

Internship experiences of a KOers member

By: Britt Cordewener

Master student Structural Design

A year ago, I decided that, as an addition to my study program at the TU/e, I wanted to gain some insight in the practical field of structural engineering. So, during the Bouwkunde Bedrijvendagen, my search for an interesting company to follow an internship. During one of the workshops, I got to know Pieters Bouwtechniek, a progressive engineering firm with several offices in the Netherlands, specialized in the design and engineering of a broad range of structures. Pieters Bouwtechniek is involved during all stages of the construction process, from the early design stages up until the final construction phase. With an interest in construction technology as well, this was exactly the reason I was very glad to be able to do my internship at their company.

My internship started with a meeting in December with Ycha van Diermen, one of the Partners at Pieters Bouwtechniek in which we discussed my field of interest and the general set-up of my internship.

In February, I started working four days a week under the guidance of Walther Plönes (a TU/e alumnus). I got the chance to work on a broad range of projects, varying from the preliminary structural design and rough cost indications of a spaceframe roof of 200 x 200 meters, to the structural calculations and reports of a festival stand for TREK. In this article, I will tell you something more about some projects I worked on and what I learned from my internship.

My first project concerned a cost indication of a large spaceframe roof. For a roof of 200 x 200 meters, any improvement in the profile size and thickness of the profiles can save a significant amount of money. With the help of SCIA Engineer the stresses in all steel members were analyzed and ranked in several categories in order to optimize the total weight (and costs) of the structure.

Furthermore, I have been working on a wide range of projects. Among others, I performed preliminary design calculations and made the structural design drawings for several housing types for residential park Hoevelaken.

With the architectural drawings as input, a structural design was made and the corresponding design calculations for slabs, columns, and walls were performed with the help of Technosoft calculation software. Some additional calculations were then performed for cantilevered slabs and foundations.

One of the fun small projects I worked on as well, was the structural design and calculations of a festival stand for the foodtruckfestival TREK. The stand was to be built quite soon. However, the structural design was still open for many possibilities.

In close collaboration with the builder, several building methods were elaborated to finally come to the most suitable and (easily) demountable construction method. The project was concluded with a report containing all structural calculations and in ultimate limit state (ULS) and serviceability

limit state (SLS), and we even got to see the end result in Rotterdam (Figure 1).



Figure 1: TREK foodtruckfestival

One of the projects I was most involved in, was the structural design and calculations for a residential building in building application phase. In close collaboration with Orga Architects, we aimed for a structural design with low environmental impact, resulting in large Douglas trusses.

The extraordinary design resulted in complicated connections and details for which additional calculations, for (among others) the moment and shear capacity, were performed.

To conclude, it could say I really enjoyed my internship at Pieters Bouwtechniek Utrecht and I learned a lot of it. Above all, it helped me to gain insight in what working at a structural engineering firm would be like. I could recommend it to all students, since it is a good preparation for the future and it also prepares you to deal with aspects that we do not learn during our study. ◀