Professional Issues

issues affecting the structural engineering profession

Opposition to Structural Licensure

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Support for structural licensure led NCSEA, SECB, ASCE-SEI and ACEC's CASE to form the Structural Engineering Licensure Coalition (SELC). While SELC serves to provide a common voice in support of structural licensure, there are engineers and organizations that oppose structural licensure. This article examines the reasons for such opposition.

Structural engineers' efforts serve to protect the public with safe designs. Every day, millions of people work in, live in or travel on the buildings and bridges that we design and rely on the power plants, industrial facilities and numerous other structures that have been built from structural plans. The NCSEA and ASCE Codes of Ethics place protection of the public as their highest priority. ASCE's first canon states:

> *Engineers shall hold paramount the safety, health and welfare of the public and shall strive to comply with the principles of sustainable development in the performance of their professional duties.*

Along with a professional obligation to protect the public, engineers are expected to prepare designs under the responsible charge of an engineer who has demonstrated the necessary qualifications. Training and studies provide engineers with powerful tools, useful to serve clients and society. Like other professions where special knowledge and skills come to bear, the public has an interest in regulating who may use these tools

In parallel with the growth of our society and scientific understanding of physical phenomena, the performance expectations of structures have increased. This is manifest in the complexity and size of the building codes. As we learn more about structural performance, we amend or revise the codes accordingly. As an example, consider how the provisions related to roof anchorage have changed in response to undesirable performance in storms. Also consider the code changes related to steel moment frames following earthquake investigations. In both instances, increased knowledge led to increased complexity of design requirements in service of the public interest.

In 1907, to protect the public, as well as land rights and water rights, Wyoming became the first state to license engineers. By 1950, all of the states and the District of Columbia had licensing rules or laws. Now, engineering licensure has become integral to building in our society.

Illinois first licensed structural engineers in 1915, followed by California in 1931. Currently, fifteen states hold the practice of structural engineering significant enough to have specific licensing provisions for the discipline. Seven – California, Hawaii, Illinois, Nevada, Oregon, Utah and Washington – require a licensed structural engineer for the design of all or certain structures. Idaho and Nebraska limit the use of the "structural engineer" title. Arizona, Louisiana, New Mexico, Oklahoma, Texas and Vermont designate structural engineers in their state rosters.

Structural engineering licensure is now recognized by NCEES, a federation of the state licensing boards. The ANSI-accredited *Model Law Structural Engineer* (MLSE) standard provides the recommended criteria for structural licensure. The MLSE is a guide framework that may be used in the individual jurisdictions.

The concept of structural licensure and imposing limitations on who may practice structural engineering has opponents with reasoned perspectives on the issue. This article considers these opponents and the grounds for their resistance.

Opposition

Opponents of structural licensure may contend that the current system of professional engineering licensure provides adequate regulation of the profession and protection for the public. Four basic arguments are commonly made in support of this view: 1) the lack of structural failures shows the adequacy of the current system; 2) structural licensure is unnecessary, since engineers are already required to practice only within their areas of competence; 3) regulation of the engineering profession is best implemented when the practice is not segregated into various disciplines; and 4) structural licensure would place undue restrictions on the practice of engineering. These points do not encompass all positions held by opponents; for example, in some cases opposition is based on the specific circumstances within a jurisdiction, a situation that is outside the scope of this article.

The first point in opposition, citing a lack of structural failures, may be viewed as a request for evidence. Engineers' professional practice is based on scientific principles supported by evidence, and it is rational to expect evidence in support of any engineering-related proposition. This point of view is commonly expressed by individuals who oppose structural licensure. By logical extension, one might consider this point of view as a reluctant opposition. Implicit in the request for evidence is a willingness to consider its possible veracity and relevance.

Specific structural failures attributable to those who would not practice under a regime of structural licensure would answer the question: "Where are the failures?" Unfortunately for society, the true cause of a structural failure may never be known. In his book, *Beyond Failure*, Dr. Norbert J. Delatte examines several structural failures. The 1987 L'Ambiance Plaza collapse during construction led to the death of 28 workers. Legal settlements by the affected parties closed the investigation before a definitive cause could be established. The engineering lessons which could have come from this failure

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are clouded by its incomplete examination. It is worth considering whether it is possible to know where the failures are.

Opposition to structural licensure based on an absence of evidence does have possible limitations. It indirectly contends that an absence of evidence about structural failures is evidence in support of current regulations. Proponents of this perspective might be insulated from witnessing the effects of poor design impacts on the public, and draw the conclusion that no change is needed.

Two points can be offered for consideration relative to this perspective. One is that many structures have not been subjected to design-level loads. Potentially deficient designs might perform acceptably under common conditions, yet fail when called upon to provide the performance needed under code-level events, such as a major windstorm or earthquake. Second, a structural failure might not become public knowledge, and waiting for a failure to happen subjects the public to potential risk.

The second basis for opposition correctly notes the ethical constraints on all professional engineers. Most jurisdictions require that engineers practice only within their areas of competence, and engineering codes of ethics also recognize similar obligations. This implicitly recognizes that engineering is a diverse practice, and practitioners are unlikely to be competent in all fields of engineering. Inherent in this thought is the idea that it is reasonable to assume that we are the best judges of our own abilities. Opponents citing this point frequently note that these ethical obligations preclude a need for structural licensure.

A corollary of this perspective is that opposition helps prevent an unwarranted growth of governmental regulation and governmental expenditures. From this perspective, structural licensure is a redundancy given the ethical restriction already established.

Cornell University research has shown that individuals may not be fully able to assess their lack of competence in fields without obvious objective standards. This has come to be known as the Dunning-Kruger effect. Proponents of structural licensure also recognize the diversity in engineering practice and cite this in support of their view. Jurisdictions with partial practice restrictions codify the concept by establishing a threshold for the involvement of a licensed structural engineer. Structural licensure proponents contend that this reduces the chance that significant structures are designed by professionals who inadvertently overestimate their own capability.

The third common point in opposition makes a case that the profession is best served by one regulatory agency in each jurisdiction offering generic licensure to all engineers. NSPE is a prominent proponent of this perspective, and has officially endorsed it in *Position Statement No. 1737 – Licensure and Qualifications for Practice*. The following is included within this document:

> *Professional engineering licensure is the only qualification for engineering practice. NSPE and its state societies will actively oppose attempts to enact any local, state, or federal legislation or rule that would mandate certification in lieu of or beyond licensure as a legal requirement for the performance of engineering services.*

NSPE members have offered the medical profession as a guide for licensing professionals in a highly varied field. Doctors may practice in a specific specialty or as a generalist. The state licenses the practice of medicine, and specialists are recognized by nongovernmental certification boards. The American Board of Medical Specialties coordinates with several medical boards to certify specialists. NSPE members have suggested that ASCE and other professional engineering organizations could perform the same function.

Part of the NSPE position is a perception that structural licensure proponents seek a completely separate regulatory system. Proponents of structural licensure bear some responsibility in helping to create this perception. In past discussions, the term "separate" was frequently used in relation to structural licensure. However, in general, structural licensure proponents believe that the current licensing boards are adequate agencies to administer structural licensure as part of their existing engineering licensing responsibilities.

The fourth point of opposition relates to structural licensure's effect on business. Some view the process to become a licensed structural engineer as an obstruction to fair business practices. More ardent opponents with this perspective view the structural licensure movement as an attempt to limit competition and artificially increase fees. This viewpoint inherently includes a contention that current regulations are sufficient, and it may frequently be linked to one or more of the other three points of objection.

Supporters of structural licensure recognize that all forms of licensure affect business, both by limiting who may participate and by providing buyers with confidence in the quality of the marketplace. Structural licensure would have the same effect by restricting practice to qualified individuals. Supporters also favor a transition process, often called "grandfathering," that would allow current practitioners to continue and ensure that new practitioners meet higher standards of qualification.

As noted earlier, the four points considered here do not address all grounds for opposition. However, common sources of opposition are based on the number of known failures, our profession's ethical obligations, a perspective for regulating engineers, or possible effects on business practices. Each jurisdiction that considers structural licensure will encounter opponents with alternate perspectives.

Understanding these objections and opening a dialog with opponents is a crucial step toward structural licensure. Actions taken in support of structural licensure are more likely to have positive results when there is better understanding of the opposition and recognition of their interests. As Ben Franklin said, "Would you persuade, speak of interest, not of reason."▪

ACEC – American Council of Engineering Companies
ASCE – American Society of Civil Engineers
CASE – Council of American Structural Engineers
NCSEA – National Council of Structural Engineers Associations
NSPE – National Society of Professional Engineers
SECB – Structural Engineering Certification Board
SEI – Structural Engineering Institute