Civil Engineer

Job Description

Civil engineers create a built environment that meets public needs, designing infrastructure such as sewer systems, water systems, storm drainage systems, roads, bridges, and dams. These tasks include balancing the health of ecosystems with the services of modern-day society. Civil engineers often specialize in specific categories of engineering such as transportation, geotechnical, structural, and water resource.

Salary

Entry – $62,000

Middle – $74-$95,000

Top – $97,000+

Core Tasks

- Develop detailed designs and specifications for projects
- Review the storm drainage impacts of the development
- Ensure that projects comply with legal/permitting requirements
- Meet with clients to discuss project needs and progress
- Observe constructions activities to see that improvements are being built per the design

Workplace / Environment

- Work hours
  - **Approx. 40 hours/week**
  - (At key milestones overtime work may be required to meet deadlines)
- Environment
  - **Frequent Communication** with teams
  - **Meetings with Clients** and local jurisdictions
  - **Office and Construction Sites** are most common
- Travel
  - **Varies between companies,** travel is common with design build construction

Education / Prerequisites

Education Level

Bachelor's degree in Civil Engineering is often recommended
(Graduate degree for specialty positions)

Licensing

Varies by state but always required
(Extra licensing required for specialty positions)

Pre-Job Preparation

Advanced courses in STEM, and intern experience are extremely helpful

High School: ACE

College: Engineers Without Borders

Experience

Soft skills

- Communication
- Leadership
- Critical Thinking
- Project Management

Technical skills

- CAD Software
- Specification Writing
- Calculation Software

Career Path: David Schwartz

About Me

Civil Engineer at KPFF Consulting

Bachelor of Civil Engineering from Oregon State University, 1982

High School Life

"I was a good student like lots of others. The top 10 in my class, getting out of high school. I took **advanced math classes;** I took calculus in high school and lots of **science**."

College Choices

"I went to college with the intent of becoming a **biochemist,** but in my sophomore year I went towards **general engineering**. I like to see things get built. I like to think of something in my head, put it down on a piece of paper, and have somebody go out and construct it, to see it get built, that's really gratifying for me, so that led me into the **civil engineering** field. I graduated with a **water resources major** out of the civil engineering school at Oregon State University."

Into the Real World

"After I got through school, I couldn't get a job because the economy was really bad in 1982. Ultimately, I found a job with a **marine construction company** where I worked seven days a week, 10 to 12 hours a day at least. The longest week I ever worked was 126 hours in one week, so that wasn't a really good job and I decided to quit and find a different opportunity."

"I started interviewing and found a job in Seattle working for a company that was mostly a **municipal company**. About a year and a half after I started working there, they went into bankruptcy and ended up selling the company to another engineering firm. This firm was Gardner Engineering which was founded by the son of the original City of Seattle head engineer."

"I changed jobs to work for an **engineering architectural firm** that mainly did work for the Department of Defense and Federal Government**.** The company did architecture, structural engineering and civil engineering, but architecture was their main focus. I was *the* entire civil engineering department. After six months there I got an opportunity at KPFF and took a job there."

"I started at KPFF in June of 1988 and have been there ever since. I worked on a job called SR 515 down the Kent Valley and I developed a really good relationship with the people at the state, and then went on to win five additional projects with the state, but those jobs just go on forever (10 plus years for some). I got tired of doing **transportation jobs** because they don't move very fast. I was able to switch my focus within KPFF, where I could do **private development work,** which included anything from parks, schools, or apartment buildings, to downtown office buildings, military facilities, and a wide variety of utility work including large sewer capacity analysis or water system analysis or upgrades."

"Civil engineers are constantly dealing with **stormwater** issues. This is true no matter where you work all across the country. I'm working in Maine right now on a project. I've done work in Idaho, California, upstate New York, Florida, South Carolina, Georgia, and many other places including some overseas work. All of them have very unique and different stormwater requirements. It's a big part of everything that we do, how to treat, or reuse, or infiltrate stormwater in some way on each project."

About My Job

"Civil engineers make civilization"

Pros

- "I get to **make a difference** in the world."
- "I get to work with some really **smart, talented people.**"
- "I can drive around town and point out 'I did this or that project' and it had a really **positive impact** on the community."
- "I like **variety** and I'm given the opportunity to have that."

Cons

- "Occasionally you have to work on projects that you don't feel that great about."

Fieldwork

- "I spent a lot of time **mentoring** and helping younger engineers to accomplish their projects, which is also very satisfying. I take young engineers out in the field to show them how things get built."

Office work

"I would say that 98% of my time is spent in the office."
"I **talk to clients** on the phone, **go to meetings**, and **help to manage** the group that I'm a part of."
"Most of my time is spent doing **design work** in a team."
"**Looking at PDFs of drawings** and **making comments** and sometimes **explaining** to others why things need to be changed and then **directing** them and helping **give guidance** in terms of how to communicate both with the client and with the permitting agencies that we're working with."

Skills

- “Having a really good **memory** is pretty critical.”
- “Having a **problem-solving** mind is extremely important.”
- “Having outstanding **communication** skills is paramount to success in the industry. We work with other consultants or clients or permitting agencies and all of that requires excellent communication. Without that you don't go very far.”
- “You also need to **retain** the things that you've learned. There’s two kinds of people we work with. Sponges soak up a lot of information and can squeeze better ideas even out of a difficult job. Sieves take in all the information but it kind of pours out the bottom and the next time they try to solve the same problem it's like they've never seen it before. It’s better to be a sponge. You’ll have a lot better success.”

Education/Experience

- “There’s lots of opportunities for civil engineers and the things you need to do even all the way back to high school is make sure you take the proper **math and science classes** and generate personal interest.”
- “When you get to college, focus on what you’re doing and make sure you understand what you’re studying. Start looking for **internships** as soon as you can.”
- “The other thing is to be involved in **activities**. Things like Engineers Without Borders at the college level teaches people a lot that can help them to be more successful in their career as they move forward.”

The Future of **Civil Engineering**

“It’s a very secure job”

“I’d say civil engineering is a **more secure** job than some other engineering. Structural engineering is very computer oriented. There are a lot of calculations that computers do for people. Anything that a computer can do without you lessens your chances of being needed more.”

“We're really in a **service industry** where it's a technical service, but it's a service. That's really what makes it stable.”

“I think they're going to continue to need civil engineers, but it’s hard to tell exactly how that will all play out. But I would expect that it should be something that’s **continuous in terms of need**.”