

A Team Effort to Respond to a Turbid Situation at the Cannonsville Dam

by Chad Cox, PE, Civil Engineer / Metro Boston Office Manager, GZA GeoEnvironmental, Inc.

The Cannonsville Dam was the last dam constructed by the City of New York as part of its water supply system in the Delaware River watershed. The dam and its reservoir are located in western New York and entered service in 1964. The large drainage basin (454 square miles) and significant reservoir storage volume (96.7 billion gallons) make the Cannonsville Reservoir an important component of the water supply system of the City of New York. The New York City Department of Environmental Protection (NYCDEP) maintains and operates the dam and manages the reservoir. The dam is a 175-foot high, zoned earthfill embankment. Flood flows are discharged over an 800-foot long uncontrolled spillway on the right abutment. The dam is located immediately upstream of the Town of Deposit and is classified as High Hazard based on the potential for loss of life in the event of a failure.

Water that is designated for use by the City is diverted through the 44-mile long West Delaware Tunnel to another NYCDEP reservoir and from



Aerial photo overview of Cannonsville Dam
(courtesy of NYCDEP)

there flows to the City through the 85-mile long Delaware Aqueduct. Water is also released into the West Branch of the Delaware River through a low-level outlet to maintain flow and habitat in the downstream channel. Flow releases to the downstream channel are accomplished via the low-level outlet as per the terms of a decree from the US Supreme Court and a plan known as the Flexible Flow Management Program.

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President's Report

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



Last month, BSCES successfully held its 168th Annual Awards Dinner with over 150 members and guests in attendance. At the event, BSCES presented the Section's highest award, BSCES Honorary Membership, to Former Massachusetts Governor Michael S. Dukakis and Nitsch Engineering Founding Principal Judith Nitsch, PE. Governor Dukakis provided a keynote address that focused on the infrastructure challenges within the Commonwealth and discussed the possibilities and challenges of a North South Rail Link connecting Boston's North and South Stations.

Each year at the Awards Dinner, the BSCES past-president at his or her discretion can present a President's Award to Section members

for their contributions to the engineering profession and especially to the Boston Society of Civil Engineers Section/ASCE. The award recipients do not learn of this honor until the night of the Awards Dinner. This year, BSCES Past-President Ellen White, PE, of Patrick Engineering, presented four recipients with a President's Award.

The first recipient was Professor David Westerling, PE, PLS, of Merrimack College. Dave is a former president of BSCES and has served two terms as the BSCES Legislative Fellow at the Massachusetts State House and as an ASCE Congressional Fellow. Most notably in the last year, Dave led the efforts for the 2016 Infrastructure Day in Holyoke which focused on the Great Stone Dam on Connecticut River and the extensive canal system that was built to power Holyoke.

UPCOMING EVENTS

Younger Member Group Celtics Game
January 11, 2017

Boston Ski and Sports Club Ski Trip
January 28, 2017

T&DI Boston Chapter Ice Skating
February 9, 2017

Younger Member Group Billiards Tournament
February 15, 2017

ASCE and BSCES Sponsored Seminar
March 9–10, 2017

BSCES Program Committee Sponsored NHI Training April 24–28, 2017

Further Details Inside



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Second, Olivia Richards, Gill Engineering, chair of the Public Awareness & Outreach Committee, was presented with a President's Award for her leadership in managing outreach student contests, such as the Model Bridge Competition and Future City Competition. Olivia spends countless hours volunteering to educate children across the Commonwealth by introducing them to the engineering profession.

The third President's Award recipient was Robert Ledger, PE, of Massport. Bob, who is serving his third two-year term on the BSCES Board of Government as treasurer, was presented with a President's Award for his years of service and dedication to BSCES in this capacity. Over the years, Bob also served as BSCES assistant

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Cannonsville Dam

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Several years ago, the NYCDEP recognized that the combination of a deep reservoir (i.e. large available gross head) and continuous releases into the downstream channel offered the potential for a possible hydropower project. NYCDEP also recognized that the development of a renewable energy project would be consistent with their commitment to environmental stewardship and sustainability. So, NYCDEP commissioned a feasibility study and subsequently elected to pursue the development of a hydropower project at the Cannonsville Dam. A license application was filed with the Federal Energy Regulatory Commission (FERC) for a project that would be designed to have a total generation capacity of just over 14 MW. The proposed project was to include a new bypass off of the existing low-level outlet conduit and a new powerhouse at the toe of the dam. FERC issued the license (FERC No. 13287) in May 2014.

As part of the efforts towards final hydropower project design, a subsurface exploration program was designed and implemented to obtain additional data about the foundation conditions in the area of the proposed powerhouse. Three soil borings were completed at the toe of the dam to collect soil samples in split spoons and record Standard Penetration Test (SPT) blow counts, which are indicative of soil density. Hollow stem augers (HSA) were used to advance the borings through the rockfill toe of the embankment and into the native alluvial deposits, silt/clay, and glacial till soils below.

On Wednesday, July 8, 2015, turbid flow was observed in the stream channel just downstream of the toe of the Cannonsville Dam embankment while the third test boring was being completed. Turbid, or cloudy, seepage emanating at or near the toe of a dam is a concern because it may be an indication of potential uncontrolled movement of soil out of the embankment structure or its foundation. Upon discovery of the condition, NYCDEP ceased all previously-planned work at the site and began response actions to stabilize the situation and to protect the safety of the dam. While NYCDEP did not consider the situation to represent an imminent threat to the safety of the dam, prudent actions were implemented out of an abundance of caution which prioritized the protection of public safety while repairs were being made. NYCDEP made the appropriate notifications to



Toe of Dam with repair operations underway (photo by GZA)



Compaction Grouting operations (photo by GZA).

FERC and the New York State Department of Environmental Conservation (NYSDEC) and engaged trusted geotechnical engineers, GZA GeoEnvironmental of New York, for assistance in addressing the issue. It was initially assumed that the turbidity was related to the bentonite backfill of the borings. However, review of data from two nearby piezometers indicated that a rapid decrease in piezometric pressure up to 14 feet had simultaneously occurred, indicating a change in hydraulic conditions within the dam embankment and its foundation. At that point, NYCDEP implemented communication protocols informed by its Emergency Action Plan (EAP) and notified Emergency Managers (EMs) in downstream communities which extended through New York and into New Jersey and Pennsylvania.

The project team came together to perform a desktop Potential Failure Mode Analysis (PFMA) as a roundtable discussion. Several additional levels of risk management and vigilance were also implemented, including: lowering the reservoir at a rate of 1 billion gallons per day; conducting daily visual observations and water sampling; conducting an EAP orientation for EM personnel in downstream communities and other associated groups; increased reading of the piezometers from daily to hourly; 24/7 physical observations of the turbidity at the toe; daily walks of each

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Cannonsville Dam

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berm and the groins of the dam to look for potential sinkholes or other potential unusual movements of the embankment; monitoring of grain size in discharge to ascertain whether larger particles were “piping” out of the embankment/foundation; and evaluation and implementation of the alarm features on the piezometers. Within a week, an on-site meeting was held with four specialty contractors to discuss their qualifications, ability to respond, availability of equipment, the conceptual design of the repair, and to solicit input into alternative techniques germane to their particular expertise and equipment that could be immediately implemented. A contractor, Moretrench, was selected on an expedited basis under an emergency contract to quickly mobilize to the site.

Working weekends and nights, the project team logged long hours to prepare an Expedited Mitigation Plan (EMP). The EMP was reviewed by a three-member Board of Consultants (BOC), as required by FERC, which provided an independent assessment of the NYCDEP’s overall proposed repair program. Analyses associated with preparation of the EMP included a review of available dam design documents, instrumentation readings, discussion of potential root causes, refining the PFMA into two failure types, the review of an alternative mitigation analysis, and development of an expedited mitigation plan. Several alternatives for rapidly addressing the turbid seepage were proposed, including: over-casing the three boreholes, permeation grouting, installation and operation of a relief well drainage curtain system, and low mobility grouting (compaction grouting). Ultimately it was agreed that a relief well network was necessary as a first stage of mitigation followed by low mobility grouting in the vicinity of the boreholes.

The project team implemented the EMP by first stabilizing the seepage outflow and then closing the boreholes. Step one of the program involved the installation of a vertical drainage curtain comprised of multiple relief wells. Wells were drilled (using fully-cased sonic drilling methods) into the water-bearing layers of the foundation and then pumped to reduce subsurface groundwater pressures. Geotechnical engineers were on-site throughout the installation process to log the borings, classify the recovered soil

samples, and oversee the construction of the wells. Readings from the existing piezometers indicated that the relief wells had an almost immediate beneficial effect, and by August 2nd, pumping from the fully-functional drainage curtain was successful in eliminating cloudy water discharge downstream of the dam.

Step two in the remediation involved sealing off the underground pathways through which the seepage had been moving. This process was accomplished utilizing a compaction grouting program. Compaction grouting involved the creation of relatively small diameter grout “bulbs” and the compaction of surround soil through the injection of stiff grout at high pressure. The use of a stiff grout mix decreases the potential for possible hydraulic fracturing soils and reduces the chance of significant grout washout during the grouting process. The project team collaborated to select the drilling equipment, grout mixes, grouting pressures, and drilling pattern judged most likely to close the former boreholes while reducing the potential for further disruption of the dam embankment and/or its foundation soils. Grout was first injected into each of the original boreholes, and then at three “satellite” locations around the perimeter of each hole. During grouting, the team continuously adjusted the program based on real-time observations. Repairs were completed by August 25th and tested by sequentially reducing pumping rates from the recently installed relief wells. Once the grouting operation allowed the pumping to be discontinued, the turbid seepage was eliminated and the piezometer readings began rebounding towards pre-incident levels indicating that the repairs were successful. Upon refill of the Cannonsville Reservoir to normal pool levels, downstream seepage had returned to typical rates without abnormal turbidity and piezometer levels had returned to expected levels. This validated the effectiveness of the repairs. With approval from FERC, the relief wells have since been decommissioned in such a way that they are stabilized for winter conditions but could be re-activated in the event of future need.

Post-incident, a Forensics and Root Cause Analyses Report was requested by FERC. The root cause analysis found that conditions at the toe of the embankment include a course-grained foundation layer containing groundwater at high piezometric pressure confined by an upper silt/clay layer. The July 2015 borings penetrated



Sonic drilling for relief well installation (photo by GZA)

this confining layer which resulted in upward seepage through the vertical borehole pathways and transport of fine-grained soils. This resulted in the generation of the turbid seepage. The water-bearing layer is believed to be a long ago buried former river bed or a similar feature that was created during the cycles of glaciation in the area. The theory that this pressurized, confined soil stratum was the source of the seepage flow that resulted in the transport of sediment into the channel downstream of the dam was supported by observation of the performance of the relief wells. Following the completion of the relief wells, which were screened in this stratum, and the initiation of pumping, turbid seepage quickly and substantially ceased.

While this situation was unexpected and undesirable, the response by the NYCDEP, its team of consultants and contractors, and government dam safety agencies, provided a textbook case in how to manage a potential dam safety emergency. The NYCDEP was open and transparent regarding the situation. Public briefings were provided regularly both via the NYCDEP’s website and in-person information sessions. NYCDEP’s dam safety instrumentation and monitoring systems were proven to be vital during the event, and its EAP protocols were tested and validated. The project team worked cooperatively to assess the situation, develop a solution, and implement the repairs in a rapid and effective manner.

Water Control for Phase I of the Muddy River Flood Damage Reduction and Environmental Restoration Project, Brookline/Boston, Massachusetts

by Derek J. Schipper, PE, Senior Project Manager and Chad W. Cox, PE, Principal, GZA GeoEnvironmental, Inc.

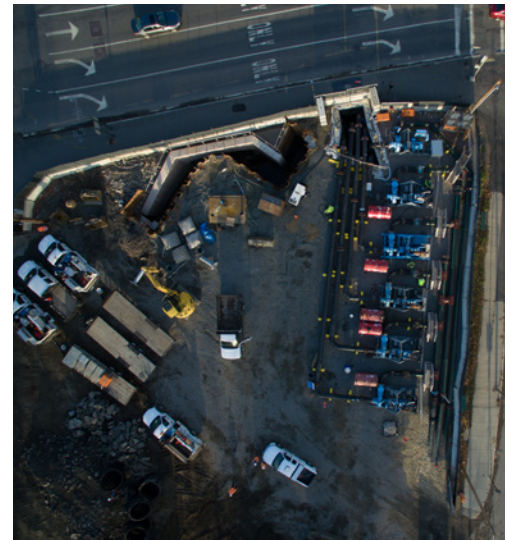
The Muddy River Flood Damage Reduction and Environmental Restoration Project is a U.S. Army Corps of Engineers (USACE) project. The Muddy River is an urban river which discharges to the Charles River and receives runoff from densely developed areas of Boston and Brookline, Massachusetts. GZA and GZA's client, Fort Hill Infrastructure, provided engineering assistance to the project general contractor Charter Contracting Company, LLC. With the exception of the Upper Fens Pond, the Muddy River was culvertized between the Riverway and Avenue Louis Pasteur (an approximate distance of 1,900 linear feet). Flooding of the Muddy River over the last few decades had caused damage to residences, businesses, academic and medical institutions in the area. In October of 1996, the adjacent MBTA Green Line tunnel and Kenmore Station were completely flooded, resulting in tens of millions of dollars in damage. The overall intent of the USACE project was to begin the process of reducing potential flood damage in the area, while at the same time providing environmental benefits, by restoring and improving an open channel for the Muddy River. This was accomplished, in part, by removing the existing twin 72-inch-diameter culverts which previously carried the river through the project area so as to "daylight" the river with a reconstructed channel. New precast, three-sided concrete culverts were installed at existing roadway crossings. Daylighting the river restored a key section of the historic Emerald Necklace corridor designed by Frederick Law Olmsted.

Key to the successful implementation of the project was a viable approach to making the channel improvements while at the same time maintaining the ability to pass normal and flood flows in the

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Sheet piles in place and flow diverted to right side of channel while left side is constructed.



Rain-for-Rent-pumps controlling flow of Muddy River during construction of Upper Fens Pond portion of project.



Completed channel in Upper Fens Pond portion of Muddy River.



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Muddy River

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river during construction. While the USACE designed the final conditions configuration of the project, the Corps left the means and methods for construction-phase water control to the contractor. The Corps provided a performance specification with general guidance and requirements regarding maintenance of flow capacity during construction. The specifics were left to the contractor to develop and present to the USACE. Charter and its engineering project team worked together to develop and submit an innovative water control plan for the proposed work. This plan was critical to Charter's ability to perform the work in this high visibility urban area. Project specifications required that a specified flow capacity be maintained in the river at all times during the work of the project to prevent potentially catastrophic upstream flooding.

The water control plan included an elaborate network of steel sheeting cofferdams to sequentially isolate work areas while the river continued to flow downstream. For the Upper Fens Pond portion of the project, large pumps were utilized to allow Charter to work in the dry under typical flow conditions, which significantly increased the pace of construction. During larger floods, the system was designed to revert to open channel flow through the work area. This concept reduced the need to continuously maintain very large pumping capacity and benefitted the project schedule. The final water control plan was accepted by the Corps and successfully implemented by Charter.

Other sections of the channel were divided longitudinally using sheet piles such that flow could be maintained on one side while channel improvements were constructed on the other side. This approach was tested by several intense rainfall events during construction and performed as intended.

A sheet pile cofferdam was also designed to span the Muddy River upstream of Riverway and serve as the Flow Restriction Control Structure (FRCS). The FRCS consisted of 30-foot-long AZ 17-700 steel sheets. The FRCS was fitted with two weir openings for aluminum stop logs and a pedestrian bridge. This structure will remain in place until future phases of the project are completed.

The USACE had a number of project partners (non-Federal sponsors) for the Muddy River project, including the Town of Brookline, the City of Boston, and the Commonwealth of Massachusetts Department of Conservation and Recreation. Charter's team for the water



Flow restriction control structure and temporary channel separation cofferdam as seen from new Riverway culvert. Flow diverted through existing twin culverts.



Flow diverted to right side of Muddy River while excavation proceeds on left side.

control aspects of the project included GZA GeoEnvironmental, Inc. which performed engineering design for construction-phase water control including supplemental sub-surface investigations, hydraulic and hydrologic modeling, and structural analyses for the sheet pile cofferdams. GZA's work was managed and reviewed by Fort Hill Infrastructure. Rain-for-Rent provided support design and supplied the pumping system to bypass Muddy River flow during the Upper Fens Pond portion of the project.

This project was highly visible to the public in an area of urban Boston which is densely packed with commercial, residential, educational, and health care facilities. The successful implemen-

tation of the project demonstrated the ability of the USACE and Charter to work in a highly complex urban riverine environment and will hopefully facilitate federal funding of future phases of the work.

Restoration of the Muddy River addresses historical flooding issues in the area and reduces future risk of economic losses to area institutions and the MBTA. Deculvertizing the river creates much needed open space and environmental improvements in Boston and Brookline. Rerouting of intersections improves vehicular traffic flow and promotes walking and cycling in the area. The project as a whole is a key part of the ongoing revitalization of this area of Boston.



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Featured Group

Geo-Institute Boston Chapter

by Jennifer Jordan, PE, Principal, JCK Underground, Inc. and ASCE Geo-Institute Boston Chapter Chair

BSCES established the Geotechnical Group, a technical committee made up of local geotechnical engineering professionals, in 1969 for the purpose of *"promoting and coordinating technical and professional activities in order to disseminate information"* for the benefit of its members. The committee name was changed in 1999 to the BSCES Geo-Institute and more recently to the Geo-Institute Boston Chapter to better align with ASCE's national geotechnical committee, but our basic mission remains the same: to foster continuing education and to provide a venue for the sharing of knowledge between engineers, geologists, and contractors in the geotechnical community.

As part of its commitment to promote technical and professional activities and disseminate information, on Thursday, December 8th the Geo-Institute Boston Chapter sponsored the sold-out dinner lecture titled "Saving Venice" presented by Dr. Juan Pestana. This lecture highlighted the Modulo Sperimentale Elettromeccanico (MOSE) project, involving the installation of an integrated system of mobile gates at the Lido, Malamocco and Chioggia inlets to temporarily isolate the Venetian Lagoon from the Adriatic Sea during high tides.

In addition to providing an overview of the rich history and culture of Venice, Dr. Pestana presented details of the extensive geotechnical study undertaken to characterize the subsurface conditions in the Lagoon. The methodology used to estimate the consolidation settlements and the behavior of the soft foundation soils supporting the large gates was presented. Dr. Pestana's lecture not only focused on the geotechnical challenges with the MOSE project, but also emphasized the challenges that the engineering community will face in protecting the world's coastlines from future flooding events.

Upcoming events sponsored by the Geo-Institute Boston Chapter include:

- The 16th Arthur Casagrande Memorial Lecture titled, "Hazard, Risk and Reliability in Geotechnical Practice" will be held on Thursday, February 2, 2017, and presented by Dr. Suzanne Lacasse of the Norwegian Geotechnical Institute.
- A half-day course on ground improvement methodologies will be held at The Engineering Center in early April 2017. Additional details will be forthcoming.

The Geo-Institute Boston Chapter also helps organize the Charles C. Ladd Memorial Lecture held every other year to honor the work and memory of Professor Charles C. Ladd of MIT. Professor Ladd has had a profound influence on the geotechnical community as a whole, and particularly in Boston. Please check future editions of *BSCESNews* for details.

I would like to thank all past and present committee members, their employers, our presenters, and all of you that attend Geo Institute Boston Chapter events for your support.

Currently, the Geo-Institute Boston Chapter Committee consists of seventeen geotechnical professionals from local consulting firms, specialty construction companies, and academic institutions, who proudly volunteer their time to serve BSCES and the engineering community in the manner originally set forth in 1969. We are always looking for additional geotechnical practitioners in the public or private sector and educators who are interested in getting involved in the committee's activities and promoting our mission. For more information, please contact me at jordan@JCKUnderground.com.

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Educating Future Dam Engineers

by Matthew A. Taylor, PE, Water Resource Engineer, and Christine Stonier, PE, Assistant Project Manager, GZA GeoEnvironmental, Inc.

Over the five years, various members of GZA's Metro Boston Dam and Levee Safety Group and Water Resources Group have participated in several educational outreach programs to help kids learn about civil engineering, specifically, dam engineering. This program is typically led by one of our engineers who provides some general information and education on the science involved with dams. The kids, with guidance from our engineers, then design, construct and test their own model dam. As you can imagine, talking to elementary or middle school kids about engineering can be challenging. But, when they are given the opportunity to get their hands dirty, their level of engagement increases exponentially.

The program was originally developed as a workshop at the Thinkfest event at Merrimack College. But, it has been successfully modified for use at other venues which have included a first grade science class, a Women-In-Engineering event for middle school girls, a multiple-session sixth grade STEM event, and a STEM In The Park Outreach for Boston neighborhood youths.

Our program has a few different formats with some basic similarities. In general, the program begins with a short presentation by an engineer on dam design principals, types of dam, and typical dam building materials. The kids are told about the assignment, which is to design, build and test a dam in a 2-ft by 3-ft by 1-ft plastic tub. The dam materials, sand, clay, stone, arched plastic sheets, filter fabric, concrete blocks, and polyethylene sheets are put on display and the kids are invited up to review them. The students are split up into multiple groups of four to six kids, given a pad of engineering paper and instructed to design a dam. Our engineer will visit each group, ask questions about the type of dam they want to build, what they think are the critical design elements and what they think they need to focus on to build a successful dam. They generate a sketch that references the

specific materials available and then move into the dam building stage. It is interesting to see the kids work as a group and how they decide on their design concept.

The groups then select and grab their materials and begin construction. Each group member is encouraged to participate in the construction. Whether it be in wetting and compacting a sand and gravel shell, coating concrete blocks with a clay mortar, or inserting a rigid plastic sheet as a corewall an earthen embankment. The designs are usually quite different and personalized. Our engineer will usually visit each group as they are constructing their model to see if they had to change their design based on "changed conditions" and to assess if they were successfully incorporating any of the design principals presented at the beginning of the exercise into their thought processes and ultimately into the construction effort.

We typically put a time limit on the dam the construction phase to mitigate loss of focus. Once the dam models are complete, we move into the testing phase. The entire class will gather around each model where that group then provides a summary of the type of dam they built and if they had any lessons-learned during transition from design to construction. After the brief discussion, the dam is tested by pouring water into the model on the upstream side and the dam. The water is typically poured into the bin until it reaches the top of the dam. If the dam holds the water without leakage, it is considered a success. But, it's the failures that provide the best teaching moments. If the dam fails, we ask the group how it happened, why it happened and what they could have done differently to avoid the failure. It's great to see the pride in the groups when their dams are successful. It's also amazing to see how much the kids learned and retained when they do a forensic analysis of why their dam failed.

Every time we conduct this event, the feedback we get is that the kids loved it and had a blast.



Getting to know the basic types of dam.



Construction phase of dam building in a neighborhood park.



Successful model of an arch dam.

The teachers appreciate the logical progression of the activity and the event organizer are impressed with the ability it has to keep the kids engaged. Hopefully, we have helped correct any misperception about engineering being dry or boring and just maybe, we inspired a few kids to consider becoming a dam engineer.

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Connecting with Students

by Valerie Chia, Civil Engineer, Howard Stein Hudson and BSCES Student Chapter Committee Chair

The Younger Member Group (YMG) has been very active this fall by providing strong support for the Commonwealth's ASCE student chapters. YMG liaisons, who comprise the BSCES Student Chapter Committee, are stepping it up this year by opting to become designated as practitioner advisors providing an even stronger resource for their assigned student chapters. The YMG is also creating a series of panel discussions with professionals that include recent alumni as well as members of the YMG. The first panels will be held at Wentworth Institute of Technology and Merrimack College before the holidays. Younger members are slated to discuss various topics such as life after

graduation, transitioning from an academic setting to an industry setting, and professional advice from the panelists. We are looking forward to hosting more!

This past October, BSCES and YMG hosted the annual ASCE Student Chapter Officers' Caucus Fall Kickoff Meeting at the offices of Louis Berger in Needham, MA. Officers from six ASCE student chapters attended and brought great energy to the event. During the networking and dinner hour, students met their fellow student chapters, representatives from BSCES committees, institute chapters and technical groups, as well as members of the BSCES

Executive Committee. The theme of the night was "What Challenges You?" based on interactive discussions of issues that arise every day for leadership roles in both the academic and the professional realms. The challenges were met with brainstorming and solutions shared through groups. It was a very successful night that helped expand networks, built student-professional relationships, and provided the students with ways to strengthen their student chapters.

Be on the lookout for Student Night 2017 on March 28th! It is another wonderful gathering of students and professionals to look forward to and I hope to see you there!

President's Report

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treasurer. Bob continues his involvement with the financial aspects of BSCES' operations and provides the institutional knowledge that is needed to run our Society.

The final recipient was Mathew Bosh Willett, PE, WSP | Parsons Brinckerhoff. Matt serves on the Government Affairs & Professional Practice Committee where he led the effort to publish BSCES' *Infrastructure: Worth the Investment* brochure that highlights the advantages of investing in our infrastructure rather than deferring funding. This brochure has been used to discuss the need for infrastructure investment with government officials and it was recently used during the Engineers and Land Surveyors Day at the Massachusetts State House.

The Construction Institute Chapter hosted a full-day Summit on December 2, 2016 that attracted over 90 members, guests and exhibitors. Its

featured presentations covered an expansive array of construction-related topics including case studies, law, design, campus planning, and technical innovations. Thomas Tinlin, highway administrator, MassDOT, provided an hour-long keynote address at the opening breakfast that focused on the Commonwealth's recent historic upgrades to all-electronic tolling. Other highlights of the event included a second keynote address by Anthony Consigli, CEO, Consigli Construction Company, which focused on *The Pending Labor Crunch and How Building Contractors Can Deal with Talent Shortage*. As part of the program, 11 exhibitors were setup in the seminar room for attendees to interact with throughout the day and during set networking times. The program was very well received by the attendees as demonstrated by Q&A sessions that offered robust dialogue on the seminar topics.

I am thankful to Chad Cox, PE, Derek Schipper, PE, Christine Stonier, PE, and Matthew Taylor, PE, of GZA GeoEnvironmental, Inc. for writing

three articles for this month's newsletter. I would like to encourage all members to prepare and submit an article for publication. This newsletter provides a great opportunity to share project knowledge to the greater BSCES community.

I would like to point out that this newsletter's featured group is the Geo-Institute Boston Chapter and encourage you to read the page 6 article about the history and activities of this group, which was written by its chair, Jennifer Jordan, PE of JCK Underground, Inc.

In closing, I would like to thank all of our Society and Program Sponsors, whose financial support helps enable BSCES and its committees, institute chapters and technical groups to host the numerous networking and professional development events that are planned for this year. Be sure to review the upcoming events described on pages 12 and 13 to help kick off your involvement in the New Year. I would like to wish you and your family a happy holiday and a healthy new year!



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



Two blocks from the State House and overlooking Boston Common, the Aldrich Center is the perfect venue for your next event. This historic building accommodates private functions and business meetings. BSCES members receive a 20% discount off our room rental rates.

Visit www.aldrichcenter.org
for more information.

Aldrich Center
ONE WALNUT STREET
Beacon Hill Boston, MA

Creating Fish Habitat in the Mystic One Dam at a Time

by Matthew I. Shuman, PE, Town Engineer, Town of Watertown

In the midst of Boston is one of the largest migrations of river herring in Massachusetts. Each spring, they make their way from the Atlantic Ocean, up the Mystic River, to spawn. Then, they will then return to the ocean, while their offspring spend the summer growing in the freshwater of the Mystic.

River herring are an important part of the ecosystem, providing food for all types of animals from whales to other fish, land animals as well as birds. Historically, river herring arrived in the Mystic River in great numbers, but have faced a number of challenges in this urban watershed, including poor water quality, habitat loss, and dams.

Fortunately for the herring, water quality in the Mystic River has been improving over the years. And, in 2011, DCR rebuilt the Mystic Lakes Dam in Arlington and Medford, incorporating both a fish ladder and an eel ladder. The Mystic Lakes Dam was the first major impediment to fish migration along the Mystic, and providing fish passage opened up significantly more habitat in the Mystic Lakes and lower Aberjona River.

This would have been the end of the story save for a series of coalescing events at Center Falls Dam in Winchester, the next dam upstream of the Mystic Lake Dam. While the Mystic Lakes Dam was under rehabilitation, the Town of Winchester was also embarking on a series of projects to address devastating flooding of the Aberjona River, a tributary to the Mystic Lakes and Mystic River. In addition to the public safety hazards associated with increasingly frequent floods, there were also substantial economic losses (\$25 million during a 1996 flood alone) to the Town. A comprehensive flood control study of the river identified several severe constrictions in the river contributing to the flooding.

One of the flood control projects the Town would be implementing was an upgrade to the Center Falls Dam. The dam is arched shaped, with a broad crested weir and stepped overflow that impounds the Aberjona River in the Town center. Under normal flow conditions, water flows over the steps to the lower part of the river. However, during large rain events, the dam can create a bottleneck that backs flows upstream through the Town center and causes flooding. For that reason, the Town has historically operated the two low level outlets at the dam prior to significant rain events to provide additional storage in the pond and increase the capacity of the dam to convey flood flows.

The flood control study found that the existing dual 30-inch gate valves were insufficient to



Rigging, lower section, fish ladder. (Courtesy of de maximus, inc.)

adequately convey flood flows and recommended they be replaced with 5-foot by 5-foot sluice gates. One had already been replaced in 2003, and the Town received funding to replace the second valve in 2011, about the same time that the Mystic Lake Dam fish ladder was installed.

In 2012, the Mystic River Watershed Association (MyRWA), a local grass-roots environmental organization, began working with hundreds of volunteers to count the number of river herring passing through the fish ladder at the Mystic Lakes Dam. As part of the program, volunteers perform a series of 10-minute counts at the ladder, and using this information can estimate the total number of herring. They have observed steadily increasing numbers of river herring passing through the ladder to spawn. In fact, by 2015 they observed almost a half a million river herring, representing a 100-percent increase over previous years. River herring grow in the ocean for 3 to 4 years before returning to freshwater to spawn. They usually return to the same river where they were hatched, which seems to validate the efforts at the Mystic Lake Dam to provide fish passage in 2011.

By 2013, the Town of Winchester had completed design of the second valve at Center Falls Dam. Back in 2011, when the Town sought funding and began design of the project, the thought that herring would reach Winchester was unimaginable. The Town didn't fund a fish ladder because there were no fish. And given the critical nature of the flood control program, the Town could not delay implementation of the work at Center Falls Dam. There was also concern about whether the areas upstream of Center Falls Dam would be suitable habitat for the fish, given water



The fish ladder being installed. (Courtesy of Todd Majer)

quality and culverting concerns. Also, fish passage might interfere with the need to provide flood control. Fish passage occurs in the spring, when flood potential is greatest.

During environmental permitting for the project, the Town modified its original plan to include provisions for a fish ladder. Due to funding constraints, the fish ladder could not be installed at the same time as sluice gate work, but the plan was designed so that the fish ladder could be installed at a later date with as little impact as possible. Shortly thereafter, using funding from a local community group, MyRWA completed a habitat study of the upper Aberjona River area, including Horn Pond Brook up to the next dam impediment at Horn Pond in Woburn. This area was found to be suitable habitat for river herring.

The sluice gate work was completed in 2014 and by 2016 a funding source was obtained for the fish ladder construction. The construction of the ladder is being funded by the responsible parties at the Industriplex Superfund site in Woburn, Massachusetts. As the details were hammered out, the Town's concerns were also allayed, as the Town retains the right to operate the dam primarily for flood control.

Construction of the fish ladder at Center Falls Dam began in November and will soon be complete, but the story doesn't end there. A future phase of the Winchester flood control program includes upgrades to Scalley Dam at Horn Pond in Woburn. Fish passage will also be included as part of the work, opening up even more habitat for fish passage. With access to this additional habitat, the Mystic River run may soon become the greatest in the state.

BSCES Honors 2016 Award Winners

by Richard F. Keenan, Association Manager, BSCES

At the 168th BSCES Annual Awards Dinner, which was held at The University of Massachusetts Club in Boston on November 14, 2016, the BSCES Board of Government honored the following 2016 award winners. Presiding over the dinner was BSCES Past-President Ellen P. White, PE, Patrick Engineering Inc.

2016 BSCES Section and Employer Recognition Award Winners

Citizen Engineer Award—presented to a BSCES member or registered professional engineer for outstanding public involvement in local or national legislation, education at all levels, non-profit volunteer organizations, community activities and similar activities improving the image of ASCE, BSCES and civil engineering.



This award was presented to **Robert P. Schreiber, PE**, CDM Smith, for his tireless advocacy for a national groundwater monitoring network.

Pre-College Educator Award—presented to a member of the K–12 education community who integrates engineering topics, particularly civil engineering, in a manner that benefits the profession and may promote students to pursue an engineering career.



This award was presented to **Kathleen M. Malone**, Derby Academy, for inspiring her students to think like an engineer.

Sustainability in Civil Engineering Award—intended to recognize a Massachusetts civil engineering infrastructure project constructed within the last three years that exemplifies the principles of sustainability espoused by the Institute of Sustainable Infrastructure (ISI).



This award was presented to **The Massachusetts Port Authority** for the Logan International Airport Consolidated Rental Car Facility (ConRAC) project. **Sam Sleiman, PE**, director of capital programs, accepted the award on behalf of Massport.

Government Civil Engineer Award—presented to a BSCES member who is serving as a paid public sector engineer at a federal, state, or municipal agency, department, or Massachusetts authority.



This award was presented to **Edmond F. Hunter** for distinguished public service during his tenure at the Massachusetts Bay Transportation Authority.

Younger Member Award—intended to recognize a member, 35 years of age or less on February 1st in the year of the award, who has made an outstanding contribution to the society.



This award was presented to **Alyson Stuer, PE**, Alfred Benesch & Company, for her contributions to the BSCES Younger Member Group.

President's Award—presented at the discretion of the President to Section Members for their contributions to the engineering profession and especially to the Boston Society of Civil Engineers Section/ASCE.

This award was presented to:



Matthew A. Bosch-Willet, PE, WSP | Parsons Brinckerhoff, for his exemplary service to the Government Affairs & Professional Practice Committee.

Clemens Herschel Award—recognizes those individuals who have published papers, not necessarily published in the BSCES Journal, that have been useful, commendable, and worthy of grateful acknowledgment.



This award was presented to **Mehrdad Sasani, PhD, PE**, Northeastern University, and **Leila Keyvani Someh, PhD**, Northeastern University, for their paper entitled "Analytical and Experimental Evaluation of Progressive Collapse Resistance of a Flat-Slab Posttensioned Parking Garage."

Large Employer Recognition Award—presented to an organization with more than 50 employees that encourages its engineers to actively participate in ASCE and BSCES activities; allows engineers time off to attend Society meetings and seminars; supports and encourages technical and professional growth; encourages engineers to prepare articles for publication in Society professional and technical journals; and, assists in the payment of Society dues.



This award was presented to **Green International Affiliates, Inc.** for its longstanding support of ASCE and BSCES. **Peter A. Richardson, PE**, vice president, accepted the award on behalf of the firm.



Robert L. Leger, PE, Massachusetts Port Authority, for his dedicated service and leadership as BSCES Treasurer.



Olivia A. Richards, Gill Engineering Associates, Inc., for her outstanding leadership and service as chair of the Public Awareness & Outreach Committee.

Journalism Award—presented to an individual who writes about engineering topics, particularly civil engineering, in a manner that benefits the profession.



This award was presented to **Rosabeth Moss Kanter, PhD**, Harvard Business School, for her recently published book *Move: Putting America's Infrastructure Back in the Lead*. Dr. Kanter was unable to attend the dinner and accept her award.



David L. Westerling, PhD, PE, PLS, Merrimack College, for his exemplary leadership to recognize and celebrate our historical infrastructure.

Recent News and Updates

BSCES Welcomes its New Members

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

Mark Zablocki, Tufts University
Courtney Messer, University of Massachusetts Amherst
Raman Vaidya, University of Massachusetts Amherst
Ruifei Chen, Northeastern University
Christine Hamilton, Smith College
Karlsen T. Brandt, University of Mississippi
Antonia L. Thomas, University of Massachusetts Dartmouth
Donald W. Comstock, III, Boston, MA
Jerry Hadjah, Jr., University of Massachusetts Dartmouth
Tyler J. Kornacki, Worcester Polytechnic Institute
Dylan Parrow, Worcester Polytechnic Institute
Nolan Rochler, Wentworth Institute of Technology
Thomas Williams, University of Massachusetts Dartmouth
Joseph R. Fernicola, Wentworth Institute of Technology
Brandi M. Duzz, The Citadel, The Military College of South Carolina
Christine K. Deidrich, Worcester Polytechnic Institute Network Operations
Coleton Leach, Stevens Institute of Technology
William B. Cole, II, Virginia Tech
Dilma P. Alves E Andrade, Wentworth Institute of Technology
Keila Gomes, University of Massachusetts Dartmouth

2017 Bertram Berger Young Engineer Award

The BSCES Transportation and Development Institute Boston Chapter is now accepting nominations for the 2017 Bertram Berger Young Engineer Award. The annual Bertram Berger Young Engineer Award serves to recognize an outstanding younger member of the Boston Society of Civil Engineers for his or her professional achievements and service to the community. The successful candidate should (1) be less than 35 years old on May 1, 2017, (2) have attained exemplary professional achievements as a young engineer, (3) demonstrate leadership in the practice of civil engineering with emphasis on transportation, (4) enhance the stature of civil engineers within the community, (5) be active with professional

organizations such as BSCES or similar, and (6) be a registered, or soon-to-be registered, professional engineer. In addition to recognition within the engineering community, the award winner will receive a \$2,500 stipend to be used for continuing education and/or professional development. Nominations will be accepted until Friday, April 14, 2017. Please [click here](#) or see the Insert at the end of this month's newsletter for further details.

Outreach Volunteers Needed!

The BSCES Public Awareness & Outreach Committee is looking for volunteers for our annual events! The Future City Competition and the Model Bridge Competition are coming up and we need your help on the competition days. We need 75 volunteers for the Future City Competition on Saturday, January 21, 2017 at MassDOT HQ, 10 Park Plaza, Boston and 30 volunteers for the Model Bridge Competition on Saturday, February 4, 2017 at MassDOT HQ.

Please follow the links below to sign up for these volunteer events. Breakfast and lunch will be provided to volunteers at the events.

New England Future City Competition Day

Saturday, January 21, 2017, 8:00 AM to 3:00 PM
MassDOT Headquarters, 2nd floor, 10 Park Plaza, Boston
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 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 at oliviaannerichards@gmail.com if you have further questions regarding the event.

[Click here](#) to sign up.

BSCES Model Bridge Competition Day

Saturday, February 4, 2017, 8:00 AM to 1:00 PM
MassDOT Headquarters, 2nd floor, 10 Park Plaza, Boston
Looking for volunteers to help run the competition. Volunteers will be running the registration table, loading the bridges, guiding teams to the stage, etc.

Please email me at oliviaannerichards@gmail.com if you have further questions regarding the event.

[Click here](#) to sign up.

For more information on volunteer opportunities or becoming part of the BSCES Public Awareness & Outreach Committee, please contact me at oliviaannerichards@gmail.com.

MALSCE Education Trust Scholarship Memorial Scholarship

The Massachusetts Association of Land Surveyors and Civil Engineers (MALSCE) Education Trust 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. The Trust is currently accepting applications for three scholarships including its Memorial Scholarships, which are awarded to students 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. Applications for these scholarships are due February 15, 2017. [Click here](#) to learn more about the Memorial Scholarship requirements and application process.

Renew for 2017 and Get in on a \$1,000 Gift Card Raffle

If you haven't done so already, ensure your ASCE and BSCES membership benefits will continue uninterrupted through 2017 by paying your dues. [Click here](#) to renew your dues and to enter into a raffle for a \$1,000 Amazon gift card. While renewing, you can make additional donations to support specific activities including diversity, sustainability, disaster response, and outreach activities specifically for ASCE members. Learn more about the voluntary contributions on the [ASCE website](#).

Have You Seen the New Print ASCE News?

ASCE News is back in print! The new ASCE News was mailed with November's *Civil Engineering* magazine. Catch up on major Society activities, what members are doing at the local level, and where to find details online, all in a lively, quick read. If you don't receive the magazine or want a preview, view it online. [Click here](#) to see the November-December ASCE News.

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 BSCES News 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.

Upcoming Events

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

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

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

Younger Member Group Event

Wednesday, January 11, 2017

TD Garden, 100 Legends Way, Boston, MA

8:00 PM

Younger Member Group Celtics Game

Join the Younger Member Group to watch the Boston Celtics play the Washington Wizards. Tickets will be handed out at a pregame social.

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

Younger Member Group Event

Saturday, January 28, 2017

Stowe Mountain Resort, VT

Round-trip Bus Pick Up Locations throughout the Greater Boston Area

One Day Trip

Ski/Ride Day Trip to Stowe, Vermont with Boston Ski and Sports Club

The Boston Ski and Sports Club is managing a day trip to Stowe Mountain Resort and offering a discount to BSCES members who would like to participate. Join BSCES Younger Members on this trip to Vermont's tallest mountain, featuring one hundred trails; from bunny slopes to bumps, jumps or glades, there will be something for every level of skier or rider.

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

T&DI Boston Chapter 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

T&DI Boston Chapter Ice Skating

Join the Transportation & Development Institute Boston Chapter 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.

Younger Member Group Billiards Tournament

Wednesday, February 15, 2017

Scholars Boston Bistro

25 School Street, Boston, MA

6:00 PM

Younger Member Group Annual Networking & Billiards Tournament

Join YMG for our annual billiards tournament at Scholars Boston Bistro. Participants will compete in teams for a grand prize of Red Sox tickets for the winning team, plus prizes for 2nd and 3rd place winners.

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

ASCE and BSCES Sponsored Seminar

Thursday – Friday, March 9 – 10, 2017

Hyatt Place Boston Braintree
50 Forbes Road, Braintree, MA 02184-2602

8:00 AM – 5:00 PM

Project Management for Civil Engineers: Planning, Scheduling and Control

Nghi M. Nguyen, PhD, PE, PMP

President, NDV Project Management Services Inc

In today's competitive global economy, virtually all organizations are project-based. Whether they are governmental, industrial or commercial ones, these organizations supply products or services intended to satisfy the needs and requirements of their clients by applying the principles and methodologies of project management to implement their projects. Consequently, this seminar is designed to provide participants with the

continued on page 13

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.

Need Bridge Inspection Refresher Training?

The BSCES Program Committee-Sponsored FHWA-NHI-130053 Bridge Inspection Refresher Training that is being offered February 14–16, 2017 at the Hilton Garden Inn in Worcester is sold out. Committee members are trying to determine whether there is enough member need to host an additional Bridge Inspection Refresher Training course this year. If you need to take this training, please contact Rakaia El-Kasaby relkasaby@engineers.org as soon as possible so that another course may be scheduled.

2016–2017 BSCES Program Sponsors

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Pare Corporation | Skanska Civil | Stantec | TranSystems | Tufts University | Weston & Sampson Engineers, Inc.

Upcoming Events *(continued from page 12)*

project management knowledge and skills associated with the planning, scheduling and controlling of all activities that must be done to meet project objectives and their benefits in effectively and efficiently managing projects that they can apply immediately in their project environment.

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

BSCES Program Committee Sponsored NHI Training

Monday – Friday, April 24 – 28, 2017

Hilton Garden Inn Worcester

35 Major Taylor Boulevard, Worcester, MA

8:00 AM – 4:30 PM

FHWA-NHI-130110

Tunnel Safety Inspection

This five-day course is highly interactive and builds upon participants' prior knowledge of tunnel and/or bridge inspection. The course covers the entire breadth of knowledge necessary to manage or execute a successful tunnel inspection based on the National Tunnel Inspection Standards (NTIS), Tunnel Operations, Maintenance, Inspection and Evaluation (TOMIE) Manual and Specifications for the National Tunnel Inventory (SNTI). During the course, the instructor will lead participants through a series of case studies and a virtual tunnel inspection. Please note that to take this course,

participants must show that they have passed one of the following pre-requisite courses: FHWA-NHI-130054, Engineering Concepts for Bridge Inspectors; FHWA-NHI-130101, Introduction to Safety Inspection of In-Service Bridges; or FHWA-NHI-130101A, Prerequisite Assessment for Safety Inspection of In-Service Bridges.

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

ASCE Webinars

ASCE WEBINARS

SUPPORT OUR SECTION

Use **WEBBOSSEC** to have

20% of your purchase

donated to our Section.

ASCE | CONTINUING EDUCATION

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

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

Mark Your Calendar!

Tuesday, March 28, 2017

Student Night

Wentworth Institute of Technology
550 Huntington Avenue, Boston, MA

See future BSCES emails for more information on this event sponsored by the Younger Member Group.

Plan to Attend!

Wednesday, May 24, 2017

2017 Bertram Berger Seminar

Multimodal Transportation in Today's Modern Society

Omni Parker House
60 School Street, Boston, MA

1:30 PM Registration

1:50 PM Opening Remarks

2:00 PM Panel Discussion

5:00 PM Social

6:00 PM Dinner, Bertram Berger Tribute, Keynote Address, and Awards

Please see the Insert at the end of this month's newsletter for further details about this event sponsored by the Transportation & Development Institute Boston Chapter. More information will follow in future BSCES emails as the event approaches.

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 February 2017 issue of the newsletter for example, will highlight the ASCE Environmental & Water Resources Institute Boston Chapter and feature one or more articles on the theme of Water Infrastructure.

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 or BSCES Association Manager Rich Keenan at rkeenan@engineers.org.



YOUNGER MEMBER GROUP

Please join us!

Boston Society of Civil Engineers Section

Younger Member Group Celtics Game

TD Garden, 100 Legends Way, Boston, MA

Wednesday, January 11, 2017

8:00 PM

To Register:

Register online at <http://bit.ly/YMGB-Celtics> or fill out a **BSCES Event Registration Form** and follow submission instructions.

Contact 617-227-5551 if you have questions about registration. Tickets will be handed out at pregame social. Details for the social will be emailed to the group one week prior to the game. No food or drink is included in the ticket price.

Boston Celtics

vs.

Washington Wizards

Bleacher Section 320

Tickets: \$40

Let's go Celtics!



2016-2017 BSCES Program Sponsors: BETA Group, Inc. | Childs Engineering Corporation | Dewberry | Green International Affiliates, Inc. | GZA GeoEnvironmental, Inc. | Haley & Aldrich, Inc. | Hayward Baker, Inc. | Helical Drilling | Howard Stein Hudson | Hoyle, Tanner & Associates | Massachusetts Department of Transportation | McMillen Jacobs Associates | N.E. Bridge Contractors, Inc. | Northeastern University | Pare Corporation | Skanska Civil | Stantec | TranSystems | Tufts University | Weston & Sampson Engineers, Inc.

SKI & RIDE



STOWE MTN RESORT • SATURDAY JAN 28TH

Boston Ski & Sports Club

\$84
DAY TRIP

**INCLUDES
LIFT TICKET &
ROUND-TRIP BUS**

BSCES YMG MEMBERS & FRIENDS!

- RIDE THE BUS TO STOWE, VERMONT
- PICK UP LOCATIONS:
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 - NEWTON - RIVERSIDE MBTA
 - WOBURN - PARK & RIDE
 - QUINCY - ADAMS MBTA
 - PEMBROKE - SUN & SKI
- SAVE ON EQUIPMENT RENTALS
- SIGN UP TODAY TO GUARANTEE YOUR SPOT!



- CONTACT ALYSON STUER - BSCESYMG@GMAIL.COM FOR INFO.
- REGISTER ONLINE AT BSSC.COM
- ENTER PROMO CODE **BSCES17** TO RECEIVE DISCOUNT

Stowe
MOUNTAIN RESORT

The Boston Ski and Sports Club is managing a day trip to Stowe Mountain Resort and offering a discount to BSCES members who would like to participate. Join BSCES younger members on this trip to Vermont's tallest mountain, featuring over one hundred trails; from bunny slopes to bumps, jumps or glades, there will be something for every level of skier or rider.



Boston Society of Civil Engineers Section
American Society of Civil Engineers



**TRANSPORTATION
& DEVELOPMENT
INSTITUTE**

Boston Chapter

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Northeastern
University

Pare Corporation

Skanska Civil

Stantec

TranSystems

Tufts University

Weston & Sampson
Engineers, Inc.

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.

2016-2017
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Tufts University

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Engineers, Inc.



FHWA-NHI-130053

Bridge Inspection Refresher Training

Tuesday, February 14, 2017 – Thursday, February 16, 2017

Hilton Garden Inn Worcester, 35 Major Taylor Boulevard, Worcester, MA
Tuesday through Thursday, 8:00AM – 4:30PM

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

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

Registration Deadline: Monday, December 19, 2016

Registration Fees: \$1,400 Members, \$1,700 Non-Members

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

Information/Registration:

Attendance for this program is limited to 30 participants. Please note that while this course is currently at maximum capacity, the BSCES Program Committee is trying to determine whether there is enough member interest to host an additional Bridge Inspection Refresher Training. If you are interested in being placed on the prospective waiting list, please contact relkasaby@engineers.org as soon as possible so that another course may be scheduled. Additional details regarding this course may be found on the BSCES event listing at <http://bit.ly/NHIBridgeRefresher2017>. Reservations for BSCES Program Committee NHI courses are accepted on a first-come first-serve paid reservation basis. Cancellations after the registration deadline will be billed. For questions regarding registration, please call 617/227-5551.



Boston Society of Civil Engineers Section

Annual Networking & Billiards Tournament

Wednesday, February 15, 2017 at 6:00 PM

Registration: 6:00 PM – 6:30 PM

Registration Fees:

\$20 Student Members, \$25 Members, \$30 Non-Members

Registration includes tournament entry and appetizers.

Online Registration Deadline:

Wednesday, February 8, 2017

Grand Prize: Red Sox Tickets for 1st place team

Plus prizes for 2nd and 3rd place winners!

Scholars Boston Bistro

25 School Street, Boston, MA 02108

Register online: <http://bit.ly/YMGBilliards2017>

For more information, please contact bscesymg@gmail.com.

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Save the Date!

2017 Bertram Berger Seminar Multimodal Transportation in Today's Modern Society

Wednesday, May 24, 2017

Omni Parker House, 60 School Street, Boston, MA

1:30 PM – 7:30 PM

1:30 PM Registration; 1:50 PM Opening Remarks; 2:00 PM Panel Discussion; 5:00 PM Social
6:00 PM Dinner, Bertram Berger Tribute, Keynote Address, and Awards.

More information will follow as the event date approaches.

Young Engineer of the Year Award

Call for Nominations

The BSCES Transportation and Development Institute Boston Chapter is now accepting nominations for the **2017 Bertram Berger Young Engineer Award**. The annual Bertram Berger Young Engineer Award serves to recognize an outstanding younger member of the Boston Society of Civil Engineers for his or her professional achievements and service to the community. The successful candidate should (1) be less than 35 years old on May 1, 2017, (2) have attained exemplary professional achievements as a young engineer, (3) demonstrate leadership in the practice of civil engineering with emphasis on transportation, (4) enhance the stature of civil engineers within the community, (5) be active with professional organizations such as BSCES or similar, and (6) be a registered, or soon-to-be registered, professional engineer.

In addition to recognition within the engineering community, the award winner will receive a **\$2,500 stipend** to be used for continuing education and/or professional development. The award winner will be notified by the end of April, 2017 and will be presented with the award at the upcoming annual BSCES Bertram Berger Seminar and Dinner.

To nominate an individual for the 2017 Bertram Berger Young Engineer Award, please submit an up to two (2) page narrative statement describing how the nominee meets the above described criteria. Nominations will be accepted until 5:00 p.m. on **Friday, April 14, 2017** and should be submitted via mail or email to:

Mr. Kurt Jelinek, P.E., Nobis Engineering, Inc., 585 Middlesex Street, Lowell, MA 01851
Email: kjlinek@nobiseng.com, Phone: 978/683-0891.



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FHWA-NHI-130110 Tunnel Safety Inspection

Monday, April 24, 2017 – Friday, April 28, 2017

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

This five-day course is highly interactive and builds upon participants' prior knowledge of tunnel and/or bridge inspection. The course covers the entire breadth of knowledge necessary to manage or execute a successful tunnel inspection based on the National Tunnel Inspection Standards (NTIS), Tunnel Operations, Maintenance, Inspection and Evaluation (TOMIE) Manual and Specifications for the National Tunnel Inventory (SNTI). During the course, the instructor will lead participants through a series of case studies, concluding with a virtual tunnel inspection that takes place in a computer-simulated, 3D environment.

Please note: To take this course, participants must show that they have passed one of the following pre-requisite courses: FHWA-NHI-130054, *Engineering Concepts for Bridge Inspectors*; FHWA-NHI-130101, *Introduction to Safety Inspection of In-Service Bridges*; or FHWA-NHI-130101A, *Prerequisite Assessment for Safety Inspection of In-Service Bridges*. A FHWA/NHI certification of completion with the participant name on it will be required to be presented to BSCES preferably at time of registration or no later than Friday, February 17, 2017. Please forward your prerequisite certificate in the form of a PDF document to bsces@engineers.org. Please visit the NHI website at www.nhi.fhwa.dot.gov or contact them at 703/235-0500 for additional information on the prerequisite course requirements.

Registration Deadline: Friday, February 17, 2017

Registration Fees: \$2,100 Members, \$2,550 Non-Members

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

Information/Registration:

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

Reservations will be accepted on a first-come first-serve paid reservation basis. Payment must be received with registration to secure a slot. Register to attend this course and pay by credit card online at <http://bit.ly/NHITunnelSafety-42417>. To register online for an event at the BSCES member rate you must login using your BSCES assigned username and password. If you do not know your login information, call 617/227-5551. You can also register for this event by mail or email. To do so, download and complete a [BSCES Event Registration Form](#) and follow the submission instructions. Cancellations or no shows after February 17, 2017 will be billed, including those that do so due to failure to take one of the prerequisite courses.