

A glimpse of the magic behind the screens.

BUILDING BONES



Kevin McCormick, PE, SE, Principal | Miller Consulting Engineers

STRUCTURAL ENGINEERING

A glimpse of the magic behind the screens

Chat GPT told me that structural engineers are the “architects of stability and the guardians of safety, crafting the strong and elegant frameworks that uphold our modern civilization.” Hmm. Okay. Sounds a bit like CGPT enjoys a good graphic novel in her downtime, but, what I’d really like to know is who these engineers are and what they’re actually doing all day long.

New to the industry, I recently moved my workspace into the middle of what can best be described as a hive of structural engineers. It was suggested that I’d learn quicker if I immersed myself in their environment rather than working virtually. So, I find myself sitting in the midst of about 20 engineers.

I hear the quiet humming of the computers, the clicking of keys, and the soft voices around the room. But my view at any given time is of their large black screens, not faces. The conversations in the room periodically erupting around me are like people speaking a beautiful foreign language. I hear terms like “disturbing forces”, “roller connection”, “cantilever”, “axial stress in members”, and “your geometry”. I hear that last one a lot. I don’t understand most of what they’re saying, but I find myself drawn in. I’m so intrigued by these engineers.

To learn more, I decided it was time to poke the hive. *Please enjoy my glimpse behind the screens as I visit with the amazing folks who spend their days building our buildings’ bones. Building Bones is a Miller Consulting Engineers series of articles highlighting the fascinating work being done by a small, Oregon-grown structural engineering firm located in Portland, Oregon. We hope you enjoy meeting our team.*



MEET KEVIN MCCORMICK

PE, SE, PRINCIPAL

How many years have you been in engineering?

34 years. And, all that time with Miller Consulting Engineers (MCE).

What inspired you to pursue a career in structural engineering?

As a child, I was very sick. The doctor's saved my life and their impact influenced my early desire for a career path in health services. Once into my pre-med coursework, I soon realized that medicine wasn't really what I wanted to do. I didn't know what to do next, however. To pay for college, I was spending my summer times working construction, building houses. I found I really enjoyed the process, so when I was back at school, I just walked across the quad from medicine to civil engineering. When I began learning about structures, everything clicked. It made sense. And, I found my passion.

What types of projects are you working on today?

Lately, I've been spending a lot of my time in forensic structural engineering for litigation cases. I never dreamed I'd be doing so many, but it's a necessary, and often sobering, part of our jobs. We're solving the problems of 'what happened.' It's all about forces and how they work, and then finding out why they did not work. There are a lot of ways to solve structure problems but sometimes the solutions employed have consequences. When designing, you have to think about the consequences that may arise if you don't solve the problems.

What aspects of structural engineering do you find the most enjoyable and fulfilling in your day-to-day work?

Watching the new engineers learn. When the light bulb comes on for them, it's exciting for everyone. When they really have 'it,' they never look back. There are a lot of success stories in our offices. And, that's down to smart, experienced engineers coming alongside new engineers, and guiding them as they learn. It takes a lot of time to train them up, but it's imperative. You want to work in an organization with a strong culture of shared, continuous team learning. Everyone rises together.



Do you remember the first project you stamped as a PE?

Yes! The Oregon State Capitol remodel. There were 27 pages of drawings. My dad was my specifications writer on that project, so his name is on the plans, as well, which makes this project even more meaningful. (Specifications are the minutiae of the building. Kind of like the quality standards.) I loved it! It was a dream come true. This project even won a national award.

Project: Oregon State Capital Rotunda

Is there a project that gave you a strong sense of accomplishment and joy?

I'm not really a big-project kind of guy. But, some of the big ones are just plain interesting. I really enjoyed the Sequoia Parkway walkway bridges and towers. That project required the development of horizontal walkways 150 feet in the air that would enable wheelchair access across the bridge. The challenge was determining what needed to be done to keep the forces low while maintaining a stable level surface. I loved watching it being built and then hearing visitors to the park exclaim, "I have no idea how this was even engineered".



Project: Eureka Zoo, Redwood Skywalk

In your experience, what qualities make an engineer exceptional?

They have to be personable, a thinker, and smart. They need to be able to relate their knowledge to someone who doesn't know the math or understand why it's important. They also have to be good listeners. If we, as engineers, stop and listen, then we have the ability to gain perspective and pick up others' views. **Engineering is often referred to as a team sport and for you to become an exceptional engineer, you've got to become an integral part of each of your project's teams.**



Kevin discussing a mutual project with Eric O, Structural Designer

What advice would you give new engineers as they prepare to enter the profession?

Ask questions. Don't be afraid. Be excited and energetic about doing everything. Ask for every challenge that comes along. You'll learn more as your metal is tested and you're able to put your knowledge into practical experience.

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Typically working behind the scenes on projects, structural engineers are the innovators and problem solvers that move the artist's vision into real, workable plans that contractors can use to actually build the structures. Stay tuned for more interviews behind the screens, with the folks whose passion it is to make our structures possible and safe.

[Learn more about our team at miller-se.com.](http://miller-se.com)