

Structural engineers in certain parts of the country have practiced under a separate licensing law for many years, most under a title act, not by choice, but by compromise. Two states have full practice acts limiting the practice of structural engineering to structural engineers and architects, also a compromise. The number of U.S. jurisdictions that place some form of limitation on the practice of structural engineering beyond the typical “practice within one’s area of expertise” is less than 25% overall. Why do so few choose the level of protection for the public that licensing structural engineers can provide?

The following are ten potential obstacles to obtaining meaningful regulation of the practice of structural engineering. Every group seeking a change in the licensing laws will encounter at least some of these obstacles. The concept that engineers should only practice within their areas of expertise is a dubious means of regulating a profession with such a direct relationship to public safety and is tantamount to changing interstate speed limit signs to read, “Be safe.”

- 1) *Apathy.* The vast majority of engineers practicing structural engineering are disinterested in the issue of structural licensing, as evidenced by just how few structural engineers associations have active committees working to secure it in some form. Without a groundswell from the profession, any licensing movement takes on the persona of a mission of zealots and gatekeepers. To succeed, the profession must become fully engaged in the effort – intellectually, politically, and with a commitment of time and treasure.
- 2) *Management.* Large engineering concerns are usually multi-disciplined, with structural engineers comprising a small department or division within the organization. Very large firms, the ones most likely to have political connections, are often publicly traded companies whose management may not be engineers. They answer to a board of directors elected by stockholders, and focus on profit and growth. Additional regulation brings additional expense, which in turn reduces earnings. Unfortunately, with the consolidation of the industry, the support of these entities is close to mandatory. The significance of opposition from industry to professional engineering licensure has already been demonstrated in the form of industrial exemptions in state licensing laws.
- 3) *Public Indifference.* Without images in the news of death and destruction, and their correlation to the actions of unqualified engineers, the public is not likely to have much interest in the regulation of the practice of structural engineering. The public takes notice when there are events such as earthquakes,

associating structural engineers with better designed buildings, translating into increased public safety and reduced property damage. Structural engineers in places directly affected by this natural phenomenon have been able to leverage such public awareness and get licensing laws passed. Many U.S. jurisdictions with equally devastating natural disasters have yet to correlate bad design with increased damage and utilize public awareness to pass licensing laws. Public education is the answer, but by whom and at what expense?

- 4) *Organizational Dysfunction.* Within the last 18 months, SEI, NCSEA, SECB, and CASE have joined together to promote structural licensure under the auspices of the Structural Engineering Licensure Coalition (SELC). Up until now, each organization has supported the concept to a different degree and extent. SEI and CASE are subsidiaries of larger groups – ASCE and ACEC, respectively – and their endorsement of the concept reflects their political realities. In the past, civil engineers have generally opposed any practice restrictions, and ACEC is a business-based organization that looks at regulation with a critical eye. By contrast, NCSEA is autonomous and has supported structural licensure unequivocally, while SECB is a credentialing organization that was established with the stated goal of securing structural engineering licensure in all U.S. jurisdictions. The four groups have now come together with a unified voice to endorse structural licensure as a post-P.E. credential for “certain structures.” While this development is promising, and the compromise position of a post-P.E. license is surely more palatable to the general engineering population, the litmus test for success will be the number of jurisdictions that adopt structural licensure in the future and the role that SELC takes in making that happen. A national coalition could provide significant assistance to state associations if funded properly and focused accordingly.
- 5) *Licensing Boards.* Licensing boards are varied in their makeup, from those that regulate only the practice of engineering to ones that regulate engineers, surveyors, architects, geologists, etc. It stands to reason that the more generic the board, the more difficult the sell for special treatment for structural engineers, who are a very small segment of the engineering profession. Illinois has about 11,000 licensed professional engineers and 1,300 licensed structural engineers residing in the

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issues related to the regulation of structural engineering practice

10 Obstacles to Meaningful Licensing of Structural Engineers

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state, suggesting that just 12% of licensed engineers practice structural engineering. There are about 420,000 licensed engineers in the U.S., and applying the Illinois ratio leads to the conclusion that there are about 50,000 who practice structural engineering. Licensing boards are wary of the potential for increased costs and difficulties associated with discipline-specific licensing, as well as the signal that “special treatment” of structural engineers could send to the other disciplines. Without an overwhelming mandate from structural engineers, board support is unlikely to be forthcoming; and without board support, changing the laws will be much more difficult, if not impossible.

6) *Regulation.* The United States has become a hostile environment for new regulations. While structural engineering licensure is insignificant when compared to Sarbanes-Oxley, the Affordable Care Act, and Dodd-Frank, it still constitutes new regulation and thus will be opposed on principle by many people, especially the more conservative members of a legislative body, regardless of their overall understanding of the proposition. The more conservative the legislative body, the less likely new regulations affecting business will be embraced without overwhelming evidence that public safety is at stake, and even then it can be a hard sell. It is essential that politicians be educated on the amount of public protection afforded by structural engineering licensure, and that other stakeholders, such as the insurance industry and building officials, be supportive of the process.

7) *Politics.* Structural engineers tend to be apolitical. As a rule, those firms that have an interest in state politics express it through membership in the state ACEC organization. State ACEC organizations expend their political capital on business issues such as infrastructure funding, tort reform, and quality-based selection. Licensing of structural engineers is not a popular issue for business because it costs money and is, therefore, somewhat counter to ACEC’s mission. Additionally, these organizations count as members of large civil and multi-disciplined firms who may view structural licensure as a restrictive impediment. Given the current trends in engineering organization membership, ACEC’s state organizations may well become the de facto representative of engineers in general and, due to their broad composition and familiarity with the political system, the voice to which

the politicians listen. Therefore, soliciting and receiving the active support of a state’s ACEC organization is imperative. Active opposition can spell the end for any structural licensure effort.

8) *Money.* One undeniable fact is that the passing of laws generally requires money. It can take attorneys to write the legislation, especially if it is a completely new law, and it can take a lobbyist to promote the passage of the law. Some structural engineers associations have had success with their own grassroots efforts, but these have typically been in areas of high seismicity where the routine shaking of buildings serves as a reminder to the public and its representatives that just saying “be safe” is not the answer. An impediment to raising money is that many engineers are cheap. We do not like to spend money, and it can take lots of money to get a law passed. No doubt it will take a national effort to raise the funds for a single state initiative; improbable, but not impossible. If each structural engineer contributed \$10/year to a political action committee, with the stated goal of securing structural licensure where it does not currently exist, many of the obstacles listed in this article could be overcome.

9) *Aversion to Change.* Engineers generally do not like change. We like symmetry, consistency, uniformity, and predictability. We generally want today to be the same as yesterday and tomorrow to be the same as today. Structural engineers who currently make a living with a P.E. license often see very little need to distinguish themselves with a structural license or SECB credential, especially if it costs money. Colleagues who practice in other disciplines are even more averse to changing laws to suit one discipline. The motivation to change is not there and, in fact, the natural tendency to oppose this change is strong. This is very difficult behavior to modify, but it is necessary if structural engineering licensure is to receive broad support. We need to view regulation of the profession in the same vein that we are forced to view the practice of the profession. We no longer use slide rules, T-squares, vellum, Kroy machines, or moment distribution. They are not appropriate solutions, and generic licensing is no longer an appropriate solution for the protection of the public. We, as the engineering profession, have to realize that and embrace the change.

10) *Other Associations.* It would be simple if a single organization’s opposition to structural licensure were the only impediment

to states passing such laws. Currently, NSPE, with the recent compromise that would make the structural license a post-P.E. credential, is more an opponent of the past than of the future; but associations of the other disciplines and subsets of those disciplines can be just as vocal in their opposition. For structural engineers, the P.E. is not the Holy Grail; prestige comes with a structural license or the SECB credential. That is not the case for other disciplines. Many licensed engineers never design a thing, never seal a drawing or a document, or actually practice engineering at all. Their Holy Grail is the P.E. license. They hang the certificate on the wall, put P.E. after their names, and are very proud of it. They are defensive when it comes to any change that lessens its significance. The challenge for structural engineers wanting to pass licensure laws is to identify these associations – especially at the state level – then educate them and attempt to eliminate them as an opponent.

On a more positive note, one major obstacle of the past is gone, and an opportunity has replaced it. The elimination of the NCEES Structural I and Structural II exams leaves structural engineers with only one test to take, and that is the new 16-hour exam. In the past, state licensing boards could assume that they were properly testing structural engineers when they allowed them to pass the Structural I for licensure as a P.E. Now licensing boards are left with only one correct choice, requiring structural engineering candidates to sit for the 16-hour exam. The Alabama and Georgia boards of licensure have gone on record stating that structural engineers who seek licensure as PEs should take the 16-hour structural exam. It would be very good for the structural licensure movement if all jurisdictions adopted this approach. In the interim, structural engineering employers who routinely pay for their employees to take P.E. exams can make it office policy for their structural engineers to take and pass the 16-hour exam.

If getting structural engineering licensure laws passed was easy, there would not be 48 states without a full practice restriction and 40 states without a restriction at all (roster designations aside). Recognizing obstacles and addressing them is prudent strategy in any endeavor. The ten obstacles presented here are probably the most significant, and all of them can be overcome. It has been over 100 years since Illinois passed the first structural engineering licensing law. If we recognize the obstacles and methodically address them, it will not take another 100 years to finish the process. ■