



A Young Professional's Perspective on Structural Licensing

By Greg Cuetara, P.E., S.E.

The professional engineer (PE) exam format and content have changed significantly in the past 30 to 40 years, as have the education and experience that engineers receive prior to taking the exam. 30 years ago, engineers did hand calculations for everything and had a good feel for answers that were outside the norm. Today, computers rule our world, and the “feel” of engineering is not as evident. Structures have become more complicated, as have building code provisions, which look more like theory than anything that would be used in practical applications.

The Civil PE exam encompasses many different fields of study, including environmental, water treatment, transportation, geotechnical, and structural. The Civil PE exam has questions in the morning that include all areas of civil engineering, and in the afternoon the examinee chooses a concentration and answers more detailed questions. The Civil PE exam covers many different topics, which means that no single one can be covered in much detail. Consequently, the Civil PE exam does not sufficiently test examinees on the kinds of challenges that practicing structural engineers face on a daily basis.

The NCEES former Structural I exam was very fast-paced and required quick thinking and knowledge of all current codes and standards. It consisted of 80 multiple-choice problems that candidates had to complete in eight hours, so time was a critical factor. The best way to prepare for this test was to know the basic concepts of structural engineering and do as many practice problems as possible.

The former NCEES Structural II exam required more knowledge but provided more time to dissect each problem into its components. It consisted of four essay-type problems, two in the morning and two in the afternoon, requiring candidates to write out solutions with comments, rather than selecting answers from among the choices given. Knowing where to

find every formula in the code was the key to passing this exam, especially the provisions related to seismic principles.

In 2011, the National Council of Examiners for Engineering and Surveying (NCEES) made some important revisions to the exam. There are no longer separate Structural I and Structural II exams. In fact, the original Structural I exam was never meant to be a stand-alone PE exam; rather, it was intended to be passed in conjunction with the Structural II exam. With this in mind, there is now a single two-day exam that covers all of the material on the older Structural I and Structural II exams, along with additional high wind and seismic content. The format for each day includes 40 multiple-choice questions in the morning and four essay-type problems in the afternoon.

There are laws and rules in every state regarding the practice of engineering. It is important to understand the specific licensing requirements of the jurisdictions in which you intend to practice. Most of them do not distinguish structural engineering from other disciplines, whereas others consider it to be a post-PE credential and require 16 hours of structural engineering exams after you become a PE. It would be safe to say that passing the Civil PE exam and then the new two-day Structural exam will allow you to practice structural engineering in almost every state. Again, the Civil PE exam alone does not effectively test structural engineers; 16 hours of structural exams should be required.

I attended my first NCSEA Annual Conference in 2008 in Cleveland, where I heard Barry Arnold speak about separate

structural engineering licensure. His first words were, “As structural engineers, we save lives.” This statement made me stop and think about why I want to be a structural engineer, and you should do the same. We all have our reasons, and mine is exactly what Barry said – I want to save lives. As a result, I am in favor of anything that will “raise the bar” for our profession.

Many people think that the exams exist primarily to weed people out of the engineering profession. The truth is that the exams are in place to test our knowledge and skills – to verify that we have the capability to keep people safe. More education, more experience, and more exams help us to provide better service to our clients and safer structures on which everyone can rely.

Personally, I have sat through a total of 39 hours of engineering exams – including the FE, Civil PE, Structural I and II, Canadian Ethics, and California Seismic and Surveying – and right now I would not have it any other way. Times are changing; engineering has changed and is currently changing, and we need to keep up for the sake of the safety, health, and welfare of the public. ■

*“As structural engineers,
we save lives.”*

– Barry Arnold

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