



SEAC

GENERAL NOTES

Structural Engineers Association of Colorado Newsletter

JULY GENERAL MEETING

Dinosaur National Monument Visitor Center Repair and Replacement

Dave Anderson & Daniel Cooke will discuss the significance of building basic construction and the history of building interventions and current re-use plans. In addition, they will describe the monitoring techniques used to inform decisions about appropriate treatment of this historic structure and describe foundation remediation solutions appropriate for expansive soils and dipping bedrock at this site.

Outline:

1. Project background, rehabilitation
 - a. Built to replace original shelter & provide visitor viewing
 - i. Mission 66 style – constructed in 1956-7
 - ii. Began moving due to expansive soils even before construction was completed
 - iii. Designated as a National Historic Landmark in 2001
 - b. Existing Conditions & Changing Needs
 - c. Separate structures – reduced and revised program for original structure
 - i. Construction of new Visitor Center for the Park ¼ mile away
 - d. Construction at Quarry Visitor Center – re-designated as “Quarry Exhibit hall”
 - i. Repair/stabilization of foundation
 - ii. Installation of detached glass window wall & interior viewing platform
2. Foundation Underpinning Solutions
 - a. Existing Soils and Foundations
 - b. Repair Solutions Considered
 - c. What is a Micropile?
 - d. Project Specific Micropile Design Details
 - e. New Foundation Underpinning Scheme

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 Lunch Banquet

November 17

Time: TBD

Don't Miss Out - July General Meeting

Date: Thurs. July 21, 2011

Speaker(s): Dave Anderson &
Daniel Cooke

Location: Renaissance Denver Hotel
3801 Quebec Street
(South of the I-70 Quebec Intersection)

Please Register and RSVP on the SEAC website at www.seacolorado.org or email your reservation to **Caryn** at: seac@martinmartin.com. Reservations MUST be made by: Monday, July 11, 2011.

Officers & Board Members



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303-499-3022
a.kelsey@ascentgrp.com



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Submit comments/articles to:

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Association of Colorado
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Lakewood, CO 80215
(303) 431-6100 x403
(303) 431-6866 fax

seac@martinmartin.com
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

Special thanks go out to CAGE for their support and tremendous help in putting together the first annual SEAC-CAGE combined membership meeting and panel discussion on communication, retaining/shoring/retention systems, and Ultimate Strength Design. Both memberships are planning a follow-up discussion meeting for next year.

My thoughts for this edition of the President's letter are concentrating on my latest experience with the bidding process on structural projects. Over the last couple of years I, and I am sure all of you reading this, have experienced the situation where you have lost a project due to structural engineering bids coming in at 50% or lower than your own. My first reaction has been disbelief, then some anger, then acceptance and finally reflection on what this may mean to our profession.

Every member of SEAC has, I am sure, had to make changes during the economic downturn and some of them quite painful. There are a lot of good engineers out there without employment but with mortgages to pay. If I was suddenly no longer employed, I would immediately try to get projects to work on and bill for as soon as possible. I am most concerned with the completeness and quality of structural engineering services provided as it relates to project safety, building code compliance and both construction & serviceability costs. Our long term goals as structural engineers should look beyond short term financial gains, and outward bound to the building industry's view of structural engineers as a whole. Our reputations and value to our clients are easily lost and very hard to regain.

I recommend that all structural engineers endeavor to provide complete and excellent services regardless of financial benefit, if any, such that our profession's value to our clients and to the public remains high, now and in the future.

Andrew C. Kelsey, PE
President

Welcome

Please welcome our newest member to SEAC:

John Pettit
(Affiliate Member)

Holly Bonstrom
(Student Member)

GENERAL NOTES - SPONSORS

JULY SPONSOR: RAMJACK THANK YOU



Ram Jack is an industry leader in designing, manufacturing, and installing high quality steel piling products for deep foundation systems and remedial underpinning on existing residential and commercial structures. We have received 19 patents for advanced designs over the last 23 years and recently became the first and only pile manufacturer to receive an International Code Council Evaluation Service Report (ESR-1854).

Ram Jack's foundation stabilization products include a helical pile system, a hydraulically driven steel piling system and a helical tieback anchoring system. Common applications include:

- Underpinning for foundation failures
- Tiebacks and wall anchors
- New construction
- Concrete slab lifting and stabilization
- Boardwalks, bulkheads and seawalls
- Tower/guy anchors
- Light poles and sign supports

In addition to foundation stabilization, Ram Jack of Colorado offers water intrusion repair, perimeter drain installation, sump pit/pump installation, foundation crack repair, vapor barrier and crawlspace ventilation systems, wall bracing and epoxy injection.

Ram Jack of Colorado

12540 West Cedar Drive

Lakewood, Colorado 80228

Phone: 303-716-7437

Fax: 720-382-2228

www.RamJackofColorado.com

MAY SPONSOR: RED BUILT THANK YOU



RedBuilt expands footprint with exclusive distribution in key states Lam-Wood Systems becomes exclusive RedBuilt distributor in six markets

BOISE, Idaho— RedBuilt™, one of the world's leading suppliers of engineered lumber products, is making a sizable addition to its U.S. footprint by naming Lam-Wood Systems, Inc. its exclusive distributor in Wyoming, Colorado, New Mexico, Nebraska, Kansas and Western Iowa. As it continues to grow, RedBuilt is also seeking representation for its pioneering, resource-efficient industrial and commercial building products on the East Coast.

RedBuilt has been recognized as a world leader in developing wood-based structural solutions since 1960. It offers the industry's most innovative engineered-lumber products and building systems for commercial, industrial and multifamily applications. RedBuilt's offerings include composite wood-and steel open-web trusses, engineered wood I-joists, engineered lumber like LVL, and complementary components, product engineering, and on-site technical support, as well as a range of concrete forming and scaffold-planking solutions. Visit www.redbuilt.com or www.lamwood.com for more details.

GENERAL NOTES - *General Announcements*

Structural Engineers Association of Colorado General Announcements

In The Spotlight

Please “REGISTER” on the SEAC Website!!!!

SEAC Members - **All** SEAC members need to “REGISTER” on the SEAC website. Once you “REGISTER”, you will be able to **RSVP** for all events and **Pay** (using PayPal) for all events, such as the Fall Seminar. You will be able to **RSVP** for General Membership meetings and enter your guest names and pay for any guests attending the General Membership meetings. In addition, you will be able to update your information (such as change of company name, address, email information, etc.). Our website also includes an Employment Page. You will be able to pay your Annual Dues online by next year.

Reminder the SEAC password is: **seacstructure** (You will need this password **AFTER** you **REGISTER** to access the Members website page.

To “Register” and/or “Create an online Account” Please Follow the link provided below:

<http://www.seacolorado.org/become-a-member/>



The 2011 Membership Directory can be accessed from the Members Only Page of the SEAC website.

If you have any changes or corrections that need to be made, you can simply update your information on the website (after you register) or email Caryn Farrell at seac@martinmmartin.com

ASCE Structural Engineering Institute

2011 Student Structural Design Competition

The Structural Engineering Institute of ASCE sponsors a structural design competition for universities. Innovative projects demonstrating excellence in structural engineering are selected based on technical content, demonstrated knowledge, originality/complexity, and presentation. Congratulations to the 2011 Student Structural Design Second Place Award Winner – The University of Colorado at Denver Team for their project Burlington Northern Santa Fe (BNSF) New Facilities Design.

Student Team Members: **Erin Dowds, Rachelle Urso, Gabriel Ledezma, and Darren Weldon**, with Faculty Advisor: **Peter Marxhausen**. **Erin Dowds** was one of the two 2010 SEAC Scholarship award winners.

Upcoming Events



SEAC FALL SEMINAR

When: October 20, 2011

Where: Renaissance Hotel - Breakfast Served

**Cost: \$150.00 (if received by September 20, 2011)
\$175.00 (AFTER September 20, 2011)**

For out-of-town guests who would like to book a room the night before the seminar, you can stay at the Renaissance Hotel for a special rate of \$129.00/night. Please reference the SEAC Fall Seminar.

SEE THE ATTACHED FLYER FOR DETAILED INFORMATION

GENERAL NOTES - *Keep them CLASSIFIED!*

Structural Engineers Association of Colorado Classified Section & Other General Announcements



juwi solar Inc. (JSI) based in Boulder, Colorado, is a developer and EPC Contractor of solar power plants throughout North America with a focus in utility-scale power plants (1MW or larger).

JSI seeks a Structural Engineer with 2-10 years experience which is performing structural calculations and optimizing racking systems, working with material manufacturers, producing engineering documents and providing input into future generation racking designs. Candidate must possess extensive skills in analytical structural software, knowledge of structural building code and steel design, and an organized approach to work with excellent written and oral communication skills.

Please visit www.seacolorado.org/employment/ for more information.

Classified Ad Policy

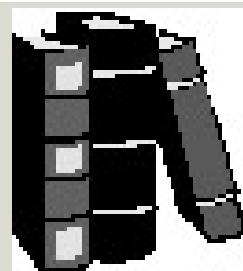
To place an ad in the SEAC Newsletter and website please contact

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
BUILDING DEPARTMENTS**

Price:
BOOK: \$50
CD: \$100

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

ATTENTION:
ENGINEERS & ARCHITECTS
COME SHOW YOUR CREATIVITY



WHEN: Friday, November 18th at 2pm
WHERE: Lodo's, 1946 Market St. Denver, CO
COST: \$40 per bridge

Registration required by Friday, October 28th

Entry fee payment required by Friday, November 4th

Your team will receive four commemorative pint glasses at the event!



gingerbreadbridge.com





Structural Engineering
and Education Solutions, LLC



National Council of
Structural Engineers



SEAC 2011 FALL SEMINAR

Guide to the Design of Diaphragms, Chords and Collectors Based on the 2009/2006 IBC and ASCE/SEI 7-05

COURSE DESCRIPTION

The 2006 *International Building Code* presents clear and stringent design criteria for floor and roof diaphragms as necessary to resist wind and seismic loading. However, diaphragms may be one of the most overlooked, under designed, and/or inappropriately detailed areas of a building. Diaphragms should respond elastically to design wind and earthquake forces and their failure could lead to a nonductile complete or partial collapse of the entire structure. Surprisingly, structural engineers are given little guidance on how to design and detail these systems. Simple deep beam models found in textbooks don't apply for typical building arrangements such as L-shaped buildings, buildings with lateral resistance on three sides, buildings with irregularities, and diaphragms with small or large openings. Using practical design examples, this short course presents simple analytical and computer modeling methods that appropriately account for these and other design conditions. The course is based on a recent NCSEA publication titled *Guide to the Design of Diaphragms, Chords and Collectors Based on the 2006 IBC and ASCE/SEI 7-05*, but expands on the subject matter to address the basics of diaphragms, chords and collectors, minor changes in the 2009 IBC, special wind provisions for high wind zones, and the interpretation of results obtained when using the finite element method. All attendees will receive a copy of *Guide to the Design of Diaphragms, Chords and Collectors Based on the 2009/2006 IBC and ASCE/SEI 7-05*.

COURSE INSTRUCTOR

Timothy Wayne Mays, Ph.D., P.E. is President of SE/ES and an Associate Professor of Civil Engineering at The Citadel in Charleston, SC. Dr. Mays is the Executive Director of the Structural Engineers Association of South Carolina and the Structural Engineers Association of North Carolina. Additionally, he serves as Chairman of the Structural Technical Group for ASCE SC Section, Ocean and Marine Engineering Division Chairman for ASCE National, and NCSEA Publications Committee Chairman. He has received two national teaching awards (ASCE and NSPE) and both national (NSF) and regional awards for outstanding research (ASCE). He is a prolific speaker who sits on several code writing committees and his areas of expertise are code applications, structural design, seismic design, steel connections, structural dynamics, and civil engineering aspects of antiterrorism.

National Council of Structural Engineers Associations Course Approval No. 090505C

WHAT DO ATTENDEES RECEIVE?

- 3.5 Professional Development Hours
- Binder of Complete Course Notes and Example Problems Worked During the Course
- One copy of the NCSEA publication *Guide to the Design of Diaphragms, Chords and Collectors Based on the 2006 IBC and ASCE/SEI 7-05*

SCHEDULE

7:30 – 8:15	Registration and Breakfast
8:15 – 8:30	General Provisions
8:30 – 9:15	Concrete Diaphragms
9:30 – 10:15	Wood Diaphragms
10:30 – 11:00	Steel Deck Diaphragms
11:15 – 12:00	Concrete Slab on Metal Deck Diaphragms

OCTOBER 20, 2011
RENAISSANCE DENVER HOTEL



Structural Engineering
and Education Solutions, LLC



National Council of
Structural Engineers



SEAC FALL SEMINAR - REGISTRATION FORM

OCTOBER 20, 2011
RENAISSANCE DENVER HOTEL
3801 QUEBEC STREET

To RSVP for this Seminar, you must first "REGISTER" on the SEAC website. Log on to www.seacolorado.org & click on the "Register" link, after that you can click on the "RSVP For Events" link and pay for this seminar. www.seacolorado.org/rsvp-for-events

Or, if you would like to pay by a check, please make your check payable to **SEAC** and send to the address listed below with this Registration Form.

Attn: Caryn Farrell
SEAC
c/o Martin/Martin, Inc.
12499 West Colfax Avenue
Lakewood, CO 80215
Phone: 303.431.6100x403
E-mail: seac@martinmartin.com

**Special Room Rate at the
Renaissance of \$129.00 if
coming in from out-of-town**

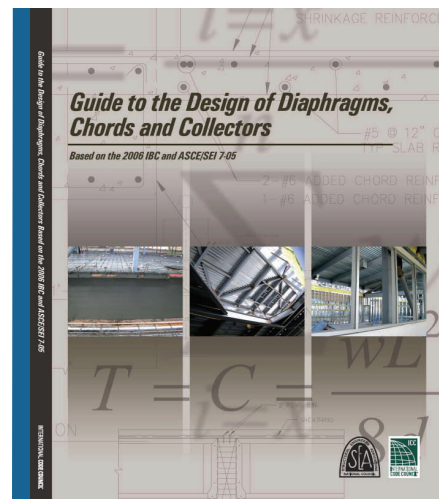
COST:

\$150.00 - If received by September 20, 2011

\$175.00 - If received **AFTER** September 20, 2011

SCHEDULE (BEGINS AT 7:30 A.M.):

7:30 - 8:15 Registration and Breakfast
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8:30 - 9:15 Concrete Diaphragms
9:30 - 10:15 Wood Diaphragms
10:30 - 11:00 Steel Deck Diaphragms
11:15 - 12:00 Concrete Slab-on-Metal
Deck Diaphragms



Company Name:

Phone No:

Names of Attendees:

Fee Amount

TOTAL

Practical Applications of TPI 1 for the Design Professional of Record – July 12

Building codes recognize numerous documents and standards for structural design and analysis. Because these standards may become part of the building code by reference, it is imperative that the design professional have a basic understanding of their content and use. The Truss Plate Institute (TPI) has created the National Design Standard for Metal Plate Connected Wood Truss Construction, typically abbreviated as TPI 1. Although construction documents frequently specify TPI 1 when using wood trusses, rarely do design professionals know or fully understand the standard's content as it pertains to them. The objective of this webinar is to provide insight into the truss industry while answering three critical questions:

- 1) What in the TPI 1 Standard applies to the project design professional?
- 2) What is the purpose for these requirements in the standard?

- 3) How can the design professional of record gain confidence that wood trusses meet the structural design intent of the building?

Scott Coffman has 30 years in structural wood design experience, predominantly in wood building components. Upon receiving a BS degree in Civil Engineering from Purdue University, he was an engineer for Trus Joist MacMillan and the Director of Engineering for Builders FirstSource. Mr. Coffman served on the TPI 1 Project Committee that developed the ANSI/TPI 1 Standard for metal plate connected wood trusses. He has authored articles published in Structural Building Components, is licensed in eight states, and currently assists Motley Structural Design in wood truss engineering.



Externally Applied Fiber Reinforced Polymers (FRP) for Structural Strengthening – July 26

This webinar will discuss the state of the art design and application methodologies for externally applied FRP for strengthening existing concrete and masonry structures, including wet-layup FRP, pre-cured laminates, and near surface mounted (NSM) bars. Available FRP strengthening material types will be discussed, structural members that can be upgraded will be presented, and limitations of FRP use will be identified. FRP design methodologies will be outlined for flexure, shear, and axial enhancement, several case studies will be presented, and available sources of information will be provided.

André G. Garner, P.E., Principal of Garner Consulting Group, has over 20 years of experience in the design and construction of repairs to existing structures using state of the art methodology, such as FRP strengthening, and innovative conventional methods, including in place self-supporting formwork. Active in the design of retrofits to structures for repair of distress, change of use, code compliance, and blast loading, Mr. Garner is also a member of ACI committees 302, 342, 440, and ACI Subcommittee 440-F "FRP Repair Strengthening".



The cost is \$250 per internet connection. Several people may attend for one connection fee. Each course will award 1.5 hours of continuing education. The times will be 10:00 am Pacific, 11:00 am Mountain, 12:00 pm Central, and 1:00 pm Eastern. Approved in All 50 States.



Webinar Series: NEHRP Seismic Design Technical Briefs

- August 4** Jack Moehle: *Concrete Moment Frames*
August 11 Jack Moehle: *Concrete Diaphragms, Chords and Collectors*
August 25 Greg Deierlein: *Nonlinear Structural Analysis*
September 8 James Malley: *Steel Special Moment Frames*

The National Earthquake Hazards Reduction Program (NEHRP) Technical Briefs are published by NIST, the National Institute of Standards and Technology, as aids to the efficient transfer of NEHRP and other research into practice. Topics of the briefs are selected to address design issues and structural systems that are commonly encountered by practicing structural

engineers. The briefs, intended to help reduce the nation's losses from earthquakes, were produced under contract to NIST by the NEHRP Consultants Joint Venture, a joint venture of the Applied Technology Council (ATC) and the Consortium of Universities for Research in Earthquake Engineering (CUREE).

Cost: \$250 per internet connection per session or \$750 for all four sessions on the NEHRP Seismic Design Technical Briefs. Each webinar awards 1.5 hours of continuing education. Several people may attend for one connection fee. There will be a \$5 fee for each continuing education certificate requested. Approved in all 50 states.

Note: The times for the NEHRP webinars will be 12:00 pm Pacific, 1:00 pm Mountain, 2:00 pm Central, and 3:00 pm Eastern.



Call for Entries

NCSEA 14th Annual Excellence in Structural Engineering Awards

The NCSEA Excellence in Structural Engineering Awards celebrates the greatest structural engineering achievements in the United States and throughout the world.

Entries are due July 22. Awards will be presented at the Renaissance Hotel in Oklahoma City on October 22, at the conclusion of the NCSEA Annual conference; and 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.

Entries are welcome, and awards will be presented, in the following award categories:

- New Buildings under \$10 Million
- New Buildings \$10 Million to \$30 Million
- New Buildings \$30 Million to \$100 Million
- New Buildings over \$100 Million
- International Structures over \$100 Million
- New Bridge and Transportation Structures
- Forensic/Renovation/Retrofit/Rehabilitation Structures
- Other Structures

NCSEA Nineteenth Annual Conference

October 20-22, 2011

Oklahoma City, Oklahoma

Oklahoma City is proud to host this year's NCSEA Annual Conference. Held at the Renaissance Convention Center, the program will include the following:

Thursday, October 20: Committee meetings, two forums (one on media relations and one on ethics), trade show, and reception

Friday, October 21: Presentations by NCSEA Past Presidents from across the country

Friday night: Dinner at the Oklahoma City Museum of Art

Saturday, October 22: NCSEA committee and business reports, lunch and speaker, followed by discussion and workshops on NCSEA's proposed position statement on separate licensing

Saturday night: NCSEA Reception and Awards Banquet, honoring the finalists of the 2011 NCSEA Excellence in Structural Engineering Awards, as well as those individuals receiving the NCSEA Cornforth, Delahay, and Service Awards



Oklahoma City Museum of Art, courtesy of Joseph Mills Photography.

NCSEA's 2012 Winter Institute – Save the Date

February 10-11 at the Hotel Monteleone in New Orleans, LA

Tour: Inner Harbor Navigation Canal (IHNC) and the Lake Borgne Surge Barrier

Lectures: Geotechnical Engineering and Pile Load Test Program for the Inner Harbor, Design of Gate Structures, ASCE 7-10 Wind Loading and Design, Hurricane and Tornado Shelter Design, Retaining Wall Design – Soil Improvement Methods in Soft and Challenging Soils, and More... Don't miss it!

NCSEA/Kaplan SE Exam Review Course

Taking the Structural Engineering Exam in the Fall? Don't miss your opportunity to take the NCSEA/Kaplan SE Exam Review Course: July 23-24 and August 6-7. More information is available on page 11 and at www.ncsea.com.