

2020-1203 Exploring Post Information Session – Introduction to Engineering

Civil:

- 1. How would the work that you do for commercial or public buildings compare to residential structures?**
 - a. Great question – at Smithgroup we do not typically work on residential structures but that is not to say Civil Engineers cannot. Building codes generally dictate the design for residential structures to the point that home building contractors are capable of designing and constructing the structures. Civil Engineers can be brought on early in order to do site analyses or lot grading and drainage plans but because of their smaller scale it's typically handled by a home building general contractor.
- 2. What checks and balances do you use to make sure that you don't make mistakes?**
 - a. Peer reviewed plans and calculations are a must. The colleagues on your same experience level can provide the first round of checks and then the project supervisor will review plans and calculations. Finally, a dedicated quality control and quality assurance senior engineer will review the plans to ensure calculations are correct, it's functional, and no details are missed.
- 3. Can you explain your daily work routine?**
 - a. It depends on who you ask and what type of civil engineer you are. For us we're design engineers and so we typically start the day off in the office, following up on coordination emails from the client, contractor, or other design colleagues. We spend a good portion of our day in the design programs such as Civil 3D where we model and draw out our plans and complete details. Usually there will be a number of coordination meetings throughout the day as well. There are times, as mentioned with Construction Administration, where we go out onto the jobsite to observe construction activity and ensure that the design is being properly constructed.
- 4. What do you enjoy the most about Engineering?**
 - a. I think for a lot of engineers the most rewarding aspect is seeing people using the spaces and places you designed. A lot of hard work went into the design and seeing people enjoying it is refreshing. I think aside from that it keeps us on our toes.
- 5. What can I do right now as a senior stuck at home who wants to do civil engineering and/or architecture?**
 - a. There are a lot of great YouTube videos that explain engineering concepts and it would definitely put you ahead of the curve to already have some familiarity when you enter college. There are also a lot of great subReddits that can put you in touch with professionals to understand that ins and outs of civil engineering. Though it's not quite necessary at the college level, we tend to use Civil3D a lot in our daily routines so looking into student versions/subscriptions and following along with help videos can certainly give you a leg up when you

begin searching for internship opportunities (usually at junior/senior college level).

Structural:

1. How long does it normally take to get from the design stage to the construction stage? (asked between Civil and Structural)

- i. In my experience, “small” jobs (say, under 10,000 SF) take 3-6 months for the design stage. “Medium” jobs (right now my job is approximately 30,000 SF) take 4-8 months. “Large” jobs (think >100,000 SF) can also take something between 6 months to a year.

Again, this depends on a number of factors:

1. Client demands; nowadays, clients are asking for projects to be completed ever faster
2. Number of structural engineers on the job
3. Complexity (is the project location prone to high-magnitude earthquakes? High winds/hurricanes? Is the building an office, a school, a hospital, or is it for technical research?)
4. New construction vs. Renovation; the ranges I give above pertain only to new construction

2. How much do you get paid for working a lot of extra hours?

- i. If you’re looking for a ballpark of how much a structural engineer gets paid, google. I search “entry level structural engineer salary in [CITY, STATE] or [STATE]” to give me an idea of annual salary. Generally, if you are licensed, you should be getting paid that salary + \$5k more.

I’m able to comfortably live off my salary. However, if you are looking for a job with high returns and low effort (I.e. you’re only in it for the money), I would suggest government work; working as a structural engineer in the power industry; or exploring a different engineering field.

3. What do I have to be good at to be a good engineer?

- i. A subjective question begets a subjective answer. Short answer: a good engineer gets their work done well and in a timely fashion. You’ll make waves if you’re prompt, you show competency and/or you indicate you know where to go if you don’t exactly know the answer(s).

4. Roughly how many projects do you find yourself working on at any given time?

- i. If the project is medium-sized (see Structural-1 answer) and has an accelerated schedule, I typically work on that full-time. If the projects are smaller, I have worked on 2-6 at any given time.

My preference? One project full-time, with a small project to fill in any dead time you may experience on that other project. There are always odd waiting periods during a full-time project that could be better utilized on a smaller project as opposed to idling.

Electrical:

1. I am considering LTU for Civil Engineering. What do you think are some things that set them apart from other schools?

- a. LTU has grown a lot since I was there and I was not in the civil department, but I can kind of answer this since Architectural engineering overlaps some of the civil classes.

LTU has a small school vibe where you can know everyone in your major and you don't need to get in your car and drive across the campus to get to your next class. My favorite part about LTU was the professors, many of them have worked or are currently working in the industry and have tons of real-world experience to back up their class lectures. You also start taking major related courses (in your case civil classes) in your first year so you can discover if you like your major as soon as you start going to school. It's not just general classes for you first 2 years then finding out you don't actually like civil and need to change majors. This combo of professors and early access to relevant classes makes it easier to pick up internships and get ready for a job before you even finish college. I was working for SmithGroup for 2 years as an intern before I graduated and got hired, going on 7 years now.

2. Did you let anything get in your way from becoming an engineer?

- a. No, I never gave up, many long nights and hours of study groups, but I made it through. I did have one semester of classes that tried to stop me. I was taking Differential Equations ("calc 4") and Statics (structural class) and I was starting to fail both classes, so I dropped the Statics class and took the free time I gained by dropping the statics class to get extra help from the Differential Equations professor. I retook statics over the summer. I ended up easily passing both classes and I ended up really enjoying Statics. Pushing forward at 120% is not always the answer, sometimes taking a step back and asking for a little help can make an impossible situation simple and actually fun. I highly recommend taking 1 or 2 summer classes to make your normal semester a little lighter and allow for more study time or social time.