

## Load Rating of the Waldrip Bridge by Field Load Testing

by Evan C. Lowell, PE, Principal, TranSystems

We have all seen a load posting sign on a roadway leading to a bridge, stating the allowable weight the bridge can support for various vehicle types. While these load posting signs have minimal impact on the large majority of vehicle operators who drive passenger cars and SUVs, they can pose a significant inconvenience to heavier vehicles such as delivery trucks, fire/emergency vehicles, school buses, construction vehicles and farm equipment. These allowable weights are typically determined through a load rating analysis process established by the federal government (AASHTO), State DOTs and local governing agencies. By federal law, each bridge is required to have an initial load rating when it is constructed, and this load rating is required to be updated whenever the bridge undergoes any significant change, such as: bridge widening, member deterioration, member strengthening, etc.

Similar to structural design methodologies, typical load rating analysis methods are often conservative in nature, and do not account for load sharing and stress distributions that often

occur in structural systems. In some cases, when load rating calculations show that a bridge's load capacity is not adequate to support statutory loads or when a structure's observed behavior is not what is expected, it may be advisable to determine a bridge's load capacity through field load testing. While more expensive than a traditional office-based load rating analysis, field load testing provides the engineer with a better understanding of the actual structural behavior of the bridge, and may yield information which can save significant time and money regarding future maintenance or rehabilitation investments in the bridge.

TranSystems recently performed a bridge load rating through field load testing for the Texas DOT on the Waldrip Bridge in Coleman County, TX. This bridge consists of six simple span trusses (1 main span and 5 identical approach spans) totaling 698 feet in length, carrying one lane of CR 220 over the Colorado River. The structure was built 1911, with the

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## President's Report

by Brian A. Morgan, Esq., Legal Counsel, CDM Smith Inc.



October brought a number of great events for BSCES, which were hosted by our technical groups and institute chapters. I would like to use this message to highlight a few activities that BSCES recently hosted such as the Younger Member Group's (YMG) annual ASCE Student Chapter Officers' Caucus Fall Kickoff Meeting, which brought together leaders from area college and university ASCE Student Chapters. Alyson Stuer, PE, from Alfred Benesch & Company, who chairs the

YMG, did an excellent job putting the event together. The highlight of the evening was a group activity, which focused on an opportunity to problem solve issues that the students face in school and in their ASCE student chapters. This event helps student chapter leaders share ideas and the YMG's efforts go a long way to encouraging students to become members after graduation. If you are a member below the age of 35, be sure to attend the YMG Holiday Party on December 8th to have fun and learn more about upcoming activities and how you can get involved.

## UPCOMING EVENTS

**CI Boston Chapter Summit**  
December 2, 2016

**ASCE and BSCES Sponsored Seminar**  
December 5 – 6, 2016

**EWRI Boston Chapter and Committee on Sustainability Site Visit**  
December 7, 2016

**G-I Boston Chapter Dinner Meeting**  
December 8, 2016

**Younger Member Group Holiday Party**  
December 8, 2016

**T&DI Boston Chapter Social Event**  
February 9, 2017

**Further Details Inside**



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One focus for this year is to provide a wider variety of BSCES events including online learning, varied networking opportunities and site visits. Aligned with this initiative, the Transportation and Development Institute (T&DI) held a great webinar in October on Infrastructure Needed for Self-Driving Cars. With over 150 participants, the event was a great success. Additionally, BSCES is focused on developing greater collaboration between the institute chapters and technical groups. For example, the Construction Institute and T&DI

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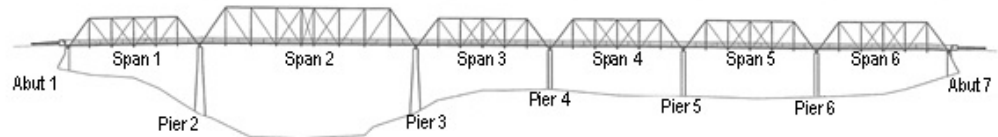
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## Load Rating of the Waldrip Bridge

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**Figure 1:** East elevation of the Waldrip Bridge, CR 220 over the Colorado River in Coleman County, TX.

main truss being relocated to the current location from another site. The trusses consist of steel rolled members and eyebars, with pinned connections at the truss joints.

At the time of the project the structure was closed to traffic due to concerns for the bridge’s load carrying capacity. Of primary concern were select truss lower chord and diagonal members and select bearings. Several eyebar lower chord members were misaligned; these members were designed to be purely in tension, but appeared to be subject to compressive loads. Several expansion bearings were in hard contact with the fixed bearings of the adjacent truss span. The Department engaged TranSystems to determine if the bridge could be reopened, and if so, what loadings should be allowed.

### Load Testing Program

TranSystems developed both static and dynamic load testing procedures to determine the safe load carrying capacity of the bridge. The procedure was prepared in accordance with *The Manual for Bridge Evaluation, 2nd Edition* (AASHTO). The tests were performed with two varying truck weights, with strain gages installed on 16 approach span truss members and 14 main span truss members. Strain gage locations were selected such that the results from multiple gages could be used to determine the axial force in adjacent members which were not instrumented.

The static load test consisted of stopping the live load at selected locations on the bridge and recording strain gage measurements; this process was then repeated for increased live loads. A minimum of three trials were performed for each live load at each location to verify repeatability of the strain readings. The dynamic load tests consisted of moving the live load across the bridge at a slow, consistent speed to minimize the effects due to impact loading. The maximum and minimum strains were recorded



**Figure 2:** Lower chord eyebars designed to be in tension are bowed, and appear to be in compression.

at each strain gage location. Four trials were run for each strain gage and load combination to verify the strain readings.

In order to investigate the distribution of axial load through the members, two strain gages were installed at each truss chord location. For the built-up members one gage was installed on each of the channel sections and for the members composed of two eyebars one gage was installed on each eyebar.

### Load Testing Results

Nine out of 15 eyebar members tested had an unequal distribution of force through the individual eyebars, with one member showing a force distribution of 10% / 90% between the two eyebars. Design and rating assumptions assume that all members remain in the elastic region under all loading conditions. Due to the unequal distribution of axial force between the two adjacent eyebars, the assumption was made that one eyebar will carry more axial force, resulting in that eyebar reaching its maximum capacity and yielding before the other. At the

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## Load Rating of the Waldrip Bridge

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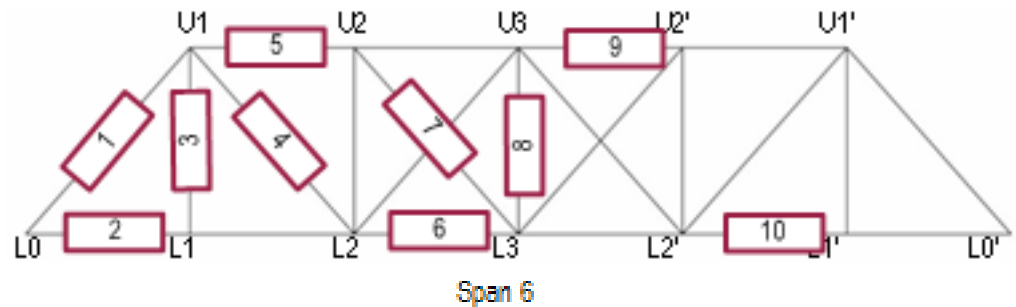
point where one eyebar is fully loaded to its maximum capacity, applying additional load will result in yielding of one eyebar and permanent deformations. At this point, the eyebar would no longer be in the elastic range and would become plastic. To account for this in the load rating, each eyebar was rated individually and the minimum rating factor governed the chord member rating.

An as-built load rating was also computed to serve as a baseline for the overall capacity of the structure and a comparison to the as-tested results. In general, the load testing measured greater loads in the top chords and endposts than the loads computed analytically, while the lower chord testing results showed loads significantly less (from 43% to over 300%) than the computed loads.

During recent inspections, and during the load testing, the truss bearings were observed to be locked in place, with no significant ability for expansion. Additionally, retrofit construction of the stringer/floorbeam connections had removed the ability for expansion at individual floorbeam locations (at each truss lower chord joint). These conditions serve to make the truss behave more like an arch, with lower loads in the bottom chord and increased loads in the top chord and endposts.

### Conclusions

Based on the results of the load testing and as-built load rating, TranSystems recommended the bridge be reopened, and posted for 8 Tons (16,000 GVW), pending the completion of various structural repairs. These repairs and load posting would reopen the bridge to for cars and light trucks, providing a significant benefit to the local community.



**Figure 3:** Elevation of approach truss span, showing strain gage locations.



**Figure 4:** Strain gages on both eyebars of truss diagonal member.



**Figure 5:** Expansion bearing from one span in contact with fixed bearing from adjacent span.

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## Featured Group

### Boston Chapter of the ASCE Structural Engineering Institute (SEI)

by Dennis Baker, PE, Vice President, HNTB Corporation, and SEI Boston Chapter Chair

The mission of the ASCE Structural Engineering Institute (SEI) is to *advance and serve the structural engineering profession*, and our local Boston Chapter supports that mission by providing learning and networking opportunities for local structural engineers throughout the year.

The SEI Boston Chapter executive committee meets monthly to discuss subjects of interest in the field of structural engineering and strives to identify topics for events related to new practices, current research, case studies and other developments impacting the industry. The committee also has access to the resources of SEI National, which is a great source for news, ideas and potential speakers from across the country. Based on these discussions, the committee organizes a variety of events, typically three to four lunch or dinner meetings, throughout the year, along with our bi-annual Fall Lecture series.

The bi-annual Fall Lecture Series is a very popular and long-standing tradition started by

the BSCES Structural Group, which pre-dates SEI. Every other year, the committee organizes a series of five to seven evening lectures by prominent speakers, which occur in consecutive weeks, typically starting in October. The next series will be held in the fall of 2017 and the committee is busy planning that now. The theme of next year's series will be related to the construction aspects of structural engineering.

The current committee is comprised of structural engineers with a wide range of experience, and includes professionals with building, bridge, and academic backgrounds. The committee has steadily grown in recent years and currently has 25 members. The growth of the committee has allowed us to form subcommittees to focus on our key functions, these include:

- Regular Programs
- Bi-Annual Fall Lecture Series
- Membership
- External Affairs

The majority of our events are technical lectures or presentations of case studies, but we also plan occasional social events. In recent years we've also hosted some joint events with the Younger Member Group, which we hope to make a tradition in coming years. Our next events are currently anticipated for February and April of 2017, so keep an eye on the BSCES Events Calendar.

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

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

**Shahvir Vimadlal, PE, Vice-Chair**  
[shahvir@yahoo.com](mailto:shahvir@yahoo.com)

**Nathan Rosencranz, PE, SE, Secretary**  
[RosencranzN@wseinc.com](mailto:RosencranzN@wseinc.com)

## President's Report

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Boston Chapters co-hosted its first social of the year in October at the Atlantic Beer Garden. On September 27th, the Coasts, Oceans, Ports and Rivers Institute (COPRI) and Environmental & Water Resources Institute (EWRI) Boston Chapters combined to hold a joint program at CDM Smith's offices titled "Climate Resilience in Boston and Beyond: Practice, Policy and Corporate Partnerships," which featured speakers from The Nature Conservancy. Upcoming, on December 7th, the EWRI Boston Chapter and BSCES Committee on Sustainability are co-sponsoring a tour of Fraunhofer CSE's Living Laboratory for Sustainable Energy Systems at the Fraunhofer Center in Boston.

BSCES continues to set the standard in ASCE. In addition to receiving the 2015 Outstanding Large Section and Branch Award this past June, BSCES was recently selected to receive the 2016 Outstanding Section and Branch Web Site Award in the "very large" Section and Branch membership category (>2,500 members). Past President Ellen White led the charge to update our website. Be sure to visit our [new website](#) and

use it as a resource to learn more about our various technical groups, institute chapters and committees, along with the upcoming events. Whether you attend a presentation or join one of our volunteer groups, BSCES needs your involvement to build our Society's community.

One of BSCES' recent undertakings is to strengthen the Section's ties with ASCE's institutes. A few years ago, BSCES had ten groups focused on various technical areas (nine technical groups and one ASCE institute chapter—the Geo-Institute). Over the last few years, BSCES aligned itself with ASCE's institute chapter model and today we have eight groups, six of which are ASCE Institute Chapters. The leaders of these institute chapters are encouraged to align with ASCE's national priorities. BSCES is thankful to Todd Clark, from Hoyle, Tanner & Associates, Inc., who attended the ASCE National T&DI Leadership Summit held at ASCE's world headquarters in Reston, Virginia. The two-day event is held bi-annually to connect leaders at all levels within T&DI. Todd was invited to speak on behalf of T&DI's Boston Chapter to present the Boston Chapter's past, present & future mission to a room filled with 100+ national, council, committee and chapter leaders all seeking to better understand each

other's responsibilities and goals. Fellow attendees represented academia, public agencies, municipalities and private practice who traveled from all across the country to attend the summit. Todd provided comments on the past successes of T&DI Boston Chapter, the programs the Chapter has lined up for the year and how the Chapter intends to advance T&DI's presence in the Boston area.

The theme of this month's newsletter is Structures and I urge you learn more about the BSCES' Structural Engineering Institute Boston Chapter, which is chaired by Dennis Baker, PE of HNTB Corporation. This issue of *BSCESNews* contains a page 4 article that was written by Dennis. We are very appreciative of TranSystems Corporation, which is both a BSCES Society and Program level sponsor. Please be sure to read TranSystems' page 1 article written by Evan Lowell, PE, titled "Load Rating of the Waldrup Bridge by Field Load Testing."

In closing, I would like to thank all of our Society and Program Sponsors, whose financial support helps enable BSCES and its committees, institute chapter and technical groups to host the numerous networking and professional development events that are planned for this year.

## Cohasset Culvert Raises the Grade

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

Following a lengthy permitting process with local, state and federal environmental agencies, the Town of Cohasset recently obtained approval to remove an existing failed headwall and culvert system on Jerusalem Road and replace them with a new culvert and headwall with a similar footprint but additional flow capacity. The project also included raising the grade of the roadway to help alleviate flooding during substantial tides and storm events.

Additionally, it was the Town's intention to improve the habitat of the existing tidal resource areas located on the west side of Jerusalem Road culvert, namely tidal flats and salt marsh. In its previous condition, tidal flow was minimal during periods of the day causing stagnant water and the buildup of organic material. The new culvert improvements will increase tidal flow; remove stagnant organics; and improve water quality of the tidal resource areas. The work is expected to result in an overall improvement to the salt marsh habitat.

The existing granite stone clapper culvert (stacked slabs of granite) overtopped during extreme high tide and significant storm events resulting in a flooded roadway multiple times a year. This condition led to closures of this busy roadway; impacted resident's access to their homes; and threatened to delay emergency response times.

The work included the installation of a 30 foot long by eight foot wide by five foot high precast concrete bottomless culvert in approximately the same location as the existing stone clapper culvert. The roadway grade for approximately 900 linear feet was raised approximately two feet to help alleviate overtopping of the culvert and roadway. At both the upstream and downstream sides of the proposed culvert, the Town bolstered the existing stone at pipe ends in an effort to minimize any scour or erosion that could possibly occur from the restoration of the culvert.



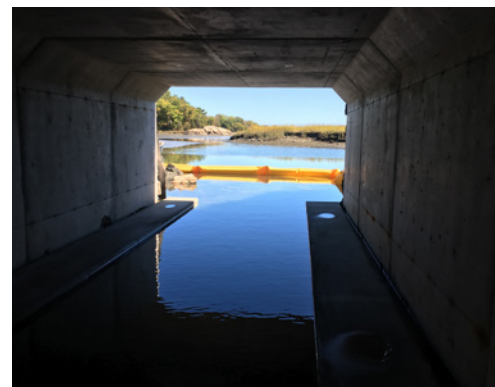
Previously Flooded Roadway under King Tide Conditions



Old Shallow Granite Block Culvert



New Roadway under King Tide Conditions



New Larger Precast Concrete Culvert

In addition to improving tidal flow, salt marsh restoration is proposed to re-establish salt marsh within areas that are currently devoid of vegetation/previously disturbed to ensure that there is no net loss of salt marsh resource area. While the elevation of the roadway was elevated from existing conditions, the existing tidal flow and the highest spring tide will assist in promoting the re-establishment and survival of salt marsh vegetation. The Town will be installing supplemental planting along the roadside edge to ensure a predominance of salt marsh vegetation.

Post-construction monitoring will ensure that the restored areas contain a minimum of 80% areal coverage with native salt marsh species.

With the benefit of funding through the FEMA Hazard Mitigation Grant Program (HMGP), along with a comprehensive and collaborative design and permitting effort, which included some constructive guidance from MassDEP and the Army Corps of Engineers, the Town was able to solve a variety of structural, civil, and environmental challenges within a very sensitive resource area in an attempt to stay ahead of an ever rising tide.



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## Legislative Fellowship—Concluding Thoughts

by Michael Sullivan, PE, Project Manager, Collins Engineers, Inc., 2015–2016 BSCES Legislative Fellow



As my tenure as BSCES Legislative Fellow concludes, I'd like to take a moment to thank the Society for providing me with this wonderful opportunity of serving the Legislature over the past two years. I've had an opportunity to understand how the legislative process works here in Massachusetts and the various roles that our elected and appointed officials play in crafting public policy. I've seen the passage of a handful of bills that affect our professional society including much needed reforms at the MBTA, the creation of the Municipal Bridge Program, reforms to the MassDOT Complete Streets program, increased thresholds for municipal construction procurements and additional funds for the MassWorks program. Based on what I've seen these past two years, I'd like to share a few thoughts.

In terms of the legislative process, there are many bills that are newly introduced in a legislative session and other bills that are reintroduced routinely in a new session. Many of these bills have zero chance of ever becoming law. If a bill hasn't been favorably reported out of whatever committee it's appointed to, that's

a good indicator that the bill isn't going anywhere. Also, bills reported out of joint committees go to Ways and Means. Again, if the bill doesn't come out of Ways and Means then it's essentially dead.

There are always two versions of a bill—one for the house and one for the senate. Typically these are similar, but sometimes they'll have differences. It's up to a final conference committee to merge the two bills into a final version. At this point political decisions and negotiates are typically the heaviest with lots of jockeying between legislators. The final bill is what is sent to the Governor's desk.

Bills are difficult to read. We're trained as engineers in a certain manner to present our information. There's a lot of legal jargon used that can be tough to understand at first but after reading a few bills, you start to get the general feel for how the information is presented.

I've learned that sometimes what you read in the newspapers or from the media isn't really the whole truth to the story (I know, what a shock!) so take it with a grain of salt. It's always interesting to read one media source and then

get the behind the scenes story from the actual decision-makers.

Finally, we as an engineering community need to do a better job sharing our knowledge and expertise to help craft public policy. If we don't, others with far less knowledge on the topic will. Infrastructure investment hasn't kept pace and we're battling for an ever shrinking slice of the pie. Engineers building and fixing our Commonwealth's bridges, roads, and tunnels see firsthand the condition of our infrastructure. Reach out to your legislators and let them know what you do and how you feel on a topic – they value the feedback! Many legislators have no idea what we as a profession do on a day to day basis. Out of the 200 legislators in the current legislative session there was exactly one registered architect and one registered engineer. Also, don't hesitate to provide public comments during a proposed bill's public hearing. Hearing schedules are easy to find on the MA Legislature webpage. Our opinion goes a long way! Thanks again for the opportunity to be your Legislative Fellow and if you've thought about serving in this position—send in an application. It's a great experience.

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# Volunteer Opportunities

## Outreach Volunteers Needed!

by Olivia A. Richards, Assistant Structural Engineer, Gill Engineering and BSCES Public Awareness & Outreach Committee Chair

### Future City Mentors

Future City teams are signed up to compete in this year's Future City Competition (January 21, 2017). We are looking for engineers to mentor the teams! Mentoring consists of advising the students on how to design a successful city. This year's theme is Public Spaces. Ideally, you will be able to work with the middle school students and provide engineering advice throughout the project. This may happen in person, via email, or even Skype. Typically, most engineers devote approximately one hour per week until January. We have teams from cities in Massachusetts and Maine, so tell us the areas that are convenient for you. Please contact Sofia Puerto at [sofiapuerto@gmail.com](mailto:sofiapuerto@gmail.com) if you are interested!

*The following towns have teams that need mentors:*

Holy Family, Rockland, MA

Curious Science and Learning, Chelmsford, MA

Shapleigh School, Kittery, ME

### Model Bridge Mentors

Model Bridge teams have registered this past October for the BSCES Model Bridge Competition and are looking for mentors. We need engineers to mentor these teams! Mentoring consists of advising the students while they design a small-scale bridge (40 inches in length) with the specified materials. Ideally, the mentor will be able to work with the kids and provide advice throughout the project (from now until February). This may happen in person, via email, or even Skype. Typically, most engineers visit the school weekly or every other week from November to January. Please contact us at [bscesmodelbridge@gmail.com](mailto:bscesmodelbridge@gmail.com) if you are interested. The competition will be held on February 4, 2017.

*The following towns have teams that need mentors:*

Carver Middle High School, Carver, MA

Esperanza Academy, Lawrence, MA

Malden Catholic High School, Malden, MA

Salem High School, Salem, NH

St. John Paul II Catholic Academy Lower Mills Campus, Dorchester, MA

Trinity Christian Academy, Barnstable, MA

Young Achievers Math and Science Pilot School, Mattapan, MA

### New England Future City Competition

**Day: Saturday, January 21, 2017**

**Overview:** Competition day for all teams to present model cities

**Location:** MassDOT Headquarters, 2nd floor, 10 Park Plaza, Boston, MA

**Time:** 8:00 AM to 3:00 PM

**Looking for:** Engineering volunteers to be judges on competition day (model judges, presentation judges, or special awards judges). Judges can be any engineer or engineering college student. No previous judging experience needed. Volunteers are to check in at the volunteer check-in table at MassDOT, 2nd floor mezzanine at 8:00 AM to attend the judges' orientation session before competition day begins. Presentation and model judges will be placed in conference rooms where student teams will present their Future Cities and judges will use rubrics to provide scores. Special Awards judges will be in the mezzanine area walking around to various Future City team tables and scoring Future City models according to the Special Award rubric. Please email me if you

have further questions regarding the event at [oliviaannerichards@gmail.com](mailto:oliviaannerichards@gmail.com).

[Click here](#) to sign up.

### BSCES Model Bridge Competition Day: Saturday, February 4, 2017

**Overview:** Competition day for all teams to present model bridges and load test models

**Location:** MassDOT Headquarters, 2nd floor, 10 Park Plaza, Boston, MA

**Time:** 8:00 AM to 1:00 PM

**Looking for:** Volunteers to help run the competition. Volunteers will be running the registration table, distributing t-shirts, loading the bridges, guiding teams to the stage, etc. Please email me if you have further questions regarding the event at [oliviaannerichards@gmail.com](mailto:oliviaannerichards@gmail.com).

[Click here](#) to sign up.

For more information on volunteering opportunities or becoming part of the BSCES Public Awareness & Outreach Committee, please contact me at [oliviaannerichards@gmail.com](mailto:oliviaannerichards@gmail.com).



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## Recent News and Updates

### BSCES Welcomes its New Members

The BSCES Board of Government is pleased to welcome the following new members who joined BSCES during the month of October, 2016:

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Zachary P. Mino, Great Barrington, MA

#### Associates

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Edwin M. Mena, Dewberry Engineers Inc.  
Kara Slocum, Sasaki Associates  
Thuong Q. Tran, Southbridge, MA  
Richard Whitehouse, EIT, VHB

#### Members

Keith M. Bouchard, SE, CBI Consulting Inc.  
Rachel Smith, SE, Simpson Gumpertz & Heger

#### Students

Zachary R. Abbott, Worcester Polytechnic Institute  
Mohammad Almana, Northeastern University  
Parker Aubin, Tufts University  
Megi Baliko, Wentworth Institute of Technology  
Daniel A. Carpenter, Rochester Institute of Technology  
Kalvin Cho, University of Rhode Island  
Kurt P. Doherty, University of Massachusetts Amherst  
Zachary Dreiker, University of Vermont  
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Marckenley J. Joseph, University of Massachusetts Dartmouth  
Bassel Khoury, Harvard University  
Deanna M. Kondek, Wentworth Institute of Technology  
Katherine Kowalski, California Polytechnic State University  
Elizabeth Lahti, University of New Hampshire  
Vasilii Lastochkin, University of Massachusetts Lowell  
Caulin Lauzon, University of Massachusetts Lowell  
Joseph Maclellan, Roger Williams University  
Eric W. McAlpine, Rochester Institute of Technology  
Kayleigh R. Murphy, University of Notre Dame  
Jaimie Payne, University of Massachusetts Dartmouth  
Amber Peach, Roger Williams University  
Jonathan Pope, Roger Williams University  
Patrick H. Riendeau, University of Massachusetts Dartmouth

Carolyn Rybecky, Vanderbilt University  
Michael A. Salvatori, Canton, MA  
Christopher D. Sarno, University of Massachusetts Lowell  
Bryan Sassaman, University of Massachusetts Amherst  
Udaya Shah, University of Massachusetts Lowell  
Paul Z. Sterritt, University of Massachusetts Amherst  
Momo Sun, Massachusetts Institute of Technology  
Michael Tortora, Middleboro, MA  
Lentini Tovores, University of Massachusetts Dartmouth  
Anthony Trant, Roger Williams University  
Kyle Tronerud, Roger Williams University  
Wyatt David Trottier, Roger Williams University  
Domenic Valeri, University of Massachusetts Lowell  
Connor Western, New Jersey Institute of Technology  
Matt Zanin, Lexington, MA

### Know a Potential New Face of Civil Engineering?

Is someone you know one of the next New Faces of Civil Engineering? Marking its 14th year, ASCE's New Faces of Civil Engineering—Professional Edition recognition program highlights the next generation of civil engineering leaders by showcasing young, diverse, talented engineers to show that engineering is an exciting profession open to everyone. If you know a civil engineer under the age of 30 who has made a unique contribution to society be sure to nominate them for this award. [Applications are due by November 18.](#)

### MALSCE Education Trust Scholarship Memorial Scholarship

The Massachusetts Association of Land Surveyors and Civil Engineers (MALSCE) Education Trust, which was founded to enhance the profession of land surveying and civil engineering in Massachusetts by providing scholarship and education grants for the students of land surveying and civil engineering who are Massachusetts residents, is currently accepting applications for three scholarships. The Trust's Memorial Scholarship is awarded to a student presently enrolled full time (days) as an undergraduate in an accredited college, university, junior college, technical institute or community college and majoring in land surveying, civil engineering or environmental engineering. Typically 2–3 Memorial Scholarships are awarded each year with varying denominations of \$500, \$1,000 or \$2,000 each. Completed applications for 2017

scholarships are due February 15, 2017 and the Trust plans to determine the number and amount of scholarships by March 25, 2017. [Click here](#) to learn more about the Memorial Scholarship requirements and application process.

### John Sullivan Named a NEWEA Water Champion

BSCES congratulates John Sullivan, chief engineer for the Boston Water and Sewer Commission and BSCES Honorary Member on being named a New England Water Environment Association (NEWEA) Water Champion. You can read a featured story about John on the [NEWEA website](#).

### Professional Development in your Wheelhouse

Stay on the cutting edge of your technical discipline with the most up-to-date codes and standards, professional practice publications, conferences, e-updates, and continuing education courses all designed to provide the resources you need to advance your career. ASCE can and should be one of your best references to continue your Professional Development. [Click here today!](#) Some of the material includes the following:

- [The ASCE Library](#) gives you access to professional journal articles online, across all disciplines of civil engineering.
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- [ASCE proactively promotes diversity](#) and includes various backgrounds, skills, and experiences to develop appropriate solutions and actions that will embrace and enhance opportunities in civil engineering.
- [Nine Specialty Institutes](#), making specialty area information and services even easier to access
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  - [Utility Engineering and Surveying](#)

**SEND US YOUR NEWS!** Looking to strengthen the community that is BSCES, the BSCES Executive Committee and Newsletter Editorial Board has decided to expand the content of this *BSCESNews* Recent News and Updates column by including more member news. Have you recently been recognized for a professional accomplishment, passed the Professional Engineer Exam, received a promotion, or changed employers? If so, send your news items to BSCES Newsletter Editorial Board Chair Michael R. Cunningham, PE, Kleinfelder, at [mcunningham@kleinfelder.com](mailto:mcunningham@kleinfelder.com).

## 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.

### CI Boston Chapter Summit

**Friday, December 2, 2016**

Marriott Courtyard Boston Downtown  
275 Tremont Street, Boston, MA

7:00 AM – 4:00 PM

#### Construction Institute Boston Chapter Boston Day-Summit

*Keynote Speaker:*

Thomas J. Tinlin, Highway Administrator,  
Massachusetts Department of Transportation

This full-day seminar will begin with an opening breakfast presentation, followed by a series of technical sessions separated by networking breaks. Each technical session will include thematically grouped presentations, including a mix of project case studies, round table discussions, and interactive training programs. The event should be attended by anyone with an interest in all things construction and construction engineering (history through innovative techniques).

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

### ASCE and BSCES Sponsored Seminar

**Monday – Tuesday, December 5–6, 2016**

Hyatt Place Boston Braintree  
50 Forbes Road, Braintree, MA

8:30 AM – 4:30 PM

#### Investigation, Analysis, and Remediation of Building Failures

Alexander Newman, PE, Forensic and Structural  
Consultant, Needham, MA

Building structures can fail in a variety of ways. While catastrophic collapses are featured on the

news, less dramatic building failures might be of interest mostly to the building owners and their insurance companies. Whether the failure is spectacular or mundane, when it occurs, it is generally necessary to determine what caused it and whether it is possible to remedy the damage. The seminar discusses the practical engineering issues involved in the investigation, analysis, and remediation of various building failures.

[Click here](#) to register for this event online.

### EWRI Boston Chapter and Committee on Sustainability Site Visit

**Wednesday, December 7, 2016**

Fraunhofer Center  
5 Channel Center Street, Boston, MA

3:45 PM Registration

4:00 PM Tour

5:00 PM Networking/Social at Barlow's  
Restaurant

#### Tour of Fraunhofer CSE's Living Laboratory for Sustainable Energy Systems

Located in the heart of Boston's Innovation District, the Living Laboratory is home to Fraunhofer CSE's Massachusetts R&D center for the advancement of sustainable energy systems. Fraunhofer CSE is one of seven centers of Fraunhofer USA, a 501(c)(3) non-profit contract R&D organization, a subsidiary of Fraunhofer Gesellschaft, Europe's largest contract R&D organization. After the tour, please join us at Barlow's for networking-social gathering.

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

### G-I Boston Chapter Dinner Meeting

**Thursday, December 8, 2016**

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

5:30 PM Social/Registration

6:30 PM Dinner and Program

#### Saving Venice

Juan M. Pestana, ScD, PE, Senior Principal,  
Geosyntec Consultants

Over the last 50 years, the city of Venice has seen a significant increase in the frequency of flooding with a record tidal level of nearly 2m measured in November of 1966. Since then, numerous engineering solutions have been proposed to

[continued on page 10](#)

### Save the Date!

**Thursday, February 2, 2017**

#### 16th Arthur Casagrande Memorial Lecture Hazard, Risk and Reliability in Geotechnical Practice

Featuring:

Dr. Suzanne Lacasse

Norwegian Geotechnical Institute

Hyatt Regency Cambridge

575 Memorial Drive, Cambridge, MA

5:30 – 6:30 PM Social/Registration

6:30 – 7:30 PM Dinner

7:30 – 7:45 PM Welcome & Introduction

7:45 – 8:45 PM Lecture

8:45 – 9:15 PM Discussion

*See future BSCES emails for more information on this Geo-Institute Boston Chapter-sponsored event.*

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## Upcoming Events *(continued from page 9)*

protect Venice from flood waters, including the use of movable gates located at the three Lagoon inlets—the Lido, Malamocco, and Chioggia. This presentation will focus on the methodology used to estimate the consolidation settlements of the highly heterogeneous silty sandy clayey soils, accounting for the variability in the stratigraphic units. The presentation will also showcase a brief description of the project and address some of the implications of future sea-level rise for coastal cities.

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

### Younger Member Group Holiday Party

**Thursday, December 8, 2016**

Bone Up Brewing Company  
38 Norman Street, Everett, MA

6:00 PM – 9:00 PM

### Younger Member Group Holiday Party

This Holiday season join the BSCES YMG at the Bone Up Brewery for a fun and festive evening of socializing with board games at our

annual Holiday Party! Dinner will be provided. We will be supporting the Toys-For-Tots foundation, so please bring a new and unwrapped toy (for all ages) as your entrance fee (otherwise you will be invoiced \$10.00).

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

### T&DI Boston Chapter Social Event

**Thursday, February 9, 2017**

Community Ice Skate at Kendall Square  
300 Athenaeum Street, Cambridge, MA

6:00 PM – 7:00 PM Ice Skating

7:00 PM – 8:00 PM Social at the

Commonwealth Market and Restaurant

### Ice Skating with T&DI Boston Chapter

Join us for a night on the ice! We will skate for about an hour and then we will warm up at The Commonwealth Market and Restaurant located at 11 Broad Canal Way, Cambridge, MA.

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

## ASCE Webinars

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

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

## Become a BSCESNews Contributor

Would you like to contribute to the newsletter of the oldest civil engineering society in the country? The BSCES Newsletter Editorial Board is seeking members who are willing to write articles for publication in *BSCESNews* or to join the Editorial Board.

Typically 300 to 700 words, *BSCESNews* featured articles are about technical topics or professional matters of interest to civil engineers. The January 2017 issue of the newsletter for example, will highlight the BSCES Engineering Management Group and feature one or more articles on the theme of Project Delivery.

Editorial Board members meet monthly via conference call to plan upcoming issues of the newsletter. They also solicit, write and/or review newsletter articles.

For more information on how you can become a *BSCESNews* contributor, contact BSCES Newsletter Editorial Board Chair Mike Cunningham at [mcunningham@kleinfelder.com](mailto:mcunningham@kleinfelder.com) or BSCES Association Manager Rich Keenan at [rkeen@engineers.org](mailto:rkeen@engineers.org).



*Help the YMGB Fight Hunger this Thanksgiving Season!*

# BSCES YMGB Holiday Meal Drive

Deadline to donate is 11/23/2016



## **This Thanksgiving, YMGB is supporting the Greater Boston Food Bank Holiday Meal Drive to help fight hunger in the Boston community!**

You can help us by donating! A link to the Younger Member Group team donation page is provided at the bottom of this flyer. Full details are provided on the website. Below are the highlights of the fundraiser:

- The goal of the Holiday Meal Drive is to provide Thanksgiving meals to families in need in the Eastern Boston area.
- The Greater Boston Food Bank estimates that 1 in 9 families in Eastern Massachusetts are challenged by hunger every year.
- The YMGB fundraising goal is \$2,500 (which will provide over 500 nutritious Thanksgiving meals!).

***Donate Today!***

**<http://bit.ly/Holiday-Meal-Drive>**

If you have any questions, please contact Anthony Richardson at [anthony.richardson@jacobs.com](mailto:anthony.richardson@jacobs.com).



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**CONSTRUCTION  
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Engineers, Inc.

# Boston Day-Summit

## Construction Institute Boston Chapter

**Friday, December 2, 2016**

**Marriott Courtyard Boston Downtown**

**275 Tremont Street, Boston, MA**

**7:00 AM Registration; 7:50 AM – 4:00 PM Speakers & Presentations**

This full-day seminar will take on the typical ASCE conference format. It will begin with an opening breakfast presentation, followed by a series of technical sessions separated by networking breaks and exhibitor interaction. Breakfast, lunch and snack breaks will be provided. Each technical session will include thematically grouped presentations, including a mix of project case studies, technical review, technology and innovative planning and construction techniques, and specific construction projects and detailed challenges.

The event should be attended by anyone with an interest in all things construction and construction engineering (history through innovative techniques) including structural engineers, geotechnical engineers, civil engineers, architects, planners, contractors, real estate developers, construction law and facility managers, both public and private.

**Registration Deadline: Tuesday, November 29, 2016**

**\$160 Members, \$200 Non-Members**

**\$135 Public Sector Members, \$160 Public Sector Non-Members**

**\$55 Student Members, \$55 Senior Members (65+)**

### Information/Registration:

Register to attend this meeting and pay by credit card online at <http://bit.ly/CI-Boston-Day-Summit>. To register online for an event at the BSCES member rate, you must login using your BSCES assigned username and password. If you do not know your BSCES member login information, call 617/227-5551. You can also register for this event by mail or email. To do so, download and complete a [BSCES Event Registration Form](#) and follow the submission instructions. Cancellations received after November 23 and no-shows will be billed.

# Friday, December 2<sup>nd</sup>, 2016

## CI Boston Day-Summit

### Seminar Schedule

	Start	End
<b>Registration and Networking</b>	7:00 AM	7:45 AM
<b>Introduction:</b> Chris Hersey, <i>BSCES CI Boston Chapter Technical Chair</i>	7:50 AM	8:00 AM
<b>Keynote Speaker &amp; Opening Breakfast</b> Thomas J. Tinlin, <i>Highway Administrator, Massachusetts Department of Transportation</i>	8:00 AM	9:00 AM
<b>MIT 2030 Development Plan:</b> Dennis Swinford, <i>Office of Campus Planning, MIT</i>	9:00 AM	9:30 AM
<b>Case Study of Disputes: (common causes; average value; typical length of dispute; resolution methods; and regional nuance.)</b> David M. Ponte, <i>Principal Project Director, Construction Claims Manager, Arcadis</i>	9:30 AM	10:00 AM
<b>Alternate Project Delivery and Design Build Methods - Legal Perspective:</b> David J. Hatem, <i>Partner, Chair of Professional Practices, Donovan Hatem LLP</i>	10:00 AM	10:30 AM
<b>Networking &amp; Coffee Break</b>	10:30 AM	10:45 AM
<b>Ground Stabilization System - Aggregate Pier Ground Support Systems:</b> Dr. Kord Wissmann, <i>President, Geopier Foundation Company</i>	10:45 AM	11:45 AM
<b>Construction of Complete Streets: Building and Maintaining Accessibility:</b> Robbie Burgess, <i>Associate Principal, Howard Stein Hudson</i>	11:45 AM	12:15 AM
<b>Keynote Speaker &amp; Luncheon (Provided)</b> Anthony Consigli, <i>Chief Executive Officer, Consigli Construction Company, Inc.</i>	12:15 AM	1:15 PM
<b>4D, Virtual Technology and BIM in Construction Innovation:</b> Paul Pedini, <i>Vice President, Boston Regional Manager, Skanska</i>	1:15 PM	2:15 PM
<b>Hynes Ceiling Demolition Project:</b> Cory Brett & Scott DiFiore, <i>Simpson Gumpertz Heger</i>	2:15 PM	2:45 PM
<b>Networking &amp; Coffee Break</b>	2:45 PM	3:00 PM
<b>Innovation in Bridge Design and Construction:</b> Timothy P. McLaughlin, PE, <i>SPS Construction, Senior Vice President</i> Nicholas A. Scenna, PE, <i>Stantec, Senior Bridge Engineer</i> Peter M. Moser, PE, <i>Stantec, Bridge Engineer</i>	3:00 PM	3:30 PM
<b>Closing Remarks/Trade Show</b>	3:30 PM	4:00 PM



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**ENVIRONMENTAL &  
WATER RESOURCES  
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## Tour of Fraunhofer CSE's Living Laboratory for Sustainable Energy Systems

### Boston's Home for Building Technology Innovation

**Wednesday, December 7, 2016**

**Fraunhofer Center, 5 Channel Center Street, Boston, MA 02110**

**3:45 PM Registration; 4:00 PM Tour; 5:00 PM – Networking/Social at Barlow's**

Located in the heart of Boston's Innovation District, the Living Laboratory is home to Fraunhofer CSE's Massachusetts R&D center for the advancement of sustainable energy systems. Fraunhofer CSE is one of seven centers of Fraunhofer USA, a 501(c)(3) non-profit contract R&D organization, a subsidiary of Fraunhofer Gesellschaft, Europe's largest contract R&D organization. The Boston center was born out of a 2013 energy-retrofit of a 100-year-old building, the Lab leverages cutting-edge design concepts and historic architecture alongside in-house research facilities, including a pilot solar module fabrication line, dedicated thermal testing laboratory, and extensive characterization/environmental testing resources.

After the tour please join us at Barlow's for networking-social gathering.

This tour should be attended by anyone with an interest in sustainability, energy and building technology including civil engineers, architects, planners, and state and municipal administrators.

### Registration Deadline: Thursday, December 1, 2016

**\$15 Members, \$20 Non-Members**

**\$13 Public Sector Members, \$15 Public Sector Non-Members**

**\$10 Senior Members (65+), \$10 Students**

### Information/Registration:

Register to attend this meeting and pay by credit card online at <http://bit.ly/EWRI-Sustainability-Tour>. 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 Thursday, December 1, 2016 and no-shows will be billed.



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## Saving Venice

**Juan M. Pestana, ScD, PE**

*Senior Principal, Geosyntec Consultants*

**Thursday, December 8, 2016**

**Wyndham Boston Beacon Hill**

**5 Blossom Street**

**Boston, MA**

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

Over the last 50 years, the city of Venice has seen a significant increase in the frequency of flooding with a record tidal level of nearly 2m measured in November of 1966. Since then, numerous engineering solutions have been proposed to protect Venice from flood waters, including the use of movable gates located at the three Lagoon inlets – the Lido, Malamocco, and Chioggia. For the design of these submersible mobile barriers, an extensive geotechnical study was undertaken to characterize the subsurface conditions. A key element in the prediction of performance for these “heavy” structural elements was the estimation of settlements and behavior of the soft foundation soils under normal operating conditions. Complicating the problem, the soils of the Venice Lagoon are characterized by very erratic depositional patterns resulting in an extremely heterogeneous stratigraphy. The mineralogical composition of these soils, on the other hand, is quite uniform.

This presentation will focus on the methodology used to estimate the consolidation settlements of the highly heterogeneous silty sandy clayey soils, accounting for the variability in the stratigraphic units. The presentation will also showcase a brief description of the project and address some of the implications of future sea-level rise for coastal cities.

**Registration Deadline: Friday, December 2, 2016**

**Registration Fees:**

**\$95 Members, \$120 Non-Members**

**\$80 Public Sector Members, \$95 Public Sector Non-Members**

**\$35 Senior (65+) & Student Members**

### Information/Registration:

Register to attend this meeting and pay by credit card online at <http://bit.ly/GI-12816>. 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 December 2, 2016 and no-shows will be billed.



YOUNGER MEMBER GROUP

## BSCES YMCG Holiday Party & Toy Drive

December 8<sup>th</sup> 6:00 PM - 9:00 PM  
Bone Up Brewing Company  
38 Norman Street, Everett MA

This Holiday season join the BSCES YMCG at the Bone Up Brewery for a fun and festive evening of socializing with board games at our annual Holiday Party! Dinner will be provided.

We will be supporting the Toys-For-Tots foundation, so please bring a new and unwrapped toy (for all ages) as your entrance fee (otherwise you will be invoiced \$10.00).

If you plan on bringing a toy please RSVP to [BSCESYMCG@gmail.com](mailto:BSCESYMCG@gmail.com). If you would rather pay the registration fee, register online here: <http://bit.ly/YMCG-Holiday-Party>



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# Ice Skating with T&DI Boston Chapter

## Thursday, February 9, 2017

**Community Ice Skate at Kendall Square**

**300 Athenaeum Street, Cambridge MA 02142**

**6:00 PM – 7:00 PM Ice Skating**

**7:00 PM – 8:00 PM Social at the Commonwealth Market and Restaurant**

Join us for a night on the ice! We will skate for about an hour and then we will warm up at The Commonwealth Market and Restaurant located at 11 Broad Canal Way, Cambridge, MA.

For additional information, go to <http://bit.ly/TDI-Ice-Skating>.

## Registration Deadline: Monday, February 6, 2017

**Admission: \$5**

**Admission with Skate Rental: \$13**

**Please RSVP to [TDI.BSCES@gmail.com](mailto:TDI.BSCES@gmail.com).**