SEAU *NEWS*

The Newsletter of the Structural Engineers Association of Utah

Volume V- Issue III November 2000

This newsletter is a monthly publication of the Structural Engineers Association of Utah.

Articles or advertisements appearing herein may be submitted by anyone interested in expressing a viewpoint on structural engineering.

Articles for publication may be submitted to:
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sadan@reaveley.com
Advertisements for publication may be submitted to:
Mike Buehner, Advertising
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Bridge over 6th South Street to Trolley Square in Salt Lake City Utah. Old smelter truss was analyzed, and retrofitted by Weber Engineering.

IN THIS ISSUE

NOVEMBER EVENT

Masonry Design and Analysis: Past, Present and Future

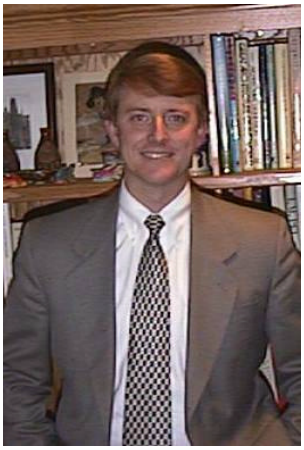
Presented by:
SEAU

Program Date:
Thursday November 16, 2000
5:30 p.m. Social
6:00 p.m. Meeting and Program

Location:
University of Utah
Engineering and Mines Building
Room 104

MESSAGE FROM THE BOARD

MY PROFESSIONAL OBSERVATIONS



By A. James W. Williams, SEAU Vice President

It is hard to believe that the year 2000 is fast approaching an end! Some of the greatest structural engineering advancements for the last millennium have occurred within only the last 10 years. With the rapid change in computers, software, scientific technologies, building codes, as well as building materials, (not to mention litigation), etc...it is a wonder we as engineers are able to keep up.

With all this advancement, is our profession here, locally any better than it was say 10 years ago, or even 5 years ago? Clients are spending more money on buildings than ever before. With the increased cost of construction, and the greatly improved architectural designs, contractors and design firms continue to prosper. Have we as a society of structural engineers kept pace? Or are we actually digressing?

Sure our fees have slightly increased over what they were a few years ago, but was it enough to keep up with the cost of doing business. With increased technology aren't we as engineers expected to provide more accurate and thorough designs (which of course require faster computers, the latest software, and new codes).

CONTINUED ON PAGE 3

MEMBER FORUM

FOCUS

Utah Structural Engineers provide a significant contribution to a wide variety of projects for commercial, government, industrial, and residential clients. Each month, SEAU would like to focus attention on the accomplishments, successes, and hard work of our Utah Structural Engineering firms. This month the focus is on:

Eagle Precast

Eagle Precast, formerly a division of Monroc, Inc., is a manufacturer of a vast array of engineered precast and prestressed concrete building components and systems. Similar to Young Electric Sign Company, which was recently highlighted in this publication, Monroc, Inc. has early roots in the intermountain region.

Around 1927 the Ryberg brothers opened and operated a sand and gravel quarry at the current Beck Street site, which today is the main headquarters for Eagle Precast.

In 1998 Monroc, Inc. divested themselves of the precast division, and Eagle Precast was formed. Today, Eagle Precast has streamlined operations with plants in Salt Lake City, and Boise, Idaho, supported by 4 licensed engineers and 7 drafters. Quite a number of regional engineers have cut their teeth in the precast industry and we continue to interact with most of the local structural engineering offices. Whether we may supply precast components or collaborate on an entire precast system we look forward to our association with SEAU.

Several highlights begin with our first multi-story entire precast building system, the Pioneer Bank building in Evanston, Wyoming. This structure was completed in 1982-83 and utilized Dywidag tension rods, splice sleeves, and compositely topped hollow core diaphragms.

Indian Springs Air Control Tower

More recently, the Indian springs air control tower was constructed in Indian Springs Nevada. This Air Force air traffic control tower was designed as an all precast structure.

ASARCO Ore Handling Facility

One of our unique precast structures is the ASARCO ore handling facility outside of Helena, Montana. This structure is 105’ across by 750’ long and has 75’ tall wall panels.

The seismic zone 2B lateral frame is accomplished with transverse AASHTO type VI girders with end blocks where NMB splice sleeves mate them to 72” columns. This allowed an unobstructed train ore car load/unload facility.

Hoover Dam Visitors Center

At the Hoover Dam Visitors Center, a 3-D map of the cliff rock face was utilized to cope the precast wall panels to within a 2” dimensional tolerance. This gave the overall appearance of a cylinder projecting from the rock. The precast panels were cantilevered and suspended off of a steel moment frame.

Challenges in precast concrete design revolve around seismic code criteria and ductility concerns. To better understand existing limitations within the precast industry Eagle Precast has partnered with the University of Utah and Dr. Chris Pantelides. We have undertaken cyclic load testing of one of our precast wall systems.

To stay abreast of innovation, Eagle Precast as a member of the Precast Concrete Institute, participates in the PRESSS program. This experimental program analyses unbonded post-tensioned precast wall panels in regions of high seismicity. They are able to undergo large nonlinear lateral drifts with little damage or residual displacements.

Thank-you for the opportunity to present our company and participate in the activities of the Structural Engineers Association of Utah..

MESSAGE FROM THE BOARD (continued from page 1)

We must now not only understand past codes and current codes, but also new codes as they are being written and developed. We owe it to our clients to provide them with the best building possible, but are we being compensated fairly? And if we aren't, is it the owner's fault? How about the architect, is it his fault? I think the fault lies with ourselves. We are so eager to do the best job we can engineering, we, as a profession, have not taken the time to ensure that we were being paid for all the we were doing. We are good engineers, but poor businessmen. It isn't until the project is complete that we find our fees were only a portion of what they should have been.

In addition to the problems we have created for ourselves, we are fast approaching a time when there will be more elderly people in the world than ever before, meaning more people retiring, and fewer people entering the work force. This will, and is resulting in a shortage of engineers. Due to supply and demand, companies will have to pay more money for engineers, or find other incentives for attracting and retaining them.

There is a tremendous amount of growth projected for our area, and the winter Olympic hype is more than just that. Several new engineering firms have opened offices locally in hopes of broadening their cash base. And most have been quite successful I might add.

As bad as all this sounds, these are actually all very good things and we will all profit from them. The engineering shortage will force companies to increase their fees or change their business practices in order to afford their employees. New engineering firms will expect higher fees from clients. They may also help to raise the standard of engineering in some areas.

Typically we have lagged behind our neighboring states, California and Nevada. They have already dealt with many of these issues. The structural engineers in each of those states are highly respected, and well compensated. Building officials, contractors, architects, and owners all look to them for needed answers. Our profession will not improve as rapidly as it could, if we don't become pro-active.

Some of the ways in which our profession here locally differs from California and Nevada are;

1. In most areas, structural plan reviews are done by engineers, and most buildings are reviewed (including residential). This helps to raise the standard of engineering as well as fees.

2. The structural engineering license actually means something. The most recent examination results for the state of Washington are as follows; Structural I, 88.1% passed, Structural II, 73.6 % passed, Structural III, 18.4% passed. The structural III license is the same exam that is used by California, Nevada, Hawaii, and Oregon. When I took the test several years ago, the pass rate was 17.3%. The structural I and II exams are the NCEES national exam. No wonder the structural engineers in the above mentioned states earn more money. They are experts at what they do, and have been tested to prove it. I personally feel we made a mistake as a profession by taking the easy road and allowing everyone to be grandfathered into the structural license. It will now take another 20 years before the Utah structural license will mean what it should.

Even a bigger factor is that a structural license in the state of Utah is no different than having a professional engineers license? Why should we be paid more if every engineer in the state can do what we do? The fact is they can't , but our clients don't know that. Maybe we should have a higher standard for ourselves and instead of being content with the Utah structural license, we should aspire to pass the California test? Even getting the state to acknowledge the title of structural engineer was a challenge. Now however, it is time to give it some meaning.

3. Building Departments should require that the engineer of record provide certification that the building was in fact constructed per his design. Currently when special inspection is required, the special inspector signs off on the building. Most special inspectors do not fully understand how the building was engineered and is intended to perform. If the every engineer had to sign off on each building, then our clients would begin to see our importance, which would also result in more services, and better compensation.

4. Each of us needs to be realistic with what the actual construction costs are. Often times our fees are based on a percentage of the cost of construction. When inaccurate costs are represented, are fees are not sufficient to provide all of the services we should be doing, and if we do them, we loose our shirts. Fees should be base on an accurate estimate of the cost of construction. The cost of construction should include the cost of the completed building, excluding furnishings, and should include

the contractors profit and overhead (including general conditions) - all of which adds up to approximately 25% more than the costs that are typically presented to us. The RS Means Square Foot Costs is an excellent source for this type of information.

5. When possible, contract directly with the owner, or contractor. They value what you do, and are happy to pay for your services. Currently it is easier for a contractor to subcontract with a mechanical sub-contractor who has engineering capabilities, and same for electrical. They avoid contracting with the structural engineer because we are not a line item on their standard forms. They are also worried about liability issues. Out of state contractors seem to have overcome these problems.

6. When the scope of work changes, ask for a change order before doing the work. The change in scope will benefit either the builder or owner, and you should be paid for the additional work you are doing. We have done work for several out of state clients who have actually asked us for our change order amounts. Our fees have more than doubled on some of these projects due to change orders. If design-build is properly implemented, then the design professionals should be getting compensated for all their work. Educate your clients.

7. Read your contracts. Most have printing, copies, travel, postage, etc.. listed as reimbursable expenses. Clients don't complain if this is explained to them up front. Over a years time you will be surprised how much plotter supplies add up to.

8. In other states, the public is aware of what structural engineers do. Even homeowners know they need an engineer in order to build a house. (Houses by the way can be much more complicated than commercial structures). Locally, how many people know what a structural engineer does? Or why we are needed? Do our wives even know what we do?

9. Continuing education? Already required by many states.

10. Disciplinary actions for poor practices?

11. Should engineers be required to carry errors and omissions insurance? There are many engineers who do not carry insurance. Shouldn't they have to disclose to their clients that they are not insured?

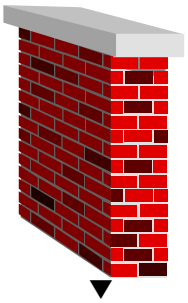
12. As engineers in eastern states begin to have to provide seismic detailing, and analysis, their fees are sure to rise, and hopefully have a positive affect on us in some ways. Particularly, if you do work outside of the state.

We have many areas where we as a profession can improve. Even a little effort in a few of these areas will result is big changes. In addition to improving our profession, many of these items will directly benefit the public. Bottom line, in addition to these items, we must continue to find ways to provide better and more complete services. The intent is to improve our profession, by improving how we do business and better serve our clients, the public.

By the way, these opinions do not necessarily represent the opinions of the SEAU Board. I waited too long in writing this article that no one else has had a chance to read it.

NOVEMBER MEETING

Masonry Design and Analysis: Past, Present and Future



Sponsored By:
SEAU

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Presented By:
Dean D. Brown, P.E., M.B.A.
Clay Division Technical Manager
Interstate Brick Company

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Thursday November 16, 2000
5:30 p.m. Social
6:00 p.m. Meeting and Program

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Location:
University of Utah
Engineering and Mines Classroom Building
Room 104

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Mr. Brown will be focusing on the following:

1. Masonry building codes and how they changed.
2. Masonry design theories.
3. Masonry building systems.
4. Masonry computer design programs.

UPCOMING EVENTS

STRUCTURAL ENGINEERING WINTER INSTITUTE

Environmental Loads on Structures: Wind, Snow and Seismic

Sponsored By:
National Council of Structural Engineers Associations
NCSEA

January 21-24, 2001

Location:
Phoenix, Arizona

Visit the NCSEA website at www.NCSEA.com for more information on the program and on Phoenix.

2001 STRUCTURES CONGRESS & EXPOSITION

2001 Structures Congress & Exposition
"A Structural Engineering Odyssey"

Presented By:
The Structural Engineering Institute of the American Society of Civil Engineers presents:

May 21-23, 2001

Location:
Washington Renaissance Hotel
Washington, D.C.

For more information, check
www.asce.org/conferences/structures20001

UPCOMING SEAU PROGRAMS

Newland Malmquist heads this year's SEAU programs committee. Assisting Newland is Brent Maxfield and Julie Ott. If there is anyone who would like to help out with the program committee, or if you just have a great idea for a program, please so not hesitate to call Newland, Brent, or Julie. Your input/help will be greatly appreciated. The following is a tentative program schedule for 2000-2001:

December:	Happy Holidays! (No Program)
January:	Program TBA
February:	Engineering Week (No Program)
March:	Program TBA
April:	Program TBA
May:	Program TBA/Officer Elections

BULLETIN BOARD

BULLETIN BOARD FEATURE

The object of this bulletin board feature is to present unique or interesting construction photos, which highlight one of the following:

1. Unique construction photos of Utah landmarks.
2. Photographs of unique construction methods employed by creative contractors.

Please submit all photos to editor. Electronic submittals are preferred. The following is this month feature photo:

Steel column to concrete foundation connection has apparently missed the "mark". Submitted by J.M. Williams & Assoc., Inc.

SEAU MEMBERSHIP APPLICANTS

The following individuals have submitted applications for approval by the SEAU membership committee for new members:

1. Gary R. Cahoon, *Professional*
2. Cambria Lambertson, *Associate*
3. John P. Reeve, *Professional*

NEWLETTER SUBMITALS

This SEAU Newsletter is designed to keep you informed of events and activities that affect our association and your involvement with SEAU. In addition, the newsletter can be a forum for you to share your views with your fellow engineers, post advertisements, or target a very select group of professionals.

Please have articles delivered to Scott Adan, c/o Reaveley Engineers & Associates, Inc., 1515 East 1100 East, SLC, UT 84105, Phone 486-3883, Fax 485-0911, Email: sadan@reaveley.com.

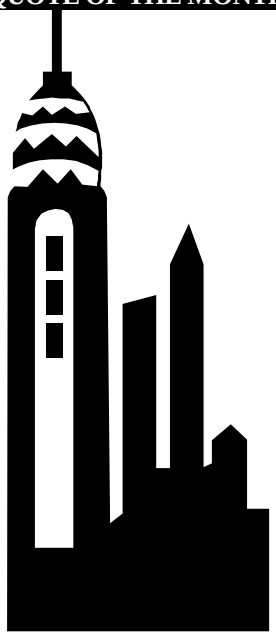
December Deadline: Not Published
January Deadline: Jan. 4, 2001
February Deadline: Not Published
March Deadline: March 1, 2001
April Deadline: April 5, 2001
May Deadline: May 3, 2001

THIS SPACE FOR RENT

The newsletter can be an excellent forum to advertise and target a very select group of professionals. To find out more contact:

Mike Buehner, c/o Reaveley Engineers & Associates, Inc., 1515 South 1100 East, SLC, UT 84105, Phone 486-3883, Fax 485-0911
Email: mbuehner@reaveley.com

QUOTE OF THE MONTH



"Every man owes part of his time and money to the business or industry in which he is engaged. No man has a moral right to withhold his support from an organization that is striving to improve conditions within his sphere"

– President Theodore Roosevelt (1908).

Please support SEAU!

CLASSIFIEDS

STRUCTURAL DESIGN ENGINEER

Reaveley Engineers & Associates seeks structural engineers to be part of our consulting team. If you enjoy challenges, are self-motivated, have excellent verbal, writing and computer skills, and would like to work on large scale, high profile projects, we would like to talk to you! Three years or more building experience in structural engineering is preferred. Salary commensurate with qualifications. Send resume to:

Reaveley Engineers & Associates
1515 South 1100 East
Salt Lake City, Utah 84105
Attn: Parry Brown
FAX: (801) 485-0911,
E-mail pbrown@reaveley.com

PROJECT ENGINEER

Barry H. Welliver Structural Engineer is a small, growing company located in the southeast corner of the Salt Lake valley. We are currently looking for persons with a minimum of 5 years experience in building design with project management capabilities. Our work consists of commercial and residential design for new structures as well as rehabilitation of existing buildings. Don't miss this opportunity for professional growth. Send letter of interest and resume to:

Barry H. Welliver
13623 S. Bridle Trail Road
Draper, UT 84020
E-mail: wellive@attglobal.net.

STRUCTURAL ENGINEER POSITION

J.M. Williams & Associates, Inc. has an immediate opening in their Salt Lake City Office for experienced, self motivated structural engineers. Must have at least 2 years experience. Utah license is a plus. Knowledge of; concrete, masonry, steel and wood. Commercial and residential projects. Benefits and competitive salary. Please call:
Phone: (801) 575-6455
Or fax resume to (801) 575-6456

J. M. Williams and Associates, Inc.
57 West South Temple, Suite 210 - Salt Lake City, Utah 84101 - 801.575.6455 and
1433 South State Street / Parvenu Plaza - Orem, Utah 84097 - 801.229.2014

STRUCTURAL ENGINEER

Dunn Associates, Inc. is growing and seeking a Structural Engineers with three or more years of experience. Excellent salary with room for growth.

Please Contact:
Dunn Associates, Inc
Phone: (801) 575-8877

SEAU Presents:

Masonry Design and Analysis: Past, Present and Future

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Location:
University of Utah
Engineering and Mines Classroom Building
Room 104

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STRUCTURAL ENGINEERS ASSOCIATION OF UTAH

P.O. Box 58628
Salt Lake City, Utah 84158-0628