

BSCES NEWS

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T&DI Boston Chapter/Transportation

An Understanding of Steel Ties

by Allene Rieger, PE, Rail Team Leader, TranSystems Corporation

with special thanks for the photographs from Matt Violin, Eastern Regional Sales Manager, NARSTCO

Steel railroad ties have been used throughout the world for many years; some of the oldest were installed on the Hejaz Railway in Saudi Arabia because of the massive theft of the standard wood tie for firewood. Some of the older steel ties are still in service today with over 50 years of use, but heavy loads and older tie clip systems have made many older steel ties obsolete. When possible, to extend the life of existing steel ties, the outdated clip systems have been retrofitted with more modern e-clips.

The Modern Steel Tie

Modern steel ties are commonly used in the UK and have recently become more common in the US. A modern steel tie is made of a thin steel section (8 to 12mm), concave in shape with folded down ends. These ties are designed to have the pods or the concave area on the underside of the steel ties filled with ballast. The turned down ends help the ballast remain in place under the



The Hejaz Railway Completed in 1908, Saudi Arabia

tie. The ballast helps hold the tie in place. The holes for the e-clips and ballast inspection come predrilled from the manufacturer. These steel ties are designed to handle the heavy load demands of the modern rail system and are made of 100% recycled steel which qualifies them for LEED credit. Steel ties are also made in the US and comply with Buy America.

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President's Report

by Ellen P. White, PE, Senior Project Manager, Jacobs



Welcome to a new year for the Boston Society of Civil Engineers Section/ASCE. I am truly honored to serve as president of BSCES and I hope that all of you will have an opportunity to take advantage

of our programs, events, and the diverse member services that we offer.

We are all very fortunate to have access to an organization like BSCES. Very few sections within ASCE offer the breadth of services that we provide. With over 4,000 members across the Commonwealth, BSCES has a total of eight technical groups and institute chapters, 21 committees, and ten student chapters. We are

the only section that publishes an engineering journal; we have our own television show; we support a legislative fellow who serves as a staff member to the Massachusetts Legislature's Joint Committee on Transportation; we sponsor approximately fifty events a year; and give away over \$40,000 annually in awards, donations, prizes, scholarships and grants. Our members are volunteer participants with Engineers Without Borders, the Charles River Cleanup, and the Greater Boston Food Bank, among others. We celebrated our heritage with the 100th anniversary of the Cape Cod Canal and the 250th anniversary of Ipswich's Choate Bridge (the second documented masonry arch bridge and the second oldest extant bridge in

UPCOMING EVENTS

YMG Bocce Tournament

September 16, 2015

167th Annual Awards Dinner

September 30, 2015

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October 6 – November 3, 2015

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October 10 – 14, 2015

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Boston Society of Civil Engineers Section/ASCE

The Engineering Center, One Walnut Street, Boston, MA 02108
 Phone: 617/227-5551, Fax: 617/227-6783
 Email: bscses@engineers.org, Website: www.bscses.org
 Executive Director: Anthony M. Puntin, PE

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An Understanding of Steel Ties

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Completed steel tie track



Steel tie stacks

The Increase in Steel Ties

Steel tie usage in the US is on the rise because of their cost effectiveness. At a glance one steel tie costs more than one wood tie, so where are the savings? The price of the steel tie includes the rail fashioning system (e-clips) so that nothing else is needed to attach the rail to the ties. This is not the case with wood ties. They still require the purchase of tie plates, spikes, and rail anchors. Also steel ties are wider than wood ties providing a larger spacing between ties resulting in an overall reduction in the amount of ties required on a project. The manufacturer's recommended lifetime for steel ties is approximately 50 years, therefore resulting in reduced maintenance and less material replacement costs, providing long term value. Additionally, there is a credit at the end of a steel tie's life as they have salvage value versus a creosote wood tie which requires a disposal fee at the end of its life. But the largest cost savings for steel ties are the reduction of ballast (large aggregate with no fines) required under the tie. A steel tie requires a minimum of 10" of ballast and a wood tie can go as little as 6". Ballast depth is measured from the bottom of tie which for a steel tie the bottom and top of tie are almost the same, but a wood tie requires an additional 7" of stone to reach the top of tie. Therefore a steel tie with 10" of ballast would require 19% less ballast than a wood tie with 6" of ballast.

Installation

Steel ties can be laid out and installed up to 50% faster than wood ties. This reduced installation time is due to their hollow design which makes them lighter than wood ties and easily transported as they can be stacked within one another. The e-clip system requires less assembly



Tamping machine with 16 tamping tool paddles (or blades)

time than plates and spikes, plus no gauging is needed because the holes for the e-clips are predrilled. (Gauge is the distance between the rails, 4' – 8.5"). On average, a five man crew can distribute 1,200 steel ties in eight hours. Steel tie turnouts can be installed two to three times faster than wood turnouts. A small crew should be able to construct at least one steel tie turnout per work shift.

Steel tie installation differs from wood or concrete ties. Standard ties only compact the ballast under the far edges of the tie because if the center of the tie is compacted the tie could act like a seesaw when loaded. Steel ties require the whole length of the tie to be compacted and the underside of the tie to be completely filled with stone. The same equipment can be used for compacting the steel ties, but additional tamping tool paddles are required to cover the whole length of the tie. Steel ties will not preform correctly if the ballast is not properly installed.

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Cities and Towns Benefitting from Every Day Counts

by Richard J. Benevento, President, WorldTech Engineering, LLC

Since 2010 the Federal Highway Administration, working with state DOT's and industry associations, have been hard at work identifying new and innovative ways to address the Nation's transportation needs. The Every Day Counts (EDC) initiative is designed to "identify and deploy innovation aimed at reducing the time it takes to deliver highway projects, enhance safety and protect the environment."

To effectively implement the EDC program state DOT's with FHWA have created State Transportation Innovation Councils (STIC) throughout the United States. The intent of the STIC is to bring together stakeholders that represent industry forces and work together to lead innovation in their state transportation program. The STIC provides a multi-stakeholder leadership to ensure and encourage a collaborative effort of identifying meaningful innovations and methods for their deployment.

The STIC is comprised of representatives of MassDOT, FHWA, other state transportation agencies, state resource agencies, state-sponsored technical assistance programs, metropolitan planning organizations, municipalities (through APWA-New England and the Mass Highway Association), transportation consultants (through ACEC-MA), the transportation construction industry (through CIM), and federal resource agencies. The STIC is jointly chaired by the MassDOT Highway Administrator and the FHWA Massachusetts Division Administrator.

At the EDC3 Summit in Portland Maine this past February STIC members from several states met with FHWA to identify new innovations to be considered. Three initiatives currently being considered in Massachusetts could provide municipalities with another tool to address their transportation infrastructure needs.

Road Diets

The Massachusetts STIC Committee adopted Road Diets as an EDC3 initiative. Road Diet innovation addresses the Technology and Innovation Deployment Program goals by improving highway efficiency, safety, mobility, reliability, service life, environmental protection, and sustainability.

For roads with appropriate traffic volumes, there is strong research support for achieving safety benefits through Road Diets. MassDOT is defining a Road Diet as a lane reduction whereby the number of travel lanes and/or effective width of the road is reduced in order to achieve benefits for all modes of travel. Operational and design changes associated with Road Diets that promote safety include reduced vehicle speeds, reduced vehicle-pedestrian, -bicycle, and -vehicle conflicts.

The MassDOT EDC3 Road Diet Team, Co-Chaired by MassDOT Complete Streets Engineer Lou Rabito, is advancing its research and development of Massachusetts Road Diet policies. The committee's work includes municipality outreach and education. As part of the development of the program plan the Road Diet Team is advancing its work on several fronts that include:

- Evaluating existing Massachusetts Road Diet locations;
- Reviewing existing national DOT Road Diet policies to improve future installments;
- Identifying six locations where Road Diets could be desirable within Massachusetts;
- Developing standardized performance measures;
- Developing specifications/policy/flowchart/guidebook acceptable for MassDOT and municipality use;

- Providing outreach, training, and/or collaboration with municipalities.

Smart Work Zones

Another EDC3 initiative that could have a significant impact on accelerating project delivery, saving money and making work zones safer and more efficient to the motoring public is Smart Work Zone innovation. There are two components of Smart Work Zone (SWZ) innovation; (1) Project Coordination and (2) Technology Applications.

SWZ Project Coordination in Massachusetts is currently in the development stage. The SWZ Team, Co-Chair by State Traffic Engineer Neil Boudreau, is examining existing practices across internal MassDOT functions and will be surveying municipalities and utility providers regarding potential means and methods to better coordinate project delivery. The intent is to produce best practices produced with recommendations to introduce a statewide effort to improve project coordination and collaboration on scheduling and a reduction of construction impacts and project completion delays.

Massachusetts is currently in the *demonstration* stage regarding Technology Applications and is working on the development of formalized business practices for use of portable ITS in the Work Zone. The SWZ Team is developing standard design procedures that include a design decision matrix and scoring evaluation criteria to determine the most effective application for a given situation. The SWZ Team is also finalizing standard operating procedures to guide contractors on the deployment and operation of these systems. The final document will be an official concept of operations document to determine when the use of this technology is appropriate.

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Cities and Towns Benefitting from Every Day Counts

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Through the assistance of the EDC3 Technology Application resources and the FHWA *Work Zone ITS Implementation Guide*, MassDOT hopes to release formal policies and procedures for the use and evaluation of Smarter Work Zones. The ultimate goal will be to develop and adopt a complete set of standards for the implementation of Smarter Work Zone technologies that becomes a tool in the toolbox for the development of the traffic management plans for construction projects.

Locally Administered Federal Aid Projects (LPA Program)

The FHWA supports State Transportation Agencies (STAs) by allowing Local Public Agencies (LPAs), such as cities or counties, to complete the design phase and to administer federal-aid construction projects. In many states, municipalities provide construction administration and oversight on State Transportation Improvement Program (STIP) that are typically overseen by state DOT personnel.

The Massachusetts STIC had identified the LPA program as a potential EDC initiative for Massachusetts. The LPA Team, Co-Chair by MassDOT's Director of Project Management Marie Rose, has been exploring the possibility for incorporating Locally Administered Federal Aid Projects in Massachusetts.

The LPA Team has been examining the pros and cons of the program with the ultimate goals of determining if it is a benefit to Massachusetts municipalities—can it save money and accelerate project delivery time. Working with Baystate

Roads, the LPA Team conducted several informational workshops and webinars as well as conducting a statewide survey sent to municipal officials throughout Massachusetts to gauge interest in the program. The survey, circulated via email to all 351 municipalities in Massachusetts in March 2014 included questions geared towards the resources the municipalities have, the types of projects they have, and their interest in a possible pilot program in Massachusetts. The survey responses revealed that 85% of municipalities knew little to nothing about Locally Administered Fed-Aid Projects and that 98% were interested in attending a workshop on it.

The LPA Team developed and conducted two full day workshops (Boxborough and Wakefield) to provide an overview of the Every Day Counts initiative, to discuss the LPA Program in detail and answer questions. The workshops provided a forum for municipal officials to become better acquainted with the program and the requirements and obligations that are related to administering a federal aid project locally. Following the presentation, the attendees participated in a lively question and answer period. Some of the attendees were very interested in participating in the pilot program and were interested in learning more about the LPA program.

The LPA Team also hosted a one day peer exchange with three state DOTs participating who currently have LPA programs—Maryland, New Hampshire, and Vermont. The format of the day included a summary of each LPA

Program, details on what works great, and lessons learned for items that can be improved upon. Based on the information gathered at the peer exchange the LPA Team determined that many of the best practices being implemented in other states are also being utilized in Massachusetts.

The LPA Team has not finalized its findings and recommendations to the STIC on whether locally administered federal aid projects is the right fit for Massachusetts. However through its research with other state DOTs and outreach with Massachusetts cities and towns as well as industry professionals, there have been several items that have been identified that can further improve federal aid program in Massachusetts with a goal of reducing project delivery time.

Keeping pace with our transportation system demands continues to be a national, state and local challenge, especially with aging infrastructure, limited financial resources and the public's outcry for a reliable transportation network. EDC is a step in the right direction. Innovation, Ingenuity, Imagination and Invention are the cornerstones of EDC that tap into progressive "outside the box" thinking at every level of our industry. Those are paybacks that are the most needed right in our own communities.

Rich Benevento is a member of the Massachusetts State Transportation Innovation Council (STIC), 2013 APWA-New England Chapter past president and president of WorldTech Engineering, Woburn, Massachusetts. For more information you can contact Rich at rbenevento@worldtecheng.com

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



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For information or reservations, contact Rich Keenan, Aldrich Center Manager at 617/305-4110 or rkeenan@engineers.org

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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 November 2015 issue of the newsletter for example, will highlight the ASCE Structural Engineering Institute Boston Chapter and feature one or more articles about structures.

Email your article in Microsoft Word format to BSCES Newsletter Editorial Board Chair Mike Cunningham at mcunningham@kleinfelder.com or BSCES Association Manager Rich Keenan at rkeenan@engineers.org.

Somerville's Complete Streets are Goal Oriented

by David Giangrande, MS, PE, President, Design Consultants, Inc.

Complete Streets advocates say that the focus is fairness and equality. They are “streets for everyone,” states the National Complete Streets Coalition. They are designed and operated to enable safe access for all users, including pedestrians, bicyclists, motorists and transit riders of all ages and abilities.

While they are all about equality, Complete Streets are not all created equal. Recently, two very different approaches were taken on roadway reconstruction projects in Somerville that illustrate this point; one on Beacon Street, and the other on East Broadway.

Long before the term “Complete Streets” was conceived, Beacon Street and East Broadway in Somerville provided transportation modal equity to the citizens of the 18th and 19th Centuries. In an 1896 book titled “Somerville’s History” by engineer, surveyor and Somerville resident Charles Darwin Elliott wrote: “From Prospect Hill it was nearly ten miles to Boston by highway. Great was the rejoicing therefore when, in 1786, the bridge from Charlestown, and in 1793, that from Cambridge to Boston were completed, and the eight to ten weary miles became little more than two.” What Elliott was talking about, are now East Broadway and Beacon Street, respectively. These roads were a “feeder of country travel” by horseback, carriage and foot, Elliott noted. At about the same time, centers of commerce—squares—began developing in the area. This “spoke-and-hub” progression continued throughout the area. For example, Beacon Street is a “spoke” to the Porter and Inman “hubs.”

Today, Beacon Street and East Broadway continue to be busy corridors linking major activity centers in the area. Yet, they serve very different roles for the people who live, work, shop and pass through the city. These differing purposes needed to be considered when the city and its consultants, Design Consultants, Inc. (DCI), formulated their Complete Streets goals.

A Cycle Track for Beacon Street

Beacon Street is the busiest bicycling thoroughfare in the city, and one of the busiest in the Boston area. A major focus of its Complete Streets initiative had to be on ensuring safe, efficient bicycling accommodations for riders of all ages. For this reason, it is a prime candidate for the city’s first cycle track.

A cycle track is a bike lane separated from the roadway and traffic by a physical barrier. Unlike



Beacon Street Cycle Track illustrated by Rob Leanna

bike lanes marked only by pavement markings, cycle tracks may be bordered by parking, wider no-drive zones with flexible barriers, or curbing.

For Beacon Street, the design team assessed right-of-way constraints and abutting land use to determine appropriate cycle track treatment. The Beacon Street cycle track section will consist of a 10-foot sidewalk including a three-foot furniture zone, a six-foot cycle track with a three-inch reveal sloped curb and an 11-foot travel lane on the north side. On the south side the section will be a 10-foot sidewalk including a three-foot furniture zone, a nine-foot cycle track, six-inch vertical curbing with a seven-foot parking lane and a 13-foot travel lane. The additional width on the south side provides door zone safety adjacent to parked vehicles while the sloped curb on the north side allows for a “useable shoulder” as required by MassDOT.

The Beacon Street cycle track is unique in that the cycle track does not change in elevation at every driveway or minor intersection. Adjustments were made to the drainage system to accommodate the grading at the intersections. The grade differential helps prevent dangerous “right hooks” and “left cross” accidents that are often associated with cycle tracks. The turning vehicles under this design must make deliberate and slow turns to negotiate the intersection grades. Also, at major intersections two-stage left turn bike boxes were provided as an additional measure of safety.

Achieving the kind of right-of-way equity that Complete Streets demand often means that some existing elements of a roadway need to be altered or sacrificed. Accomplishing the goal of a cycle track on Beacon Street requires removing parking spaces along a ¾-mile stretch on one side of the road. Parking studies determined that sufficient capacity would remain, but residents and business owners in the area were concerned nonetheless. Therefore public participation was critical. Stakeholders in the area needed reassurance that the addition of a cycle track, along with other components of the Complete Streets plan, would not have a negative effect on their lives, home values or income. After a long and spirited process, all parties had their say and sufficient consensus was reached to proceed with the cycle track. The additional travel lane width and cycle track width were a direct result of the community and regulatory process.

The Beacon Street improvements were not just cycle track centric. Pedestrian concerns were also a key consideration throughout the community process. Most of these concerns focused on the separation of space between the pedestrian and bicyclist to reinforce the definition of the two areas. Several design elements of the furniture zone changed to address these concerns including a brick inlay to provide texture and color contrast, along with vertical elements such as trees, bike racks and

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Somerville's Complete Streets are Goal Oriented

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benches between the existing utility poles. The furniture zone also eliminated other concerns about where to temporarily store snow and trash. These design solutions, which were reached in great part due to the well-attended and highly productive community meetings, not only add to the aesthetics of the road, but further define the space limits for various uses.

The Beacon Street design is complete and construction is anticipated to begin in the fall.

Enhancing East Broadway's Commercial District Via a Road Diet

East Broadway runs from the McGrath Highway/Route 28 to the Boston city line, ending in the shadow of I-93 and the Zakim Bridge. Like Beacon Street, East Broadway has a long and storied history. The road dates back to colonial times and was actually part of the route for Paul Revere's famous ride.

In recent years, East Broadway has become an ethnically diverse, heavily commercialized corridor comprised of restaurants, government buildings, storefront offices, healthcare facilities and retail shops. Its bicycle traffic is a fraction of Beacon Street's. Thus, the Complete Streets goal for East Broadway was more focused on economic revitalization and creating a sense of place via enhanced pedestrian facilities.



Reconstruction of East Broadway illustrated by William Francis Pardy

A major challenge of the East Broadway redesign was implementing a road diet. East Broadway had long carried two lanes of traffic in each direction, but exhaustive data collection and analysis of various Synchro software runs concluded that the adjacent I-93 and McGrath Highway eliminated the need for these extra travel lanes on East Broadway.

Turning lanes were still required at major side street intersections but a single lane in each direction in the link sections provided sufficient capacity. As a result, the city and project team focused on "a node and link" design. The intent is to create activity nodes surrounding and linking businesses and government buildings.

The East Somerville Library is located at the center of this 1.25 linear project, providing a perfect opportunity to create an activity center. The design of this node focused on the needs of the community and the various festivals, bazaars and farmers markets that occur throughout the year. Seat walls, special pavement plantings and hardscape enhance the experience during these important civic and community events. Throughout the project, sidewalks were enlarged to promote outdoor seating at cafes, luncheonettes and restaurants. This also promoted the design team's ability to greatly enhance the pedestrian experience with pedestrian amenities. The project adds more than 200 new street shade trees, benches, planters, LED lights, bike racks and trash receptacles. Modal equity for bicyclists was

accomplished with the addition of an on-road dedicated buffered bicycle lane.

East Broadway required significant upgrades to comply with the requirements of the Americans with Disabilities Act. The upgrades entailed adding curb extensions to facilitate pedestrian ramps and reduce crossing distances, correcting sidewalk slopes, and improving the safety of pedestrian crossings. All signals are equipped with APS actuators and count down pedestrian indicators. The highly visible crosswalks are imbedded thermoplastic with a special Somerville design.

Both street redesigns also included the staples of a safety improvement project: traffic signals, signage and pavement markings were upgraded. Additionally, both projects required full utility rehabilitation and reconstruction. Sewer and water line repairs and improvements were part of the scope. East Broadway's reconstruction is moving swiftly, with an anticipated completion date of November 2015.

The goal of Complete Streets is to provide right-of-way equity "for everyone," but not for "just anyone." True solutions are not one-size-fits-all. The challenge in creating an effective Complete Street is ensuring that it provides the correct mix of multi-modal transportation needs for its users.

David Giangrande is president of Design Consultants, Inc. (DCI), a civil engineering, transportation planning and land surveying company based in Somerville.

BSCES

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Become a 2015-2016 Outreach and Education Sponsor

One of three annual sponsorship options, the 2015-2016 BSCES Outreach and Education Sponsorship Program is an opportunity to show you support BSCES' public awareness and outreach efforts. A core mission of BSCES is to educate students and bring appreciation and awareness to the public about civil engineering. This is accomplished through the numerous programs and activities of the BSCES Public Awareness & Outreach Committee and Younger Member Group. Participants in this sponsorship program are recognized at all BSCES outreach, collegiate and younger member events.

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

Featured Group

Chapter Two for the T&DI Boston Chapter

by Todd M. Clark, PE, Senior Vice President, Hoyle, Tanner & Associates, Inc. and Chair, Transportation & Development Institute Boston Chapter

Building on our first year functioning as the Boston Chapter of the Transportation & Land Development Institute (T&DI), this year is shaping up to be a very busy one. The chapter has already held a summer social that was well attended and effective in gathering new members who are looking to get involved in planning another successful Bertram Berger Seminar. As the summer season ends, the chapter's executive committee is putting the finishing touches on the year-long effort to plan our second year's approach to events, meetings, communications and operations.

On August 12th, a group of BSCES members met after hours and outside at the American Fresh Brewhouse at Assembly Row in Somerville. This event was a step taken in offering new ways of interacting with members who also wish to enhance T&DI's presence in the engineering community. Many new and some familiar faces enjoyed the near perfect weather. The venue was new and afforded multiple opportunities for attendees to hear about what is planned for the upcoming year and what we have done in the recent past.

Back on June 16th, we hosted the annual Bertram Berger Seminar at the Courtyard Marriott in Boston. 120 people gathered to hear from a total of 11 speakers who were all asked to offer their comments on the seminar's theme of how Transportation + Development = Economic Progress. The event was broken out into two separate panel discussions followed by a lunchtime program, which was capped with a presentation from our distinguished keynote speaker Transportation Secretary Stephanie Pollack whose passion and vision for transportation and development in the Commonwealth was well-received.

Panel one speakers focused on recent examples of projects linking investments in transportation to resulting economic progress regionally and locally. Assembly Row was one case example offered by Mr. Brad Rawson, the director of transportation & infrastructure for the City of Somerville. This Transit Oriented Development or TOD is a successful redevelopment project linking many land-uses with multiple modes of transportation and has become a shopping,

dining and work destination in the area. Development at Assembly Row continues as those attending our August social event witnessed first-hand.

Panel two was comprised of recognized leaders in the transportation field who offered their perspectives on the future of transportation investments in roads, rail, air and ports in Massachusetts. Attendees were given the opportunity to ask questions and engage in post panel discussions with state and federal agency leaders who appreciably set aside time out of their schedules for BSCES members attending the event. Their participation, without a doubt, contributed to the overall success of the event.

The Berger Seminar is only one event T&DI hosts each year. Last year members also organized a lunchtime legislative update on the state of affairs with transportation funding and a two-part webinar series on ADA sidewalk compliance. The webinar series was the first of its kind for BSCES and a stepping stone for technical presentations organized by the T&DI executive committee. Looking ahead to the 2015–2016 year, it is part of the goal to continue to provide new topics for the Berger Seminar and technical presentations.

Looking ahead, on September 9th at 6:00 pm at the Aldrich Center at TEC, we are scheduled to hold our first meeting for all interested committee members to discuss a full agenda of T&DI action items. I encourage you to attend as this meeting is all about introductions, hearing about what's happening within the Boston Chapter of T&DI, planning and determining what is right for you!

On the 9th the executive committee will provide more information about this year's planned T&DI events, set meeting schedules, and plan visits to the three UMass campuses. The current list of event opportunities is:

- Bertram Berger Seminar: *June 2016*
- BSCES Model Bridge Contest: *October 2015 – February 2016*
- Combined Event with other BSCES Group: *TBD*
- Technical Webinars: *November 2015 and February 2016*

- Legislative Luncheon Update: *March 2016*
- Francis M. Keville Annual Dinner: *April 2016*
- BSCES Public Awareness & Outreach Awards Celebration/Herzog Dinner: *May 2016*

To accomplish all of the T&DI Boston Chapter goals, the executive committee has changed how we approach meetings this year. As we engage more members and place a higher value on everyone's time, we recognized the need for becoming more flexible and so our approach is:

1. Out of necessity, our event planning meeting times and dates are based on active participant's availability and will be set by each event chair after groups are formed and in the near future.
2. The T&DI executive committee holds conference calls at monthly intervals at a minimum to address chapter business and set meeting agendas.
3. We plan to host bi-monthly night meetings open to all active T&DI members. The dates and times will be set on September 9th.

Chapter two for the Boston Chapter of the T&DI is open. We are looking to engage local innovators and leaders in the transportation and development profession to examine current trends and future direction for practices, projects, and issues. Our intent is to educate BSCES members on a wide variety of interests to advance their professional development and benefit the fields of practice that we all serve. Transportation and development are components of most major projects, and as such, we often work with other BSCES institute chapters and technical groups to organize multi-discipline events.

If you are a transportation or land development professional and an ASCE T&DI member looking for a group where you can discuss current happenings, exchange ideas and become engaged in opportunities to improve the standing of engineering in your community—you are invited to join the Boston Chapter of T&DI. To learn more contact me at tclark@hoyletanner.com or T&DI Boston Chapter Senior Vice Chair Bryan Zimolka at bzimolka@hshassoc.com.

Town Brook Relocation, Reclamation, and Enhancement

by Bonnie Ashworth, Quincy, MA

Two pocket or strolling gardens, located adjacent to the Town Brook and along a busy crosstown connector in Quincy, mark the culmination of a project to improve the brook and smelt habitat and fit into the city's urban development plan. The brook and parks were the topic of a recent tour sponsored by the Quincy Park Department's Environmental Treasures monthly program, organized by Sally Owen. The presenters, who reflected the complexity of the project, were Quincy's principal planner, Rob Stevens, landscape architect Rebecca Bachand (UBLA—Ulrich Bachand Landscape Architecture, LLC), and environmental consultant and wetland/soil scientist Chris Lucas (Lucas Environmental, LLC).

The Town Brook originates in the Blue Hills Reservation where it is collected in the Old Quincy Reservoir before it flows through Southwest Quincy and Quincy Center, terminating in the Town River. Small portions of the brook are channels open to the air but the remainder is enclosed, some of which runs through the basements and foundations of buildings in downtown Quincy and under roads and parking lots. Concerns about the brook over its history have centered on flooding and storm water management, the rainbow smelt migration, and water quality.

The brook's culvert was constructed over time between the 1890s and 1970s with materials including stone, concrete, and corrugated metal pipe. Pictures from a walk-through of the enclosed area of the brook in 2008 reveal structurally compromised sections, areas open to the buildings above or "windows" into adjacent structures, utility conflicts, damaged lines, illicit sewer connections, and clogged and collapsed sewer drains.

Flooding problems date back to at least 1886, according to Quincy DPW records, although flow control structures were incorporated to lessen the impact of flooding. As part of a federal flood control system project, the US Army Corps of Engineers designed the deep rock relief tunnel (completed in 1997) to divert peak storm flows from entering the brook and reduce flooding in areas previously impacted.

The number of smelt has been declining across New England and spawning of rainbow smelt in the brook has dropped dramatically in the last 10 years or so, due in part to flow issues, water quality, and sedimentation. In addition, the brook has been classified as an impaired waterway by the US Environmental Protection Agency because of high pathogen levels since 2002.



Rob Stevens, Quincy's principal planner, talked about the Town Brook and two pocket parks in the context of the urban renewal project in downtown Quincy on a recent Environmental Treasures tour. The vegetative wall in the background is an important aspect of the system.

Realigning the Town Brook was an initial step to improve old infrastructure in Quincy Center as the city started a major downtown redevelopment project. Studies, permitting, and monitoring were rigorous because of the complexity as well as the need for the city to work with state and

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Town Brook Relocation, Reclamation, and Enhancement

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federal agencies. The city received the Massachusetts Department of Environmental Protection permit to move forward with restoration of the Town Brook in late 2011. It also received \$10.1 million in grants from the state to pay for the project, and state and local officials kicked off construction with a ground breaking ceremony in July 2012.

The flow of the brook was redirected from 1,700 linear feet of aging, structurally compromised culvert and diverted through about 1,200 linear feet of closed and open culvert, with an increase of about 200 feet of daylight. Construction, including demolition of the American Legion Post 95 on the site of one of the pocket parks, proceeded right in the middle of the city. There was a push in spring 2013 to finish the culvert work ahead of the smelt spawning season, as required by the Massachusetts Division of Marine Fisheries. After water was redirected to the new culvert, work began on the pocket parks, located on two plots of land at Mechanic Street, Hannon Parkway, and Revere Road, in July 2013 and the parks were completed in late October 2014.

The parks were designed with great attention to detail and a whole level of environmental engineering and science was incorporated into that design, as explained by the three presenters for the tour. Flood control and the smelt migration were basic considerations. For example, it was designed at maximum capacity for flooding, with the channel through the parks 11 feet wide and six feet high. Yet a specific velocity and flow

of the water are needed for the smelt to be able to mate and spawn and sedimentation has to be controlled, Chris Lucas noted.

He went on to explain the solution—installation of a rock substrate, used uniquely here to prevent scouring and erosion, a honeycomb structure bolted to the concrete bottom and holding stone of a specific size to accommodate smelt eggs. The angle of the channel had to be just right for the correct water velocity and the depth also had to be controlled through the use of a low flow channel. A small island was created to help control the flow and add space for wetlands species. To measure the effectiveness of this approach, the permitting required smelt monitoring for three years.

The design of the parks and selection and placement of plantings were equally thoughtful. Rebecca Bachand related how the program incorporated the history of the sites. The cornerstone from the American Legion Post is part of the stone pier at the entrance to that park, and interpretive signage was installed on each site to explain the importance of the smelt as well as the neighborhood’s history. There are open paved areas with walkways and seating plus wetlands in the channel.

A vegetative wall along the Hannon Parkway side of the brook is an attractive feature and was a challenge as only four to six inches of soil are behind it. A rain garden with plants that can tolerate dry conditions but also 24 hours of wet “feet,” is a low impact development technique

that is part of the mix, Rebecca Bachand observed. Rain gardens catch rain fall, slowing its absorption into the soil and thus filtering it before it reaches ground water, reducing pollutants. She pointed out that all of the granite blocks in the garden had come from the old channel, and are from Quincy quarries. And volunteer plants, such as dock and cattails, have found a home along the wall and on the island.

Rob Stevens succinctly summed up the project: “The Town Brook Relocation Project has vastly improved the ecological balance of the Town Brook. From the vegetated wall and island to new environmentally sensitive low flow channels and substrate, the brook now provides a more appropriate habitat for the thousands of smelt that travel upstream each year to spawn while maintaining Town Brook Flood Control System’s functionality and capacity.”

Town Brook has received a new lease on life. It’s an improved waterway flowing through updated infrastructure with 200 feet of daylight, a rainbow smelt-friendly environment, better able to handle water flows, and attractive to passersby who can pause at the parks to sit or view the plantings and flowing waters. Quincy Mayor Koch noted in a press release: “The restoration of the Town Brook culvert is one of the most meticulously designed, expertly-engineered, and environmentally-beneficial public works projects contemplated anywhere at any time in Massachusetts.” The brook and pocket parks are there for the public to enjoy in the heart of an urban area.



Simpson Gumpertz & Heger Inc. (SGH) is a national engineering firm that designs, investigates, and rehabilitates structures and building enclosures. We are always looking for talented engineering candidates for all of our offices. To learn more about SGH and current job opportunities, visit our website at www.sgh.com.

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

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MassDOT Project Selection Council Recommends New Project Selection Criteria

by David M. Manugian PE, Public Works Director, Town of Ashland

On July 2, the MassDOT Project Selection Advisory Council (the Council) presented their report to the legislature on recommended changes to how federal and state funded transportation projects are evaluated. This is in contrast to the current system of evaluation written about in the June issue of *BSCESNews*.

The estimated value of federal transportation funds administered through the TIP process is approximately \$600 million a year across Massachusetts. To qualify for the federal funding the state has to provide 20% of the project costs. Therefore approximately \$750 million of projects can be administered each year.

The Project Selection Advisory Council was established by Section 11 of Chapter 46 of the Acts of 2013 and charged with developing “a uniform project selection criteria to be used in the development of a comprehensive state transportation plan.” During the following eighteen months the Council met around the state, held numerous public hearings, and created

a framework for developing further details.

The Council broadly identified two groups of projects: modernization projects and capacity projects. Modernization projects generally consist of projects that take infrastructure in poor condition and bring it up to current standards. Capacity projects generally consist of those that add new connection to existing projects or expanding existing connections.

In the new review process the Council recommended eight main goals for evaluating projects: system preservation, mobility, cost effectiveness, economic impact, safety, social equity and fairness, environmental and health effects, and policy support.

At the same time the Council recognized that different categories of projects such as those related to roads and paths, Massachusetts Bay Transportation Authority (MBTA), and regional transit would require different scoring criteria and priorities. Therefore six scoring categories were developed: Roads and Paths Modernization,

Roads and Paths Capacity, MBTA Modernization, MBTA Capacity, Regional Transit Modernization, and Regional Transit Capacity.

Finally, the Council took the eight project goals and compared them to the six project categories to come up with a weighted criterion for each goal in each category. The Project Priority Formula Summary Table lists each proposed weighed criterion, and the report provides detail on the objective of each criterion and the data needs.

The report provides recommendation for implementation of the new criteria. The Council recommended creating and implementation a committee to oversee the initial use of the proposed framework. It will be led by MassDOT staff but informed by a stakeholder advisory committee. This committee will be made up of people from a variety of stakeholder groups.

The report was submitted to the Chairmen of the Joint Committee on Transportation, Senator Thomas McGee and Representative William Straus. [Click here](#) to read the report.

President's Report

continued from page 1

If you and your colleagues are not actively involved with BSCES, you are missing out on some great opportunities.

Active participation allows members to acquire new technical skills, network with colleagues and clients, and improve their leadership and communication abilities. You and your colleagues can become active members of one of our eight technical groups or institute chapters which are listed on page two of this newsletter. We also have several committees such as Public Awareness & Outreach, Government Affairs & Professional Practice, and Sustainability that are always looking for active participants. If you like to write, our Journal and Newsletter Editorial Boards welcome members with writing and editing skills.

Although this is the first issue of *BSCESNews* this season, BSCES has been busy over the summer months planning a diverse series of lectures and seminars for the coming year. These include the Structural Lecture Series and the

first Charles Ladd Lecture, which are organized by our Structural Institute and Geo-Institute Boston Chapters, respectively. We are pleased to host the 167th Annual Awards Dinner on September 30th at the Marriott Long Wharf in Boston. The keynote speaker is Professor Bernard Amadei, PhD, NAE, of the University of Colorado who is the founding president of Engineers Without Borders—USA. His topic will be “Engineering for Sustainable Human Development.” The evening will include recognition of BSCES award recipients. Please see our website events page for more information about this and other events.

We have also spent the past month updating the current BSCES website to better communicate our mission and activities with membership. A new website will be launched in November and will allow information (such as this newsletter) to be easily accessible and streamlined. We are all very excited about this change and offer thanks to Website Committee Chair, Rob Musci of CDM Smith, for taking on this challenge.

With all of our accomplishments, what is truly amazing is that we are a volunteer organization. Our success is founded on our past leadership particularly BSCES Past-President Ali Touran of Northeastern University, our executive committee members, and our technical group and institute chapter chairs listed on page 2 of this newsletter.

I also wish to thank our Corporate, Technical, and Outreach Sponsors who are instrumental in financially supporting our organization. I encourage you to read the page 1 article from this month's sponsoring firm and Corporate Sponsor, TranSystems Corporation, entitled “An Understanding of Steel Ties” as well as the Transportation and Development Institute Boston Chapter's article by its chair, Todd Clark of Hoyle, Tanner & Associates.

I am looking forward to seeing you at future events including the Annual Awards Dinner on September 30th.

BSCES Legislative Fellow Update from Beacon Hill—Legislative Reforms at the MBTA

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



As I begin my term as Legislative Fellow for the 2015–2016 legislative session, I'd like to thank the leadership of BSCES for entrusting me with this great opportunity. For those members unfamiliar with the legislative fellow program, I'll be serving as a representative that functions as a technical resource at the Massachusetts State House. I am directly appointed to work with the Joint Committee on Transportation, chaired by Representative William Straus, but have the opportunity to provide assistance on a variety of matters requiring the expertise of a professional engineer. Throughout the upcoming year I'll be keeping members updated through monthly columns in BSCESNews on important legislative developments that directly impact our profession.

Many of you are likely familiar with the recent legislative changes that affected the Massachusetts Bay Transportation Authority. The significant operation problems that the MBTA experienced during last winter's "snowmageddon" provided an opportunity for Governor Baker and lawmakers to pass reforms aimed at improving the embattled agency. Multiple initiatives were included in the 2016 state budget. Authorization was granted to allow

the MBTA to pursue construction manager at risk and design-build project deliveries through chapter 149A of the General Laws. A three year moratorium of procurement of goods and services through sections 52 to 55 of chapter 7 of the General Laws, the so-called "Pacheco Law", was passed to allow the agency to outsource some of their underutilized bus routes with the hope of realizing operational savings. The MassDOT board of directors has been expanded to 11 members with increased participation by the municipalities and the MBTA general manager will now serve under the secretary of MassDOT. The centerpiece of reforms included the creation of a new Fiscal and Management Control Board consisting of members of the MassDOT board of directors and public transit experts who'll have the authority to secure the fiscal, operational, and managerial stability of the authority. The new board will be responsible for establishing fiscal stability by ensuring the operational and capital budgets are properly aligned, making the MBTA more customer focused by establishing a performance management system to provide better service with the hopes of increasing ridership, and developing five and 20 year capital plans to preserve and modernize the authority's assets. Also, the board will work to reduce barriers for public-private partnerships,

utilize the lease and sale of real estate assets to implement value-capture strategies, and submit a preliminary report this month on its plans to address fiscal and operational stability.

Two bills, currently in committee, will affect how towns and cities finance water infrastructure projects and how the state plans for the effects of climate change. The first bill is S.1722: An Act providing for alternative delivery of infrastructure projects. The state's Water Infrastructure Finance Commission has identified a funding gap of \$39.4 billion over the next 20 years to finance our drinking, wastewater, and stormwater infrastructure. This bill will allow municipalities to seek innovative financing solutions such as public private partnerships (P3). Currently, the authority to enter into a P3 agreement is only granted to MassDOT for surface transportation projects. The second bill is S1973: An Act providing for the establishment of a comprehensive adaptation management plan in response to climate change. The bill will allow the state to create vulnerability assessments for state agencies and public utilities.

For any questions on the legislative fellow program, please contact me at mtsullivan@kleinfelder.com.

Steel Ties

continued from page 2

Applications

Steel ties are most commonly used for yard tracks, industry tracks, and working tracks. In the immediate area of loading for coke, coal and pot ash it is recommended that the steel ties be galvanized.

Areas where steel ties do not perform well are high salt locations or areas of poor drainage as they aid in the erosion of the tie and shorten the life span. Typically main line tracks do not use steel ties as it would require insulated ties, to avoid short circuiting the signal system, which increase the cost and require additional maintenance.

Replacement of existing specialty track infrastructure in non-standard conditions without any survey is also not an ideal use of steel ties. This is



Insulated tie



Non-insulated tie

because steel ties turnouts, crossovers and other specialty track items fit together perfectly. Where this is ideal for ease of assembly, it requires that the track system be fully engineered prior to ordering and installing materials, and eliminates the ability to easily make changes on-site during construction.

Conclusion

Be on the lookout for steel ties; because of their cost effectiveness in certain applications, steel tie usage is going to continue to increase within the US.

Recent News and Updates

BSCES Welcomes New Board of Government

On May 18th, at the BSCES Annual Business Meeting Part 1, the results of the 2015–2016 BSCES Board of Government elections were announced. Members of the 2015–2016 BSCES Board of Government took their oath of office at the June 15th BSCES Board of Government meeting and officially assumed oversight of BSCES with the commencement of the 2016 BSCES fiscal year on July 1, 2015. BSCES members will welcome their new leaders during the 167th BSCES Annual Awards Dinner, which takes place on Wednesday, September 30th at the Boston Marriott Long Wharf. The members of the new BSCES Board are as follows:

President:

Ellen P. White, PE, Jacobs

President-Elect

Brian A. Morgan, Esq., LEED AP, CDM Smith

Secretary

Christopher “Topher” Smith, PE, CDM Smith

Treasurer

Robert L. Leger, PE, Massachusetts Port Authority

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Senior Vice President

Geoffrey B. Schwartz, PE, GZA GeoEnvironmental, Inc.

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

Bruce L. Jacobs, PhD, PE, HydroAnalysis, Inc.

Past President

Ali Touran, PhD, PE, Northeastern University

Western MA Branch Vice President

Vacant

Institute Chapter & Technical Group Chairs

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Lauren S. Klonsky, PE, CDM Smith

Construction Institute Boston Chapter

Daniel R. Cook, PE, Simpson Gumpertz & Heger Inc.

Engineering Management Group

Kevin M. Garvey, PE, CDM Smith

EWRI Boston Chapter

Matthew Hodge, PE, Hodge Water Resources LLC

Geo-Institute Boston Chapter

Jonathan P. Davies, PE, Hatch Mott MacDonald

Structural Engineering Institute Boston Chapter

Peter M. Keeping, PE, HNTB Corporation

T&DI Boston Chapter

Todd M. Clark, PE, Hoyle Tanner and Associates

Younger Member Group

Cara Pirkey, EIT, HNTB Corporation

BSCES Thanks 2015–2016 Corporate Sponsors

The BSCES Board of Government would like to thank the following firms for their support as 2015–2016 BSCES Corporate Sponsors:

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Fay, Spofford & Thorndike, Inc. (FST)

Green International Affiliates, Inc.

GZA GeoEnvironmental, Inc.

Jacobs

Kleinfelder

Louis Berger

McMillen Jacobs Associates

TranSystems Corporation

VHB

Statehouse Presentation by BSCES

In an effort to address the pressing concerns within the Commonwealth, the State Senate held a series of informational caucuses to provide information to the legislators about various subjects. BSCES was invited by the chair of the Joint Transportation Committee, Senator Thomas McGee, to speak on the issue of the state’s Transportation Infrastructure. BSCES President Ellen White and Executive Director Tony Puntin were part of a panel that presented at the State House on May 14th. The presentation focused on current roadway and bridge conditions as well as funding concerns. Their full presentation can be viewed [online](#). As is evident by this presentation, BSCES leaders are looked at as the “experts” on infrastructure and our opinions are valued by our state legislators.

BSCES in the News

When Fox 25 in Boston wanted to learn more about Massachusetts’s “Crumbling Infrastructure”, who did they turn to? Who else...BSCES. More and more, Executive Director Tony Puntin has been fielding questions and concerns about the state’s infrastructure. Over the summer, [Fox 25 interviewed Tony](#) about the condition of our transportation network. Civil engineers are the stewards of our infrastructure. As such, ASCE and BSCES are committed to educating the public and our elected officials as to the need to maintain that infrastructure.

BSCES on Social Media

Did you know that BSCES is “connected”? As the forms of communication continue to expand, BSCES is trying to keep up with all of the social media outlets. Our [twitter](#) account has over 300 followers from state agencies to engineering firms. We invite you to follow us and #BSCES if you attend one of our events. The BSCES [Facebook](#) page has almost 800 “likes.” The page is used to announce upcoming events, provides pictures galleries of some of our signature events, and sometimes shows the lighter side of engineering. Almost 1,800 individuals have connected with BSCES on [LinkedIn](#). This forum is used for meeting announcement and discussions that are more technical in nature. These sites, in addition to the [BSCES homepage](#), will provide information on upcoming events and highlight BSCES accomplishments.

Update Your ASCE Profile

Have you moved lately, changed jobs, or do you have a new email address? It is very important that we receive your updated contact information. Please make sure you update your profile at ASCE

National. Every month BSCES receives updated member information from ASCE that we utilize for all BSCES correspondence. You have a personal profile that you can access and update your contact information. Simply go to the ASCE [“Membership & Communities”](#) page and click on the “Log in...” bullet under the Already a Member section. Once you’ve logged in, you can edit your contact information. Members can also always call 800-548-2723 and have someone in Customer Service make updates for them over the phone.

Free Online Career Fair

There are many benefits to ASCE and BSCES membership. One upcoming “perk” is an [online career fair](#). Participation in this virtual fair is free for members. All job seeker participants in the event will be part of a diverse pool of talented professionals. Additionally, your company can register to “interview” potential candidates. ASCE’s Online Career Fair will connect your company with top talent from a vast community of professionals, representing all sectors around the country. The online format provides an easy, effective way to discover top talent. Employers will receive a fully customized booth, complete with logo, images, open positions, videos and other information important to candidates. During the live event, employers will receive three recruiter seats, where recruiters will connect directly with job seekers in one-on-one chats to discuss career opportunities and determine if the candidate could be a good match for any openings.

Raise the Bar

One of ASCE’s strategic initiative, commonly referred to as [“Raise the Bar,”](#) seeks to increase the educational requirements for civil engineering licensure in the future professionals. With the changing face of science and engineering, it is necessary to continue to learn and adapt. In just 30 years, we have gone from using slide rules and log tables to GPS, sophisticated modeling software, and smartphones. Change will continue to happen, most likely at a heightened pace. The undergraduate engineering programs, largely due to financial restrictions placed by legislative bodies, have decreased from an average of 145 semester hours to 128 over the past several decades. ASCE, as outlined in Policy 465, believes the educational required for licensure should be a baccalaureate degree in civil engineering, plus a “master’s degree, or approximately 30 coordinated graduate or upper level undergraduate technical and/or professional practice credits. The flexibility of pursuing either a master’s degree or the alternative of an equivalent 30 credit hours provides two viable paths to meet the needed educational requirements of the future. This initiative recently received reaffirmation of support from the organization tasked with developing licensure standards, [NCEES](#).

Upcoming Events

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

To register online for an event at the BSCES member rate you must login using your BSCES assigned username and password.

If you do not know your BSCES member login information, call 617/227-5551.

Younger Member Group Event

Wednesday, September 16, 2015

Boston Common, Boston MA

5:30 PM – 9:00 PM

YMG Annual Bocce Tournament

Whether you rule the North End with your Bocce skills or are just a beginner, come join the BSCES Younger Member Group for our Annual Bocce Tournament held outside on the Boston Common. Fee includes pizza and tournament entry. Prizes for 1st and 2nd place winners!

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

167th Annual BSCES Awards Dinner

Wednesday, September 30, 2015

Boston Marriott Long Wharf
296 State Street, Boston, MA 02109

6:00 PM Cocktail Reception

7:00 PM Dinner; 8:00 PM Program

Please join us for our 167th Annual Awards Dinner on September 30 at the Boston Marriott Long Wharf for an evening celebrating BSCES and the engineering profession. BSCES will recognize new leaders, present annual awards, and honor our newest Honorary Members, Charlie Button (posthumously) and Ron Sharpin. The keynote speaker for the evening will be Bernard Amadei, PhD, NAE, Mortenson Chair of Global Engineering at the University of Colorado and Founding President of Engineers Without Borders—USA.

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

ASCE and BSCES Sponsored Seminar

**Thursday and Friday
September 17 and 18, 2015**

Hyatt Place Boston Braintree
50 Forbes Road, Braintree, MA 02184

8:30 AM – 4:30 PM

Design, Construction, and Renovation of Masonry Structures

Alexander Newman, PE, FASCE

Forensic & Structural Engineering Consultant

Author, Structural Renovation of Buildings: Methods, Details, and Design Examples

While more and more masonry buildings are being renovated rather than demolished, the

design professionals find that reliable data on the topic of their renovation is difficult to find. The seminar starts with the basics of design and construction of various masonry structures. With the basics explained, the instructor illustrates and discusses the design details and construction techniques commonly used for load bearing, shear-wall, and curtain-wall masonry applications. Drawing on more than three decades of practical design and forensic experience, he gives many of these details a critical look and suggests the solutions that have worked better than others.

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

Structural Engineering Institute Boston Chapter Lecture Series— Wicked Fast Bridge Construction

**Tuesdays, October 6, 13, 29, 27
and November 3, 2015**

Tufts University, Barnum Hall
163 Packard Avenue, Medford, MA

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

Organized around the theme of Wicked Fast Bridge Construction (WFBC), the SEI Boston Chapter's 2015 Lecture Series features five lectures and a panel discussion examining the state of, lessons learned, and the future of accelerated bridge construction in New England. Topics include:

Lecture 1 – Tuesday, October 6, 2015 The State of Wicked Fast Bridge Construction (WFBC) in New England

Michael P. Culmo, PE, Vice President of Transportation and Structures, CME Associates, Inc.

Lecture 2 – Tuesday, October 13, 2015 Detailing of WFBC—Lessons Learned

Joseph P. Gill, PE, President, Gill Engineering Associates, Inc.

Lecture 3 – Tuesday, October 20, 2015 WFBC Local Case Study I— MassDOT Bridges

Brian Brenner, PE, Vice President, Fay, Spofford & Thorndike, Inc.

Nicholas Scenna, PE, Senior Structural Engineer, Fay, Spofford & Thorndike, Inc.

Lecture 4 – Tuesday, October 27, 2015 WFBC Local Case Study II—MBTA Bridges

Erik J. Stoothoff, PE, Chief Engineer, MBTA
John C. Schwarz, PE, Director of Bridge & Tunnel Projects, MBTA

Lecture 5 – Tuesday, November 3, 2015 Durability of WFBC Bridges

Michael P. Culmo, PE, Vice President of Transportation and Structures, CME Associates, Inc.

The Future of WFBC (Panel Discussion)

Moderator: Alexander K. Bardow, PE,
State Bridge Engineer, MassDOT

Panelists: Presenters of Lectures 1 – 4

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

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Fall 2015 ASCE Seminars

ASCE is pleased to announce the following seminars scheduled in MA during the fall 2015 months

November 4, 2015

GIS for Hydraulic and Hydrologic Modeling
Using ArcGIS Desktop

(Computing; Hydraulics and Water Resources)

November 19, 2015

Deep Foundations: Design, Construction,
and Quality Control

(Construction; Geotechnical; Structural)

December 10, 2015

Structural-Condition Assessment of
Existing Structures

(Architectural; Construction; Infrastructure;
Materials; Structural; Transportation)

These in-depth, practice-oriented programs are produced by ASCE's Continuing Education Department.

Upcoming Events *(continued from page 13)*

ASCE 2015 Convention

Saturday – Wednesday, Oct. 10–14, 2015

New York Marriott Marquis
1535 Broadway, New York, NY 10036

Civil engineers from across the country and around the world will converge on New York City in October for the first ASCE Convention. Explore the state of the industry and profession via a thought-provoking, multidisciplinary program that can earn you as many as 24 PDHs. You'll be inspired by opening keynote speaker Luke Williams, an authority on business innovation leadership. Registration is open; sign up now and save as much as \$200. Get details on the inaugural ASCE Convention.

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

Save the Date!

Monday, November 16, 2015

**First Charles C. Ladd Memorial Lecture
Trends in Mechanically
Compressed Sediment Behavior
with Stress and Plasticity**

Featuring: John T. Germaine, ScD
Research Professor, Civil and Environmental
Engineering Department, Tufts University

Please see the insert at the end of this month's newsletter for further details about this Geo-Institute Boston Chapter event.

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:

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

Two Offerings:

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

Hilton Garden Inn Worcester

Look to future issues 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. Ask us about additional opportunities in our other offices, or visit our Employment Section at www.galeassociates.com.

Gale is an EO Employer/AA/Veterans/Disabilities



essgroup.com/careers

Apply to recruitment@essgroup.com

Design Engineer

Seeking PE with 6-12 years' civil/site and water resources project experience. Great for increased responsibility and growth in project management and business development. Required: BS in engineering; PE license; AutoCAD Civil 3D, ArcGIS, and HydroCAD skills.

Senior Design Engineer

Seeking lead design engineer for civil/site and water resources projects with 15-20 years' complex project management, permitting, and business development consulting experience. Required: BS or MS in engineering; PE license; AutoCAD Civil 3D, ArcGIS, HydroCAD, and/or SWMM skills.



Please join us!

Bocce Tournament Wednesday, September 16, 2015

5:30pm – 9pm (registration 5:00pm-5:30pm)



Cost:

- \$5 Students
- \$10 Members
- \$15 Non-members

Register online at

<http://bit.ly/2015BocceTournament>

Registration Deadline:

September 14th*

Whether you rule the North End with your Bocce skills or are just a beginner, come join the BSCES Younger Member Group for our Annual Bocce Tournament held outside on the Boston Common.

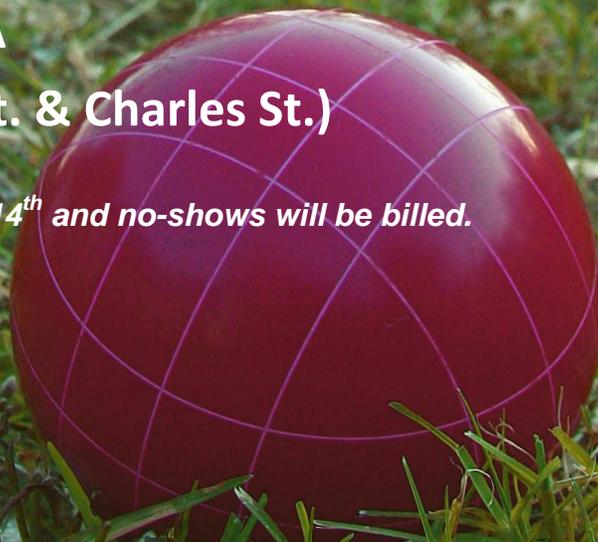
Fee includes pizza and tournament entry.

Prizes for 1st and 2nd place winners!

Boston Common, Boston MA

(Meet at Corner of Beacon St. & Charles St.)

****Cancellations received after September 14th and no-shows will be billed.***



You are cordially invited to attend the 167th BSCES Annual Awards Dinner.

September 30, 2015

Boston Marriott Long Wharf

296 State Street, Boston, MA 02109

6:00 PM Cocktail Reception; 7:00 PM Dinner; 8:00 PM Program

Engineering for Sustainable Human Development



Keynote Speaker:

Bernard Amadei, PhD, NAE

Professor, Mortenson Chair in
Global Engineering,
University of Colorado
Founding President, Engineers
Without Borders - USA

Dr. Amadei is Professor of Civil Engineering at the University of Colorado at Boulder. He received his PhD in 1982 from the University of California at Berkeley. Dr. Amadei holds the Mortenson Endowed Chair in Global Engineering and serves as a Faculty co-Director of the Mortenson Center in Engineering for Developing Communities. He is also the Founding President of Engineers Without Borders - USA and the co-founder of the Engineers Without Borders-International network. Among other distinctions, Dr. Amadei is the 2007 co-recipient of the Heinz Award for the Environment; the recipient of the 2008 ENR Award of Excellence; the recipient of the 2015 Washington and ASCE OPAL awards; an elected member of the US National Academy of Engineering; and an elected Senior Ashoka Fellow. He holds five honorary doctoral degrees (UMass Lowell; Carroll College; Clarkson, Drexel, and Worcester Polytechnic Institute). In 2013 and 2014, Dr. Amadei served as Science Envoy to Pakistan and Nepal for the US Department of State.

Honor Award Winners and Newest Honorary Members:

Please join us for our 167th Annual Awards Dinner on September 30 at the Marriott Long Wharf for an evening celebrating BSCES and the engineering profession. BSCES will recognize new leaders, present annual awards, and honor our newest Honorary Members, Charlie Button (posthumously) and Ron Sharpin. Space is limited for this event, register today!

167th BSCES Annual Awards Dinner:

You can use this form to register multiple attendees. Please fill in the number of people you wish to register for the appropriate price point and add up the total attendees and total amount. Then list their names and contact information below.

Registration Fees:	Type	Fee	Number of Attendees	Amount
	BSCES Member:	\$150.00	_____	_____
	Non-Member:	\$200.00	_____	_____
	Table of 10:	\$1,500.00	_____	_____
	Totals:		_____	_____

Register Online: Register and pay by credit card online at: <http://bit.ly/167thBSCESAnnualAwards>. To receive the member price you must login using your BSCES assigned username and password. If you do not know your login information call 617/227-5551.

Register by Mail or Email: You may also register by mail or email. To do so, complete the registration form below and email to bscesreg@engineers.org or mail to: BSCES, The Engineering Center, One Walnut Street, Boston, MA 02108-3616.

Registrant Information:

Name (s): _____
 Organization: _____
 Address: _____
 Telephone: _____ Email: _____

Credit Card: Please bill my (Check one): Visa MasterCard American Express

Name On Credit Card: _____
 Credit Card Number: _____ Expiration Date: _____
 Billing Address: _____
 Signature: _____

Check: When paying by check, please make checks payable to "BSCES" and mail with your completed Registration Form to the above address.

Registration Deadline: Wednesday, September 23, 2015

No-shows and cancellations received after Wednesday, September 23 will be billed. For questions please call 617/227-5551. No phone registrations.

2015 Fall Lecture Series

Wicked Fast Bridge Construction

Tuesdays, October 6, 13, 20, 27 and November 3, 2015

Tufts University, Barnum Hall, 163 Packard Avenue, Medford, MA

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

ASCE SEI Boston Chapter is pleased to present the 22nd Fall Lecture Series, entitled “Wicked Fast Bridge Construction.” Topics include The State of Wicked Fast Bridge Construction (WFBC) in New England; Detailing of WFBC; WFBC local case studies of MassDOT and MBTA bridges; durability of WFBC Bridges and The Future of WFBC (Panel Discussion). This lecture series is cosponsored by the Tufts ASCE Student Chapter.



LECTURE 1 – Tuesday, October 6, 2015 The State of Wicked Fast Bridge Construction in New England

*Michael P. Culmo, PE, Vice President of
Transportation and Structures, CME Associates, Inc.*

All of the New England States have constructed WFBC projects and several states have instituted Accelerated Bridge Construction (ABC) programs. The design community has adapted to these new technologies using resources made available by owner agencies, industry, and the Federal Highway Administration (FHWA). The benefits of ABC or WFBC have been well documented by FHWA and others. The primary benefits include higher quality, improved safety through reduced exposure of workers and travelers to work zones, reduced mobility impacts to the traveling public, and reduced impact to the environment. This presentation will provide an overview of how the New England States are implementing WFBC, and cover topics such as decision making process, prefabricated bridge elements, bridge system installations, accelerated project delivery and ABC tolerances.

LECTURE 2 – Tuesday, October 13, 2015 Detailing of WFBC – Lessons Learned

Joseph P. Gill, PE, President, Gill Engineering Associates, Inc.

This presentation will focus on various design issues and construction details encountered on a number of accelerated bridge construction projects in Massachusetts and elsewhere. Methods of erection/placement, along with development of details compatible with construction sequence and schedule, as well as the lessons learned on these projects will be presented. Discussions will cover design approach and detailing for various bridge elements including footings, wall/column to footing connection, pier cap to wall/column connection,



backwalls, approach slabs, superstructure connections to deck, barriers, waterproofing, membrane and wearing surfaces. The design approach to short term as well as long term (final design) loading along with the impact of tolerances will also be discussed.

LECTURE 3 – Tuesday, October 20, 2015

WFBC Local Case Study I – MassDOT Bridges

Brian Brenner, PE, Vice President, Fay, Spofford & Thorndike, Inc.

Nicholas Scenna, PE, Senior Structural Engineer, Fay, Spofford & Thorndike, Inc.

This presentation will discuss case studies of select MassDOT bridges. Topics covered will include utility relocation, utility bridge, Self-Propelled Modular Transporter (SPMT) construction, MBTA commuter rail station reconstruction and lessons learned. “Lessons learned” discussions will cover various topics including issues unique to design-bid-build procurement approach, contractor’s means and methods, special specifications, precast concrete details and construction tolerances, and protection of adjacent existing structures during rapid demolition. Use of the innovative early utility relocation contract will also be discussed.



LECTURE 4 – Tuesday, October 27, 2015

WFBC Local Case Study II – MBTA Bridges

Erik J. Stoothoff, PE, Chief Engineer, MBTA

John C. Schwarz, PE, Director of Bridge & Tunnel Projects, MBTA

The primary mission of the MBTA is to move their customers safely and on schedule. The MBTA owns and maintains over 350 rail bridges, however, advanced age and condition of these

structures require multiple bridges to be replaced yearly for the foreseeable future in order to maintain a good state of repair. This presentation will discuss past usage of WFBC at the MBTA using case studies to offer lessons learned from successful implementation, as well as the decision making process and future use of ABC or WFBC techniques on MBTA bridge projects. To date, MBTA has used these techniques for the construction of three bridges, and a future bridge replacement is in the final design stage. Discussion will also include the use of SPMTs, which has been very successful on MBTA projects.

LECTURE 5 – Tuesday, November 3, 2015

Durability of WFBC (ABC) Bridges

Michael P. Culmo, PE, Vice President of Transportation and Structures, CME Associates, Inc.

CME Associates has inspected several bridges constructed with various ABC methods. This session will include a discussion on what works and what does not work.

The Future of WFBC – Panel Discussion

Moderated By Alexander K. Bardow, PE, State Bridge Engineer, MassDOT

This session will include a brief update on WFBC or ABC at MassDOT followed by a panel discussion with speakers of lectures 1 through 4. The panel will answer questions from attendees.

SPEAKERS

Michael P. Culmo, PE, Vice President of Transportation and Structures, CME Associates, Inc.

Michael Culmo is the Vice President of CME Associates, Inc. responsible for directing structures and transportation design department on new expressway bridges, bridge rehabilitation and related highway structures. He has over 31 years of experience in the design of steel, concrete, pre-stressed concrete and timber bridges. He has special expertise in the field of accelerated bridge construction technologies. Mr. Culmo holds a Bachelor’s degree in Civil Engineering and a Master’s degree in Structural Engineering, both from the University of Connecticut.

Joseph P. Gill, PE, President, Gill Engineering Associates, Inc.

Joseph Gill is the President and Owner of Gill Engineering Associates, Inc., a local structural design firm in Needham, Massachusetts focused on the bridge infrastructure market. Before founding Gill Engineering in 2000, he had over 17 years of project experience with the Massachusetts Highway Department and the Massachusetts Turnpike Authority. As former MassHighway Bridge Engineer and MassPike Chief Engineer, Mr. Gill gained a thorough knowledge of bridge projects from inception through planning, permitting, design, construction, operation and maintenance. He was recently involved in the successful completion of various accelerated bridge construction projects, including the award-winning Wellesley Cedar Street Heavy Lift and Medford Fast 14 Bridge Replacement.

Brian Brenner, PE, Vice President, Fay, Spofford & Thorndike, Inc.

Brian Brenner is a Vice President with Fay, Spofford & Thorndike in Boston, Massachusetts. His professional practice includes technical management and structural design of bridge and transportation projects throughout New England and the New York metropolitan area. He is the lead structural engineer for three WFBC or ABC projects: River Street over MBTA, Morton Street over MBTA, and Massachusetts Avenue over Commonwealth Avenue in Boston. As a professor of the Practice at Tufts University, Mr. Brenner teaches classes in reinforced concrete design, bridge design, bridge history and aesthetics, and introduction to engineering. His research includes an NSF Partnership for Innovation project focusing on long term and sustainable bridge design. Mr. Brenner is the editor of multiple ASCE and BSCES journals and is the author of over 100 papers as well as three collection of essays, "Don't Throw This Away", "Bridginess", and "Too Much Information" published by ASCE.

Nicholas Scenna, PE, Senior Structural Engineer, Fay, Spofford & Thorndike, Inc.

Nicholas Scenna is a Senior Structural Engineer and Deputy Bridge Team Leader with Fay, Spofford & Thorndike in Boston. He has over 10 years of experience in bridge planning, design, construction, inspection and rating. His work experience includes public and private sector clients, including state agencies, municipalities, railroads and private owners. Mr. Scenna has experience working on complex bridge design and construction contracts with accelerated schedules, and strict scope and budget constraints. He recently managed two high profile ABC contracts for MassDOT – the Burns Bridge Replacement D-B in Worcester and the Morton Street SPMT Bridge Replacement in Boston. He also co-authored and presented a paper entitled "When is an Historic Bridge No Longer an Historic Bridge?" at the 2014 SEI Structures Congress.

Erik J. Stoothoff, PE, Chief Engineer, MBTA

Erik Stoothoff is the Chief Engineer for the Design and Construction department of the MBTA, where he oversees all capital infrastructure projects. Prior to joining the MBTA as Chief Engineer in April 2013, he worked at Jacobs Engineering Group for the previous 13 years in various capacities as a design engineer and project manager. His work experience as a structural engineer includes designing and delivering numerous bridge and station projects for the MBTA and MassDOT. Mr. Stoothoff was the Engineer of Record for two of the rapid bridge replacement projects by the MBTA along the Fairmount Corridor at the Woodrow Avenue and Talbot Avenue crossings. He has a Bachelor's degree in Civil Engineering from Northeastern University.

John C. Schwarz, PE, Director of Bridge & Tunnel Projects, MBTA

John Schwarz is the Director of Bridge and Tunnel Projects at the MBTA, and oversees the inspection, rehabilitation and replacement of the Authority's bridge and tunnel infrastructure. He has over 30 years of experience in a wide range of projects. Mr. Schwarz joined the MBTA in 2003 after working in the private sector for several years. At the MBTA, he has worked on a variety of projects including Green Line Relocation at North Station, Fairmount Corridor Improvements, CNG Bus Facility Retrofits and the Redundant Elevator Program. He is a Civil Engineering graduate from Northeastern University.

Alexander K. Bardow, PE, State Bridge Engineer, MassDOT

Alexander Bardow has worked for MassDOT's Bridge Section in various positions since 1983, and has been the Massachusetts State Bridge Engineer since 1995. In this position, he oversees the Bridge Design, Bridge Inspection, Ratings and Overloads, Metal Control, and the Geotechnical and Hydraulic Sections. Mr. Bardow is a voting member of the American Association of State Highway and Transportation Officials (AASHTO) Subcommittee on Bridges and Structures (SCOBS), and serves on following SCOBS technical committees: Welding (Chair), Timber (Vice Chair), Seismic Design, and Guard Rail and Bridge Rail. He has also been a member of the PCI New England Technical Committee since 1991. Mr. Bardow is a member of ASCE and BSCES and has served in several elected offices within BSCES, including as President in 2004-2005. He has received both his BSCE and MSCE degrees from the Massachusetts Institute of Technology.

REGISTRATION DEADLINE: Thursday, October 1, 2015

Registration Information:

Registration Fees: See registration form below.

Register to attend this seminar and pay by credit card online at <http://bit.ly/SEILectureSeries>. 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 completing the registration form below and mailing, emailing or faxing it to BSCES, The Engineering Center, One Walnut Street, Boston, MA 02108, bscsesreg@engineers.org or 617/227-6783, respectively. Cancellations received after October 1, 2015 and no-shows will be billed.

Directions to Lecture Hall and Parking:

Lecture Hall: Tufts University, Barnum Hall Room 008, 163 Packard Avenue, Medford, MA

<http://campusmaps.tufts.edu/medford/#fid=m004>

Parking: Tufts University, Dowling Hall Garage, 419 Boston Avenue, Medford, MA

<http://publicsafety.tufts.edu/adminsvc/parking-services/medford-somerville-campus-parking-services/parking-garages/>

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

Pizza! New in 2015, we begin each evening with pizza starting at 6 pm during registration.

Registration Form **BSCES SEI Boston 2015 Fall Lecture Series**

Tuesdays, October 6, 13, 20, 27 and November 3, 2015

Tufts University, Barnum Hall, 163 Packard Avenue, Medford, MA

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

Registrant Information

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

Registration Fees

Full Series of Five Lectures

- \$195 BSCES/ASCE Member
- \$245 Non-Member
- \$170 Public Employee Member
- \$195 Public Employee Non-Member
- \$70 Senior/Student

Single Lectures

- \$60 BSCES/ASCE Member
- \$75 Non-Member
- \$55 Public Employee Member
- \$60 Public Employee Non-Member
- \$25 Senior/Student

Circle Lectures Attending: 1 2 3 4 5

Total Amount Enclosed \$ _____

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

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

Card Name: _____
Card Number: _____ Exp. Date: _____
Billing Address: _____
City: _____ State: _____ Zip: _____
Signature: _____



Boston Society of Civil Engineers Section
American Society of Civil Engineers

2015-2016 Outreach and Education Program Sponsorship

Cost: \$1,500

Specific BSCES Initiatives Sponsored:

K-12 Educational and Public Awareness & Outreach Activities

- Infrastructure Awareness Day
- Future City Competition
- Model Bridge Contest
- Ralph Salvucci On-Line Model Bridge Contest
- Ralph Salvucci On-Line Bridge Contest Awards Celebration
- "Civil Engineering Today" TV Show

Younger Member Group

- ASCE Student Chapter Officers' Caucus
- Bocce Tournament/Networking Event
- 104rd Annual Student Night
- Billiards Tournament/Networking Event

Benefits:

- Two (2) admissions to Younger Member Group or Outreach event of your choice.
- A special award will be named for your organization at Future City Competition. You can pick from among the various awards, present the award and receive a framed picture of the award presentation.
- Logo displayed on the BSCES public awareness and outreach website, www.engineeryourfuture.org.
- Listing in the end credits of "Civil Engineering Today" television show, which gets streamed on YouTube.
- Organization name announced during introductory remarks at all major Younger Member Group and Public Awareness & Outreach Committee events.
- Recognition in BSCES member newsletter, *BSCESNews*.

Yes, I would like to become a BSCES Outreach and Education Sponsor at the price of \$1,500.

Firm/Organization Name: _____

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

Sponsor Contact: _____

Address: _____

Telephone: _____

Email: _____

Fax (617/227-6783) or email (wognibene@engineers.org) this form and credit card information to Will Ognibene by **Wednesday, September 30, 2015**.

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, The Engineering Center, One Walnut Street, Boston, MA 02108-3616.

If you have any questions, contact Tony Puntin at 617/305-4111 or apuntin@engineers.org