

## MassDOT Route 128/Interstate 95 Add-A-Lane Westwood-Dedham-Needham, MA (Part 1)

by Larry Cash, PE, MassDOT Project Manager; Malek Al-Khatib, PE, The Louis Berger Group, Inc. Project Manager; Daniel Deng, PE, The Louis Berger Group, Inc. Project Engineer

Route 128/Interstate 95 is considered the second busiest stretch of highway in Massachusetts. The Massachusetts Department of Transportation (MassDOT) has implemented the roadway widening program called Add-A-Lane project to alleviate the traffic congestion along the Route 128 / Interstate 95 starting from Route 24 in Braintree, through the Towns of Canton, Westwood, Dedham, and Needham and ending at Route 9 in Wellesley.

Louis Berger was selected by MassDOT to provide the design and construction phase services of three miles of roadway widening and seven bridges reconstruction along Route 128/Interstate 95 in the towns of Westwood, Dedham and Needham. This \$80 million project involved the evaluation of various construction alternatives to facilitate maintenance of four lanes of traffic during peak hours along the Route 128 corridor. The proposed construction will include: (a) incorporation of a

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Close-up aerial view

## President's Report

by Ellen P. White, PE, Senior Program Manager, Patrick Engineering Inc.



The overall theme of this month's newsletter is *Structures*. The Structural Engineering Institute (SEI) Boston Chapter is the featured technical institute, the biennial structural lecture series recently concluded, and this issue offers several structural-themed articles. There are, however, several other important items that I would like to highlight including the first Charles C. Ladd Memorial Lecture and developments at the national level on transportation funding.

The US House of Representatives has officially approved the Surface Transportation Reauthorization & Reform (STRR) Act of 2015, a six-year bipartisan bill that will provide flat-level funding. The \$325 billion bill was approved by a vote of 363-64. A last-minute amendment was added to STRR that secured an additional \$40 billion in revenue from an unused Federal Reserve account. This means that even though this bill is funded for six years, it does not increase highway and transit funding over current amounts. This bill must now be reconciled with the Senate's DRIVE Act in a

## UPCOMING EVENTS

**T&DI Boston Chapter Webinar**  
November 18, 2015

**Southeastern Massachusetts Committee Event**  
November 19, 2015

**ASCE and BSCES Sponsored Seminar**  
November 19 & 20, 2015

**COPRI and EWRI Boston Chapters Event**  
December 1, 2015

**T&DI Boston Chapter and Younger Member Group Event** December 3, 2015

**EWRI Boston Chapter Workshops**  
December 8 & 15, 2015

**ASCE and BSCES Sponsored Seminar**  
December 10 & 11, 2015

**Younger Member Group Holiday Party**  
December 10, 2015

**Further Details Inside**



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conference committee. It is hoped that a compromise bill will emerge and be passed by November 20, which is the date that the short-term extension expires. A concern is that the bill will only continue the status quo and not increase funding levels needed to address infrastructure needs.

The funding gap is growing and our aging infrastructure needs greater investment. To find out more about the condition of our infrastructure and the cost to consumers, read

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## MassDOT Add-A-Lane

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fourth travel lane within median; (b) addition of 10-foot shoulder in each direction; (c) replacement of seven bridges and three interchanges; (d) improve quality of storm water runoff; (e) noise wall installation; (f) overhead sign replacements; and (g) will be required to maintain four travel lanes traffic during peak hour throughout the construction.

Three interchanges within the project limits are namely Great Plain Avenue (GPA) over Route 128/Interstate 95, a trumpet interchange at the north limit; Route 135 under Route 128/Interstate 95, a trumpet interchange in the middle; and Route 109 over Route 128/Interstate 95, a divided full clover leaf interchange at the south limit. In addition, there is a salt shed and a correction facility located in the median area south of Route 135 interchange separating the roadway of northbound and southbound.

The replacement of seven bridges at four locations from north to south includes: Great Plain Avenue. Charles River, Route 135, and Route 109. Great Plain Avenue Bridge is an overpass which will be demolished and reconstructed at the early stage of the project. Both Charles River and Route 135 Bridges for Route 128 NB & SB will require stage demolition and construction for bridge superstructure and substructure to maintain 4 lanes traffic on Route 128/Interstate 95. Route 109 Bridges, two separate span over Route 128 NB and SB, is also an overpass which will be constructed in two stages as it is a major connector roadway between Westwood and Dedham.

The major design challenge is to maintain four lanes of traffic during peak hours to accommodate the traffic of the on/off ramps at the interchange as well as the configuration of the existing bridges. An extensive study and evaluation were performed by our experienced staff to conclude that the project will need to be constructed in four stages to meet the design requirements. In addition, a temporary bridge and a temporary crossover roadway need to be constructed to allow for the northbound traffic to travel on the southbound lanes or vice versa during different construction stages.

### Construction Stage 1

- Shift Route 128 SB traffic west and Route 128 NB traffic east to allow the construction of median widening from Charles River Bridge to northern limit of work
- Demolish and reconstruct Great Plain Avenue Bridge



Rock inspection



Rock stabilization

- Demolish and reconstruct eastern portion of Route 128 SB Bridges over Route 135 and the Charles River
- Demolish and reconstruct western portion of Route 128 NB Bridges over Route 135 and the Charles River
- Construct temporary Route 128 SB over Route 135 and Route 128 NB, SB cross over roadways

### Construction Stage 2

- Shift Route 128 SB traffic onto east and temporary SB roadways maintaining two 12-foot travel lanes and two 1-foot shoulders on each roadway
- Demolish and construct western portion of Route 128 SB bridges over Route 135 and the Charles River
- Construct final Route 128 SB roadways westerly portion and SB ramps connection at Great Plain Avenue and Route 135

### Construction Stage 3

- Relocate temporary bridge over Route 135 to temporary NB roadway over Route 135
- Construct portion of temporary NB roadway at crossing and at temporary bridge approaches

*continued on page 3*



## MassDOT Add-A-Lane

*continued from page 2*

- Shift Route 128 NB traffic onto west lanes and temporary NB roadways maintaining two 12-foot travel lanes and two 1-foot shoulders on each roadway
- Demolish and reconstruct eastern portion of Route 128 NB Bridges over Route 135 and the Charles River
- Construct final Route 128 NB roadway and NB ramp connections at Route 135

### Construction Stage 4

- Remove temporary bridge over Route 135, temporary roadways, and temporary ramp connections
- Construct Route 135 and Route 109 bridges.
- Construct final paving and landscaping

A rock outcrop is located along the median east of Route 128 southbound, starting south of Route 135 interchange, extending through the correction facility and ending at Route 109. In order to accommodate the construction of the additional lane, the outcrop south of Route 135 interchange, with an approximate length of 900 feet, will need to be evaluated for its stability before commencing any rock removal. The design team has conducted site visits, observed surficial conditions, and reviewed mapped surficial and bedrock geology. Geotechnical engineering analysis was then performed to interpret bedrock geology conditions, compile rock discontinuity data and evaluate rock fall mitigation measures. The field report was prepared to provide the results of field investigations, geotechnical and geological interpretations, analysis, and recommendations on rock stabilization and rockfall catchment. Rock slope stability can be achieved by scaling

to remove the unstable portion; installing rock anchors doweled into the rock mass underneath; or applying shotcrete along the rock seams.

Due to geometric constraints, the temporary northbound roadway, with an approximate length of 500 feet, needs to be constructed with a steep slope at 1H:1V versus typical 2H:1V for the roadway embankment. A reinforced slope treatment was developed and designed to mitigate the global instability due to steep slope. Reinforced slope stability analysis was performed to account for a 45-degree slope and a maximum embankment of 32 feet. The input required for the analysis includes profile boundary, soil parameters, piezometric surface; boundary loads and seismic loads. The reinforced slope treatment consists of 6-inch diameter perforated lateral drain installed at the bottom of the fill spaced at 30-foot. Primary and secondary geogrid with varying lengths are to be placed at 2.5-foot spacing alternately as the backfill being compacted at a 6-inch lift. A 1-foot layer of crushed stone is to be placed on the embankment slope as a base. A 2-foot layer of modified rock fill will be place to stabilize the steep sloped embankment. An 8-inch subdrain will also be installed at the top of the embankment.

Construction Cost: **\$80M**

Contractor: **McCourt Construction Company**

Construction Award Date: **May 2010**

Target Completion Date: **December 2015**

Percent Complete: **100%**

*The above article is part one of a two-part article on Louis Berger's contribution to the MassDOT Route 128/Interstate 95 Add-A-Lane Westwood-Dedham-Needham project. Part two of this article will appear in the December 2015 issue of BSCESNews.*



Steep embankment slope



Traffic management looking north



Traffic management looking south



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## Analysis and Design for Replacement of the Burns Bridge

by Brian Brenner, PE, Vice President, Fay, Spofford & Thorndike; Peter Moser, PE, Civil Engineer, Fay, Spofford & Thorndike; and Nick Scenna, PE, Senior Engineer, Fay, Spofford & Thorndike

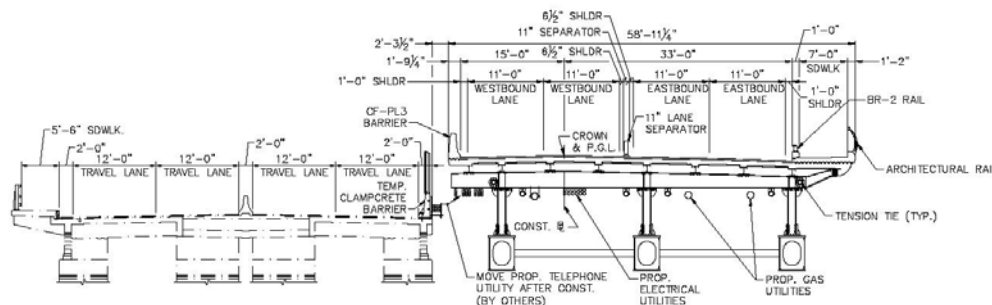
Last September, substantial project completion was awarded to The Middlesex Companies (TMC) for construction of a replacement of the Burns Bridge, Route 9 over Lake Quinsigamond in Worcester. Fay, Spofford & Thorndike (now Stantec) served as lead designer for TMC as a part of the design-build project. The previous concrete deck arch bridge has been replaced by two, five-span, post-tensioned, steel deck arches with a total length of 870 feet and a main span of 240 feet. The roadway is supported by stringers, floor beams, and columns above the main arch ribs. Each structure uses three arch ribs in order to provide redundancy of the arches.

The arches are relatively shallow, with a rise-to-span ratio of about 1 in 13. These arches tend to generate more lateral thrust than would be produced by deeper arches. In fact, the arches are flat enough that, in some respects, the behavior is that of a composite arch-beam bridge. For this reason, the design takes advantage of moment continuity of the arches at all four piers. Thrust from the arches are resolved, in part by tension ties at the deck level.

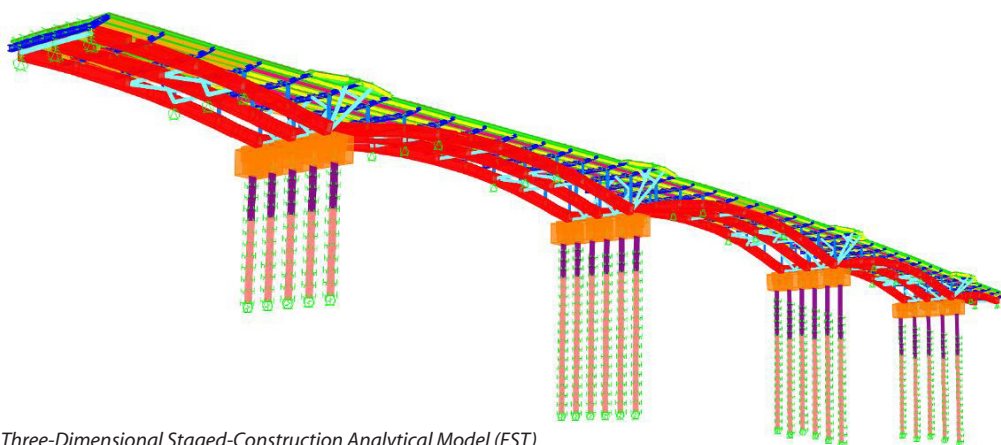
Tension ties were sequentially post-tensioned. The dead-load bending moments in the arch ribs were reversed by post-tensioning the arches before the deck was poured. The pre-compressed arches have significant compression and minimal bending under dead load at the end of construction. The tension forces in the stringers were offset by applying some of the post-tensioning force to the stringers. Precompressing the stringers in this way decreased both the final stringer tension and the associated connection forces.

### Construction Sequence

The previous concrete arch structure carried four lanes of traffic (two eastbound and two westbound). Replacement bridges carry three vehicle lanes and one bicycle lane in the final condition. The overall sequence of construction was to: 1) construct the new eastbound structure



Lane Configuration During Construction (FST)



Three-Dimensional Staged-Construction Analytical Model (FST)

adjacent to the existing bridge; 2) temporarily shift both eastbound and westbound traffic onto the new eastbound structure (See below); 3) demolish the existing structure; 4) construct the new westbound structure in the place of the existing structure; and 5) divert westbound traffic onto the new westbound structure.

The new bridge structures are similar, although the new westbound bridge is slightly wider than its eastbound counterpart to allow for a left turn lane at the west approach. Construction staging was modeled using CSI Bridge design software.

For a typical girder-slab bridge, the effects of locked-in stresses can be computed by simpler

methods, such as by hand. But for the Burns Bridge, the large number of construction steps coupled with the hybrid arch-beam behavior of the arch ribs required a more sophisticated analysis approach.

The staged-construction modeling approach was instrumental in selecting the construction sequence as well as finalizing member and connection design. Member and connection forces could be selected from a single stage (such as the final stage in the presence of live load) or enveloped over the entire construction sequence. In this way, member and connection design

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## Burns Bridge

*continued from page 4*

calculations could explicitly include design checks for temporary construction conditions.

The staged-construction analysis was particularly important to the design of the post-tensioning sequence. The objective of the post-tensioning was to minimize both the arch rib bending moments and the stringer axial tension at the end of construction. The objective of the post-tensioning was therefore evaluated at several significant stages (such as deck pours) after the post-tensioning was complete.

### Perched-Pier Foundation Design

The four pier foundations were designed using a perched approach in which the bottoms of the piers sit below the water level but above the lake bottom. This was accomplished by building a watertight form, pouring the bottom portion of the pier as a “soffit” with blockouts to accept the piles, setting the pier soffit and formwork on the piles, sealing and dewatering the formwork, and pouring the remaining pier concrete. All reinforcing steel was placed on dry ground in the contractor’s staging area. The whole pier construction assembly, including formwork and reinforcing steel, was then floated out on barges to its final location. This approach resulted in a substantial schedule advantage because it eliminated the need to work with cofferdams in the lake.

### Aesthetic Design and Detailing

The previous Burns Bridge was not just a crossing, but an iconic structure appreciated as a part of the landscape for almost a century. It crosses a waterway with heavy recreational use in all four seasons. For much of the year, the lake is a center of rowing and sculling, and it is used to host national competitions. Therefore, it was important from the start of the project that the new bridges be not just functional, but also beautiful.

The new bridges are detailed with steel deck arches that respect the arch form of the old bridge but in an updated version that is more open and

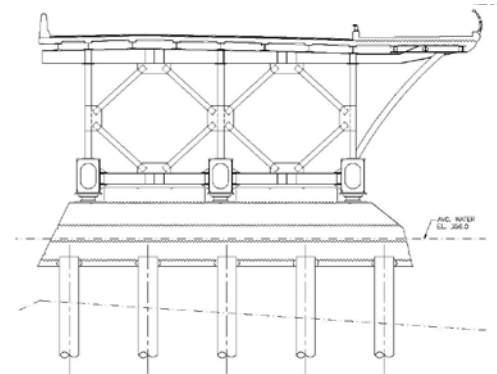
graceful. The new bridges have larger vertical and horizontal clearances under the arches, which provide opportunities for bigger boats and improved staging of race events. Some aesthetic features incorporated in the design include:

- A customized pedestrian handrail.
- Pedestrian lookouts throughout the span for viewing sculling competitions and other water events located at each abutment and pier on both structures.
- Architectural roadway lighting coordinated with revised lighting in Worcester and Shrewsbury.
- Smooth, uncluttered fascia designs on the box beams, with special details for the post-tensioning conduits to limit their visibility. The designers took advantage of visualization and daylight / lighting studies to optimize this appearance.
- Design for continuity across piers to emphasize the horizontal sweep of the bridge structure.
- Development of portal architectural “sail” sculptures at each bridge approach to help frame the bridge and lake views.
- Design of variable color up-lighting for the below deck arches and the sail sculptures.

### Conclusion

MassDOT scheduled a lighting and dedication ceremony for the new Burns Bridge on Sunday, November 1. At the ceremony, new color architectural and sail lights were turned on for the first time in sequence. The local community and project participants had the chance to celebrate the completion of the beautiful new arch bridges which now grace the shores of Lake Quinsigamond.

**Acknowledgements:** The authors express appreciation to the Massachusetts Department of Transportation, Owner of the Burns Bridge. Transystems Corporation assisted MassDOT as the Owner’s Engineer for preliminary design and review of final design. The Design-Build team was led by General Contractor, the Middlesex Corporation of Littleton, Massachusetts. Fay, Spofford & Thorndike served as lead designer. Other design team members included TY Lin, Jacobs Engineering, Green International, C&C Engineering, and Illumination Arts.



Perched Pier Design (FST)



Pier Soffit and Formwork (FST)



Burns Bridge Elevation

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## Demolition or Deconstruction of Structures: An Overview

by Charles Sacre, PE, Senior Principal Professional, Chris Sweet, PE, Senior Professional, and Ryan Caisse, CHMM, Project Professional, Kleinfelder, Inc.

Existing building structures approaching or exceeding their serviceable life may need to be upgraded and modified by their owners for a new function and use, or totally replaced with a new structure. Available space, particularly within the older cities of the Northeast, is at a high premium and often leads building owners to consider restoring, modifying or completely replacing their buildings with modern, functional spaces that meet the needs of the end user. Often times, the deconstruction of a building needs to follow a systematic approach to maintain operation of the existing building and remain open to the public. This phase of the construction process becomes a critical component. For the last 25 years, Kleinfelder (KLF) has provided such services that included multiple types of demolition and deconstruction of buildings, industrial and environmental facilities, and infrastructures for different purposes. Leaving the demolition part of a project to the general contractor as “Means and Methods” of demolition appears to be more and more risky to the owners, causing delays and cost overruns due to poor documentation of unforeseen conditions. The goal of this brief article is to address through project examples the structural engineering aspects of deconstruction towards demolition, and emphasize that a comprehensive investigation of existing structures mitigates such risks.

### 2013–2015, Hangar Building 16 at Logan, complete demolition, MA

KLF assisted Massport (MPA), and designed the demolition and deconstruction—recently completed—of the 71,000 SF Hangar. KLF studied the as-built structural drawings, and performed multiple site visits to verify the building conditions. Multiple options of safe demolition were considered, including partial shoring of the main arches of the structure. The demolition contractor proposed a design utilizing modern high reach cranes equipped with shears. Sequencing the deconstruction in detailed steps, addressing each step with the owner, and closely monitoring each step of the work lead to the safe and successful demolition of the building without incident.

### 2006–2010, Deconstruction for Hangar Building 423 Upgrading to Accommodate a C-17 Aircraft for the Air Force Reserve, March AFB, CA

Hangar Building 423 served for the maintenance of the KC-135 and the sophisticated C-17 aircrafts. Federal regulations required a clearance increase by 9 feet around the C-17, to avoid

#### The Challenge

- Complete demolition. Or partial demolition to add new structures, while keeping buildings operational, utilities functional.
- Demolition falls under the “Construction Means and Methods”: Contractor’s responsibility. Is this enough?
- Dealing with issues that cause delays and change orders.
  - a. Unforeseen conditions
  - b. Pernicious hazardous materials
  - c. Utilities under/above ground.

#### The Options

1. Investigation limited to visible structural/architectural/utilities: acceptable for total demolition.
2. Due to the space use by tenants, inaccessible utilities, Investigation limited to visible building elements: risks of the unforeseen conditions.
3. Thorough investigation: review record drawings, field verify conditions, identify structural systems and deterioration, identify pernicious hazardous materials, identify mechanical/electrical/plumbing and fire protection systems, other utilities and building components. Mitigating risks and schedule extension.

#### The Payoff

Deconstructing an existing building implies a level of investigation and review of record drawings that allow a planned and safe demolition with minimal surprises. Option 3 fulfills this criteria and is the most appropriate for building retrofit and additions, resulting in comprehensive contract documents, and cost efficient construction.

Options 1 and 2 lack in facts finding and can result in overruns of construction cost and delays detrimental to the project, particularly in Option 2.



Hangar stripped of the structural shell and the sliding gates, in stable condition. Planned removal of roof joists supported by the main arches, towards completion.



Deconstruction of each 250-ft arch was designed. Shearing at 50-ft from one end allowed a safe vertical fall of each arch. Above is the last arch demolished.



Tapered Column with the new nine foot high steel section addition below.



Raising the main girders completed. Notice the shoring and vertical jacks’ extensions

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## Demolition or Deconstruction of Structures: An Overview

*continued from page 6*

damaging it during maintenance. KLF as the structural consultant engineer, reviewed the record drawings in detail, observed on site the favorable building conditions, and subsequently performed its structural analysis. The foundations, and the structure had ample capacity for higher loads. Total demolition was one option. However, KLF proposed an alternative consisting of lifting the roof and simply adding a welded steel column extension of 9 feet at each of the columns. In a new analysis, we found that the roof girders remained serviceable. Detailed phasing of deconstruction, to raise the roof and insert the column extension were shown on the drawings. The contractor used the concept suggested on our contract documents, but proposed shoring and jacking the roof girders at their ends. The project was completed on time and on schedule, and resulted in a net project savings of \$15M.

### 2008–2012, Riverside Pump Station Modifications, and 72-inch Force Main Replacement, Greater Lawrence Sanitary District, MA

The modification of the pump station (PS) required redesign of the new supports of the force main within the dry well, and new concrete coring in the 5-foot diameter concrete wall to accommodate a 72-inch diameter pipe penetration. The record drawings of the PS

provided sufficient details to assess the large opening impact on the wall, and the redistribution of bending moments and shears in its immediate vicinity. A solution consisting of additional concrete thickness and reinforcement around the exterior of the opening, was designed to accommodate the stress redistribution in this critical area.

### 1995–2001, Worcester Union Station Renovation and Rehabilitation, MA

Worcester Union Station is a historic building originally constructed around 1910. During the structural investigation, no record drawings were available despite our research with the historic agencies in New England. The degree of deterioration and the architectural changes to accommodate the upgrades to the Station could not be accomplished without the record drawings. The KLF team of structural engineers developed a structural investigation and testing program consisting of the following: measure the dimensions of all structural elements, determine the concrete's mechanical properties and the size and spacing of the internal reinforcing steel, sample the structural steel of the roof trusses and measure sizes and thicknesses, and perform geotechnical borings to assess the existing soil conditions present on site. This allowed the development of the structural design based on solid data and as-built conditions. This

comprehensive investigation allowed the engineers to design, upgrade, and add to this 66,000 SF building several elements including the architecturally significant main towers that are unique to Union Station.

In conclusion, the structural engineer's efforts to design and implement deconstruction sequencing plans, structural modifications or renovations to existing buildings adds a component that is not encountered when designing a new structure. Partial or full deconstruction of building construction focuses on the following critical elements:

1. **Documentation**—Record drawings are the identity of an old building. If not available, a thorough structural investigation will save time, reduce design costs and minimize construction budget and schedule overruns.
2. **Due Diligence**—Making assumptions without facts could be detrimental to the project progress, resulting in project delays or cuts due to excessive costs.
3. **Communication**—Addressing the demolition phase of the project early-on in the design phase helps the client understand the importance of the structural investigation. It may be an additional cost above the normal design, but could be a cost efficient approach the end of construction.

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## Featured Group

### ASCE Structural Engineering Institute, Boston Chapter

by Peter M. Keeping, PE, Senior Structural Engineer, HNTB Corporation, and SEI Boston Chapter Chair

What is the Structural Engineering Institute, Boston Chapter (SEI Boston)? For those that have not heard yet, the Structural Group within BSCES has officially affiliated with ASCE's Structural Engineering Institute. This is an exciting change for the group as it maintains our work within BSCES, but also allows us to tap the broader network of ASCE's SEI.

What does this change mean for you? While still maintaining its role as the structural group for BSCES, affiliating with SEI provides SEI Boston with the ability to offer more in-depth and varied technical content to our members, giving you the opportunity to learn about new practices, cutting edge research, and other developments that you can use in your practice.

The SEI Boston executive committee is comprised of structural engineers with building (vertical), bridge (horizontal), and academic backgrounds and interests. Our committee meets monthly to plan several lunch and dinner meetings throughout the year along with our

biennial lecture series. This year, we anticipate adding field trips to local construction sites in addition with our other planned gatherings.

A few years ago the group implemented a subcommittee system. Each member selects which subcommittee they would like to serve on. The subcommittees are Lecture Series, Program and Membership. This gives each member more of a chance to get fully engaged, make more of a contribution and generally feel like a more productive member of SEI Boston. Members are welcome and encouraged to change subcommittees as they feel.

If you have a question regarding SEI Boston, want to attend an event, or get involved in planning future events, please feel free to contact any member of the current executive committee leadership:

Peter M. Keeping, Chair, [pkeeping@hntb.com](mailto:pkeeping@hntb.com)

Dennis Baker, Vice-Chair, [djbaker@hntb.com](mailto:djbaker@hntb.com)

Shahvir Vimadala, Secretary, [shahvir@yahoo.com](mailto:shahvir@yahoo.com)

SEI Boston just completed our 22nd biennial lecture series. This year's series, titled "Wicked Fast Bridge Construction," featured the following lectures:

- *The State of Wicked Fast Bridge Construction in New England* by Michael P. Culmo, PE
- *Detailing of WFBC — Lessons Learned* by Joseph P. Gill, PE
- *WFBC Local Case Study I — MassDOT Bridges* by Brian Brenner, PE, and Nicholas Scennna, PE
- *WFBC Local Case Study II — MBTA Bridges* by Erik J. Stoothoff, PE and John C. Schwarz, PE
- *Durability of WFBC (ABC) Bridges* by Bryan Busch, PE, and *The Future of WFBC — Panel Discussion*, moderated by Alexander K. Bardow, PE

We will notify you about other SEI Boston Chapter events as details are finalized. I look forward to seeing you at these future events.

## Recent News and Updates

### BSCES Thanks 2015–2016 Outreach and Education Sponsors

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### 2016 Ernest A. Herzog Call for Papers

It is that time of year again... time to prepare for the 2016 Ernest A. Herzog Award. BSCES has recently released the [Call for Papers](#). Submitted papers shall present an infrastructure project, innovation or idea in which the author was actively involved in as an owner, advocate, engineer, or end-user. Areas of application may include design, construction, operation, maintenance, management or financing of infrastructure components or systems. The paper should be original and between 2,000 to 6,000 words. It must clearly describe the project, innovation, or idea and highlight benefits to the current engineering and construction practices. This year the winning paper will be presented at the newly developed Spring Awards Dinner. The event is scheduled for May 10, 2016 at Framingham State University. As with past events, ASCE's president-elect will also be in attendance and provide the keynote address.

### Pumpkin Spice Everything, Including Bridges

In celebration of the holiday season, BSCES member and part-time author offers his take on the pumpkin-spice phenomenon. All those familiar with Brian's "quirky views on engineering" (ENR's characterization, not ours) will appreciate his engineering view on this very non-engineering matter.

#### ASCE WEBINARS

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### BSCES/ASCE Webinars, Help Us Help You

BSCES recently entered into an agreement with ASCE National that will help our section. ASCE currently holds more than 300 live webinars annually and also has available more than 300 on-demand webinars covering a wide variety of technical and management topics. By assisting ASCE national in promoting webinars, BSCES will earn a royalty on webinar sales for your Section/Branch. When a BSCES member registers for a webinar using the code WEBBOSSEC, 20% of the

gross revenues will go directly to BSCES. Webinars can be easily ordered and accessed by customers through [ASCE's website](#). Please make sure to take advantage of this benefit for BSCES.

### ASCE Innovation Contest Unveiled

Are you Innovative? Want to prove it? ASCE has recently unveiled their Innovation Contest. This is an opportunity to join with others to help transform the state of our nation's infrastructure. Become part of the solution by sharing your best ideas, projects, and theories for how to build a better future. Contestants may submit a description of their innovations in any or all of four different topics: Innovative Business Models and Technologies, The Internet of Things, Green Things, or Resilience. Winners will have the opportunity to present their ideas to and network with industry leaders, be considered for research grants, be recognized in trade publications, and receive awards. Student entries that are selected as winners will also be offered first and/or second round interviews for job and internship opportunities.

### Social Media

Did you know that BSCES is "connected?" Our twitter account has over 300 followers from state agencies to engineering firms. The BSCES Facebook page has almost 800 "likes". Almost 1,800 individuals have connected with BSCES on LinkedIn. These sites, in addition to the [BSCES homepage](#), will provide information on upcoming events and highlight BSCES accomplishments.



## President's Report

*continued from page 1*

*ASCE's Report Card for America's Infrastructure* and *ASCE's Failure to Act Report*. Also consider becoming involved with the BSCES Government Affairs & Professional Practice Committee (contact [AnaCristina Frago](#) or [Bill Lyons](#)) and sign up for ASCE's *Key Contacts Program*. Also mark your calendars for ASCE's Legislative Fly-In on March 15–16, 2016 in Washington, DC and Engineers and Land Surveyors Day at the Massachusetts State House on Tuesday, May 10, 2016. These programs offer a unique opportunity to meet with elected officials to discuss matters important to the engineering profession including transportation funding.

BSCES is excited to sponsor the first Charles C. Ladd Memorial Lecture on Monday, November 16. John T. Germaine, ScD, of Tufts University will discuss the SHANSEP concept, which was developed by Charles Ladd and Roger Foott. Professor Germaine will discuss the results of an experimental program that has resulted in modifications to the SHANSEP equation. For more information, [click here](#).

Another geotechnical event is being sponsored by the Southeastern Massachusetts Committee. Representatives from Geopier Foundation Company, Inc. and Design/Build Geotechnical, LLC will discuss aggregate pier ground support systems. This event is geared to geotechnical, structural, and civil engineers, as well as others who wish to learn more about design considerations and construction techniques for these systems. For more information, [click here](#).

The Transportation & Development Institute Boston Chapter of BSCES is also pleased to sponsor a roundabout webinar on Wednesday, November 18th. This is a great opportunity for you and your colleagues to learn more about design, outreach, and maintenance considerations. Unlimited viewers are allowed for each registered seat. For more information, [click here](#).

There are two Massport related events in December. On December 1st, the Coasts, Oceans, Ports & Rivers Institute and the Environmental & Water Resources Institute Boston Chapters will co-sponsor a lecture by Robbin Peach, MPA, MA, program manager of resiliency at Massport. She will discuss how Massport makes its assets more resilient to

flooding. The second event is co-sponsored by the Transportation & Development Institute Boston Chapter and the Younger Member Group. This event will allow participants to experience a flight simulation experience and will take place in a facility that mimics the control tower with full animation. For more information about these events, [click here](#).

The Environmental & Water Resources Institute Boston Chapter will also sponsor a HEC-RAS 2D & GRASS GIS Hydraulic Modeling workshops on December 8th and 15th. Karen Madsen, PE and Derek Etkin, PE will be the speakers. For more information, [click here](#).

I also wish to highlight two other Younger Member Group events. The group will be hosting a holiday party on December 10th and they are currently organizing their Holiday Meal Drive through the Greater Boston Food Bank. Every \$20 donated equates to five nutritious Thanksgiving meals. During this season of giving, please consider making a donation. The deadline is November 26th. You can donate by [clicking here](#).

The BSCES Public Awareness & Outreach Committee is also seeking mentors for the Model Bridge Competition, which is recently underway, and Future City Competition on January 16th. For more information on volunteering opportunities or becoming part of the BSCES Public Awareness & Outreach Committee, please contact [Olivia Richards](#).

The SEI Boston Chapter has continued their long standing tradition of sponsoring the biennial lecture series. As in previous years, this was another successful series. *Wicked Fast Bridge Construction* proved to be a popular topic and

BSCES thanks the superb speakers, who made this event successful, as well as Peter Keeping and the SEI Boston Chapter committee members, who planned every detail of the event. It is no surprise that last year the SEI Boston Chapter was awarded the best Structural Institute nationally by ASCE.

BSCES also just submitted its application for the 2015 ASCE Outstanding Section/Branch Nomination (Very Large Section). This application includes several categories and requires in-depth documentation of all of our activities, events, publications, advocacy, outreach, etc. We have been fortunate to have received this award three of the past four years. This is a testament to our volunteers and to our committees, institute chapters and technical groups. Special thanks to Awards Committee Chair Bruce Jacobs for coordinating and completing this application.

In closing, I would like to thank all of our corporate sponsors, particularly this month's featured sponsor, Louis Berger. We are grateful to Louis Berger's long-time support of BSCES and encourage you to read their feature article about MassDOT Route 128/Interstate 95 Add-A-Lane Westwood-Dedham-Needham, MA written by Larry Cash, PE, from MassDOT and Malek Al-Khatib, PE, and Daniel Deng, PE, from The Louis Berger Group, Inc. This is consistent with the overall theme of this month's newsletter, *Structures*, and I urge you learn more about BSCES' Structural Engineering Institute, which is chaired by Peter Keeping of HNTB. You can read his article about the committee on page 8 or [contact him](#) if you wish to become involved with the committee. I also want to wish all of you a very happy Thanksgiving.

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



Two blocks from the State House and overlooking Boston Common, the newly refurbished Aldrich Center is the perfect venue for your next event. This historic building accommodates private functions, business meetings, and receptions for up to 75.

For information or reservations, contact  
Rich Keenan, Aldrich Center Manager  
at 617/305-4110 or [rkeenan@engineers.org](mailto:rkeenan@engineers.org)

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## BSCES Member Profile: Paul Moyer, PE, SECB

by Bonnie Ashworth, Quincy, MA

BSCES congratulates Paul Moyer on his election to Chair of the Board of Trustees of The Engineering Center Education Trust (TECET). It's yet another contribution he has made to BSCES over his long standing membership, having served previously as President and Chair of the Infrastructure Group. He was recipient of the BSCES President's Award in 2012 for "exemplary service and leadership as co-founder of the BSCES Past Presidents Committee" and in 1999 for exemplary service.

On a national level, Paul has been an active contributor to ASCE. He served on ASCE's Board of Directors from 2005 to 2008, and was the New England District Director in 2005. When ASCE reorganized into regions, he was a member of a committee that developed the founding documents for the Region 1 Board of Government, with oversight of all ASCE sections and branches in New England, New York, and Puerto Rico. He then served as a Region One Director. Paul has served on numerous national ASCE committees, including chairing the Finance, Program, and Policy Committees. Paul is also a member of the American Council of Engineering Companies and the Women in Engineering Seminar.

Established in October of 1989 and located at One Walnut Street, Boston (which it owns), TECET is an educational and charitable nonprofit trust that is overseen by a 12-person board of trustees. Since its inception, TECET has fostered the education of engineers, surveyors, and allied professionals with emphasis on life-long learning. TECET provides a home for professional and technical meetings, public outreach, and society management to several associations including BSCES.

Paul graduated from UMass Amherst with a BSCE in 1979 and earned his MSCE from Northeastern in 1987. He's a structural engineer who lists his specialties as highway and railroad bridges; culverts; tunnels; high speed rail facilities; rapid transit structures; retail, mixed use, commercial, and industrial buildings; parking garages; communication towers; environmental treatment facilities; marine structures; and dams. He holds PE licenses in Massachusetts, Maine, New Hampshire, Rhode Island, and Vermont, and he is certified by the Structural Engineering Certification Board.

Paul is a Principal and Vice President at Gill Engineering Associates now, and he worked earlier in several other notable firms in Greater Boston. He started his career at Stone & Webster as a Structural Designer and Engineer, and went from there to Pare Corporation, serving as Vice President and Structural Division Manager. He worked for Parsons Brinkerhoff as Structural Department Head and Deputy Engineering Manager for nine years before moving to Dewberry-Goodkind as Vice President and Office Manager. Then he was Vice President and Office Manager at Jacobs-Carter Burgess before landing at Gill in 2009.

With 14 years in office management and a principal-in-charge leadership role, 13 years in a structural engineering department leadership role, and 25 years in various roles on engineering projects, from structural engineer to project manager to principal-in-charge, Paul has played a part in many projects over his career.

Who hasn't heard of the award-winning I-93 Fast Bridge Replacement accelerated bridge project or the ongoing and complex Longfellow Bridge Rehabilitation Project? Paul was the Quality Control Administrator on the I-93 Fast 14 Project, which required design completion in four months and demolition and replacement of the superstructure be done over 13 summer weekends. The project garnered a long list of awards in 2011. Paul is the design-build team Design Quality Control Manager for the Longfellow Bridge Rehabilitation Project, which is in the midst of a \$250M restoration of the landmark bridge between Boston and Cambridge.

These are just two key projects Paul notes from an extensive list of professional highlights that also includes the MassDOT Cedar Street Bridge over Route 9 in Wellesley, another award-winning accelerated bridge design-build project; the MassDOT CSX Bridge Bundle, design of four bridges to increase clearance over CSX rail tracks; and the MassDOT Route 146 interchange in Worcester and Millbury, a four-plus mile upgrade of the road with over 30 bridges, 30 major retaining walls, two new interchanges, and construction of a bikeway.

While at Dewberry-Goodkind, Paul served as Project Manager and Principal-in-Charge for a General Engineering Consultant Contract for the Massachusetts Turnpike Authority. This project included a wide variety of assignments, such as: the periodic inspection of bridge and highway facilities; research and study of new ITS and telecommunications technologies; preliminary and final design of capital projects; and the oversight of construction projects. He was Principal-in-Charge of design, engineering, and planning services for the Arborway Bus Storage and Repair Facility in Boston, which includes 10 service bays, two washing bays, and below-grade parking for 275 vehicles. He was Deputy Project Manager for the West Parking Garage at Logan Airport, a fast-track design of a new 3,600 space building plus modification of an existing parking garage and bridges connecting the two.

Three projects Paul was involved in for the MWRA were the Nut Island Headworks in Quincy, Secondary Treatment Facilities at Deer Island, Boston, and the Deer Island Outfall Tunnel in Boston Harbor. He was Project Manager of structural and geotechnical design for the Nut Island dewatering facility and headworks for a new wastewater treatment plant. Construction was planned so there was continuous plant operation during demolition of the old plant and construction of the new facility on the same site. The project won the



*Paul Moyer is the newly elected Chairman of the Board of Trustees of TECET.*

Massachusetts Chapter of the American Consulting Engineers Congress 1999 Grand Conceptor Award. He was Structural Project Engineer for design of the Secondary Treatment Facilities at Deer Island, Boston, and for major modifications to the diffuser tunnel section of the Deer Island effluent outfall tunnel.

Paul is not just a busy professional engineer, he's also a musician. He is lead guitarist for The Fey Band, a classic rock band playing gigs in the Plymouth area. He credits his outside interest in music with keeping him fresh. He notes the importance of having an outlet completely removed from engineering.

Paul advises young engineers on the importance of membership in professional organizations, such as BSCES. This provides many opportunities for professional development. Serving in leadership roles for technical groups and committees allows engineers to learn management and leadership skills in a low-risk situation. Also, membership facilitates development of the all-important professional network. Relationships formed early in an engineer's career can be invaluable in later years, as you and your peers climb their respective career ladders.

BSCES will benefit from the continuing involvement of Paul Moyer and his new role as Chair of the TECET Board of Trustees. As such, he will oversee the 12-person board and the staff of The Engineering Center Education Trust. Paul hopes to foster cooperation and coordination between the sponsoring organizations of TECET, which include BSCES, American Council of Engineering Companies of Massachusetts (ACEC/MA), and the Massachusetts Association of and Land Surveyors and Civil Engineers (MALSCE). He also wants to increase TECET's awarding of grants to deserving educational organizations and individuals.



## BSCES Section and Employer Recognition 2015 Award Winners

by William Ognibene, Membership Coordinator, BSCES

At the 167th BSCES Annual Awards Dinner, which was held at the Boston Marriott Long Wharf, on September 30, 2015, the BSCES Board of Government honored the following fiscal year 2015 award winners. Presiding over the dinner was BSCES Past-President Ali Touran, PhD, PE.



### Journalism Award

Gordon Harris for raising awareness and appreciation of infrastructure through his writings about the Choate Bridge



### Large Employer Recognition Award

TranSystems Corporation for its longstanding support of ASCE and BSCES. Accepting the award on behalf of TranSystems were Nathaniel S. Blake, PE, (L) and Tomas G. Stuopis, PE, (R)



### Citizen Engineer Award

Edward L. Hajduk, D.Eng, PE, Lecturer, University of Massachusetts Lowell, for leading UMass Lowell ASCE Student Chapter Members in Community Outreach



### Pre-College Educator Award

Edmund S. Dawes, Jr., PE, Engineering Teacher, Marblehead Veterans Middle School, for his passionate commitment to preparing students to pursue careers in STEM industries



### Small Employer Recognition Award

Childs Engineering Corporation for encouraging its engineers to actively participate in ASCE and BSCES. Accepting the award on behalf of Childs Engineering were Rebecca P. Skalaski, PE, (L) and Charles W. Roberts, PE, (R)



### Government Civil Engineer Award

David Denny, PE, PLS, Design Engineer, Boston Water and Sewer Commission, for his distinguished service to the Commission and the City of Boston



### Younger Member Award

Cara Pirkey, EIT, Transportation Engineer, HNTB, for contributions to the Younger Member Group and the Transportation & Development Institute Boston Chapter



### President's Award

Tomas G. Stuopis, PE, Associate/Assistant Vice President and Senior Project Manager, TranSystems Corporation, his dedicated service as BSCES Assistant Treasurer



### Clemens Herschel Award

Jerome Hajjar, PhD, PE, CDM Smith Professor & Chair of the Department of Civil Engineering, Northeastern University, for the paper entitled "Design Concepts for Controlled Rocking of Self-Centering Steel Braced Frames"



### Sustainability in Civil Engineering Award

City of Cambridge for the Alewife Stormwater Wetland project. Accepting the award on behalf of the City of Cambridge was Catherine Woodbury



### President's Award

Stephen F. Rusteika, Jr., CS, Managing Director, PMA Consultants, LLC, his outstanding leadership in developing the BSCES Five-Year Strategic Plan

## BSCES Legislative Fellow Update from Beacon Hill Regional Transportation Ballot Initiative

by Michael Sullivan, PE, Structural Project Engineer, Kleinfelder, 2015-2016 BSCES Legislative Fellow



Yet another bill related to infrastructure funding has been filed in the Legislature—[SB1474/HB2698](#)—An Act relative to regional transportation ballot initiatives—which was heard by the Revenue Committee in late September and remains under consideration. The bill would enable municipalities to raise revenues for local and regional transportation projects by means of “single subject” tax surcharges. Communities would have the power to choose which tax would be subject to surcharge, including sales, property, payroll or vehicular excise taxes. The additional revenue would then be used for transportation-related

purposes such as maintenance, planning, designing, constructing and operating public transit systems, roads, bridges, bikeways, pedestrian pathways, or other transportation-related enhancement projects. The bill would also provide for “district agreements” which would allow two or more municipalities to coordinate the use of additional tax revenues on regional transportation projects.

Prior to instituting any surcharge, the proposed legislation would require preliminary approval by the city council, mayor, or town board of selectmen before being put to the voters by means of a local ballot initiative. Any surcharge would be limited to a term of 30 years, though could sunset sooner. Municipalities would also

be permitted to include a list of specific projects or activities with the ballot question.

All participating municipalities will be required to create a regional or local transportation committee which will consist of representatives from the municipality, MassDOT, regional planning agency, regional transit agency, and the MBTA if the municipality is located within the MBTA's service area. The local and regional transportation committees will study transportation-related needs, possibilities, and resources of the city, town, or district.

The League of Women Voters, Transportation for Massachusetts, and the Metropolitan Area Planning Council have all issued statements in support of the legislation.

## Student Chapter Caucus a Success

by Jessica Yarmarkovich, EIT, Project Designer, Nitsch Engineering, and BSCES Student Chapter Committee Chair

The Younger Member Group (YMG) and BSCES Student Chapter Committee hosted the annual ASCE Student Chapter Officers' Fall Kick-off Meeting at Louis Berger's impeccable office in Needham. Eight Student Chapter leaders attended the event, contributing to over 30 students. The evening began with a social gathering, in which students met members of the BSCES Executive Committee, Younger Member Group and students from other school chapters. Cara Pirkey, the YMG chair, introduced the group, followed by Ellen White, BSCES President, who gave a presidential address focusing on the history and importance of BSCES. Caucus attendees enjoyed a delicious buffet style Italian dinner from Comella's.

The remainder of the night focused on round table discussions hosted by members of YMG and BSCES. Topics that were covered included *Industry Talk*, in which Ellen White discussed



Students pose with BSCES President Ellen White (second from the left) and ASCE Region 1 Governor Linda Hager (far right) at the end of the evening

what it takes to be a successful professional in the industry; *Interview and Resume Skills*; *Becoming a Young Professional*, in which Alyson Stuer focused on transitioning from being a student to an employee; *ASCE Activities, Awards & Scholarships*, in which BSCES Executive Director Tony Puntin represented ASCE National; *Younger Member Group*, in which

Cara Pirkey focused on the YMG mission and events; and 'Outreach Activities'.

Thank you to all of the students and BSCES members who participated in the fantastic evening. Please keep a lookout for future event announcements; we are always welcoming new members! To get involved and receive direct updates, email [bscesymg@gmail.com](mailto:bscesymg@gmail.com).



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## ASCE 2016 Annual Convention

by Anthony Puntin, PE, Executive Director, BSCES

For their annual meeting this year, ASCE decided to go old school... really old school. The annual meeting has taken many forms over the past several years. This year ASCE developed a program to truly enhance the "convention" aspect of the meeting. The ASCE Convention is the Society premiere membership event. It is the single annual opportunity where the entire Society is represented and therefore reflects the diversity that ASCE encompasses. The program for the Convention was just as advertised "integrated, multi-cultural, technical, and educational nature." These topics presented were intended to define a recurring Convention Program and provide benefits to attendees and their employers on an educational and professional level.

Following the theme of "going back to their roots," ASCE selected New York City as the host for this year's event. ASCE originally formed in New York in 1852 and the corporate headquarters were there until the late 1980s. The convention could not be held at just any location in NYC for this homecoming... it was right in the heart of Times Square. The excited atmosphere of the surroundings provided an energetic feeling as close to 1000 engineers gathered from across the world to celebrate our profession.


In addition to the multitude of technical and professional sessions, the Convention also included two "business" requirements: the State of the Society presentation and the induction of new officers. I am happy to report that ASCE is continuing to grow under the direction of new Executive Director Tom Smith. Membership has topped 150,000 for the first time in ASCE's history! Close to 20% of the membership is now overseas with only 6 countries not represented. If you know a civil engineer in Greenland, tell them they could be member #1 from that country. The new class sworn in will be led by president-elect Norma Jean Mattei. I had the privilege of serving with Norma Jean on ASCE's

Board for 3 years. I can't think of a more qualified individual to lead the Society. She is scheduled to visit Boston on May 10, 2016 and will be the keynote speaker at the Spring Awards Dinner. Stay tuned for details.

Boston was well represented with BSCES President Ellen White, myself, and several students from Wentworth in attendance. I also saw several other local engineers on panel discussions and making presentations. For me, one of the highlights of the convention was the opening session featuring best-selling author Luke Williams. I will admit that I was not familiar with him prior to his presentation and didn't know what to expect. His dynamic presentation was centered around the notion of "disruptive change." He challenged us to not accept the

status quo and keep looking forward (remember when Blackberry had the market on smartphone?). Don't spend your time trying to solve a problem; look where there may not be a problem and make it better. He told the story of an entrepreneur that questioned his business friends as to why socks only come in pairs. After being told by them that the three legged market was very small, he decided to cause a little disruptive change. The result was LittleMissMatched. Take a few minutes to Google it. Who would have thought solving a problem that didn't exist would be so lucrative.

Next year's convention will be September 29 to October 1, 2016 in Portland, Oregon. Mark your calendars! I anticipate the program and speakers will be just as great as this year. Hope to see you there.



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617-373-2444, [civilinfo@coe.neu.edu](mailto:civilinfo@coe.neu.edu); [www.civ.neu.edu](http://www.civ.neu.edu)

## Submit an Article to BSCESNews

The BSCES Newsletter Editorial Board invites BSCES members to write and submit an article for publication in *BSCESNews*. Typically 400 to 800 words, *BSCESNews* featured articles are about technical topics or professional matters of interest to civil engineers. The January 2016 issue of the newsletter for example, will highlight the BSCES Engineering Management Group and feature one or more articles about project delivery.

Email your article in Microsoft Word format to BSCES Newsletter Editorial Board Chair Mike Cunningham at [mcunningham@kleinfelder.com](mailto:mcunningham@kleinfelder.com) or BSCES Association Manager Rich Keenan at [rkeen@engineers.org](mailto:rkeen@engineers.org).

## 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.

### T&DI Boston Chapter Webinar

**Wednesday, November 18, 2015**

12:30 PM – 1:30 PM

#### Critical Elements of Roundabout Design

Andy Paul, PE, Senior Engineering Associate,  
Kittelson & Associates, Inc.

This webinar will provide a brief overview of key roundabout design elements, peer review “fatal flaw” details, public outreach techniques and maintenance considerations. It will also feature case studies of the critical design elements that are discussed. This webinar is appropriate for planners, engineers, and public officials responsible for planning, design, construction, and maintenance of traffic control devices.

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

### Southeastern Massachusetts Committee Event

**Thursday, November 19, 2015**

Abington Ale House

1235 Bedford Street, Abington, MA

7:00 AM – 7:45 AM Registration/Continental Breakfast; 8:00 AM – 11:00 AM Presentation

#### Aggregate Pier Ground Support Systems

Kord J. Wissmann, PhD, PE, President and Chief Engineer, Geopier Foundation Company, Inc.

Mike Pockoski, PE, Eastern Region Lead Engineer, Geopier Foundation Company, Inc.

James R. Wheeler, PE, Principal Engineer, Design/Build Geotechnical, LLC

Dr. Wissmann and his associates will discuss the ongoing evolution in the design and construction of aggregate pier ground support systems used in New England and will focus on design assumptions, considerations for organic and soft cohesive soils, construction techniques for cemented piers, geotechnical and structural engineering-related design of ground support for floor slabs, and ground improvement for soil liquefaction and slope stabilization. This discussion will emphasize the importance for design professionals to thoroughly understand the concepts behind ground improvement design, construction, and verification so that they can make informed recommendations to their

clients regarding ground support alternatives and designed in accordance with the building code.

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

### ASCE and BSCES Sponsored Seminar

**Thursday & Friday, November 19 & 20, 2015**

Hyatt Place Boston Braintree

50 Forbes Road, Braintree, MA

8:30 AM – 4:30 PM

#### Deep Foundations: Design, Construction, and Quality Control

Aaron Budge, PhD, PE, Professor of Civil Engineering, Minnesota State University

Joseph A. Caliendo, PhD, PE, Professor of Geotechnical Engineering, Utah State University

Jerry A. DiMaggio, PE, D.GE, Principal,

Jerry A. DiMaggio Consulting, LLC

Mohamad H. Hussein, PE, Vice President, GRL Engineers, Inc.

The purpose of this seminar is to present modern techniques for the design, installation and verification of deep foundations. Over the past twenty-five years major changes have occurred in the deep foundations industry. New improved methods have been developed for installing all types of deep foundations, increased loads are being used, and new quality control procedures have been developed. This seminar will present modern design procedures for deep foundations including discussions on new developments.

[Click here](#) for further details including how to register to attend this course and pay by credit card online.

### Register Today!

**Thursday, December 3, 2015**

#### Massport Flight Simulation

Sponsored jointly by T&DI Boston Chapter and the Younger Member Group

Terminal E, Boston Logan International Airport, Boston, MA

12:00 – 2:30 PM

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

### COPRI and EWRI Boston Chapters Event

**Tuesday, December 1, 2015**

Wyndham Boston Beacon Hill

5 Blossom Street, Boston, MA

5:45 PM Social/Registration

6:30 PM Dinner; 7:00 PM Presentation

#### Preparing for a Flood: Resiliency at Massport

Robbin Peach, MPA, MA, Program Manager of Resiliency, Massport

Robbin Peach, program manager of resiliency at Massport, will give an overview of the Massport process to make its assets more resilient to flooding—therefore protecting our region's economy. She will discuss the planning process for identifying threats and critical assets, architectural and engineering solutions, and operational preparedness. Please join us for this very interesting presentation and dinner.

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

### EWRI Boston Chapter Events

**Tuesday, December 8 & 15, 2015**

VHB, 101 Walnut Street, Watertown, MA

5:30 PM Social/ Dinner; 6:15 PM Presentation

#### Workshops: HEC-RAS 2D & GRASS GIS Hydraulic Models

Karen M. Madsen, PE, Civil Engineer, AECOM

Derek Etkin, PE, Water Resources Engineer, CDM Smith

These two workshops aim to teach attendees about HEC-RAS 2D and GRASS GIS Hydraulic Models. The first workshop will provide an overview of two numerical models embedded GRASS GIS: a sediment transport/ erosion/ deposition model and a numerical model for transient groundwater-flow in two dimensions. The results of the GRASS GIS models will be compared against more conventional approaches at two New England sites. The second workshop discusses the new capabilities of HEC-RAS version 5.0 and is aimed at practitioners with familiarity in open channel flow modeling or experience in flood plain mapping projects.

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

[continued on page 15](#)



## Upcoming Events *(continued from page 14)*

### ASCE and BSCES Sponsored Seminar

**Thursday & Friday, December 10 & 11, 2015**

Hyatt Place Boston Braintree

50 Forbes Road, Braintree, MA

8:30 AM – 4:30 PM

#### Structural-Condition Assessment of Existing Structures

*Brian K. Brashaw, PhD, Director, Wood Materials and Engineering Program, University of Minnesota Duluth*

*Zhiyong Cai, PhD, PE, Research Engineer, USDA Forest Products Laboratory*

*Gregory Febr, PE, Principal Engineer, ATMG*

*Larry D. Olson, PE, President, Olson Engineering*

*Dennis A. Sack, PE, Senior Vice President, Olson Engineering*

*Steven Smith, CWI, Senior Technical Specialist, ATMG*

*Xiping Wang, PhD, Research Engineer, USDA Forest Products Laboratory*

This seminar is an intensive overview of material evaluation practices and procedures used for assessing the structural condition of existing structures and covers as many aspects of

evaluating structures and structural material conditions as possible. State-of-the-art information on visual inspections, destructive and nondestructive testing (NDT), and the hands-on experience provided in this seminar, are essential for those involved in evaluating concrete, masonry, wood, and metal structures.

*Click here for further details including how to register to attend this course and pay by credit card online.*

### Plan to Attend!

**Thursday, December 10, 2015**

#### Younger Member Group Holiday Party

Sacco's Bowl Haven and Flatbread  
45 Day Street, Somerville

This holiday season, help the YMG support a local fundraiser and join us for a fun and festive night of candlepin bowling and pizza at our annual Holiday Party!

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

### Mark Your Calendar!

#### 2015–2016 BSCES Program Committee-Sponsored Training

The BSCES Program Committee is pleased to announce that it has arranged for BSCES to host the following programs during the current fiscal year:

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

**February 2 – 4, 2016**

Hilton Garden Inn Worcester

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

**April 4 – 15, 2016**

Hilton Garden Inn Worcester

#### Tunnel Safety Inspection (FHWA-NHI-130110)

Two Offerings:

**April 18 – 22, 2016 and June 20 – 24, 2016**

Hilton Garden Inn Worcester

*Look to the December 2015 issue of BSCESNews for information on how you can register for these BSCES Program Committee events.*

## Classifieds

### Gale Associates, Inc.

Gale Associates, Inc., a well-respected engineering/planning firm celebrating over 50 years in business, seeks candidates for the following positions:

**Civil Engineer/Sr. P.M.**—For Weymouth, MA and Towson, MD—Licensed Sr. Civil Engineers with 10+ years' experience in civil/site design, land planning and permitting for industrial, institutional, commercial, multifamily residential and athletic/recreation facilities. Qualified candidates will have direct experience related to all aspects of civil design (hydrology, grading, utilities, etc.) for a wide variety of development types. Must be well-versed in state and local permitting (environmental and municipal) practices and familiar with sustainable design

applications for civil work. A proven history of successful project management, well-honed writing skills, communication/presentation aptitude, and the ability to lead design teams are essential. LEED®AP certification desirable.

**Structural Engineer**—Licensed with 3 to 7 years' experience and a strong resume in the evaluation and renovation of existing structures and facades, foundation design and concrete rehabilitation. Knowledge of waterproofing and building envelope assemblies helpful. Ability to assist with managing projects, computer efficiency and effective presentation/communication skills essential.

**Entry-Level Staff Engineer**—ABET accredited BSCE with E.I.T. for a variety of planning, design, and permitting projects involving industrial, institutional, commercial,

multifamily residential, and athletic/ recreation facilities development for both public and private clients. Candidates will have some design experience (grading, drainage, utilities, etc.) and strong technical writing/communication skills. Working knowledge of Civil 3D and Hydro CAD essential.

Recently voted one of the 2015 "Best Firms to Work For" by Zweig White, Gale offers an excellent salary and full array of great benefits. If you have the qualifications for any of these positions, we would like to hear from you. Please send resume and salary requirement to [kaf@gainc.com](mailto:kaf@gainc.com). Ask us about additional opportunities in our other offices, or visit our Employment Section at [www.galeassociates.com](http://www.galeassociates.com). Gale is an EO Employer/AA/Veterans/Disabilities



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## Critical Elements of Roundabout Design Webinar

**Andy Paul**

*Senior Engineering Associate  
Kittelson & Associates, Inc.*

**Wednesday, November 18, 2015**

**12:30 PM – 1:30 PM**

This webinar will provide a brief overview of key roundabout design elements, peer review “fatal flaw” details, and public outreach techniques and maintenance considerations. In addition, this webinar will include case studies of the critical design elements discussed.

The speaker, Andy Paul has been involved in roundabout design, operations, and project delivery in Massachusetts since 2004. Andy later worked in the MassDOT State Traffic Engineer’s office as the State Roundabout Coordinator. He has presented on roundabouts and rotaries to local jurisdictions, planning organizations, DOT’s, FHWA, TRB, and ITE. Andy is a past member of the TRB Roundabout Committee and is currently the Co-Principal Investigator for NCHRP Synthesis 46-02.

**Registration Deadline: Monday, November 16, 2015**

**\$40 Members, \$50 Non-Members**

Unlimited viewers per registered seat

### Information/Registration:

Register for a seat to the webinar and pay by credit card online at [http://bit.ly/TDI\\_Roundabout](http://bit.ly/TDI_Roundabout). 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 November 16, 2015 will be billed.

Two days prior to the webinar, a link for [gotowebinar.com](http://gotowebinar.com) will be emailed to all registrants along with instructions to login for the event.



## Aggregate Pier Ground Support Systems Workshop

**Kord J. Wissmann, PhD, PE, D.GE**

*President and Chief Engineer, Geopier Foundation Company, Inc.*

**Mike Pockoski, PE**

*Eastern Region Lead Engineer, Geopier Foundation Company, Inc.*

**James R. Wheeler, PE**

*Principal Engineer, Design/Build Geotechnical, LLC*

**Thursday, November 19, 2015**

**Abington Ale House, 1235 Bedford Street, Abington, MA**

**7:00 AM – 7:45 AM Registration/Continental Breakfast; 8:00 AM – 11:00 AM Presentation**

Dr. Wissmann and his associates will discuss the ongoing evolution in the design and construction of aggregate pier ground support systems used in New England and will focus on design assumptions, considerations for organic and soft cohesive soils, construction techniques for cemented piers, geotechnical and structural engineering related design of ground support for floor slabs, and ground improvement for soil liquefaction and slope stabilization. Discussion will emphasize the importance for design professionals to thoroughly understand the concepts behind ground improvement design, construction, and verification so that they can make informed recommendations to their clients regarding ground support alternatives that are safe, reliable, cost effective, and designed in accordance with the intent and requirements of the building code.

This talk should be attended by anyone with an interest in innovative foundation systems including structural engineers, geotechnical engineers, civil engineers, architects, planners, contractors, real estate developers, and facility managers, both public and private.

**Registration Deadline: Monday, November 16, 2015**

**\$45 Members, \$55 Non-Members**

**\$40 Public Sector Members, \$45 Public Sector Non-Members**

**\$20 Senior Members (65+), \$20 Students**

### Information/Registration:

Register to attend this meeting and pay by credit card online at <http://bit.ly/GroundSupportWorkshop>. 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 **Monday, November 16, 2015** and no-shows will be billed.



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## Preparing for a Flood: Resiliency at Massport

**Robbin Peach, MPA, MA**

*Program Manager of Resiliency, Massport*

**Tuesday, December 1, 2015**

**Wyndham Boston Beacon Hill, 5 Blossom Street, Boston MA**

**5:45 PM Social/Registration; 6:30 PM Dinner; 7:00 PM Presentation**

Robbin Peach, program manager of resiliency at Massport, will give an overview of the Massport process to make its assets more resilient to flooding - therefore protecting our region's economy. She will discuss the planning process for identifying threats and critical assets, architectural and engineering solutions, and operational preparedness. Please join us for what will be a very interesting presentation. This talk should be attended by anyone with an interest in coastal resiliency including civil engineers, architects, administrators, and planners.

Robbin Peach managed Massport's award-winning Disaster Infrastructure Resiliency Plan and is currently overseeing implementation of capital and operational improvements to make Massport's assets resilient to extreme flooding. She regularly sits on committees and collaborates with federal, state, regional, and intermodal transportation agencies around resiliency. Ms. Peach holds a Masters in Public Administration from Harvard Kennedy School, a Master of Arts in Landscape Design and Land-use Planning from the Conway School, and a Bachelor of Science in Horticulture from Virginia Polytechnic Institute and State University.

**Registration Deadline: Tuesday, November 24, 2015**

**\$90 Members, \$115 Non-Members**

**\$75 Public Sector Members, \$90 Public Sector Non-Members**

**\$30 Senior Members (65+), \$30 Students**

### Information/Registration:

Register to attend this meeting and pay by credit card online at <http://bit.ly/COPRI-EWRI12-01>. 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 November 24, 2015 and no-shows will be billed.





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*Join us!*

## Massport Flight Simulation

**Thursday, December 3, 2015**

Terminal E – Boston Logan International Airport

(Directions to the meeting location will be emailed to registrants prior to this event.)

12:00 PM – 2:30 PM



So you think your project has traffic control – come check out Massport's 360° Flight Simulator! Join the Younger Member Group and the Transportation & Development Institute Boston Chapter for an opportunity to sit through a flight simulation experience. During the simulation, users will be in a facility that completely mimics the control tower: 360 degree views; animations depicting aircraft landing, takeoff, and taxiing; and communications between the pilots, operations and the air traffic controllers. Space is limited, don't delay, and register today!

**Registration Deadline: Monday, November 30, 2015**

**\$10 Members, \$15 Non-Members**

### Information/Registration:

Register to attend this meeting and pay by credit card online at [http://bit.ly/YMG\\_FlightSim](http://bit.ly/YMG_FlightSim). 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 November 30, 2015 and no-shows will be billed.



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## Workshops: HEC-RAS 2D & GRASS GIS Hydraulic Models

**Karen Madsen, PE**

*Water Resources Engineer, AECOM*

**Derek Etkin, PE**

*Water Resources Engineer, CDM Smith*

**Tuesday, December 8, 2015 & Tuesday, December 15, 2015**

**VHB, 101 Walnut Street, Watertown, MA 02472**

**5:30 PM Social/Dinner; 6:15 PM Presentation**

**GRASS GIS Hydraulic Models:** GRASS GIS is a geographic mapping software with an open-source license. This open-source license means that anyone can freely program the software, and it has allowed academics to build environmental models inside of the GRASS GIS software. This workshop will provide an overview of two numerical models embedded in GRASS GIS: a sediment transport/erosion/deposition model, and a numerical model for transient groundwater-flow in two dimensions. The results of the GRASS GIS models will be compared against more conventional approaches at two New England sites. This workshop is aimed at modelers interested in learning about open-source tools.

**HEC-RAS 2D:** In the Fall of 2015, the USACE Hydrologic Engineering Center (HEC) plans to release HEC-RAS version 5.0, which includes many new features, most notably a 2D surface flow module. The new capabilities provide users with the flexibility to add overland flow areas to a traditional HEC-RAS model without the cost or startup time associated with other vendor packages. This workshop is aimed at practitioners with familiarity in open channel flow modeling or experience in flood plain mapping projects. A presentation of the new capabilities will be followed by a model demonstration and an open discussion of applications.

**Registration Deadline: Tuesday, November 24, 2015**

**Registration Fees: \$90 Member, \$115 Non-Members**

**\$75 Public Sector Member, \$90 Public Sector Non-Member**

**\$30 Senior Members (65+) and Students**

### Information/Registration:

Register to attend this meeting and pay by credit card online at [http://bit.ly/EWRI\\_ModelingWorkshop](http://bit.ly/EWRI_ModelingWorkshop). 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 November 24, 2015 and no-shows will be billed.





# BSCES YMG Holiday Party & Toy Drive

**When:** Thursday, December 10, 2015  
6:00 PM – 9:00 PM

**Where:** Sacco's Bowl Haven in Davis Square  
45 Day Street  
Somerville, MA 02114

**Cost:** Free! We will be supporting the Toys-for-Tots foundation this Holiday Season, please bring a new and unwrapped toy (for all ages) as your entrance fee (otherwise you will be charged \$10). Pizza, bowling and shoe rental will be included.

If you plan on bringing a toy please RSVP to [BSCESYMG@gmail.com](mailto:BSCESYMG@gmail.com), if you would rather pay the registration fee, register online here:

[http://bit.ly/YMG\\_Holiday15](http://bit.ly/YMG_Holiday15)

Last day to RSVP is Friday, December 4.



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