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# CIVIL ENGINEERING ACADEMY PODCAST

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## CEA 75 - A DAY IN THE LIFE OF A TRANSMISSION ENGINEER

The five main branches of civil engineering are widely recognized by most of us who choose a career in the field. We begin to develop an interest in one of such branches during the early college years after taking more specific classes or attending presentations of companies within this branch. Today, however, Isaac reveals how a particular presentation got him into an area that few people know of as a potential branch they can get into: The Transmission World!

While still a senior student at the University of Utah, Isaac attended a presentation by *Electrical Consultants Inc. (ECI)* in which they displayed many graphics on the PLS-CADD software showcasing the beautiful work that designing and building power lines entails. This got his attention and really resonated with him as something he could pursue in the future. At the time, he was working at a water resources company, but this presentation was so impactful that, as soon as he graduated from college, he

bounced back into the utility industry. He started as an inter doing transmission design work after college and grew from there. Now, he is the project manager of a transmission company, overseeing the design and building process of high-voltage power line systems.

What a day in the life of a transmission engineer looks like can be summarized in some key milestones that are important for the completion of a whole power line project. Once you're assigned a project, the first thing you have to do is field surveying. This will provide you with all the data you need to know before actually designing the power system, such as clearances from building and other constructions, topography, etc. Nowadays, this information can be collected through LIDAR technology, which can be pretty helpful. After you gather all that data, you need to actually design the project as we do with any other civil engineering project. However, for the transmission world, there's a specific type of software

called PLS-CADD by *Power Line Systems*. Simply put, this is the AutoCAD of the transmission world. In this software, you'll also start giving shape to your power lines, as well as deciding on which conductor material they should be made out of, calculating their sagging depending on the type of conductor chosen, establishing the poles locations, and estimating the tensions tending to pull over the towers due to how the lines are attached to them.

After all the surveying and design steps needed, you have to deal with the *Right-of-Way (ROW)*, which is the department that helps you to actually acquire the land that your power lines are going to be on. Sometimes this can play out smoothly, while sometimes it can be a challenge. After you're done with it, then you need to start developing the plans and profiles for your project, as with any other civil engineering project. Here you have to do your homework before you start building the power lines. It's helpful to always go out into the field and see what you've got there that may not be as you've previously thought, what can truly make the building process way more complicated. After completing the plans and profiles in compliance with the codes, and specifically the NESC for power lines, you can start the process of getting your Issue for Construction (IFC), which legally and officially allows you to start building your power line project.

## Resources

Purple Mattress - [Website](#)

PPI - [Website](#)

Electrical Consultants Inc. (ECI) - [Website](#)

The University of Utah - [Website](#)

PLS-CADD by Power Line Systems - [Website](#)

National Electrical Safety Code - [NESC](#)

Civil PE Review Course - [Link](#)

Civil FE Review Course - [Link](#)

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[CEA Newsletter](#) - Join over 4000 engineers like you and learn the tips and tricks to passing the FE and PE. We even have a free resource for you!

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