

Natalie Quinn**Job title:** Structural Engineer | Momentum Consulting Engineers**Graduation date:** 2016**Degree:** PhD Earthquake Engineering**Tell us about your role**

At the minute I am working as a structural engineer in a really small design consultancy called Momentum that are based in Shoreditch and we do structural design for a really wide variety of structures, for example buildings, stages for festivals, sculptures etc.

What motivated you to go into this sector?

It was a lot of small decisions rather than one big decision. I studied civil engineering, which I studied because I wanted to do something related to buildings, possibly architecture and design, but I also wanted to do maths as well. So I thought that was a good way of combining them both. Then when I finished I didn't really know what I wanted to do, so I went travelling for a while, ended up working on an earthquake reconstruction projects in Peru. Then I did a PhD in earthquake engineering related to the seismic retrofitting of buildings in Peru. And then after that I decided I want to work in London. I wanted something different: instead of doing research, I wanted to get involved in things that were actually going to get built, and on projects that take a few months rather than a few years.

How did you find the consultancy where you work now?

I decided that I wanted to work in a small consultancy, and I found quite a few of them through looking at who had won awards in design competitions and the kind of architects who do interesting projects and where structural engineers work. Then I went through their websites and the projects they did, which narrowed it down to seven companies all between 10 and 80 people working for them.

Then I just emailed them. I attached my CV and I wrote a bit of background about myself, my experience, why exactly I wanted to work with them and try to keep it quite brief because usually they're just going to skim read.

From seven of them, four got back to me, invited me to an interview. I went to two, and in the second one I liked them a lot, and they offered me a job, so I just went for that.

What does a normal day look like for you?

Four to five days of the week, I'll be in the office most of the day. Usually we're working on two projects in one day. I usually have about 4 projects at the same time, some of them will be long term things that I'll be working on for a year or more others might only be one or two days and others might be months so probably choose two of them, the most urgent ones, to work on.

A lot of phoning clients and architects discussing the designs. I usually get a lot of emails saying here are some problems, can you solve them, and then doing some calculations to try and solve the problems, then sketching up what I propose, and sending it to them and they will reply and say, that's fine, or no, that doesn't work because of this reason. Also helping my colleagues, talking about their projects.

Then maybe about once a fortnight I'll go to the site or meetings. For example one of the projects I'm working on at the minute is Royal Veterinary Building in Camden, which is an existing building, built in the 1930s. So as you can imagine, it's a lot of renovation work, so as they were adding some extensions and taking down walls. As they started to strip away the plaster, they find that it's not actually how it was supposed to be. So they'll call me and say, there is this beam there, what do we do with it, and I have to figure out why it's there in the first place and then how to remove it.

Did you always know that you wanted to work in a smaller company?

No, not at all. I did some summer placements when I was doing undergraduate degree, which were in medium sized companies. One of them was in a particularly large, global company. After graduating the first time I probably would have been happy to go into that, but after my PhD I wanted to go in somewhere smaller, because I already have experienced freedom, and my PhD wasn't directly relevant to what these big companies do. I was worried that if I went to a big company, it would be harder to use that to progress. Because ultimately I think big companies have a set progression route. Small companies can be a bit more flexible. And I think in small companies, often you get to encounter things at an earlier stage.

What are the best things about your role?

I like I like the scope working on site, I like going out and looking at how old buildings are built, trying to work out what they were thinking at the time, and why they designed them the way they did. I also like going and checking the structures after they've been built. So quite often, particularly in small projects that I've done myself, I'll go after and have a look at it and check it's being built correctly according to what I designed and that's really cool to see.

One of the projects we worked on is Beyoncé and Jay Z tour – we developed the structure work for that, we later saw the videos of the structures that you actually have spent the last six months designing.

What are some of the challenging aspects?

It can be difficult working with clients and architects who can be really demanding and don't really understand that they try to push the boundaries beyond which they can't be pushed. You tell them to build it this way, and they build it in a completely different way, and have a go at you when you tell them that they have to take it down and rebuild it again.

Sometimes it's difficult to work out what's going on, the analysis side can be very difficult.

Did your PhD help you with what you are doing?

Yes, a lot! It helps in terms of general understanding of buildings. Technically, it helped me out a lot with analysis, using software, and writing as well. Obviously, PhD is a lot of writing and at work there is a lot of writing of reports. So it helped me to write to quicker, and produce better quality because I think in the undergraduate degrees there was not a lot of writing, mainly the calculations.

What advice would you give to someone wanting to go into this sector?

I would advise to get some sort of experience during the summers, that can really help and can give you an idea of if you'd actually like it, even if it's only for a couple of weeks.

I would also advise to sketch a lot and look at buildings if you want to go into construction engineering consultancy it's really important to understand how buildings are put together. So sketching ideas is important, it also helps with the ability to see in 3d. I think people often think that because we've got CAD and everything there is no need to know how to sketch but actually most people spend half a day sketching, so that's really important.