The team was founded by Victoria “Tori” Rhodes, ‘14 and Olivia Kalban, ‘14 in Fall 2013. Tori spent her junior year preparing for Cornell to have a seismic design team. She attended the 2013 competition to observe other teams and get a sense of what competition would be like in the coming years. In her senior year, Cornell had its first full team and sent four team members to the 2014 competition in Anchorage, Alaska.

The original team of 13 members has now grown to 18 members from the majors within the College of Engineering, and other majors such as science of earth systems and architecture.

The way we design, construct, render and present our structure has grown as well. Since the team’s inception, we’ve always used SAP2000 for structural modeling and analysis and AutoCAD for both structural design and architectural rendering. However, in our second year we moved from manually cutting all the members to laser cutting them from AutoCAD files, improving construction speed, efficiency and quality. Then in our third year, we shifted to Autodesk Revit for renderings, improving their overall quality.

Cornell’s first competition in July 2014 - Anchorage, Alaska
About Our Team

Regardless of the many majors represented on our team, all of our members share a passion for construction, architecture, design and seismology, but most importantly our members enjoy working on a close knit team with other passionate members.

Our members have opportunities to participate in many of the different facets of our team including structural analysis, construction planning and management, architectural design, and team outreach. The most gratifying part for our members is experiencing the process of bringing our project from an initial design to a full scale model.

Inside the Undergraduate Seismic Design Competition

The Undergraduate Seismic Design Competition is an annual earthquake engineering undergraduate competition where Student teams must design and construct a five foot tall balsa wood model of a 30-story high rise. It is held in a different city every year with a new set of design rules by the Earthquake Engineering Research Institute (EERI), a national organization made up of student chapters and professional members whose mission is to promote earthquake engineering education.

Judges select student teams from across the globe to attend competition based on their initial design proposals. Each building is tested on a shake table at competition to withstand three different types of seismic movements, and an accelerometer placed on the roof plate analyzes the roof's maximum accelerations and displacements. Teams are judged based on the building’s structural performance as well as the proposal, architectural finish, prediction accuracy, overall building revenue, and presentation of the building at competition.

Every year presents new design challenges that define significant aspects of the building, such as the need to include a restaurant floor that is double the normal floor height (San Francisco, 2016) or a green roof that is triple the normal roof weight (Portland, 2017).
San Francisco Spring 2016

Our third competition took place April 5th-8th in downtown San Francisco, where we competed against 32 other university teams from across the U.S. and the world. On the first day, all the teams assembled for the first time to weigh their models, display their posters, and check for penalties. The next day featured presentations from each team, judging of posters and architecture, and silent auctions for the buildings most likely to win the competition.

The third day was the most eventful: ground motion testing. In front of the entire competition body, each team’s model was tested under the three ground motions. In all, only half the models survived all ground motions. Collapsed models crashed to the floor; some buildings even split in half. Finally, the awards ceremony took place on the last day.

Our structure survived all three ground motions, and we finished 3rd place overall with notable finishes in architecture (4th), analysis prediction (6th), and Final Annual Seismic Cost (3rd). This year we would like to improve our communication score and maximize annual revenue.

2017 Design and Competition Details (Portland)

This year’s skyscraper model must reside in the Pearl District of Portland, Oregon. It must incorporate a green roof and atrium, which both pose major challenges. Not only will the atrium affect the lateral resistance of the structure, but the added weight on the top will heavily influence how the building responds to seismic activity.

Additionally, Portland is near the Cascadia Subduction Zone and crustal faults, which has the potential of producing major earthquakes in the future. With the aforementioned considerations in mind, our team has designed a building that not only has the capability of enduring earthquakes of various magnitudes but also takes into account the culture of Portland, which is often associated with counterculture and eco-friendliness.

Like in San Francisco, our building will experience three different ground motions, in order of increasing magnitude. The winning team will be determined primarily based on the building’s structural performance and Final Annual Building Income, as well as other factors.

“... Our team has designed a building that ... takes into account the culture of Portland, which is often associated with counterculture and eco-friendliness.”
Thank you for checking us out! We are happy to answer any questions or concerns you may have.

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