City of Loveland Traffic Engineering Intern Program

My internship with the City of Loveland Traffic Engineering department gave me the opportunity to participate with many aspects of work involving traffic and transportation. There are many areas of the traffic department I was involved with such as road striping, sign making, engineering design, road tube counter data collection, and traffic calming. The experience I have gained from the various tasks I have completed has helped me to understand how the integral disciplines come together to keep traffic flowing smoothly.

In the beginning of summer, I put out road tube counters to analyze traffic data. Depending on the number of tubes and the position of the tubes, speed data, intersection approach volumes, or average daily traffic volume data can be gathered. With this data, I wrote different reports and updated average daily traffic count maps in AutoCAD. For traffic studies including intersection approach volumes, I wrote a traffic signal warrant study which is written by following codes in the MUTCD to determine if a traffic signal needs to be placed at a particular intersection. I also wrote speed summaries for roads where I placed speed counters due to residential requests for traffic calming.

Throughout the summer, I also performed turning movement counts. A turning movement count is performed by sitting next to an intersection and recording all of the movements of the vehicles passing through the intersection in a time period of an hour split up into four 15 minute intervals. Turning movement counts are a common request from city engineers to determine how many people are going a certain direction so they can determine a solution to their problem. This information could, for instance, help them determine if they can close a turn lane or if they need to add more lanes in a certain direction.

There were many other projects given to me through out the summer. First, I performed a parking study down a road near a medical center in Loveland. This parking study was performed to see if the parking lanes down either side of the road could be taken out to make the road 4 lanes instead of the 2 lanes it currently is. A parking study was needed to see if there were sufficient spots in the parking lots to accommodate for those people that parked in the parking lanes. I also put together an Excel spreadsheet with all of the parking data. Next, I performed travel time studies for the major arterials in Loveland. A travel time study entails going from a specific point on the furthest north or furthest east point of a road and going to the furthest south or west point of the road in Loveland and timing the total trip and the total amount of time

stopped at each stop light. Each travel time study had to be performed at the morning peak hour of traffic, the evening peak hour of traffic, and an off peak hour of traffic. The travel time study also had to be performed three times for each road for each peak hour or off peak hour. Once the travel time studies were completed, the studies were averaged for each road at each peak or off peak hour and an equation was used to determine the letter grade of the road. Throughout the summer, I also gained experience in many computer programs. Foremost, I was constantly using GIS to print aerial views of certain intersections. I also used AutoCAD to update many maps. One map is the speed limit map that shows the speed limits of roads and where the speed limits change. Next, I gained experience using Synchro modeling which is a valuable program to traffic engineering design. Synchro allows the user to input the number of lanes in each direction at an intersection. Then, the user inputs the hourly traffic flow and can run a simulation. Synchro can optimize the engineer's design by determining if a traffic signal, a roundabout, or a four way stop would be ideal.

On a couple days during the summer, I gained experience in other disciplines of the traffic department. Foremost, I learned how to make road signs. Once the road signs were made, I went and helped replace some stop signs and speed limit signs. Next, I helped stripe a road in a residential area. This is done with a driver of the paint truck driving and an operator of the carriage in the back with aiming the spray guns mounted to the side. I also attended a regional traffic calming meeting, as well as various meetings with city engineers throughout the summer.

Now that the school year has begun again, I am still collecting road tube counter data as it is requested. I also am helping with the traffic calming program. This entails collecting speed data on the road, putting the SMART trailer on the road (a trailer that shows the passing vehicles' speed), and possibly adding signs to a road, drawing new striping plans, or requesting selective police enforcement. I also enter accident reports so we have accident data readily available when it is needed to write a signal warrant study, or to determine traffic calming measures.

This job has taught me many new things with traffic engineering. I gained experience in collecting road tube counter data, turning movement count data, and performing other traffic related studies. I also furthered my technical knowledge in Excel, AutoCAD, GIS, and Synchro analysis. The experiences I gained throughout my internship with the City of Loveland will assist me throughout my career in traffic and transportation engineering.

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