



SEAC

GENERAL NOTES

Structural Engineers Association of Colorado Newsletter

NOVEMBER ANNUAL DINNER

Spray Foam in IRAQ - An Engineer's Deployment

Schedule

Mark Your Calendar
(2010)

General Membership Meetings

(Breakfast 7:30 a.m.)
January 21
March 18
May 20
July 15
September 16

Business Management Committee Meetings

(Breakfast 7:30 a.m.)
February 11
April 8
June 10
August 12
October 14

SEAC Board of Directors Meetings

(7:30 a.m.)
January 7
February 4
April 1
June 3
August 5
October 7

Fall Seminar
October 21

Annual Dinner Banquet
November 18
6 - 9 p.m.

Join us as local structural engineer **Mike Griffeth** shares his story about his time in Iraq while serving in the Colorado Air National Guard. Captain Griffeth will tell us about his experiences in being called up for active duty and mobilized to go into a war zone. Come and find out what CNN did not tell you about living and working in Iraq and the life of a deployed soldier.

Mike will present the project he managed for the military but also share his experiences traveling around the country in convoys, planes, and helicopters. He will speak about the local Iraqi civilians hired to work on our projects and the risks they encountered as they worked with our military as well as the reality of living in a war zone our soldiers experience on a daily and constant basis. You will leave with a better understanding of the sacrifice our service men and women make every day to insure our freedom and safety.

Mike Griffeth is a Professional Engineer and practices structural engineering in Colorado. He specializes in residential structures constructed mostly of logs and timber materials. Mike is a member of SEAC and has a Master's degree from Colorado State University and a bachelor's degree from the University of New Hampshire. Mike was recently honorably discharged from the Colorado Air National Guard after serving six years.



November Annual: Thurs. November 18, 2010

Speaker(s): Mike Griffeth, P.E.

Location: Renaissance Denver Hotel

3801 Quebec Street

(South of the I-70 Quebec Intersection)

Time: 6 p.m. - 9 p.m.

Please e-mail your RSVP and Annual Dinner Registration Form to **Caryn** at: seac@martinmartin.com

Reservations MUST be made By Monday, Nov. 15, 2010.

Officers & Board Members



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

Caryn L. Farrell

SEAC Executive Assistant

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President's Message

At the beginning of my term as President I used my first newsletter article to wish goodbye to 2009 and all of the economic misery we lived through in our industry. And now, as we are well into the 4th quarter of 2010 I can confidently state that things are better for some and worse for others. I might add that I believe the economy will improve or possibly weaken in 2011, although it may not change at all. That is about as far out I'm going on this limb.

Fortunately, a number of good things have happened in SEAC this year. We've had some outstanding work by our Steel Committee and also by our Architectural Liaison Committee. By the way, this committee has changed their name. See information on Page 4 of this newsletter. Do not forget the great job by our Education Committee in putting on the Fall Seminar, attended by over 80 hungry minds. Also, we saw the formation of the Code Committee Joint Task Force, a new group that will be involved interfacing with our state and municipal building departments in discussions relating to code development and interpretation.

Serving as an officer of SEAC has been a great experience for me. I have been impressed repeatedly by the dedication of our members, our committees and our Board of Directors and the hard work they do to advance the practice of structural engineering in Colorado and beyond. Thanks for allowing me this honor. I definitely have a new appreciation for anyone who serves our organization.

I am looking forward to seeing many of you at the Annual Dinner on November 18th. We have a great speaker lined up and it should be a good time.

Last, I have provided a book review on the "THE EXISTENTIAL PLEASURES OF (STRUCTURAL) ENGINEERING"

A book by Samuel C. Florman.
See Page 3.

Before I sign off as President I would like thank the two or three of you that can say you actually read my articles this year. See you at the Annual Dinner.

P.S.- the SEAC Breakfast Meat Initiative has completed successful negotiations with our general meeting host and we should be in good shape bacon-wise for a while or at least until someone slips up again.

GENERAL NOTES - SPONSORS

A REVIEW OF "THE EXISTENTIAL PLEASURES OF (STRUCTURAL) ENGINEERING"

A book by Samuel C. Florman

I'm generally not into reading about or discussing philosophy, but a friend recently shared that this book was required reading for his freshman year in college. If nothing else, you can probably agree that the name is interesting. I of course had to look up what existential meant before I could begin reading. Try this definition see what you think:

ex•is•ten•tial - adjective

1. Of, relating to, or dealing with existence.
2. Based on experience; empirical.
3. Of or as conceived by existentialism or existentialists: an existential moment of choice.
4. Linguistics Of or relating to a construction or part of a construction that indicates existence, as the word there in the sentence There is a cat on the mat.

I suppose this works as a definition, although I'm thinking there might be a bit more to it than that. The meaning of existential now cleared up, we move along. But first, I should mention there are no charts or graphs in this book anywhere.

In this work, Florman discusses the exalted role of the engineer as the great technological advances of the period from 1850 to 1950 were taking place—highways, bridges, dams, invention of the auto and plane, as well as all manner of machines and conveniences. He then contrasts this against the invention and use of the atom and hydrogen bombs and the growing environmental movement of the 1960's and 70's. In this period, being associated with technology and innovation was not always held in high esteem. After WWII, when the existential movement took off, the enthusiasm for a chance to rebuild the world coexisted with a pessimism and despair. For the engineer, Florman tells us that, even if you don't see yourself as building a utopia for mankind, your work can be fulfilling and filled with existential joy. He proposes that "analysis, rationality, materialism, and practical creativity do not preclude emotional fulfillment" and also that "engineering is superficial only to those who view it superficially."

Florman also tells us the existential pleasures we receive from the work we do and want to do are the reward we are seeking, as opposed to the end result of our work. When he wrote this he may not have been thinking about shop drawings, but over all I see the point. Maybe it's about the journey and not the destination?

Seeing that business is slow for many of us and we might have some time on our hands, perhaps this is a good time to check out this book and see if this philosophy speaks to you. You can borrow my copy if you like and I hope you enjoy the book, but more importantly, I hope you still enjoy the practice and profession of engineering in the modern world.

And everyone, please have an existentially pleasurable day.

Thank You!

Many thanks to our Fall Seminar Sponsors



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Bronze Sponsor

GENERAL NOTES - SPOTLIGHT

In The Spotlight



Wally Prebis, Newest SEAC Life Member

Welcome

Please welcome our newest members to SEAC:

Brandon Parker (Student Member)
Aero Solutions, LLC

Rachelle Urso (Student Member)

Travis Schafer (Affiliate Member)
Wiss, Janney, Elstner Associates, Inc.

Charles Zwiacher (Affiliate Member)
D&B Engineering

Patrick McManus (Professional Member)
Martin/Martin, Inc.

Brian Lobmeyer (Professional Member)
Anchor Engineering, Inc.

David Mier (Professional Member)
JVA, Inc.

New Name for the Architectural Liaison Committee

The Architectural Liaison Committee has been renamed. This change is due to the committee's efforts to involve General Contractors and other trades in the committee's pursuit of fostering better relationships between the design team partners. The new name for the committee will be the "**Construction Industry Liaison Committee**". The committee's chairperson remains Mark Cormier.

If you have a change of address, phone, fax, or e-mail. Please e-mail Caryn Farrell at seac@martinmartin.com

The Board of Directors is looking for a volunteer to chair the SEAC Wind Committee. If interested, please e-mail seacwind@jvajva.com.

STRUCTURAL DESIGN WITH STAINLESS STEEL

A bright attractive appearance along with superior corrosion resistance has brought stainless steel to the forefront in the selection of exposed structural steel materials of choice. It can be found in common architectural features such as stairways, balconies and awnings, or in industrial structures, containment systems, or utility supports. Stainless steel, as with typical carbon steel, can be produced in the form of sheet, plate, and bar, as well as structural shapes and sections such as HSS, wide flange beams, or rebar. The typical structural engineer accustomed to designing with codes and methodologies based on carbon steel properties, may be surprised to discover the dramatic differences inherent in the material behavior of stainless steel, so much so that the AISC (American Institute of Steel Construction) specifications in general are not applicable to stainless steel design.

The only design specification referenced by the IBC (International Building Code, 2006) and AISC N690 (Specification for Safety-Related Steel Structures for Nuclear Facilities, 2006), and currently available in the US for the structural design of stainless steel, is ASCE-8, the Specification for the Design of Cold-Formed Stainless Steel Structural Members (Ref. [1]). Although this title may be misleading and appear to limit the applicability of its intended scope, the fundamental characteristics of the material are captured and force a dramatic difference in the design and analysis approaches that must be considered when designing with stainless steel. The specification is primarily based on the AISI specification (American Iron and Steel Institute, Specification for the Design of Cold-Formed Steel Structural Members, 1986) which is limited to light gauge cold-rolled sections, thus the design engineer must extrapolate and supplement the design methodologies provided in order to apply the design principles to other common structural shapes such as hot-rolled sections.

Much insight into the unique behavior of stainless steel can be gained from a comparison of its stress-strain curve as compared to the well-known carbon steel curve (Figure-1). Typical austenitic stainless steels are shown to behave as linear-elastic only at very low stresses, less than half of the yield strength, and exhibit drastic non-linear behavior up through very high strain levels without fracture. This indicates the benefit of very high ductility, increased strain hardening, and energy dissipation capacity as compared to carbon steels. This also indicates the potential danger in using a linear elastic analysis approach to stainless steel design when stresses approach the yield strength or beyond. Deflections may be significantly underestimated along with P-delta effects, and any design capacity based on stability theory may be largely excessive due to the drastic reduction of Elastic Modulus at increased stress levels. To further complicate this behavior, the material is anisotropic, whereas the stress-strain relation varies with the direction of loading.

Although the ASCE-8 specification is based on an LRFD design approach, the allowable flexural capacity is limited to substantially

less than the plastic capacity of the section. A capacity in excess of the yield strength of a section may be used, but the limitations on its use exclude all but the most simplistic designs. Stainless steel is highly sensitive to cold-working, thus substantial strength increases can be realized if such can be substantiated.

There is much room for development with the dated ASCE-8 specification if it is indeed intended to encompass all types of structural stainless steel sections; unfortunately it may be several years before such is available. Rumor has it that AISC is considering developing a Design Guide for stainless steel; this also would be unavailable for some time yet. Currently the most advanced design criteria for stainless steel are based on the Eurocode standard (Ref. [3]), which does include provisions for hot-rolled sections and the commonly used Type L material.

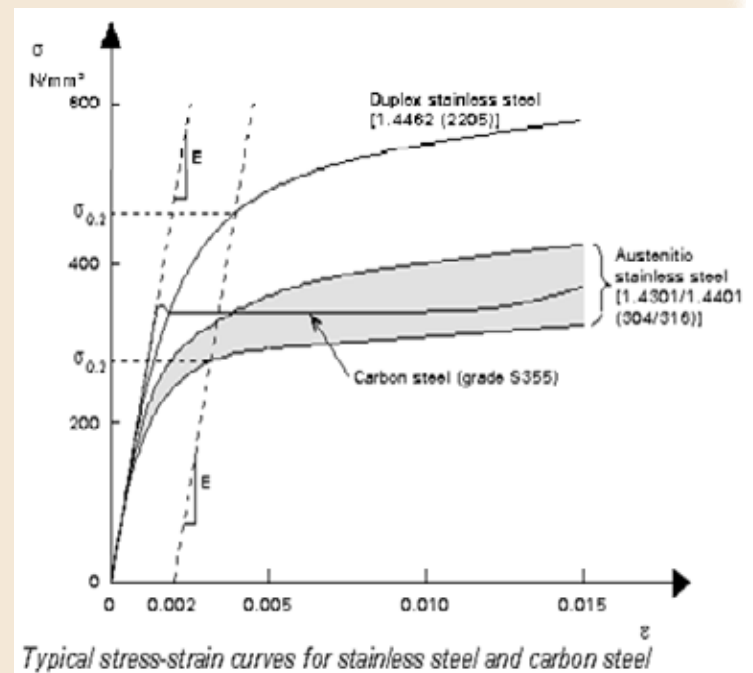


Figure-1: Common Stress-Strain Curves (Ref. [2])

REFERENCES:

- 1) SEI/ASCE-8, the Specification for the Design of Cold-Formed Stainless Steel Structural Members, American Society of Civil Engineers, 2002.
- 2) British Stainless Steel Association, Comparison of Structural Design in Stainless Steel and Carbon Steel, www.bssa.org.uk, 2010.
- 3) Eurocode 3, Design of Steel Structures, Part 1-4: Supplementary Rules for Stainless Steels, British Standards Institute, 2006.

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SEAC Architectural Liaison Committee Survey Summary

Now the Construction Industry Liaison Committee

The SEAC Architectural Liaison committee recently conducted a survey within the architectural community relative to some of the “HOT” topics that are currently shaping the work environment in the construction/design industry. A brief summary of the results is provided below. To view the full survey and read some of the interesting comments made by the respondents, please visit the SEAC website.

The survey was distributed to the AIA Denver membership, approximately 400 members, and 94 responded. Nearly half of the respondents were principles in their firm and almost 60% have more than 16 years of experience. The remainder of the respondents represented a good cross section of other levels of experience and responsibilities within the company. The sectors most represented by the participants were commercial, government, education, and residential.

BIM

Architects feel BIM is in its infancy. Less than 65% of the respondents have used BIM, and of those who are using it, less than 20% have been using it for longer than 5 years. The primary responses for the benefits of BIM were: Trade Coordination, Clash Detection, and Streamline of design and delivery. BIM appears to be a “hot topic” of discussion. Almost all of the people who are using BIM gave some type of comment on their vision of BIM with many different perspectives. Many commented that firms need to embrace this new technology soon or their business may be severely limited.

LEED

The respondents’ participation in a LEED project was not as substantial as expected (about 70%). Architects felt that the structural engineer should be familiar with LEED but their scope of work on a LEED project does not change. Most felt that a structural engineer’s main contribution to sustainability was material and structural system selection.

STRUCTURAL ENGINEER-OF-RECORD SELECTION

Architects overwhelmingly view structural engineers as a valuable part of the design team and typically select their structural engineer based on previously completed projects with a specific engineer / company. Architects think the most important characteristic / quality for structural engineers to possess is technical expertise; the least important quality is personable, easy to work with. Architects think the two most important qualities of engineer’s contract documents are coordination and technical accuracy; the least important is aesthetics / readability.

Structural Engineering Services

Overall the architectural community is pleased with the scope of services provided by the structural engineers they interact with. Less than 7% of the respondents deemed the structural services provided fell short of the defined scope of work. Of the seven listed services that a structural engineer typically provides, six were deemed “Good” or “Excellent” in lieu of “Fair” or “Poor”. The architectural community would like specific discussion of the engineering services that are excluded, and most would like to see the overall services better defined. Only 7 of the respondents were familiar with the “*A Guide for Consulting Structural Engineering Services in Colorado*”.

IPD

Architects who responded felt that IPD is just starting, but will be the focus in years to come and will take several years to become more efficient. The opinion was that the Owner/Contractor/Architect and System engineers make up the IPD team. Communication between all members of the project team seemed to be the most common item of “High Importance” in regards to IPD.

GENERAL NOTES - General Announcements

Construction Industry Liaison Committee

The **Construction Industry Liaison Committee**, formerly the **Architectural Liaison Committee** of the **Structural Engineers Association of Colorado** asked for local architects to participate in a survey that was intended to help better understand some of the “HOT” topics that are currently creating a different working environment in the construction industry. The Committee would like to thank those of you who helped promote the survey. The survey results are complete and we would like to share the results as well as a brief summary with the membership of SEAC. The next steps for the **Construction Industry Liaison Committee** is to:

1. Get a similar survey out to the local General Contractor community.
2. Get and distribute the results from the General Contractor survey.
3. Get a similar survey out to the SEAC membership community.
4. Get and distribute the results from the SEAC membership survey.
5. Get feedback from the SEAC membership and determine how best to get representatives from AIA, GC's and SEAC together to share, in finer detail, points of discussion around the major topics.

I encourage you to take the time view the full results and enjoy some of the comments that the architectural community shared with us. Please visit the SEAC website to view the survey responses as well as the survey summary. It is posted in the “Members Only” section on the SEAC website www.seacolorado.org. It is well worth the time to see some of the feedback that was received.



ANNUAL DINNER

Events
6:00 p.m. - 7:00 p.m. - Cocktails
(Cash Bar)
7:00 p.m. - 7:45 p.m. - Dinner
7:45 p.m. - 9:00 p.m. - Presentation/
Awards

Cost:
\$40.00 Per Person

Thursday November 18, 2010
Renaissance Hotel

See Annual Dinner Registration Form

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To learn more visit www.acec-co.org and select seminars/programs on the left menu bar then click on the gold Future Leader logo. You can read about the workshop dates, titles, descriptions and how to register. Join other engineering rising stars to become the next generation of Future Leaders.

Classes Start March 1, 2011. Reserve space NOW~~Limited seating is available.



ANNUAL DINNER 2010

STRUCTURAL ENGINEERS ASSOCIATION OF COLORADO

REGISTRATION FORM

Spray Foam in IRAQ - An Engineers Deployment Annual Dinner

Renaissance Hotel
3801 Quebec Street

Events

6:00 pm - 7:00 pm - Cocktails/Tours (cash bar)

7:00 pm - 7:45 pm - Dinner

8:00 pm - 9:00 pm - Presentation/Awards

Cost: \$40.00 Per Person

RSVP: Submit this Registration form by Monday, November 15, 2010
to seac@martinmartin.com

Please remit payment with this Registration Form (make checks
payable to SEAC) to:

SEAC
c/o Martin/Martin, Inc.
12499 West Colfax Avenue
Lakewood, CO 80215

Payment Submitted ____ or Pay At The Door ____

Your Name _____

Guest Name _____

Company _____