FIELD OBSERVATION MEMORANDUM

To:	Tom Szymoniak
From:	John Smith
CC:	
Date:	October 30, 2014
Subject:	**City of Portland Engineering Offices Visit**

Team D from the CE111 Introduction to Civil Engineering class visited the City of Portland offices at 1310 SW 5th Avenue on Wednesday October 24, 2014. The purpose of this visit was for students to learn about the different types of work civil and environmental engineers do for the city. Our host was Lawrence Terrell, a civil engineer for the City of Portland in the Bureau of Environmental Services (BES). The visit lasted approximately one hour. Five engineers and one construction manager, representing three bureaus, discussed their work for the city. We then briefly toured the work spaces on the 13th floor. This memo presents my observations and discussion of the visit.

Observations

Mr. Terrell began with an overview of the departments and bureaus in the City of Portland. He then introduced Tim McCurdie, who works in water facility planning for the Portland Water Bureau. Mr. McCurdie discussed the need for watershed improvements in the urban environment and described ways that the city is currently working to increase the capacity and efficiency of the water infrastructure.

The next speaker was David Valdez, an engineering analyst with the Portland Bureau of Transportation (PBOT). He described an engineering analyst's fundamental job as "analyzing a system in order to figure out how it works, how efficiently it works, and if it can be improved." He explained that on a daily basis he analyzes field data such as signal timing to see if a delay in traffic or pedestrian movement can be eliminated. Mr. Valdez also described his training for his job. He did an internship with PBOT as he completed his B.S. and he obtained an M.S. with a specialization in Transportation Engineering so that he was well qualified to work on traffic issues for the City of Portland.

Following Mr. Valdez were four employees of BES. Charlotte Bailey, an environmental engineer, spoke about her role in maintaining the sanitary sewer system. She primarily designs repairs for the system and upgrades to meet new regulations. Patricia Johnson works as a supervising professional engineer. She emphasized the impact that permits and regulations have on city projects. They often determine when and where work can be done, and they require careful planning that allows time for the permit process. Sam Patterson, also a professional engineer, spoke about his work in stream and habitat restoration. He explained that timber harvesting along many of our rivers and streams removed woody

debris which had prevented erosion and provided habitat for wildlife. One method he often employs to mitigate the negative effects of the timber practices is to place large logs and root wads along the banks of the rivers. Finally, George Caruso spoke to our team. Mr. Caruso is a construction manager who often works with the city's engineers. He described his role as "the science of successfully implementing designs in the construction phase." In other words, as he explained, he supervises crews who build the objects that were designed by engineers.

The final part of the visit was a five-minute tour of the 13th floor. The floor was divided into cubicles, with larger, glassed-in offices along the outside walls. Four people were having a discussion around a drawing on a white board in one of the outer offices . Otherwise, the floor was very quiet and most cubicles were empty. We were unable to see many engineers in the midst of their work.

Discussion

The speakers covered diverse types of work for the city. However, two major themes were apparent in all the speakers' comments. The first theme concerned the large number of challenges that come from working within the city. The speakers mentioned the number of permits, the need to retrofit old designs of water and sewer systems to fulfill new laws, the high volume of traffic on small roads, and the difficulties of trying to make a natural watershed in an urban area. Many of these conditions would not be as challenging in a rural area with lower population. The second theme concerned the teamwork required on every project the engineers mentioned. Engineers in different bureaus worked together, as when BES and the Water Bureau speakers both talked about watershed issues. Engineers and construction employees must also collaborate, as Mr. Caruso made clear. All the speakers mentioned how their work was just one part of a larger project. Previously, I had not thought about how many different people play roles in the successful completion of a project.

In addition, because I am interested in transportation, I found comments by Mr. Valdez especially helpful. I plan to look into internships with PBOT as I complete my B.S. degree.

Conclusion

Overall, the visit to the City of Portland engineering offices was very useful for increasing my understanding of engineers' work in the city. I also learned more about training for my specific interest in transportation engineering. The trip would have been even more educational if I had learned more about an engineer's typical day at work. For the future, I recommend asking the engineers to explain what they usually do each day or to tell what they were working on earlier that day.