

STUDENT WORK REPORT

Student Information

Date: 7/29/19

Student Name: _____

Student Email: _____

School/Discipline: Civil Engineering

Please circle your current work session:

➤ 3-session – 1 2 3

➤ 5-session – 1 2 3 4 5

➤ Internship – Fall Spring Summer

Employer Information

Does the Work Report contain Proprietary Information? Y or N (please circle one)

May Purdue post the Work Report on the CE or OPP website? Y or N (please circle one)

Employer: Schnabel Foundation Company

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I have worked two sessions for Schnabel Foundation Company. This organization is a geotechnical construction company which designs and manages projects. Geotechnical engineering is the civil engineering practice of stabilizing the ground. This often means that geotechnical engineering contributes a portion to larger projects. For example, I worked on projects that were part of large-scale tunnels, building foundations, environmental clean ups and road expansions. In addition, this company is considered a design-build contractor which means they both design the work and manage the project. I like seeing both the design and management of project from start to finish. I believe that I have a better understanding of being a civil engineer if I can participate in both parts. Seeing both parts of the business means that I also spent time in the office and on site. For me, seeing the physical manifestation of a design is essential to understanding what I'm doing in the office.

I have completed my second work session with Schnabel Foundation Company. This company designs and manages geotechnical projects. Geotechnical engineering is a discipline within civil engineering that works to create stable earth conditions. Schnabel often works as a subcontractor on larger projects like road ramps and building foundations. For this work session, I worked on several projects in different capacities.

First, I worked in Fairfax, Virginia on the highway expansion of I-66. Schnabel is providing earth retention support to a future off ramp. As part of this earth retention system Schnabel installed a series of drilled shafts in which steel beams and concrete are added. While on site I worked to create, collect and manage data generated by the job. I created data by surveying the structures as they were being built. I surveyed both the top of the steel beams and the top of concrete using a scope and meter stick. I recorded these results and used them to create paperwork for the general contractor of the job. This paperwork allowed the general contractor to better understand the work we were doing daily. In addition, I managed the digital versions of this paperwork. This included scanned versions of the paperwork and a spreadsheet that showed the difference between the design measurements and the built measurements. The data in this spreadsheet was valuable because it showed how well we were remaining within the specifications. In addition to the surveying paperwork, I collected the concrete receipts. These were important for two reasons. First, according to the specifications, Schnabel could only pour concrete within 90 minutes of the truck leaving the concrete plant. This means that Schnabel needs to know if the concrete is within specifications and it was my job to check that. Secondly, Schnabel turned in the concrete tickets to the general contractor as an invoice of the concrete purchase. This paperwork also had on a digital component. I tracked the concrete quantities in the spreadsheet, so at the end of the month the general contractor and I could easily work out any

differences. Lastly, I collected paperwork from the drill rig operator. He generated data about the soils being drilled and then recorded it to be analyzed. This data included the types of soils encountered, the depth at which they were encountered and how long it took to drill through them. This data is used to ensure that system designed will work based on the soil samples taken before the project began. In addition, we use this data internally to help get a better idea of the amount of time it takes to drill in certain soils. This helps Schnabel bid future projects more accurately and more competitively. I also managed these documents digitally as well as working on analyzing the data within them. I was on site for this project for about 6 weeks.

The next project I was on site for was a building foundations project in Charlottesville, Virginia. Schnabel is providing earth retention support to existing structures for a building expansion. These existing structures are retail spaces and roads that are being used while the expansion occurs, so it's important that they don't move while the building is under construction. While on site I observed a similar earth retention system to the one in Fairfax, however this one was a different phase of construction. The Charlottesville job was had moved on to installing wooden lagging. I was in Charlottesville for a day.

Next, I went to Rehoboth Beach, Delaware to visit a job constructing an earth retention system to support a new foundation of hospital suite. Here I again surveyed to ensure the construction matched the design. I also collected data on noise levels of the different equipment on site. Schnabel uses this data to ensure that everyone is wearing appropriate ear protection for their jobs. For this job, I observed a new way of installing steel beams. This site had sandy soil, so Schnabel decided to vibrate the steel beams into the ground rather than drill and place steel beams. I was on this site for two days.

The last site I visited in this rotation was Cedar Falls, Iowa. This job was another highway expansion job. Here I observed tieback testing and collected noise levels of different equipment. Tieback testing ensures that the earth retention system will support the applied load of the project. I spent two days on this site.

The remainder of my work rotation was spent in the Cary, Illinois office. While in the office I worked on applying for bids, assisting in the design process and analyzing internal quality control data. For bid applications, I would read all the documents provided to find the relevant documents. I then would report the approximate scope to the engineer who decide whether we would further pursue the job. If we were going to further pursue the job, I would then provide further details about the scope of the job including quantity estimates and boring drawings. For assisting in the design process, I use AutoCAD to draw borings, deep soil samples, and cross section views of projects. I have also worked on creating spreadsheets that act as calculators to estimate the quantity and cost of different aspects of the jobs. Lastly, I also work on analyzing internal data. I am currently working on analyzing the drill depths and times for the Fairfax job.

At the end of this work rotation, I again learned a lot. I especially learned about surveying in the field because I practiced this skill frequently this summer. In working on the spreadsheet calculators, I learned new commands in Excel. Looking ahead to the next rotation, I would be interested to learn more about the legal aspects of the relationship between Schnabel and the client.