The Structure of a Singaporean Summer

It was hard to believe, as a rising senior, that I could experience anything over the summer that would so drastically influence my views on my field and my professional future. The eight weeks that I spent working for Web Structures in Singapore through the Columbia Experience Overseas program did just that. I learned just what the field of structural engineering is about, and got insight into how industry practices differ between the United States and Asia. The job was fast-paced: I had to both teach myself new skills and apply them to real projects, often simultaneously. I made several mistakes along the way, and though I overcame most challenges, some ended up getting the best of me. This summer was my first time working in the structural design industry. Here, I will attempt to concisely retell what I have done, and what I have learned, over my summer in Singapore.

On my very first day in the office, I was trained in a structural analysis program called ETABS by my mentoring structural engineer, Shamiah. ETABS is almost exactly the same as a program I learned at Columbia called SAP2000, so the learning curve was not too steep for me. Still, I had a lot of questions to ask Shamiah, who would always answer me to the best of her ability, and patiently wait during my frequent note-taking intermissions. My task was to create a 3-dimensional structural model of a 36-story public housing development to be constructed in Singapore. The basis of this model was a set of architectural floor plans provided in AutoCAD by the project’s architect. After making this model, I was to run a structural analysis to see if the building’s design was sound enough to sustain preliminary, presupposed loading conditions. I was under the impression that this was a closed training exercise of an old project; this assumption could not have been further from the truth.

At the end of the first week, my mentor informed me that the architect wanted results by Monday. I was working on a current, live project in my first week! Until then, I had been taking my time, studying every detail of the building plans and the new software that I was learning. Immediately, I was forced to switch into high gear and have real results prepared at very short notice. In retrospect, since the internship
was only 8 weeks long, I am glad that this was the case. Otherwise, I could have easily taken more than one week just learning nuances of software and drawings instead of getting actual work experience.

After another week or so, my role in that project quietly came to a close. I held a few other small roles on a couple other projects over the next few weeks, and from each I gleaned as much practical knowledge as possible from the work, from our office library, and especially from my co-workers. My claim to fame, however, was not from an engineering project, but from a rather special assignment. Near the end of the internship, I was charged by a senior structural engineer with the responsibility of becoming the office expert on a new software that no one in the office had even heard about but him. He was too busy to learn the software himself, but felt that it should become commonplace in the office, as it could improve our productivity quite significantly. This assignment proved to be the most trying endeavor of the summer, simply because there was nobody in the office to whom I could go for help.

After a two-day crash course in the program, Dynamo, I designed and 3D-printed a small arch bridge. After another two weeks, on my last day, I was presenting the software to the whole Singapore office, as well as the Malaysia office, and the Shanghai office. The sense of responsibility was a little daunting, but it also gave me the push I needed to really throw myself into my work and prove my ability and worth to the company. My efforts paid off, as the tutorial presentation went quite well. I was confident that Dynamo’s potential would not walk out of the door with me on that final day. It felt very fulfilling to get so invested in a project and see it to fruition.

Web Structures Singapore has a company culture that is very different from what one would find in a typical U.S. structural engineering firm (judging from my personal experience with both). In Singapore, while working, employees keep small talk to an absolute minimum. In the States, conversation is constantly flowing: people talk about anything from current events to weekend plans. I was happily surprised by the marked effort by Web Structures administration to maintain employee morale and closeness. In the middle of every month, all employees would come down to the first floor and cut a birthday cake in celebration of the employees whose birthdays fell in that month. At the beginning of every month, all employees gather together at lunchtime over boxed lunches to learn about new structural
engineering methods or the latest and greatest structures going up around the world. Every few weeks or so, there are after-work employee outings like picnics and movie nights. I felt lucky to be working there, and I could tell that the other employees also understood and appreciated the value of this delightful company culture. All these activities made me want to work harder and give back to the company.

On the opposite end of the cultural spectrum, the work culture in Singapore was much more intense and demanding than what I had become familiar with in America. It is normal for engineers to come early into the office and begin working, take a smaller lunch break, and stay late into the evening almost every day. These people would barely get up to stretch or go to the bathroom! Adjusting to this aspect of the job was the hardest part for me, but it has prepared me well for any sort of engineering work culture I might encounter in America.

Over the course of those two months, I was exposed to a new country, work culture, office environment, and building code; to new people, challenges, failures, and successes. I learned so many new skills, and gained a great deal of insight into the industry that I will probably pursue after college. I am writing this at the end of the first week of class, and already I feel that this internship is enriching my last year here at Columbia. With that being said, I’d like to paraphrase a bit of wisdom from an engineer named Shin, who sat next to me in the office this summer:

if there’s one thing I’ve learned over the past two months, it’s that there is a lot left for me to learn.

Thank you, Heather, and the entire CEO program, for this amazing opportunity.