



# MY SUMMER AS A MATC INTERN

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Experience, confidence and community are essential before entering into the engineering field of work. As an intern for Felsburg Holt & Ullevig (FHU) during the summer of 2014, I gained valuable knowledge in field work, modern technology, and professional networking. Every day at work brought new lessons to learn and obstacles to overcome that a regular college education does not always offer.

Felsburg Holt & Ullevig is a private consulting firm specializing in transportation and environmental planning, traffic engineering, transportation system design, and environmental services. FHU began with three employees and since then has grown to a firm with more than 100 employees with four locations throughout Colorado and Nebraska. The values of the employees are centered on hard-working individuals, who enjoy having fun and giving back to the community. The company is celebrating their 30th anniversary this year by giving back to the community with 30 acts of kindness. FHU is a firm that goes above and beyond the average firm. Through the Mid-America Transportation Center (MATC) internship program, I interned with the traffic engineering department at FHU. I had the chance to perform actual field work, execute multiple traffic analyses, and work alongside knowledgeable supervisors and coworkers.

My first project consisted of performing a safety study for the South Dakota Department of Transportation (SDDOT) to evaluate thirteen highway intersections throughout the state. I mostly worked with excel on this project to develop peak period turning movement counts for both the AM and PM peak periods for each intersection. With these turning movement counts, a crash analysis was conducted to look for crash patterns among the studied intersections. I also developed condition diagrams for each intersection. At FHU, condition diagrams are used for most traffic and safety studies to get a better view and understanding of a particular area. For these condition diagrams, the intersection is drawn out with lane measurements and assignments, road signs, speed limits, and any important landmarks or businesses nearby. I learned how detailed and aware of your surroundings a successful engineer needs to be to perform in this industry. All the data gathered was then analyzed at each

intersection, and recommendations were developed for immediate or long term improvements. A preferred alternative recommendation was also provided for each intersection. I had the opportunity to learn the Computer Aided Design (CAD) software MicroStation. With this software, I helped draft each intersection and roadway alternative. From there, I determined removal areas and also proposed new construction. The areas were then used to develop cost estimates. Using MicroStation for this project was the most beneficial experience for me, because I had the opportunity to learn how to use important software, with the guidance and help from my supervisors. Most firms are looking for engineers with experience in MicroStation, so this was instrumental to my career in getting this initial experience.

Another unique project that I had a great opportunity to work on was a traffic study for the construction of a new viaduct in the Hoeven Valley area of Sioux City, Iowa. For this project, I analyzed intersections to find the AM and PM peak periods. We also looked at the area peak of this study area instead of each individual intersection peak period. This was done because several corridors within the study area have their own individual peaking characteristics. Microsoft Excel was used to calculate the area peak time for all intersections. This helped create a more uniform distribution of traffic among all the intersections included in the study and look at a more accurate picture of traffic in the future. With this proposed traffic in the future, a traffic analysis software called Synchro was used to analyze the intersections. With this program, different diagrams of intersection networking were established to examine different scenarios of rerouting traffic with this proposed viaduct. Synchro calculated the level of service at each intersection based on the Highway Capacity Manual. This was another instrumental learning experience in my internship. I had the opportunity to learn how to utilize a software program that is highly important in the traffic engineering field.

Professionalism was another key aspect I picked up on throughout my internship. I was lucky enough to attend a variety of meetings. Internally at FHU, we held quarterly all branch staff meetings, monthly

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Nebraska staff meetings, bi-weekly transportation marketing meetings, and specific project meetings as needed. All meetings were conducted professionally and efficiently. I quickly learned to take notes and introduce myself to new or unfamiliar members at meetings. During these meetings, up-to-date technology was used such as video conference calls. Externally, I also had the opportunity to visit City Hall for a project meeting and attend an Omaha Engineers Club meeting at Piccolos.

Last and most importantly, I gained valuable mentoring from my fellow FHU supervisors and coworkers. One thing that college professors and classes are not always able to deliver is career advice in the private consulting industry. Through my internship, I learned that engineering is much more than science and math analysis. I learned that a large part of the consulting industry is marketing and networking. To be able to perform in this field, one must have a competitive edge and aggressiveness to go out and find work. A key component I learned is how important networking is among other firms and colleagues. Your next work opportunity through work can be initiated by the most random circumstances. Another important aspect young engineers, especially college students, should be aware of is the mentoring program within a working environment. It is important to have a go-to-guy with any question or problem you have. Even if they can't always help out, they might know a good direction to point you towards. In my opinion, that is the aspect that FHU excels at. FHU strives to be a working team environment. Young and older coworkers would take time out of their day to provide guidance or assistance to less experienced individuals like myself.

My summer with FHU has been an amazing experience in learning how a private consulting firm operates. I learned valuable knowledge through traffic analysis, modern technology, and exceptional mentors. FHU and the MATC program have encouraged me to pursue a career in traffic engineering. My deepest gratitude goes to FHU and MATC for making this internship possible and furthering my career skills.



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