



My MATC Internship

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Throughout my MATC internship, I gained valuable experience working in a professional engineering environment and in the field of traffic engineering. I was fortunate enough to have the opportunity to work with JEO Consulting Group during the summer. JEO has offices in Nebraska, Iowa, and Kansas serving hundreds of small towns as well as larger cities like Lincoln and Omaha. They engage in many aspects of civil engineering including transportation, structural, water infrastructure, water resources, aviation, and aquatics. I was part of the Traffic Engineering team where I worked on real projects like traffic studies, construction plans, and reviewing reports. I also got to experience meetings in a professional setting. I was always doing something different week by week, in which I was always learning something new.

The first project I worked on was a traffic study for Sarpy County. The purpose was to determine if a permitted left-turn phase was needed at the intersection of South 48th Street and Cornhusker Road. The first task of the project was to set up traffic cameras to record for a full day, so we could get a count of the volume of traffic using the intersection. I then used this data to create figures and write the report using guidance and methods from the American Association of State Highway and Transportation Officials (AASHTO) and the Institute of Transportation Engineers (ITE). Our recommendation to Sarpy County was to add a protected-permitted left-turn phase for the west to south movement. This project was great because it was small enough where I was able to do most of the work and see a project go from initial data collection to delivering a report to the client.

One of my main goals while working for JEO was to gain more experience with design software like Civil 3D and MicroStation. I was using one, if not both of these

platforms almost every day and I was given a wide variety of things to work on. One of my jobs was to design new parking lot layouts for Northwest Highschool in Grand Island. Ten concepts were created and then were narrowed down to three to present to school officials. Another job I worked on was to create line diagrams depicting alternative intersection concepts for the intersection of North 48th Street and Cornhusker Highway in Lincoln. These concepts will eventually be presented to the city as part of the study done by JEO. I also created a road classification map for the city of Beatrice to go with an access management plan. One of the last things I worked on was for a road construction project in which I designed typical cross-sections for the reconstruction of North Road in Grand Island. The experience I've gained in design this summer has helped me become a more confident engineering student, and much more prepared to work as a professional engineer.

JEO has their own summer internship program, where interns are grouped into teams to work on an engineering project. These projects are completed for local communities at no cost. My team was to come up with a solution for the city of Edgar, Nebraska, to get rid of water ponding that happens on the street and ditches of several city blocks after rainfall. This is where I got to experience the water resources side of civil engineering. Our goal was to get these streets and ditches to drain out of town properly. We first had a survey team survey the site. A site visit was also needed to determine any problem areas and take pictures of any water ponding. Then, we had a surface of the existing ground topography created in a Civil 3D file. Using Civil 3D, we drew alignments down the ditches and created profiles so we could visualize the grade of each ditch. Our solution was to regrade the ditches to a constant slope to prevent

ponding. Several culverts needed to be replaced and a new culvert needed to be constructed under an existing driveway that was blocking a drainage ditch. Also, a valley gutter needed to be constructed across a street to aid in the flow of water. This project included several meetings with the city to identify their problem, provide progress reports, and present the final construction plans to the city council.

I acquired many new skills and improved on others with JEO. Right away, I realized that engineers need to have great attention to detail. We were always reviewing each other's work to make sure we presented our best work to the client. I also became much more proficient in Excel while calculating and making spreadsheets of traffic volumes for our traffic studies.

I enjoyed my time working with JEO. They treat their interns like any other employee in the company. Many of my days were indeed, challenging. In my first week, I thought I was in way over my head. However, I wasn't alone and there was always someone to answer any questions I had or to help me if I needed it. That's what's great about JEO, everyone is always willing to help each other out. I would like to give special thanks to my supervisor Mike Malone for giving me the opportunity to work with JEO. I would also like to thank Mark Friend for his engineering guidance and everything I learned from him. I recommend JEO to other engineering students looking for an amazing internship experience.