com/join-us).

The Boston Society of Civil Engineers Section/ASCE is pleased to announce its 2020-2021 Sponsorship Program. Promote your organization while demonstrating your support of BSCES by becoming a Society or Program Sponsor before the July 30, 2020 registration deadline. You can [register online](#) to become a BSCES Sponsor or complete the included sponsor registration form and follow the submission instructions. Sponsorship benefits and costs are as follows:

## Society Sponsor – \$5,000

Logo with hyperlink on BSCES website ([www.bsces.org](http://www.bsces.org))

Logo and/or name displayed with Society Sponsors on:

1. Broadcast emails
2. Event flyers
3. Sponsor Banner
4. Awards celebration display and slideshow

Named and thanked as Society Sponsor in:

1. Introductory remarks for all BSCES events\*
2. Introductory remarks for annual awards celebration
3. First and sponsored issues of BSCES member newsletter, *BSCESNews*
4. BSCES "Civil Engineering Today" TV show credits

Newsletter:

1. Logo displayed in redesigned HTML newsletter
2. Featured sponsor of one issue
  - Two advertisements placed in that issue
  - Opportunity to submit a featured newsletter article

Free tickets:

1. Two registrations for annual BSCES awards celebration or other event of choice\*
2. Two invitations to BSCES leadership reception

## Program Sponsor – \$2,500

Logo and/or name displayed with Program Sponsors on:

1. Event-related broadcast emails
2. Event flyers
3. Website events page
4. Sponsor Banner

Named and thanked as Program Sponsor:

1. Introductory remarks at all BSCES events\*
2. First issue of BSCES member newsletter, *BSCESNews*
3. BSCES "Civil Engineering Today" TV show credits

Free tickets:

1. Two registrations for BSCES event of choice\*

[Click here](#) to view a detailed list of sponsorship benefits.



\* Certain exclusions apply. See detailed list of sponsorship benefits for additional information.

Select Sponsorship Level	Cost
<input type="checkbox"/> BSCES Society Sponsor	\$5,000
<input type="checkbox"/> BSCES Program Sponsor	\$2,500

Total Enclosed: \_\_\_\_\_

Firm/Organization Name: \_\_\_\_\_

(As you would like it to appear in sponsorship promotions)

Sponsor Contact: \_\_\_\_\_

Address: \_\_\_\_\_

\_\_\_\_\_

Telephone: \_\_\_\_\_

Email: \_\_\_\_\_

Fax (617/227-6783) or email ([bsces@engineers.org](mailto:bsces@engineers.org)) this form and credit card information to BSCES by **Thursday, July 30, 2020**.

Please bill my (check one):  MasterCard  Visa  American Express

Card Number: \_\_\_\_\_ Expiration Date: \_\_\_\_\_

Billing Address: \_\_\_\_\_

Cardholder Signature: \_\_\_\_\_

Print Name: \_\_\_\_\_

Or

Make check payable to BSCES. Mail with this form to Boston Society of Civil Engineers Section/ASCE One Walnut Street, Boston, MA 02108-3616.

If you have any questions, contact Rich Keenan at 617/305-4110 or at [rkeenan@engineers.org](mailto:rkeenan@engineers.org)

**Payment Due at Time of Commitment**

2019-2020  
Society Sponsors  
AECOM  
EarthSoft  
Keller  
Perry Associates LLC  
Shea Concrete Products



2019-2020  
Program Sponsors  
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Technology  
Weston & Sampson  
WSP USA

## FHWA-NHI-130053

### Bridge Inspection Refresher Training

**Tuesday, September 29, 2020 – Thursday, October 1, 2020**

**Location To Be Announced**

**Tuesday through Thursday, 8:00AM – 4:30PM**

The major goals of this course are to refresh the skills of practicing bridge inspectors in fundamental visual inspection techniques; review the background knowledge necessary to understand how bridges function; communicate issues of national significance relative to the nations' bridge infrastructures; re-establish proper condition and appraisal rating practices; and review the professional obligations of bridge inspectors. This course is based on the "Bridge Inspector's Reference Manual," 2002 (updated 2006), with reference to the AASHTO Manual as defined by the National Bridge Inspection Standards regulation.

Core course topics include inspector qualifications and duties, bridge mechanics, record keeping and documentation, fatigue and fracture in steel bridges, traffic safety features, safety, National Bridge Inventory (NBI) component ratings, superstructure type identification, inspection techniques and case studies for decks, superstructures, bearings, substructures, channels and culverts, and a mock bridge inspection classroom exercise. Optional topics include inspection of truss gusset plates, adjacent box beams, and post-tensioning tendons.

**Registration Deadline: Tuesday, September 1, 2020**

**Registration Fees: \$900 Members, \$1,100 Non-Members**

**Registration fee includes course materials, continental breakfast, breaks, and lunch**

#### Information/Registration:

**Attendance for this program is limited to 30 participants. Individuals who attempt to register after the course is closed will be added to a waiting list.**

Reservations will be accepted on a first-come first-serve paid reservation basis. Payment must be received with registration to secure a slot. Register to attend this course and pay by credit card online at <http://bit.ly/BridgeInspectionRefresher2020>. 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 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 or no shows after September 1, 2020 will be billed.

2019-2020  
Society Sponsors  
AECOM  
EarthSoft  
Keller  
Perry Associates LLC  
Shea Concrete Products



2019-2020  
Program Sponsors  
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Tetra Tech  
Tighe & Bond, Inc.  
TranSystems  
Tufts University –  
Department of Civil and  
Environmental Engineering  
VHB  
Wentworth Institute of  
Technology  
Weston & Sampson  
WSP USA

## FHWA-NHI-130055

### Safety Inspection of In-Service Bridges

**Monday, November 30, 2020 – Friday, December 11, 2020**

**Hilton Garden Inn Worcester, 35 Major Taylor Boulevard, Worcester, MA**  
**Monday through Friday, 8:00 AM – 4:30 PM**

This 10-day course is based on the 2015 FHWA “Bridge Inspector’s Reference Manual” (BIRM) and provides training on the safety inspection of in-service highway bridges. Satisfactory completion of this course will fulfill the training requirements of the National Bridge Inspection Standards (NBIS) for a comprehensive training course. This course is not geared towards fracture critical, underwater, or complex structures. Mid-term and final examinations based on course content will be administered to participants.

Please note: To take this course participants must show that they have passed one of the following pre-requisite courses: FHWA-NHI-130054 *Engineering Concepts for Bridge Inspectors*; FHWA-NHI-130101, *Introduction to Safety Inspection of In-Service Bridges*; or FHWA-NHI-130101a *Prerequisite Assessment for Safety Inspection of In-Service Bridges*. A FHWA/NHI certification of completion with the participant name on it will be required to be presented to BSCES preferably at time of registration or no later than Friday, September 25, 2020. Please forward your prerequisite certificate in the form of a PDF document to [bsces@engineers.org](mailto:bsces@engineers.org).

### Registration Deadline: Friday, September 25, 2020

**Registration Fees: \$2,000 Members, \$2,200 Non-Members**

**Registration fee includes course materials, continental breakfast, breaks, and lunch**

### Information/Registration:

**Attendance for this program is limited to 30 participants. Individuals who attempt to register after the course is closed will be added to a waiting list.**

Reservations will be accepted on a first-come first-serve paid reservation basis. Payment must be received with registration to secure a slot. Register to attend this course and pay by credit card online at <http://bit.ly/SafetyInspectionBridges2020>. 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 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 or no shows after September 25, 2020 will be billed.

# Permeable Reactive Barriers for Groundwater Nitrate Treatment

## SNEP/BSCES Joint Webinar

#SNEPitUp

Wednesday, July 8, 2020 12:00-1:30PM EST



Please join the Southeast New England Program (SNEP) and the Boston Society of Civil Engineers (BSCES) for a webinar on Permeable Reactive Barriers (PRBs) for groundwater nitrate treatment.

Register Here: <https://signup.com/go/AoTKQWy>

#SNEPitUp

Please join the Southeast New England Coastal Program (SNEP) and the Boston Society of Civil Engineers (BSCES) for a webinar on Permeable Reactive Barriers (PRBs) for Groundwater Nitrate Treatment on July 8, 2020 from 12-1:30pm EST. The webinar will feature an overview of PRB use for passive treatment of groundwater nitrogen, recommend site assessment approaches, and case studies focusing on PRBs in different stages of implementation from pre-injection planning to post installation and monitoring. Speakers include scientists, engineers, and project managers with direct experience implementing PRBs for nitrogen treatment on Cape Cod and the Islands.

### Speakers:

Marcel Belaval, Hydrologist, EPA Region 1

Tom Parece, Associate Vice President, Water, New England AECOM

Matt Charette, Senior Scientist, Woods Hole Oceanographic Institution

Jessica Thomas, UMass Dartmouth

Brian Howes, UMass Dartmouth

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