

# SEAU *NEWS*

*The Newsletter of the Structural Engineers Association of Utah*

*Volume XI- Issue V February 2007*

*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 may be submitted to:*

*Richard Seelos, Editor  
(801) 486-3883 rseelos@reaveley.com*

*Advertisements may be submitted to:*

*Jerod Johnson, Advertising  
(801) 486-3883*

*jjohnson@reaveley.com*

τ



**Pierre Lescot**

a French architect active during the French Renaissance  
see page 2.

## IN THIS ISSUE

Message From The Board.....	p 1
Focus Article.....	p 2
Technical Article.....	p-3
Bulletin Board .....	p 5
Upcoming Events .....	p 6
Newsletter Deadline.....	p 6

## FEBRUARY EVENT

**DR. S. K. GHOSH**

*Analysis of Revisions to the  
2006 IBC Structural Provisions.*

February 15, 2007  
5:30 PM  
EMCB, U of U

**See page 8**

## MESSAGE FROM THE BOARD

### **REACHING OUT TO THE LESS - ACTIVE**



By Russell Merrill,  
SEAU Secretary/Historian

**A**s a recently re-activated member of SEAU, I thought I might write a brief article on why people might shift their priorities away from

active participation in this organization, and what if anything we can do to help bring them back. My personal road back started with the call I received that invited me to accept this position as secretary. Obviously there are not enough board positions to have this method affect a significant number of people.

So what are the various reasons some people drop their participation? What are the reasons some people maintain their support? I have heard it said that there are 4 types of motivation for action or lack of action.

1. Desire to avoid bad effects caused by the action or lack of action.
2. Desire to gain rewards that the action might cause.

CONTINUED ON PAGE 4

## FOCUS

*SEAU NEWS intends to highlight some of our most interesting and important buildings in Utah. We also wish to provide biographies of famous structural engineers.*

*If you have a particular interest in a building or person you would like to see highlighted in this space, please contact newsletter committee member Cameron Empey at (801) 486-3883 or cempey@reaveley.com.*

*This month the focus is on:*



## Pierre Lescot

From Wikipedia, the free encyclopedia

**Pierre Lescot** (Paris c.1510 – Paris 1578) was a French architect active during the French Renaissance. François I took him into his service, and appointed him architect in charge of the building projects at the Louvre, which transformed the old château into the palace that we know. A project put forward by the architect and theorist Sebastiano Serlio was set aside in favor of Lescot's, in which three sides of a square court were to be enclosed by splendid apartments while on the east, facing the city as it then was, the fourth side was probably destined to be lightly closed with an arcade. Festive corner pavilions of commanding height and adorned by pillars and statues were to replace the medieval towers. Little was actually achieved beyond razing some of the old feudal structure.

Though Lescot was confirmed in his position after the king's death by his heir Henri II, and though he worked at the Louvre project until his death, only the west side and part of the south side were completed, comprising the present southwest wing of the *Cour Carré*, the *Aile*

*Lescot*, or "Lescot Wing". The building executed in 1546–51 set the mold of French classicism: it is of two stories with an attic richly embellished with Jean Goujon's panels of bas-reliefs crowned by a sloping roof, a traditional feature of French building and practical in a rainy climate. The deeply recessed arch-headed windows of the ground story give the impression of an arcade, while the projecting pavilions bear small round *oeil de boeuf* windows above them. In the second storey slender fluted pilasters separate the windows, which alternate delicate triangular and arched pediments. Goujon's noble sculpture and architectural ornaments are cleverly subordinated to the construction, but the surviving groundfloor *Salle des Caryatides* (1546–49) is named for Goujon's four caryatid figures that support the musicians' gallery. Of Lescot's constructions at the Louvre there also remain the *Salle des Gardes* and the Henri II staircase.

His first achievements (1540–45) were the rood-screen in St-Germain-l'Auxerrois, of which only some sculptures by Goujon have been saved and in Paris the Hôtel de Ligneris (1548–50, now the Musée Carnavalet), which was thoroughly altered by François Mansart. Here and especially in the design of the Fountain of Nymphs (1547–49), his moderate part is outshone by Goujon's sculpture.

Lescot's career is so scantily documented it is not known whether he ever visited Italy, or whether his knowledge of Italian practice was derived through the architecture and engravings that issued from the School of Fontainebleau. All of Lescot's known works have sculptural decoration by Trebatti and by Jean Goujon, who collaborated with him at the Louvre. Unlike the other architects of the French Renaissance, Pierre Lescot was not from a line of masons but the son of a seigneur. His father, also Pierre Lescot, was sieur of Lissy en Brie and Clagny, not far from Versailles, seigneuries his son Pierre inherited. Although, according to a letter from Ronsard, Pierre Lescot busied himself zealously in early youth making drawings and paintings, and, after his twentieth year, with mathematics and architecture, his wealth and the duties of his offices appear subsequently to have interfered with his artistic activity. No other documented works are identified.



**MESSAGE FROM THE BOARD (CONTINUED FROM PAGE 1)**

3. A sense of duty related to the subject of the possible action.
4. Passion for the subject of the possible action.

When it comes to trying to describe what motivates the very active members of SEAU it is probably one or a combination of these items. For the majority of very active members, I like to believe it is almost all a passion for the subject.

I sincerely hope that going in-active from SEAU rarely has to do with some kind of offense being taken from a prominent member. For people who lose their former level of activity, their reasons are likely some form of the opposite of four items of motivation listed above. They don't see / understand what SEAU accomplishes, takes care of items 1 and 2. Because they are not seeing SEAU benefits or accomplishments, item 3 comes into play. For those of us with SEAU activity issues, it is hard to admit it, but the opposite of number 4 is playing a part. For me specifically, I had a life-changing event occur that drastically altered my time priorities, and SEAU participation became a casualty.

So what can we do to help the less-active, or those who are not members? I believe that pushing or pressure in the wrong way will not help. What is the biggest SEAU benefit? I believe it is the high quality seminars that the organization arranges, along with arranging the subsidy from DOPL. This is the most tangible benefit, among others along with just the simple fact that a local forum for handling issues related to the advancement of our profession of a really good idea. This knowledge helps me build my sense of duty motivation.

So can we just explain these things to those who are not members or are less active and expect that they will dive in with huge passion? I am afraid not. It is not that easy. I believe we must develop our passion, maintain our passion, and make sure our passion shows. SEAU invites you all to strive for increased participation, and let your example of passion bring others with you. It is not going to be easy. But we never said it would be easy. We only said it would be worth it.

**BULLETIN BOARD**

**SEAU – SEISMIC COMMITTEE by STEPHEN COHEN**

There are two separate topics we would like to address, first being the statewide amendments to the IBC and second is an issue dealing with tilt-up concrete that we have been assigned to address by the SEAU Board.



Beginning January 1, 2007 the 2006 edition of the IBC went into effect. Along with the adoption of this code, the statewide amendments to the IBC also went into effect. Since some of these amendments were seismic in nature and two of the Seismic Committee members are on the Structural Advisory Committee to the Uniform Building Code Commission, the Seismic Committee spend considerable this past summer reviewing these amendments. A summary of these amendments as they relate to structural engineering are as follows:

1. In the adopted provisions that may be used by building officials in evaluating existing buildings, the 1997 UCBC (Uniform Code for Building Conservation) was dropped and replaced with the 2006 IEBC (International Existing Building Code). Also, ASCE 31-03, Seismic Evaluation of Existing Buildings was added as an approved method.

2. In several references to snow load to be included in seismic design the amount of snow and the importance factor to be used with this load combination were updated to current references. Also, other references in regards to snow loads were updated including the use of the thermal factor, Ct being equal to 1.0 when the Utah Snow Load Study is being used.
3. As an alternate to the simplified wind design as is currently found in the IBC and ASCE 7, a provision allowing the 1997 UBC Wind Load criteria was added.
4. The references to and wording of the requirements for seismic upgrade required by change in occupancy were updated to match references and wording found in the 2006 IBC.
5. The wording of the parapet ordinance was revised. In re-looking at this ordinance we believe that we need to add some additional mandatory language.

The above is just a quick summary. The complete language of this document can be found by following links from [http://www.dopl.utah.gov/licensing/ubc\\_commission.html](http://www.dopl.utah.gov/licensing/ubc_commission.html).

**SEAU – SEISMIC COMMITTEE by STEPHEN COHEN**

Note that one amendment that was not successful in getting through the Structural Advisory Committee was an amendment dealing with snow loads in Wasatch County. Wasatch County has been using their own independent study for snow loads in their county since the early 90's. However, they have lost their backup data and the engineering firm (Bonneville Engineering), which did the study, is no longer in business. If anyone knows of the where this backup data can be found, Wasatch County would be greatly thankful for this information.

On a separate issue the SEAU Board has directed the Seismic Committee to study a position paper written by SEAOC in regards to the connection of tilt-up (or precast panels) to the foundation. At issue is that some buildings are detailed with no connection to the footing, but instead are simply doweled to a reinforced slab on grade. The allowance for this connection can be found in ACI-05 Section 16.5.1.3(c) which reads:

When design forces result in no tension at the base, the ties required by 16.5.1.3(b) shall be permitted to be anchored into an appropriately reinforced concrete floor slab on grade.

The equivalent passage in the UBC used by SEAOC in their position paper is found in an exception in the 1997 UBC Section 1915.8.3.2. Many engineers and plan checkers in California believe this is a poor provision in seismically active areas and rely on other section in the UBC to counter the above provision. The final paragraph of the SEAOC position statement reads:

It is in theory possible to provide an exclusive connection to the slab-on-grade based on the specific language of 1997 UBC 1915.8.3.2, provided that a "rational load path" is established to transfer the in-plane and out-of-plane forces through the slab-on-grade and to the supporting soil. However, slab-sliding resistance is difficult to predict, especially where a moisture/vapor retarder such as Visqueen is provided. Also, unreinforced or jointed floor slabs are unlikely to provide a rational load path. For these reasons, as well as the desirability of being able to mobilize the lateral sliding strength of foundations, the SEAOC Seismology Committee strongly recommends that designs in seismically active areas always include either a direct or indirect connection to the foundation footings. An indirect connection might consist of the current rebar from wall panel to the pour-strip, plus additional rebar to connect the pour-strip to the footings.

Our committee is in the early stages of reviewing this issue and as such has not formed a cohesive mind in

determining what our recommendations should be for this practice in the State of Utah. We were in agreement that a direct or indirect connection seems more reliable and does not have as many design challenges as a slab only connections including the what ifs (i.e., what if the owner in a future remodel cuts the existing reinforced slab on grade for a future plumbing line and in so doing disconnects the slab ties from the wall).

We discussed three options, one, remain silent and let individual engineers and plan checkers develop their own procedures; two, develop our own position paper stating what we believe to be good design practice and distribute this paper to local engineers and building officials; or three, support a code amendment restricting the use of the slab only connection to areas of low seismicity and/or stating all the design requirements needed to insure a complete load path for the slab only connection. The code amendment could be dealt with on a local level only (i.e. Utah State amendments) or could be handled on a national basis with other organizations involved such as SEAOC.

If you'd like to weigh in on this topic, please call, send a letter or email any of those on the Seismic Committee. If you'd like a packet on what we are using to review this issue, please contact one of the Seismic Committee members.

**Seismic Committee Members:**

Stephen Cohen, Chair  
 Barry Welliver, SEAU Board Member Representative  
 Justin Naser, Secretary  
 Don Barfuss, Member  
 Leon Tanner, Member  
 Ken Willmore, Member (Past Chair)  
 Steven Powel, Member



**SEAU – EMERGENCY RESPONSE COMMITTEE by ROBERT CONDER**



Are you ready for the next big disaster? When a disaster strikes close to home do you know what to do? While discussing our role as engineers after an earthquake with several Northern Utah Emergency Task Force leaders it was asked that we also consider CERT training.

The Community Emergency Response Team (CERT) is a group of citizens trained to assist during those times when professional emergency response teams (i.e. police and firemen) are unable to respond completely. One of the goals we have in the Structural Engineers Emergency Response committee is to establish a working relationship with State and Federal (FEMA) Urban Search and Rescue programs. In the addition to the ATC-20 training that many of us received last May, CERT training would be valuable to help aid each of our communities after any disaster.

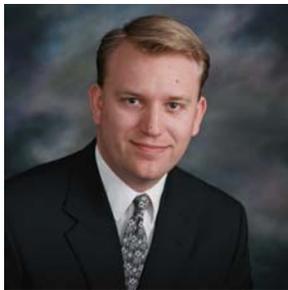
Typically CERT training is taught through seven 3-hour classes at local fire and city centers. These classes train members how to identify hazards in the area (some of which is similar to the ATC-20 training), assist in personal and family preparedness, basic fire

suppression, first aid/triage, and basic search and rescue.

The best way to find out about local training is on your city’s website or by calling your city’s management. I do have some contact information for some of the local cities. You may call me at 801-576-6414. Another person to contact is Lani Nisbet of Utah Citizens Corp at 801-538-8606 or at [citizencorps.utah.gov](http://citizencorps.utah.gov). The typical cost for the training is around \$20; however, it varies by city. If you wish to take the course for free you can take the course in Sandy by calling Ken Kroudy at 801-568-7279. Each city typically holds training each quarter. Additional information can also be found at [cert.utah.gov](http://cert.utah.gov).

Another motive for having each of us take the course is the help make contacts within each city and let them know about our ATC-20 training. Then when a disaster occurs, they will know who to contact. In contacting the directors of different cities, I discovered that very few even knew of ATC-20 training. We know that there are many of you who wish to assist after any disaster, as evident by all those who volunteered after Katrina and those that took the ATC-20 training. This is a great opportunity for each of us to be able to assist others when our help is needed.

**SEAU – PR-WEB PAGE COMMITTEE by JAKE WATSON**



Our Public Relations / Web Committee is currently working towards three lofty goals:

1. Increase public awareness of Structural Engineers
2. Establish SEAU members as the

preeminent members of the Structural Engineering Community

3. Make SEAU the “go-to” organization for public issues related to structural safety and policies.

Over the past several years we have made progress towards these goals. We have made publications for other organizations, educated professionals, and aided our membership in numerous ways.

We would like to continue these efforts and expand them. If you are a SEAU member and would like to help, a lot or a little, we could use some new faces. Our committee has three immediate tasks:

1. Support Structural Licensing and Legislative Committees through the legislative session

2. Improve the SEAU website by updating and finishing the design criteria pages
3. Help maintain the e-mail and membership lists.

This committee is a great and easy to way to get involved. We can use help from student members up through life members. Also, if any member has goals they would like to see the PR committee pursue, please send me an email. If you would like to help, please send an email to [seau@seau.org](mailto:seau@seau.org). Any help will be greatly appreciated.

**SEAU NEWSLETTER DEADLINE**

November SEAU News deadline is **October 26<sup>th</sup>**.

We expect updates from the following committees:

- SEAU Past President
- Codes Committee
- Residential Design Committee
- UEC Delegate

**SEAU MEMBERSHIP APPLICANT**

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

None at this time

**Can Ethics Be Taught?**

One of the toughest attitudes to address about ethics is “You can’t teach ethics to adults. You either have them or you don’t.” Ironically, I sometimes hear this view from individuals who are responsible for continuing education or professional development programs—in other words, people who are responsible for the character education programs of licensed professionals. Those who espouse this attitude have essentially given up on the notion that adults can be taught new skills or improve the ones they have. While it may be true that is difficult to change attitudes once they are ingrained, research studies indicate it is entirely within the realm of possibility that we can learn new skills and behaviors, including ethical decision making skills.

Psychology professor Lawrence Kohlberg studied moral development. He theorized and later demonstrated through his research that ethical decision making skills can be not only be taught, but can also be developed and enhanced. His theory suggested that there are at least six stages of moral development:

- Stage 1 moral thinkers believe that you should do the right thing because otherwise you will get in trouble.
- State 2 thinkers believe you should do the right thing so that others will give you something in return.
- Stage 3 thinkers believe that you should do the right thing so that people will like you.
- Stage 4 thinkers emphasize the importance of laws and rules and believe that following those guidelines is important for an orderly society.
- Stage 5 thinkers are critical thinkers who believe that a society’s laws may be flawed. They believe in possible exceptions to the rules.
- Stage 6 thinkers believe in universal ethical principles that go beyond a particular society’s rules.

Research studies indicate that while it is difficult to bring about a significant change in an adult’s level of ethical reasoning in an artificial environment, such as a classroom, it is, nevertheless, possible. Business and education college majors, for example, experience the largest gains in ethical reasoning skill development when exposed to appropriate ethics education programs.

Researchers have also determined the following:

- Individuals must go through stages in sequence. Individuals do not skip from Stage 1 to Stage 3, for example. This finding is true regardless of the cultural or regional background of study participants.
- Generally, stage development is not reversible. Once individuals have reached Stage 4, as an example, they will use Stage 4 as their dominant navigational style for

handling ethical dilemmas. Stage 4 thinking, by the way, is the typical navigational style for adults.

- Individuals can’t comprehend moral reasoning at a stage more than one beyond their own. For example, a Stage 2 adult (“I will do this for you if you do something for me”) may understand Stage 3 reasoning (“What will the neighbors say?”), but they will not appreciate or understand Stage 4 (“If everyone just did what they wanted, our society would fall apart.”) It is best to reason with individuals based on their own level of development.

- Stage development occurs when one’s cognitive outlook is inadequate to cope with a dilemma. Bonafide change occurs when we confront real—not hypothetical—ethical problems at home and at work. We realize that our former method of dealing with problems no longer resolves the problem to our satisfaction. For example, teenagers who typically use Stage 3 thinking “I wonder what my friends would think” may not find Stage 3 reasoning appropriate or satisfying when their friends ask them to experiment with drugs. As another example, Stage 4 scientists who are on the verge of human cloning (“I must follow the law”) may find that level of reasoning inadequate when there are no laws or guidelines to follow. What we can do in the classroom and at the office is orient and train adults to be ready for ethical dilemmas by giving them many opportunities to learn discuss ethical decision making strategies.

- Individuals are cognitively attracted to reasoning at one level beyond their own. In other words, while we may be unable to mimic the conduct of individuals more advanced in their reasoning skills, we can still be inspired intellectually by those who are more mature in their judgement and in their behavior.

It is this last finding that is most compelling. Our attraction to ethically superior people suggests not only that we are capable of being taught, inspired and led, but also that individuals who are more advanced in their reasoning skill have the obligation to speak up, teach, and lead.

Deborah H. Long, Ed.D., DREI  
Continuing Education Programs for Licensed Professionals

(919) 968-3742

[www.derorahlonh.com](http://www.derorahlonh.com)

Copyright © Deborah Long 2000

## ADVERTISEMENT



We are looking for a Structural/Civil Engineer with a desire to do more than just sit in the office all day! Structural concrete products design experience and P.E. registration preferred, but can train an EIT. Duties include precast concrete design work and cost estimating, along with project management and close involvement with clients and the production staff for each project. Being involved from start to finish leads to a very exciting work environment and a rewarding experience! Good computer skills, written/verbal skills, and unique problem solution skills are very helpful for this position. Benefits include a company car, insurance, and competitive wages!

Fax resume to EnCon Utah at (435) 843-4239, or call Glen Palmer at (435) 843-4230 or (800) 578-9773.

## UPCOMING EVENTS

**February 23, 2007**

UTAH ENGINEERS COUNCIL ENGINEERS WEEK BANQUET 2007

6:00 p.m. at the Wasatch Vista Room in Wells Fargo Building, 23<sup>rd</sup> Floor, 299 South Main Street, Suite 2300 Salt Lake City

\$45 General Admission, \$22.50 Students and Senior Retired Engineers. For tickets, please contact Mike Buehner at (801) 486-3883.

Featuring Dr. Stephen C. Jacobsen of Sarcos as this year's banquet speaker. The UEC will also be presenting awards for Engineer of the Year, Engineering Educator of the Year, Fresh Faces in Engineering and MESA Teacher of the Year. The ACEC award winners will also be honored.

**November 4-9, 2007**

The Third Structural Engineering World Congress - 2007 (SEWC 2007) will be held in Bangalore, India. Please contact [info@sewc2007.org](mailto:info@sewc2007.org) for further info.

## ADVERTISEMENT



**DUNN ASSOCIATES, INC**  
Consulting Structural Engineers

**DRAFTER**

Dunn Associates, Inc., is seeking an experienced drafter. Experience in structural or architectural drafting is a must. Excellent opportunity for growth and advancement. Full benefit package.

Fax: (801) 575-8875

Email: [info@dunn-se.com](mailto:info@dunn-se.com); [www.dunn-se.com](http://www.dunn-se.com)

## PHOTO OF INTEREST



Structural engineering or mining operation?



Existing 30'x40' rotunda footings were recently undermined and suspended as part of an innovative load transfer scheme to base isolate the 90 year old Utah State Capitol Building. Each rotunda footing previously carried 6.6 million pounds. Seen above are members of the design and construction team posing for a photo below the footing as workers continue to remove soil.

**SEAU Presents:**

# Analysis of Revisions to the 2006 I

**February 15, 2007****5:30 PM****Engineering and Mines Building (EMCB)****University of Utah Campus****Salt Lake City, Utah****Dr. S. K. Ghosh,**

Dr. S.K. Ghosh will be addressing the structural provisions in Chapter 16 of the 2006 IBC which, for the most part, adopt by reference the structural provisions of ASCE 7-05, Minimum Design Loads for Buildings and Other Structures. He will go over changes in the design load combinations and the live load, snow load, and wind design provisions. He will be explaining how the seismic requirements are dramatically different in format and organization from those found in ASCE 7-02. In addition, he will also be discussing several significant seismic technical changes, including revised spectral acceleration maps and the new set of maps for the long-period transition period, TL; the new redundancy coefficient determination procedure; and the new simplified design procedure.

## **STRUCTURAL ENGINEERS ASSOCIATION OF UTAH**

P.O. Box 581292

Salt Lake City, Utah 84158-1292

[www.seau.org](http://www.seau.org)

### **Board of Directors**

Jeff Miller, *President*Barry Welliver, *Vice Pres./Pres. Elect*Julie Ott, *Past President*Don Barker, *Treasurer*Russell Merrill, *Secretary/Historian*Mike Buehner, *Member of the Board*Shaun Packer, *Member of the Board*