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2006 MATC Internship Report

HDR Engineering



Thirteen weeks ago, I did not know what an MSE wall was. I had no idea that chains, profiles, and patterns had anything to do with engineering. I had used Microstation once. Thirteen weeks ago, I was a college student with no work experience; but today, I am an employable apprentice, actively working towards a career in engineering.

The MATC internship program has done more than provide me a summer job or teach me more about engineering. The MATC program has set me up for the future. In this report, I will explain what I did these past thirteen weeks that benefited me so greatly, and I will go over what I have learned in the process.

My first day, I began my MicroStation summer. Starting with the training programs, I had no idea this CAD program would become so ingrained into my daily routine. It was great to go through these tutorials and get a good foundation rather than just jumping straight in. Once I had become familiar with MicroStation, I started my first assignment.

My first assignment was earthwork for a beltway in Orange County, Florida. The fact that this job was in Florida made me glad that I was working with a larger company, and I could work on projects around the United States. For this assignment, I used GEOPAK in MicroStation to create an output file containing cut and fill numbers used by a contractor. This was a challenge because of my lack of experience with MicroStation. Most of my time was spent tidying up the cross-sections (making sure lines were connected, symbology was consistent, etc.) so the program would record the correct data. The engineer I

was working under did a good job of helping me along while still giving me the responsibility of doing my own work and making sure it was correct.

After finishing my work with the beltway in Florida, I did some QC on drainage calculations. My job was to back-check the calculations and make sure the numbers were consistent and reasonable. Coming into this summer, I only knew of the geometric design aspect of roadway engineering. This was a good look into the other pieces that go together when building a road.

When I had checked the drainage calculations, I started working on the Lincoln South Beltway project, a project that would occupy me for the rest of the summer. I was fortunate enough to come when my section was finalizing the plan set for this project. This allowed me to see everything that goes into a large roadway project. I worked on everything, from contours to drainage. Even though most of my work was CAD related and consisted of laying out and organizing the different sheets that go into a set, just the exposure to the different elements was better than any simple design work I could have been doing.

This is when my knowledge of MicroStation became necessary. I went through a GEOPAK training program that taught me how to lay out the alignments, profiles, superelevation, and cross-sections. I learned how to write input files that ran cross-sections and earthwork. Of course as the summer went on, I became more independent and more reliable. I was soon just given tasks with little or no explanation. I really felt that HDR used me and trusted my work.

As the summer wrapped up, we finished the plans to some extent. I found that there are always things that get discovered after the fact, so revisions are a

necessity. I put together special plans for a Mechanically Stabilized Earth (MSE) Wall and fittingly, used Excel and GEOPAK software programs to run earthwork calculations during my final weeks of the summer.

I have only mentioned the actual tasks I performed this summer. Something needs to be said of the important work experience I have gained. Having to interact and explain myself to other engineers was big part of my internship. Being responsible for the accuracy of my work was another thing I learned. Turning something in for a grade and turning something in to be built are two totally different things. Finally, I will be ready to go on that first day after I graduate, because I know what is expected from an entry level engineer and what it takes to get the job done. I feel that this will give me a real advantage in the future.

Again, I have gained so much from my little time in the MATC internship program. With CAD training, project experience, and real-world knowledge, I am definitely further along than I was thirteen weeks ago.