

Structural Connection

E-Newsletter

December 2011
December 2010

Please forward this Newsletter to interested engineers.

Quiz Winners

Congratulations to the winners of the last *Structural Connection* quiz.

Alicia Diaz de Leon and **Greg Bundy** both received a \$50 gift certificate for NCSEA continuing education.

Learn what you need to know about Deferred Submittals February 25-26, 2011

Deferred Submittals: What the EOR Needs to Know and Show from Design to Construction.

Don't miss this two day seminar featuring current state of the practice regarding specialty engineered systems.

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

Full schedule and speaker list available online soon!

The Amelia Island Plantation

has a \$149 room rate only until February 9.

To secure a room use group code 022011NCSEAWINT

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Structural Licensing: The Current State of US Practice Part 2 of 2

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Principal Structural Engineer, Project Design Manager, Project Quality Manager at CH2M HILL and NCSEA Licensing Committee Member

Structural Engineering Practice Restriction versus Title Restriction

One must be aware of the difference in the two types of state-adopted legislation or regulation in order to understand the following state by state discussion. (US territories are also included.)

1. Under a structural engineering practice restriction, one must possess a valid structural engineering license in order to provide the state-defined structural engineering services. The scope of such a limitation can vary from certain types of structures (hazardous, high occupancy, fire suppression, etc) to any and all structures within the state that require design by a professional engineer.

2). Under a structural engineering title restriction, an engineer must pass the state-designated structural engineering exam in order to be titled as having an SE license, but this designation is not required to design any given type of structure; anyone with a PE license may do so, usually those who have passed the civil PE exam.

Both types of licensees may place "SE" after their name for practice in that jurisdiction. Only seven states currently have structural engineering practice restrictions (two full and the others partial), and only three states have structural engineering title restrictions while three states and two territories have SE discipline or branch recognition.

Practice Restrictions

The most straightforward requirements for structural engineers are in states that have adopted a full SE practice restriction. To design *any* type of structure that requires design by a professional engineer, the person must be licensed as a structural engineer by either having passed the previous Western States Exam, the current NCEES SE I and II exams, and/or the SE II in conjunction with the SE III exam provided in Oregon, Washington, and California. (Hawaii accepts all options. Illinois will only accept the first two options. Therefore, an SE currently licensed in Oregon, Washington or California who did not attain their license through the original Western States exam, must still take the 8-hour SE I exam to become licensed in Illinois.) A few other states have adopted partial practice SE restrictions. Those who hold a civil PE license may design any structure *except* those specific types of structures that are legally required to be designed by a licensed SE. In some cases, the description of the type of structure is somewhat open to interpretation. No two states with a partial practice restriction have adopted that same

Specifier Vendors

STRUCTURE magazine's recent "[2010 Trade Show in Print](#)" lists 150 structural product and software suppliers, most of which have never exhibited at the NCSEA Annual Conference.

We would like to fill our *largest* exhibit space ever (57 booths) in Oklahoma City next October. Look over the lists and provide NCSEA with a contact at one or more of these vendors. E-Mail the contact's name and company or telephone to [Emile Troup](mailto:Emile.Troup@ncsea.org), exhibits coordinator at 617-312-1801. He will e-mail you the 2011 floor plan showing the 13 exhibitors already booked.

Many of our repeat exhibitors claim that the NCSEA show is the "best bang for the exhibitor's buck" so ask your vendors to meet you in Oklahoma City!

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Webinar Information

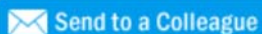
Each webinar

- Costs \$250 per internet connection so several people may attend for one connection fee.
- Awards 1.5 hours of continuing education.
- Is approved for continuing education in all 50 States through the NCSEA Diamond Review Program.
- Is applicable for SECB recertification.
- Is accepted by AIA.
- Has a \$5 fee for each continuing education certificate requested.

Webinars will run:
10:00 AM Pacific
11:00 AM Mountain
12:00 PM Central
1:00 PM Eastern

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and



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language for the description of structures required to be designed by a structural engineer.

Illinois and Hawaii

Hawaii and Illinois have adopted a full SE practice act as described above. Illinois even has a completely separate licensing board for structural engineers. These states use the NCEES SE I and II exams for the basis of licensure.

California and Nevada

Both of these states have had partial SE practice restrictions in place for many years as either a licensing restriction (California) or a licensing rule (Nevada). In California, an engineer must be licensed as a structural engineer (SE) in order to be in responsible charge of the design of schools and hospitals. California is currently proposing legislation to include structures similar to those noted below for the other western states with partial SE practice restrictions. In Nevada, design by an SE is required for structures requiring special expertise such as radio towers and buildings more than 3 stories or 45 feet in height.

Oregon, Washington, and Utah

Partial practice acts have been legislated in these states over the last decade, starting in the late 1990s with Oregon. In Oregon, an SE license is required to design the primary framing and lateral-load-resisting systems for designated hazardous facilities and special occupancy structures, any essential facilities over 4,000 square feet in plan area or 20 feet in height, structures with irregular features, and occupied buildings more than 4 stories or 45 feet in height. Washington similarly requires an SE license for design of hazardous facilities, essential facilities over 5,000 square feet in plan area or 20 feet in height, as well as standby power equipment, air traffic control towers, critical national defense structures, structures exceeding 100 feet in height, occupied buildings of more than 4 stories, bridges with total span over 200 feet and piers with surface area over 10,000 square feet, and structures where over 300 people congregate. Utah only recently changed its title restriction to a practice restriction. In 2008, it required an SE license for the design of structures similar to those identified in Oregon and Washington and added even more definition and refinement to the specific size, height, use, occupancy, and type of structures in the list.

Title Restrictions

In the following states, the NCEES I and II SE exam is administered and the title of structural engineer (SE) may be legally used by the practitioner, in addition to or instead of professional engineer (PE), after his/her name to designate a licensed professional who has passed a state-approved 16-hour SE exam. However, there is no restriction for design of any type of structures associated with the title.

Idaho and Nebraska

Idaho and Nebraska recognize the SE designation. However, Idaho requires that the applicant already hold an Idaho PE license prior to applying to take the current SE I and II exams. Both of these states will consider reciprocity from structural engineers in other states from applicants who have passed 16 hours of SE exams when they obtained their original SE license, either the SE I and II or SE II and III exam combination or the older Western States Exam. Based on the exams taken and the amount of experience in structural engineering that an applicant can demonstrate, the Idaho PE license may still be required prior to comity being granted for the SE license.

Arizona, Vermont, Louisiana, Guam and North Mariana Islands

These states and territories specifically license engineers by branch or discipline and recognize structural engineers in this way. However this is not considered separate licensure because there is no restriction in the states' statutes or regulations that explicitly distinguishes structural engineers from other professional engineers.

New Mexico

No SE exam is administered by the state. However, the state allows an "R" on the states licensed professional engineer roster indicating structural engineering is the PE area of practice as a specialty sub-discipline. The Board Rules explicitly recognize structural engineering, unlike any of the other disciplines. Ruling for a designation as a structural engineer for either a state license and for comity is based on alternate options for combinations of education, experience and testing.

Other Structural Exam Use

Additionally, 39 states currently offer the SE I and SE II but do not have an in-state SE practice or title restriction. However, engineers may take the exams without traveling to another state where the exam is required for licensure.

Most states offer the SE I exam as an option to the 8-hour PE exam. The applicant who passes this test then holds a generic PE license.

Examples By the Numbers

Examples of the hours of testing currently required to acquire an SE license, including all prerequisite exams, are listed below. Currently, all exams are written and graded by NCEES except as noted above for Oregon, Washington, and California. Depending on which state was the original state of SE registration, exam hours for reciprocity vary greatly. Note that for the mature structural engineers, all states accept the original Western States 16-hour SE exam as a basis of reciprocity without other testing for the SE portion of the requirement. While the new 2011 16 hour SE exam will greatly improve the equality of testing as a basis for reciprocity, California, Oregon, Washington, Nevada and Idaho will still require a civil PE be obtained prior to an SE license, and additionally California will also require the NCEES PE exam to be supplemented by 4 hours of survey and seismic testing.

Practice Restrictions

California: 8 hours CE or SE I PE + 4 hours survey/seismic (CA SS) CE +16 hours SE II and III = **28 hours**

Oregon/Washington: 8 hours CE or SE I PE + 16 hour SE II and III = **24 hours**
(for CA CE/SE reciprocity adding survey/seismic to receive civil PE = **28 hours**)

Nevada: 8 hours CE PE + 16 hours SE I and II = **24 hours**

(for WA/OR reciprocity add SE III additional 8 hours of exams (+8 = **32 hours**)

(for CA reciprocity add SE III and CA SS exams (+8+4= **36 hours**)

Illinois/Hawaii: 16 hour SE I + II = **16 hours**

(for WA/OR reciprocity add SE III and Civil PE exams (+8+8 = **32 hours**)

(for CA reciprocity add SE III and CA CE with SS exams (+8+8+4= **36 hours**)

Title Restrictions

Idaho: 8 hours CE PE + 16 hours SE I and II = **24 hours**

(Reciprocity for CA/OR/WA as noted above for Illinois and Hawaii for **36/32 hours**)

Remaining States and Territories with a Title Restriction: 16 hours SE I and II = **16 hours**

(Reciprocity for CA/OR/WA as noted above for Illinois and Hawaii for **36/32 hours**)

Other Restrictions

New Mexico may require certain educational backgrounds in addition to testing requirements in order to receive comity.

Path Forward

From the information provided above, it is clear that structural engineering licensing requirements are muddled! No more than any two states currently come close in the combination of exam requirements and practice restrictions. Reciprocity is an adventure in frustration while dealing with the requirements and paperwork. Clearly, there is a need for greater uniformity and consistency in what a structural engineer may design in any given location. As each state establishes its own requirements independently, each new practice restriction varies the language and requirements, usually due to political compromise, from what was used in the states that had previously put practice restrictions in place.

In 2004, NCEES published specific qualifications for a Model Law Structural Engineer, which can be found at NCEES.org. This document is intended to provide typical requirements for education, experience, and examination that could be adopted by a state licensing board to establish a structural engineering practice or title restriction in that state.

[NCSEA Licensing Committee website](#) has provided guidelines within a white paper in an attempt to lay common ground. Through the member organizations, the Licensing Committee seeks to influence states, in the interest of public safety, to adopt consistent licensing laws, especially concerning separate licensure of structural engineers. In the early years of this new century, NCSEA partnered with SEI to hold several workshops to gather information on how interested engineers can mobilize and be successful in obtaining Practice Act legislation within their states. [A report on these workshops has been published and is available online.](#)

NCSEA/Kaplan SE Exam Review Course

Are you ready for the for the new SE exam? Prepare now with NCSEA, online.

Prepare for exam day success with this new course designed by NCSEA, Kaplan Engineering Education, and leading structural engineers from across the industry. The exam will undergo significant changes in April 2011, making it even more challenging. Be prepared with our online exam review course!

[For more details and to register click here.](#)

NCSEA Continuing Education

NCSEA has many continuing education opportunities for structural engineers all across the US.

Most are Diamond Reviewed and accepted in all 50 states. Below is a complete list. To purchase past webinars contact [Jan Diepstra](#) at 312-649-4600 x202.

Upcoming Web-based Seminars

January 25, 2011

Heavy Timber Connections: Mistakes and Lessons Learned

Speaker: Ben Brungraber of Fire Tower - Engineered Timber

February 10, 2011

Detailing of Unbonded Post-Tensioned Structures to Minimize the Effects of Restraint to Shortening

Speaker: Bryan Allred of Seneca Structural Engineering

Pre-Recorded Webinars available on CD

> BIM

Electronic File Transfer & BIM Risk Management

Speaker: Mark Blankenship (6/13/2007)

> CODES

Understanding and Making Full Use of ASCE 31 & 41

Speaker: Chris Poland (6/8/2010)

Code Requirements for Structural Integrity

Speaker: Ron Hamburger (5/12/2009)

Update on the 2008 MSJC Code and Specification

Speaker: Richard Klingner (9/11/2008)

> CONCRETE DESIGN

Utilization of Precast Concrete in the Construction of Bridges in High and Moderately High Seismic Regions - What Do We Know?

Speaker: Jose Restrepo (9/15/2009)

> FOUNDATION DESIGN

Foundation Design Using IBC Chapter 18

Speaker: Michael Valley (11/6/2008)

> GENERAL

Practical Design of Structures for Blast Effects

Includes: *Design Criteria, Design Methods 1, Design Methods 2, Progressive Collapse*

Speaker: Jon Schmidt (11/4/2010-12/9/2010)

Design Considerations for Ponding Loads on Roofs

Speaker: Tom Wallace (10/28/2010)

Skyscrapers: Past, Present & Future

Speaker: Shankar Nair (7/14/2009)

Thorough Preparation of Construction Documents

Speaker: David Ruby (11/15/2007)

Foreseeing the Testimony of an Expert Witness

Speaker: Gene Corley (9/25/2007)

The NIST World Trade Center Investigation: How the Recommendations Could Hurt Structural Engineering

Speaker: Jon Magnusson (10/17/2006)

> MASONRY DESIGN

Detailing Load Bearing Masonry Buildings for Both Crack Control and Structural Performance

Speaker: Susan Frey (5/20/2010)

MASONRY SERIES | **Ensuring Your Masonry is Constructed as Designed**

Speaker: Michael Schuller (4/16/2009)

MASONRY SERIES | **Reinforced Masonry Shear Wall Design**

Speaker: Russell Brown (4/2/2009)

MASONRY SERIES | **Masonry Tallwalls**

Speaker: David Biggs (3/19/2009)

MASONRY SERIES | **Strength Design of Masonry**

Speaker:Richard Klingner (3/5/2009)

MASONRY SERIES | **Allowable Stress Design of Masonry**

Speaker:Russell Brown (2/19/2009)

MASONRY SERIES | **Masonry Basics, or Masonry 101**

Speaker: Gregg Borchelt (2/5/2009)

Masonry Walls Using Strength Design

Speaker:David Biggs (10/17/2007)

> QUALITY ASSURANCE

Tactics for Performing QA Reviews

Speaker: Cliff Schwinger (5/13/2008)

Components to a Model QA Program

Speaker: Cliff Schwinger (5/6/2008)

> SEISMIC DESIGN

Performance-Based Earthquake Engineering with Application to a Bridge Structure

Speaker:Joel Conte (9/24/2009)

STRUCTURAL DESIGN MANUAL SERIES | **Wind Load Examples**

Speakers:Steve Kerr & Dan Werdowatz (3/10/2009)

STRUCTURAL DESIGN MANUAL SERIES | **Cold-Formed Steel Light-Frame Three-Story Structure**

Speaker: Doug Thompson (2/10/2009)

STRUCTURAL DESIGN MANUAL SERIES | **Steel Concentrically Braced Frames**

Speaker: Rafael Sabelli (1/8/2009)

STRUCTURAL DESIGN MANUAL SERIES | **Steel Special Moment Frame**

Speaker:Kevin Moore (12/17/2008)

STRUCTURAL DESIGN MANUAL SERIES | **Reinforced Concrete Special Moment-Resisting Frame**

Speaker:Jon Kiland (11/20/2008)

STRUCTURAL DESIGN MANUAL SERIES | **Tilt-Up Wall Panel with Openings**

Speaker: John Lawson (10/28/2008)

STRUCTURAL DESIGN MANUAL SERIES | **Seismic Design of Concrete Wall Buildings - Current Codes & Beyond**

Speaker:Joseph Meffei (8/21/2008)

STRUCTURAL DESIGN MANUAL SERIES | **Seismic Design in a Three-Story Wood Light-Frame Structure**

Speaker:Doug Thompson (6/24/2008)

> STEEL DESIGN

Axis and Principal Axis Bending of Single Angles

Speaker: Whitney McNulty (11/9/2010)

Wood and Cold Formed Steel Trusses

Speaker: Ed Huston of Smith & Huston Consulting Engineers (9/14/10)

Architecturally Exposed Structural Steel

Speaker:Jack Peterson, P.E., S.E. (3/23/10)

Vertical Bracing Connections in the Seismic Regime

Speaker:William Thornton (11/5/2009)

Better Base Plate Performance by Design

Speaker:Barry Arnold (10/29/2009)

Connections: The Last Bastion of Rational Design

Speaker: William Thornton (7/28/2009)

AISC Seismic Provisions for Structural Steel Buildings

Speaker: Jim Malley (6/10/2008)

Evaluation of Joists & Joist Girders for Modification or Repair

Speaker: Jim Fisher (5/22/2007)

Two New Standards for Seismic Design and Steel Structures

Speaker:Ron Hamburger (6/21/2006)

> SUSTAINABILITY

Disaster Resilience as Sustainable Design

Speakers: Erik Kneer & Lindsey Maclise (6/16/2009)

> **WIND DESIGN**

Wind Load Design for Storm Shelters and Critical Facilities

Speaker: Bill Coulbourne (9/9/10)

Wind Load Design for Storm Shelters & Critical Facilities

Speaker: Marc Levitan, Ph.D. of LSU Hurricane Center (8/5/2010)

Design of Coastal Buildings

Speaker: Bill Coulbourne (7/15/2010)

Wind Design Using 2009 IBC

Speaker: Don Scott (4/20/2010)

Understanding Tall Buildings Under Wind: Full-Scale Dynamic Behaviors

Speaker: Tracy Kijewski-Correa (5/21/2009)

Designing Buildings for Wind Load by ASCE 7-05

Speaker: Larry Griffis (4/16/2008)

Simplified Approach to Wind Load Design for Buildings Up to 160 Feet in Height Using ASCE 7-05

Speaker: Larry Griffis (11/20/2007)

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