

Structural Engineers of NH

September 2005



Serving New Hampshire

Next Meeting

Wednesday

September 14, 2005

Traditionally Connected
Heavy Timber
Connections
New & Old

A Fireside Inn
West Lebanon, NH

SENH PRESIDENT'S LETTER...

Greetings! Some good news for a change from the legal front; I've been informed that the constitutionality of the Statute of Repose was upheld in the case that went before the NH Supreme Court. For more information on the decision, go to <http://www.courts.state.nh.us/supreme/opinions/2005/index.htm>

Membership Meetings

It's time again to start our fall meetings. Thanks to the efforts of the Professional Development Committee, we have a number of informative meetings planned and an upcoming seminar on light gage metal framing. Look for more information in this newsletter on upcoming opportunities. I hope to see everyone at the September meeting.

SENH Officers

The Board of Directors met on June 14th and assumed the following office positions for the coming year:

- President – Steve W. Johnson, P.E.
- Vice President – Alex Azodi, P.E.
- Treasurer – James Karmozyn, P.E.
- Secretary – Linda McNair Perry, P.E.
- Director-at-Large – Robert Busby, P.E.

New Members

SENH would like to welcome Harry Wetherbee as a new associate member in our organization.

Special Inspections

In conjunction with the New Hampshire Building Officials Association, the SENH Special Inspection committee will participate in a technical presentation session at the New Hampshire Local Government Center's annual conference. The flyers on Special Inspection that we had available at our last meeting will also be mailed to local building officials.

Cold-Formed Steel Framing in Construction Today Seminar

Structural Engineers of New Hampshire with The Steel Framing Alliance/LGSEA will be hosting a one (1) days seminar on Wednesday October 12, 2005. The seminar explores opportunities for cold-formed steel in projects through the use of the latest design standards and techniques. Highlights include an overview of the latest nomenclature, the new Code of Standard Practice for CFS, detailed review of floors, wall, and truss applications and a special session on panelization. The day will include vendor displays of some of the most recent products and services available for the design community.



Member of



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Cold-Formed Steel Framing in Construction Today Seminar (continued)

The SENH Board of Directors would like to thank the Professional Development Committee for working tirelessly to coordinate with the SFA/LGSEA and for recruiting industry sponsors to bring you this valuable seminar. The fee for this seminar is \$100.00 for members of SENH, SFA/LGSEA and AIA and \$150.00 for non-members. This is expected to be a popular seminar, so be aware that registration will be limited to 55 people on a first-come, first-served basis. A more detailed announcement as well as registration form is included in this newsletter.

NCSEA Annual Conference

The NCSEA 13th Annual Conference will be held this year in Kansas City, Missouri. The conference runs from October 27-29. Robert H. Durfee, P.E., our NCSEA delegate will be attending the conference. All members are encouraged and invited to attend the conference. For more information on the conference program and the registration form please visit their website at www.ncsea.com.

Other Meetings and Seminars

CASE in partnership with ASCE is holding the 2005 Convocation on the Best Practices of Risk Management, to be held November 4-5, 2005 in Dallas, Texas. For information on this conference, go to their website at www.acec.org and click on the RMP (Risk Management Program) convocation logo.

FHWA Covered Bridge Manual

Earlier this year, we sent an email to the members asking if they wanted a copy of the FHWA Covered Bridge Manual. For those who responded yes, those manuals are now in and they will be available at the September meeting. There are also a few extra manuals that will be available on a first come first serve basis.

Engineer of the Year/Young Engineer of the Year

Nominations are due for the Engineer of the Year/Young Engineer of the Year. If you know someone who has contributed significantly to the engineering profession in New Hampshire, please contact one of the Board members.

NCSEA Monthly Moments Newsletter

The August issue of the NCSEA Monthly Moments is now posted on the SENH Website. Please check the website for current and past issues of the newsletter.

As always, if you have any questions regarding SENH, what's planned for the future, or suggestions on how to improve our organization, please don't hesitate to contact any member of the Board of Directors.

Sincerely,
Structural Engineers of New Hampshire

Steve W. Johnson, P.E.
President



Structural Engineers of New Hampshire Meeting Attendance

DATE: May 18, 2005

PLACE: The Common Man Restaurant, Concord, NH

RE: The Leonard P. Zakim Bridge
(2.0 PDH Assigned)

NAME		ORGANIZATION	NAME		ORGANIZATION
Matthew	Allen, P.E.	JSN Associates, Inc.	Paul	Kirby, P.E.	TFMoran, Inc.
Vicki	Arbitrio	NCSEA	Jeffrey T.	Klein	Vanasse Hangen Brustlin, Inc.
Roderick D.	Bard, P.E.	Stahlman Group, Inc.	Dave	Konieczny, P.E.	Pyramid Engineering, P.C.
Paul M.	Becht, P.E.	H. L. Turner Group	Matthew J.	LaBrecque, P.E.	PCI Architecture
Jay H.	Brown, P.E.	Structural Systems, Inc.	Thomas, E	Lamb	Trus Joist, A Weyerhaeuser Business
Robert S.	Busby, P.E.	Kalwall Corporation	Matthew J.	Low, P.E.	Hoyle, Tanner & Assoc., Inc.
John	Byatt, P.E.	CLD, Inc.	Josh	Lund, P.E.	Vollmer Associates
Lou	Cote	Steffensen Engineering Assoc., Inc.	David A.	Macolini, P.E.	JSN Associates, Inc.
Normand G.	Cote, Jr., P.E.	NGC Structural, LLC	Nathan	Maher, P.E.	JSN Associates, Inc.
Tony	Coviello, P.E.	JSN Associates, Inc.	Kenneth G.	Marshall, P.E.	Foley & Buhl Engineering, Inc.
Edward F.	Decelle	Structural Systems, Inc.	Richard	Martin	W. R. Grace & Co.
G. Keith	Donington	Bechtel/Parsons	Lisa M.	Martin, P.E.	Quantum Construction Consultants
Kathy J.	Dougherty, P.E.	---	Donald F.	Mayo, P.E.	Donald F. Mayo, P.E., Inc.
Robert H.	Durfee, P.E.	Hoyle, Tanner & Assoc., Inc.	Ryan C.	Nedwicke, P.E.	Trus Joist, A Weyerhaeuser Business
David F.	Emanuel	Emanuel Engineering, Inc.	Joseph W.	Patusky, P.E.	NHDOT
Fred	Emanuel, P.E.	Emanuel Engineering, Inc.	Linda McNair	Perry, P.E.	GV Engineering, LLC
George	Fallet, M.S., P.E.	Consulting Engineer, Inc.	Stephen	Richard	Steffensen Engineering Assoc., Inc.
Joel	Fisher, P.E.	Fisher Engineering, P.C.	Richard E.	Roberts, P.E.	Foley & Buhl Engineering, Inc.
Jason L.	Gallant, P.E.	Parsons Transportation Group	Arthur W.	Rose, P.E.	Arthur W. Rose, P.E., PLLC
Roger W.	Gayer, P.E.	Structures Unlimited, Inc.	Kyle	Roy, P.E.	Kimball Chase
Derek J.	Gilbert, P.E.	TFMoran, Inc.	Bill	Saffian	
Paul	Goldberg, P.E.	PCI Architecture	Timothy L.	Schaal, P.E.	Schaal Engineering, P.C.
Martin	Gorham, P.E.	JSN Associates, Inc.	Peter	Steffensen, P.E.	Steffensen Engineering Assoc., Inc.
Robert S.	Hartford, P.E.	Kalwall Corporation	Jeffrey L.	Tirey, P.E.	Tirey & Associates, P.C.
Steven M.	Hodgdon, P.E.	Vanasse Hangen Brustlin, Inc.	Benjamin E.	Tirey, P.E.	Str. Eng Consultant
Sean	James, P.E.	Hoyle, Tanner & Assoc., Inc.	Jeffrey S.	Trexler, P.E.	Trexler Engineering
Steve W.	Johnson, P.E.	Vanasse Hangen Brustlin, Inc.	Edward	Weingartner, P.E.	McFarland-Johnson, Inc.
Roger	Keilig, P.E.	HTE Northeast, Inc.	Bryson T.	Welch, P.E.	CLD Consulting Engineers, Inc.
Thomas T.	Kendrick, P.E.	Parsons Transportation Group	Andrew D.	White	Tirey & Associates, P.C.

SENH May 18th Meeting Minutes

I. BUSINESS PORTION OF MEETING:

The meeting was called to order by President Steve W. Johnson, PE, at 7:15 pm, after the social time and dinner.

1. Elections: The board nominated Steve Johnson, Alex Azodi and Bob Busby to fill the three available positions on the board. No other nominations were submitted prior to the May meeting. All three were elected to two year terms on the SENH Board of Directors by a show of hands.
2. Treasurers Report: SENH account has balance of \$12,599. March meeting had profit of \$389. Those that have not paid their dues as of yet will get e-mail reminders along with renewal forms.
3. New Associate Members Approved: Richard Martin of W. R. Grace, Scott Harmon and Chad Michaud, PE of S. W. Cole Engineering, Inc.
4. Public Relations Committee. Steve requested interested individuals notify the board about serving on this committee that will initially set the course for future efforts intended to 'promote the image of structural engineering and SENH'. This committee would be asked to thoroughly scope out viable goals and task future sub-committees, such as PR (speakers bureau, school projects) and website (making it more public friendly) to achieve those goals.
5. Steve introduced Vicki Arbitrio, PE, NCSEA VP who visited SENH as part of an effort by the board of NCSEA to establish closer relationships with member organizations. She reported on news of the national association and plans to share issues that are of importance to our membership back to the NCSEA.
 - a. Vicki started by describing the SEA Advocacy Committee that has similar objective as the PR Committee just discussed by Steve. Through several sub-committees the Advocacy Committee is focusing on:
 - 1) Students & Teachers
 - 2) General Public & Media
 - 3) Clients & Prospects, and
 - 4) Regulators (code writers)
 - b. Vicki offered an overview of SEA. The organization started 10 years ago, currently with 38 state organizations, with the overall objective of promoting communications between the states.
 - c. SEA is working on promoting continuing education (recently creating the Diamond Review Program to certify education content of vendor presentations), advancing separate licensing, setting college education requirements, and influencing code updates.
 - d. SEA is asking members to assist in a peer review the National Institute of Standards and Technology (NIST) Draft Report on the collapse of the World Trade Center especially as it relates to recommendations for future code revisions. Please read the NCSEA *Structural Moments* April newsletter that was posted on the SENH website www.NCSEA.com for more information.
 - e. SEA works with CASE and ASCE/SEI to publish *Structure* magazine. SEA has recently revamped the website.
 - f. The future of the NCSEA Winter Institute is in question due to poor attendance. The NCSEA Annual Conference will be held in October in Kansas City.
 - g. NCSEA calls for entries for the 2005 NCSEA Excellence in Structural Engineering Awards Program. Awards will be presented at the Annual Conference in five project categories:
 - 1) New buildings under \$10M.
 - 2) New buildings from \$10M to \$30M.
 - 3) New buildings over \$30M.
 - 4) New bridge and transportation structures
 - 5) Other structural design projects
6. Steve noted that SENH will sponsor applications for NCSEA Award Program, so if any member's company has a submittal they wish to have considered for this program they should inform the SENH board.
7. Steve introduced the next speaker: Keith Donington, PE, of Parsons Brinkerhoff

SENH May 18th Meeting Minutes

II. TECHNICAL PRESENTATION

Keith Donington, PE, Senior Supervising Structural Engineer with joint venture Bechtel/Parsons Brinkerhoff, presented a summary of design and construction highlights of the "Leonard P. Zakim Bunker Hill Bridge, Boston, MA" that was completed in 2002 and opened to traffic in March 2003. Owner: Massachusetts Turnpike Authority (MTA), Sponsor: Federal Highway Administration (FHWA), Engineers: HNTB Corp. (tower and bridge main span) & Figg Bridge Engineers (back spans), Construction Contractors: joint venture Atkinson/Kiewit. As management consultant, Bechtel/Parsons Brinkerhoff, had responsibility for project design and construction management, conceptual/preliminary design, final design (design criteria/specifications), assisting the client consultant selection, construction management (planning/scheduling), construction engineering, and QA.

An extensive bridge type study examined the viability of 11 bridge types, once the original Scheme Z conceptual design with its many connecting loops was rejected. After assessing each option using a weighted bridge evaluation matrix, it was decided by the Bridge Design Review Committee to proceed with the first asymmetrical cable-stayed bridge in the US based on the design concept of Dr. Christian Menn.

At 183-ft.-wide it is currently the widest cable-stayed bridge in the world. The 745-ft main span is supported between 2 inverted Y-shaped hollow-core concrete towers (260 ft above the deck) located on opposite sides of the Charles River. There are 8 lanes of I-93 located between the tower legs/lines of cables (140 ft c. to c.) plus 2 lanes for local access on the cantilevered side of the bridge deck. The top 60 feet of the towers were added to make the towers appear in proportion with the rest of the structure – more visually appealing.

The superstructure was built using a hybrid alternative with composite steel for the main span and post-tensioned concrete back spans. The relatively short back spans were constructed of concrete to counter the uplift from traffic loads on the mainspan. The north back span was changed by the contractor (a value engineered alternative) to cast-in-place on falsework from the incrementally launched scheme provided on the contract plans. The main span cables are balanced by the back span cables. Visco elastic dampers (like shock absorbers) were installed at the base of all cables to dampen wind vibrations. The substructures were located to avoid obstructions in the waterway. The towers are founded on approximately 40 x 60 ft footings that are founded on 8 ft diameter drilled shafts. The north tower is located over an MBTA Orange Line tunnel.

Due to the susceptibility of cable vibration in wind, tests were done in a wind tunnel to assess the overall performance of the proposed cable stay bridge. Special features like an external spiral bead on the co-extruded high density polyethylene cable pipe spin rain water off were incorporated. A unique design feature of this very wide bridge is the deck openings located in the medians which allow sunlight through to the water and aquatic life below.

A value engineering proposal to use un-grouted stay cables using greased and sheathed Freyssinet monostrand proved to be very successful. Each strand is 0.6 inch diameter, comprised of 7 wires individually coated in grease and wrapped by a plastic sheath. The largest stay cable was made up of 73 – 0.6 inch diameter strands. Using the Freyssinet "iso-tension" method of stressing enabled the strand in each cable to be individually stressed by one man using a jack weighing only 40 pounds. This method also allows for easy inspection of individual cables at a later date. It is felt that this cabling system will out perform the more typical grouted cables, since grout is often damaged due to the flexibility of the cables and therefore does not actually provide the needed corrosion protection of the cables.

As one might expect in a project of this size, special issues arose during construction. Difficulties with a cofferdam at a tower foundation revealed an underground obstruction that resulted in a design change by HNTB. Specifically they changed from a 20 feet deep footing to 15 feet thick and provided additional rebar. Placement of the last deck segment proved to be a challenge, due to unexpectedly high temperatures that made the closure gap too small. Rebar congestion in Bent 1, caused by double layers of #11s that were lap spliced over 13 feet, was solved by staggering the splices and using coupler splices instead of lap splices.

2.0 PDHs for the technical presentation were earned by attendees.

Respectfully submitted, Linda K. McNair-Perry, P.E., Secretary, SENH

SEPTEMBER MEETING ANNOUNCEMENT

NEXT MEETING: Wednesday September 14, 2005

SUBJECT: **“Traditionally Connected Heavy Timber Connections - New and Old”**, Ben Brungraber, Ph.D., P.E., Bensonwood Homes, Walpole, NH.

PLACE: A Fireside Inn, 25 Airport Road, West Lebanon, NH.
603-298-5906

DIRECTIONS: I-89 to Exit 20, West Lebanon, turn south on Route 12A, take first left onto Airport Road.

AGENDA: 5:30 pm-6:30 pm Social Hour
6:30 pm-7:15 pm Dinner
7:15 pm-7:30 pm Business Meeting
7:30 pm-8:50 pm Presentation

DINNER: Salad, choice of entrée (Chicken Cordon Bleu or Roast Prime Rib), cheesecake.

COST: Member: \$38.00 Non-Member: \$43.00 Full Time Student: \$30.00

RSVP: by Thursday, September 8, 2005
Please indicate dinner preference with your reservation!

Please send check payable to “Structural Engineers of New Hampshire” with list of attendees to:

SENH
P.O. Box 226
Manchester, NH 03105-0226
Contact: Deb Coon, Administrative Assistant, (603) 669-5555

NOTE: 2.0 PDHs have been assigned for attendance to this program. Attendees are responsible for ensuring they check-in on the attendance list upon arrival at the meeting.

**STRUCTURAL ENGINEERS OF NEW HAMPSHIRE
SEMINAR ANNOUNCEMENT**

DATE: Wednesday October 12, 2005

SUBJECT: **Cold-Formed Steel Framing in Construction Today**

HOSTS: Structural Engineers of New Hampshire
The Steel Framing Alliance/LGSEA

SPONSORS: Aerosmith Fastening Systems, Inc.
Hexaport International, Ltd
Hilti Corporation
Marino/Ware
Premium Steel Buildings, Inc.
Sanford Contracting, Inc.
Steel Elements, Inc.
Super Stud Building Products, Inc.
The Steel Network, Inc.
(Additional industry sponsors still pending)

TOPICS: **“An Introduction to Cold-Formed Steel Framing (CFS) and the Code of Standard Practice”**
Maribeth Rizzuto, Steel Framing Alliance

“Connectors for CFS”
Michael Booth, The Steel Network, Inc.

“The Design of Floors with CFS”
Nader Elhajj, NAHB Research Center

“Steel Framing Panelization”
Danny Feazell, Premium Steel Buildings, Inc.

“CFS Structural Applications and Shear Walls”
Speaker to be announced

“CFS Trusses”
Mark D. Beroney, Hexaport International, Ltd.

PLACE: The Highlander Inn and Conference Center,
Manchester, New Hampshire (At the Airport). (603)-625-6426
Presentations (2)

DIRECTIONS: I-93 to I-293 in Manchester, to Exit 2, Brown Avenue. South on Brown Avenue;
follow signs to Airport. Turn right onto Highlander Way off the Airport Access
road.

AGENDA: 8:00-8:30 AM Registration, Continental Breakfast
8:30-10:30 Technical Presentations (2)
10:30-11:00 Visit tabletop displays/break
11:00-12:00 Technical Presentations (1)
12:00-1:00 PM Lunch
1:00-3:00 Technical Presentations (2)
3:00-3:30 Visit tabletop displays, break
3:30-4:30 Technical Presentation (1)
4:30-4:45 Q&A – Additional Resources
4:45-5:30 Visit vendor displays

**STRUCTURAL ENGINEERS OF NEW HAMPSHIRE
SEMINAR ANNOUNCEMENT
(continued)**

COST: Members of SENH, SFA/LGSEA and AIA: \$100.00
 Non-members: \$150.00

Registration fee includes Continental Breakfast, Lunch and Afternoon Break

REGISTRATION: by Wednesday, October 5, 2005

Please send check payable to "Structural Engineers of New Hampshire" with application below to:

SENH
P.O. Box 226
Manchester, NH 03105-0226

Contact: Deb Coon, Administrative Assistant, (603) 669-5555

PLEASE NOTE: Space is limited, and Registration will be limited to 55 people on a first-come, first-served basis.

CONTINUING
EDUCATION:

6.0 PDHs have been assigned for attendance to this program. Attendees are responsible for ensuring they check-in on the attendance list upon arrival at the meeting.

MISC:

The Steel Framing Alliance will have the latest AISI Code, ANSI approved Standards and other publications available for purchase at a discount at this event.

REGISTRATION FORM**SENH and SFA Cold-Formed Steel Framing Seminar**

October 12, 2005

The Highlander Inn and Conference Center, Manchester, NH

Name:	Mailing Address:
Phone:	E-mail:
Firm:	Member of: SENH SFA LGSEA AIA (circle one if applicable)
Non-member registration fee: \$150.00	Members of above organization(s): \$100.00

Mail registration form and check to:
SENH, P.O. Box 226, Manchester, NH 03105-0226



**STRUCTURAL ENGINEERS
OF NEW HAMPSHIRE**

P.O. Box 226
Manchester, NH 03105-0226

WE'RE ON THE WEB!
WWW.SENH.ORG

