



# Granite Columns



## President's Letter



I am excited to serve the SENH membership as president, and grateful for all the hard work put in by the many SENH members before me. I want to thank Chris Fournier for his dedicated service on the board of directors. Chris was instrumental in updating and advancing the strategic plan and I plan to pick up where he left off. I cannot do this by myself though. The board of directors, and I, need assistance and input from the membership to make this happen. Lately everyone I talk to has a busy schedule and many commitments. I was in a similar situation when asked to join the board of directors, but I am glad I found the time to join. I ask all members, including some that may have served on the board of directors or committees previously, to consider spending a small amount of

time to support SENH efforts that will benefit the practice of structural engineering in New Hampshire. In many cases, this commitment is just a few hours a month or less. Below are a few ways you can help the board of directors advance the strategic plan and help SENH work for all of us. Please consider acting on at least one of these:

*Public Outreach* - Our webmaster has retired, and we do not have a replacement. We are not looking for someone to write code for days. We need someone or several people to communicate and manage content with the board of directors. SENH works with a professional web designer for more complex tasks and website development.

*SENH Strategic Plan* - I will be ensuring that this working document will be circulated to the membership in the next month. It is currently not easy to find it on the website (see the first item). We need more feedback on this document from the membership. Please consider taking a small amount of time to give the board of directors your suggestions to improve this document and the strategic vision of SENH.

*Professional Development* - Our professional development committee (PDC) does most of the work to plan meetings, seminars and webinars. Please consider volunteering for the PDC to assist in these tasks. If you do not have the time to volunteer for the PDC perhaps you can still help them. We are always in need of technical topics and speakers for meetings and seminars. If you come across a good speaker or are just looking to gain knowledge on a topic please pass this information along to me or PDC co-chairs are Kayla Hampe, [khampe@hoyletanner.com](mailto:khampe@hoyletanner.com) and Katie Welch, [kwelch@hoyletanner.com](mailto:kwelch@hoyletanner.com).

Thank you to all that currently support and volunteer for SENH! If you are interested in becoming more involved or have any questions or concerns, feel free to contact me at [president@senh.org](mailto:president@senh.org) or (603) 472-4488.

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### Special Points of Interest/ Reminders:

- *Mark your calendars! The annual Joint meeting with ASCE is scheduled for September 11th—See inside for details.*
- *Winners of the Excellence in Structural Engineering Awards are in! Check out the photos inside!*
- *Looking for information on the upcoming NCSEA Summit? Turn to page 3 for the Ad!*

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# SENH Committee Updates

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## NCSEA Committee

*Submitted by Robert Durfee, P.E.*

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SENH Representatives: Bob Durfee and Jeff Karam

The chair of this committee has been rotated to Maine (SEAM) for this year (Jason Potter, Chairperson). SENH members have recently been informed of upcoming seminars, meetings and presentations sponsored by adjoining State SEA's by this Committee.

This Committee has been informing members of recent Code Adoptions and code changes in member states.

## Ad-Hoc Awards Committee

*Submitted by Robert Durfee, P.E.*

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Chair: Bob Durfee,

Co-Chair: Bob Champagne,

Members: Fred Emanuel and Josif Bicja

The Excellence in Structural Engineering Awards Program was held at the May 26th SENH meeting in Manchester. Three awards were presented for Buildings, Bridges and Special Structures. All award winners and their projects are highlighted in this newsletter.

The Committee has recommended to the Board that one project award may be considered each year for nomination for the NCSEA Excellence in Structural Engineering Awards Program. The Board concurred with this recommendation and supported the entry of the 2017 SENH Special Structures Award, Northeastern University Complex Stair Project by Summit Engineering.

## Nomination Committee

*Submitted by Robert Durfee, P.E.*

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Co-Chairs: Bob Durfee and Sean James

The call for nominations for the 2020 Engineer of the Year and Young Engineer of the Year in New Hampshire will be issued this Fall by NSPE-NH. The Nomination Committee is seeking a candidate to nominate for Engineer of the Year (EOY) and Young Engineer of the Year (YEOY) from SENH. Contact a co-chair with your suggestion of a candidate by November 1, 2019. Remember, candidates must be nominated confidentially and in strict secrecy. A candidate must not be aware he/she is being considered or nominated for an award.

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# SENH Committee Updates

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## 2019 NCSEA Structural Summit, Disneyland—Anaheim, California

*Submitted by Robert Durfee, P.E.*

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SENH Delegate: Bob Durfee

SENH Alternate Delegate: Tom Lamb

Member: Alex Azodi

Member: Jeff Karam

Member: Peter Greim

The 2019 Summit will be held on Tuesday November 12th to Friday, November 15th ,2019 at the Disneyland Hotel in Anaheim, California. Delegate Bob Durfee and Associate Delegate Tom Lamb representing SENH will attend the Summit. Bob will also attend his Communication Committee meeting on Tuesday. Alex, Jeff and Peter are also on NCSEA committees and may attend the Summit and Committee meetings.

Kayla Hampe will attend the conference and participate in Young Member Group activities. Kayla was selected to receive an NCSEA Young Member Scholarship to attend the Engineering Summit this year and represent SENH as a Young Member. Kayla is the first candidate from SENH to be awarded this scholarship. Congratulations to Kayla!

## Professional Development Committee Update

*Submitted by Josif Bicja, P.E.*

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As a member organization of NCSEA, SENH was able to provide an NCSEA recorded webinar on June 26, 2019 to members in a Lunch & Learn type format free of cost. These types of seminars have proven to be very successful, with a large number of attendees. PDC will continue to offer other webinars in the coming months.

Webinar Topic:

Repair of Construction Defects—Every Project has Them

There are construction defects on almost every job, unless it is a very small job, or the owner is extremely fortunate. The list of likely defects includes cracks, spalls, rock pockets, delaminations, chips, gouges, rained on slabs, uneven slabs, etc. On a typical job, repairs may have to be done to slabs, vertically, or overhead.

This presentation discussed identifying the defects, repair material selection, repair methods, surface preparation, bonding, curing, etc. In some cases it will be important for the repairs to be aesthetic as well as functional. The webinar covered ways to accomplish both.

# 2019 NCSEA Structural Summit

Submitted by Robert Durfee, P.E.

## 2019 Structural Engineering Summit November 12–15, 2019 · Disneyland® Hotel · Anaheim, CA

### Your Opportunity to Mix Fun, Structural Engineering & the Magic of Disney!

*The NCSEA Structural Engineering Summit draws the best of the structural engineering field together for an event designed to advance the industry. Designed by structural engineers for practicing structural engineers.*

The 2019 Summit is taking place at the [Disneyland Hotel](#) in Anaheim, California. NCSEA has secured group rates at the [Disneyland Hotel](#) as well as [Disney's Grand Californian](#). Rooms are available before and after the Summit (*per hotel availability*), giving you the option to fit in some leisure time. **Join us for education and networking, but also for a little fun in the sun!** Rooms are being reserved quicker than ever before, don't miss your opportunity – [Book Your Stay at the Disneyland® Hotel](#)

#### New to 2019

- **Brand New Format!** Beginning on Tuesday and ending Friday afternoon, the program offers more education and less overlap.
- Five **Keynote** Presentations!
- **The SE3 National Symposium**, the first Structural Engineering Engagement and Equity (SE3) symposium to be held in conjunction with a national engineering conference
- **A Welcome Event** sponsored by the *Structural Engineers Association of California (SEAC)*

#### What to Look Forward to:

- **Disneyland!** The [host hotel](#) is located just a short stroll from the Disneyland Park and Disney California Adventure. *Discounted park tickets will be available through NCSEA starting July 8.*
- Over 16 hours of Continuing Education, a 30% increase from last year!
  - [Check out the Schedule here!](#)
- New & Improved **Networking Events**
- The Largest Structural Engineering-Focused **Trade Show**
- **A Celebration of Structural Engineering** hosted by *Computers and Structures, Inc.* This party will celebrate the immeasurable contributions of the structural engineering profession to society.
- **NCSEA's Award Celebration**, honoring the ingenuity, creativity, and innovation of structural engineering and structural engineers across the association and around the world!

<http://www.ncsea.com/events/annualconference/>

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# UNH Happenings

*Submitted by Raymond Cook, Ph. D., P.E.*

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## **Over 300 Seventh Grade Students Visit CEE at UNH**

In early June, over 300 seventh grade students from New Hampshire, Maine, and Massachusetts, visited the Civil & Environmental Engineering (CEE) Department at UNH. While studying plate tectonics and earthquakes in their science class, these students designed and built pasta towers to be tested using an earthquake simulation through the shake table in the Structural High Bay in Kingsbury Hall. Shokoufeh Zargar, a doctoral candidate in CEE, demonstrated natural modes of vibration before they destroyed the towers with additional weight and vibrations. During this visit the students also worked with Professors Eshan Dave and Jo Sias and their doctoral students, Chibuke Ogbo, Kate Haslett, and Runhua Zhang, to break samples of concrete and asphalt under different temperatures. Professor Nancy Kinner also gave them a crash course in coastal response using the Mc Farland Flume in Gregg Hall and Professor Martin Wosnik gave them a tour of the UNH wind tunnel or Flow Physics Facility. The visit ended at Holloway Commons, which is always a big hit with middle school students.

## **FAI Girls' Winter Camp Johannesburg, South Africa.**

During June (winter in South Africa) for the past 5 years, Erin Bell and Robert Henry, faculty from the Department of Civil and Environmental Engineering (CEE) at UNH, have been traveling to Johannesburg South Africa to assist First Avenue Investment (FAI) Management and the TechnoLab at the University of Johannesburg in providing 20 middle and high school aged girls with a week-long STEM experience. This program is an extension of the UNH Tech Camp program that was started in 2007 and now has an enrollment of approximately 380 campers at UNH this year.

The primary focus of the FAI Girls' Winter Camp has been to enable young women in South Africa to see the career opportunities that could be available for them in a variety of engineering fields. The girls have been involved in building autonomous robots and small-scale bridges and towers, conducting wind turbine experiments, testing the strength of chocolate asphalt, and visiting various engineering companies and construction sites in the Johannesburg area. They even saw how one builds a small airplane. This year Erin Bell was joined by Diane Foster, faculty member from the Department of Mechanical Engineering (ME) at UNH, John Turner a recent graduate of ME, and Dzijeme Ntumi, a recent graduate of CEE.

The sponsor of the camp is hoping to expand the program to host more girls and cover more engineering and science areas. If anyone is interested in getting involved in the FAI Girls' Winter Camp, there are several ways to do so. One can contact either Erin Bell, [erin.bell@unh.edu](mailto:erin.bell@unh.edu) or Robert Henry, [robert.henry@unh.edu](mailto:robert.henry@unh.edu).

Related links:

First Avenue Investments: <http://firstavenue.co.za/>

Technolab: <https://www.uj.ac.za/faculties/febe/technoLab>

FAI Girls' Winter Camp: <http://firstavenue.co.za/first-avenue-institute-girls-winter-camp-2018/>

UNH Tech Camp Goes Global: <https://www.unh.edu/unhtoday/2017/12/tech-camp-goes-global>

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## **Young Members Group**

The SENH Young Members Group is still looking for volunteers to partake in the panel discussion with students at UNH in the fall. This panel will discuss topics such as how to be prepared to enter the workforce, what to expect from internships or your first year at work, life-work balance, etc. We currently have 2 confirmed panelists and would like to have at least 2 more volunteers.

Please contact Nevin Gomez at [Nevin.Gomez@wsp.com](mailto:Nevin.Gomez@wsp.com) or [senhymg@gmail.com](mailto:senhymg@gmail.com) if you would like to participate in this beneficial discussion with UNH students.

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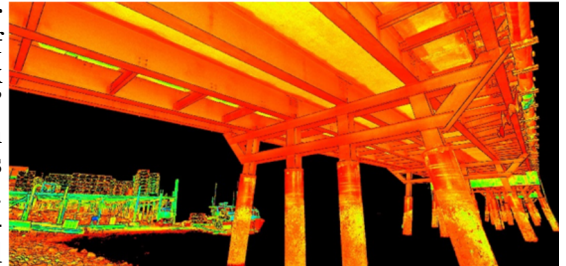
# ASCE/SENH Joint Meeting Announcement

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NEXT MEETING: Wednesday, September 11, 2019

PRESENTATION: **Reality Capture with 3D Laser Scanning & Modeling**

Some newer technologies have raised the bar substantially on the quality and completeness of survey data that engineers can expect to work with. While we still speak in terms of “as-built” or “existing conditions” surveys, the information we gather with survey-grade 3D laser scanners is often called “reality capture” for good reason. This presentation will explain how laser scanners are used to capture extraordinarily detailed information on components of bridges, buildings, and other structures. It will discuss some of the inherent safety benefits of using scanners versus other means of obtaining measurements on difficult-to-reach features. The



presentation will also provide specific examples of how that scan information can be presented in a variety of user-friendly formats for engineering projects, and the relative costs & benefits of those different formats. The objective of the presentation is to build awareness within the structural engineering community about these new tools and to help those in attendance evaluate when those tools will provide value for their own engineering projects.

**SPEAKER'S BIO:** **Michael Carter** joined Doucet Survey LLC as their Director of 3D Mapping in November 2015. Prior to joining Doucet Survey, Michael had done conventional land surveying and 3D laser scanning since 2005.

While Michael continues to be involved with traditional boundary, topographic, and construction layout surveys, his primary focus for the last 8 has been on 3D laser scanning surveys. He has performed a wide variety of work in this area, including scans of highways, bridges, tunnels, rail corridors, airports, complete interiors & exteriors of large buildings, neighborhood streetscapes, LNG and other fuel processing facilities, rock faces, mine shafts, electrical utility structures, boats, and a host of other geometrically complex structures. Michael really enjoys this work and continues to be excited about the amazing and helpful deliverables it allows his team to provide to their clients.

Prior to changing careers into land surveying, Michael worked in controls engineering for two industrial equipment manufacturers. He has a BS in Electrical & Computer Engineering from The Johns Hopkins University and an MBA from Loyola College in Maryland, and later studied Land Surveying courses at the UNH Thompson School. He earned his NH LLS in May 2016. Michael lives in Milford, NH with his wife Erin and their two children Keegan & Catriona.

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# ASCE/SENH Joint Meeting Announcement *(Continued)*

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PLACE: Murphy's Taproom & Carriage House  
393 Route 101  
Bedford, NH 03110  
(603) 488-5975

AGENDA: 5:30 pm – 6:30 pm Registration/Social Hour  
6:30 pm – 7:15 pm Dinner  
7:15 pm – 7:30 pm Business Meeting  
7:30 pm – 8:30 pm Presentation  
8:30 pm – 8:45 pm Closing Remarks

DINNER: Buffet with choice of Chicken Parmesan or Baked Cod with Buttery Cracker Crumb. Sides include garden salad with champagne vinaigrette dressings, fingerling potatoes, and vegetable medley.

Please include any food allergies or dietary restrictions to be accommodated.

COST: Member/Non-Member: \$45.00 – Government Employee: \$35.00 – Student: \$15.00 “No-shows” will be billed at full amount. Refunds will not be issued.

RSVP: **By Friday, August 30, 2019 to avoid any late fees.** There will be a \$10.00 late fee for anyone wishing to RSVP past this date.

Registration and payments can be completed using one of the following methods:

Pay online at <http://www.senh.org/meeting-calendar> using SENH's Meeting Calendar

Send a check with list of attendees to:

TFMoran, Inc.  
Attn. Cassi Beroney  
48 Constitution Drive  
Bedford, NH 03110  
[cberoney@tfmoran.com](mailto:cberoney@tfmoran.com)

NOTE: 2.0 PDHs have been assigned for attendance for ASCE/SENH members. Attendees are responsible for ensuring their check-in on the attendance list upon arrival at the meeting.

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# May Meeting Attendance List & Meeting Minutes

Introduction to Fiber-Reinforced Cementitious Matrix (2.0 PDH's)

The Derryfield Restaurant

625 N. Mammoth Road, Manchester, NH 03104

May 16, 2019

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Name	Company	Name	Company
<b>Mark Jarvinen, P.E.</b>	<b>Simpson Strong-Tie</b>	Katelyn Welch, EIT	Hoyle Tanner & Associates, Inc.
Andrew Griffin	TFMoran, Inc.	Kayla Hampe, P.E.	Hoyle Tanner & Associates, Inc.
Bob Champagne, P.E.	Summit Engineering, PLLC	Kenneth Marshall, P.E.	Foley Buhl Roberts & Associates, Inc.
Christopher Fournier, P.E.	HEB Engineers	Kyle Roy, P.E.	TFMoran, Inc.
Chuck Tinkham, P.E.	JSN Associates	Linda McNair-Perry	Summit Engineering, PLLC
Dan Martel, P.E.	Team Engineering	Lou Cote, III	TFMoran, Inc.
Daniel Bard, P.E.	Summit Engineering, PLLC	Mark Beroney	Atlantic Prefab, Inc.
Dennis LaBombard, P.E.	LaBombard Engineering, LLC	Matt Mullen	TFMoran, Inc.
Eric Caron	University of NH	Natasha Kulchitsky	TFMoran, Inc.
Eric Picard, P.E.	TFMoran, Inc.	Paul Sbacchi, P.E.	TFMoran, Inc.
Fred Emanuel, P.E.	Emanuel Engineering	Rich Rooney	MacFarland Johnson
Greg Clauson	AISC	Robert Busby, P.E.	Kalwall Corp.
Jay Brown, P.E.	Structural Systems, Inc.	Robert Durfee, P.E.	Dubois & King, Inc.
Jeff Karam, P.E.	Evergreen Structural Engineering, PLLC	Ross Wood, P.E.	Hoyle Tanner & Associates, Inc.
Jeff Trexler, P.E.	Trexler Engineering	Sean Brown, P.E.	Hardesty & Hanover
Jonathan Nadeau	TFMoran, Inc.	Tom Lamb, P.E.	TFMoran, Inc.
Josif Bicja, P.E.	Hoyle Tanner & Associates, Inc.	Zachary Zavalianos, P.E.	Dubois & King, Inc.

*\*Speaker*

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## Business Portion of the Meeting

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Chris Fournier opened the business portion of the meeting:

The Treasurer Provided an Update:

- Please renew your membership and pay your dues if you have not done so already

Chris Fournier Provided an Update on the strategic plan:

- Professional Development
  - Free Webinars provided
  - Reduced meeting Fees
  - SEAM seminar announcements
- Public Outreach
  - IBC 2015 expected to be adopted in NH
- Committee Effectiveness
  - PDC and Code advisory committees have been very active
  - More committee and board volunteers needed

Younger members group update:

- Younger members group hopes to host a panel discussion at UNH
- Volunteers are needed

SENH Excellence in Structural engineering awards were presented. See the SENH website for the submissions and winners.

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## Presentations

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Mark Jarvinen, PE of Simpson Strong Tie presented on Fiber Reinforced Cementitious Matrix (FRCM).

FRCM is similar to fiber reinforced polymer reinforcing (FRP) but is bonded by a cementitious matrix rather than a polymer material. Also, FRCM uses a carbon fiber reinforcing grid. These characteristics lead to FRCM being more compatible with the concrete substrate, more heat resistant, more permeable to water transmission, and more economical when compared to FRP. Also, FRCM can be applied to a moist substrate with less surface preparation than FRP. This leads to a more economical solution in large areas. Drawbacks include additional weight, thicker repair and messier installation when compared to FRP.

FRCM differs from pneumatically placed concrete in that it involves one trade rather than two, has a faster reinforcing install time, thinner thickness, less weight and typically higher strength.

FRCM has many uses including:

- Change in occupancy upgrades
- Reinforcing/retrofit upgrades
- Remediate low concrete strength and/or corroded steel
- Alternate to other strengthening techniques such as bonded steel plate or beam enlargement
- Pipe repair and repairs in wet environments

FRCM is installed first by preparing the surface including cleaning corroded reinforcing bars, removing deteriorated concrete, injecting/sealing cracks and preparing the concrete to a specific surface profile. Next a ½" layer of cementitious matrix is applied followed by the reinforcing grid and additional ½" matrix. Initial cure is 2 to 5 hours and a 3 to 5-day wet cure is recommended. Final strength is measured at 28 days and is 7,500psi.

Design of FRCM is per ACI 549.4R13 and ACI562. Several strengthening limits exist including not increasing the flexural and shear strength of the existing member by more than 50%.

Quality control and field testing are recommended. A pull off test per ASTM C1583 determines adhesion and mortar cubes are taken for testing the cementitious matrix. Witness panels are also used.

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# Excellence in Structural Engineering 2019 Award Winners

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**2019 Bridge & Transportation Winner:** Hoyle, Tanner & Associates, Inc.—Manchester, NH

Entry: Old Blenheim Bridge Replacement in North Bleinheim, New York



*Above Left: Completed Old Blenheim Bridge Replacement*

*Right: Josif Bicja, P.E. of Hoyle Tanner accepting award from SENH President, Christopher Fournier, P.E.*



**2019 Special Structures Winner:** Summit Engineering, PLLC—Portsmouth, NH

Entry: Harbor Way Ship Sculpture in Boston, Massachusetts



*Below Right: Completed Harbor Way Ship Sculpture*

*Below Left: Daniel Bard, P.E. of Summit Engineering accepting award from SENH President, Christopher Fournier, P.E.*



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# Excellence in Structural Engineering Award Winners

*(continued from Page 10)*

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**2019 Buildings Winner:** TFMoran, Inc.—Bedford, NH

Entry: Medicus Healthcare Solutions Building in Windham, New Hampshire



*Below Right: Medicus Healthcare Solutions Building, in Progress*

*Left: Thomas Lamb, P.E. of TFMoran, Inc. accepting award from SENH President, Christopher Fournier, P.E.*

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