2011

MATC Summer Internship

1st Avenue Cedar Rapids, IA

MID-AMERICA
TRANSPORTATION CENTER

HDR

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Commuters driving during peak hours in Chicago experience the worst annual delay in the U.S. at an average of 70 hours per commuter. This traffic delay increases travel expenses, cuts into a commuter's daily production and negatively impacts the environment. To solve congestion problems like those in Chicago, traffic engineers can optimize outdated signal timings, add traffic lanes, implement unique intersection designs, or promote other modes of transportation. Through the Mid-America Transportation Center (MATC) I had a great opportunity to work on a couple projects related to traffic delay while interning at HDR.

HDR is a private consulting firm founded in 1917 and based out of Omaha, NE. The company started out with just one office with 12 employees but has now become a highly respected engineering and architecture firm with over 180 offices. The Engineering News-Record ranked HDR at #11 in its Top 500 Design firms of 2011 (in Transportation the company was #8). As an intern in the company's traffic section, I work directly with six professional engineers who have taught me some of the skills necessary to become a successful engineer. My coworkers have been great as they are always available for questions and if I make a mistake they take the time to explain what I need to do to correct it. With the new knowledge that my colleagues have taught me I am better able to take lessons that I learned in my coursework and apply them to different projects.

My first project that I worked on was a concept study in Mason City, Iowa. For the project I became responsible for doing a preliminary traffic analysis of 14 intersections along Highway 122. To analyze the intersections I used a program called Synchro. With this software I created a diagram of the intersection network including

approximate lengths between intersections, lane geometry, turning movement volumes, and signal timings. Synchro then computed the level of service at each intersection based on the Highway Capacity Manual methods. From this information decisions will be made on how best to improve traffic operations. To help illustrate locations where there were problems in the network, I created diagrams using Excel which will later be used in reports for the client.

The second major project that I worked on was an improvement study for 1st Avenue in Cedar Rapids, Iowa. My primary job for this project was to assist with data collection at the project site. This was a great experience for me to be a part of the fieldwork that goes into a typical roadway improvement study. Some of the information that I helped to collect included daily traffic counts using tube counters, turning movement counts, spot speeds, travel time runs, and site photos which took about a week to complete. During that time I had to put in some overtime and on one night I was out putting down tube counters past midnight.

Upon completion of the data collection task, I then started conducting a crash analysis along 1st Avenue. Most of my time for this assignment was spent taking information from crash reports and entering them into Excel. Compiling all the data was a little bit challenging as I had to use my professional judgment when categorizing the accidents by type and cause. The problem was that some reports were incomplete and other times I had multiple reports for the same accident with conflicting information. Once all the information was in a spreadsheet I could then look to find any trends to crashes that occurred along 1st Avenue. Along with the crash analysis I also helped in modifying Synchro and Excel files like I did with the Mason City project.

The projects in Mason City and Cedar Rapids have been my main focus, but I have also done other minor tasks for the company. Most of my first week working at HDR was spent doing online training related to company policies, procedures, and standards. Other jobs that I did during my internship included taking site photos for use in proposals, attending meetings, doing research, and even organizing of the company library. When I have some free time between project tasks, I have opportunities to mess around with different software programs like CORSIM, HCS and Microstation. On the Cedar Rapids project I also got to observe a simulation of the traffic network being created with a software package called VISSIM.

My summer with HDR has been a great experience in learning how an engineering consulting firm operates. The environment, culture, and employees at HDR have been an enormous benefit to me as I continue to develop as an engineer. My time with HDR has also brought me realize that I want to pursue a career in transportation engineering and also obtain my PE License. I would like to thank both HDR and MATC for providing me an internship that has helped me develop the skills I will need in my future endeavors.