



President's Letter

Wow! The leaves have turned, the mornings are chilly and it appears that another summer has zipped past us. Hopefully, you are all enjoying this beautiful autumn weather and are preparing for winter (and the new president). A few weeks ago, I went to the annual gathering of the structural-technical group of SEI in Minneapolis. I have been attending this event for the last 6 years on behalf of SENH and ASCE NH. Since there is no organized SEI group in New Hampshire, SENH has been invited to represent the interests of our structural engineers at this event. This two day event is an informal gathering of usually 30 to 40 chapters. The organizations exchange ideas and share information about their activities in an effort to learn from each other's successes, failures and innovations. I am happy to announce that, in comparison to others, SENH is up-to-date and is well-accomplished. I have taken notes from some of the lessons that I thought would be beneficial for us to pursue and will share them with the rest of the board members and the committee chairmen.

Last week, Bob Durfee (our NCSEA delegate) and I attended the annual

NCSEA gathering in Cleveland. Our aim was to report back to you the national news and any innovative ideas we heard: look for Bob's report. Recently, on one of my trips, I heard a speaker mention that there is talk of making code requirements for professionals to design according to the "green" building protocol. As you probably have noticed, it is difficult to read industry related material these days without seeing some reference to sustainability or "green" building. As stewards of the earth, we must learn to design and construct with knowledge, understanding, and respect for the environment. I believe we can work with other professions to offer innovative design options that incorporate the values of the "green and sustainable" philosophy. As professionals we are required to provide safety. We can also be involved in providing sustainable and "green" design; this is the proper thing to do and we all must participate. At this time, however, the most progress in the "green" movement is directed toward non-structural areas. Very few seminars or lectures focus on the role that the structural engineer can or should play. Therefore, I believe that it would be to our (and our environment's) benefit if we are

proactive. I have thought about a committee ~*Green Building Committee* ~ within our organization, comprised of a few of our members, whose charge it would be to collect information concerning the advances affecting structural engineers and occasionally updating our members via articles, seminars, etc. I am interested to know what your thoughts on this subject are.

I would also like you to help us enhance SENH by participating in our various activities, and by sharing with the board your ideas for improving the organization. We are also looking to form other new committees such as: a *Code Advisory Committee* ~ *Existing Building Committee* ~ *Special Inspection Committee*, etc... If there are any other areas that may be of interest to you, please share them with me or the other board members.

Thanks Alex

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Special Points of Interest/ Reminders:

- *Joint Meeting of SENH & NHPSE November 18, 2008. See inside for details.*
- *The November 2008 issue of the NCSEA newsletter is now posted on the SENH website. The newsletter contains detailed information on the upcoming "Winter Institute" in Miami, Florida.*

NCSEA Supports NCEES Structural Engineering PAKS Survey

submitted By Robert Durfee, P.E., SECB

NCEES is conducting a Professional Activities and Knowledge Study (PAKS), to elicit input on what is required of a licensed structural engineer with 4-6 years of structural engineering experience. What should the scope of practice be, for entry-level structural engineers? To what extent should seismic knowledge be tested in the revised Structural Exam?

Twelve states and territories require sixteen hours of structural examination for licensure. Nine of those jurisdictions offer the NCEES Structural I and II examinations. Three states offer the NCEES Structural II and a locally prepared Structural III seismic examination. Five other states and territories offer, but don't require the Structural I and Structural II Exams. Eighteen li-

censing jurisdictions offer Structural I only.

NCEES has been studying the issue of structural examinations. NCEES hopes that a single sixteen-hour exam can be written which will satisfy the needs of all states who license Structural Engineers. One of the steps in determining whether this will work is to conduct a new Professional Activities and Knowledge Study (PAKS). This survey is designed to elicit input on the professional activities and knowledge/skills required of a licensed structural engineer with four to six years of structural engineering experience. Participation in this survey is critical for defining the scope of practice for entry-level structural engineers.

NCSEA believes that it is vital that practicing Structural Engineers respond to this survey by accessing the site and filling out the questionnaire. Your response will link any changes in our structural examinations back to our everyday reality and, ultimately, set the standards of our practice.

To complete the survey, please enter the following survey link into your web browser. The survey can be completed in less than 45 minutes: <http://vovici.com/wsb.dll/s/12dog33eff>.

All responses must be received no later than Nov. 10, 2008.

NCSEA Code Advisory Committee

Ed Huston, P.E., outgoing President of NCSEA, has announced the appointment of **Alex Azodi, P.E., SECB**, to fill the vacant position on the Code Advisory Committee, General Engineering Subcommittee. The announcement was made at the Annual Conference in Cleveland last week. The Code Advisory Committee is active with Model Codes and Standards issues and activities, such as generating and responding to proposed code changes, preparation and codification of resource documents, trial design studies and practical application guidelines.

Several SENH members expressed interest in serving on this Committee (including Alex). Congratulations Alex on your appointment to this National Committee.

Many NCSEA Committees are seeking new members. If you have an interest in serving on a committee, contact Bob Durfee, NCSEA Delegate at rdurfee@dubois-king.com.

NCSEA Winter Institute

The annual NCSEA Winter Institute will be held on January 23-24, 2009 in Miami, Florida. The topic for this years institute is "WIND ENGINEERING". A tour of the RWDI Wind Tunnel testing laboratory is included. Up to 15 PDH's can be earned for attending the two days of presentations, with PDH's accepted by all 50 state PE Boards for continuing education. For more information, including the technical agenda, registration, airfare and hotel costs can be found at the NCSEA website, or in the November 2008 NCSEA newsletter.

Modifications to IBC 2003 in Massachusetts

Massachusetts has implemented the 2003 IBC with particular modifications to Chapters 1, 4, 9, 16, 17, 18, 19, 21, 22, 23, 24, and Appendices effective September 1, 2008. The one and two family dwelling portion of the code has been in place since June 1, 2008. Follow the link below to read the Announcement of the Promulgation of the 7th Edition Basic Building Code.

Code copies are available through the Massachusetts State House Bookstore (617-727-2834). The Code may be purchased at the Bookstore or by placing an order via US Mail. An order form can be found at <http://www.sec.state.ma.us/spr/sprcat/catidx.htm>

New Members, Associate Members & Student Members

SENH is proud to welcome the following new Student Members:

Student Members:

- | | |
|--------------------|--------------------|
| ◇ Andrew P. Bisson | ◇ Chad T. Hummel |
| ◇ Daniel P. Broman | ◇ Heather B. Jones |
| ◇ Levi D. Byers | ◇ Saisok Lekyang |
| ◇ Mario Y. Giroux | ◇ Geoff N. McGuirk |
| ◇ Kayla M. Hampe | ◇ Ryan McNamara |

Upcoming Webinars

The latest schedule of NCSEA webinars being offered are:

- **November 06, 2008: webinar**
[Foundation Design Using IBC Chapter 18](#)
Michael Valley
- **November 12, 2008: webinar**
[Structural Load Determination – Wind Loads](#)
- **November 20, 2008: webinar**
[Reinforced Concrete Special Moment-Resisting Frame](#)
Jon Kiland
- **December 4, 2008: webinar**
[Structural Load Determination – Earthquake Loads](#)
- **December 17, 2008: webinar**
[Seismic Design of a Steel Special Moment Frame](#)
Kevin Moore
- **January 08, 2009: webinar**
Steel Concentrically Braced Frames
Rafael Sabelli
- **February 10, 2009: webinar**
Cold-Formed Steel Light-Frame Three-Story Structure
Doug Thompson
- **March 10, 2009:**
Wind Load Examples
Steve Kerr

Visit the NCSEA website at: www.NCSEA.com for further information on subject matter, length of webinar and registration.



THE LATEST FROM THE UNH STEEL BRIDGE TEAM

submitted by Patrick Moon, VP of UNH ASCE and Team Leader for the Steel Bridge.

We began this year by thoroughly looking over the rule book and beginning our preliminary design based upon the imposed restrictions. Our design possibilities are limited by the major restrictions such as, a max height of 2 ½ feet and the superstructure having to be below the deck. With the struggles of last year's team, we wanted to come out strong this year and create something aesthetically inspiring and ideally a winner.

We have two concepts already committed to paper. We have a third concept we believe could be assembled rapidly and therefore offset penalty points on the extra weight and deflection that the design will incur. The team agreed that aesthetics as well as practicality are going to take a back seat to this year's main focus, which seems to be stiffness and efficiency. We would love to share those with you in this publication, but since this is a competition we will have to keep them under wraps for now. Please join us at our meetings at Kingsbury Hall Library on Monday at 6:30 PM to see what we have so far. We are also in the process of brainstorming connections that will expedite the assembly process.

We have a dedicated team of about 20 people. The group members have divided into sub committees such as rules, finances, sponsorship, and design of structure. To stay organized and to maintain an effective schedule we have organized weekly meetings, we communicate through online announcements and emails. The team has been enthusiastically searching for sponsorships and any outside involvement available. We consistently collaborate with professors and we are actively brainstorming new ideas. The majority of the team are juniors and seniors but we have also encouraged the freshman and sophomores to get involved and join Steel Bridge.

THE LATEST ON HOW SENH IS WORKING TO HELP THE UNH STEEL BRIDGE TEAM

submitted by Linda McNair-Perry, P.E., SECB, UNH Liaison for SENH PR Committee.

SENH Associate Member Rebekah Briggs of Parsons, Brinckerhoff, Quade & Douglas, Inc. has volunteered to work with the Steel Bridge Team as a consulting engineer/advisor. Rebekah earned her Masters from UNH a few years ago with Professor Erin Bell as her advisor. Dr. Bell is also the faculty advisor for the steel bridge. They will be working with an enthusiastic group of students from UNH this year and will be happy to receive the input of other consultants who can offer insight and perspective into the real world of designing bridges to the students. If you are interested in sharing a little of your time please contact Rebekah at briggs@pbworld.com or Patrick Moon at psp5@cisunix.unh.edu Currently the Steel Bridge Team is meeting every Monday evening at the Kingsbury Library at 6:30 PM.

In addition SENH is working with steel fabricators, welders, and UNH folks to arrange for a hands on welding workshop/tutorial for the students. If there is an opportunity to open it up to SENH members we will do so. It is in the early stages, so look for announcements in the near future.

FALL JOB FAIR

submitted by Linda McNair-Perry, P.E., SECB, UNH Liaison for SENH PR Committee.

I had the honor of representing SENH to the students at the recent Job Fair. We had 10 new Student Members join our ranks. I met with numerous students at all levels looking for internships/part-time jobs that will get them some structural engineering experience. There was at least one student graduating in December who is looking for full time employment. I collected their resumes. If you would consider taking on a graduate or student intern, contact me at lperry@sfceng.com and I will share those resumes with you.

The students were each invited to join us at our meetings, so if they take me up on that invitation please welcome them warmly. The steel bridge team was also invited to come to our next dinner meeting,



SENH NOVEMBER MEETING ANNOUNCEMENT

Joint meeting with the New Hampshire Society of Professional Engineers

- DATE:** November 18, 2008
- PRESENTATION:** Overview of Construction Related Insurance Requirements, by Susan Siegel, CPCU and Robert Simpson, VP of The Rowley Agency, Inc. The Rowley Agency is the one of the largest independently owned insurance agencies in northern New England and provides commercial and private insurance as well as surety bonds. Our speakers have a combined 54 years of experience in the insurance field and will be speaking about the following topics: How to read and insurance certificate and what it all means, how to write insurance requirements as part of a construction contract, what does additional insured really mean and what you should know for design-build projects in terms of insurance.
- PLACE:** The Sheraton Harborside Portsmouth Hotel & Conference Center
250 Market Street, Portsmouth, NH
Phone 431-2300
www.sheratonportsmouth.com
- DIRECTIONS:** I-95 to Exit 7 in NH. Drive one mile east. Right turn at Russell Street and park in gated parking lot on the right.
- AGENDA:** 5:30 pm-6:30 pm Social Hour
6:30 pm-7:15 pm Dinner
7:15 pm-7:40 pm Business Meeting
7:40 pm-9:00 pm Presentation
- DINNER:** Buffet choice of Short Ribs of Beef and Baked Haddock Asiago
- COST:** SENH/NHSPE Member: \$50.00 Non-Member: \$60.00
Full Time Student: \$10.00
- RSVP:** by Friday, November 14, 2008. There will be a \$5.00 late fee for anyone wishing to RSVP past the November 14th date.
- Please send check payable to "Structural Engineers of New Hampshire" with list of attendees and membership affiliation to:
- SENH
P.O. Box 226
Manchester, NH 03105-0226
Contact: Deb Coon, Administrative Assistant, dcoon@hoyletanner.com
- NOTE:** 1.0 PDH has been assigned for attendance to this program. Attendees are responsible for ensuring their check-in on the attendance list upon arrival at the meeting.

SENH September 25, 2008 Meeting Minutes

Business Portion of the Meeting

1. The meeting was called to order by Jason Ayotte, P.E. of NH ASCE and by Alex Azodi, P.E., of SENH at 7:00 pm. Jason covered NH ASCE business items first. SENH business items were presented next as follows:
2. Treasurers Report: Kyle Roy reported the financial position of the organization was strong with an ending bank balance of \$21,032.59.
3. Professional Development Committee: Sean James, the new chairman is seeking volunteers to join the committee. He is especially interested in individuals who can help develop building topics.
4. Public Relation Committee: Jeff Tirey has accepted the chairman position.
5. Volunteers Needed: Currently there are 178 members of SENH. Volunteers are needed to help the various committees and to expand the role of SENH. One new endeavor being considered is the establishment of the Green Building Structural Engineer Committee.
6. SEI Update: During the SEI annual meeting in Minnesota, it was noted SENH is very active and doing well. As part of the conference, Alex had the opportunity to tour the recently constructed I35 Bridge.
7. NCSEA Update: Bob Durfee will represent SENH at the annual conference in Cleveland during the 23-25 of October.
8. Engineer of the Year and Young Engineer of the Year: SENH is seeking candidates from the organization. Any member wishing to recommend a candidate is encouraged to contact the board members.
9. Jason Ayotte introduced the speaker.

Bellows Falls Tunnel: Track Lowering Project for Modified Double Stack Container Cars, by Kenneth A. Pidgeon, P.E., Vice President of *ECI Rail Constructors, Inc.*

The town of Bellow Falls lies next to the Connecticut River in the southern portion of Vermont. The Bellows Falls Tunnel originally constructed in the 1850's, allowed standard box car could go through, but the newer double stacked freight containers could not. The objective for the state and federal government was to reduce I-89 and I-91 heavy truck traffic by improving local rail service. Therefore ECI Constructors were contracted to lower the rail road bed while keeping the impact to existing traffic flow to a minimum. The \$2.5 million project was funded by VTrans (Rail & Structures Divisions) Parson Brinckerhoff, the Federal Highway Administration (FHWA) and the New England Central Railroad a.k.a Rail America. Rail America is the owner of the tunnel and VTrans provided the engineering.

The tunnel is basically a stone arch fabricated using a cut and cover construction method. It was 280 feet long and 12 wide. The bed had already been lowered twice in the past (in the 1950's and 1970's). Above the tunnel were the city streets and an old historic structure, the Windham hotel (no longer in operation). The crossing at the south portal is

the only access to the municipal sewer treatment plant.

The project criteria was to lower the tracks 2 1/2 ft in order to achieve a minimum 19'-8" clearance. The horizontal clearance could not shrink less than 11'-8". Although both rail and street traffic had to be maintained, the project did allow for a one day shutdown of the traffic for grade crossing work and a three day shutdown for the final profiling of the terrain. Amtrak passed through the tunnel at 12:00 noon and 5:30 PM. Freight traffic used the tracks at night. ECI work window was limited to 4:00 AM to 11:45 AM and 12:00 noon to 5:30 PM. Railroad coordination required ECI to serve as RR flagger and to install and remove "derailers" (device to prevent unauthorized use of the track while under construction).

The restricted working times and long days presented construction hardships. So did the inadequate lighting conditions in the tunnel, unexpected poor subsurface conditions and limited access to the worksite. Tunnel work is a linear chain process in that equipment could not

move around activities or other equipment. Only a limited number of activities could occur at once. A canal ran through the town; close to the construction site. The water level was 5' above the track bed, but ground water was not a problem. The railroad bridge crossing the canal could not be lowered. The canal itself is used to generate hydro electric power. The above hotel foundation ended at the ceiling of the tunnel. Because of the physical landscape characteristics and design requirements, the bed had to be lowered which created a section of track at 4% grade. Originally the grade was 2%. The new sloped was approved by the rail institute.

A series of events and items had to be performed or provided during the construction phase which began September 2006. First items to be provided were tunnel lighting, an office trailer, and security cameras. A staging area also had to be established. Next, existing Sprint and RR communication lines had to be relocated along with any other underground utility in the area. The tracks and street had to be rebuilt at the crossing area. "Shotcrete" work repaired the

Continued from Page 6

crash wall and ceiling joints. It was also used to build a new retaining wall. To maintain good rail alignment the wood bridge ties were dapped (usually a 1/2" cut groove). Time restraints dictated rail to be cut in 13 foot section. The 13 foot track sections were removed in work areas twice daily to allow bed work to proceed. The track section was replaced when trains had to pass. 2,077 cubic feet of rock had to be removed which involved controlled blasting. Where the tunnel was supported on soil with shallow rock, a hydraulic rock splitter was used. 551 linear feet of underpinning (soldier pile & lagging with cross braces) had to be performed. Another required retaining wall was cast in place.

A major concern during the whole process was tunnel settlement. Excavation induced movements, stress changes, and strain changes. Not just excavation, but the underpinning installation, vibrations of work related tasks, and backfilling allowed the opportunity for settlement. Even the time, length, and depth of open excavation contributed to the chance of settlement. It was necessary to establish a settlement monitoring program. Survey monitoring pins were installed and measured vertically and horizontally. Direct wall to wall measurements were manually measured with grade rods. It was felt the simplest and most direct measurements were the most reliable. Base line readings were made prior to the start of any work. The maximum vertical movement measured for the east wall was 0.05 ft. (typical was 0.03 ft). For the west wall, the maximum vertical

movement was 0.14 ft. (typical was 0.10 ft). The maximum horizontal movement was 0.15 ft total for both sides (typical 0.13 ft). Upon review of the measured movement it was noted no sign of distress appeared in the tunnel. No significant impact appeared to the building overhead. Almost no movement has occurred during or since the shut down.

As mentioned, three days were allocated for final terrain profiling (Aug 18th-20th). The blitz (working 24 hours per day) entailed track removal, excavation to the new subgrade, installing conduit, trimming rock, installing ballast stone, re-installing track and surface refinement. The rail joints were continuously welded to reduce fatigue to the trains by eliminating rail vibration.

1.0 PDH for the technical presentation was earned by attendees.

Respectfully submitted by Robert S. Busby, P.E., Secretary, SENH

Attendance List

Bellows Falls Tunnel: Track Lowering Project for Modified Double Stack Container Cars
(1.0 PDH)
The Common Man Restaurant , Concord, NH
September 25, 2008

Name	Organization	Name	Organization
Jason Ayotte, P.E.	Vanasse Hangen Brustlin, Inc	Sean James, P.E., SECB	Hoyle, Tanner & Associates, Inc.
Alex Azodi, P.E., SECB	Omega Structural Engineers, PLLC	Roger Keilig, P.E.	HTE Northeast, Inc.
Greg Bakos, P.E.	Vanasse Hangen Brustlin, Inc	Tom Kendrick, P.E.	
James O. Barney, Esq.	Sulloway & Hollis, PLLC	Paul Kirby, P.E.	The Louis Berger Group
Shannon R. Beaumont, P.E.	CLD Consulting Engineers, Inc.	Jeff Klein, P.E.	Vanasse Hangen Brustlin, Inc
Paul Becht, P.E.	The H.L. Turner Group	Russell P. Lagueux, P.E.	EnviroSense, Inc.
Jeff Bjrz	Nobis Engineering, Inc.	Stephen Langevin, P.E.	Maguire Group
David Brogan	R. W. Gillespie & Associates, Inc	John Lavigne	The H.L. Turner Group
Wade R. Brown, P.E	SEA Consultants Inc.	Andy Lawrence	The H.L. Turner Group
Michael Burke	JGI EASTERN, Inc.	Jason Lodge, P.E.	Hoyle, Tanner & Associates, Inc.
Robert S. Busby, P.E.	Kalwall Corporation	Thom Marshall	The Louis Berger Group
Tim Cady	Briar Hill	John Maynard, P.E.	Maguire Group
Nick Caron	The Louis Berger Group	Jeff McCullough	Nobis Engineering, Inc.
Mike Chervincky	Vanasse Hangen Brustlin, Inc	Ken Milender	Miller Engineering & Testing
Norm Cote, P.E., SECB	NGC Structural LLC	Brian Nereson	JGI EASTERN, Inc.
Chris Cucco, P.E.	Maguire Group	Anant Panwalker	Nobis Engineering, Inc.
Chris Daigle, P.E.	The Louis Berger Group	Ken Pidgeon	ECI Rail Constructors
Marisa Dibiaso, P.E.	Maguire Group	John Poisson	Hoyle, Tanner & Associates, Inc.
Keith Donington, P.E.	Parsons , Brinckerhoff, Quade & Douglas, Inc.	Chris Robert	University of New Hampshire
Kathy Dougherty, P.E.	iLevel by Weyerhaeuser	Kyle Roy, P.E.	TFMoran Inc.
Robert Durfee, P.E., SECB	Dubois & King	John Scott	Rist Frost Shumway Engineering
Larry Dwyer	JGI EASTERN, Inc.	Jim Spaulding	The H.L. Turner Group
Trey Dykstra	JGI EASTERN, Inc.	Trevor G. Stanley, P.E.	Parsons , Brinckerhoff, Quade & Douglas, Inc.
Lauren Gardner	Vanasse Hangen Brustlin, Inc	Kirk L. Stenersen, P.E.	Higher Design, PLLC
David Gates	CLD Consulting Engineers, Inc.	Doug Stewart	The H.L. Turner Group
Sally Gunn, P.E.	Vanasse Hangen Brustlin, Inc	Veronica Thibodeau Carter, PE	New Hampshire Technical Institute
Mike Hansen, P.E.	Vanasse Hangen Brustlin, Inc	Roger Thibodeau, P.E.	Twin State Engineering
Jaime Harned, P.E.	CLD Consulting Engineers, Inc.	Jeff Tirey, P.E.	Tirey & Associates, P.C.
Robert S. Hartford, P.E.	Kalwall Corporation	Brian Vincent	Nobis Engineering, Inc.
Manfred Hoertdoerfer	SEA Consultants Inc.	John J. Wilson, P.E.	Jacobs Engineering Group

Additional Meetings & Conferences

October –December 2008 UNH's fall programs for Engineers, Surveyors, and Soil Scientists Contact and registration information can be found on our website at <http://www.learn.unh.edu/pcw/>.

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ACI Fall 2008 Convention in St. Louis, Missouri. November 2-6. To register go to www.aciconvention.org

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The 4th Building Security Certified Professional (BSCP) Seminar will be held on November 20 & 21, 2008 in Reston, Virginia. The seminar will provide 13 professional development hours (PDHs) in key building security knowledge areas including: Project Process, Risk Assessment, Site Considerations, Building Envelope Interior Space, Facility Operations and BSC Rating System. For detailed info, visit:

www.buildingsecuritycouncil.org/certification.html

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Practical Applications of the 2005 AISC Seismic Provisions - 0.80 CEUs / 8.0 PDHs December 2, 2008, Burlington, VT. Please visit www.aisc.org/seminars for more information.

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