Civil Engineering Essay, Research Paper

March 13, 2000

Research Paper

Civil Engineering

Throughout my lifetime, I have never had to think very much about the working world and everything that went with it. All through high school I took classes I liked or thought would be interesting to me, but never thought that all of those classes were preparing me for what was to come. Before I knew it, it was time to go to college. The four years of high school had flown by and now it was time to choose a major for college. I had never given much thought as to what I wanted to do for the rest of my life. The only real occupations that I had really gotten to experience were teaching, the jobs that my parents had, and others such as doctors, dentist, most of the occupations that everyone sees while they are growing up. When I finally decided on my major, I chose engineering, but I didn’t know if I would like it or not. The only prior knowledge I had about it was the fact that my grandfather was an electrical and chemical engineer, and that my parents and teachers said that I would be good at engineering. Recently I have been interested in civil engineering, but what does one do with such a degree? What opportunities are available to a person with a degree in civil engineering on the job market? The broad curriculum that covers many different fields of engineering make civil engineering a major that allows a person to work in nearly any field they wish.

So what could a person do with a degree in civil engineering? Civil engineering is one of the most general fields in engineering, and is often considered the “liberal arts of engineering.” Civil engineering is also referred to as the “People” engineering, because wherever there is a civilization, there is a need for civil engineers. A person that possesses a degree in this field shows an understanding of mathematics, chemistry, and physics. Thus there are many different applications of jobs that a person can perform with this degree. As Jeff Olsen, a former graduate in civil engineering at the University of Cincinnati says,

Fortunately for an engineer, there always seems to be room for advancement, both inside and outside of engineering. If you want to stay “engineer” your whole career, there are typically two paths an engineer takes during their career. One is to remain technical your whole career. This type of person is someone that likes sitting behind a desk doing design all day, or overseeing and approving designs by others. The next type of career path that the majority of engineers go towards is engineering management. The person that follows the engineering management path is typically someone that has good communication skills, likes dealing with people, and is very good at handling multiple tasks at once.

A plus with a civil engineering degree (or any engineering degree for that matter) is that it opens the doors to many areas of other interests such as engineering equipment sales, business communications, or even politics. Also, there are many readily available job positions for civil engineers. Civil engineers held approximately 228,000 jobs in 1996, and the level of employment is expected to grow at about as fast as the average, if not faster, for all occupations through the year 2006 (Chua). The level of employment is a bit misleading due to the fact that this number only includes the civil engineers working in civil engineering positions. This does not include all civil engineers that may have used their well-rounded, technical degree for other parts of the workforce, such as business management.

With a degree in civil engineering I would have the opportunity to perform many different jobs. Due to the fact that this profession has been around since the 18th century, it is not difficult to see the many of the works done by civil engineers. From the earliest times, engineers have been involved in building roads, bridges, cathedrals, and aqueducts. Did you know that it was Alexander G. Eiffel, a civil engineer that designed the Eiffel Tower or that it was Joseph Strauss, another civil engineer who designed the Golden Gate Bridge (Telford)? These ancient structures reveal a history of inventive genius and persistent experimentation. As for today, all you have to do is look around to see the many different structures that civil engineers design. They are capable of designing structures as large as the Millennium Dome in Greenwich and London, England, which is the world’s largest dome and the World Financial Centre in Shanghai, China, which will be the world’s tallest building at 460 meters once completed (Telford). Many projects, such as the ones just mentioned, have become world famous and they reflect the pride of local residents. Many of the things that we take for granted but which play a vital part in our everyday lives are the products of civil engineering. It covers construction of power stations that provide the electricity we use every time we turn on a light or watch television; the plant to purify our drinking water and to treat waste water; the roads we drive along and the airports from which we travel abroad. Every bridge, dam, oil rig, pipeline, reservoir, tunnel and waterway is a civil engineering project, as are many other smaller structures. Civil engineering is also very much concerned with how their work affects the environment. Reducing pollution, defending the coast from erosion, and finding new uses for building materials are also some of their main environmental concerns. So, in general, civil engineers are concerned with designing and executing structural works that serve to assist the general public.

The list of things that these civil engineers can do is just a small amount of jobs that these engineers are capable of performing. There are many other potential positions that a civil engineer can hold other than the physical aspect of design and construction of structures. Some civil engineers use their degree to become educators; some become professors of engineering and others become science or mathematics teachers at local high schools. It is not uncommon for some civil engineers to go to a graduate school for a master’s degree in business administration. Many hold management and administrative positions for major corporations. Others work in operations, maintenance, technical sales, marketing departments, and management that don’t actually work on or with the structures. The have an understanding of the structure, how it is designed, and how it is constructed. But as Jeff Olsen, project manager of construction for Quest Engineers, says:

Within Quest Engineers, civil engineers perform a variety of activities, such as field surveys, designing of water and sewer lines and wastewater treatment plants, marketing, administration, and rate analysis studies. Some people within the company may do only one of the above exclusively, while others may do two or more as part of their job. As a project manager I get to a little of everything, which keeps the job from getting boring.

A person wondering how they can acquire such a degree must keep in mind that engineering in general is not a major for everyone. It requires a person that has a mind with the ability to think creatively and logically. This means finding a practical solution to a particular problem. The course loads and types of classes vary from college to college, but there are many classes that are universal for all engineering. These are rigorous classes such as calculus, chemistry, and physics. Since civil engineering deals with the design and construction of buildings and transportation systems, there are many more classes that deal with physics, such as structures and integrated design. Some other important classes include such topics as soil mechanics, which covers such topics as soil structure, soil compaction, bearing capacity, and slope stability. There are also hydraulic systems classes that involve the theory and design of pipe flow, measuring devices, open channels, pumps and turbines. Another important class is environmental engineering, which is a class that discusses the environmental impact of what civil engineers do and how to prevent or reduce water and air pollution. What makes civil engineering such a good major is that classes such as these are parts of other engineering majors, thus giving civil engineers a broad range of understanding of many different topics. These classes may seem difficult to many people, and of course are not for everybody, but Professor Rost, sees it differently. He says, “There really isn’t anything hard about the courses that deal with any engineering major. You just have to like what you are doing. If you have an understanding for calculus based mathematics and physics based sciences, then you will have no problem with civil engineering, or any other engineering field.”

Civil engineering is a field of work that allows a person to work in nearly any work environment they choose. The degree shows an employer that the graduate has a high level of understanding of different topics and ability to learn many different skills on the job. The versatility of the profession allows a person to work on the construction, do the design, work in marketing, or any other computer-based desk job. They can work as civil engineers, or use their degree as a base to become other professionals such as business people or educators. They are the minds that create the roads, bridges, and buildings we use everyday. So be thankful for civil engineers, because without them our buildings would be unsafe, our drinking water would be contaminated, and our roadways would be so deteriorated and congested that traveling would be a hassle.

You might wonder what I want to do with a degree in civil engineering. To me, it means choices in where I want to work, who I want to work with, and what type of job I want to do. I am the type of person that becomes bored very quickly with the same thing day in and day out, so this fast paced, always-changing work atmosphere is perfect for my personality. As a civil engineer I will choose to work outside with a hands-on approach to the projects I take on. This will be a very rewarding career for me, since I will get to see a specific design all the way through to the finished project, and I will get to observe how this finished project helps the public. I also like the fact that my work would benefit more people in one day than almost any other profession. Since I am good at solving problems and designing and constructing things, I should have no problems as a civil engineer. Because civil engineering has all the qualities I am looking for in a job, I feel that it is the perfect career for me.

Olsen, Jeff. Personal Interview. 18 Feb. 2000.

Rost, Bob. Personal Interview. 22 Feb. 2000.

Chua, Ian Y. H. Civil and Structural Engineering Resource Web. 29 Jan. 2000. 2 Mar.

2000. http://web.singnet.com.sg/~icyh1955/civil.html.

Telford, Thomas. “Re: Civil Engineers Handbook.” E-mail to the author. 29 Feb. 2000.