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Major: Electrical & Computer Engineering
Employer: Tangibl, LLC

Co-op Job Summary

Term 2: Summer 2008

Introduction:

Tangibl LLC is a small, private engineering firm that primarily does contract work for clients ranging from local municipal plants to major electrical utility companies. The type of work they do includes project management, construction management, engineering design, drafting, and other related services. The company is divided into a couple of divisions that are responsible for particular categories of work and/or types of clients. Co-ops are usually assigned to a division and supervisor based on the needs of the company. I know that the past co-op primarily was in the project management and fieldwork role, while I mostly stayed in-house working on completely different types of jobs.

Work Assignments:

During the Fall 2007 term, I found myself working on many small projects, some interesting, some mundane. For the Summer 2008 term, I spent almost all my time working on two large-scale projects, both of them more difficult than anything I had done previously. This time, my projects were more team-based, meaning that I had more freedom to develop my own processes and ideas in conjunction with my team members, rather than simply follow my supervisor’s direct instructions (like I did in the Fall).

The first project I worked on was in the field of electrical power distribution for a major energy company client. This was a very high profile job for Tangibl, so it was exciting for me to be able to have role in it. A further benefit was that my co-op term began right as Tangibl started the job, so I was able to work on this job right at its start-up phase and continuing through the duration of my co-op term. Power distribution was a topic I never learned in school, so I did not apply any specific classroom knowledge. However, I did need to know fundamentals of electrical circuits and power, which helped when my co-workers were explaining more advanced concepts to me.

In its broadest sense, Tangibl was asked to improve reliability and increase circuit protection on well over one hundred power distribution circuits spanning western, central, and northern Pennsylvania. Circuit protection was done by fusing branches off of the circuit’s main line, and by installing reclosers and sectionalizers based on electrical load and customer count considerations. Then, we used industry software to analyze the circuits for proper time-current coordination in order to ensure that our design proposals would function correctly. Of course, there were plenty of calculations to do and technical background to understand while we were doing this work. Without divulging too much proprietary information, we had to develop a package of information for each circuit that would later be sent to the client’s regional engineers. This information would later be sent
had developed during the fall term. This project had been ongoing for months before I first came to Tangible. There were both changes to the physical layout of the plant’s electrical system as well as major changes to the actual methodology behind our power studies, which explained why this project took so long to complete. Luckily, I had remembered some things about electric utilities and protective devices from my first term, so this project went a bit smoother as compared to in the fall. Since I had used the analysis software and worked on this project for so long, I was also asked to create a user’s manual for other employees to reference.

**Evaluation:**

I was happy with the way this co-op term went, since the projects I worked on were challenging and relevant to my academic interests. I was able to make more of my own decisions, which I felt more comfortable with as I gained experience on the project. The only downside was the level of training provided for my major project. When it started, I was only told the bare minimum background information on what I needed to do. I did not even receive the packet from the client that outlined the project’s scope, design philosophies, and other important information until a couple weeks into the project. Most of my early “training” amounted to me re-running analysis on some circuits due to mistakes that could have been easily prevented if I had a more complete conceptual understanding about what needed to be done. Not surprisingly, I ended up having to make revisions to my early work to bring them up to standard. Though I was able to quickly apply these lessons learned to the rest of the project, a more rigorous and structured training session would have saved a lot of time.
Life Outside of Co-op:

Unfortunately, I got a late start on the housing search for the summer term, so I was unable to find any reasonably priced housing in the Yardley area. Yardley is a typical upper-middle class suburban region, so it is difficult to find suitable apartments or dorm rooms. Luckily, it is only a 40 minute commute from my home in New Jersey, so I ended up living at home again, just like during the Fall 2007 term. Although this saved me a lot of money, I would have much preferred to live on my own. I would highly recommend starting your housing search early, and being aware that you may be living in some family’s spare bedroom.

On weekends, I visited my high school friends who were also working in the Philadelphia or central New Jersey area. In addition, we went up to New York City every few weeks to hang out with some other friends who were doing internships there. Yardley is a fairly centralized location, so it’s only about an hour from Philadelphia, New York City, or most places in New Jersey. The drive back up to Cornell is about 4 hours, so I ended up going back up to visit friends at school as well. In Yardley itself, there are plenty of places for young people to have fun, including movie theaters, gyms, bars, and malls. A car is highly recommended for errands or local travel.

Student Signature: __________________________ 8/3/08

Supervisor Signature: ________________________ 8/15/08
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Term 1, Fall 09

Job Assignment Essay – Work Term One

Coming to Tangibl, I had never had any AutoCAD experience, so the first few days of my fall term, I was oriented on basic AutoCAD 2009 according to the company’s standards. In the following days I got a better hang of the software as far as it is used within Tangibl’s CAD department. I also learned their organization scheme. While I didn’t have an assigned mentor, I usually went to Dawn or Red, both CAD workers, with any questions I had. Jimmy was also responsible for giving me a lot of my work, so if I had a question regarding the job I was working on, I would usually go to him.

Most of what I was responsible for was to take the drawings that were marked up and make the changes on AutoCAD. The drawings could be anything from a wiring diagram to a plan view of the first floor lighting. I worked on all kinds of civil and electrical drawings from topics ranging from pump stations to electrical equipment. There were other jobs I performed as well, I did a lot of organization of things like submittal logs, keeping track of the drawings and documents that we received from clients. I also wrote up several “transmittals.” They were mostly a cover sheet of what we were sending them as well as a letter being a little more specific about the package. I was also able to call clients several times to ask them to give us a reference drawing we needed to complete something or to ask for clarification on something they wanted us to do. One of the things it was most interesting to see was how a contracting company works.
From what I’ve seen of other companies it does seem to function a little differently. For one, there’s not as smooth a work flow. As my coworkers would tell me all the time, “it’s either feast of famine with work around here.” And it’s true, there were absolutely times where deadline upon deadline was looming, and others where things were taken at a more relaxed pace. Tangible was able to take a variety of different jobs. While each one was different from the previous, there were some that were radically different, and at least from my perspective, there were many opportunities for us to learn about an aspect of AutoCAD we’d never used before. For example, one project incorporated a lot of 3-D AutoCAD, and dealing with that in a professional setting was something the people working with it hadn’t done before.

While I didn’t have any work related specifically to my Materials Science & Engineering background, I feel that I did learn about how a small engineering contracting company works and it was a good introduction to the business world in general. I learned the proper ways to approach a boss or mentor, CAD system filing and how to keep the document system from getting too muddled, to mention a few.

As far as my living situation, I’m renting a room in a house about a 10-15 minute drive away. I found the listing on a website for a community college in the area where people will post residency openings. The price was very reasonable and in a good location. I live with a few others who have all been friendly and nice throughout my stay in Langhorne. The location itself is also very convenient, being close enough to my home in New Jersey that I can visit with I want/need to, but also very close to the colleges of friends from home and the city of Philadelphia itself. So while there’s not a lot to do in the Langhorne area, it’s very close to lots of active places.
Nicholas Fuga
Mechanical Engineering
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Fall 2010

At Tangibil, LLC my main job as a co-op was 2D electrical drafting using AutoCAD. I provided drafting support on the many ongoing engineering projects the company was involved in. Two major projects I worked on were a grid modernization project for a utility company in New Jersey and a rate compliance filing for a utility company in West Virginia. In both of these projects I was the sole provider of AutoCAD support for the designs implemented by our firm. In the first project, I provided route maps of the circuits we worked on, displaying pole locations, pole tags, fiber optic routes, manhole locations, and recloser locations and information, all on a geographically accurate underlay of streets and important landmarks. In the rate compliance filing, I provided sole AutoCAD support to update the documentation of the utility company’s circuit. Their old documentation showed all relevant electrical information, but was outdated and was not geographically representative, and was all in paper form. I was able to find an electronic map of West Virginia that I used as an underlay in AutoCAD, and was mapped out the circuit onto this underlay, so that it was geographically accurate. This circuit representation included single and multi phase wire, transformers, fused cutouts, capacitor banks and metering points.

When I first started I was given about a week of orientation, mostly learning the AutoCAD program because I had no experience with it going into the job, and also learning other things I would be responsible for, such as time keeping, scanning, plotting, and preparing transmittals. I found this method to be effective and everyone I worked with was very receptive to questions so that also helped ease my transition into the workplace. Most of my questions were either directed to other AutoCAD operators or to my supervisor.

The work that I did for this company was not particularly relevant to my educational background or career interests. My major is mechanical engineering and this firm for the most part deals with electrical designs, but nonetheless I was still interested to learn what I could and would definitely consider a career after college in an electrical field. Regardless of the fact that the firm’s area of expertise was not aligned with my major, I was able to learn a lot about working in an office, and conducting oneself in a professional manner. These are things that cannot be taught in a classroom.

Being that the firm is very small (about 25 people), finding housing is up to the co-ops. I used Craigslist to find housing, and it worked out very well for me. I found that apartments were pretty expensive in the area compared to the wage I was making, so I looked primarily in the rooms section. I contacted about 15 different people in August who were offering rooms in their homes, and set up to meet with about 6 or 7 of them. I came down to the area one weekend before my term started and checked out a bunch of the rooms, and ended up getting a pretty good deal on a place that was about a 3 minute drive from my job. I had two rooms and a bathroom to myself and my landlord was hardly ever around because she owned her own business so it ended up working out really well.

As far as finding things to do in the area, there are a lot stores and there is a mall in the area, so if you’re into shopping (which I’m not) that’s a plus. There’s at least one park in the area which was a pretty nice place to go to when it was warm out. I personally had a difficult time meeting people outside of work, but I used the 4 months of free time after work to buy a guitar
and practice a lot, which I greatly enjoyed. Since the company is so small, they didn’t offer any kind of out of work events.

Overall I would say the best thing about my job was that being in a small company I know that all of the work I did actually mattered and contributed to the success of the firm. As I said before, in some of the projects I worked on I was the only person providing AutoCAD support. Probably the worst thing about this job, although I don’t have any other co-op experiences to compare to, is that I was mostly doing the same thing 8 hours a day every day, that is drafting in AutoCAD. However I think with any job it’s going to feel monotonous compared to being at college when you are always learning something new. I would definitely consider my time at Tangibl, LLC to be a positive experience.