A-Lab Remodel

Jason Kono & Kim Caplan

A Lab
2:00
Estes

This senior project is to re-model A-lab as a state of the art, multi-use facility for presentations, classes, and studying. The goal is to provide a quality space to further enhance student's learning experience. Information will be gathered from faculty and students to generate ideas for projection equipment, acoustic quality, seating arrangements, and other ways to improve the lab. Drawings, plans, and cost evaluations will be used to communicate our concepts.

Tanzania Polytechnic

Danny Hall, David Saechao & Tim Wolf

B Lab
2:00
Baltimore

An inter-disciplinary design-build project, Tanzania Polytechnic is a technical college offering vocational skills training to 500 secondary-school graduates. Special consideration is given to the use of cement-stabilized soil blocks as the primary building material. Other third-world construction issues are also addressed, such as confined masonry construction for unreinforced block. Beginning phases of construction are scheduled for summer of 2009.

Digitally Fabricated Structures for Wood Framing Housing

Alma Garcia & Farinaz Jalaie

E Lab
2:00
Nuttall

Test friction capacity within connection using digital fabrication techniques. To validate digital fabrication as the potential construction technique to mass produce customized housing that is rapidly assembled with little material waste and to reduce the cost by partially eliminating mechanical fasteners and physical labor.

Exploring FRP-Strengthened OSB

Justin Tuyay, Trey Sheehe, Gerald Hunt, & Stig Widell

D Lab
2:30
Mwangi

The purpose of this experiment is to compare the performance of standard single and double sheathed plywood shear walls to a fiberglass reinforced plywood shear wall. The hope is to show that a prefabricated fiberglass reinforced plywood product could be designed to strengthen design capacities.

The ARCE Senior Project Conference highlights the capstone design and research projects undertaken by Architectural Engineering seniors. Each senior is encouraged to pursue a topic of interest that falls outside of the ARCE program curriculum. Consequently, this annual conference exhibits the best in the ARCE seniors' creativity and problem solving techniques.

Heavy Timber Connections

Mercury Manns

B Lab
2:30
Archer

An attempt to create a moment connection in a post and beam joint using a traditional heavy timber connection, the mortise and tenon. This involves testing the original mortise and tenon design as well as improved models. After a series of tests in High Bay Lab, the design was improved to increase the elastic load capacity and ductility of the connection.

Rossi Road Center Pedestrian Bridge

Valerie Gilbert

E Lab
2:30
Dong

A new retail center is being developed next to an existing retail center in the community of Templeton, CA. As a part of the new development, it was recommended that off-road pedestrian access between the retail centers be created to alleviate pedestrian/car mishaps. The pedestrian bridge provides this off-road access connecting the centers spanning a swale that divides the two properties.

Seismic Rehabilitation for San Miguel Mission Church

Mario Cardona

A Lab
2:30
Nuttall

Mission San Miguel is essential in the history of California since it was one of the first settlements in the state. This building is also California's most endangered landmark due to the structures of the mission suffered severe damage during the 2003 San Simeon earthquake. The project will include a research of the actual structural condition of the building, the evaluation of the proposed seismic retrofit technique and recommendations to improve the seismic behavior of this historical structure.

ARCE

Senior Project Conference

June 5, 2008
12:00-3:00PM

Barn Technology and the Design of the Cal Poly Dairy Calf Barn

D Lab
12:00
Archer

Anne Dwyer

This senior project is intended to document the process of designing a facility for a farm, specifically the proposed calf barn at the Cal Poly dairy. A survey of barns throughout the county will be presented in order to show the current state of barn technology. Architectural considerations such as equipment, storage and humane animal treatment will be discussed. Structural issues like material selection and wind versus seismic design will also be covered. Finally, a cost analysis of a self-designed structure versus a pre-manufactured structure will be conducted.

Response of Students to Engineering Principles

E Lab
12:00
Brady

Miguel Robles & Julia Ramirez

Sixth grade students were exposed to basic structural engineering principles, including topics such as beams, columns, trusses, and arches. The project sought to create interest in structural engineering, as well as to create usable teaching modules that both non-engineer and engineer teachers may use to incorporate structural engineering concepts in the classroom at a younger age.

Joist Hanger Fixity

B Lab
12:30
McDaniel

Eric Bennett & David Mendivil

The goal of this project was to investigate whether or not the use of joist hangers in buildings adds to the load carrying capacity of a member. We loaded truly simply supported elements as well as ones with joist hangers to be able to compare deflection and rotation results to come up with joist hanger fixity.

How Buildings Get Built

D Lab
12:30
Brady

Jason Pedersen & Jessica Duquette

Designed to instill an interest in the different aspects of the building process, this project goes beyond the ARCE curriculum by expanding our technical communication and presentation skills. This project also allowed for the opportunity to teach holistically about the design-build industry to a class of twenty fourth- through sixth-grade students. These students were exposed to the three main facets of the building profession: design, engineering and construction. The main concepts of these professions were then exemplified through a role-playing activity.

Project Pier 52

E Lab
12:30
Dong

Danniel Kang & Tobias Yuen

Our senior project was part of this year's ACSA/AISC Assembling Housing Student Design Competition, a steel competition for one of Seattle's busiest ferry terminals, the Colman Ferry Dock. The competition called for the design of mixed-used modular housing integrated with prefabricated steel to offer low cost alternatives to construction. The project was part of an interdisciplinary collaborative effort between architecture students and architectural engineering students at Cal Poly. Structurally, our project tackled various issues that ranged from cantilevering modules off of a four hundred foot tower to a worm like lattice structure that supported gravity and lateral loads.

2008 PCI Big Beam Competition

A Lab
1:00
Mwangi

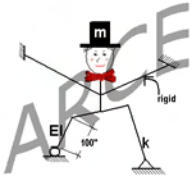
Jeremy Mosst, Leon Taing, & Billy Toy

The purpose of our senior project is to effectively promote structural efficiency in the design, construction, and testing phases of a reinforced concrete beam according to the competition guidelines. The proposal: a beam that is to be subjected to a single point load at the midpoint between 32 kips and 38 kips. The desired result is minimal deflection designed and constructed out of the least amount of structural material necessary.

ARCEWiki

D Lab
1:00
Archer

Brenda Fezler, Gaelyn Krauser & Marya Mikati



Arcewiki is the creation of a collaborative tool for Cal Poly ARCE's in the form of a Wiki. Arcewiki can be used as study aide and for review as it will allow students to go beyond memorization and practice problems to not only pass a class but deepen understanding. Such a tool will allow expansion upon knowledge learned in class, access to different points of view and learning styles, and communication between students, teachers, and survivors.

New Testing Wall for High Bay Lab

E Lab
1:00
Pharaoh

Michael Robertson & John Tricamo

A design for a new Strong Wall for the High Bay lab. A 20 foot wide by 20 foot tall wall is proposed to be constructed for the existing strong floor in the lab.

Computer Program Design for Engineering Practice of Timber Design

B Lab
1:00
Nuttall

Kevin Michelmore

My project explores the usefulness and difficulties of using Microsoft Excel to create a "simple" design program for engineering, with the goal of dramatically reducing design time. The focus of the program is timber design for beams, specifically cantilever and single span beams, using the 2005 National Design Specification.

LEED Construction in Baseball Stadiums

B Lab
1:30
Baltimore

Jenny Jirschefske & Lindsay Patch

A case study was conducted on the Washington, D.C. Nationals' new $611 million stadium, the first baseball stadium to implement LEED design principles in its construction and become LEED certified. With the information gained from this case study, we were able to make suggestions on how to apply LEED principles to the renovation of San Luis Obispo's Sinsheimer Stadium and its surrounding complex, home of the SLO Blues and SLO Rattlers baseball teams.

Coleman Ferry Dock Redevelopment for the ACSA/AISC Steel Design Competition

D Lab
1:30
Dong

Leigh Guggemos, Marisa Nolasco, Caitlin Potter & Daniel Ramos

This competition was done as part of a collaborative design studio with Architectural Engineers and Architects. Two groups will present together on the experience of the class itself (this studio is offered every year for senior project) as well as their individual designs. The scope for the competition was to develop a site for housing and commercial/retail use while exploring the many varied functional and aesthetic uses of steel as a building material.

Simpson Strong Tie Display

E Lab
1:30
Mwangi

Trevor Berkowitz & Kyle Glen

The project includes the construction of examples simpson strong tie connections along with the display of actual wood framed construction techniques and materials used today.

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