BSCES NEWS

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UPCOMING EVENTS

EnvisionTM 101: New Release and Current Trends *January 15, 2019*

Bridge Inspection Refresher Training *February 12–14, 2019*

Further Details Inside

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Northampton's Upper Roberts Meadow Reservoir Dam Breach and Stream Restoration Project—Educating Tomorrow's Dam Removal Practitioners

by Matthew Taylor, PE, Principal, Metro Boston Dam and Levee Safety Group Leader, GZA

On September 26th, GZA participated in a field trip for the UMass Amherst Dam Removal Practicum course led by the MA Division of Ecological Restoration (DER) practitioners and university professors from the Environmental Conservation and Civil Engineering Departments. Each year, DER teaches ten students about the dam removal process and invites them to participate in the project management teams for on-going dam removals across the Commonwealth. The class visited the City of Northampton's Upper Roberts Meadow Dam Breach and Stream Restoration Project in Northampton, MA to take advantage of an opportunity to see a successful, local dam removal. The UMass Dam Removal Practicum course students were able to see the results first-hand and ask questions about the project and discuss what struggles that were encountered and how they were overcome. The Project has been highlighted as a case study in the class over the last four academic years and this year the class was able to see the site in the final stages of construction.

Controlled removal of existing masonry spillway.

The Upper Roberts Meadow Reservoir Dam was a 30-foot tall stone masonry dam that was identified by the Commonwealth as a "High Hazard, Poor Condition" structure. As such, it needed to be either repaired or removed. GZA was contracted by the City to perform an alternatives analysis which yielded dam removal as the preferred approach. Over the past 11 years, the project has advanced through preliminary design, pre-application meetings with regulators, public presentations, final design, environmental permitting, historical/archaeological permitting, and finally construction. The long project time line was the result o f a public process and regulatory pathway that required multiple design approaches that required input and concurrence by many project stakeholders. One of the key project elements was how to deal with the approximately 27,000 cubic yards of sediment that had been

continued on page 2

President's Report

by Geoffrey B. Schwartz, PE, Sr. Project Manager, GZA

Dear Members,

We are in the middle of our busy events season, please check in with our events calendar and weekly email blasts to look at upcoming programs, there should be plenty of great ones to choose from! And as always, if you would like to participate in one of our 10 committees, or our eight technical groups / institute chapters, or volunteer at an Outreach event, please visit our website and email the current committee or group chair, or email me at the link below, and I will direct you to the right person!

The December *BSCESNews* theme is geotechnical engineering. Please read the article by Lucy Jen the chair of the BSCES Chapter of the Geotechnical Institute. If you are interested in submitting an article, please contact our Newsletter Editorial Board chair, Bruce Jacobs, at sr.vp1@bsces.org.

As part of our end of the year ask campaign, we at BSCES respectfully request that if you enjoy our programming or our publications, and would like to support the Society, we encourage you to make a personal donation (no donation is too small!). Please consider making a tax-deductible donation by clicking here on our "Donate Page."

We are currently searching for a BSCES Legislative Fellow starting in January 2019 and running through June 2020. If you or someone you know is interested and might be a good fit, I encourage you to apply. Click here for more information.

Finally, I am excited to announce that the Awards Committee will be soliciting nominations for a variety of annual awards starting now! This is an excellent opportunity to recognize individuals and employers that have made significant contributions to the civil engineering

continued on page 8

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Dam Breach and Stream Restoration Project

continued from page 1

impounded by the dam. The City, with the help of GZA and MA DER, was able to obtain concurrence for the regulators to permit the project as a staged dam removal with a controlled sediment release. The dam removal was conducted in stages to "throttle" the release of sediment downstream, which mitigated the potential for downstream flooding while allowing the sediment in the impoundment to develop its new stream channel in a controlled manner. It was initially predicted that approximately 10,000 cubic yards of sediment would be released and allowed to flow downstream to previously sediment-starved reaches or flow into the downstream emergency backup water supply reservoir, Middle Roberts Meadow Reservoir. Ultimately, the removal of the Upper Roberts Meadow Reservoir Dam will restore connectivity to two separate cold-water fisheries habitats.

DER, UMass and GZA site visit to the dam

Before and after view of downstream channel

In the spring of 2018, the construction project was awarded to SumCo Eco Contracting, LLC of Peabody, MA. Dam removal and sediment sluicing activities were conducted over the spring and summer with the last blocks of the dam being removed at the end of September. The construction project has been a huge success with no downstream flooding and a very well incised channel carved out of the sediments within the former impoundment. A rainy summer facilitated a faster staged dam removal due to a relatively rapid sediment transport by several well-timed heavy rain events. The fortuitous weather patterns allowed the dam removal activities to be completed over one construction season, twice as fast as initially predicted based on a typical summer construction schedule. A post-removal sediment survey has revealed about 10,000 cubic yards of sediment have already been transported from the former impoundment. With the dam completely removed and new stream channel fully formed, the rate and quantity of additional sediment mobilized will be limited, relatively speaking.

The project can be deemed a success for many reasons. The Commonwealth's Dam Safety Order was fully addressed by removing a Poor Condition, High Hazard dam. The project costs were effectively controlled by using the sediment release in lieu of dredging and offsite disposal, thus saving the City nearly $500,000. The sediment sluicing approach also allowed the newly formed stream to establish itself in a natural way within the former impoundment and eliminated the ecological impacts compared to the dredging alternative which would have required clearing 5 acres of forest to construct a sedimentation basin to process hydraulic dredging spoils. Lastly, the sediment sluicing option has allowed the area to quickly become picturesque and beautiful, something that would not have happened for many years if the sediments were dredged prior to the dam removal. The staged dam removal and sediment release allowed the stream channel to be formed while concurrently, and almost immediately after being dewatered, the exposed sediments burst into a thriving and surprisingly well-established vegetated floodplain.

Groundwater Recharge at One Dalton Street

by Christopher D. Hodney, PE, Project Engineer, Nitsch Engineering

The One Dalton Tower, the newest addition to the Back Bay skyline, is currently entering the final stages of construction at the intersection of Dalton and Belvidere Streets, adjacent to the Christian Science Plaza. The project includes a new 61-story high-rise tower that will house a Four Seasons Hotel and Private Residences at One Dalton Street, and a new urban park. The project will include 211 hotel rooms, 185 residences, and a restaurant. When complete, the tower will be the third tallest in Boston (after the Prudential Center and 200 Clarendon Street) at 742 feet.

The project site is located in Boston's Groundwater Conservation Overlay District (GCOD). The GCOD covers areas of the City where groundwater has been receding from historical levels. This creates problems in older buildings, like the ones on St. Germain Street and Clearway Street near the project site. When groundwater levels fall, the wood piles that support these buildings are exposed to oxygen, causing them to rot. As the wood piles rot, the buildings begin to be damaged by settlement and can eventually become structurally unstable. Replacing or repairing the piles under these buildings is an expensive, labor intensive process. To help replenish groundwater levels in these areas, projects in the GCOD have been required to infiltrate the first inch of stormwater that falls on impervious areas (like buildings or sidewalks). The Boston Planning and Development Agency recently took this a step further and adopted new standards for larger projects (over 100,000 square feet) that increases this amount to the first 1.25 inches. This project, however, predates this requirement.

The project includes two parts, which each have their own, separate, recharge systems. The first part consists of the Tower; the second consists of a park at the corner of St. Germain Street and Dalton Street. The design of the recharge system from the park is relatively simple. Stormwater is collected in catch basins throughout the site and directed to an underground infiltration system made up of perforated corrugated polyethylene pipe in a bed of stone and wrapped in filter fabric. When this recharge system is full, it overflows to the combined sewer in Dalton Street.

The design of the One Dalton Tower, however, presents challenges to the traditional approaches to infiltrate stormwater. The tower takes up the entire site, so there is no area outside the building to fit a recharge system. The garage beneath the tower also extends down below the groundwater table, so it was not possible to install a recharge system under the building either.

With these site limitations, the approach to recharge for the Tower is to capture stormwater from the roof and direct it to a storage tank within the building. This tank is sized to hold the required one-inch volume, and overflows to the same combined sewer in Dalton Street as the system in the park. While the building will be the third tallest in the city, it only has two levels of basement, which are occupied primarily with parking and mechanical rooms, leaving little room for a stormwater tank. The question of where to site the tank needed to be answered—and found help in the complex history of the site.

The project site sits in an area of Boston that has changed substantially through the twentieth century. Before the Christian Science Plaza, Colonnade Building, and Prudential Center, the project site straddled the edge of a residential neighborhood and the rail yard where the Prudential Center now sits. Construction of these new buildings in the 1960s and 1970s created a mixture of old and new utilities underneath the street. It also created some unique property lines – including a below-grade arc that extends out under Dalton Street. This unique space would have otherwise been unused, so it was a perfect location to build the stormwater tank.

Stormwater recharge is accomplished by slowly pumping water from the Tower's storage tank to four infiltration wells that are located in the sidewalk in front of the building on Dalton Street. The pumps for the One Dalton Tower are designed to empty a full tank in 72 hours, meeting the Massachusetts Stormwater Standards. The wells, which are designed by the geotechnical engineer, are vertical pipes surrounded by a column of sand. Each well holds a column of water which slowly equalizes with the local level of groundwater. The number of wells is based on the percolation rate of the natural soil, the amount of water that needs to be infiltrated, and the time over which it needs to be infiltrated. The vertical nature of the wells maximizes surface area where water can infiltrate into the ground, and the column of water provides head pressure to facilitate drawdown in the wells.

Recharge wells are becoming more common as larger buildings are built on relatively small sites, leaving little room for traditional onsite recharge systems. Their small footprint outside of the building allows them to be located to avoid existing utilities under the sidewalk even in the most congested areas of the city. The city has recognized their usefulness and allows projects to apply for a license to install recharge wells under public sidewalks. However, the major drawbacks of finding room for a tank in the building, and of maintaining the tank and pumps, means that traditional, passive approaches to recharge are still preferred when space allows.

The approach to groundwater recharge at the One Dalton Tower is a bit different from traditional approaches in Boston but will become more common in the future as space gets tighter and tighter in an already compressed city. This type of system is an effective solution that allows projects to both meet city and state requirements and to mitigate their impacts to the older buildings that make up so much of Boston.

Hanging from a Thread: Rock Slope Characterization Through Hand Mapping, Rope Access, and Terrestrial Lidar

by Erik Friede, EIT, Engineer I, GZA, and Andrew Blaisdell, PE, GE, Associate Principal, Geotechnical Engineer, GZA

No matter where you are in New England, and many other mountainous regions of the United States, rock outcrops can be spotted bordering highways, building developments, waterways, and many other environments. To the casual observer it can provide some interesting scenery. However, historical rock excavation methods and site designs have left slopes that are unstable and/or extremely close to areas utilized by the public. As a result, they can represent a major risk to the public and an engineering challenge. Engineering geologists and geotechnical engineers work together using a toolbox of multiple characterization techniques to evaluate the conditions that can contribute to instability of bedrock exposures and develop mitigation strategies to limit the risk to the public.

As with most areas of the geotechnical engineering field, a hands-on approach is essential to understand the conditions relating to risk. Joint orientations are measured to evaluate the regional and local joint patterns, and the joints are visually inspected for signs of weathering, water flow, or previous movement. Either a traditional Brunton transit compass or a Clinometer application on an iPhone (e.g., GeoID) can be used to measure the orientation (i.e., strike and dip) of an exposed surface of the rock. Combined with a study of the local geology, the rock type and joint patterns are evaluated to assess potential for individual blocks or more substantial rock masses to be released from the slope and to enter areas inhabited or travelled by the public.

Discontinuity data collected on foot and from a ladder is the most efficient method to map a bedrock exposure, and it is typically utilized alone for slopes about 25 to 40 feet high or less, depending on the complexity of the geology. This technique was used to evaluate the bedrock structure and stability of a rock slope bordering a rail line in Holyoke, Massachusetts. The slope is within a few feet of the tracks, and continued rock releases from the slope required reduced speeds along the rail line. The goal of the project was to design a rockfall mitigation system that would allow the speeds to be increased without relocating the tracks. An anchored mesh system comprised of high-tensile strength wire mesh secured to the rock face using a grid pattern of rock dowels was designed to secure the rock mass in place and limit the potential for falling rocks to impact the existing railway alignment. The mitigation system is currently under construction.

Field mapping and data collection are often more involved for taller slopes. Slopes greater than about 40 feet in height are typically mapped using ropes access (rappelling) techniques to characterize the entire slope. A two-person team, often consisting of an engineering geologist and geotechnical engineer, work together to map and record data, making multiple descents at a horizontal spacing that is adequate to characterize the rock structure. Both members of the team must have ropes access training to allow response to emergencies during mapping. Training for rope access work is typically conducted by self-governing bodies such as SPRAT, IRATA, PCIA, or other groups of qualified professionals in the field. GZA's ropes access team are Professional Climbing Instructors' Association (PCIA) Level I Slope Access certified and have utilized this training to map slopes up to 200 feet high in a single descent. The PCIA certification is also held by almost all of the specialty contractors that complete rock slope stabilization work on ropes.

Access to this relatively low-height slope adjacent to an active rail line in Holyoke required only a simple step ladder.

Rock mapping at this 80-foot high slope in Saugus necessitates rope access by trained personnel.

For projects that require detailed observations but have limited access or contain substantial rock areas that are unsafe for ropes access, terrestrial laser scanning (LiDAR) or photogrammetry completed using an Unmanned Aerial Vehicle (UAV, i.e., drone) can be used in combination with, or in place of, ropes access. Terrestrial LiDAR, and more recently photogrammetry, have become indispensable tools used by GZA in rock slope evaluations over the past several years. Software packages developed by Split Engineering are specifically designed to calculate joint orientation data from point clouds developed from LiDAR or photogrammetry "point cloud" survey data. This software can be used to make measurements of other significant features, most importantly dimensions of potentially unstable areas and accurate sections of the slope geometry, in addition to developing a more robust joint orientation data set. The collected field measurements are still vital as they are used to supplement, calibrate and/or verify the point cloud model and verify consistency between measurements.

A combined approach of field mapping and LiDAR evaluation was used to investigate a massive, blocky granite body forming the boundary of a retail shopping center in Saugus, MA. The rock slope borders a loading zone for food and other deliveries behind the shopping center. The major concern at this site was the potential for very large falling rocks to fall from high on the slope and impact pedestrians and employees working in the area beneath an approximately 80-foot tall portion of the slope. Rockfall evaluations and joint measurements were used to develop a mitigation system composed of scaling, rock dowels, passive mesh drapes and shotcrete buttresses. Rock fall showed that catchment enhancement through regrading and the installation of jersey barriers was adequate to mitigate the risk in portions of the slope. The mitigation system is currently under construction.

Rock slope instability represents a major risk to the safety of the public if not addressed appropriately. It is contingent on owners or agencies that control facilities containing unstable rock slopes to engage experienced geotechnical engineers and engineering geologists to plan and execute mapping programs to select and design practical, cost effective stabilization solutions that improve public safety protection.

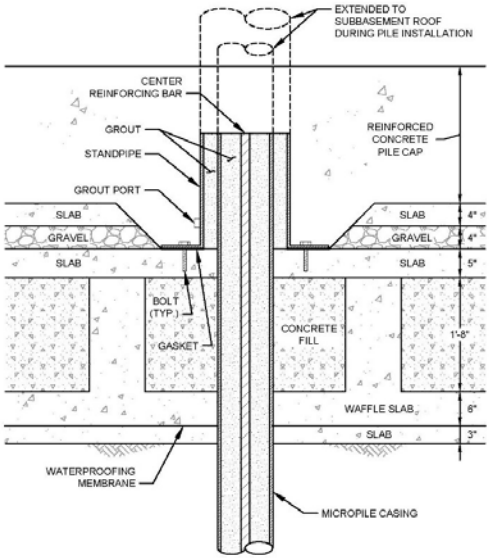
Innovative Application of Micropiles under High Groundwater Conditions Allows Development of Site over Existing Subbasement

by Mary C. Nodine, PE, Project Manager, GEI Consultants Inc., Michelle C. Perez-Canals, Geotechnical Engineer, GEI Consultants Inc., and Michael P. Walker, Senior Principal, GEI Consultants, Inc.

The CANALSIDE development in Buffalo, New York will serve to revitalize the former site of the Buffalo Memorial Auditorium. The Auditorium was an iconic indoor arena located downtown and constructed in 1940. It was demolished in 2009 and the only portion of the Auditorium left intact was a subbasement equipment room. The subbasement was renovated in 2014 and has since been used to house ice making equipment for the historic replica canals, which are frozen in the winter months to become New York State's largest outdoor ice skating rink.

A four-story building housing a children's museum was proposed to be constructed directly above the Auditorium subbasement. The concept of a structure above the subbasement quickly proved to be a challenge. The subbasement was founded on steel H-piles driven to bedrock and reuse of the existing foundation was considered. However, the loads imparted by the new building would exceed the capacity of the existing piles. Furthermore, groundwater in the area was located at the level of the adjacent Lake Erie, about 8 feet below ground surface and 10 feet above the subbasement floor. As-built drawings showed that the subbasement was constructed on an approximately 4-foot-thick layered slab system including an inverted waffle slab with concrete infill to counteract groundwater pressure. A waterproofing membrane was present within the slab system.

GEI Consultants, Inc. was engaged to design foundations that would penetrate through the subbasement slab while providing groundwater control both during and after construction. The architect and structural engineering team (FFAE Architects and Ravi Engineering and Land Surveying, P.C.) was therefore able to place columns both within and outside the subbasement, allowing for more flexibility in design of the building.



Micropiles were driven through the pre-existing four-foot thick layered slab system to support the new construction and surrounded by standpipes to control groundwater.

Foundation Design

Drilled micropiles were selected as the foundation system for the structure due to their small diameter and the ability of installation equipment to drill through the concrete floor slab and other obstructions. The building columns and the pile caps were strategically laid out to minimize the number of columns within the subbasement. This would limit the number of roof and floor penetrations and the number of large pile caps required since the subbasement would need to continue to function as an active equipment room.

The proposed pile caps had to avoid existing columns, internal walls, equipment and other structures. The piles themselves had to miss the existing pile caps and grade beams buried within the waffle slab. This resulted in an unusual configuration with large pile caps (up to 7 micropiles per cap) that were eccentrically loaded and asymmetrical. Each micropile was designed for compression loads ranging from 26 to 334 kips, and tension loads up to 261 kips.

Groundwater Control

To control groundwater during construction, a 12-inch-diameter standpipe was installed at each micropile location within the subbasement. The upper floor slab and gravel subfloor drain were removed at each pile cap location, and standpipes were bolted to the underlying waffle slab via a flange extending out 4 inches around the standpipe. A gasket was installed between the flange and the floor slab to provide a seal around the slab penetration.

The standpipes extended from the subbasement floor up through the subbasement roof. The micropiles were drilled from the subbasement roof through the standpipe, and the groundwater pressure below the floor was balanced by the fluid head inside the standpipe.

When drilling was complete, and the center bar reinforcement was installed, each pile was immediately tremie grouted until grout return was observed at the top of the drill casing at the roof level. A grout port was provided near the bottom of the standpipe for grouting of the annulus between the drill casing and the standpipe. The goal was for the grout to fully

continued on page 6

Innovative Application of Micropiles

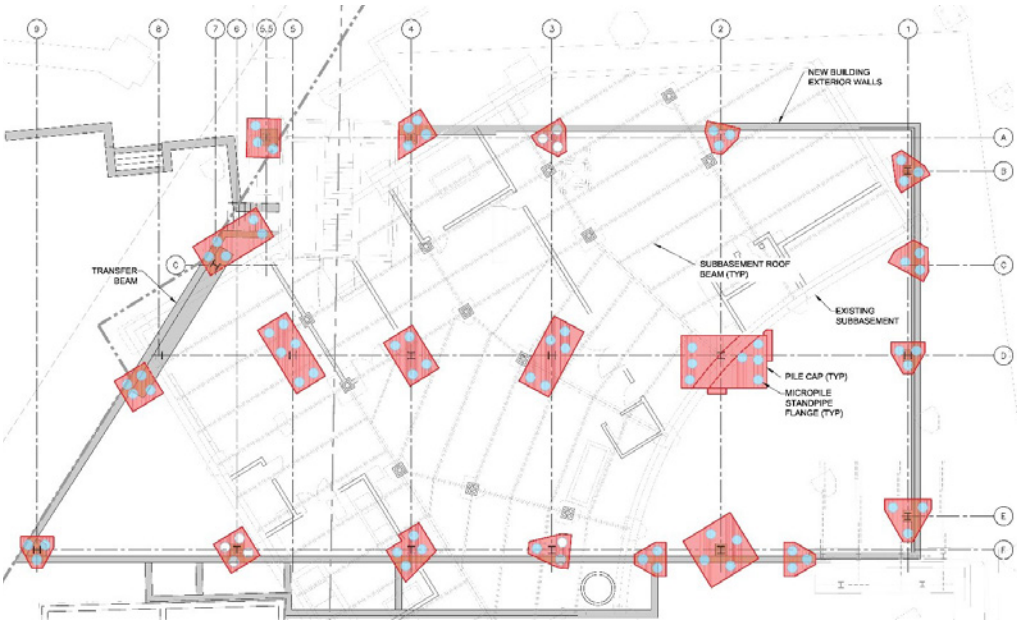
continued from page 5

displace water within the micropile, the annulus, and any cracks in the slab system to prevent leakage both during construction and in the final condition.

Construction Challenges

Several challenges with foundation construction arose that required quick action and solutions from the project team.

1. Condition of waffle slab: When the upper slab and drainage layer were removed, the contractor found several areas where the surface of the waffle slab was not a suitable surface on which to bolt the standpipe. The conditions included (1) trenches in the waffle slab for utilities, (2) soil fill up to 3.5 ft thick instead of concrete fill, and (3) water present that flowed through existing rebar penetrations and nail holes. The project team developed several solutions for these challenging slab conditions, including filling shallow voids with quick set mortar and backfilling with high early strength concrete connected to the original concrete beneath with threaded rods.
2. Leakage during installation: After grouting the standpipes, some were still filled with water. This indicated that the cement grout was not providing an adequate seal inside the standpipe annulus, and that grout placed inside the annulus was leaking out, likely flowing into voids within or below the subbasement slab system. The project team had to adopt procedures to obtain adequate sealing inside and below the standpipe including (1) using a tremie pipe to grout the standpipe annulus providing a lower injection point for the grout, (2) adding bentonite to the cement grout for the standpipe annulus, and (3) where leaks still occurred, a fast-set polyurethane grout was injected under pressure through grout holes drilled diagonally to intercept the concrete slab penetration below the standpipe.



Micropiles and pile caps (shown in red) were located so as to avoid columns and walls in the existing subbasement.

The project team successfully addressed unforeseen challenges during construction due to the unknown condition of the subbasement floor, and a number of lessons were learned about waterproofing techniques. The ability to drill foundations through the subbasement floor allowed for reuse of the in-place structure and flexibility in the superstructure design.

Standpipes enclosing the installed micropiles were anchored to the existing slab system.

Rehabilitation of Centennial Dam, Mother Brook, Dedham, Massachusetts

by Derek J. Schipper, PE, Senior Project Manager, GZA GeoEnvironmental, Inc. and William S. Gode-von Aesch, Director of Flood Control Management and Navigational Operations Section Bureau of Engineering, Massachusetts Department of Conservation and Recreation

Centennial Dam is owned and operated by the Massachusetts Department of Conservation and Recreation (DCR). The dam impounds water along the Mother Brook, a human-made water conveyance through which water can be moved from the upper reaches of the Charles River into the Neponset River, thereby bypassing the downstream Charles River Basin in metropolitan Boston. The dam was originally constructed prior to 1900 and served to power the mills located near it. In 1975 the Commonwealth acquired most of the land at the Dam to improve upon flood control efforts following flooding which had occurred in the previous decades. The Dam received a High Hazard classification as it is located immediately (i.e. within 20 feet in some places!) upstream of historic mill buildings and new construction both of which now contain residential condominium housing units.

Based on visual/Phase I inspections performed by GZA, the Dam was deemed to be in poor condition according to the criteria of the Massachusetts Office of Dam Safety. Deficiencies included a leaning left downstream masonry wall with an inadequate stability factor of safety; insufficient spillway capacity; overly steep downstream slope of right embankment; woody vegetation throughout the embankment; partially corroded 48-inch-diameter mid-level outlets; failing/partially collapsed right discharge channel wall; low level outlet in need of repair; seepage under high flow conditions and leakage at right embankment along training wall depressions behind the right downstream discharge channel wall.

The overall objective of the rehabilitation project at the Centennial Dam was to address dam safety deficiencies identified during visual inspections by GZA and confirmed by the DCR. The final design took into consideration the historical appearance of the dam while including certain structural and hydraulic improvements to meet current dam safety regulations. GZA, the DCR, and contractor R. Bates & Sons, Inc. worked closely together and with the condominium association during the winter/spring of 2018 to successfully complete the rehabilitation.

Dam Rehabilitation Highlights

Rehabilitation of Centennial Dam addressed numerous dam safety issues. In addition, the rehabilitation improves and simplifies operations for the DCR. The design preserves the historic appearance of the structure while meeting current dam safety standards.

The project was particularly complex with respect to the hydrologic and hydraulic analyses. To satisfy Massachusetts Dam Safety Regulations, the rehabilitated dam needed to be designed to pass the ½ Probable Maximum Flood (½ PMF). While the immediate watershed of the dam was relatively small at about 1.5 square miles, Mother Brook receives a much larger amount of flow from the Charles River via a diversion gate at the head of Mother Brook. Based on GZA's analyses, Centennial Dam would have overtopped by about 1 foot for the ½ PMF, prior to the improvements. The rehabilitation design included installation of an approximately 2.5-foot-high parapet wall along the top of the dam to address freeboard, overtopping and wave action issues during the design flood. The parapet wall consisted of precast concrete blocks stacked over the location of the core wall. Based on observed downstream seepage, the core wall appears to have been overtopped during flooding. The design included placement of low-permeability fill along and over the existing core wall to essentially extend the water barrier to the top of the blocks.

Prior to rehabilitation, operation of the dam's outlets was challenging and time consuming. Removal of stop logs at the twin, 48-inch-diameter mid-level outlet pipes required multiple DCR staff. A new cast-in-place auxiliary spillway at the entrance of the existing twin 48-inch-diameter corrugate metal pipes (CMPs) has a fixed weir set about 6 inches higher than the primary spillway. It is designed to activate during flooding without DCR operation. The CMPs, which were partially corroded, were lined with cast-in-place plastic pipe liner which proved to be considerably more cost-effective than replacing the pipes. Improvements to the low-level outlet gate and operator will also allow the DCR to better manipulate flows in advance of a flood.

Improving the stability of the left downstream masonry wall was a critical part of the project. The project initially considered buttressing the downstream face of the masonry wall with cast-in-place concrete piers supported on footings supplemented with rock anchors to resist overturning. However, this approach would have been time consuming, expensive and

continued on page 8

The left downstream embankment prior to repairs was found to have an inadequate stability factor of safety.

Left downstream embankment following removal of the upper portion of the masonry wall and regrading of the slope up to the top of the dam

Reconstructed right discharge channel wall addressed collapsed segments of the wall.

President's Report

continued from page 1

profession and their communities. The following is a summary of the BSCES Annual Awards:

The **Citizen Engineer Award** is presented to a BSCES member or registered professional engineer for outstanding public involvement in local or national legislation, education (at any level), non-profit volunteer organizations, community activities, or similar activities improving the image of ASCE, BSCES and the civil engineering profession. The **Horne/Gaynor Public Service Award** is presented to a BSCES member or registered professional engineer for unpaid public service in a municipal, state or federal-elected or appointed post for philanthropic activities in the public interest. The **Government Civil Engineer Award** is presented to a BSCES member who is serving as a paid public sector engineer at a federal, state, or municipal agency, department, or authority in Massachusetts. The **Clemens Herschel Award** recognizes an individual who has published a paper that "has been useful, commendable, and worthy of grateful acknowledgment." The **Journalism Award** is presented to a journalist or other author who has published one or more articles, papers, books, social media blogs, or film for a non-technical audience that raises awareness of the contributions of the civil engineering profession. The **Pre-College Educator Award** is presented to a member of the K–12 educational community who integrates engineering topics, particularly civil engineering, in a manner that benefits the profession and may promote students to pursue an engineering career. The **College Educator Award** is presented to a member of the academic community who inspires and encourages civil engineering students through exceptional teaching and mentorship. Candidates should be actively teaching in a classroom setting at a college or university in New England. The **Younger Member Award** is intended to recognize a BSCES member, 35 years of age or younger on February 1 in the year of the award, who has made an outstanding contribution to BSCES and/or the civil engineering profession. The **Engineer of the Year Award** is presented to a BSCES member, with 15 years or more professional experience, who has exhibited extraordinary leadership in the form of managerial leadership, technical excellence, professional integrity, and mentorship of other engineers. The **Project of the Year Award** is presented to a BSCES member and her/his project team who has served in a major role on an innovative, challenging, unique, and/or complex project located in the Commonwealth of Massachusetts.

The **Employer Recognition Awards** were created by the BSCES Board of Government to recognize those employers who commit to providing exceptional opportunities to their engineers. Special recognition will go to those organizations who exhibit exemplary support as evidenced by: encouraging technical and professional growth through continuing education, training, mentoring, project experience, participation in development of technical papers or presentations, and other means; tackling staff quality-of-life issues in the modern workplace; contributing to the community to make a positive impact; encouraging active participation in professional societies such as ASCE/BSCES. There are two types of employer recognition awards: the Small Employer Recognition Award is given to deserving organizations with less than 50 employees and the Large Employer Recognition Award is given to organizations with more than 50 employees.

Please consider nominating your company or fellow engineer, co-worker, friend, or someone who you think deserves special recognition for these awards. The nominations deadline is **Monday, March 11, 2019**. Nomination forms are included as inserts at the end of this newsletter. For additional information, please contact me or Michael Cunningham, the Chair of the Awards Committee, at Vice.President2@bsces.org.

I'd like to once again thank our Society Sponsors. This month's sponsor of the newsletter is GZA GeoEnvironmental. We also thank GZA for contributing articles to this issue of *BSCESNews* on repairs to the Centennial Bridge in Dedham, rock slope mapping, and the removal of the Upper Roberts Meadow Reservoir Dam in Northampton.

Please do not hesitate to reach out with comments, questions, and feedback, so that we may continue to serve you.

Respectfully submitted,
Geoffrey
president@bsces.org

Rehabilitation of Centennial Dam

continued from page 7

intrusive to the downstream abutters. An alternate option was developed to remove the upper portion of the masonry wall and slope back the embankment to the top of the dam. GZA was able to generate a photographic render of this option to present to the DCR and owners of the condominiums. The DCR and owners were impressed with the conceptual appearance of the downstream embankment and elected to move forward with this approach which ultimately also resulted in considerable cost savings for the project.

Construction was performed during the winter and spring when flows in Mother Brook are typically highest. The water control design and permits allowed the gate at the Mother Brook Diversion to be raised (i.e. closed) to prevent flow from the Charles River from entering Mother Brook, thus, draining the impoundment upstream of Centennial Dam. While this approach was successful for most of the project, there were periods of flooding where the Charles River overtopped the diversion gate and the impoundment was flooded. GZA, the DCR, and R. Bates & Sons worked closely to anticipate forecasted flooding and safely secure the project area as needed.

Rehabilitation of the Massachusetts DCR owned Centennial Dam restored a High hazard dam within a residential condominium complex. The dam also functions as an important flood control structure protecting the metropolitan Boston area. The project brought a 19th century mill dam up to 21st century safety standards, simplified dam operations, and addressed numerous deficiencies.

New Center for Engineering, Innovation and Sciences—Next Step in Wentworth's Evolution

by Dennis Nealon, Director Public and Media Relations, Wentworth Institute of Technology

The new Center for Engineering, Innovation and Sciences is the next step in Wentworth's evolution—a bold, physical representation of the Institute's growth, and of its vision for the future. Over its nearly 115-year history, Wentworth has grown from a technical school into a leader in experiential education focused on design, management, engineering and sciences. The Institute has expanded its curriculum and enrollment over the past century, and over the past 14 years has invested over $300,000,000 in campus infrastructure, the latest of which is our first new academic building from the ground up in over 45 years.

The four-story, multipurpose building consists of 75,000 square feet of laboratory, teaching, and office space, a large community presentation area, as well as numerous gathering spaces for students, faculty, and staff. The building houses Wentworth's Biological, Biomedical and Civil Engineering Departments; Accelerate, Wentworth's innovation and entrepreneurship center; an additive manufacturing center; as well as Wentworth's Externally Collaborative, Project-Based, Interdisciplinary Culture for Learning (EPIC) initiative.

Wentworth's Center for Engineering, Innovation and Sciences opened at last at a celebration that drew hundreds to the newly restored campus quad. Joined by university community members and local officials, President Zorica Pantíc cut the ceremonial ribbon for the 75,000-square-foot facility that became the leading and lasting symbol of her nearly 14, transformative years at the Institute's helm.

"This evening we are literally stepping into a bright, new future for Wentworth, and I couldn't be more pleased to be a part of this extraordinary evolution," she said.

She also said the Center underscores the university's increasingly influential role in higher education and will help prepare students for the opportunities of the knowledge-based economy of the 21st century.

Attendees included members of the Board of Trustees; trustees emeriti; representatives of the project team of Gilbane Building Co., Leers Weinzapfel Associates and STV/DPM; Boston City Councilor Josh Zakim; faculty, staff, students, alumni, and other special guests and friends of Wentworth.

New Center for Engineering, Innovation and Sciences on the Wentworth Institute of Technology quad.

"Now we know, some dreams do come true," said Board Chair Michael Masterson. "But to become real, dreams like this take the determination and vision of hundreds of people working together. As a community, we can all feel very, very good about coming together to help make this facility happen."

"The flexible floor plan, with offices, labs and collaboration spaces, allows for crosspollination of ideas and innovative thinking, and supports Wentworth's academic mission to empower, inspire and foster innovation through experiential learning," said Jack Duggan, chair of the Department of Civil Engineering.

"The facility's impact on teaching, learning, innovation and entrepreneurship on our campus will be immeasurable," said Eric Overström, senior vice president for Academic Affairs and provost. "Our faculty has poured a lot of extra effort into bringing this building to life, and their devotion and conscientiousness have made a tremendous difference."

The building's engineering labs are equipped with more than $1 million worth of state-of-the-art analytical instrumentation that will prepare students to understand, test, and in some cases design emerging engineering materials, products and processes. The new Center enables students to use cell and molecular biology for tissue analysis and engineering, for example.

Wentworth President Zorica Pantíc over the ribbon cutting ceremony for the new building.

Pantíc cited the generosity of the corporations and individuals who have helped to make the four-story Center a reality. More than 40 donors have contributed approximately $1.7 million to the facility, including two donors, alumnus Matthew LaRovere Sr. and alumnus and Trustee Jack Blaisdell, who made gifts in appreciation of their Wentworth educations and in honor of their families and friends.

"We built something here on this campus that will forever change the future of this university and its students," said Wentworth legacy student Shannon Sturtz, CM'21, who completed a co-op at the Center for Gilbane Building Co. "The engineers, innovators, and scientists of this campus will now have a state-of-the-art facility to utilize in their education, research, and discovery for years to come."

Engineers Without Borders—MIT Chapter

by Ana Claudia Guedes, Civil Engineer, MIT-EWB Volunteer

Engineers Without Borders (EWB) is a non-profit that partners with people from developing countries around the globe and works with them to find solutions that will improve the quality of life in their communities. The national organization Engineers Without Borders USA (EWB-USA) has more than 14,000 members and has been implementing engineering projects in different communities to meet their basic human needs. Members of the student-run Massachusetts Institute of Technology Chapter of EWB (MIT-EWB) learn practices that will make us lifelong change-makers. Our team is a diverse group of engineers, scientists, leaders, designers, humanitarians, and innovators that are working together to create a better world, one community at a time. The process is illustrated by description by four recent MIT-EWB projects.

Ghana Startup Company

After graduation, MIT alum and Ghana-born Kwami Williams and co-founder Emily Cunningham created the company Moringa-Connect in Accra, Ghana to support small-scale farmers in Accra and address the endemic problems of malnutrition. Moringa, known as the "miracle tree", is a source of vitamin, protein, calcium and iron. The oil pressed from the seeds, which is rich in anti-oxidant and has moisturizing properties, is used to produce beauty products and the leaves are processed into teas. Both products offer extraordinary health benefits and are shipped to customers around the world. MoringaConnect provides moringa seeds, fertilizer, and training to its farmers, and buys back the mature seeds and leaves. During the development of the company, MIT-EWB served as consultants and led research inquiries in multiple areas: processing line optimization and design, biological processes for eliminating bacteria on leaf surfaces, seed de-sheller machine design, and oil press methods. As of 2018, MoringaConnect has planted over one million moringa trees and serves over 2,500 small farming families.

Finding Uses for Discarded Plastic

In Uganda, MIT-EWB took on a project focused on minimizing the impacts of plastic on the environment. In developing communities, it is common to find plastic bags scattered across the ground or for plastic waste to be burnt with other trash, which can release noxious fumes. Our team worked to develop a method through which plastic waste could be melted down and then molded into household tools. In addition, MIT-EWB established partnerships with non-profit organizations in Kampala and Soroti to proliferate these methods in the developing world.

Improving Charcoal Briquette Production

Through the MIT D-Lab, the MIT-EWB connected with Betty Ikalany, who founded Appropriate Energy Saving Technologies, Limited. Her company produces charcoal briquettes for use in cook stoves, which provides a cleaner cooking alternative to the conventional three stone fire practice. Briquettes are formed by first burning natural agricultural waste to create an ash, which is then mixed with a binder. This mixture is pushed through an extruder to create cylindrical, chimney-like briquettes. This process induces a considerable stress on the extruder screw, which was found to break easily and increase the cost of the produced briquettes. To address this problem, MIT-EWB developed a case hardening treatment applied to the extruder screw that greatly extended its lifetime.

Water Supply for Rural Community

The most recent work of MIT-EWB has been developed in Mkutani, Tanzania. Since 2017, our team has been working with the Boston Professional Chapter of EWB (EWB-BPC) to address the lack of drinking water at the village. Mkutani has a population of 3,000 inhabitants and most families live on less than $4.50/week. The village lacks sanitation and health care, resulting in common diseases such as malaria, diarrhea, schistosomiasis, typhoid, eye infection, and skin diseases. Child mortality is between 50 and 75 per 1000 children.

Previously, the only ways the residents could access water were from a polluted river nearby, expensive prepackaged bottles, or a borehole located three kilometers away with limited capacity and a frequently broken hand pump. In order to provide a convenient and reliable source of water to Mkutani villagers, the EWB's goals were to install a solar-powered pump system, locate a storage tank near the borehole, and construct a tap stand to get water out of the tank. Our team went on an assessment trip this past January to talk to the community in Mkutani and learn about their needs.

After the assessment trip, the EWB started working with the local Mkutani water organization to design a solar-powered water pump that would be easier to use and more reliable than the previous system. Necessary tasks included designing structures, the pipe network, and wiring. At the same time, the MIT-EWB started fundraising to pay for travel expenses, materials, labor, and club operation costs. Most of the funds came from MIT grants, travel grants, fellowships, sponsorships, companies, donations and Boba sales.

Installed storage tank and solar panels

MIT-EWB and community members draw water from new tap stand

In August 2018, members of MIT-EWB and EWB-BPC traveled to Mkutani to assist in the construction, installation and set-up of the pump. The tank stand was built prior to their arrival by a local organization, C.PP.S Mission Projects in coordination with the EWB structural team. A local supplier of water related equipment, Davis & Shirtliff provided the water pump (Grundfos SQF 2.5-2), the solar system and installed the system. The EWB team helped with frame painting, piping, concrete pad repairs, trench digging, electrical connections, and security fence and gate installation. On-site tests showed a capacity up to 2,200 liters per hour and the maximum energy input was about 0.8 to 0.9 kW.

continued on page 11

Featured Group

Geo-Institute Boston Chapter

by Lucy Jen, PhD, PE, Tufts University

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 GeoInstitute 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.

Casagrande Memorial Lecture

As part of the Geo-Institute commitment to promote technical and professional activities and the dissemination of information, the Geo-Institute held the 17th Arthur Casagrande Memorial Lecture on Thursday, November 8th. Dr. Bengt H. Fellenius delivered the 17th Casagrande Lecture on "Observations and Analysis of Wide Piled Foundations" by presenting examples of case histories and analyses results with emphasis on how to include settlement analysis in the design of piled foundations.

Dr. Fellenius presented available case histories reporting observations on full-scale piled rafts and showed the settlement response to applied load can be modeled as that for an equivalent flexible pier due to compression of the piles and the soil matrix plus that of an equivalent raft for compression of soil layers below the pile toe level. Piles and soil, combined as a pier, have strain compatibility, which requirement determines the distribution of load between the piles, the contact stress, and the load-transfer movement of the piles. Interior piles engage the soil from the pile toe level upward in contrast to a single pile, which engages it from the ground downward.

The response between the interior and perimeter piles differ. Particularly so in non-subsiding and subsiding environment, because perimeter piles can be subjected to downdrag and drag forces, while downdrag or drag force will have minimal effect on the interior piles. In non-subsiding environment, it is advantageous to make perimeter piles shorter than interior piles, while, in subsiding environment, perimeter piles best be longer. The load distribution across the raft is also governed by the degree of rigidity of the raft and by the difference in dishing at the pile toe level and in the dishing of the actual raft. "Bearing capacity" of pile and raft has little relevance, if any, to a rational design.

Recent and upcoming events sponsored by the Geo-Institute include:

- Dinner Lecture titled "Geotechnical Challenges at Encore Boston Hotel" will be presented by Mary B. Hall and Michael P. Smith of GZA on Tuesday, December 11, 2018 at Tufts University.
- A full-day Industry-Academic symposium on current projects in the Boston area and current research in local universities scheduled for early March 2019. Additional details will be forthcoming.
- Dinner lecture in April/May 2019 will be presented by Dr. Rudolph Bonaparte, 2018 ASCE Terzaghi Lecturer. Additional details will be forthcoming.

Charles C. Ladd Memorial Lecture

The Geo-Institute 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. The 3rd Charles C. Ladd Memorial Lecture will be held in late Fall of 2019. Please check future editions of the BSCES Newsletter for details.

We would like to thank all past and present committee members, their employers, our presenters, and all of you that attend GeoInstitute events for your support.

Currently, the Geo-Institute Boston Chapter Committee consists of fifteen (15) geotechnical professionals from local consulting firms, specialty construction companies, and academic institutions, who proudly volunteer their time to serve the BSCES and the engineering community in the manner originally set forth in 1969. We are always looking for additional members—geotechnical practitioners in the public or private sector or educators who are interested in getting involved in the committee's activities and promoting our mission. For more information, please contact the committee chair: Lucy.Jen@Tufts.edu.

Engineers Without Borders—MIT Chapter

continued from page 10

Now all villagers, including elderly, can obtain water from the tap stand without laborious hand pumping. An attendant is monitoring water sales at 100 TSh (approximately $0.05) per 20-liter container, which can be filled in about 40 seconds. The water authority plans to fill the tank on one day (6-8 hours of pumping) and sell the water in the next day; however, they also have the option of filling the tank while selling the water.

Developing Local Expertise

Currently, the MIT-EWB is working on a solar education program and developing a solar water pump manual. During the visits in Mkutani, the District Engineer informed our team that several communities are transitioning to solar-powered pumps, but they do not have the technical knowledge to maintain or repair them. There are a few qualified solar technicians in the east coast of Tanzania, but most of these communities cannot afford to bring them from Dar Es Salaam. Therefore, the villagers are unable to diagnose issues when their solar systems fail, so the equipment is often abandoned due to small, easily-reparable problems.

Our goal is to write a manual for these communities that provides useful information on operations and maintenance, how to troubleshoot common failure modes, and how to adapt the system to new power sources. The next trip is planned to January, when the group will present the solar education manual to the Dodoma technicians, check the water pump, analyze the area for the future hilltop tank, and assess the needs of women and girls in regards to sanitation and schooling.

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 recently:

Associates

Andrew Allain, Horsley Witten Group
Ryan Angelico, Weston & Sampson
Danah Hamzeh, University of Massachusetts Amherst
Jose Omar Hernandez, Build Health International
Sean Horan, GZA GeoEnvironmental, Inc.
Russell Isler, Toole Design Group LLC
Calvin Joseph, Jacobs Driscoll Engineering

Students

Prachi Borkar, Visvesvaraya Technological University, Belgaum
Bella Chau, Wentworth Institute of Technology
Annemarie Eastwood, Worcester Polytechnic Institute
George Friedlander, Western New England University
Christopher Looney, University of New Hampshire
Ken Muamba, University of Massachusetts Lowell
Vashisht Reddy Patlolla, Northeastern University
Samantha Pond, Western New England University
Laura Jun Chee Yong, University of Massachusetts Lowell

BSCES Welcomes New Program Sponsor

The BSCES Board of Government would like to thank Subsurface Constructors, Inc. for becoming a 2018–2019 Program Sponsor.

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 2019 issue of the newsletter for example, will highlight the 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 Bruce Jacobs at sr.vp1@bsces.org or BSCES Association Manager Rich Keenan at rkeenan@engineers.org or at 617/305-4110.

ASCE Swears in New Leadership at Annual Convention

BSCES would like to congratulate new ASCE President Robin Kemper who was sworn into office during the ASCE 2018 Convention in Denver, Colorado. Watch her acceptance speech here. Other new ASCE officers sworn in at the convention included President-elect Kancheepuram "Guna" Gunalan and Directors Carl Sutter, Robert Cagle, III, Tony C.G. Lau, and David Odeh.

ASCE Approves New SMART Cities Policy Statement

During the ASCE 2018 Convention, the Board of Government approved Policy Statement 557: SMART Cities which encourages all modes of transportation to tie into the U.S. Department of Transportation's Strengthening Mobility and Revolutionizing Transportation (SMART) city infrastructure planning. The Board meeting also included the approval of six revised policy statements: PS 140: Engineering Education: A Shared Responsibility, PS 377: Science, Technology, Engineering, and Mathematics (STEM) Education, PS 395: Combined Sewer Systems, PS 420: Clean Water Act Reauthorization, PS 509: Provision of Engineering Services Across State and International Boundaries, PS 548: Connected and Autonomous Vehicles. All ASCE policy statements can be found here.

Renew Your 2019 ASCE and BSCES Membership Today!

By acting now to ensure your ASCE membership continues through 2019, you will be able to enjoy all your Society benefits and resources uninterrupted. Early renewal will enter you into drawings for Amazon.com gift cards. The earlier you renew, the more chances to win. Visit asce.org/drawing to renew and enter now. When renewing your ASCE membership, please don't forget to also renew your BSCES membership to continue to receive the numerous member benefits that BSCES has to offer.

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 for more info 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.
- Professional Books available to you at a significant member discount, give you access to the latest technical information, codes and standards, and best practices in civil engineering.
- ASCE Conferences open doors to new professional opportunities, let you exchange ideas with peers, and shake hands with industry colleagues.
- 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
- Architectural Engineering Institute
- Coasts, Oceans, Ports and Rivers Institute
- Construction Institute
- Engineering Mechanics Institute
- Environmental & Water Resources Institute
- Geo-Institute
- Structural Engineering Institute
- Transportation and Development Institute
- Utility Engineering and Surveying

Update Your ASCE Profile

Have you moved lately, changed jobs, or do you have a new email address? It is very important that we receive your updated contact information. Please make sure you update your profile at ASCE National. Every month BSCES receives updated member information from ASCE that we utilize for all BSCES correspondence. You have a personal profile that you can access and update your contact information. Simply go to the ASCE "Membership & Communities" page and click on the "Log in…" bullet under the Already a Member section. Once you've logged in, you can edit your contact information. Members can also always call 800/548-2723 and have someone in Customer Service make updates for them over the phone.

Weston & Sampson Corporate Headquarters Relocating

Weston & Sampson is pleased to announce that the firm is relocating their corporate headquarters to 55 Walkers Brook Drive in Reading, Mass. The new location provides space for 200 employees with plenty of room for growth and features modern architecture, furnishings, and amenities. Weston & Sampson anticipates the move in the first quarter of 2019.

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 Association Manager, Rich Keenan, rkeenan@bsces.org.

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.

EnvisionTM 101: New Release and Current Trends

Sponsored by Committee on Sustainability and EWRI Boston Chapter

Tuesday, January 15, 2019
CDM Smith, Boston, MA

5:30 PM Reception
6:00 – 7:30 PM Panel Discussion

Join a panel of local and national experts assembled to discuss the recent release of EnvisionTM v3, and current industry trends for its application to planning sustainable infrastructure projects. The relevance of the Envision Sustainability Professional (ENV SP) credential will also be covered. Questions may be submitted to the panel in advance by registrants. Food and beverages will be provided during the reception.

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

FHWA-NHI-130053 Bridge Inspection Refresher Training

Sponsored by the Program Committee

Tues. – Thurs., February 12 – 14, 2018
AECOM, Boston, MA

8:00 AM – 4:30 PM

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.

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

ASCE Webinars

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.

Classifieds

BSCES Awards Nominations Deadline is March 11

Do you know a worthy award recipient? If so, then download, complete and submit the 2018 BSCES Employer Recognition and/or Section Awards form contained in this newsletter by the Monday, March 11, 2019 submission deadline. The Large and Small Employer Recognition Awards are given to those organizations who exhibit exemplary support of ASCE and BSCES. The long-standing BSCES Section Awards are given to individuals who have made significant contributions to the civil engineering profession and their communities.

Please see the awards nomination forms at the end of this month's newsletter for further details.

BSCES
Boston Society of Civil Engineers Section
American Society of Civil Engineers

2019 Individual Section Awards

Each year, BSCES presents awards to deserving individuals in the Section or in the community who are nominated by their peers in recognition of their service. Here is your opportunity to nominate a co-worker, friend, or someone who you think deserves special recognition. Please see the following awards descriptions and page 2 of this form for nomination instructions.

The Nominations Deadline is **Monday, March 11, 2019**. The Awards Committee will review all nominations and present a list of candidates for selection by the Board of Government. Awards will be presented at the 170th BSCES Annual Awards Dinner.

I would like to nominate _____ For the:

_____ CITIZEN ENGINEER AWARD: This award is presented to a BSCES member or registered professional engineer for outstanding public involvement in local or national legislation, education (at any level), non-profit volunteer organizations, community activities, or similar activities improving the image of ASCE, BSCES and the civil engineering profession.

_____ HORNE/GAYNOR PUBLIC SERVICE AWARD: This award is presented to a BSCES member or registered professional engineer for unpaid public service in a municipal, state or federal-elected or appointed post for philanthropic activities in the public interest.

_____ GOVERNMENT CIVIL ENGINEER AWARD: This award is presented to a BSCES member who is serving as a paid public sector engineer at a federal, state, or municipal agency, department, or authority in Massachusetts.

_____ CLEMENS HERSCHEL AWARD: This award recognizes an individual who has published a paper, not necessarily published in the BSCES Journal, that has been useful, commendable, and worthy of grateful acknowledgment. If nominating for the Clemens Herschel Award, please attach the name of the paper and names of all authors, if co-authored.

_____ JOURNALISM AWARD: This award is presented to a journalist or other author who has published one or more articles, papers, books, social media blogs, or films for a non-technical audience that raises awareness of the contributions of the civil engineering profession.

_____ PRE-COLLEGE EDUCATOR AWARD: This award is presented to a member of the K-12 educational community who integrates engineering topics, particularly civil engineering, in a manner that benefits the profession and may promote students to pursue an engineering career. The Public Awareness & Outreach Committee reviews these nominations and recommends the recipient to the Board.

_____ COLLEGE EDUCATOR AWARD: This award is presented to a member of the academic community who inspires and encourages civil engineering students through exceptional teaching and mentorship. Educators empower students to realize full potential and exemplify the profession in their classroom. Candidates should be actively teaching in a classroom setting at a college or university in New England.

_____ YOUNGER MEMBER AWARD: This award is intended to recognize a BSCES member, 35 years of age or younger on February 1 in the year of the award, who has made an outstanding contribution to BSCES and/or the civil engineering profession.

_____ ENGINEER OF THE YEAR AWARD: This award is presented to a BSCES member, with 15 years or more professional experience, who has exhibited extraordinary leadership in the form of managerial leadership, technical excellence, professional integrity, and mentorship of other engineers.

_____ PROJECT OF THE YEAR AWARD: This award is presented to a BSCES member and her/his project team who has served in a major role on an innovative, challenging, unique, and/or complex project located in the Commonwealth of Massachusetts. The majority of the work should have been completed by engineers located within Massachusetts.

BSCES
Boston Society of Civil Engineers Section
American Society of Civil Engineers

2019 Individual Section Awards

To submit a nomination, complete this form and return it by the nomination deadline via email, fax, or mail to bsces@engineers.org, 617/227-6783, or BSCES Awards Committee, Boston Society of Civil Engineers Section/ASCE, The Engineering Center, One Walnut Street, Boston, MA 02108-3616, respectively.

Name and Company Address of Nominee(s)*:

_____

_____

_____

Is this a re-nomination? Yes _____ No _____

**Please attach a brief (no more than one page) explanation of the candidate's qualifications for nomination.*

Your Name: _____ Daytime Telephone: _____ Email: _____

NOTE: *If you nominated someone last year who was not selected, you may re-nominate the individual(s).*

QUESTIONS: *Contact BSCES Awards Committee Chair Michael Cunningham at 617/498-4773 or Vice.President2@BSCES.org.*

BSCES
Boston Society of Civil Engineers Section
American Society of Civil Engineers

2019 Employer Recognition Awards

The Boston Society of Civil Engineers Section of the American Society of Civil Engineers Awards Committee invites you to nominate an organization to receive the Small Employer Recognition Award *or the* Large Employer Recognition Award*. Please see the following awards description and page 2 of this form for nomination instructions. To be eligible to receive this award your award nomination must be received by the BSCES Awards Committee no later than* ***Monday, March 11, 2019****.*

As a means of fostering the members of the civil engineering profession, the Boston Society of Civil Engineers Section/ASCE has established an award to recognize those employers who commit to providing exceptional opportunities to their engineers. Special recognition will go to those organizations who exhibit exemplary support as evidenced by:

1. Encouraging technical and professional growth through continuing education, training, mentoring, project experience, participation in development of technical papers or presentations, and other means.
2. Tackling staff quality-of-life issues in the modern workplace.
3. Contributing to the community to make a positive impact.
4. Encouraging active participation in professional societies such as ASCE/BSCES.

Members who want an organization to be considered for recognition should provide a letter demonstrating the firm's commitment to its engineers. Firms nominated shall be actively participating in BSCES via sponsorship, employee membership, contributions to the newsletter, etc. Letters shall include the total number of employees in the firm, number of BSCES members, and cite specific examples of its employees being actively involved in BSCES.

The awards committee will review the nominations and select an exemplary small employer and a large employer in the Section. Organizations with less than 50 employees are eligible for the Small Employer Award. Awards will be presented at the 170th BSCES Annual Awards Dinner. Successful recipients will be considered for endorsement as potential (future) applicants for the ASCE Employer Recognition Award. No organization will be eligible to receive the award in consecutive years.

Name of Organization: _____

BSCES
Boston Society of Civil Engineers Section
American Society of Civil Engineers

2019 Employer Recognition Awards

Complete and return this nomination form and attachment to the BSCES Awards Committee no later than Monday, March 11, 2019 to be eligible for the award.

Nominator/Title: _____

Address: _____

Telephone: _____ Email: _____

Signature: _____ Date: _____

Organization: _____

Contact Person: _____

Title: _____

Office Address: _____ Website: _____

Telephone: _____ Email: _____

Please attach a brief (no more than two pages) narrative describing why the organization meets the criteria described in this nomination form.

Please complete this form and the additional pages and return it via email, fax, or mail to bsces@engineers.org, 617/227-6783, or BSCES Awards Committee, Boston Society of Civil Engineers Section/ASCE, The Engineering Center, One Walnut Street, Boston, MA 02108-3616, respectively. For questions, contact BSCES Awards Committee Chair Michael Cunningham at 617/498-4773 or Vice.President2@BSCES.org.

Thank you for your continued support of ASCE and BSCES.

BSCES
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American Society of Civil Engineers

Committee on Sustainability

EWRI ASCE
ENVIRONMENTAL & WATER RESOURCES INSTITUTE
Boston Chapter

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Department of Civil and Environmental Engineering, Northeastern University

Patrick Engineering Inc.

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Subsurface Constructors, Inc.

Tighe & Bond

TranSystems

Tufts University

VHB

Wentworth Institute of Technology B.S. and M. Eng. in Civil Engineering Programs

Weston & Sampson

WSP

Envision™ Symposium: New Release and Current Trends in the Sustainable Infrastructure Project Framework

Tuesday, January 15, 2019

CDM Smith
75 State St #701
Boston, MA 02109
5:30 PM Reception; 6:00 – 7:30 PM Panel Discussion

Join a panel of local and national experts assembled to discuss the recent release of Envision™ v3, and current industry trends for its application to planning sustainable infrastructure projects. The relevance of the Envision Sustainability Professional (ENV SP) credential will also be covered. Questions may be submitted to the panel by registrants.

Panelists include Kari Hewitt, Director of Sustainability for VHB, and Anthony Kane, Managing Director for the Institute for Sustainable Infrastructure (ISI).

Food and beverages will be provided during the reception, along with a cash bar.

About Envision: Envision is a framework that provides the guidance needed to initiate this systemic change in the planning, design and delivery of sustainable and resilient infrastructure. Envision is a decision-making guide, not a set of prescriptive measures. Envision provides industry-wide sustainability metrics for all types and sizes of infrastructure to help users assess and measure the extent to which their project contributes to conditions of sustainability across the full range of social, economic, and environmental indicators.

Registration Deadline: Friday, January 11, 2019

$60 Members, $75 Non-Members
$50 Public Sector Members, $60 Public Sector Non-Members
$20 Senior Members (65+), Students

Information/Registration:

Register to attend this meeting and pay by credit card online at bit.ly/EnvisionTMSymposium. 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 January 11, 2019 and no-shows will be billed.

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FHWA-NHI-130053
Bridge Inspection Refresher Training
Tuesday, February 12, 2019 – Thursday, February 14, 2019

AECOM, 1 Federal Street, 8th Floor, Boston, 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: Tuesday, January 15, 2019

Registration Fees: $1,400 Members, $1,600 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/NHIBridgeRefresher. 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 January 15, 2019 will be billed.

This course provides 1.8 Continuing Education Units (CEU)
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