



# SEA - NEWS

A Publication of SEAOSD - Structural Engineers Association of San Diego

April

Volume 50, Issue 4

2016

## In This Issue

### May 17, 2016 Member Luncheon

May 17, 2016  
Member- Lunch

Tuesday, may 17, 2016

Stone Brewery  
2816 Historic Decatur Rd.  
Bldg. 1, Suite #116  
San Diego, CA 92106

### Forensic Nonlinear Analysis of the Alto Rio Collapse

### Detailed Nonlinear Analysis of the Alto Rio Building

José I. Restrepo<sup>1</sup> and  
Joel P. Conte<sup>1</sup>

<sup>1</sup> Professor, University of  
California, San Diego,  
Department of Structural  
Engineering, La Jolla,  
California, USA.

### Abstract

This seminar will  
describe the results of

### A Message From Your President



I would like to start out by thanking everyone that attended our annual "Student Night". We had about 75 engineering students joining us from UCSD and SDSU. One reason we were able to achieve such a great turnout was through the sponsorship from local engineering firms and industry partners that allowed the students to attend for free. This year, we had 20 generous sponsors that I would like to thank again for their support. For a full list of the companies that contributed to the effort, please see the special section in this month's newsletter. We also had a special program with a panel of engineers including Jim Stenger from Curry Stenger Engineering, Peter Carlson from Miyamoto International, Lisa Bridge from Kleinfelder|Simon Wong Engineering, and Sabina Piras from T.Y. Lin International. Michael Braund moderated the panel discussion, which provided a great opportunity for the students to ask all sorts of questions in an open forum and gain a much better understanding of what we do in practice. Sabina also gave a special presentation earlier in the evening on the Idaho Avenue Pedestrian Replacement Bridge in Santa Monica, CA.

Each year, SEAOSD also provides financial support to students from UCSD and SDSU to aid their academic growth and career development into the structural engineering profession. This year, SEAOSD provided a \$1,000 scholarship to a student from each school, as well as a \$2,000 at-large scholarship. The winners were announced at Student Night, but I would like to once again recognize and congratulate Deborah Hug from SDSU, as well as Ni Zhan and Paul Tominna from UCSD. It was a pleasure getting to meet them and all the other students, and I hope to see these faces around for years to come to lead the next generation of engineers in our profession.

Last month, we also had a great turnout for our inaugural Committee Night. It was a great chance to learn more about each of our committees and get involved with our organization. I would also like to thank our speaker, Dorothy Amundson, from Cavnac & Associates that presented some helpful tools and tips on Risk Management. As engineers, we often tend to focus on the technical side of things, but it's very important to also

detailed nonlinear finite element analysis of the fifteen story Alto Rio building. The Alto Rio building was built in 2006 in the city of Concepción, Chile, was the only modern building that underwent a catastrophic collapse during the 27 February 2010, Mw 8.8 Maule earthquake. Eight lives were lost as a result of the collapse of this building. This building was typical of many medium rise buildings designed and built in Chile during the period 1996-2009. The lateral force resisting system of the Alto Rio building consisted of a dense array of 0.2 m (8 in.) thick transverse and longitudinal reinforced concrete bearing walls.

The Alto Rio building was modeled using two different approaches. The first finite element model consisted primarily of conventional 4-node shell elements of approximately 0.2 m x 0.2 m in size for the walls and slabs and smeared rebar sub-elements for the steel reinforcement.

understand and practice these valuable concepts on risk management in order to sustain a successful business. Our meeting next month will focus on the investigation of the Alta Rio building that collapsed during the 2010 Chile Earthquake. I'm excited to have Professors Jose Restrepo and Joel Conte from the UCSD Department of Structural Engineering that will be joining us to discuss the reasons why a modern building designed and constructed to current code standards underwent a catastrophic collapse. We have also invited our Existing Buildings Chair, Wayne Brown, to give a brief overview of their activities.

All members should have recently received an email requesting applications for the SEAOSD Excellence in Structural Engineering Awards program. Given the wide variety of entry categories, there are plenty of opportunities to submit one (or more) of your projects. I've submitted several projects in the past and always found it to be a rewarding experience and enjoyed the opportunity to showcase my hard work and achievements. This is also a good marketing opportunity since the award winners will be issued in a press release. The deadline for entries is April 28th, so there's still plenty of time to submit a project. For more info, please visit our website at [www.seaosd.org](http://www.seaosd.org).

I also want to mention that the SEAOSD Board has several positions opening for the upcoming 2016-2017 fiscal year. This includes two Director positions, as well as Vice President and Treasurer. If you are interested in becoming active in SEAOSD's leadership, please contact me or any current Board member to find out more about the various positions and to put your name on the ballot.

In closing, I want to remind you all that the SEAOSD Golf Tournament is coming up soon on Monday, April 25 at Twin Oaks Golf Course in San Marcos. It's a scramble format, so don't feel like you have to be a scratch golfer in order to participate. Just see it as a great way to get out of the office and interact with other members from our local engineering community while also helping to raise funds for our organization. For more information, see the flyer in this month's newsletter. I look forward to seeing you at future events!

Ryan Turner, S.E.  
President@SEAOSD.org  
SEAOSD President  
2015-2016

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## Call for SEAOSD Board Nominations:

The association is looking for candidates to

The structure was modeled almost entirely using 4-node 24 degree-of-freedom shell elements with embedded smeared rebars. The analysis software for performing the nonlinear analysis of the Alto Rio building was ABAQUS/Standard FE computer program used in conjunction with the ANACAP-U concrete and the rebar constitutive models developed by ANATECH Corp.

The second finite element method files used the three-dimensional cyclic beam-truss model (BTM) successfully validated in the literature using experimental cyclic test results on reinforced concrete wall specimens.

The BTM modeling approach is able to capture the effects of flexure-shear interaction by updating the concrete compressive stress-strain relationship with the instantaneous tensile strain normal to the diagonal element carrying the compression stress field. The analysis software for performing

fill Board positions! The election is coming up the third week of May. Please nominate a worthy candidate, including yourself, by contacting Manny Sinha, at [manny.sinha@parsons.com](mailto:manny.sinha@parsons.com)

### **BIG THANK YOU TO ALL OF OUR STUDENT NIGHT SPONSORS!**

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the nonlinear analysis of the Alto Rio building was was the advanced structural analysis software framework OpenSees.

Views of the 15 story Alto Rio building before and after the 2010, Mw 8.8 Maule earthquake.

Speakers: Professor Jose Restrepo and Professor Joel Conte from UCSD Dept. of Structural Engineering

Jose Restrepo Bio:

Professor Restrepo focuses on the discovery of construction alternatives for state-of-the-art, performance-based designs. Before coming to UCSD in 2001, Jose Restrepo was a senior lecturer at the University of Canterbury. Restrepo is a member of the New Zealand Concrete Society. Professor Restrepo received his Ph.D. from the University of Canterbury, Christchurch, New

Tuesday, April 12, 2016

**THANK YOU TO OUR SEAOSD STUDENT NIGHT SPONSORS:**



**USRC Certification & New Membership Opportunities**

The US Resiliency Council (USRC - [www.usrc.org](http://www.usrc.org)) is pleased to announce two important new opportunities as it launches its rating system for the earthquake performance of buildings.

1. Join the USRC as we embark upon our mission to implement meaningful rating systems that describe the performance of buildings during earthquakes and other natural hazards.
2. Apply to become a USRC Certified Rating Professional and/or Certified Rating Reviewer to perform and review USRC ratings.

New membership opportunities and benefits are described at [www.usrc.org](http://www.usrc.org), where you can join online.

[TO READ MORE CLICK HERE](#)

**2017 SEAOC CONVENTION**

Calling for Members within your companies to join us as we plan the 2017 SEAOC Convention and SEAOSD's 50th Anniversary Celebration! The SEAOC Convention will be

Zealand.

hosted at the beautiful Hilton San Diego Resort & Spa in Mission Bay.

Joel Conte Bio:

Prior to joining UCSD in 2001, Joel Conte was an associate professor of civil engineering at UCLA and Rice University. Conte was named "Civil Engineering Professor of the Year" at Rice University and is a recipient of the Research Initiation Award from the National Science Foundation. Professor Conte received his Ph.D. from University of California, Berkeley.

[CLICK HERE TO REGISTER!](#)

Mark your Calendars for our next member Dinner will be on June 21, 2016 at Stone Awards Night! More information to follow soon.

**New Member  
Applicant Postings**

Eric Parker ~ Associate

## SEAOC Legislative Alert

### Support SB 885 to end Duty to Defend obligation

March 7, 2016

SEAOC this spring is supporting legislation in Sacramento that would prohibit "duty to defend" clauses in public and private contracting. This would appropriately limit the liability of design professionals to their level of responsibility in legal disputes.

Senate Bill 885 (Wolk), which is sponsored by our colleagues at ACEC-CA, will likely be heard in its first policy committee in April. This will be followed (we hope) with more hearings in other committees, as well as on the floors of the Senate and Assembly.

SEAOC is asking that members write letters of support for the bill and submit them to the SEAOC Legislative Committee. SEAOC will then deploy the letters at the Capitol at appropriate times in the legislative process. (Going forward, we will also ask SEAOC members to call or email certain legislators in advance of specific hearings, so watch for that).

For now, please review the sample letter and:

1. Adapt it to fit your own situation and practice. Please consider whether you are speaking on behalf of yourself or your firm (or both), and revise the sample language accordingly. Feel free to include any pertinent thoughts or specific experiences.
2. Please add your own signature and contact information, office or home as appropriate.
3. If appropriate, use your office letterhead.
4. Please submit your letter to the SEAOC office, dschinske@seaoc.org. We'd appreciate receiving it within the next two weeks.

That's it! Thanks for your help. We look forward to keeping you posted on the bill's progress and further opportunities to engage.

Carl Josephson, SE  
Chair, Legislative Committee

[Download the Sample Letter](#)

**COMMITTEE ROSTER**

Your 2015-2016 Committee Roster

## JOB FORUM

April



### 2017 SEAOC Convention

It may seem far away, but the 2017 SEAOC Convention in San Diego, is just around the corner! It will be held at the Hilton San Diego Resort and Spa at Mission Bay on September 12-17, 2017. If you are interested in joining the committee contact Lisa Bridge at [lbridge@kleinfelder.com](mailto:lbridge@kleinfelder.com)

### Younger Member Forum

If you are 35 or under and would like to participate in the SEAOSD YMF activities, contact YMF Chair, Aaron Taylor. He will let you know about upcoming YMF events and add you to the mailing list.

Aaron Taylor  
Hope-Amundson  
[ataylor@hope-amundson.com](mailto:ataylor@hope-amundson.com)

### Quick Links

[Our Website](#)

[Job Forum](#)

[Events](#)

### Professional Directory

***KPFF values freedom. Freedom to work on what inspires you. Our engineers and modelers work on a vast spectrum of projects that are located around the globe: everything from anchorage of mechanical systems to complex, non-linear analysis of high-rise structures. We have all the benefits of a large, stable firm but none of the red tape that comes with it. Providing first-class service to our clients in a collaborative work environment is our goal. KPFF is experiencing solid growth and are looking for exceptional engineers and modelers to join us.***

#### ***Our current projects include:***

- ***Airports***
- ***Arenas + Stadiums***
- ***Long-Span Structures***
- ***Bridges***
- ***Government Facilities + Embassies***
- ***Commercial Developments***
- ***High-Rise Structures***
- ***Mixed-Use Developments***
- ***Corporate Campuses***
- ***Healthcare + Medical Facilities***
- ***Education Facilities (K-12 + Higher Ed)***
- ***Museums + Convention Centers***

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***Position - Structural Engineers (Experienced) - San Diego, CA***

#### ***Position Summary***

***As a Structural Project Engineer, you will work individually and collaboratively in the design and construction process for***

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## 2016 Calendar

New Location!  
Stone Brewery  
2816 Historic Decatur Rd.,  
Bldg. 1, #116  
San Diego, CA 92106

**a wide array of challenging projects. You will work closely with talented engineers, BIM / CAD technicians, architects, project managers, contractors and client teams.**

### Structural Engineer Preferred Qualifications

- PE licensure
- Master's Degree Preferred
- 3-8 years of experience in structural engineering
- Strong verbal and written communication skills
- Creative, proactive, and detail-oriented individual
- Outgoing individuals who thrive when working directly with architects, contractors and other engineers

### Experienced Structural Engineer:

Apply

Here: [http://chc.tbe.taleo.net/chc05/ats/careers/requisition.jsp?org=KPFF\\_2&cws=63&rid=271](http://chc.tbe.taleo.net/chc05/ats/careers/requisition.jsp?org=KPFF_2&cws=63&rid=271)

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**Position: Structural Engineers (Experienced and Entry-Level)-  
Portland, OR**

### Position Summary

**As a Structural Project Engineer, you will work individually and collaboratively in the design and construction process for a wide array of challenging projects. You will work closely with talented engineers, BIM / CAD technicians, architects, project managers, contractors and client teams.**

### Experienced Structural Engineer Preferred Qualifications

- SE licensure
- 2-8 years of experience in structural engineering
- Strong verbal and written communication skills
- Creative, proactive, and detail-oriented individual
- Outgoing individuals who thrive when working directly with architects, contractors and other engineers

### Entry-Level Engineer Preferred Qualifications

Tuesday, May 17, 2016  
May Member Luncheon

Tuesday, June 21, 2016  
Awards Night

**\*\*Meeting sponsorship opportunities available for the 2016 meetings. Contact [secretary@seaosd.org](mailto:secretary@seaosd.org) for more details. Future meeting details will be posted on the website ([www.seaosd.org](http://www.seaosd.org)) as they become available.**

## SEAOSD Board of Directors Meeting

The SEAOSD Board of Directors normally meets the second Tuesday of every month. The February Board of Director's meeting will be held on Tuesday, May 17, at 10:00 AM at the Stone Brewery. If you have an issue to bring before the Board please let a member of the Board know so that it can be placed on the agenda. The past agendas/minutes can be viewed on the SEAOSD webpage at <http://www.seaosd.org>.

Send correspondence to: SEAOSD, 401 W. Lexington Ave. #12621, El Cajon, CA 92022, (619) 733-2734 or email [secretary@seaosd.org](mailto:secretary@seaosd.org).

## SEA-NEWS Deadlines

March 2016	02/20/16
April 2016	03/20/16
May 2016	04/20/16
June 2016	05/20/16
July 2016	06/20/16

These dates are subject to change.

You may contact the Editor:

- **Master's Degree Preferred**
- **Strong verbal and written communication skills**
- **Creative, proactive, and detail-oriented individual**
- **Outgoing individuals who thrive when working directly with architects, contractors and other engineers**

### **Experienced Structural Engineer:**

**Apply**

**Here: [chc.tbe.taleo.net/chc05/ats/careers/requisition.jsp?org=KPFF\\_2&cws=63&rid=73](http://chc.tbe.taleo.net/chc05/ats/careers/requisition.jsp?org=KPFF_2&cws=63&rid=73)**

### **Entry-Level Structural Engineer:**

**Apply**

**Here: [chc.tbe.taleo.net/chc05/ats/careers/requisition.jsp?org=KPFF\\_2&cws=63&rid=151](http://chc.tbe.taleo.net/chc05/ats/careers/requisition.jsp?org=KPFF_2&cws=63&rid=151)**



### **WoodWorks Unique Career Opportunity**

**Location: Home Based Office in So. CA**

**The Wood Products Council (WPC) is looking for a Technical Advisor to support design professionals when they have questions about the use of wood in non-residential or multi-family buildings.**

**Part of a national Design & Construction Services team, the Technical Advisor will work with the Regional Director to build a network of architects, engineers, builders and developers throughout So. CA, encourage these individuals to use more wood in their designs, and support their ability to do so by providing technical assistance.**

**If you are looking for a unique way to combine your people skills and structural engineering background, this might be the right opportunity for you!**

Heather

[secretary@seaosd.org](mailto:secretary@seaosd.org)

Phone: 619-733-2734

c/o SEAOSD

401 W. Lexington Ave., #12621

El Cajon, CA 92022

All submissions must be given to the Editor by **12:00 PM** the day of the deadline to allow time for formatting and printing.

Thank you,

**SEAOSD Publications Committee**

**For More Details, please go to**

**<http://www.woodworks.org/about-woodworks/careers/>**

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**February**



Job Title: Structural Design Engineer

HTK Structural Engineers, located in San Diego (Poway), is seeking experienced (2-7 years) ENGINEERS to perform structural design and detailing for a variety of commercial and residential projects. Knowledge of wood, structural steel, concrete masonry and current building codes is required. NOTE: This is a position for structural design (not mechanical, plumbing, etc.). Competitive salaries, great bonuses and retirement package. Paid health/vision and dental insurance, vacation, sick leave and holidays. Great work environment! Please send resumes to: [ts@htkse.com](mailto:ts@htkse.com).

The logo for Reid Middleton. The name 'Reid Middleton' is written in a white, bold, sans-serif font against a dark blue rectangular background. The 'M' in 'Middleton' is significantly larger than the other letters and overlaps the 'id' in 'Reid'. Below the blue background is a white horizontal bar.

Company Information

REID MIDDLETON, INC., is a civil and structural engineering firm with a 60-year history of service to public and private clients throughout the Pacific Rim, including Hawaii and Alaska. We are headquartered in Everett, Washington with additional offices in Spokane, WA; San Diego, CA; Anchorage, AK; and Honolulu, HI. We have a culture of hard working and highly motivated people who are committed to each other's success. We believe in flexible work schedules, celebrating our successes, and enjoying our time away from work.

Our firm's market-focused organization includes a diverse portfolio of Aviation, Civic/Municipal, Commercial, Education, Healthcare, Industrial, Military, Transportation, and Waterfront projects. Please refer to [www.reidmiddleton.com](http://www.reidmiddleton.com) for more information about our portfolio.

Project Engineer, Structural Engineering

Location: San Diego, CA

We have been actively working in the Southern California region for the last 10 years. The steady growth of our structural engineering practice has created opportunities for challenging design, project management, business development, and professional growth in our recently opened San Diego, CA, office. The right candidate has a unique opportunity for professional growth within a well established, employee-owned, professional design firm.

Requirements for this position include the following:

- \* Experienced Professional Civil or Structural Engineer with a minimum of 5 years' experience in structural design.
- \* Bachelor's Degree in Civil or Structural Engineering.
- \* Knowledge of ETABS, SAP, SAFE, REVIT BIM, AutoCAD, and Microsoft Office software.
- \* Master's Degree in Structural Engineering (preferred).
- \* Licensing as a Professional Engineer in the State of California (preferred).

Primary responsibilities include the following:

- \* Structural Engineering design.
- \* Development of design drawings, specifications, and cost estimates.
- \* Preparation of design documents and technical reports.
- \* Coordinating and leading technical and professional staff.
- \* Assistance with the preparation of project proposals.
- \* Project development and management.
- \* Performing construction administration of designed projects.
- \* Coordinating subconsultants.

The successful candidate must be highly qualified, motivated, and experienced. They must possess excellent interpersonal and communication skills and the ability to participate within a team of engineers and drafters to engage in structural analysis and design of structural systems in concrete, wood, masonry, and steel.

The candidate must also have the ability to work independently and use initiative to find solutions to engineering problems.



Our firm's market-focused organization includes a diverse portfolio of Aviation, Civic/Municipal, Commercial, Education, Healthcare, Industrial, Military, Transportation, and Waterfront projects. Please refer to [www.reidmiddleton.com](http://www.reidmiddleton.com) for more information about our portfolio.

Entry Level Engineers, Structural Engineering

Location: San Diego, CA

The steady growth of our structural engineering practice has created opportunities for challenging design, professional development, and professional growth in our San Diego, CA, office.

We are looking for a highly qualified and motivated entry-level engineers (Designers) to join our structural engineering team.

Requirements for this position include the following:

- \* Bachelor's Degree in Civil or Structural Engineering.
- \* Licensing as an Engineer-In-Training.
- \* Knowledge of AutoCAD and Microsoft Office software.
- \* Master's Degree in Structural Engineering (preferred).
- \* Experience with structural analyses and design software such as Visual Analyses, ETABS, SAP, SAFE, Perform 3D, and Revit Building Information Modeling (BIM) software (preferred).

The successful candidate must possess excellent interpersonal and communication skills and the ability to participate within a team of engineers and drafters to engage in structural analysis and design of structural systems in concrete, wood, masonry, and steel.

The candidate must have the ability to work collaboratively in a team environment and the ability to work independently as well. We are looking for problem solvers.



Wiseman + Rohy Structural Engineers is a full service Structural Engineering company with four decades of quality projects constructed around the United States. Most of these projects are in Southern California and western states.

We have an opening for an engineer with over 5 years of experience in structural engineering. This position offers the opportunity to participate in challenging and unique projects in all types of commercial structures. We are looking for a highly motivated engineer to become a long-term part of this established company.

Immediate position available.

Please Send Resumes To: [HR@wrengineers.com](mailto:HR@wrengineers.com)