

# BSCES NEWS

A MONTHLY PUBLICATION OF THE BOSTON SOCIETY OF CIVIL ENGINEERS SECTION/ASCE

VOL. 39 | NO. 1 | SEPTEMBER 2014

T&DI Boston Chapter/Transit Oriented Development

## UPCOMING EVENTS

*ASCE and BSCES Sponsored Seminar*  
September 17, 2014

*Geo-Institute Event*  
September 24, 2014

*SEI Boston Chapter Event*  
October 10, 2014

*166th Annual Awards Dinner*  
October 14, 2014

*Further Details Inside*



## The I-84 Hartford Project

by Lenny A. Velichansky, PE, Assistant Vice President and Civil Engineering Division Leader, TranSystems Corporation



I-84 Corridor through Downtown Hartford

### Background

I-84 through Hartford is the busiest section of highway in the state of Connecticut, carrying more than 175,000 vehicles daily (more than three times its original design capacity!). The majority of this 50-year-old highway was built on elevated structures which are reaching the end of their useful life and must be replaced. The corridor also features substandard roadway geometry, lack of lane balance, and weaving sections comprised of combinations of left and right hand entrance

and exit ramps. As a result, this portion of I-84 experiences on average one accident per day which further exacerbates heavy congestion already caused by heavy traffic demand.

The highway was built in the 1960s and by 1970 it was realized that the impacts of this transportation facility on the physical environment into which it was introduced were dramatic and overwhelming. Similarly to many urban corridors constructed during that era, the

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## President's Report

by Ali Touran, PhD, PE, Professor, Department of Civil and Environmental Engineering, Northeastern University



As the new president of BSCES it gives me pleasure to welcome you to this first issue of the current volume of *BSCESNews*. While this is the first issue of the newsletter and while September is the official start of BSCES programs for the year, we on the BSCES Board of Government have been hard at work during the summer to prepare for the coming year's events. Participating in the Cape Cod Canal Centennial celebration on July 29th is an example of our summer activities.

BSCES offers a diverse range of benefits to its members. These include a variety of technical presentations, dinner events, continuing education courses, opportunity to getting involved with various technical groups and institute chapters, specialty lecture series, newsletter, and the journal. Everyone who is passionate about civil engineering is sure to find a reason to join and to enjoy BSCES services and opportunities. As an example, when I came to Boston in 1987, I already knew that BSCES was the only ASCE section that published its own journal. I eventually joined the editorial

board of the journal and also became a member of the Construction Group. During the past six years, due to my involvement with the BSCES board, I have attended several regional and national meetings of the ASCE sections and branches. I have not come across a section that is more active than BSCES or provides a more diverse range of activities.

It is a great honor for me to serve the oldest engineering society in the country as its president. My plans for the coming year are (1) to enhance

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## The I-84 Hartford Project

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highway presented a visual and physical barrier that divided the City, hindered connectivity between the neighborhoods and downtown, and lacked the urban design principles.

The horizontal and vertical geometry of the existing viaducts is complicated by a number of factors. The viaduct substructure is intricately arranged to avoid a rail line built in 1830s which traverses the corridor at a long gentle skew. A sharp reverse curve introduced to avoid the historic Union Station severely restricts the design speed. The independent, and in certain areas, vastly different, eastbound and westbound roadway profiles are driven by the area topography which results in a number of city cross streets being squeezed vertically between the two split highway barrels.

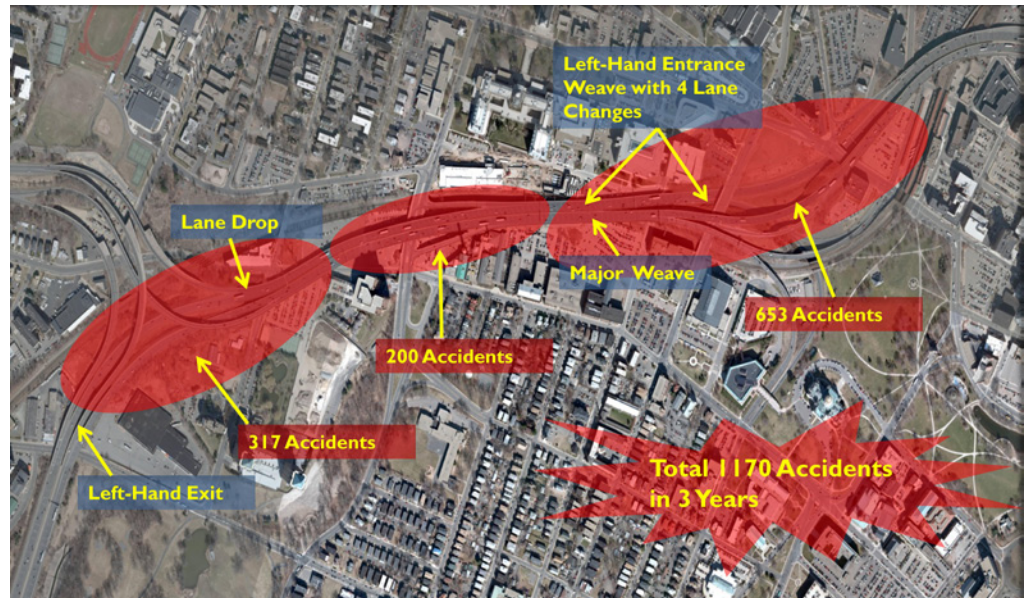
Over the years the Connecticut Department of Transportation (CTDOT) performed costly repairs of these structures and at one point

considered replacing the I-84 viaducts "in-kind." However, after further considerations, community input, and recognizing potential great opportunities that might be realized with further assessment of this corridor, CTDOT decided to take a more holistic approach and the I-84 Hartford Project was born.

The project assesses the needs and condition of the highway along a two-mile stretch between Flatbush Avenue and the I-91 interchange, develops alternative solutions, and advances a program of improvements from environmental permitting through design and construction. It is envisioned that the reconstructed I-84 corridor will:

- accommodate the traffic demand more safely and efficiently than at present
- promote greater mobility by facilitating connections with other modes
- adhere to 'Complete Streets' practices
- provide additional economic development opportunities

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Major Transportation Deficiencies along the Corridor



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## Cape Cod Canal Marks 100 Years

By Bonnie Ashworth, Quincy, MA

The Cape Cod Canal, generally taken for granted as thousands travel over it going to and from Cape Cod, has a long and fascinating history, from the days of the Pilgrims, to its designation as a National Historic Civil Engineering Landmark in 1985, to celebration of its 100th anniversary in 2014, with ten days of events.

Economic considerations have driven the history of the canal. The Pilgrims set up the Aptuxet Trading Post on the Manomet River in the early 1600s, and Miles Standish, of the Plymouth Colony, is credited with proposing a canal in 1623 to connect Cape Cod and Buzzards Bays to facilitate travel to the post. The area was first surveyed for a possible canal during the Revolutionary War under the orders of General George Washington in 1776. More surveys and studies followed, some charters were granted, and there were several unsuccessful attempts to build a canal over the next 100 years.

The loss of lives, ships, and valuable cargo from wrecks along the Cape's outer banks took a huge toll, with an average of one shipwreck every two weeks and almost one a week from 1880 to 1900 when shipping was at its height. The pressure increased for a canal to eliminate circumnavigation of Cape Cod and greatly reduce the danger to lives and commerce.

A lack of money had been an impediment to several failed canal projects, but in 1904 banker August Belmont Jr. became involved. He bought the Boston, Cape Cod, and New York Canal Company, which had a charter to build a canal dating from 1899. He teamed up with civil engineer William Barclay Parsons to tackle the job. It's of interest to note that the two had worked together to finance and build the New York subway which opened in 1904.

The project started on June 19, 1909, when granite for construction of the breakwater for the east end of the canal arrived from Maine, and the official ground breaking was on June 22, 1909, when Belmont wielded a silver shovel from Tiffany and Co. in Bourne to signal the commencement. Two dredges began working on the approach channel at the westerly end, and dredges dug from both ends toward the middle. Twenty-six dredges, both dipper and hydraulic of different sizes, would be used over the course of construction.

Early on, the dredges encountered enormous boulders left behind by the glaciers that had formed the Cape and Islands tens of thousands



*The Cape Cod Canal, looking east toward the Sagamore Bridge with the service road in the foreground, is a beautiful and peaceful sight on a brilliant summer day.*

of years ago. Divers were employed to dynamite the boulders, and to make up for the delay, steam shovels and narrow gauge railway equipment to remove material were brought in to work on the middle. The pace of construction picked up and the canal opened on July 29, 1914, in a ceremony that included a Parade of Ships with Assistant Secretary of the Navy Franklin Delano Roosevelt in attendance.

At the time, the canal was ten feet shallower than the twenty-five foot charter depth, and it wasn't officially completed for two more years. Although boat traffic increased as the canal got deeper, it never had the number of vessels passing through or the income generated by tolls hoped for and it wasn't a financial success. The canal project also included construction of three bridges, two drawbridges for vehicles and a Strauss trunnion Bascule railroad bridge. In addition, ferry service across the canal ran till the 1930s.

The Federal Railroad Administration operated the canal during World War I, after which Belmont resumed running it. He sold it to the government in 1927, and the U.S. Army Corps of Engineers was directed to operate and upgrade the canal in March 1928. The toll was eliminated and the Corps embarked on a huge improvement program that included a survey of shipping companies to determine why some types of vessels didn't use the canal. The bridges, with movable spans, were a major concern to shipping.

Two new highway bridges, the Sagamore and Bourne, with vertical clearances of 135 feet above high water were built and dedicated on June 22, 1935. The Bourne Bridge received the American Institute of Steel Construction's Class "A" Award of Merit as "The Most Beautiful Bridge Built During 1934." A vertical lift

railroad bridge was also built close to the site of the original, and it was raised for the first time on September 10, 1935. It was then the longest vertical lift railroad bridge in the world and considered a feat of engineering as well as design.

Among other improvements were the widening and deepening of the canal, rebuilding and straightening access from Buzzards Bay, and installing riprap along the banks to limit erosion. This construction took place during the Great Depression and provided many jobs over two years. The success of the improvements is reflected in the numbers; the new canal had three times as many vessels and eight times as much tonnage pass through it as had the old canal in its last year under private ownership.

The Cape Cod Canal continues to be a valuable asset to navigation, with 14,000 vessels traveling through in one year, and it provides many recreational opportunities. There's a wide range of activity on the service roads along its banks, such as bicycling, in-line skating, walking, jogging, hiking, picnicking, fishing, boating, camping, viewing the wildlife, and just relaxing and watching the boats go by, but no swimming due to strong currents. The Cape Cod Canal Visitor Center in Sandwich is open seasonally; it offers films and interactive displays on many aspects of the canal.

To sum up what you see today, the canal is 17.4 miles long, with a minimum depth of 32 feet, a minimum width of 480 feet, and 135 feet of clearance under the vehicle bridges. Its claim to fame, according to ASCE, is that "without the use of locks, the sea-level, 17-mile Cape Cod Canal was designed to successfully cope with a tidal differential of 4.5 feet coupled with a three-hour out-of-phase tidal cycle." No wonder it's a civil engineering marvel and landmark!

## Oppose the Repeal of the Gas Tax Index—Vote No On Question 1

by William F. Lyons Jr., PE, Esq., President, Fort Hill Infrastructure Services and BSCES Government Affairs & Professional Practice Committee Chair

A ballot initiative with far reaching implications for our economy will be decided this fall. If you are following the local news, you might think I am talking about the repeal of casino gambling. However, there is one ballot initiative that is far more important to the Massachusetts economy, but far less fashionable to talk about. In fact, for many taxpayers, it is such an abstract issue that they simply shrug when asked what the consequences of a “yes” vote might be. The ballot question that is so important to our economy is the proposed repeal of the indexed gas tax.

A key aspect of the landmark 2013 transportation finance legislation was a provision to index the gas tax to inflation. This means that the gas tax, which is currently a flat tax of 24 cents per gallon, will gradually increase every year to keep pace with inflationary pressures. Without indexing, every year our transportation funding is effectively decreased by inflation. With the index, our transportation system is effectively “level funded” and should receive roughly the same amount of resources each year after adjusting for inflation.

The slogans for repeal are very seductive. Indexing has been dubbed by some as the “forever tax” because it will forever adjust itself to reflect inflation. For those voters who hate taxes of every kind, the gas tax index may seem especially insidious.

But there is another side of this issue that receives short shrift. Without a well maintained transportation system, we cannot get all of our workers to their jobs. Whether they travel by foot, bicycle, car, bus, trolley, subway, train, or boat, the funds generated by the gas tax subsidize each trip from home to work and back. Just as importantly, all of the goods and services that are the lifeblood of our economy are shipped

using that same transportation network. Without a robust transportation system, our economy would falter.

Instead of investing in our transportation system, for several decades Massachusetts has allowed a serious maintenance backlog to accumulate in our roads, bridges, and transit systems. While maintenance can be deferred year after year, at some point the system will fail due to poor maintenance. When failure occurs, the economy suffers exponentially due to lost efficiency. In addition, we find ourselves having to pay for the emergency repairs as well as the permanent repairs—a highly inefficient use of limited capital. This says nothing of the potential for lost lives and injuries when there is a catastrophic failure in our transportation system.

In 2007, the Transportation Finance Commission found that the state had accumulated a \$15 billion to \$20 billion deficit in transportation spending, representing deferred maintenance. This deficit in spending compromises our safety and economic competitiveness on a daily basis. Nearly nine percent of the state’s bridges are structurally deficient. This is merely one example of the problems caused by deferred maintenance.

Study after study has shown that investments in transportation infrastructure are critical to maintaining our economic position in the global economy. Take for example the work of the Massachusetts Competitive Partnership, whose membership includes the chief executives of the most prominent Massachusetts companies. Their membership is a who’s who of the biggest companies in the state: Raytheon, Fidelity Investments, Partners Health Care, Massachusetts Mutual, Bank of America, Liberty Mutual, Vertex Pharmaceuticals, Staples, Putnam Investments, Northeast Utilities, State

Street Investments, BJ’s, and EMC. These are hardly companies that are known for advocating for higher taxes. Yet, in a report co-authored by the Partnership with the Boston Foundation, entitled *The Cost of Doing Nothing: The Economic Case for Transportation Investment in Massachusetts*, these business executives make a forceful case for increased investment in transportation infrastructure to maintain our competitive edge.

The list of organizations that oppose the repeal of the gas tax is equally impressive and very diverse. A partial list includes AAA Southern New England, the Conservation Law Foundation, the Greater Boston Chamber of Commerce, the Massachusetts Taxpayers Foundation, the Livable Streets Alliance, NIAOP—The Commercial Real Estate Development Association, and the Environmental League. Their collective opposition to the repeal of the index sends quite a message regarding the support that the current law enjoys.

What does the increased gas tax mean to the average voter? And why index the gas tax anyway? The gas tax increase (including indexing) represents \$5 per citizen per year in increased funding. That is roughly two cups of coffee. In reality, the gas tax index represents the political compromise that was needed to ensure a long term, sustainable source of revenue for our transportation infrastructure needs. Are there other ways to achieve the same outcome? Yes, but the gas tax index hardly seems like a huge investment for the return expected in safety and economic competitiveness.

Ultimately, the voters will have their say this fall. Some will vote to reject the gas tax index because they dislike the idea of taxes in general and indexed

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## Transportation Funding Update

by Clay Schofield, PE, Barnstable, MA

The current transportation bill “MAP-21” will expire on October 1st of this year and the next bill—*Generating Renewal, Opportunity, and Work with Accelerated Mobility, Efficiency, and Rebuilding of Infrastructure and Communities throughout America*, aka “Grow America” act—is pending. The \$302 billion, four-year surface transportation reauthorization proposal was submitted to Congress by the Obama Administration in April 2014.

The Grow America legislation provides formula and discretionary funding for construction and maintenance of highways, roads, bridges, transit, as well as bicycle and pedestrian infrastructure. The bill would increase total investment in such projects by nearly 40 percent over current spending levels. For public transportation investment, the bill features an increase of nearly 70 percent, above current spending, roughly \$72 billion over four years. In addition, it includes a focus on increased access to “ladders of opportunity” through investments in projects that connect people to centers of employment, education, and critical services.

The \$302 billion would be spread across six areas over four years:

1. \$199 billion for road safety and highway systems with a focus on a “Fix-It-First” policy and \$10.1 billion dollars to the National Highway Traffic Safety Administration.
2. \$72 billion for public transit systems including expansion projects. \$5.1 billion will be used to eliminate a portion of the \$86 billion public transit infrastructure backlog.
3. \$10 billion for multi-modal freight program to strengthen American exports and trades as well as new grants to fund new rail, highway and port projects.
4. \$5 billion for the Transportation Investment Generating Economic Recovery (TIGER) program.
5. \$4 billion for the Fixing and Accelerating Surface Transportation (FAST) program.
6. \$4 billion for the Transportation Infrastructure Finance and Innovation Act (TIFIA) to increase the level of private investment in transportation infrastructure.

The Act is still being refined; House and Senate versions of the funding bill have been bouncing back and forth in Washington since April. In August, a \$10.8 billion short term extension was agreed to by the legislative bodies and signed by President Obama. The extension will last 30

months and will sustain federal transportation funding through May 2015. The Highway Trust Fund was expected to run out of funds in August and the Department of Transportation was ready to start cutting reimbursements to states for highway projects they have completed. This extension is the 12th short-term transportation bill augmentation in the past five years. While it is a reprieve for state transportation departments and other interests, the relief is tempered by concern about what will happen next.

On August 6, 2014, Transportation Secretary Anthony Foxx hosted a virtual National Town Hall discussion on the need for a long-term transportation bill. “The federal highway program is in crisis,” said Secretary Foxx, “We can’t afford to wait until May, If Congress does not pass a long-term bill this year, it is not likely to get the job done on deadline.” The new Congress will be installed in January, after the November mid-term elections, and significant legislative action will likely be postponed until new legislators have a chance to review the issues. “There will be little opportunity to pass a major highway bill before the end of May”, Foxx said.

A number of proposals are being discussed from user fees to reforming the corporate tax system to generate revenue that could pay for a one-time, long-term highway bill. Corporate tax reform has been proposed by Representative Dave Camp, chairman of the House Ways and Means Committee. His plan will comprehensively reform the tax code that would dedicate \$126.5 billion over eight years to the Trust Fund. In this proposal the money would come from a change in the tax treatment of foreign income to US corporations. Right now, taxes on earnings and profits from a foreign subsidiary are postponed until the money is distributed as a dividend. Under the change, some of this income would be taxed over the eight years.

The Obama administration’s approach to paying for its four-year highway bill is similar to Representative Camp’s in that it involves corporate tax reform. About half of the money required for Grow America, \$150 billion, would come from corporate tax reform, and \$63 billion would go to supporting the Trust Fund.

Many in the transportation and business communities continue to assert that the quickest and most effective way to save the Fund is to raise the federal fuel tax. But many Republican and Democratic lawmakers insist that raising the

tax is politically impossible. Recently American Trucking Associations has reconsidered its policy on highway funding through increasing the federal fuel tax and added seven alternatives to its commitment to the federal fuel tax.

1. Index the fuel tax based on price, the Consumer Price Index or the estimated impact of improved fuel efficiency.
2. Use the proceeds from repatriation of overseas capital (Representative Camp’s proposal).
3. Issue Treasury bonds subsidized with revenue from indexing the fuel tax.
4. Impose an annual highway access fee for all motorists.
5. Use royalties from new oil and gas leases.
6. Impose a per-barrel tax on imported oil and domestic crude production.
7. As a last resort, a short-term transfer from the General Fund to the Highway Trust Fund.

Another option being considered by some is phasing back the federal fuel tax and the Highway Trust Fund and devolving responsibility to the states. Ultimately states would use local funding that’s now available, or raising more money through any of a number of traditional or alternative methods. Stay tuned!



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### Become a 2014–2015 Outreach and Education Sponsor

One of three annual sponsorship options, the 2014–2015 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.

## eTOD Transit Station Area Rating System- A TOD Planning Tool Focused on Social Equity

by Ronald Burns, PE, Principal Engineer CHA Consulting, Inc.

Northeastern University’s Dukakis Center and the Center for Transit Oriented Development have worked together to create a new rating system for evaluating the suitability of areas around mass transit stations for transit oriented development (TOD). The rating system is not focused on individual projects but the overall capacity of the area around the transit station to support high quality equitable TOD projects. The eTOD Rating system focus is on providing planners, community groups, developers and engineers a way of looking at data on a given station area that give a holistic measure of those conditions that contribute to less driving and more transit ridership.

The rating system is broken up into the three different metrics taken directly from the acronym for TOD. These in turn are composed of selected available data and indices:

**Transit:** Transit Accessibility (assesses size of area accessible by transit to passengers), Transit Connectivity (assess access to and frequency of service), Transit Use (% of workers using non-auto transit in station area)

**Orientation:** Transit Dependency (% of zero vehicle households in station area), Lower Income (% households with income below \$25,000), Rental Housing (% of renters), Affordability (measure of % of income spent on transportation)

**Development:** Walkability (Walk score©), Residential Density and Employment Gravity

(assesses quantity and distance to employment locations)

The most unique aspect of the rating system is its focus on measuring what they call the station area’s capacity for “equitable TOD” (the e in eTOD stands for equitable). By this the Dukakis center means projects that promote transit equity and accessibility. They believe that TOD should be focused on “core riders” which are defined as those most likely to use public transit. According to their research these core riders are composed of a higher percentage of historically disadvantaged demographics and socioeconomic groups. Therefore by focusing on core riders the Dukakis center believes that the TOD project will be both high performing and equitable. The social equity of the TOD project is primarily measured by orientation sub scale.

The eTOD rating system was pilot tested using data for the MBTA transit system. A total of 345 transit stations areas were evaluated including bus stops, trolley and commuter rail stations. The results of the rating system analysis yielded for each station a total eTOD score with sub scale scores for each of the three metrics. The range of scores was subdivided into four categories to give reviewers a quick way of assessing the overall quality of the TOD attributes. They range from the best performing stations listed as “Transit Oriented” to worst performing stations “Transit Adjacent.” As a

check the scores were correlated against vehicle-miles traveled (VMT) data for available households in the station areas. The researchers found that residents in the best performing stations drive less than half as much as the worst performing stations.

The rating system, and in particular the sub scores, can be used to evaluate how well a proposed TOD project might work in a particular station area. For instance a station area that has a low orientation sub score but high transit and development scores would benefit from an affordable housing or rental housing project. While a station area with a high orientation score but a low development score would be a good location for a mixed use or retail development that would bring more services to the area. Overall this rating system brings another perspective to the evaluation of TOD projects that can help further productive communication between the multiple stakeholders involved in these projects.

[Click here](#) for more information on this rating system and to see more data on individual station areas.

**References:**

*eTOD Score Executive Summary*, Stephanie Pollack, Anna Gartsman, and Jeff Wood, October 2013

*eTOD Score: Creating a Performance Rating System For Equitable Transit Oriented Development presented at RailVolution 2013 Workshop on Measuring What Counts: Tools You Can Use to Evaluate Investments*, Stephanie Pollack, October 21, 2014



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## Featured Group

### A New Institute Chapter for BSCES

by Clay Schofield, PE, Barnstable, MA and ASCE Transportation and Development Institute Boston Chapter Chair

BSCES' new chapter of ASCE's Transportation and Development Institute (T&DI) officially become active July 1st. The BSCES Board of Government elected to combine the Transportation, Infrastructure, and Land Development technical groups to form the chapter. ASCE created the Institute in 2002 and it includes over 16,000 members in a number of chapters around the country.

Creating the chapter and an affiliation with ASCE's T&DI provides BSCES greater conformance with its bylaws and constitution. This conformance is with regard to becoming affiliated with other technical organizations or groups. A similar affiliation was achieved by the formation of the Boston Chapter of the ASCE Coasts, Oceans, Ports, and Rivers Institute (COPRI).

The three technical groups have been working on the merger since the fall of 2013 and have already collaborated on a seminar on climate change with the Volpe National Transportation Systems Center held in December. This seminar, which was proposed to get the groups working together, was considered a big success and set the tone for the new chapter.

The technical groups developed a mission statement, an application to become a chapter, and a Memorandum of Understanding with the ASCE that were accepted by the Institute. The Boston Chapter mission includes five elements:

1. Unite the disciplines of planning, design, construction, operations, maintenance, and research in support of sustainable transportation, infrastructure, and land development;
2. Provide communication, education, and collaboration to enhance the professional knowledge and skills of its members so that they may help to improve quality of life;
3. Bring together engineers, planners, industry representatives, citizen groups, developers, public officials, and others dedicated to improving transportation, infrastructure, and fostering appropriate development decisions at the local, regional, state, national, and international levels;
4. Advance the state-of-the-art and state-of-the-practice; and
5. Enhance the welfare and status of transportation, infrastructure, and development professionals.

The T&DI Boston Chapter will also continue many of the major events held regularly by the three technical groups including:

#### Special Annual Events

- Bertram Berger Seminar
- Ralph Salvucci Model Bridge Competition

#### Awards

- Ernest Herzog Technical Paper Award
- Bertram Berger Young Engineer Award
- Bertram Berger Scholarships

I was elected the inaugural chairperson of the T&DI Boston Chapter during this past May's FY2015 BSCES election. I will be joined by the three current technical group chairs in the following capacities:

- Senior Vice Chair—Todd Clark, PE
- Vice Chair—Alyssa S. Marino Medina, PE
- Clerk—Paul Savard, PE

The first chapter meeting was held July 16th to discuss how the new chapter would proceed and included:

- Chapter sponsored events for the coming year, which tentatively include:
  - The first annual Infrastructure Awareness Day, which will be related to the centennial of the opening of the Cape Cod Canal (an ASCE Landmark).
  - Events on ADA Issues (October), Infrastructure Finance (December), A Legislative Update (February), Low Impact Development (March), and the traditional Berger Transportation Seminar (April) and Ralph Salvucci Online Bridge Awards Celebration/ Herzog Dinner (May).
- Membership—development of a larger committee and establishment of subcommittees is planned and a draft survey of members that

indicated an interest in the T&DI was discussed. The survey is designed to accomplish a number of objectives:

- Attract more active members
- Determine areas of interest
- Develop a mailing list for events, relevant training, and activities
- Get feedback on important issues that need attention by BSCES/ASCE

A second survey is also to be developed that will go to student chapter members interested in the T&DI. This version of the survey will help define student needs and interests. A strong desire to include students and the BSCES Younger Members Group is held by the current T&DI chapter members and holding some future Boston T&DI Chapter meetings in conjunction with ASCE Student Chapters is expected.

- Coordination with ASCE—Liaison with the ASCE T&DI committees is expected to be helpful in having a successful first year. Actions for coordination will be defined including providing a monthly T&DI newsletter article.

Membership in the T&DI Boston Chapter is open to any BSCES member and should be individuals who are engaged in the development of policies and programs related to transportation, infrastructure, and land development. This involvement could include the planning, design, construction, operation, management, and regulation of associated planning and engineering works. Members of the current technical groups will be included as Chapter members. Other BSCES members interested in joining the new chapter should contact me at [clayscho@verizon.net](mailto:clayscho@verizon.net). Meetings are currently scheduled for the 3rd Wednesday of the month generally following the monthly ACEC/MA TALC (Transportation Agencies Liaison Committee) meeting.

**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)

**Aldrich Center**  
ONE WALNUT STREET  
Beacon Hill Boston, MA

## Branch & Committee Reports

### SEMAC Keeps Rocking & Rolling

by John C. Cavanaro, PE, Principal,  
Cavanaro Consulting

Following two successful technical events over the past year pertaining to Stormwater Management and FEMA Flood Plain Issues, respectively, The Southeastern Massachusetts Committee (SEMAC) is planning their third event this fall! Look for more details about this event in future BSCESNews events pages and see below for a sneak preview.

The fall workshop will be led by Dr. Kord Wissmann, PhD, PE, DGE, president and chief engineer of Geopier Foundations. Kord, and his associates will discuss the design and construction of Rammed Aggregate Pier systems used in New England and will focus on design assumptions, design considerations for organic soils, construction techniques for cemented piers, design of piers used to support floor slabs, and ground improvement for slope stabilization and soil liquefaction. Speaker bios are provided below.

**Kord J. Wissmann, PhD, PE, DGE** is the president and chief engineer at Geopier Foundation Company, Inc. based in Davidson, North Carolina. Kord has more than 25 years of experience in geotechnical engineering spanning the gamut from consultants to designers to specialty contracting.

**Mike Pockoski, PE** has been the eastern region lead engineer for Geopier Foundations for over eight years, and was previously with Kleinfelder in Las Vegas and GZA GeoEnvironmental in Norwood, MA.

**James R. Wheeler, PE** is the principal engineer at Design/Build Geotechnical, LLC. Jim received his BS and MS degrees in geotechnical engineering from Lehigh University, Bethlehem, PA before joining Haley & Aldrich, Inc. in 1976 where he spent nearly 21 years as a geotechnical consultant and becoming a vice president of the firm.

SEMAC is charged with addressing regional and local interests that are generic to civil engineers who practice in the southeast region of the Commonwealth. The Committee will endeavor to promote public awareness of the functions of civil engineers; encourage civil engineers in the

region to participate in the public arena through community involvement; perform outreach to educational institutions and charitable endeavors; and develop seminars and workshops that will help practicing engineers stay current with technology, innovation and regulatory changes.

Please look for more information regarding the Southeastern Massachusetts Committee in upcoming issues of *BSCESNews*, and/or contact any of the folks below for additional information on becoming active in SEMAC.

*Azu Etoniru, SE, PE, PLS, Committee Chair*  
[aetoniru@etengineering.com](mailto:aetoniru@etengineering.com)

*Charles Gross, PE, Committee Vice Chair*  
[chgpelle@me.com](mailto:chgpelle@me.com)

*John Cavanaro, PE, Committee Clerk/Secretary*  
[jcavanaro@cavanaroconsulting.com](mailto:jcavanaro@cavanaroconsulting.com)

### 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 2014 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](mailto:mcunningham@kleinfelder.com) or BSCES Association Manager Rich Keenan at [rkeenan@engineers.org](mailto:rkeenan@engineers.org).

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## Recent News and Updates

### BSCES Welcomes New Board of Government

On May 20th, at the BSCES Annual Business Meeting Part 1, the results of the 2014–2015 BSCES Board of Government elections were announced. Members of the 2014–2015 BSCES Board of Government took their oath of office at the June 24th BSCES Board of Government meeting and officially assumed oversight of BSCES with the commencement of the 2015 BSCES fiscal year on July 1, 2014. BSCES members will welcome their new leaders during the *166th BSCES Annual Awards Dinner*, which takes place on Tuesday, October 14th at the Museum of Science. The members of the new BSCES Board are as follows:

#### President

Ali Touran, PhD, PE, Northeastern University

#### President-Elect

Ellen P. White, PE, Jacobs

#### Secretary

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

#### Treasurer

Robert L. Leger, PE, Massachusetts Port Authority

#### Assistant Treasurer

Tomas G. Stuopis, PE, LS, TranSystems Corporation

#### Senior Vice President

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

#### Senior Vice President

Malek A. Al-Khatib, PE, Louis Berger

#### Vice Presidents

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

Richard D. Maher, PE, PMP, LEED AP,

Perry Associates, LLC

#### Past President

Reed M. Brockman, PE, AECOM

#### Western MA Branch Vice President

Vacant

#### Institute Chapter & Technical Group Chairs

##### COPRI Boston Chapter

Gregory G. Robbins, PE, GZA GeoEnvironmental, Inc.

##### Construction Institute Boston Chapter

Gregory R. Imbaro, PE, Simpson Gumpertz & Heger Inc.

##### Engineering Management Group

Angela T. O'Donnell, CDM Smith

##### EWRI Boston Chapter

Yan Zhang, PhD, PE, CFM, AECOM

##### Geo-Institute

Justin A. Dominguez, PE, GEI Consultants, Inc.

##### Structural Engineering Institute Boston Chapter

Todd M. Warzecki, PE, BETA Group Inc.

##### T&DI Boston Chapter

Bentley "Clay" Schofield, PE, Barnstable, MA

##### Younger Member Group

Thomas "TJ" W. Liveston Jr., EIT,

Hatch Mott MacDonald

### BSCES Thanks 2014–2015 Corporate Sponsors

The BSCES Board of Government would like to thank the following firms for their support as 2014–2015 BSCES Corporate Sponsors:

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Fay, Spofford & Thorndike, Inc. (FST)

Green International Affiliates, Inc.

GZA GeoEnvironmental, Inc.

Jacobs

Jacobs Associates

Kleinfelder

Louis Berger

TranSystems Corporation

VHB/Vanasse Hangen Brustlin, Inc.

**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 to update your contact information. Simply go to the [ASCE home page](#) and click on MyASCE. This will prompt you to login. Once you've logged in, on the left side there will be a link that says Edit Personal Information. Members can also always call 800/548-2723 and have someone in Customer Service make updates for them over the phone. You can also email questions to [myasce@asce.org](mailto:myasce@asce.org).

**Are you certifiable?** Certification is the recognition of attaining advanced knowledge and skills in a specialty area of civil engineering. ASCE created Civil Engineering Certification, Inc. in 2004 to provide a mechanism for professional post-licensure certification of the various specialties within civil engineering. Each Academy offers the highest advanced post-licensure certification in areas of coastal, geotechnical, navigation, ocean, ports, and water resources engineering. All certifications adhere to ASCE's policy to broaden and deepen the body of knowledge for practicing engineers and to elevate the standards in civil engineering. [Click here](#) for more information on the programs.

**Boston is famous (or infamous) for the conditions of its roads.** We know that road repairs are easier and cheaper when problems are fixed early, before they get the chance to "grow." A group headed by Ming Wang, a professor of environmental and civil engineering at Northeastern University, has developed a process to detect potholes before they appear. The process, called Versatile Onboard Traffic Embedded Roaming Sensors (VOTERS), helps to identify potential problem areas before they happen. [Click here](#) for more information about this new process.

**The Boston Professional Chapter of Engineers Without Borders-USA is conducting their annual Golf Without Borders tournament to raise money for the projects they are undertaking.**

The Boston Chapter was established in 2005 for the purpose of engaging local professional engineers and interested persons in EWB-USA projects and programs. Members are volunteering their time and resources in support of engineering projects around the world. If you are interested in playing or sponsoring, [click here](#) to visit the event page.

**We all know and appreciate that engineering is one of the highest paid degrees you can get.** And many of us may be a little biased and believe that Massachusetts has the best engineering schools. Well now there is proof. A recent ranking of the Top 10 Engineering Colleges includes two Massachusetts schools. MIT and WPI were ranked 4th and 6th, respectively. The list comes from College Factual and is a ranking of colleges based on their overall quality. [Click here](#) to see the entire list.

**BSCES wants to connect with you!** We are active on all of the social media outlets. Follow, like, connect, and subscribe to BSCES on [Twitter](#), [Facebook](#), [LinkedIn](#), and [YouTube](#). These sites, in addition to the [BSCES homepage](#), will provide information on upcoming events and highlight BSCES accomplishments.

**As a volunteer based organization, BSCES relies heavily on the time, effort, and financial support of individuals and companies within the civil engineering industry.** BSCES Executive Director Tony Puntin would like to thank you for your time and dedication. As always, please feel free to contact him at [apuntin@engineers.org](mailto:apuntin@engineers.org) if you have any thoughts as to how BSCES can better serve you.

## BSCES Seeks Legislative Fellow

by Anthony M. Puntin, PE, BSCES Executive Director

BSCES is looking for a member to become our 2015–2016 Legislative Fellow in the Massachusetts Legislature. The BSCES Legislative Fellow Program provides an opportunity for a BSCES member to work for approximately 16 months on the staff of a Massachusetts legislative committee. It is possible to serve in this role on a part-time basis, while doing your regular job, depending on certain restrictions. The BSCES Legislative Fellow participates directly in the lawmaking process and learns how the state government operates. The Massachusetts Legislature will benefit from the Fellow's engineering expertise. Additionally, at the end of the fellowship, the civil engineering community has an engineer with in-depth knowledge of the legislature's decision-making process. For more information, visit the [BSCES Legislative Fellows page](#) on BSCES' website. Be sure to see the Frequently Asked Questions

(FAQ) section; below is an example of one of the most common questions:

**Why should my company agree to let me work a reduced schedule? What's in it for them?**

*The overall experience of being a Legislative Fellow (LF) is so much more than attending a training course or commenting on legislation after publication as a member of a specialty technical group. To actually review and comment on materials in real time is an amazing growth experience. You get a "ring-side seat" during transportation funding legislations and get a better understanding of the transportation priorities of both the Executive and Legislative branches of government. This experience will stick with the employee and cause them to view the engineering profession (and current employer) as a more motivated employee—the upshot is that an employee will most likely stay with its employer*

*longer. Even with the LF time commitment, you will still be able to provide at least two to three days of work with your current employer. From the company's perspective, a commitment to keep critical work flowing with your reduced schedule would be important to emphasize. Also, you will need to have a discussion about the number of hours you will plan to work during this term period, if there will be any impact on your benefits, projects/work assigned, etc. Your employer is required to submit a statement as part of your application to indicate their support of this endeavor.*

The application deadline is Friday, October 31, 2014 for the Fellowship year beginning in early February 2015 and ending on July 31, 2016. Contact Rich Keenan at 617/305-4110 or at [rkeenan@engineers.org](mailto:rkeenan@engineers.org) if you have any questions or would like additional information.

## Vote No On Question 1

*continued from page 4*

taxes in particular. These ideological differences of opinion are an important part of our public policy discourse. Unfortunately, ballot initiatives are a terrible way to establish policy because they are devoid of the very sort of compromises that democratic processes foster. Ballot initiatives, by definition, are either "yes" or "no."

For those who vote to reject the gas tax index, the logical follow on question is "if not the gas tax index, what else?" Rejecting the gas tax index will result in a funding shortfall of more than \$1 billion over a ten year period. These funds have already been pledged to tackle our most pressing

transportation needs. Without the revenue generated by the gas tax index, many projects critical to our economic competitiveness will be in serious jeopardy. Responsible public policy would suggest that our political system should identify a replacement source of revenue in order to continue with the modest improvement in transportation funding represented by the 2013 transportation financing act.

As the election season bears down on Massachusetts, our voters should take the time to educate themselves about the implications of repealing the gas tax index. It is a complicated

subject, prone to emotional response and irrational discussion. But it is quite possible this is the most important ballot initiative for our economy in several decades. Listening to the debate about repealing the casino legislation, you might never know that we are on the precipice of causing a major roadblock to economic competitiveness in a fast moving global economy.

*For more information on this issue and to join in the fight to maintain sustainable transportation funding, please visit <http://saferoadsbridges.com>.*



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# The I-84 Hartford Project

*continued from page 2*

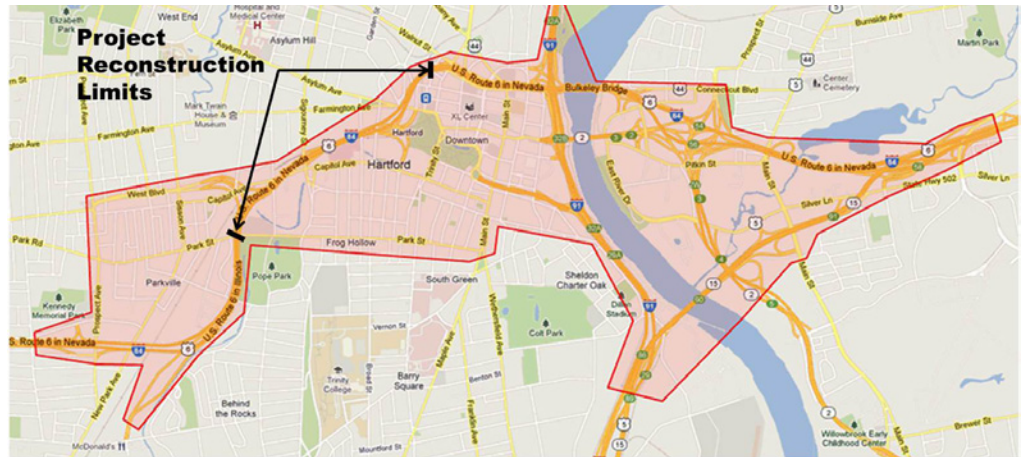
- facilitate goods movement into and through the corridor
- minimize the impact and barriers to the communities through which it passes

In 2012 CTDOT selected a Program Management team led by TranSystems to initiate and oversee the project. TranSystems is being assisted by a number of subconsultants including Parsons Brinkerhoff (major subconsultant), Fitzgerald and Halliday (public outreach), Goody Clancy (urban design), and Arthur DiCesare Associates (structural support). Among its many tasks, the Program Management Team is coordinating work with the teams responsible for concurrent NEPA/MEPA documentation (AECOM), rail relocation (Parsons Brinkerhoff) and Congestion Pricing Study (CDM Smith).

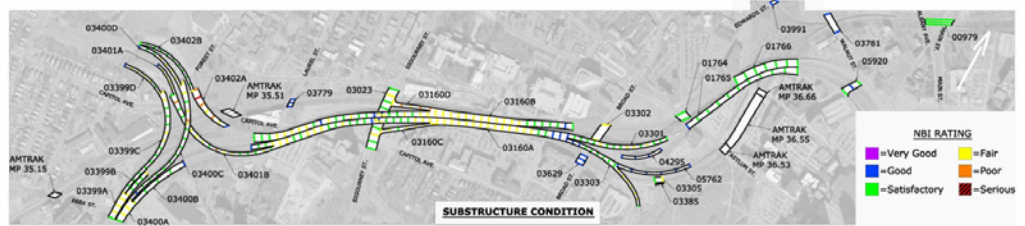
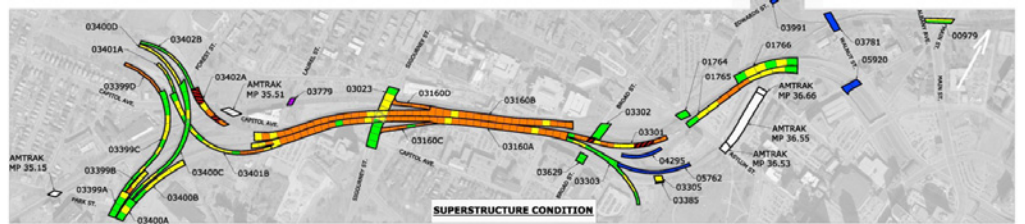
## Needs and Deficiencies Study

The project was initiated by defining the existing conditions within the study area. In support of major tasks such as travel demand modeling and micro simulation, an extensive data collection program was undertaken. This program included traffic volumes, travel times, operating speeds, queuing, vehicle origins and destinations, traffic signal data, crash statistics, and roadway geometry. Traffic counts were obtained for nearly 300 roadway segments and ramps and 65 intersections. Video cameras were employed for counts on interstate highways. Wide Area Aerial Video surveillance via two helicopters supplemented by ground mounted video cameras was used to establish ramp to ramp origin-destination volumes, operating speeds and queuing. Real time operating speeds and travel times were obtained through GPS and cell phone based data. Regional origin and destination information was acquired from proprietary software.

The collected data was processed and assembled to generate a complete picture of existing operating conditions. A regional TransCAD travel demand model maintained by the Capitol Region Council of Governments (CRCOG) was used as a starting point for travel demand forecasting. A multimodal subarea model for the project study area was developed and calibrated using the information obtained during the data collection phase. The TransCAD subarea model was used to generate design year No-Build traffic volumes.



I-84 Hartford Project Study Area



Existing Structural Conditions within Project Corridor

The analysis of the existing and design year No-Build traffic operation was performed using a number of tools. The I-84 and I-91 corridors, interchanges and intersections at ramp terminals were modeled in VISSIM. The analysis of freeway facilities was also conducted using the HCS software. Synchro and SimTraffic were used for analysis and simulation of traffic signal systems throughout the study area.

A detailed assessment of the mainline viaducts and ramp structures was performed. The evaluation included three distinct structural elements: substructure, superstructure, and

deck. Each of these elements was rated according to its condition, ranging from “very good” to “serious.” Additional data documenting existing conditions included other transportation modes, such as rail and bus transit, and social, economic and environmental conditions.

All of this data was presented in the formal Analysis, Needs and Deficiencies Report which was submitted to CTDOT in June of this year. This report along with the exhaustive public outreach process will guide the development of corridor improvement alternatives.

*continued on page 12*

## The I-84 Hartford Project

*continued from page 11*

### Alternatives Development

Based on the findings of the Analysis, Needs and Deficiencies Report, the project team is currently developing alternatives for improvement. The alternatives range from rehabilitation of existing structures to full replacement in kind to a complete reconfiguration of the corridor. To date, ten major concepts, each with up to half a dozen variations, are being developed. The concepts include mainline realignment, modifications to the interchanges, various combinations of consolidating and /or eliminating some of the interchanges, and addition of collector-distributor roads. All alternatives consider retaining the existing rail line at its current location as well as relocating it to improve its geometric characteristics, facilitate future rail expansion, and maximize the opportunities for reconfiguring the corridor. The concepts being studied include construction of the new I-84 corridor partially on structures, relocating the entire corridor at grade coupled with rail realignment, and even a tunnel alternative.

Major considerations in developing the alternatives include increasing opportunities for urban

design features consistent with the “Complete Streets” practices. The project is also ensuring compatibility with CTfastrak, a Bus Rapid Transit system being currently constructed adjacent to the corridor. An integral part of the alternatives is reconstruction of many city streets crossing or in the immediate vicinity of the I 84 corridor with the focus on accommodating pedestrians and bicyclists.

As new alternative concepts are introduced, they are being tested for operational efficiency. The TransCAD subarea model is refined to reflect the proposed modifications and the design year volumes are analyzed with VISSIM, HCS and Synchro/SimTraffic.

One of the most challenging aspects of the project is construction staging and temporary traffic control. Configuration of some of the alternatives is driven by the requirement to maintain three lanes of traffic in each direction on I-84 at all times. The approach to staging construction currently being explored employs temporary ramps, interim structures, roadway detours, and possible structure underpinning. As the alternatives are refined, regional impacts of the project construction will be evaluated using the regional TransCAD model and traffic analysis/simulation tools.



Screenshots of VISSIM Model

The public outreach process is paramount to the success of the project. To date, CTDOT and the project team held one Public Information meeting, four Public Advisory Committee meetings, and three Working Group meetings. This robust process will continue throughout the permitting, design and construction phases of the project.

## President's Report

*continued from page 1*

the technical content of our programs, (2) restructure the journal, and (3) grow the membership. Technical programs are one of the most important components of our activities. They bring together our members and improve our knowledge and understanding of current technical issues. This past year, the alignment of our technical groups with ASCE Institutes continued with the Transportation & Development Institute Boston Chapter being the latest group to form. Look for the article about the creation and planned undertakings of this group on page 7 of this newsletter. Currently BSCES activities are channeled through six institute chapters (Construction; Geo; Coasts, Oceans, Ports, and Rivers; Structural Engineering; Transportation and Development; and Environmental and Water Resources), two technical groups and several very active committees. The Public Awareness & Outreach Committee, whose members are engaged in numerous undertakings, is one example of the committees that help make BSCES the vibrant organization that it is. Our journal, the *Civil Engineering Practice*, has been a source of

pride and a distinguishing feature of the BSCES compared to all other ASCE sections. During the past few years, we have been facing some challenges in soliciting technical articles that fit our journal's mission. To a lesser extent, the cost of the journal has been a concern. I have already convened a special task force of several very experienced individuals to review the available options with regards to these issues. The task force started its work in August and we are considering several options. I expect that we can report on this matter within the next six months. Finally, sustaining and increasing the membership is vital for any organization such as ours. Our Executive Director Tony Puntin has been working hard to improve the membership numbers. We plan to reinvigorate our membership committee and continue to look for ways to keep our membership growing.

We are proud to be the oldest engineering society in the nation—we are in our 167th year—and we want to remain the best. This would not have been possible without the enthusiastic and generous support of our sponsors, past and present. Some of the special funds set up to support the BSCES go back more than a hundred years! Our corporate sponsors support the publication of this newsletter, the website, and the

Annual Awards Dinner. Our 2014-2015 corporate sponsors are AECOM, Fay, Spofford & Thorndike (FST), Green International Affiliates, Inc., GZA GeoEnvironmental, Inc., Jacobs, Jacobs Associates, Kleinfelder, Louis Berger, TranSystems Corporation and VHB/Vanasse Hangen Brustlin, Inc. TranSystems Corporation is the sponsor for this first issue. Look for the TranSystems' article on the front page of this issue.

I also want to welcome the new members on our Board of Government, including all of our new institute chapter and technical group chairs, and say a special thank you to our outgoing President Reed Brockman and outgoing Past-President Peter Richardson for the dedication and effort they have given to BSCES.

As a final note, our Annual Awards Dinner hosted by our own Reed Brockman, will be held at the Museum of Science on Tuesday, October 14 to honor two 2014 Honorary Members, Walter Jaworski, who is recently retired from GZA GeoEnvironmental, and Beverly Scott, of the MBTA, along with other award winners. Our keynote speaker is Sam Sleiman, Massport's director of capital programs and environmental affairs.

## 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.

### ASCE and BSCES Sponsored Seminar

**Wednesday–Friday, September 17-19, 2014**

Embassy Suites Boston Logan Airport  
207 Porter Street, Boston, MA

Wednesday—Friday 8:30 AM—4:30 PM

#### Technics for Pavement Rehabilitation

*Newton C. Jackson, PE, Senior Civil Engineer,  
Nichols Consulting Engineers*

*James M. Signore PhD, PE, Co-Principal  
Investigator and Senior Development Engineer,  
University of California Pavement Research Center  
(UCPRC), University of California, Berkeley*

This seminar provides detailed information on the quality standards for pavement rehabilitation. It includes the concepts that assist pavement engineers in developing the most reliable and cost-effective rehabilitation alternatives for existing flexible and rigid pavements. It addresses the problem of rehabilitation for both pavement types in a logical sequence: existing pavement structural evaluation and condition assessment, distress mechanisms, needs assessment, assignment of feasible alternatives from four categories of reconstruction, restoration, recycling, and resurfacing (4R), selection of preferred alternatives, overall design and construction.

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

### Geo-Institute Event

**Wednesday, September 24, 2014**

Revere Hotel / Boston Commons  
200 Stuart Street, Boston, MA

5:30 PM Social/Registration

6:30 PM Dinner and Program

#### Design Challenges and Behavior of High Capacity Piles for the New York (Tappan Zee) Bridge

*Robert J. Palermo, PE, GZA GeoEnvironmental, Inc.  
Robert D. House PE, GZA GeoEnvironmental, Inc.*

The construction of two new bridges that will replace the existing 60-year-old Tappan Zee Bridge is currently underway. The new river crossing will consist of two multi-span, 3.1-mile-long bridges that cross the Hudson River between Rockland and Westchester Counties in New York. An overview of the project will be presented that describes the impact of the ground conditions on the selection of bridge foundations and the challenges associated with the design of the high capacity pipe piles. The results of the extensive pile load testing program will also be addressed.

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

### Structural Engineering Institute Boston Chapter Event

**Friday, October 10, 2014**

Transportation Building  
10 Park Plaza, 2nd Floor, Boston, MA

8:30 AM Registration

12:00—1:00 PM Lunch

4:30 PM Adjourn

#### MassDOT LRFD Bridge Manual

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

*Joseph Gill, PE, President, Gill Engineering*

*Bryan Busch, PE, Director, Structural  
Engineering, CME Associates, Inc.*

This workshop is geared towards younger practicing BSCES members currently designing bridges for MassDOT. It will primarily focus on how to design bridge elements using the new Part I of the LRFD Bridge Manual. The workshop is intended to provide an overview of the significance, and the rationale behind the changes including new methods for dead load distribution, seismic design, bearing design, and integral abutment design.

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

*continued on page 14*

### Save the Date

**Tuesday, December 16, 2014**

#### 15th Annual Arthur Casagrande Memorial Lecture

*Sponsored by the BSCES Geo-Institute  
Hyatt Regency Hotel, Cambridge, MA  
Look for an email with further details.*

### ASCE Fall 2014 Seminar Schedule

*ASCE is pleased to announce the following seminars scheduled in Massachusetts during the Fall 2014 months.*

**September 17, 2014**

Techniques for Pavement Rehabilitation

**November 20, 2014**

Bridge Rehabilitation

**December 11, 2014**

Design of Metal Building Systems: Avoid Pitfalls in Specifying and Procuring

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

## Upcoming Events *(continued from page 13)*

### 166th Annual BSCES Awards Dinner

**Tuesday, October 14, 2014**

Museum of Science

1 Science Park, Boston, MA

6:30 PM Registration and Reception

7:30 PM Dinner

8:30 PM Program

Please join us for our 166th Annual Awards Dinner on October 14 at Museum of Science for an evening celebrating BSCES and the engineering profession. BSCES will recognize new leaders, present annual awards, and honor our newest Honorary Members Walter E. Jaworski, ScD, PE, recently retired from GZA GeoEnvironmental, Inc. and Beverly A. Scott, PhD, CEO and general manager of the MBTA. The keynote speaker for the evening will be Sam Sleiman, PE, CCM, Massport's director of capital programs and environmental affairs.

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

### Upcoming BSCES Program Committee Seminars

*Mark your calendar and look for future emails about these upcoming BSCES Program Committee Sponsored Events*

**Stormwater Seminar**

Thursday, October 23, 2014

Westford Regency & Conference Center

**FEMA Seminar**

Friday, November 21, 2014

Holiday Inn Mansfield/Foxborough

**Safety Inspection of In-Service Bridges**

Monday–Friday, December 1–12, 2014

OR

Monday–Friday, February 23–March 6, 2015

Hilton Garden Inn Worcester

**Bridge Inspection Refresher Training**

Tuesday–Thursday, January 13–15, 2015

OR

Tuesday–Thursday, March 24–26, 2015

Hilton Garden Inn Worcester

### Register Today

**Saturday, October 4, 2014**

**7th Annual EWB UMass Amherst Sweat for Clean Water 5K Run**

UMass Amherst Goodell Hall  
on the front lawn by the Old Chapel

Check-In 10:00 AM

Walk 10:30 AM

Run 11:00 AM

Please join us as an individual or put together a team!

A free t-shirt will be given out at the event to the first 100 runners who pre-register on-line.

*[Click here](#) for more information about this Engineers Without Borders UMass Amherst Student Chapter-sponsored event.*

## Classifieds



### **Exciting opportunities to join the Hoyle, Tanner Team!**

We are actively seeking a highly motivated **SENIOR BRIDGE ENGINEER** in Manchester or Portsmouth, NH and a **REGIONAL MANAGER OF ENVIRONMENTAL SERVICES** in Manchester, NH.

Hoyle, Tanner & Associates, Inc. is a midsize, employee owned, national consulting engineering firm headquartered in Manchester, NH with offices in the Northeast, Florida and the Virgin Islands. Visit our career pages at [www.hoyletanner.com](http://www.hoyletanner.com) for more information and other exciting career opportunities.

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Boston Society of Civil Engineers Section  
American Society of Civil Engineers



GEO-  
INSTITUTE  
Boston Chapter

## Design Challenges and Behavior of High Capacity Piles for the New NY (Tappan Zee) Bridge

**Robert J. Palermo, PE**

*GZA GeoEnvironmental, Inc.*

**Robert D. House, PE**

*GZA GeoEnvironmental, Inc.*

**Wednesday, September 24, 2014**

**Revere Hotel / Boston Common, 200 Stuart Street, Boston, MA**

**5:30 PM Social/Registration; 6:30 PM Dinner and Program)**

The construction of two new bridges that will replace the existing 60-year-old Tappan Zee Bridge is currently underway. The new river crossing will consist of two multi-span, 3.1-mile-long bridges that cross the Hudson River between Rockland and Westchester Counties in New York. The geology at the site generally consists of a thick deposit of soft, organic soils overlying glacial lake varved clays up to several hundred feet in thickness. High capacity deep foundations consisting of a combination of end-bearing and friction piles will be used to support the new bridge superstructure. The main span towers and anchor piers of the bridge are designed to be supported on 6-ft diameter, open-ended steel pipe piles bearing on either glacial till or sedimentary or metamorphic bedrock at depths of up to 270 feet below the Hudson River. The nominal resistance of these piles is up to 31,135 KN (7,000 kips). The remaining portions of the bridge are designed to be supported on 3-ft and 4-ft diameter, open-ended steel pipe piles, about half of which are friction piles in the deep glacial lake varved clay deposit. The required nominal resistance of the friction piles is up to 19,125 KN (4,300 kips).

An overview of the project will be presented that describes the impact of the ground conditions on the selection of bridge foundations and the challenges associated with the design of the high capacity pipe piles. The results of the extensive pile load testing program will also be addressed.

**Registration Deadline: Wednesday, September 17, 2014**

**\$75 Members, \$85 Non-Members**

**\$65 Public Sector Members, \$75 Public Sector Non-Members**

**\$55 Senior Members (65+) & Students**

### **Information/Registration:**

Register to attend this meeting and pay by credit card online at [http://bit.ly/BSCES\\_GEO\\_Tappanzee\\_Event](http://bit.ly/BSCES_GEO_Tappanzee_Event). 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 September 17, 2014 and no-shows will be billed.

## MassDOT LRFD Bridge Manual

**Alexander Bardow, PE**

*State Bridge Engineer, MassDOT*

**Joseph Gill, PE**

*President, Gill Engineering*

**Brian Busch, PE**

*Director, Structural Engineering, CME Associates, Inc.*

**Friday, October 10, 2014**

**Transportation Building, 10 Park Plaza, 2<sup>nd</sup> Floor, Boston, MA**

**Conference Room No. 1, 2 and 3**

**8:30 AM Registration; 12:00-1:00 PM Lunch; 4:30 PM Adjourn**

This workshop is geared towards younger practicing member's currently designing bridges for the MassDOT. It will primarily focus on how to design bridge elements using the new Part I of the LRFD Bridge Manual. The workshop is intended to provide an overview of the significance, and the rationale behind the changes including: new methods for dead load distribution, seismic design, bearing design, and integral abutment design.

**Registration Deadline: Wednesday, October 8, 2014**

**\$50 Members, \$65 Non-Members**

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

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

### **Information/Registration:**

Register to attend this meeting and pay by credit card online at

[http://bit.ly/SEI\\_MassDOT\\_LRFD\\_BridgeReg](http://bit.ly/SEI_MassDOT_LRFD_BridgeReg). 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. There is a 60 person limit for this event. Due to high registration expectations, a 4 person limit per firm is being implemented. An encore workshop is tentative. A morning and afternoon refreshment will be provided. Lunch will be the attendee's responsibility. Cancellations received after October 8, 2014 and no-shows will be billed.



You are cordially invited to attend the 166th BSCES Annual Awards Dinner, Tuesday, October 14, 2014



## Museum of Science

1 Science Park, Boston, MA

6:30 PM Registration and Reception; 7:30 PM Dinner; 8:30 PM Program

Keynote Speaker:

### Sam Sleiman, PE, CCM

Director of Capital Programs and Environmental Affairs  
Massachusetts Port Authority

Sam Sleiman has over 30 years of extensive experience in the design and construction industry. Sam joined Massport in October 1993 and has held several positions in the Authority, most recently as the Director of Capital Programs and Environmental Affairs. As the head of Capital Programs, Sam directs the overall management of the Authority's capital investment program, safety program, utilities management, in-house project design and environmental permitting and management. Sam is a licensed registered Professional Engineer in the Commonwealth of Massachusetts and a Certified Construction Manager. He is an active member of the American Association of Airport Executives (AAAE), Airports Council International-North America (ACI-NA), American Society of Civil Engineers (ASCE) and the Construction Management Association of America (CMAA). Currently, Sam is the chair-elect for the CMAA National Board. He is also a member of the ACI-NA World Steering Committee, and is a member of Northeastern University's Civil and Environmental Engineering (CEE) Industrial Advisory Board. Moreover, Sam participates in various peer review panels. In 2010, Sam was named one of *Engineering News Record's (ENR) Top 25 Newsmakers of 2009* along with receiving The New England Chapter of CMAA *Person of the Year for 2009 award*. Sam holds both a Master and Bachelor of Science degree in Civil Engineering from Northeastern University.

## Honor Award Winners and Newest Honorary Members:

Please join us at Museum of Science for an evening celebrating BSCES and the engineering profession. BSCES will recognize new leaders, present annual awards, and honor our newest Honorary Members, Walter E. Jaworski, ScD, PE, who is recently retired from GZA GeoEnvironmental, Inc. and Beverly A. Scott, PhD, CEO and general manager of the MBTA. Space is limited for this event, so register today!

## 166th 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:	\$175.00	_____	_____
	Table of 10:	\$1,500.00	_____	_____
	Totals:		_____	_____

**Register Online:** Register and pay by credit card online at: <http://bit.ly/166thBSCESAnnualAwards> 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 below and return it to the address above or email it to [bscesreg@engineers.org](mailto:bscesreg@engineers.org).

### 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: BSCES, The Engineering Center, One Walnut Street, Boston, MA 02108-3616

### Registration Deadline: Tuesday, October 7, 2014

No-shows and cancellations received after Tuesday, October 7 will be billed. For questions please call 617/227-5551. No phone registrations.

# 2014-2015 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
- ThinkFest
- Construction Career Days

### Younger Member Group

- ASCE Student Chapter Officers' Caucus
- Bocce Tournament/Networking Event
- 103rd 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](http://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*.



2014 Model Bridge Contest



# 2014-2015 BSCES Sponsorship Program

Yes, I would like to become a 2014-2015 BSCES Outreach & Education Sponsor at a cost of \$1,500

Firm/Organization Name: \_\_\_\_\_  
(As you would like it to appear in event promotions)

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

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

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

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

Fax or email this form and credit card information by **Tuesday, September 30, 2014** to Audrine Ellard, BSCES, at 617/227-6783 or [aellard@engineers.org](mailto:aellard@engineers.org).

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](mailto:apuntin@engineers.org)

**Payment Must be Received at Time of Commitment**