# FIELD OBSERVATION MEMORANDUM

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| To: | Tom Szymoniak |
| From: | John Smith |
| CC: | |
| Date: | October 30, 2014 |
| **Subject:** | **Visit to the Engineering Office in the City of Portland, 1310 SW Fifth Ave.** |

We visited the City of Portland offices on Wednesday October 24, 2014. The purpose of this field trip was for students to learn about the different types of work civil and environmental engineers do for the City of Portland. Our host was Lawrence Terrell, who is a civil engineer for the City of Portland in the Bureau of Environmental Services. Engineers were represented from the Bureau of Environmental Services (BES), Portland Water Bureau (PWB) and the Portland Bureau of Transportation (PBOT). The tour lasted about one hour and included walking through some of the work spaces on the 13th floor. The tour was very informative. We met both civil and environmental engineers, who discussed some of the challenges and opportunities working for the City of Portland. A description of the tour and observations are presented below.

## Observations

After a brief introduction and discussing the various departments in the city, Mr. Terrell introduced Tim McCurdie, who works in water facility planning for the Portland Water Bureau, which allowed Mr. McCurdie to talk about the need for watershed improvements and some ways that the city is currently working to increase the capacity and efficiency of our water infrastructure.

The next speaker was David Valdez, an engineering analyst with PBOT. He described an engineer 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. I believe it is fair to say he primarily works on creating efficiency. Mr. Valdez graduated as a civil engineer and obtained a master's degree in Transportation to work on traffic issues within the City of Portland.

Mr. Valdez then introduced Charlotte Bailey. Ms. Bailey is an environmental engineer with the BES, and she spoke about her role in maintaining and repairing sanitary sewer system.

The next speaker was Patricia Johnson, a supervising professional engineer. She talked about project schedules, permits, and regulations that impact a city project.

Following Ms. Johnson was Sam Patterson. He spoke about his work in stream and habitat restoration. Mr. Patterson explained that timber harvesting along many of our rivers and streams removed

woody debris which prevented erosion and provided habitat for wildlife. One method employed to mitigate these effects is to large logs and root wads along the banks of the rivers. The last person to speak to our team was a construction manager, George Caruso. Mr. Caruso works for BES. He explained his role as "the science of successfully implementing designs in the construction phase."

## Discussion

Several major themes were apparent from the presentation at the City of Portland. The first theme that I heard was the challenge associated with implementing new designs in developed and urban areas within the City of Portland. Projects from initial inception to construction can take several years and involve many facets. Many of the speakers mentioned the difficulty associated with stopping traffic for construction and retrofitting old designs to support rules and laws that have since been established. One example is the American Disability Act (ADA). A second theme, which Mr. Terrell closed with, was the need for future engineers. Much of the infrastructure in cities across the U.S. is over a hundred years old and in need of replacement. He stressed the importance and sense of fulfillment that can be obtained from the job. Thirdly, each speaker seemed to emphasize the teamwork associated with any project. Tasks are broken up and many professionals work on the same project.

## Conclusion

Overall, I found this tour to be pretty interesting and informative. I enjoyed hearing the group talk about engineering. What I would like to learn more about is what each engineer does on a typical day.