What I Did During My Summer MATC Internship

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When I learned that I had been accepted as a MATC intern, I was excited to finally get some work experience in the engineering world. I was assigned to first time MATC sponsor Lamp, Rynearson and Associates. I was hoping that I could get a feel for a career as a transportation engineer and it turns out that my experiences this summer have done just that. I believe that my work at LRA has taught me many things about transportation engineering and has been a huge help in preparing me for a future career as a transportation engineer.

I came to the office the first morning a little anxious and excited to get started. I met my supervisor and went through the standard tour of the office, computer set-up, company policy review, etc. In the afternoon, I was thrust into the engineering world by being given a project to complete that was basically all my own.

I was to design right and left turn lanes into the driveway of a private residence that was being turned into a Montessori school. The driveway is located at approximately 185th Street along Maple Road just outside of Omaha. My supervisor went over a few details about the design of turn lanes and explained why this project was different than most. The Nebraska Department of Roads recently suggested that turn lanes at unsignalized intersections on rural highways be offset from the roadway so that vehicles stopped at the intersection can see around other vehicles in the turn lane and safely determine when it is okay to proceed through the intersection. This was the first time that LRA had designed such turn lanes so I was basically given the data and formulas I needed and set loose to figure out the size and length of the new turn lanes. After

wearing out my calculator punching in numbers and determining lengths and sizes, I drew the new turn lanes on an existing Autodesk Civil 3D file showing the existing layout of the intersection as well as existing spot elevations of the roadway joints. Finally, I put spot elevations in on the new turn lanes using the existing elevations and standard cross sectional slopes of highways. With all of that done, I was finished with my very first project that I could almost call my own.

The next project I worked on was a very large one and took up almost half of my summer. The city of Omaha called on LRA to conduct a global traffic study of the intersections around 204th and West Center Road. There are 5 proposed developments to be built around the intersection in coming years and the city needed to know how they would affect the roadways in the area. Because of the number and size of the developments as well as the fact they are being built around the interchange of two major highways (Highways 6/31 and 275), the future traffic volumes are going to be very large in the area. We were called upon to produce a study of the roadway from Pacific Street to F Street along 204th and from 209th to 192nd along Center Street and determine what improvements needed to be made to handle the future traffic.

I spent about a week making trip generation tables for each of the developments to determine approximately how many vehicles will enter and exit each one. These numbers are determined based on the types and sizes of buildings being put in the developments. Some of the land uses in these developments will consist of office buildings, retail stores, restaurants, single-family housing, apartments, an elementary school and a 24-screen movie

theater. I used formulas from the Institute of Transportation Engineers' Trip Generation manuals to determine the number of trips produced by these developments. The trips that I focused on throughout the study were trips made during the AM and PM peak hours.

I used current daily traffic counts to determine where to distribute the new trips throughout the network in order to see where the vehicles would come from and where they would go. I also used projected growth factors from MAPA to determine traffic volumes in the area in the future if the developments were not built. Then I added the distributed trips to the "background" trips to determine the "full-buildout" traffic volumes. I set up the roadway network in the software program Synchro and entered the calculated volumes at each intersection. After assembling all this information, I handed it over to my supervisor to run the Synchro analysis and write the formal report. Our study recommended that signals be installed at all intersections and additional turn lanes and through lanes be built at nearly every intersection.

Besides the two bigger projects, I have done some other things at LRA this summer as well. I have reviewed a traffic study by another firm to verify the data, gone to various meetings and worked with LRA land development interns on a housing development project. I am now starting on a traffic study for the area around a new middle school to be built in Hastings. It has been a busy summer with an assortment of work assignments.

My internship this summer has provided me with extremely valuable experience and knowledge that I could not have acquired without getting this

opportunity. I was able to work on two large projects that exposed me to both roadway design and traffic planning. I learned many important things that I could not learn from just taking a class. I was fortunate to work with smart, fun people and get my foot in the door in the transportation engineering field. I have fully enjoyed my internship and must have made a good impression on my boss because he offered me an internship position during the fall semester, which I have accepted. It has been a great summer and I am excited to continue my internship here at LRA and my path towards a career in transportation engineering.

Explaining my traffic study project on the field trip