



## A Young Engineer's Case for Structural Licensure

By Emily Guglielmo, S.E.

**D**uring my first NCSEA conference in 2011, I was inspired by the passion for the structural engineering profession displayed by my more senior peers. Throughout the conference, a major discussion topic was the need for structural licensure in addition to generic professional engineering licensure. As I listened to the arguments, I did not fully understand the reasoning either for or against structural licensure. Years later, I can now state with full confidence that I strongly support efforts toward structural licensure, and I ask all of my young professional peers to stand with me.

Why did you choose to be a structural engineer? Perhaps you loved to innovate, build, and create. Mathematics and science might have been your passion, and engineering was a pragmatic direction. Raised in the San Francisco Bay area, I developed a lifelong fascination with earthquakes. I vividly remember the 1989 Loma Prieta event. Midway through gymnastics practice, the building lights swayed back and forth, the balance beams shook, and the doors and windows rattled loudly. I was fortunate to be inside a safely designed building with adequate bracing and structural support. From that day forward, I was fascinated with the idea of creating structures that could withstand these extreme forces of nature and protect their occupants.

Fast forward through a college and graduate education, and many years of practical engineering experience, and I was thrilled to be eligible to obtain my license. As I recall sitting for the Principles and Practice of Engineering (PE) examination, my memories are of wastewater, fluid dynamics, and environmental remediation. Successfully passing the exam, I concluded that I could recall my civil engineering college curriculum, address generic engineering topics, and research reference material during an examination. However, I was required to demonstrate little competency in the design of a structure that could withstand wind, snow, seismic, or even gravity forces.

Several years later, I successfully passed the 16-hour NCEES Structural Engineering (SE) exam. That experience stands out in stark contrast to the PE exam. I was challenged by questions involving various structural

materials and the appropriate utilization of building codes. The exam required an ability to solve real-world structural engineering problems, complete with detailing and sketches. The rigor and associated knowledge required to pass the SE exam was a far superior measure of competency when compared to the PE examination.

As structural engineers, we have a public duty to design safe structures. Presuming that engineers who pass a generic civil exam have the ability to do so is dangerous. Some opponents of structural licensure argue that we should give individuals the professional discretion to judge their own ability to design a given project. However, an engineer is often blissfully unaware of the amount of knowledge, detailing requirements, and standards that are required in structural engineering.

As an analogy, in the past, most medical care was performed by general practice physicians. While the quality of the care was usually good, the medical field evolved with the development of specialists. It is clear that a physician with years of surgical training is better equipped to remove a gallbladder than a general practitioner. Similarly, a cardiologist is better suited to manage difficult arrhythmias than a generalist. Likewise, specialization makes good sense for engineers, since we are uniquely trained and practiced in a particular field of expertise. Structural licensure would ensure demonstrated competency in our specialty.

Some opponents of structural licensure argue that there is no evidence of major building failures due to incompetent engineering, thus proving the adequacy of the current system. However, as structural engineers, we should be proactive about public safety and critical with respect to who is permitted to design our community's infrastructure. It would be short-sighted and irresponsible to wait for a catastrophic event before lobbying for structural licensure.

Structural engineers often complain about reduced fees and the profession's lack of prestige. However, we should look in the mirror and question ourselves about the significance we place on our work. If we honestly think that structural engineering is vitally important to the design community and the public at large,

then we should stand behind that statement and require all structural engineers to prove their competency through structural licensure.

Other young engineers ask me, "Why should I take the SE exam if my state does not offer structural licensure?" In addition to the moral and professional mandate outlined above, passing the SE exam offers a prestige increasingly important to structural engineers. Even if your state does not currently offer structural licensure, it likely will require one during your professional career. The most convenient time to take the SE exam is early, when you are the most proficient at design and familiar with codes and standards. As a bonus, the NCEES SE exam creates a nationwide platform to apply for comity in most states, resulting in additional professional distinction and opportunity.

As tomorrow's leaders, I strongly urge you to become an advocate for structural licensure in your state. Most jurisdictions already have local licensure committees who would greatly benefit from a passionate young structural engineer promoting structural licensure. Furthermore, you can serve as an example to your peers by taking the SE exam. Many NCSEA Young Member Groups offer technical training and team study approaches to help engineers prepare for the exam.

Structural engineering is at a critical crossroads. Visionary leadership from young professionals is vitally needed to address many significant challenges. While they may appear daunting, they also can be viewed as an opportunity for young engineers to shape the future of the profession and protect their communities. I strongly urge you to advocate for structural licensure in your state, take the SE exam, and help advance our practice while improving public safety. ■

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