Winter Quarter 2012

American Society of Civil Engineers at UCLA

ASCE Bruin

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Letter From the President

Dear Students, Alumni, and Faculty,

I am proud to present to you, the Winter 2012 edition of the ASCE Bruin. Though the title might seem odd given the great weather Los Angeles is currently experiencing, this edition focuses on the ASCE engineering projects' endeavors throughout winter quarter and their respective experiences at the Pacific South West Regional Conference. This year, conference was hosted by Cal Poly Pomona and took place between March 22nd and March 24th. In addition to the regional conference, our seismic design team attended the EERI national competition in Memphis, Tennessee, and our geotechnical design team, in association with the CalGEO student chapter at UCLA, attended the ASCE Geo-Institute national competition in Oakland, California.

ASCE at UCLA achieved a large amount of success at conference this year, taking 4th overall. Five of our projects finished in the top five at Cal Poly Pomona and most notably, the seismic team took first place at the recent EERI national competition. The success we have experienced is largely a testament to the excellence and work ethic of our Project Managers who are featured in this newsletter. Their dedication is invaluable as the projects remain an integral part of our student chapter.

Looking forward, UCLA's chapter is currently in the process of electing and transitioning the officer board for the 2012-2013 school year. Though conference has passed, the club continues social and professional programming and there are some great upcoming events you can learn about in the back pages of this newsletter. In addition, The Concrete Canoe team has submitted an appeal to attend the national competition and I wish them the best of luck.

As always, I would like to thank our sponsors, especially the UCLA Engineering Alumni Association, W.E. O'Neil Construction, and Shimmick Construction, for providing the funding necessary for our projects to compete. I would also like to thank the faculty members of the CEE Department who served as advisors for our projects and helped them prepare for their respective competitions.

If you have any questions, comments, or would like to hear more, I am always available at vanderlip.ryan@gmail.com

Sincerely,
Ryan Vanderlip
President, ASCE UCLA

Conference

BY CHARLOTTE INSULL

During finals week of winter quarter, 51 ASCE students piled into cars and headed out to Cal Poly Pomona, the host of the 2012 ASCE Pacific Southwest Conference. While having conference competitions during finals week was a bit of a challenge, the project managers, directors and event participants excelled nonetheless, and UCLA was a strong competitor against the 18 other schools. Some of our best events were Geotechnical (2nd place), Volleyball (2nd place), Ultimate Frisbee (2nd place), and Concrete Canoe (3rd place). UCLA also won 4th place in Environmental, Concrete Bowling, and Impromtu, and 5th place in Steel Bridge.

Conference was also a great bonding experience for all the members of ASCE; we enjoyed each other's company at a group dinner at Buca di Beppo, banquet at the Disneyland Hotel, and throughout the conference events, supporting each other every step of the way. Below are some photos from the weekend!

Brian makes a great catch with defense from Nathan to help our Ultimate Frisbee team go all the way to the finals of the tournament and win 2nd place overall!

Sydney and Dan represented UCLA in the Impromptu event, building a lego "ASCE" structure based solely on instructions written by Nathan and Amy.

Our all girl tug-of-war team of Paige, Amy, Desere, Kendra, Elise, and Christine fought hard and made it to the second round of competition.

In Volleyball, the Bruin team of Amy, Casey, Eric, Ryan, Nathan, and Dan went all the way to the final round of competition and ended up with an impressive second place finish!

Projects

Concrete Canoe

By Samara Al-Jumaily and Bryan Carpentier

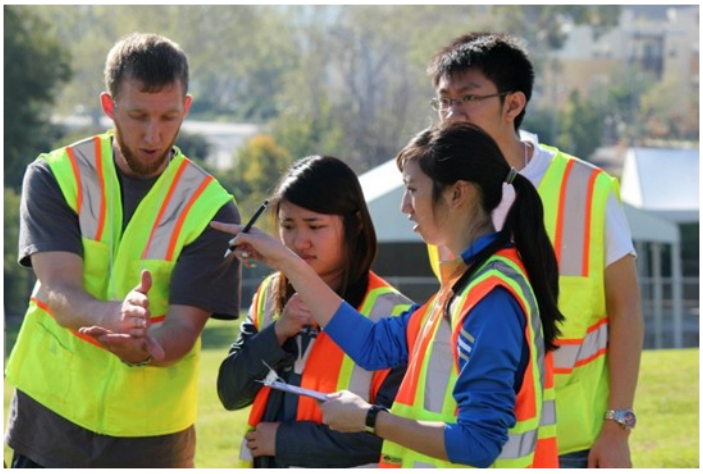
This past winter quarter has been a busy one for Concrete Canoe. We successfully sanded, patched, tensioned and stained Hakuna Matata and the final product is amazing. The first half of the quarter was devoted to sanding and patching, in an effort to create a smooth, flawless surface to prep for finishing and to prevent hydraulic drag. We used different grades of sandpaper throughout the process: 60, 100, 220, 400, and 800 for our desired effect and went through three rounds of sanding bumps and patching dips. Finally, we applied vinyl stencils to the interior and exterior of the canoe and applied stains in phases as well as colored concrete as accents. The finished design came out colorful, intricate and really stood out at conference with its detailed geometric designs along the bottom of the hull, bold animal prints adorning the exterior sides, and Lion King silhouette in the interior hull. Our tensioning system also proved very successful after lessons learned from the prototype post-tensioning system. We found that by casting the ends of the canoe around the ten steel cables while they were still attached to the tensioning rig, thereby pre-tensioning the ends while post-tensioning the body, the ends would act as anchors for the cables and ensure that they would stay in tension over time.

At conference, UCLA did extremely well in all aspects. Hakuna Matata placed third overall out of 16 schools, with consistent third place finishes on race day and in final product, and second place in design paper. We showed an incredibly light and thin canoe that proved its strength and beauty in the water, and are waiting to see if we will be allowed to compete nationally. With our many achievements and improvements that came with this past year, I can speak for the entire team in saying that this has been a truly rewarding experience and we are looking forward to what next year will bring.

Surveying

By Nick Orton

This year the surveying team placed 11th at conference. We determined that our problems again came from instruments that were not calibrated correctly. This is the second year in a row that the instruments have caused us to place lower than we should have. Enough of the pity party though, this year we were also able to get some new students interested in surveying and one of our members may actually have gotten a summer job from this project!



Surveying is still an important part of a civil engineers career, and an understanding of the material can really help in the future. For next year, we are looking to upgrade our equipment so that people will be more interested in learning surveying. Although we are done for now, there is always time for more surveying so don't hesitate to try and get involved! I would like to thank our sponsors this year, the Engineering Alumni Association, and Adkan Engineers for helping make this year a success by giving us money and equipment.

Steel Bridge

By Taher Ghaemi

The UCLA Steel Bridge project has come to an end for the year. We started off Fall Quarter working mainly on the design, and we spent the majority of Winter Quarter working on fabrication. We began winter quarter by building a 24' long table to work as a jig for our welding process. We then spent almost every weekend of the quarter finalizing our steel members, cleaning up and modifying our connections, and welding. There were many long days where we had our officers and several other students helping out, and many steel fabrication techniques were taught to those who came. Students were excited to learn how to weld, and many were intrigued by the intricacies of seeing a design that we had modeled on our computer come to life in an actual physical product. The steps of the fabrication stage took slightly longer than we had anticipated, and we ended up finishing the bridge during 8th week. We then finalized the aesthetics of our bridge by spraypainting and labeling the members. We were left with a few weeks to practice for the timed construction element of the competition.

We competed in the PSWC conference on Saturday, March 24. We ended up with a 5th place finish out of almost 20 universities. We all learned a great amount from the project, and we are excited to implement all the things we learned into next year's bridge.

Concrete Sports

By Chris Lai

Creating this year's concrete bowling ball, The Stone of Knowledge, was a rocky ride but definitely an amazing experience. Our first task was to construct a bowling ball mold out of foam blocks, liquid mold rubber, and wood. We used a real bowling ball to create the mold which was unfortunately destroyed when it became stuck the second time. The bottom half of the mold was constructed first and the top half second. Even with application of special mold paste and form oil, the bowling ball was first stuck while making the bottom half. Thankfully, the ball was released after hours of teamwork, quality bonding time, and eventually destroying the foam base and cutting the rubber mold. After repairs, the top half was next. While attempting to release the ball from the mold's top half, the ball mysteriously bonded to the rubber mold which led to us crushing the bowling ball and using a chisel and pliers to remove shards of the bowling ball stuck to the rubber. After months spent on construction, repairs, teamwork, and becoming distracted by the interesting layers of a bowling ball, the mold was finally completed!

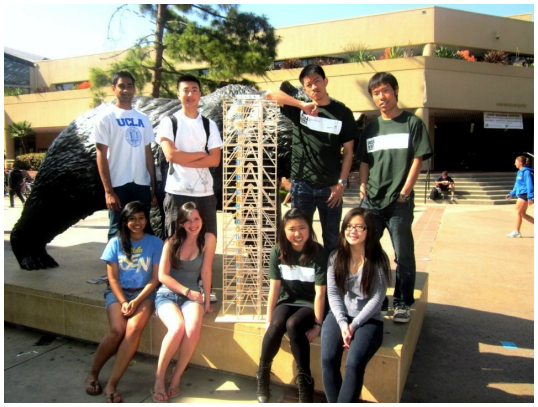
Using gravel, fibers, cenospheres, and slag cement, the concrete mix was durable and strong enough to withstand impact while bowling. After casting, the concrete bowling ball was easily released from the mold, patched, and decorated with gold paint and equations because it was The Stone of Knowledge! Besides bowling as part of the competition, an original skit was also required. We wrote Indiana Jones and The Stone of Knowledge featuring Indiana, Indiana's girlfriend, Short Round, an evil tribal leader, and a narrator. We had a lot of fun writing, acting, and adding a bit of improvisation to our skit. We even dressed up and had props such as a TI-1 as the Tablet of Solving (a calculator made of cardboard). Thanks to our countless hours of effort, a beautiful concrete bowling ball, our hilarious skit, and superior bowling skills, we earned 4th place at conference! Staying together as a dedicated team, we were able to overcome the many obstacles in constructing the mold and casting the concrete bowling ball. With great ASCE members and a mold that will last for many years to come, concrete bowling's future looks very bright!

Seismic Design

By Jennifer Huynh

This quarter, the Seismic Design team attended our national competition in Memphis, TN. Despite the incredibly long and grueling drive, our team arrived fresh-faced and ready to compete. The cross-country journey took us through Arizona, New Mexico, Texas, Oklahoma, Arkansas, and Tennessee and we faced all imaginable weather obstacles. The trip was the perfect opportunity for quality team-bonding and exciting road trip eats.

We arrived to the grand sight of rows of balsa structures lined up in the opening ceremonies. The first day of the competition involved the presentations of all the competing schools and a series of school and professional presentations about seismic engineering. The sharing of all the schools' methods of design and analysis provided a learning experience for the ASCE members that attended. UCLA gave a solid oral and poster presentation that highlighted our strong design and hard work. On the following day, we engaged in shake testing of the structures and witnessed the fascinating ways in which other projects failed or survived. With our strong design, UCLA performed well and survived all three ground motions with minimal damage. Moreover, to add to the excitement this year, EERI held an auction where professionals bid on winning teams and UCLA received one of the highest bids from one of our Assistant Researchers and Lecturers, Christine Goulet.



The awards luncheon took place during the last day and involved a wonderful meal, an engaging talk, and the presentation of awards. Many schools' projects performed admirably so the choices for winning were competitive. To our joy, UCLA won first place in the 2012 EERI Undergraduate Seismic Design competition over other rivalry schools and last year's champions. This incredible accomplishment gave immense worth to all the time and effort that we put into our project, and we hope to take this year's success as inspiration to continue performing well in all the following years.

Geotechnical Design

By Sean Ahdi

In the third year UCLA has participated in the MSE Wall competition, the Geotechnical team once again improved upon last year's great progress. Although the rules were mostly the same as last year, we decided to entirely revamp our design methodology. After increased interest from students outside of ASCE and CalGeo, we began full-scale testing of soil and reinforcement materials during the first week of Winter Break.

One radical change in our design was to reduce the number of reinforcement strips used from over one hundred to 20, simply by applying the same principles of basic soil mechanics as we did last year, but in a less technical and more intuitive manner, such as adding end anchors to better keep strips in place. We were thus able to reduce our design reinforcement weight by over 33 percent, while still being able to hold the required 50 pounds of vertical surcharge and 25 pounds of horizontal surcharge. Our hard work culminated in a technical report which earned our group 5th place among all schools in the country, earning us an invitation to the Geo-Challenge National Competition in Oakland, along with a $1000 travel stipend. We also produced a poster corresponding to our report, which was evaluated by judges at the PSWC Regional Competition and incorporated into our project's final score.

At the PSWC, held at Cal Poly Pomona, our group placed 2nd overall out of 17 schools, despite a last-minute design change prompted by the use of a different type of sand in the competition. But our team felt good on competition day with our matching "UCLA CIVIL & ENVIRONMENTAL ENGINEERING" t-shirts and detailed project poster, and we were awarded with a plaque recognizing our achievements. Overall this year was a great success and we hope to build upon it and improve for future years and keep interest growing in both this project and geotechnical engineering.

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We're in the process of creating a new website, but for now keep up to date on our old one at www.ascebruins.org..

Check out the 5th floor Boelter Bulletin Board for announcements and upcoming events.

Membership forms are accepted year round and can be picked up at the new ASCE Lounge in 2638 Life Science Building or at our Boelter bulletin board. Completed forms can be submitted with the $20 membership fee to any officer. For more information on membership, please contact Wesley Mercado at wtmercado@gmail.com

Environmental Design

By Ben Wong

The Environmental project has drawn to a close after taking 4th place this year at our regional competition. This year's treatment system, dubbed "The Water Hammer", was a very simple design that took on the task to soften hard water. Our system comprised of a hydraulic jump, caustic soda softening, sand filtration, and recarbonation. A major breakthrough in our design came from our method of recarbonation. After exploring many options, we found that blowing air into the water through straws yielded surprisingly effective results.

Our project hit many new milestones this year by obtaining more accurate testing equipment. This equipment allowed us to optimize our system to a much greater extent than in previous years. Additionally, this equipment will also be able to serve future years. Our team is now preparing to set the stage for the coming year.

Spring Lookahead

Upcoming Events:

EAA Alumni Presentations — Saturday, May 5th 11:00am - 2:00pm

End of the Year Banquet — Friday, May 11th 6:00pm - 9:00pm

End of the Year Bonfire — Saturday, May 19th, 12:00pm - 5:00pm

Spring Student-Professor Barbeque — Friday, June 1st, 5:00pm - 8:00pm

Spring Blood Drive — Thursday, May 3rd, 9:00am - 5:40pm

For more information about the projects and other ASCE events, contact:

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