Behind the Scenes: Building the Attractions at Universal Orlando

Masters student Nairiti Singh spent this summer at an exciting internship assisting a project engineer at Universal Studios, where she worked on two new attractions.

CEE: Tell us about the work you were doing in Orlando.

I worked on the construction team for two upcoming attractions: Fast and Furious: Supercharged and Race Through New York Starring Jimmy Fallon.

I was working under a project engineer and I shared her work and responsibilities, which mostly involved dealing with documentation. One of my duties was to get paperwork from the general contractor and route it to the entire team, and if it didn't get approved I had to route it back to the contractor for changes.

I was also tasked to organize a turnover meeting with the contractor. In a turnover meeting, the owner and the contractor go over all the deliverables that were listed in the contract to see what has been completed and what still has to be done. That ensures that everyone understands the status of the project and what the remaining expectations are.

I also used an app called NoteVault, which is a daily reporting app that is accessible to everyone in the company. Every day I would go out to the site, take pictures of the site, describe the status of the contractor’s work, and upload it to the app. This allowed everyone who couldn’t come out to the site to still see what was going on and make sure the work was being properly implemented.

CEE: What was your favorite part of the experience?

Every day I walked through the part to get to my office and I got to see everything when the park was quiet and they’re just testing the rides. It was a great feeling.

My team was also really great. My cubicle mate was very helpful and taught me everything I needed to know, and made a guide for me to explain all the abbreviations that the team uses. This was my first full-time work experience, and it’s a large company so I was pretty scared, but it wasn’t as overwhelming as I thought it would be. The project is complicated, but my team all made the work look really simple.

They made me realize that you don’t have to worry about every part of a project—you just have to focus on your work and get it done so that you can pass the project along to the next person.

CEE: Did any particular CEE classes help to prepare you for this internship?

Project Management for Construction with Professor Burcu Akinci helped me know what to expect when working on a construction project. Engineering Economics with Professor Matteo Pozzi helped me understand the math and the numbers that go behind these projects.

Also, BIM for Engineering, Construction and Facility Management taught me about all the software used in these types of projects, which was very helpful.

CEE: Did this experience influence your career goals?

Definitely. Before this internship, I knew that construction management was the industry I wanted to go into, but I didn't know what position I wanted the most.

After coming here and working on document management, I realized that that's what I want to do, because it involves communicating with everyone involved in a project. My internship showed me that there are a lot of issues of interoperability in construction, which can cause a lot of inefficiencies.

Time and money are the main things that you lose on a construction project and if you lose those it's a huge deal, so I would like to be able to focus on fixing those issues.
Minimizing Waste and Connecting With the Community at Nucor Steel in Seattle

Master's student Rochelle Samuel connected with Nucor Steel at a campus info session and the College of Engineering's Technical Opportunities Conference. She spent her summer working as an environmental engineering intern at their steel plant in Seattle.

CEE: Tell us about the work you were doing for Nucor.

When I started my internship at Nucor Steel in Seattle they were preparing for an environmental corporate audit. Environmental engineers from the corporate office come in and do a major internal environmental inspection. As part of that audit I edited and updated the company's environmental plans so they're up to date and in line with EPA regulations, as well as redeveloped a database that detailed hazard information for each type of waste generated.

I also worked on a waste minimization project where I figured out how many waste streams the company had, how much waste each one generated, how much it cost, and how to minimize those different factors. In the end I found an opportunity to minimize waste and cost, with potential savings of up to $150,000 annually.

The Nucor Seattle plant was actually very interesting because it's the only steel plant I know of in the U.S. that's located in an urban area, so we had a heightened environmental awareness and heard from the public a lot.

Because of that, I think, our plant in particular was out in the community a lot and I was involved with a lot of public outreach. I went to a lot of meetings with community groups that the company supports, like the YMCA, and wrote environmental fact sheets to send out to the public.

CEE: How did you connect with Nucor for this internship?

I stumbled on one of their information sessions at CMU and I really liked the company and what it stood for. I emailed the recruiter that I met and sent them my resume. A week later I saw Nucor at the Technical Opportunities Conference, and ended up having a good conversation with the recruiter. That night I was called back for an interview.

CEE: What was your favorite part of your internship?

I think the whole experience was very eye-opening and challenging. I had never worked a manufacturing job before, and seeing how much work that the environmental engineers put into understanding the plant and the manufacturing process really showed me how well-rounded environmental engineers have to be to work in whatever field they're in.

CEE: Were there any CEE classes that helped to prepare you for this internship?

I took Sustainable Engineering with Professor Jeanne VanBriesen and Civil Systems Investment Planning and Pricing with Professor Scott Matthews my first semester here. Those were the hardest I've taken in grad school, but they were very, very rewarding. I still use the tools I learned from both of them in the classroom and out.

Both classes taught me the importance of understanding and incorporating your client's decision factors into the solutions you propose. It's a matter of accomplishing environmental goals by helping a client realize the benefit to them.

At Nucor, I was trying to minimize the waste they were generating, and I presented that with the amount of money they could save while having a lesser impact on the environment. These two efforts do not need to be mutually exclusive.

Matthews’ class taught me how to present data and results, and my presentation at Nucor was maybe the best presentation I've ever given because of what I learned in his class and because I was able to present the data in a way that would connect with them.
Internship - Hydroelectric Power Infrastructure

CEE graduate student Peter Tschofen knew he would one day like to work at a company like Illwerke VKW AG, a utility company in his home country of Austria. This summer he had the opportunity to do an internship at Illwerke VKW AG where he worked at their hydroelectric plant.

CEE: Tell us about the work you did this summer.

Illwerke VKW AG is a utility company in my home state in Austria that basically only does hydroelectric power. It generates electricity from water flowing down the mountains, and pumps the water back up the mountains if need be.

I was accompanying the surveying crew as they did measurements of the terrain and checked the infrastructure to see that everything worked as expected. If the terrain shifts a little they have to check to make sure everything is still working.

CEE: How did you find out about this internship?

This is my hometown so I was aware of the energy company and I just applied for a job directly. When I started studying civil engineering I knew I would likely want to work at a company like this.

It's uplifting because it's a very green form of energy. It's a nice company to work for and it has been a very important employer in the area for many years, and working there strengthened my intent to work for a similar sort of green energy company.

CEE: Were there particular CEE classes that helped to prepare you for this internship?

The energy courses I took, including a course called Energy Demand and Utilization taught by my adviser Costa Samaras.

Another class that I took called Infrastructure Management, taught by Sean Qian and Don Coffelt, was helpful; since I got to know all these different pieces of infrastructure, I got to see how infrastructure management works in practice.

CEE: What skills did you pick up or develop through this internship?

I didn't study civil engineering in undergrad, so for me it was all new. I got to know a lot of the technical details of doing measurements, and I got to know the pieces of equipment that they're using, which is very interesting.

CEE: What would you say was your favorite part of the experience?

One thing that was really great was that I got to know every part of infrastructure they have. I visited the dams, I got to see the pipes. The company is currently building two power plants so I was able to visit those sites as well.

I also got to interact with a lot of people. It's a typical utility company but it's very influential in the Vorarlberg region and it provides electricity to a lot of nearby industry, particularly in Germany.

Germany is currently working toward abandoning nuclear power and using more renewable sources, so everyone has very strong opinions about the energy sector and about which renewables are actually useful. The people working at Illwerke are convinced that they're working on the best type of renewable energy, and I like working with people who have that conviction in what they're doing.
Energy and Stormwater Improvement for Agriculture

E&TIM masters student Pritham Aravind spent his summer working as an engineering intern for the Spices and Vegetable Ingredients division of Olam International. His internship gave him an opportunity to not only work with improving utility use but also work on improving their stormwater management.

CEE: Tell us about the work you did this summer.

I worked on a couple of projects for Olam International, an agriculture company based out of Singapore that has operations all over the world and processes products all over the spectrum, like vegetable ingredients, rice, cocoa, coffee, and cotton. I was based out of Gilroy, California, at an onion and garlic processing facility.

One project I worked on was figuring out how to revamp their utility usage to make it more energy-efficient and cost-efficient.

While the company had come up with two potential solutions to improve the utility usage, they didn't have a clear project plan along with the numbers or the facts together to actually prove which of their potential solutions would work, so I did all the due diligence to calculate the costs and energy usage involved and to develop a clear project plan for each possible solution.

Another project was stormwater management for the facility.

Two streams bound the facility on either side with much of the stormwater flowing into those streams. They had been having a lot of issues with not just pollutants, but also product running off with the stormwater into the streams.

It was actually a very extensive project—usually stormwater management is just collecting water and reusing it, but for this you had to also factor in all the lost product, as well as the legal fees of not complying with the stormwater permits, so there was a lot of economic value in getting a clear stormwater management plan.

In addition to evaluating the potential cost and time for the potential solutions I developed, I had to look at environment permitting for both of the projects I worked on.

California is extremely strict in regard to air pollution, so if you're looking to replace your utilities you have to look at how much you're emitting and what sort of permit you have to get for that, which can vary a lot based on what equipment you're using.

CEE: Were there any CEE classes that helped to prepare you for this internship?

While I was working I was actually thinking to myself that I had totally done a lot of the work in my classes. Civil Systems Investment, Planning and Pricing, taught by John Matsumura last fall, prepared me for the economic-based analysis in my work. Probability and Statistics, taught by Professor Irving Oppenheim, was also very helpful because I worked with a lot of data and there was a lot of economic math involved.

I had sat in on four or five classes of Water Resource System Engineering, taught by Dr. Jared Cohon, and even though I had only attended a few sessions, I found that very useful for the stormwater project I worked on. I definitely plan on taking this course next spring.

CEE: What skills did you pick up or develop through this internship?

I had some previous experience with energy-related calculations and engineering, but I think I sharpened those skills a lot by having the chance to actually apply what I had learned in class. I also sharpened my ability to track down the right data.

When you have a problem and a blank sheet of paper, collecting the right data takes up to 70 percent of the time involved. I think I became much better at determining what the best datasets are for any problem at hand, which helped my work become more efficient.