



SEAC

GENERAL NOTES

Structural Engineers Association of Colorado Newsletter

MARCH GENERAL MEETING

BIM FOR SMALL FIRMS

Schedule

**Mark Your
Calendar
(2011)**

General Membership Meetings

(Breakfast 7:30 a.m.)

January 20

March 17

May 19

July 21

September 15

Business Management Committee Meetings

(Breakfast 7:30 a.m.)

February 10

April 14

June 9

August 11

October 13

SEAC Board of Directors Meetings

(7:30 a.m.)

January 6

February 3

April 7

June 2

August 4

October 6

Fall Seminar

October 20

Annual Dinner Banquet

November 17

6 - 9 p.m.

Please join us for a discussion on Building Information Modeling (BIM) and its potential impact on the small structural design firm.

During the past few years the landscape of our industry has changed significantly as globalization and the lackluster economy take hold. However, while some organizations struggle, others are not only surviving, they're thriving by leveraging the latest in Building Information Modeling technology.

Sustainable design in architecture and manufacturing is now a project criterion on par with budget and schedule. We're seeing exponential growth in the adoption of technology not only in our design and construction processes, but also among the general population. Technology adoption and return on investment is at an all time high. But where does a small firm start?

The global movement toward technology is unavoidable, however, the initial adoption poses a unique challenge to small structural engineering firms. With limited staff and resources, tighter budgets, and increased competition – how does the small firm get started?

During our discussion, we will look at a path to adopting BIM, and how to make better design decisions while streamlining work flows from concept to construction documents. Come find out how BIM helps small firms do more with their limited resources, win more work in this competitive market, and increase client satisfaction through better design and coordination.



Brian is a Technical Specialist with Autodesk focused on Autodesk's solutions for structural engineers. He is a licensed structural engineer with over 10 years of building design and consulting experience. During his time in the industry he worked as a Project Engineer, Project Manager, and Principal on a variety of structures including, commercial and office buildings, parking garages, single-family residences, and mixed-use facilities. He earned a B.S. in Civil Engineering from the University of Texas at Austin.

Don't Miss Out - March 17, General Meeting

Date: Thurs. March 17, 2011

Speaker(s): Brian E. Johnson, P.E.

**Location: Renaissance Denver Hotel
3801 Quebec Street**

(South of the I-70 Quebec Intersection)

Please email your reservation to
Caryn at: seac@martinmartin.com.
**Reservations MUST be made By
Monday, March 14, 2011.**

Officers & Board Members



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303-499-3022
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Association of Colorado
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WWW.SEAColorado.org

Information for inclusion in the newsletter must be received one month prior to the next general meeting.

Caryn L. Farrell
SEAC Executive Assistant
seac@martinmartin.com

PRESIDENT'S MESSAGE

-Which Is More Important- The Employee Or The Client?

As many members of SEAC can attest to over the last several years, our offices have shrunk to the point that our capacity to do excellent work has been affected. As Professional Engineers, we all know the importance of quality services no matter the economic circumstances, and have had to re-double our efforts in an effort to do more with less. I have had the privilege to work for, and hire, excellent engineers of all ages and would contend that without a team of qualified engineers, our clients would not consider engaging our services.

In the business of Structural Engineering we must adjust our business plans and capacities as the market demands. This has required tough decisions with people we work with and with people that feel like family. Having just had a former employee hire my firm through his new company, I can see the benefits of placing your business priorities with Employees at the top of the list.

I wish the general membership good luck in these economic times and recommend that your team members be put on the same or similar pedestal that our clients regularly perch upon.

I hope to see you all at the March General Meeting. Brian Johnson will be speaking on BIM For Small Firms. Don't miss out on this meeting.

Our May meeting will be a joint venture with CAGE. The discussion topic will be a Panel Discussion on Soils and Structural Engineering Interaction in Design

and Specification. We expect very large attendance at this meeting.

The SEAC website is currently in the process of being enhanced to allow members to pay dues on-line and update your contact information. These upgrades should be completed in early April. Watch for emails to update you on the progress of our website.

Last, I would like to thank everyone who has paid their membership dues for 2011. Your continued support of SEAC is greatly appreciated. SEAC is an excellent organization that provides many opportunities to get involved.

As always, please do not hesitate to contact one of your Board Members with any questions or comments.

Welcome

Please welcome our newest member to SEAC:

Robert Hessek
(Professional Member)
Fay Engineering Corporation

GENERAL NOTES - SPONSORS

MARCH SPONSOR:

CAD-1

THANK YOU



CAD-1, Inc. is an Autodesk Gold Partner specializing in delivering complete solutions that implement Autodesk technology for maximum competitive advantage. The CAD-1 award-winning staff is skilled at providing a variety of services, including up-front consulting to determine which software best suits your needs; assisting with the installation and setup of the software; customization to ensure the software works your way; training your staff to use it efficiently; and supporting them with expert mentoring and technical assistance.

CAD-1, Inc. believes in the importance of driving sustainable design awareness and adoption. We provide technology, education, and support for initiatives that inform and promote innovations which address current and future sustainable design challenges. We are pleased to collaborate with the architects, engineers, and designers who are creating a cleaner and healthier environment through smart design.

CAD-1, Inc. is an award-winning Autodesk Training Center providing high quality, expert training onsite or at our training center. CAD-1 instructors are ranked in the top ten by Autodesk for instructors in North and South America. Our courses include AutoCAD, AutoCAD Civil 3D, AutoCAD Map 3D, Survey, Revit, AutoCAD Architecture, NavisWorks, and 3ds max.

JANUARY SPONSOR:

LNA SOLUTIONS

THANK YOU



3924A Varsity Drive, Ann Arbor, Michigan 48108, 888-724-2323 fax; 734-677-2339 www.LNASolutions.com

Pre-Engineered Mechanical Steel Connections offer Advantages for the Addition of Structural Steel Members in Existing Buildings

LNA Solutions offers pre-engineered structural steel clamping systems for the connection of secondary steel to primary steel without the need for site drilling or welding. The use of the girder clamping systems is advantageous in that there is:

- No weakening of the primary steel.
- Ease of field adjustments.
- No damage to protective coatings.
- No "hot work" permits are required.
- Reduction in design time.
- Reduces installation time and labor costs.
- No special tools or skilled labor required.

The **LNA Solutions** presentation will include;

- Products and applications.
- Technical considerations for clamping systems.
- Design and selection of clamps.
- Design tools and software.
- Project history.
- Q & A session.

Speaker: Frank Buck is the President of **LNA Solutions**, Ann Arbor, Michigan. He has successfully completed and has been awarded degrees in the following programs of study; AE, BSBA and MBA.

GENERAL NOTES - *Keep them CLASSIFIED!*

Structural Engineers Association of Colorado Classified Section & Other General Announcements



Rocky Mountain Prestress has an opening for a Precast Preconstruction Services Professional.

Responsibilities:

- Promote precast systems; develop projects with local construction industry.
- Create and maintain contacts with local industry partners.
- Communicate precast pricing and budgets.
- Negotiate project performance contracts.
- Work within a sales team to develop local markets.
- Communicate project scope requirements.

Requires: B.S. in Architecture, Engineering, or Construction Management and 10+ Years in the commercial construction industry.

To apply, email resume and cover letter to

maynards@rmpprestress.com

For more information about our company, visit our website

www.rmpprestress.com

Rocky Mountain Prestress is an
Equal Opportunity Employer.

Classified Ad Policy

To place an ad in the SEAC Newsletter and website please contact

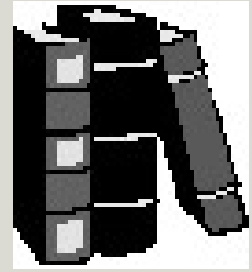
Caryn Farrell at:

seac@martinmartin.com

Classified ads need to be kept to 100 words (maximum), and a logo may be submitted in .JPG format.

Your classified ad will be displayed in the next available newsletter and will remain on the SEAC website for two (2) months.

The cost to place an ad is
\$100.00.



PUBLICATIONS FOR SALE

**2007 COLORADO GROUND SNOW LOAD
REPORT & MAP**

Price:

\$75 (Members)

\$100 (Non-Members)

**A GUIDE FOR CONSULTING
STRUCTURAL ENGINEERING SERVICES:
A RECOMMENDED STANDARD OF
PRACTICE**

Price:

\$25 (Members)

\$50 (Non-Members)

**2006 SURVEY OF COLORADO BUILD-
ING DEPARTMENTS**

Price:

BOOK: \$50

CD: \$100

Please see the SEAC website to
order a publication or Contact
Caryn Farrell at:
seac@martinmartin.com for
order forms.



SEAC 2011 Proposed Budget and Year over Year Comparison

	2011 Budget	2010 Actual	2010 Budget	2009 Actual	2009 Budget	2008 Actual
Income						
Advertising	0.00			0.00	400.00	600.00
Dues - Membership Dues						
Affiliate Members	5,300.00	4,260.00	2,500.00	2,670.00	2,640.00	
Business Mgmt.	720.00	760.00	1,000.00	1,080.00	1,000.00	
Professional Members	27,160.00	24,560.00	25,000.00	26,880.00	24,720.00	
Student Members	240.00	225.00	500.00	30.00	0.00	
Total Dues - Membership Dues	33,420.00	29,805.00	29,000.00	30,660.00	28,360.00	29,950.00
Fall Seminar	7,500.00	7,550.00	5,000.00	4,710.00	8,000.00	12,850.00
Fall Seminar Sponsor	3,000.00	3,000.00	3,000.00	3,500.00	3,000.00	1,500.00
Fees - Annual Meeting	2,000.00	1,500.00	2,200.00	2,250.00	2,800.00	2,925.00
Fees - Breakfast Guests	500.00	580.00	250.00	0.00	0.00	0.00
Interest Income	50.00	58.22	350.00	491.90	650.00	714.98
Miscellaneous Income	0.00	85.00	0.00	0.00	0.00	0.30
Sales - Breakfast Sponsors	5,000.00	4,420.00	5,000.00	4,000.00	5,000.00	6,000.00
Sales - Building Dept Survey	100.00	215.00	200.00	270.00	400.00	1,631.00
Sales - Snow Load Report	500.00	673.00	500.00	1,477.00	1,000.00	9,762.00
Sales - Std. of Practice	150.00	245.00	150.00	360.00	150.00	315.00
Total Income	52,220.00	48,131.22	45,650.00	47,718.90	49,760.00	66,248.28
Expense						
Accountant	1,170.00	1,170.00	900.00	900.00	900.00	1,593.99
Awards	650.00	462.76	650.00	459.09	650.00	756.25
Bank Charges	0.00	0.00	0.00	24.00		12.00
Committee Expenses	500.00	408.75	500.00	231.98	250.00	0.00
Contract Labor	9,900.00	9,000.00	9,000.00	9,000.00	9,900.00	9,000.00
Conventions	3,200.00	3,652.33	3,100.00	2,638.96	3,000.00	2,615.74
Meetings - Annual Dinner	4,000.00	3,406.36	4,000.00	3,863.41	6,000.00	7,648.81
Meetings - Business Practice	1,300.00	1,570.83	1,300.00	1,241.49	1,300.00	1,120.88
Meetings - Fall Conference	5,000.00	1,574.00	5,000.00	4,063.11		11,463.29
Meetings - General Membership	16,000.00	15,547.30	16,050.00	11,277.39	8,000.00	10,605.18
Messenger Services	50.00	12.32	250.00	236.09		0.00
Miscellaneous	600.00	354.95	600.00	360.00	600.00	360.00
NCSEA Committees	600.00	0.00	500.00	0.00	1,000.00	581.51
NCSEA Dues	4,500.00	4,240.00	4,500.00	4,480.00	5,000.00	5,024.00
Office Supplies	200.00	189.39	150.00	137.13	500.00	94.67
Postage	100.00	57.38	400.00	261.53	800.00	907.09
Print/Postage New Mmbr. Binders	300.00	0.00	225.00	0.00	225.00	136.10
Printing - Snowload				0.00	0.00	4,587.40
Qualifications Based Selection				0.00	0.00	1,200.00
Seminar				0.00	8,000.00	
Subscription Service						225.00
Survey - Business Practice	900.00	900.00	900.00	2,000.00		840.80
Web Site	3,000.00	1,892.00	2,250.00	2,481.50	4,500.00	344.00
Total Expense	51,970.00	44,438.37	50,275.00	43,655.68	50,625.00	59,116.71
Net Income	250.00	3,692.85	-4,625.00	4,063.22	-865.00	7,131.57



NATIONAL COUNCIL OF STRUCTURAL ENGINEERS ASSOCIATIONS

Letter to SEA's
JANUARY/FEBRUARY, 2011

Dear Delegates of our NCSEA Member Organizations:

Happy 2011! I hope that you and your family had a wonderful holiday season and your firms are off to a good start for the New Year. My name is Jim Malley, and I have the honor of being NCSEA President for 2010-2011. NCSEA is planning to communicate with our Delegates and Member Organizations more frequently this year, including letters such as these, and at least two web-based meetings that hopefully will be attended by Delegates and/or leaders of all NCSEA Member Organizations.

One of the challenges that NCSEA continually faces is ensuring that our individual members are aware of all the good work that is being done on their behalf, and to assist the work of their statewide and local Member Organizations. Being the "National" organization naturally results in making it difficult to communicate in a way that each individual engineer has an accurate understanding of the ongoing activities. Listed below is a partial list of NCSEA activities, with the volunteer committee primarily responsible noted in parentheses.

- Provide practicing engineers access to the development and revision process for codes and standards (Code Advisory)
- Advocate positive changes in the building code development process (Code Advisory)
- Enhance the image of structural engineers in the eyes of the general public (Advocacy)
- Educate the media to encourage them to seek structural engineers for commentary on issues that pertain to structural engineering (Advocacy)
- Convey accurate information to the general public relative to structural-engineering-related events (Advocacy)
- Educate other design professionals and potential clients about the role, value and importance of structural engineers (Advocacy)
- Educate elected officials about the importance of structural engineers in order to gain their support for SE licensing legislation, Good Samaritan Acts, mandatory peer review, and QBS (Advocacy)
- Encourage students to pursue careers in structural engineering (Advocacy)
- Develop publications to assist engineers with difficult and poorly understood areas of practice (Publications)
- Advocate for structural engineering degree programs (Basic Education)
- Enhance communication thru NCSEA website improvements, the Member Organization Delegate Handbook, and monthly e-newsletters sent to all MO members (NCSEA Office)
- Provide meaningful, practical and convenient continuing education opportunities at reasonable prices, such as Webinars, annual Winter Institute and Conference (Continuing Education)

- Provide national support for pursuing separate structural licensing on a state-by-state basis (Licensing)
- Pursue improvement in the level of competence and standard of practice of the structural engineering profession throughout the U.S. (Licensing)
- Work toward establishing a national Structural Engineering Emergency Response (SEER) network to link state SEER groups, as well as help promote in-state Good Samaritan laws (SEER)
- Provide reasonably-priced ATC-20 and ATC-45 training for MO's (Continuing Education)
- Continuously update the NCSEA SEER Manual (SEER)
- Encourage communication and interaction between member organizations, their committees, and NCSEA committees (NCSEA Office)
- Revitalize existing, and create new, state SEAs (Membership Development)
- Publish STRUCTURE, the leading monthly publication for, by, and about structural engineers and their practice (Publications – Editorial Board, NCSEA Office)

A few of these items are noted as being a responsibility of the NCSEA Office. In addition to these items, our office staff supports and spurs our committees to complete all of their tasks and goals. Led by Executive Director Jeanne Vogelzang, they are critically vital to our success, working collaboratively alongside the volunteer efforts of our members.

In addition to these ongoing activities, recent NCSEA accomplishments include:

- Successful participation of the Code Advisory Committee (CAC) in representing practicing SE's on numerous proposed changes to the 2009 IBC. Positions taken by the CAC were upheld on issues related to simplified wind provisions, seismic retrofit of existing buildings, numerous seismic design issues, quality assurance/quality control, and design related to progressive collapse.
- Survey of educational institutions for structural-engineering-related courses offered and publication of the results in the May 2010 issue of STRUCTURE magazine, in the interest of improving the technical and practical quality of education for structural engineering students.
- Publication of two NCSEA books and short courses offered throughout the U.S. (*Guide to the Design of Diaphragms, Chords and Collectors Based on the 2006 IBC and ASCE/SEI 7-05* and *Guide to the Design of Out-of-Plane Wall Anchorage Based on the 2006/2009 IBC and ASCE/SEI 7-05*).
- Formation of five new member organizations, in Alaska, Mississippi, North Carolina, Pennsylvania, and Wisconsin.
- New SE Practice acts in Utah and Washington. Active support of MO's pursuing new SE Acts in Florida, Texas, Nebraska, Ohio, Alaska and Georgia.
- Signing of an agreement with the International Code Council (ICC) Evaluation Service to assist ICC with the technical review and acceptance of structural products.
- Establishment of a successful ongoing series of webinars for members, that focuses specifically on the educational needs of practicing structural engineers.
- Development of a review/refresher course specifically designed for the new NCEES Structural Engineering examination, given for the first time this January and February, prior to the first time the new SE test is being given.

- Monthly e-newsletters to update the membership on activities and issues of interest.

In addition to our ongoing activities, I am greatly looking forward to working with the Board, our NCSEA staff, NCSEA Committees, and our Member Organizations over the next year to carry out the Vision and Mission of NCSEA that we reconfirmed last year:

Vision: NCSEA and its Member Organizations constitute the premier professional society for practicing structural engineers in the United States of America.

Mission: NCSEA serves to advance the practice of structural engineering and, as the autonomous national voice for practicing structural engineers, protect the public's right to safe, sustainable and cost effective buildings, bridges and other structures.

One of the Board's first actions this year was to finalize and approve NCSEA's Strategic Plan. As the President in the first year of the five year Strategic Plan, my goal is to ensure that we get off to a good start toward achieving the six main goals outlined in the plan. They are simply stated as:

External Goals

1. Promote the Profession
2. Represent the Profession
3. Improve the Profession

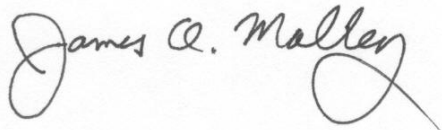
Internal Goals

1. Encourage and Support the Member Organizations
2. Energize Committee Activity
3. Ensure Financial Security

The Strategic Plan has a great deal of detail as to how we plan to achieve these goals. While I am certain that we will make good strides forward on all six goals this year, I plan to place emphasis on areas where NCSEA can continue to expand our service to our Member Organizations and their individual members. I pledge that we will strive to serve the varied needs of all our Member Organizations to the maximum extent possible during the coming year.

As with any volunteer-based organization, there are numerous activities and functions where Delegates, Member Organization leaders, and individual members can become involved and make significant contributions to the future success of NCSEA and our profession. We urge each of you to consider joining us in NCSEA's effort to serve our profession and help protect the public safety. If you have questions about NCSEA's activities, program, or how they relate to those of your Member Organization, please feel free to contact me, or NCSEA Executive Director Jeanne Vogelzang, via the NCSEA website at www.ncsea.com. If you do decide to actively participate, I believe that you will find it to be a stimulating and rewarding experience.

Thank you for all that you do, and will do, to promote, represent and improve our profession.



James O. Malley
NCSEA President, 2010-2011



2011

NCSEA Membership

Partnering Organizations

SEI
Reston, VA

CASE
Washington, DC

Associate Members

AISC
Chicago, IL

American Forest & Paper Association
Washington, DC

Bentley Systems, Inc.
Carlsbad, CA

Institute for Business & Home Safety
Tampa, FL

International Code Council
Birmingham, AL

ITW Red Head
Addison, IL

Metal Building Manufacturers Association
Cleveland, OH

Metal Dek Group, a Unit of CSI
Columbia, SC

Schuff Steel Company
Phoenix, AZ

USP Structural Connectors
Burnsville, MN

Affiliate Members

CETCO Building Materials Group
Hoffman Estates, IL

Cold-Formed Steel Engineers Institute
Washington, DC

Construction Tie Products (changed from Associate to Affiliate this year)
Michigan City, IN

CSC Inc.
Chicago, IL

DECON USA, Inc.
Beaufort, SC

Dwyer Companies
West Chester, OH

Fibrwrap Construction, Inc.
Lombard, IL

Hardy Frames, Inc.
Ventura, CA

Helical Anchors, Inc.
Minneapolis, MN

Hilti, Inc.
Tulsa, OK

Powers Fasteners
Brewster, NY

RISA Technologies
Foothill Ranch, CA

SE Solutions, LLC
Holland, MI

SidePlate Systems, Inc.
Laguna Hills, CA

Steel Joist Institute
Myrtle Beach, SC

Sustaining Members

Barrish, Pelham & Associates, Inc.
Sacramento, CA

Barter & Associates, Inc.
Mobile, AL

Burns & McDonnell
Kansas City, MO

Cartwright Engineers
Logan, UT

CBI Consulting, Inc.
South Boston, MA

Construction Technology Laboratories
Skokie, IL

Cowen Associates Consulting Structural Engineers
Natick, MA

Criser Troutman Tanner Consulting Engineers
Wilmington, NC

Degenkolb Engineers
San Francisco, CA

DiBlasi Associates, P.C.
Monroe, CT

Dominick R. Pilla Associates
Nyack, NY

Dunbar, Milby, Williams, Pittman & Vaughan
Richmond, VA

Engineering Solutions, LLC
Oklahoma City, OK

Gilsanz Murray Steficek, LLP
New York, NY

LBYP, Inc.
Birmingham, AL

Ruby & Associates, Inc.
Farmington Hills, MI

Simpson, Gumpertz & Heger, Inc.
San Francisco, CA

Structural Engineers Group, Inc.
Jacksonville, FL

TGRWA, LLC
Chicago, IL

The Harman Group, Inc.
King of Prussia, PA

Thornton Tomasetti
Chicago, IL

United Structural Systems Ltd., Inc.
Lancaster, PA

2011 Winter Institute Deferred Submittals: What the EOR needs to know and show From Design to Construction



February 25 & 26, 2011

The complexity of deferred submittals is not often appreciated by the Structural Engineer, nor fully comprehended by the contractor, both of whom will subsequently be impacted by the results of inappropriate integration of the deferred submittal with the original drawings. The challenges may be further exacerbated by the interpretation of building departments and the lack of concise definitions and controls. Do SE's get themselves into trouble, more often than not, by improperly dealing with deferred submittals? Don't miss this opportunity to find out and discuss these problems with your peers! Only \$595 for 2 days, or \$350 for 1 day. Earn up to 15.5 professional development hours.

Included in the program Friday are tours of the Canam Steel Joist Facility and Gate Concrete Products.

Location:

Omni Amelia Island Plantation
Amelia Island, Florida 32035

Mention NCSEA Winter Institute for a special room rate of \$149 until February 9.

Room rate includes free hourly transportation to/from JAX Airport (Jacksonville, FL). Call 904-277-5920 at least 3 days before your arrive with your flight information to secure a ride.

Reservations:

1-888-261-6165 Group number: 022011NCSEAWINT

Register at www.ncsea.com

Upcoming NCSEA Webinars:

- February 10, 2011:** Detailing of Unbonded Post-Tensioned Structures to Minimize the Effects of Restraint to Shortening – *Bryan Allred*
- March 1, 2011:** Building Information Modeling in Structural Engineering Practice Today – *David J. Odeh*
- March 10, 2011:** Post-Tensioned Slabs on Ground Design – *Bryan Allred*
- April 19, 2011:** Code Issues in Existing Buildings: Archaic and Obsolete Structures – *Donald Friedman*
- May 17, 2011:** AISC T.R. Higgins Lecture—The AISC Seismic Design Provisions: Past, Present and Future – *James O. Malley*

NCSEA/Kaplan Structural Engineering Exam Review Course

Obtain two weekends (12 hours each) of targeted review, sitting in front of your computer, with 24/7 playback. Review anytime. Instructors are knowledgeable, hand-picked and recommended by your peers:

January 29-30: Vertical Forces Review.

February 12-13: Lateral Forces Review.

Visit www.ncsea.com and follow the "Hot Topics" link for the NCSEA/Kaplan SE Exam Review Course, to register and for more information on the course and the instructors.

2011 NCSEA Excellence in Structural Engineering Awards

CALL FOR ENTRIES

The National Council of Structural Engineers Associations (NCSEA) announces the Call for Entries for the 2011 NCSEA Excellence in Structural Engineering Awards Program. Projects must have been completed between January 1, 2008 and December 31, 2010, or must be sufficiently complete such that they clearly show the basic design of the structural system. Projects may be located anywhere in the world. Multiple entries from the same firm will be accepted. All entries must be received at the NCSEA office by 4:00 p.m. CDT on Friday, July 22, 2011. Visit www.ncsea.com for more details.





Structural Licensing:

The Current State of US Practice

By Susan M. Frey, P.E., S.E., LEED® AP

Most engineers and clients realize that each and every state and protectorate of the United States has a specific licensing requirement for each category of engineer: mechanical, electrical, civil, and so forth. While mechanical and electrical engineers perform similar services regardless of the type of project, civil engineering houses many diverse types of practice. These civil engineering specialists include professionals who design intersections, parking lots, and roadways (general civil engineers); those who provide the design criteria for earth structures, such as dams and dykes, and foundations for vertical structures (geotechnical engineers); those who clean up the environment (environmental and hydraulic engineers); those who furnish traffic controls and design roadway intersections (traffic engineers); and of course, those who design buildings, tanks, and bridges (structural engineers).

To be able to practice in any given jurisdiction, an engineer typically must have taken and passed an exam, which may be a national exam, a state exam, or a combination of both. Each jurisdiction dictates the qualifications for an engineer practicing within his/her area of responsibility. When engineers desire to practice in any additional jurisdiction, they may apply for reciprocity (or comity) to have the other state or territory accept their current qualifications, or they may have to undergo additional testing. Of all these disciplines, the one that is most directly related to the life safety of the general public is structural engineering.

In many states, an engineer who has a civil engineering license may design any structure, even though the licensing exam may not have included any questions on detailed code requirements for buildings' or bridges' wind or seismic design. The civil engineering PE exam is very generic in nature. Many states have recognized the distinction between general civil and structural engineering and have enacted either structural engineering title restrictions or practice restrictions, to ensure that the designs of public and private facilities are performed by those who understand life-safety codes to a higher level of competency. The structural engineer must be knowledgeable in multiple materials and their corresponding standards (concrete, wood, aluminum, steel, masonry), as well as the forces that these materials must be able to withstand (gravity, wind, vibration, seismic, hydraulic, snow, earth pressure, ice, flood).

Structural Engineering Exams Past, Present, and Future

The content and type of structural engineering (SE) exams have varied over the years. The first state legislated structural engineering licensure as a separate area of practice was Illinois in 1919. Many of the original western state exams began with the 16 hour Western States Structural Engineering Exam. Originating in California many decades ago, followed immediately by Oregon and Washington, nearly a dozen western states authored and graded a 16-hour SE exam. This test was given for many years and is still accepted as a basis of reciprocity in almost all states.

More recently and valid through 2010, the National Council of Examiners in Engineering and Surveying (NCEES), the national

licensing exam organization for all engineering disciplines, had offered two companion SE exams, SE I and SE II, each 8 hours in length. Some states had adopted the SE I exam, which is the more basic exam and is similar to the national civil engineering exam, to be an equivalent 8-hour civil engineering test. Oregon, Washington, and California (either in the past or moving forward for reciprocity in 2011) use the SE II paired with an additional state 8-hour SE III exam which will be given for the final time in the fall of 2011. The SE III has two annual versions through October of 2011. The first is written by Washington and graded by Oregon and Washington and is used in those two states, as well as in British Columbia. Similarly, California continues to write an annual SE III exam which is utilized only in California. The three states accept either version of the SE III for reciprocity of licensure.

Refer to the April 2010 STRUCTURE® magazine article "The New Structural Exam, NCEES Raises the Bar" by Peter Vaccaro, P.E. for information on the 2011, new 16 hour SE exam to replace the current SE I and II (and in 2012, the SE III) test formats. Although this exam will improve consistency among those jurisdictions that currently have SE licensure, it still is not a universal requirement for licensure for all those engineers who are designing bridges and buildings, as many do so under a civil PE license.

Alaska requires civil engineers designing structures to pass an additional 4-hour exam on cold regions design requirements, in addition to passing the 8-hour Civil PE exam. A few states also require a civil PE license prior to an SE license. Others require an ethics exam, or a local legal knowledge test, in addition to any type of professional engineering testing, including structural exams.

Part two of this discussion will delve into the various jurisdiction-based title and practice restrictions for structural engineers, how they vary between states and territories, and how the differences impact comity and reciprocity.



Susan M. Frey is a principal structural engineer serving as a designer, design manager, structural technical quality assurance reviewer, and multi-discipline team quality assurance manager on various types of projects during her 33 years with CH2M HILL. She is active in various code and standard committees including masonry and prestressed concrete tanks. She teaches a masonry and building forces class annually at Oregon State University.

On January 19, 2011, Susan Frey presented an NCSEA webinar titled Structural Engineering Forum: Exam, Exam Review, Licensing & Reciprocity. If you missed it and would be interested in obtaining a DVD of the recorded webinar, it can be purchased for \$35, including shipping and handling, by calling the NCSEA office at 312-649-4600 ext. 200.

March 1 Building Information Modeling in Structural Engineering Practice Today

This seminar will focus on practical issues of using Building Information Modeling (BIM) in a structural engineering office. Using real project examples, Mr. Odeh will discuss key issues including: how BIM changes the traditional structural design workflow; how teams can be organized effectively to manage the BIM; data exchange between BIM and analysis programs; appropriate levels of detail to be included in a model; and quality control/quality assurance.

David Odeh

David Odeh is a Principal at Odeh Engineers, Inc., a leading structural design and consulting firm in the New England region. He has over 15 years of experience in professional practice, including the design of high rise structures, academic and institutional buildings, forensic engineering and structural investigation, and the adaptive reuse and preservation of historic buildings. Since 2001, David has been on the adjunct faculty of the School of Engineering at Brown University in Providence. He also teaches at the Rhode Island School of Design and serves on the Board of Overseers of the Boston Architectural College.

David is an active member of ASCE's Structural Engineering Institute, and currently serves as co-chairman of the national committee on Building Information Modeling, and as a member of the Business and Professional Activities Division Executive Committee. He also serves on the Existing Building Code Subcommittee of the National Council of Structural Engineers Associations.



March 10 Post-Tensioned Slabs on Ground Design

Post-tensioned slabs on ground are primarily used to resist the effects of expansive and compressible soils on residential foundations. These foundations have typically been used to support up to 4 levels of wood frame construction, but are also being used in industrial (tilt up and steel frame) and commercial structures. Since these foundations are considered slabs on grade, the requirements of the ACI 318 code do not apply to their design. A design methodology has been created and modified over the years by the Post-Tensioning Institute (PTI) and will be discussed. In addition the seminar will cover typical construction practices, design and use of rebar in post-tensioned slabs and drawing preparation.

Bryan Allred

Bryan Allred is a licensed Structural Engineer and Vice President of Seneca Structural Engineering Inc. in Laguna Hills California. He specializes in the design of reinforced concrete buildings using post-tensioned floor systems, post-tensioned slab on ground foundations for residential and commercial projects and using external post-tensioning to retrofit existing wood, steel and concrete structures. He has created and presented numerous instructional seminars for the Post-Tensioning Institute (PTI) across the United States and has published several articles relating to construction and engineering aspects of post-tensioned concrete. Bryan is a member of the Building Design, Slab on Ground and Education Committees of PTI.



The cost is \$250 per internet connection. Several people may attend for one connection fee. This course will award 1.5 hours of continuing education, with a \$5 fee for each continuing education certificate requested. The times will be 10:00 am Pacific, 11:00 am Mountain, 12:00 pm Central, and 1:00 pm Eastern. [Register at www.ncsea.com](http://www.ncsea.com). **Approved in all 50 states.**

Call for Entries

NCSEA 2011 Excellence in Structural Engineering Awards Program

NCSEA announces the 14th annual Excellence in Structural Engineering Awards Program. Up to three Excellence in Structural Engineering Awards will be presented in each of the following eight categories: New Buildings under \$10M, New Buildings \$10M to \$30, New Buildings \$30M to \$100M, New Buildings over \$100M, International Structures over \$100M, New Bridge and Transportation Structures, Forensic/Renovation/Retrofit/Rehabilitation Structures, and Other Structural Design Projects. In each category, one of the three projects will be chosen as an Outstanding Project.

Entries are due July 22, and awards will be presented at the NCSEA Annual Conference Awards Banquet at the Renaissance Hotel in Oklahoma City on October 22, at the conclusion of the NCSEA Annual Conference. Winning projects will be featured in future issues of STRUCTURE magazine. For awards program rules and eligibility, as well as entry forms, see the Call for Entries on the NCSEA website:

www.ncsea.com

