PURDUE
UNIVERSITY

STUDENT WORK REPORT

Co-Op Student Information

Date: 12/13/09

Student Name: Jay Wyss

Student Signature: Jay C Wyss

Student Email: jwyss@purdue.edu

School/Discipline: Civil Engineering

Please circle your current work session:

- 3-session – 1 2 3
- 5-session – (1) 2 3 4 5

Co-Op Employer Information

Does the Work Report contain Proprietary Information? Y or (N) (please circle one)

May Purdue post the Work Report on the OPP website? (Y) or N (please circle one)

Co-op Employer: GRW Engineers, Inc

Supervisor Name: Rick Miller

Supervisor Signature: Rick Miller

PROFESSIONAL PRACTICE (CO-OP) PROGRAMS

Co-Op Work Report

School of Civil Engineering

Purdue University

Work Period 1- Fall 2009

at

GRW Engineers, Inc.

7112 Waldren Drive

Indianapolis, IN

Submitted by Jay A. Wyss

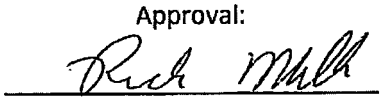
January 11, 2010

Campus Address:

336 N. Salisbury Appt. #10

West Lafayette, IN 47906

Approval:



Supervisor's Signature

Summary

I completed this Co-op at GRW Engineers, Inc. at their Indianapolis branch as member of the CAD department. GRW Engineers, Inc. is a nationwide company that opened its doors in 1964 in Lexington, Kentucky. The company was originally named G. Reynolds Watkins Consulting Engineers, after its founder. The company maintained this name until 1980, when they finally shortened it to simply GRW Engineers, Inc. The company expanded outside of Lexington by acquiring various other companies and opening in offices throughout Kentucky, until they finally extended their business outside of Kentucky. They opened office in Indiana, Ohio, Tennessee and Texas. After many years of success, GRW has began to receive many acclamations. Some of the awards have been given to GRW by U.S. Environmental Protection Agency, the American Council of Engineering, and many other prestigious committees. GRW has also been rated one of the top engineering firms nationwide by Engineering News-Record.

Since this was my first Co-op session, I lacked many of the necessary skills and knowledge to do various drafting and surveying work. So much of the tasks I did were basic and simple CAD work or excel and Microsoft work. As the semester went on and as I become more familiar with CAD, my tasks began to become more complicated and more important. One of these more complicated task was the main project I had worked on, which was a water main job for the Town of Brookville. I spent nearly month working on this particular job. I started out with mostly working in the paper space of CAD, which is where leaders, which are used to annotate the sheets. After I had completed this and gone back through a few times to make sure everything was correctly identified, I was given the task of drawing the profile views of the proposed waterline. In order to put in a profile view of the proposed waterline a few things are needed to be done before hand. The first thing I had to do was find and place the any conflicts with the waterline in the profile. Then I had to draw in the proposed water line, which also had to abide by the county regulations, while avoiding all of the conflicts. After I had drew in the proposed water line that only remaining thing to do in to draw in the symbols for the fittings along the pipe. After all of this, I had my work sent to the certified engineer to review it. Then I had to do all of the final corrections from the engineer until the plans were approved to be spent out to the client. After I had completed, the Brookville project, I did a lot of odd jobs with different sets of plans until the end of the term.

I started out this job with very minimal training and skills in the field of AutoCAD and surveying. I feel I'm leaving with a great base of knowledge to learn CAD on and I increased my understanding of water systems that are utilized in towns and cities. My current future plans are to continue on the path that I'm on. This Co-op session has just reaffirmed what I thought being a Civil Engineer was. It allowed me to see some hands on work for a real Civil Engineer. It allowed me to see some hands on work for a real Civil Engineer.

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Introduction

The purpose of this paper is to report my progress through my first Co-op session. I completed this Co-op at GRW Engineers, Inc. at their Indianapolis branch as member of the AutoCAD department, which specializes in drafting using the AutoCAD computer program. The beginning of this report consists of the background information about the company. I first describe the history of the company then go into detail about the company's services and awards they've won. After all of that I began to discuss the department I worked in and what I actually did during this Co-op session. I went into great detail about one of the main projects I had worked on during this term, which was the design for a new water main for the town of Brookville. Finally, I finish this report with a description of some of my future plans, including my school and career goals that I hope to achieve someday.

Company History

GRW Engineers, Inc. is a nationwide company that opened its doors in 1964 in Lexington, Kentucky. The company was originally named G. Reynolds Watkins Consulting Engineers, after its founder. In 1967, G. Reynolds Watkins passed away and new president was named, Lyle F. Wolf. As president, he expanded the company outside of Lexington by acquiring various other companies and opening in offices throughout Kentucky. Despite much expansion, the company maintained this name until 1980, when they finally decided to shorten it to simply GRW Engineers, Inc. In 1984, after many successful years, GRW began to spread out from their center of operations to outside of the state of Kentucky. They first expanded into Tennessee, then later to Indiana, Ohio, and Texas. The office in Indianapolis opened in 1992, which is the office I currently hold employment at.

Company Information

GRW offers four different main services to clients, including engineering, architecture, planning, and digital mapping. They provide these services to all types of clientele, such as federal, state, municipal and private industry clients. With GRW's dedication to the services they offer, they have been able to create such strong relationships with their clients that 90 percent of GRW's work has come from repeat clients. GRW's work has also gotten the attention of many awards on both the national and state levels. They have won awards from U.S. Environmental Protection Agency, the American Council of Engineering, and many other prestigious committees. GRW has been rated one of the top engineering firms nationwide by Engineering News-Record. The company is currently on the rise and doesn't appear to be slowing down anytime soon.

Department

The office I work in, as was stated earlier, is the Indianapolis office. I currently work in the CAD department of this office. This department is in charge of all AutoCAD work at this branch. The CAD department deals with bringing in the surfaces from a surveyor. These surfaces incorporate just about everything, such as land elevation, existing utilities, buildings, telephone poles, and many other things. The employees of this department, most often called CAD techs, are also given the task of designing and drawing the plans for projects according to the engineer's demand. The CAD techs basically draw what the engineer has designed, with the AutoCAD programs, to create the plans.

Duties and Responsibilities

Since this was my first Co-op session, I lacked many of the necessary skills and knowledge to do various drafting and surveying work many GRW employees do on a regular basis. Many of the tasks I did throughout the semester were very basic and used only simple CAD work, Excel, or Microsoft Word. As the semester went on and as I become more familiar with CAD, my tasks began to become more complicated and more important. When the semester first started, I did very simple jobs, such as inserting labels into AutoCAD on various project sheets. I also did other tasks such as creating cost estimates for a project or creating a spreadsheet to record inventory of past projects. Then, later in the semester my responsibilities started to increase and I started doing things such as creating and drawing profile views of proposed water mains.

Main Project and Manner of Execution

The main project I worked on was a water main job for the Town of Brookville. I spent nearly a month working on this particular project. I started out mostly working in the paper space of CAD, which is the option in CAD where leaders, the annotations to the sheets, are entered. Leaders tell someone what certain symbols are and where they are located. For example, a leader will point to a certain fitting along the water main, then it will read 'STA 0+32 W-LINE 2 45° BEND R.D.J.I.', meaning it is located 32 feet from the start of the line and that it is a joint to bend the direction of the water main. It was my job on this project to measure the location of the fittings and to make sure that they were labeled accordingly. After I had completed this and gone back through it a few times to make sure everything was correctly identified, I was given the task of drawing the profile views of the proposed waterline.

In order to put in a profile view of the proposed waterline, there are a few things that need to be done before hand. The first thing I had to do was find and place the many conflicts, which are potential intersections of the proposed waterline with the existing utilities, in the profile view. Possible examples of these conflicts include existing gas lines, underground telecommunication lines, existing waterlines, and existing storm and sanitary sewers, among many other things. Once I found where they would intersect, I had to place the conflict into the profile view at the correct depth so that the waterline will not run into the conflicts. When it came to sewers, inverts, or the elevation of the bottom of a pipe, had to be calculated to figure out the exact depth of the existing piping. To figure out the invert of a sewer pipe at a particular spot, simple use of slope was used to calculate how deep the said sewer pipe was at the particular crossing. When it comes to everything else, including gas, electric, and existing water, I had to look up the county's regulation depth for each of the particular utility. After I found the depth and the proper crossing location of each conflict, I had to place them in their respective places in the profile view. Now that the conflicts were in place, I had to draw in the proposed water line, which also had to abide by the county regulations, while avoiding all of the conflicts. Also every county has a certain depth in which a water line must be separated from a sanitary sewer, so I had to take that into consideration, which was normally around one and a half to two feet from the sewer pipe. After I had drawn in the proposed water line the only remaining thing to do was to draw in the symbols for the fittings along the pipe. These fittings include bends, couplers, reducers, and sleeves. These symbols must be placed at the place location in the profile view as is in the plan view. Once I had completed that I had to go and put the correct labeling to annotate the profiles. After all of this, I had my work sent to the certified engineer to review it. Then I had to do all of the final corrections from the engineer until the plans were approved to be sent out to the client.

After I had completed, the Brookville project, I did a lot of odd jobs with different sets of plans. I worked on correcting As-Built plans for project for Indiana American Water Company. I also did some minor work for other various projects that needed to be done. After we had caught up with all of our deadlines, I began to do a variety of jobs, from CAD work, to creating spreadsheets and typing up memo's for various jobs. I started out this job with very minimal training and skills in the field of AutoCAD and surveying but I feel that I am leaving with a great base of knowledge to learn CAD on and I definitely succeeded in increasing my understanding of water systems that are utilized in towns and cities.

Future Plans

My current future plans are to continue on the path that I am currently on. This Co-op session has just reaffirmed what I thought being a Civil Engineer was. This work session was a great experience for me; it allowed me to see some of the hands-on work a real Civil Engineer does on a day-to-day basis. This experience has only increased my drive to be a Civil Engineer. I plan on coming back and finishing out my remaining Co-op sessions at the GRW branch I worked at this session. I also plan to graduate college in a total of five years and to attempt to maintain employment here at GRW after I graduate, which at this point is a very good possibility barring any unforeseen circumstances. I hope to one day own my business, but that part of my plan is much farther in the future. This is all part of my current plan, which is going along as I had hoped so far.