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New Hampshire Section of the American Society of Civil Engineers
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PRESIDENT'S MESSAGE

Calling all to Order, New Hampshire Section!



The "Order of the Engineer" that is... Spring has traditionally been the time of year when the New Hampshire Section celebrates the Order of the Engineer. Although it may not feel like spring with all of the snow as of late, spring it will be on March 20th.

The Order of the Engineer—concept was founded in Canada in 1926. The Canadian version is known as the "Ritual of the Calling of an Engineer." The ritual was founded shortly after the Quebec Bridge disasters where two bridge-attempts failed before a third and successful bridge-attempt was completed over the Saint Lawrence River. The purpose of the ritual was, and is, to remind inductees of their ethical responsibility when practicing the civil engineering profession.

The Order of the Engineer was first celebrated in the United States at Cleveland State University on June 4, 1970. Today the ceremony is celebrated across the country. Much like the Canadian version, the Order represents the obligation of inductees to the civil engineering profession and to the public. During the ceremony inductees make an oath to engineering ethics. Following the oath, inductees receive a stainless-steel ring to be worn on the little finger of their working hand. The ring serves as a reminder of their oath.

Last year I had the joy of participating in the Order of the Engineer at an ASCE-conference in Indianapolis, Indiana. Today I remember the oath I took when my ring clicks off my keyboard. Since induction, I have attended the Order of the Engineer at the University of New Hampshire. Attending the ceremony, even after induction, was a refreshing reminder of the rewarding profession of civil engineering and the responsibility paired with it.

So, if you're a young engineer just entering the profession, or if you're a seasoned engineer with years of experience, I highly recommend participation in the upcoming Order of the Engineer. Please see the meeting announcement for more information.

Continued page 2

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Newsletter Editor

Fran Weaver
Hoyle, Tanner & Associates, Inc.
150 Dow Street
Manchester, NH 03101
603-669-5555, x-111

Please Send Correspondence To:
The New Hampshire Civil Engineer
NH ASCE
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**Next deadline
(For April 2015 issue):
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Town & Country Reprographics, Inc.
Concord, New Hampshire

ASCE-NH is planning several exciting events in the upcoming months. Stay tuned for event announcements via e-mails and newsletters. Until then, happy shoveling everyone and be safe!

Nathan Cote, P.E. is a Geotechnical Engineer with S. W. Cole Engineering, Inc. He earned B.S. and M.S. degrees in Civil Engineering from the University of Maine. He lives in Dover, New Hampshire with his wife, Erin and daughter, Iris.



Younger Members Annual Bowling Outing

Younger members are the future of ASCE. Each year ASCE-NH hosts an annual bowling outing to attract younger members and show them how ASCE isn't just for gaining PDHs. Enough people showed to have four teams of 4. Highest individual scores are awarded praise for their, well, luckiness. You see, no one here is a champion bowler. This year Matthew O'Brien won the first game with a score of 198. Two points shy of something impressive. He was immediately overtaken in the next round by Tim XXX, who ended his game with 197. The alley announced an unassociated patron's achievement of bowling a perfect 300. The bowling gods were generous on this day in December, feeding the crowd feasts of turkey (bowling term for getting three strikes in a row).

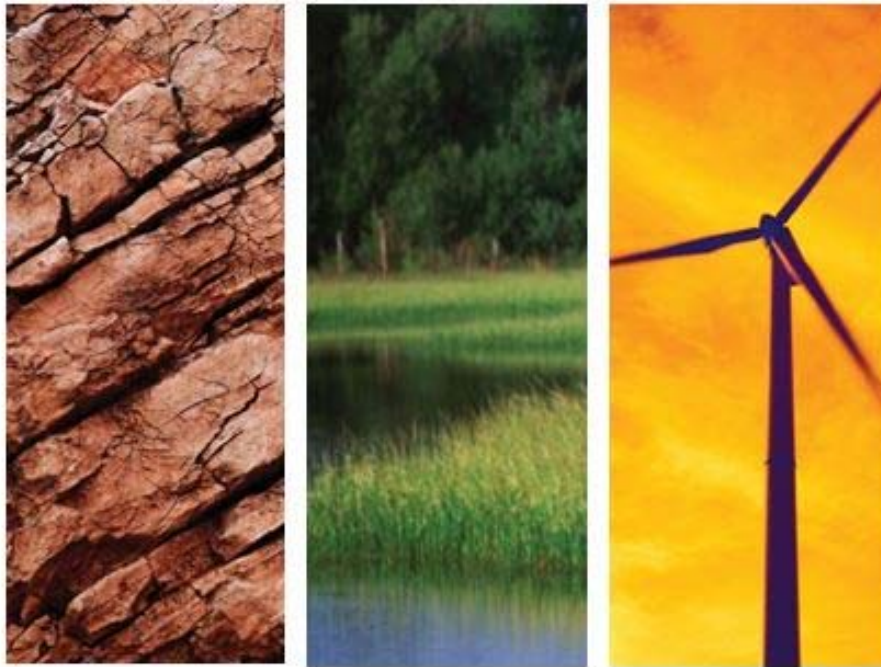
A little something different was added this year: a holiday Yankee Swap. Every crew or family has their own version of rules. We blindly took numbers with the agenda of taking a gift from the table and only being able to trade with the numbers below you (number 1 gets to trade with anyone at the end). Well, rambunctiousness quickly ensued as the participants attempted to solve the enigma that resulted from engineer's wrapping jobs. The never ending streamer wrapping and the infinitely shrinking gift (inspired by the Russian dolls) are just a couple of examples that come to mind. The gifts were just as hilarious. I believe a leather, American-flag-pattern fanny-pack takes the cake on all time ridiculous gift. The lucky participant who chose this treasure wore it with class. All in all, this was a very successful evening of laughter, games and networking.



S. W. Cole Engineering, Inc. is celebrating its 35th year in business! We would not have reached this milestone without the support of our loyal clients.

To show our thanks, we've put together a short video.

Visit www.tinyurl.com/SWCVideo to watch it now.



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Momentum Building to Establish a New Hampshire Professional Chapter of Engineers Without Borders (EWB)-USA

If you live in NH and ever looked into volunteering with EWB-USA (www.ewb-usa.org), you would quickly learn that there is no professional chapter. In fact, NH is one of the few states without a professional chapter. A growing group of NH engineers are trying to change this. They are holding a meeting at the headquarters of Sanborn, Head & Associates, Inc. (20 Foundry Street, Concord, NH) on March 18, 2015 from 6:00 PM to 7:00 PM to discuss the process of establishing a professional chapter of EWB-USA and to gauge the interest and commitment of the group. Assuming there will be sufficient interest, an interim leadership team and action plan to move the process forward will be established. If you are interested in attending this meeting, or if you have questions, please contact Heidi Lemieux at Sanborn Head (hlemieux@sanbornhead.com). To accommodate interested participants who cannot attend the meeting in person, we will provide a call-in number and web link.

About EWB-USA

EWB-USA was founded in 2002 by Professor Bernard Amadei, Professor of Civil Engineering at the University of Colorado. There are over 12,000 EWB-USA members within over 250 established chapters. About two thirds of the chapters are students; the other third are professionals. According to the EWB-USA web site, there are 684 community development projects in 39 countries (including domestic projects). Chapters sign up for 5 year commitments with partner communities ("programs") and team with non-governmental organizations (NGOs). EWB-USA has an established process for performing projects that includes: submitting project proposals and design reports to EWB-USA Headquarters; conducting trips for assessment, implementation, and monitoring; and preparing/submitting trip reports.



In addition to chapter officers, there are typically leadership roles for projects, fund raising, and public relations. Most chapters also include a local volunteering component that is outside the project process. EWB-USA is open to non-engineers as each program involves communication and education components lend themselves to other professions. There is room for just about anyone who is committed and interested in participating.



EWB at UNH

The EWB-UNH Chapter started working on projects in 2004, and completed efforts in Thailand and

Niger. The UNH chapter is presently working in Lukodi, Uganda and San Pedro de Casta, Peru. The current projects include development and protection of groundwater supplies, drinking water purification, and irrigation. The UNH chapter has traveled to Lukodi five times since 2011 and recently completed their first trip to San Pedro. The EWB-UNH Chapter is always looking for professional mentors to assist with their projects as well as to travel to these communities.



ASCE-NH Annual Ski Day



The roads were covered in a blanket of snow; traffic was slow. This would normally make for a bad commute to work. But on the last Friday in January, it was welcomed by all who attended the 2nd Annual Ski Day. Sponsored by GZA GeoEnvironmental and hosted by Waterville Valley Ski Resort, an impressive group discount provided each participant with a lift ticket, use of the Harpoon Room Sky Box, breakfast, lunch and après-ski appetizers.

Skiers and snowboarders alike were welcomed at the lifts with no lines. The favor was returned by tearing through the new “Pow Pow” that the storm left fresh on the slopes the night before and continuing to do so throughout the day.

The Harpoon Room is private, cabin-lodge themed room with couches, lounge chairs, gas fireplace and bar. There was even a fully-stocked private bathroom that seemed more

fitting in a hotel. Participants met here to check-in, load up on the assorted breakfast and coordinate their day with other members of ASCE. This event attracted a whole range of members from younger to more senior. After a strong

morning of skiing, the fatigued office-dwelling members reconvened to warm up with coffee and hot cocoa. They filled their bellies with ribs and chicken parmesan as Jason Gallant from CMA Engineers presented a challenging pedestrian bridge replacement project of the Nordic ski trail bridge that was ripped down river from its original resting place by Hurricane Irene. Accelerated deadline and restrictions of the National Forest made site access and constructability quite an impressive feat of engineering.



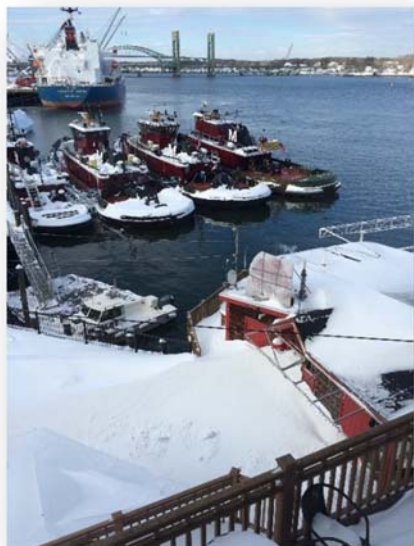
Those who could, regrouped and hit the slopes once more as the rest stayed and networked over a beer or two. The day came to an end as people said their goodbyes and enjoyed après ski beverages and snacks. The ride home was

pleasant as the only white on the road was the hot cocoa's whipped cream on your upper lip.

MORE SKI DAY PHOTOS



THE BLIZZARD OF 2015



6'+ drifts at the Portsmouth decks. Tough getting into Old Ferry Landing that day...

Submitted by:

Andrew P. Vardakis, P.E.
Project Engineer



Bring your sleds this way. We have a trail (for real!)....and snow.

From my son's place in Rollinsford, NH

Submitted by:
Leon H. Geil, P.E., MASCE



HAVE PHOTOS YOU'D LIKE TO SEE IN THE NEXT ISSUE?

Please e-mail fweaver@hoyletanner.com – include a brief description of your photos!

CORPORATE SPONSOR OF THE MONTH

What is a *Corporate Sponsor of the Month*? This could be YOUR company! For \$250.00, you will receive a 8" x ½" Front Page Banner Advertisement featuring your company. The ASCE-NH homepage will show your company logo, linked to your firm's homepage. In addition, a full page of our newsletter will be yours -- available for you to tell our readers anything you want about your company -- maybe you've recently acquired some new talent you want to boast about; or perhaps you just completed a very special project, or even reached a milestone anniversary year! The choice is yours - any topic that would be of interest to your colleagues in the engineering industry -- You may use the space for photos, narrative, whatever way you decide to put your company's name -- literally -- in the headlines!

December 2012	CDR Maguire
January 2013	GZA GeoEnvironmental, Inc.
February 2013	Fay, Spofford, & Thorndike
March 2013	Tighe & Bond
April 2013	International Erosion Control Systems, Inc.
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January 2015	VHB
February 2015	
March 2015	<i>Golder Associates</i>
April 2015	To be announced!
May 2015	To be announced!

Thank you to our past Sponsors of the Month for showing support for the ASCE's New Hampshire Section! Please consider signing up for sponsorship of future editions of The New Hampshire Civil Engineer. Remember, all proceeds go directly to the Scholarship Fund!!

Now reserving space for June 2015 and beyond!

To reserve space or learn more, contact fweaver@hoyletanner.com!

Of course, our regular classified advertising section is still available. See page 2 for more information.

GEC – Panama

By Nick Golon

Dateline – Panama City, Panama (*ciudad de Panamá*).

Located at the Pacific entrance of the Panama Canal, Panama City played host to the 2014 ASCE Global Engineering Conference (GEC) in what turned out to be a most memorable experience for this engineer. Given the chance to attend this event on behalf of the NH-ASCE and equally important as a representative for our Country, was an opportunity I could not resist and most gratefully accepted!

With an abundance of culture, history, and not to mention nightlife (try Casco Viejo, Panama if you are looking to accomplish all three in one day) this political and administrative center of the country did not disappoint. Celebrating the 100th anniversary of the Panama Canal and the soon to be opening new third lock of the canal was the focal point of the event and the knowledge and pride the country shown in these endeavors was evident from the moment you stepped off the plane.

Program highlights of the GEC included topics such as Giga projects with the focus on the construction, financial, political, and engineering aspects. When not hearing from industry leaders on this and various other topics attendees were treated to the chance to mix and mingle with a melting pot of peers that one would not typically meet in a lifetime, never mind within the 5 day span the conference covered.



Personally, nothing topped the combination guided tour of the Panama Canal as we watched a gigantic ship pass through the locks, and were then whisked away to pay homage to the active construction site that will become home to the new third lock. Having worked on job sites such as the Big Dig in Boston would have seemingly prepared me to pay witness to such an undertaking but it was truly awe inspiring to witness such an engineering marvel in creation.

The GEC program, which was a partnership between ASCE and Engineers Without Borders (EWB-USA), closed in exciting fashion with a less than traditional presentation by Grant

Imahara, Engineer on Discovery's "Mythbusters", as he treated us to his thoughts on the evolution of the engineer as well as a multitude of explosions, typical to his famous show.

I offer my many thanks to the friends from near and far I made while in Panama (not to mention my family and work that did without me for a week) who helped make the 2014 ASCE Global Engineering Conference such a memorable event. I hope to see you all again soon as we as Civil Engineers accept the challenge of our ever-changing world to maintain and adapt the infrastructure that our society depends on every day.



MORE PICS FROM PANAMA ...



ASCE Multi-Region Leadership Conference



The annual ASCE Multi-Region Leadership Conference was held in Miami, Florida on January 8-10. The conference was split into two groups of the ASCE Region 1, 2, 4 and 5 members: Eastern Region Younger Members Council (ERYMC) and Section/Branch Leaders (SBLs).

The two-day conference began with a presentation from the ASCE National President outlining ASCE's efforts in supporting stronger infrastructure investment from the government, providing member services, and reaching toward their long term goal of producing the IMAX movie, *Dream Big!*. *Dream Big!* is "a celebration of engineering that will leave viewers breathless by taking them above, below, around, and through some of engineers' most impressive achievements." Production is underway and the world premiere is scheduled for 2016. You're invited to see the exciting trailer: <http://www.dreambigfilm.org/>

Following the opening of the conference, the two groups were split up to attend various workshops. The SBLs attended workshops that primarily focused on building Sections and Branches using the resources of ASCE National. The ERYMC attended leadership training workshops that allowed the younger members to learn more about ASCE and participate in valuable leadership training.

There were some sessions throughout the conference that the ERYMC and SBLs attended together. These joint sessions included presentations on how to deal with difficult coworkers and understanding the generation gap in an office. Nightly networking events were held throughout the weekend to ensure both groups could network with each other.

The ASCE-NH section was well represented at the conference. Tim Audet (NH Section Treasurer) and Matt O'Brien (NH Section Clerk) attended the workshops for SBLs. Thalia Valkanos (NH Section Junior Delegate) attended the workshops for ERYMC. Region 1 Governor and ASCE-NH member Jason Ayotte attended as an ASCE National representative and moderated various ERYMC and SBL sessions.

Miami's 80 °F weather was a pleasant contrast to all of the NH members in attendance. They wished they had more time to experience Miami, but they enjoyed socializing and networking with all of the other ASCE members at the conference. All said and done, the ASCE-NH section is primed and prepared for 2015!



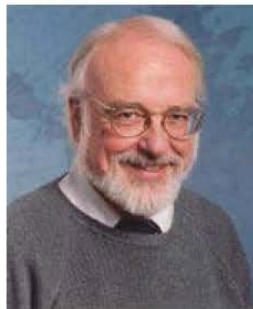


UNIVERSITY of NEW HAMPSHIRE
Civil Engineering

*Geotechnical Engineering
Research Group at UNH*

The Third Pedro De Alba Lecture in Geotechnical Engineering

The geotechnical engineering group and the Department of Civil Engineering at the University of New Hampshire is pleased to invite you to the 3rd Pedro de Alba Lecture in Geotechnical Engineering. This annual event is an opportunity to remember and honor Professor Pedro de Alba's passion for teaching and research, and years of dedication to students and the profession. We are delighted and honored that this year's lecture will be given by Professor Robert Holtz.



Professor Robert D. Holtz, PhD, PE, D.GE
Professor Emeritus
University of Washington

University of New Hampshire, Huddleston Hall

Thursday April 9, 2015

5:30 – 6:30: Networking hour (Cash Bar and Appetizers)
6:30: Lecture

GEOSYNTHETIC REINFORCED SOIL: FROM THE EXPERIMENTAL TO THE FAMILIAR

Abstract: The lecture begins with a historical review of reinforced soil technology, from the ancients, the developments by H. Vidal and K. Lee on Terre Armée and Reinforced Earth, the early uses of geosynthetics for soil reinforcement in France (Bidim), Sweden (Wager and Broms), and the USA (USFS, FHWA, J. R. Bell, T. A. Haliburton, B. R. Christopher and others). The advantages and basic behavior of geosynthetic reinforced soil (GRS) are presented along with an overview of current design procedures, and with reference to UW analytical research results. Practical suggestions are given for dealing with creep, pullout, and backfill drainage. Geosynthetic properties are then discussed, again with reference to UW research results. Although GRS is quite a mature development, a few technical and professional issues remain; primarily, too many failures of these structures occur. Reasons for these failures and some suggestions as to what the profession can do about them are presented. The lecture ends with several examples of successful applications of GRS and reinforced soil technology.

Please register by contacting Jean Benoît at jean.benoit@unh.edu or Majid Ghayoomi at majid.ghayoomi@unh.edu

For more information please visit http://unh.edu/geotech/Geotech_deAlba%20Lecture.html

Sponsorship opportunities are available and welcome in support of this annual event
please contact Professor Benoît for details.

CANALS TO KEEP BOSTON'S BACK BAY FROM FLOODING?

By T.R. Witcher

Engineers, architects, city planners, and developers convened in Boston to discuss ways to fortify the coastal city against rising sea levels.

Two years ago, Hurricane Sandy rocked the eastern seaboard and gave Americans a fresh reminder of the damage major storm events can inflict upon our cities. Damages topped \$50 billion. Now, city builders are faced with a subtler but potentially more debilitating long-term problem: rising sea levels.

Last fall the Urban Land Institute (ULI) released a report based on a series of charrettes it hosted in Boston, a city particularly vulnerable to sea level change. A 2013 World Bank report studied 146 of the world's largest coastal areas and concluded that Boston was the eighth most vulnerable. (The study estimated that costs endured by flood events could top \$1 trillion annually by 2050 unless resiliency measures are put in place.) With sea levels possibly rising more than 6 ft by 2100, large sections of the New England capital could potentially wind up underwater, the report states.

The report also notes that in 2013 Congress increased the amount of money that the National Flood Insurance Program (NFIP) could borrow from just under \$21 billion to more than \$30 billion to "ensure the program would have adequate financial resources to cover its existing commitments for storm-related damages. As of July 2013, the NFIP owed the U.S. Treasury approximately \$24 billion, according to the report.



Left unchecked, rising sea levels potentially could flood the Innovation District south of downtown Boston. Arrowstreet.

Participants in the charrettes, which included a diverse group of architects, engineers, city officials, insurance companies, and real estate developers, focused on four areas in Boston chosen as representative of the major regions within the city: the Innovation District, a developing warehouse district south of downtown; the historic Victorian brownstones of Back Bay, one of Boston's most beautiful and affluent neighborhoods; the light industrial district around the Alewife quadrangle in western Cambridge; and Revere Beach, perched against the Atlantic Ocean.

For the Innovation District, an adaptive master plan was proposed that would evolve over time to mitigate rising sea levels and more frequent storm surges. Charrette participants reimagined a planned harborwalk as an "occupiable seawall that would both protect the district and provide public recreational and development opportunities," the report states. "The street network, utilities, and buildings would be modified incrementally each decade to adjust to new predictions on sea levels and anticipated storm surges." The report stresses that there is still time to build such a resilient environment through phased and incremental improvements that take changing development, financing, and insurance requirements into account.

The diverse range of stakeholders, including insurance companies and real estate developers, brought "a little bit of reality" to the table, says Brian Swett, the chief of environment, energy, and open space for the City of Boston. "And a little bit of the governance challenges."

Swett says other groups—from nonprofit foundations to the Boston Harbor Association—have hosted similar charrettes in the past. But ULI's involvement signaled that resiliency is not just an esoteric design exercise in "building green" or "net zero" but an issue facing mainstream real-estate developers. "This is an issue that all coastal cities are going to have to deal with," he says.

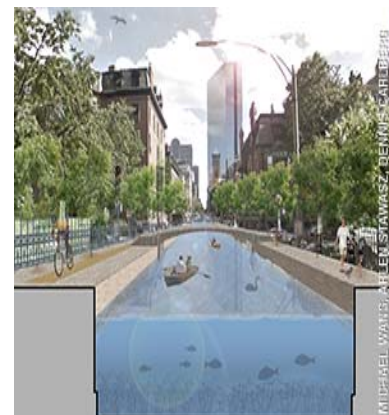
The charrettes were tasked with coming up with novel ideas, and the one that has garnered the most attention is incorporating canals into Boston's Back Bay neighborhood. Though the elegant Victorian brownstones are among the country's most urbane, the report notes that the neighborhood sits on marshland that was filled in during the 19th century. "Much of this new land lies less than four feet above today's high tide," the report notes. The proposal called for installing canals on alternating east-west alleys and north-south streets, and the eventual conversion of Storrow Drive, which parallels the Charles River along the outer edge of the Back Bay, into a canal. The canals would help manage overflow if the nearby Charles River Dam is one day overtopped.

"What a phenomenally thought-provoking image," Swett says, adding that the design drawings garnered three million hits on the Web, proving that "we do need to think big and bold."

Swett adds, "I'm not necessarily thinking that that's the right solution, but man, we got a whole lot of people talking about the challenge we face who had never talked about it before."

Shawn P. Smith, P.E., LEED-AP BD+C, a senior engineer with Boston-based Nitsch Engineering and one of the cochairs of the report, admits that on the surface, the idea may seem "just crazy."

"But when you dive a little deeper, you start to understand that a lot of these streets are going to be flooded anyway," he says. "There are



The most radical idea to address resiliency in Boston involved converting streets in the exclusive Back Bay to canals. Michael Wang, Arlen Stawasz, Dennis Carlberg.

New Hampshire Section ASCE

underpasses along Storrow Drive that go well below sea level."

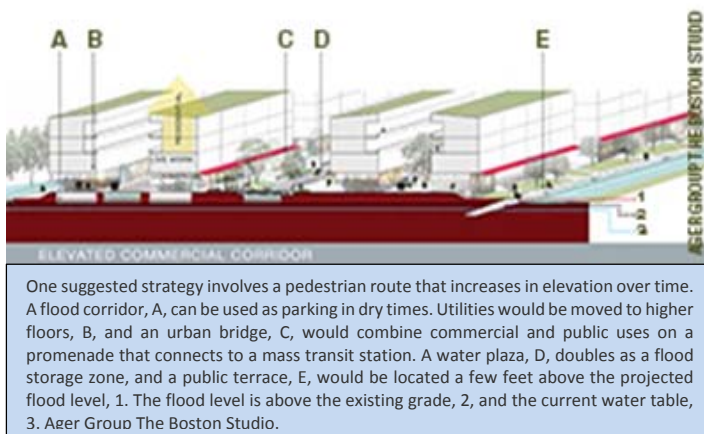
The question, Smith continues, is whether to allow water to come in such a way as to maintain the historic nature and urban fabric of the neighborhood, or to take a more traditional approach, of building a higher wall to try to keep water out."

"The group had a lot of fun coming up with that," says Zachary Chrisco, P.E., A.M.ASCE—a senior associate with Sasaki Associates, in Watertown, Massachusetts, a participant in the charrette—about the canals. "We were given a couple of hours, so it wasn't like there was a lot of rigor to the technical side. It's a great example of thinking outside the box to come up with an idea that could spur further thinking and ultimately lead to a number of viable [solutions] to a tough challenge.

"I think there could probably be 10 more ideas that push beyond that idea, that given more time, a similar group could come up with," he adds. Chrisco describes the Back Bay location as the most challenging of the sites chosen and adds that it's too early to know whether an idea like canals could genuinely be feasible on any level. Still, he says, "One of the most critical takeaways is that there's not a simple solution, especially in the Back Bay. It really is a historic neighborhood, there's a lot of high-value property, there's a lot of critical infrastructure, and it's aging infrastructure. There is no simple solution if you accept that water is going to move into that area."

The challenge multiplies when one considers all of the disciplines involved in making large-scale changes to an established urban landscape. "One of the big challenges is aligning stakeholders toward a goal of resiliency when everyone is heading in different directions sometimes," Smith says. Developers, for instance, want to maximize returns on investment; cities want buildings to be 100 percent safe in all circumstances.

The report points out that resiliency planning will require balancing equipment protection with equipment loss and replacement. For example, if the life expectancy of a piece of equipment such as a fire pump is less than the frequency of a major flood event, it may be cheaper to simply replace the pump when it fails rather than investing in waterproofing it. The report also recommends designing buildings so that major electrical, mechanical, and plumbing infrastructure can be moved to higher floors, or so that floor-to-floor heights on the first floor are increased to provide more space to accommodate a raised ground floor.



Swett notes that Spaulding Rehabilitation Hospital, located right on the water's edge in Charlestown, just north of downtown Boston, incorporated resilience design from the beginning. Waterproofing the building (so that it could remain open and operating in a 100-year flood event) added only 1 percent to the building's hard costs, he notes, and that was largely due to moving a transformer and some switch gears to the roof.

"There's a ton of low-hanging fruit in preparedness design that everyone should be taking advantage of," Swett says. "If we think about it upfront, it doesn't have to cost much at all."

And many of the changes can be made as part of regularly scheduled projects, he says. "We're all going to be replacing HVAC [heating, ventilation, and air-conditioning] over the next ten years," he says. "Everybody should be thinking, 'Can I buy myself some flooding capacity?'" That could take the form of moving HVAC systems to a higher floor or simply putting it on top of cinder blocks, he notes.

Still simple building systems solutions won't solve all of the coming problems. Swett says the region needs a better coordinating mechanism among government agencies, noting that the federal government's priority tends to focus on rebuilding after an event. Even Rebuild by Design, the \$930-million U.S. Department of Housing and Urban Development (HUD) competition meant to respond to the effects of Sandy, he says, requires planners to "show an existing recovery need from a prior event that hasn't been addressed," he says. Metro Boston, despite near misses, has not been declared a federal disaster zone and so was ineligible for those moneys. "In this country we don't spend a lot of money on planning relative to other developed countries," he notes.

Participants all stressed the need to continue discussing the issue of resiliency so that it stays in the public eye. Swett notes that all 13 mayors in the metro Boston area are meeting for a summit next spring to discuss regional climate preparedness.

Participants also suggested that the area's building codes be reviewed to determine if they adequately address climate preparedness. Last year the city passed new design review guidelines that state that developers of any building larger than 50,000 sq ft must complete a checklist and questionnaire determining the expected life cycle of the project, expected climactic conditions at the end of that cycle, and what plans developers have in place to deal with those expected changes. While it's not prescriptive—the state controls the building code—it does enable the city to enter into conversations with developers, who are often seeking zoning variances, about effective ways to consider the resilience of a building through its lifetime.

According to the report, a dollar spent on prevention saves four dollars in damages. "I think Sandy made a big splash when it hit the major financial center of the world," says Smith. "The costs of inaction were laid bare when buildings were shut down and leases weren't paid because nobody could occupy their buildings."

Cranium Challenge

March 2015

Congratulations to everyone who successfully solved the January challenge!

Ron DuLong	<i>Town of Sandown, NH</i>
Brian Nereson, PE	<i>GeoInsight</i>
Michael Summerlin, PE	<i>NHDES</i>
Carl Thunberg, PE	<i>Terracon</i>

And an honorable mention to Scott Osgood, PE from Enfield who answered (from experience I bet) that the concrete block would tear a hole in the pool liner and leave you with an empty pool!

The answer for the January challenge:

The water level in the pool goes *down*.

This bonus question inspired more heated discussions between sleep-deprived undergrads in the student lounge than any other exam question that I can remember. When the concrete block is in the canoe, it is displacing a volume of water equal to its mass. When it is thrown into the pool, it displaces a volume of water equal to its own volume. Because concrete is denser than water ($SG = 2.3$ to 2.4), it displaces more water when in the canoe than when sitting on the bottom of the pool. Easy right? Not when you're operating on two hours of sleep, apparently.

The March Puzzle is as follows:

In the same vein as the canoe puzzle from January:

*A bird is inside of a large sealed box. The box is placed on a scale.
When the bird flies inside the box, what happens to the reading on the scale?*

Send your solutions to Justin Lowe, University of New Hampshire, Kingsbury Hall Room W220, 33 Academic Way, Durham, NH 03824, or by email to Justin.Lowe@unh.edu. Correct responses received by **May 10, 2015** will be recognized in a future issue of "The New Hampshire Civil Engineer".

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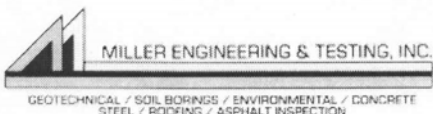
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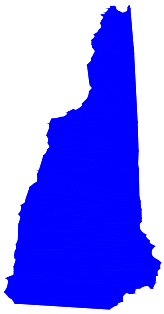
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