



2008 MATC Internship Report

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HDR Engineering



Roadway Design



This past summer, I started the next major transition in my life: moving from school out into the professional world. While some might refer to this as the dreadful “beginning of the end”, I took a lot away from my experiences and feel lucky to have had such a great opportunity. Although I am still glad to have two years of school remaining, I am no longer scared of what lies ahead of me in the real world once the days of late night parties and Big Red football games are a thing of the past.

This past spring, I was introduced to the MATC Intern Program. Not knowing what area of civil engineering I wanted to pursue, I decided to give transportation a hard look. I was lined up to work in the Roadway Design section at HDR Engineering, a company I knew little about. It could not have worked out better though, as I have enjoyed every day I have spent at HDR. For setting me up with such a great company, I need to thank the MATC Program.

HDR is a national engineering, consulting, and architectural firm, with headquarters located in Omaha. Other than that, I had very little idea what to expect before my first day. I was the walking definition of inexperience. After meeting a few people and filling out paperwork, I was told to familiarize myself with MicroStation, a CAD program that I would need for the summer. Little did I know just how much I would be using the program.

After a few days, I started to put things together. The Roadway Section at HDR is fairly large, with over 20 employees. Smaller teams work on separate projects together. Each project is made up of hundreds of sheets of design information, detailing every feature of the road that you could imagine, from

construction plans to drainage designs to road cross sections, just to name a few. Being fairly unfamiliar with most all of this, I was a little worried. Before long though, I was making significant contributions to my design team.

Within our team, it has been my job to take sheets that an engineer edits and then make the appropriate corrections on the MicroStation file within our database. At first, as you can imagine, I was doing fairly simple tasks, such as editing street labels or placing an elevation on certain key points. As the summer progressed though, I became more and more comfortable while learning more complex aspects of the design process. This has led me to many different areas within the design process. For example, designing a typical cross section for a segment of road, or calculating the total construction quantities required for a certain work zone. I could go on listing more, but there are just too many things I have done for a paper of this length.

Specifically, I have spent the vast majority of my time working on one project. This is the redesign of US Highway 75 south of Omaha, between Bellevue and Plattsmouth. The Nebraska Department of Roads hired HDR to design the whole project, which is split up into five main sections: two stretches of the actual highway and three main intersections. My team has consisted of a project manager and two other roadway design engineers, one of which I have worked very closely with on a daily basis.

One of the bigger tasks I was put in charge of was the widening of the pavement and shoulder for a significant stretch of the highway. Once the engineers made the decision that the original design should be slightly wider,

they turned it over to me. I had to widen the feature lines and then redesign all the pavement and shoulder shapes to match with these lines. Once this had been done, I had to recalculate all the quantities of the pavement areas I had changed and edit our construction notes to match these quantities.

Another larger task I have been working on is the general information sheets for the retaining walls we are constructing in the project. These sheets basically give all the information needed to build the wall. I needed to consider its position, dimensions, surrounding environmental features, materials needed, cross sections, and much more. Once I determined what information had to be included, I had to figure out the best way to present this information for clarity.

When I began my internship this summer, I was as green as they come, but I can honestly say that I have learned more than I could have ever hoped for. My experience here at HDR has not only reassured me of my decision to pursue a career in civil engineering, but also given me a look into what my future very well might look like. Not only that, but I have been able to make connections with one of the best companies in the nation. I have thoroughly enjoyed my MATC internship this summer and can now say that I am excited for what a future in transportation might hold for me.