Excerpt From

Advisory Committee on Council Activities

Dennis Truax, Ph.D., P.E., Chair

ABSTRACT

The Advisory Committee on Council Activities (ACCA) provides advice and briefing to the president and the board of directors on new policy issues, problems, and plans that have not been assigned to a standing committee or that involve several existing committees. ACCA conducted an organizational meeting at the 2014 annual meeting in Seattle, Washington, and held face-to-face meetings in December 2014 in San Antonio, Texas, and in January 2015 in San Diego, California, to finalize its recommendations to the Council.

ACCA was assigned 11 charges, has 9 motions for Council action, and has several recommendations for consideration by the board of directors.

Charge 2

Study the issue of structural engineering practice and its method of regulation, summarizing the current approaches to structural engineering regulation. Engage the structural engineering community, and make recommendations for revisions to the Model Law and Model Rules, if deemed appropriate.

Over the past few years, several organizations representing the structural engineering community have proposed that the practice of structural engineering relating to certain types of structures be regulated with a higher level of qualifications than that which is currently reflected in the laws and rules of most licensure jurisdictions. Their position is based on the premise that engineers addressing certain structures, generally termed “significant” or “essential,” require a higher level of expertise due to the structures’ complexity and high potential for harm in the event of failure. Such failures can result in significant loss of life, carry large financial impacts, and erode the public trust in engineering. Therefore, the organizations deem that significant structures present a greater threat to the health, safety, and welfare of the public, and they propose that engineers offering services associated with such structures be regulated to ensure that they possess and demonstrate a higher level of expertise.

Based on the current licensure systems of a few states, several approaches for imposing the higher level of regulation have been proposed. Some favor the formation of separate structural licensure systems, similar to the system used in Illinois. Others have proposed that discipline-specific licensure be employed, similar to the system used in Hawaii. Still others have recommended the addition of special recognitions or licenses to a generic P.E. license, similar to the approach used in Utah and Washington. There are also those who believe that the higher-level qualifications are unnecessary and the generic licensure approach used by most states that prohibits engineers from practicing in areas “in which they lack competence” provides adequate protection.

The debate over the need for a different approach and the nature of that approach has been ongoing for several years. In 2013, at the request of professional organizations that represent the structural engineering community, NCEES charged ACCA to consider the issue and determine if NCEES should officially engage in the debate. In early 2014, ACCA conducted a survey of the member boards to get a sense of the Council's desire in this regard. Based on results of the survey, ACCA made a motion at the 2014 annual meeting that NCEES charge a committee to study the issue, with the ultimate goal of making recommendations for modifications to the Model Law and Model Rules, if appropriate. The motion was approved, and ACCA received this charge as a result.

Current Model Law and Model Rules

The current Model Law and Model Rules employ the generic licensure approach, which is used by most of the licensure jurisdictions in the United States. Under generic licensure, all types of engineers are licensed as P.E.'s, with no reference to discipline if they satisfy a common level of qualifications, and they are restricted to practice within their areas of expertise. Under the generic approach, structural engineers would be bound to address only structures that they are qualified to address. Also under this approach, the only regulatory means of prevention of catastrophic failures (which represent the concern of the structural community) would be the adequacy of the common qualifications and the promise of licensed engineers to personally restrict their practice to the areas of expertise that they possess or perceive to possess. The structural engineering community regards the common level of qualifications to be inadequate for the structures in question and believes the generic approach is not proactive enough, given the ramifications of failure.

Current Regulatory Approaches

The practice of structural engineering in the United States is regulated by essentially five different approaches. These are briefly described as follows:

- **Generic P.E. Licensure**: The most common approach today is the use of generic licensure. This is also the approach currently reflected in the Model Law and Model Rules. In this approach, structural engineers are, as are all types of engineers, licensed as a P.E. without reference to discipline under a common level of qualifications and are bound to practice only in their area of expertise.
- **Generic P.E. Licensure Plus Protected S.E. Title**: Some jurisdictions regulate generically but impose additional requirements that must be satisfied to allow the licensee to use the title "structural engineer" or "S.E." The practice of structural engineering is regulated generically, but the use of the title is specifically restricted. This approach provides a higher level of regulatory assurance by confirming to the public which structural engineers have demonstrated the higher level of qualifications needed for significant structures.
- **Generic P.E. Licensure Plus Protected S.E. Title and Restricted S.E. Practice**: Some jurisdictions license structural engineers under the current generic P.E. system but impose additional requirements to obtain a separate S.E. title and regulate the practice of structural engineering. In this case, not only is the use of the title "S.E." restricted, but certain restrictions are also imposed as to who is allowed to practice structural engineering relative to significant structures. This approach has two variations:
    - **P.E. Plus S.E.**: Individuals first obtain a P.E. license by satisfying the common level requirements for education and experience and passing one of the standard NCEES Principles and Practice of Engineering (PE) exams. They then obtain the S.E. designation by meeting additional requirements (generally gaining additional experience in structural engineering related to

significant structures) and passing the 16-hour NCEES Structural Engineering (SE) exam. Such individuals are authorized to practice engineering in both a generic sense and in the restricted areas of structural engineering. This variation is already in place in some jurisdictions.

  - **S.E. Only**: Individuals meet the common level requirements and any additional requirements required for structural engineering and pass only the 16-hour SE exam. These applicants directly receive the S.E. designation without having to take one of the standard PE exams. Such individuals would be authorized to practice only structural engineering. This variation is not actually used by any jurisdictions at this time but is included here because the structural community has expressed interest in it as a possibility to eliminate the need for pure structural engineers to have to take both the PE exam and the SE exam.

- **Discipline-Specific Licensure**: Some jurisdictions license by discipline and include structural engineering as a separate type of license. With discipline-specific licensure, licensees are titled consistent with the discipline in which they are licensed. For example, a structural engineer is designated an S.E., a civil engineer a C.E., and a mechanical engineer an M.E. Licensees are also restricted to practice only within their designated discipline, which is specifically defined by the jurisdiction's statutes and rules. In this case, structural engineers are specifically restricted based on the definition of structural engineering.
- **Separate S.E. Licensure**: One state regulates the practice of structural engineering via statutes and rules that are completely separate from those regulating other disciplines of engineering. In this case, an S.E. license is required to practice structural engineering, regardless of the nature of the structure.

The following provisions are also reflected in the regulation of structural engineering in many of the U.S. jurisdictions. Each provision will need to be considered if the Council decides to modify the Model Law and Model Rules for structural engineering.

- **Competency Standards**: The competency standards (education, experience, and examination) used to regulate structural engineers at the higher level vary somewhat from jurisdiction to jurisdiction. However, the current Model Rules includes a definition titled Model Law Structural Engineer (MLSE). This definition reflects a set of licensure standards (including the relatively new 16-hour SE exam) that satisfy the requirements for structural engineering in all (or nearly all) of the licensure jurisdictions in the United States. The designation is currently used to expedite the approval of comity licensure applications for S.E.'s (a similar definition, Model Law Engineer, is provided to expedite comity licensure for P.E.'s), and it would seem appropriate for use in regulating the practice of structural engineering at a higher level.
- **Thresholds**: Many jurisdictions that regulate structural engineering separately do so only in relation to significant structures such as schools and hospitals or to essential structures such as those related to national defense, emergency response, etc. Structures over a certain height or buildings of a certain size or occupancy or with floors over a certain number are also usually included. The definitions of these thresholds vary from jurisdiction to jurisdiction, but the concept should be included if the Council decides to modify the Model Law and Model Rules in relation to structural engineering.
- **Grandfathering (or License Continuation)**: Most jurisdictions grandfather or continue existing licensees who practiced engineering under a past set of standards and do not impose the new standards on these individuals going forward. However, in the case of structural engineering, jurisdictions that have added new structural engineering designations do require practicing structural engineers to demonstrate their experience and qualifications before granting them the new S.E. designation or license.

Analysis

Of the approaches described above, ACCA considered the first three for possible implementation by NCEES. These are Generic P.E. Licensure, Generic P.E. Licensure Plus Protected S.E. Title, and Generic P.E. Licensure Plus Protected S.E. Title and Restricted S.E. Practice.

ACCA rejected Discipline-Specific Licensure from further consideration because it has not been embraced by NCEES in the past. The trend toward specialization and the splintering of engineering into many sub-disciplines would also complicate licensure and reduce mobility under a discipline-specific model. The committee also rejected Separate S.E. Licensure because the committee considered it unlikely that a proposal for separate practice acts for structural engineering would be embraced by NCEES or the governing bodies of the various licensure jurisdictions.

Generic P.E. Licensure represents the "do-nothing" alternative because this is the approach currently reflected in the current Model Law and Model Rules. Although most U.S. jurisdictions use the generic approach, the committee is sympathetic to the need for structural engineering practice associated with significant structures to be subject to a higher level of regulation. Members agreed that a more proactive approach than generic licensure should be considered given the threat to the health, safety, and welfare of the public posed by such structures. They also felt that the number of jurisdictions currently employing a higher level of regulation for structural engineers (11, including title and practice acts) is significant enough to warrant consideration for a change to the Model Law and Model Rules. The current provisions in these states vary significantly; before more states adopt new provisions, the Model Law and Model Rules should be revised to provide guidance. Consequently, the focus of the committee moved to the remaining approaches: Generic P.E. Licensure Plus Protected S.E. Title and Generic P.E. Licensure Plus Protected S.E. Title and Restricted S.E. Practice.

The Generic P.E. Licensure Plus Protected Title approach maintains generic licensure but adds title protection for structural engineers. Title protection would provide the public with a means to ensure that the qualifications of the structural engineer are adequate for the project they are considering; however, it provides only an indirect means of safeguarding the public by virtue of the state-regulated title and state-maintained roster. The public would still have to understand the difference between a P.E. and a P.E. with S.E. designation when selecting a structural engineer. A P.E. without the S.E. designation would not be explicitly prohibited from designing significant structures, provided the structures fall within the licensee's area of expertise. The determination of a P.E.'s area of expertise would be the only means of ensuring that the proper qualifications are in place, and such a determination would be made largely by the P.E. proposing to perform the structural engineering work. The committee decided that S.E. title protection alone is insufficient to address the public health, safety, and welfare threat that exists for significant structures.

The committee will present Motion 1 to implement the Generic P.E. Licensure Plus Protected S.E. Title and Restricted S.E. Practice approach. This approach not only protects the S.E. title but also regulates the practice of structural engineering; thus, it better safeguards the health, safety, and welfare of the public relative to structures with an elevated level of threat. While it is essentially discipline-specific licensure for one segment of the engineering profession, it still maintains a connection with generic licensure. The provisions can be embedded in the statutes and rules of most of the jurisdictions.

The committee also recommends that the approach include both variations described above: the P.E. Plus S.E. and the S.E. Only. If an individual is content to restrict his or her practice to only structural engineering, he or she should not be required to take both the PE and SE exams and maintain both licenses.

Related Provisions

If the Council approves the recommended approach for incorporation into the Model Law and Model Rules as presented in Motion 1, the committee recommends that other related provisions be addressed as follows:

- **Competency Standards**: Specific competency standards (education, experience, and examination) will need to be established for the new Model Law and Model Rules requirements. The committee recommends that the standards reflected in the Model Rules definition of Model Law Structural Engineer (Model Rules 210.20 B3) be adopted for this purpose.
- **Thresholds**: The definitions of significant and essential structures, which would set the threshold for the imposition of the higher-level competency standards, could be left to the individual jurisdictions, but NCEES should develop a definition for the Model Law and Model Rules for the sake of promoting uniformity. The exact definition should be developed by reviewing the threshold definitions of jurisdictions that currently regulate structural engineering. Establishing such a definition was considered outside the scope of this charge. ACCA has included development of this definition as part of Motion 1.
- **Grandfathering (or License Continuation)**: The grandfathering of current practitioners upon implementation of new requirements is normal practice by licensure jurisdictions, and the committee recommends that any new requirements for the regulation of structural engineering to be on a forward-looking basis, with all currently licensed engineers that practice structural engineering being granted the new S.E. designation after a demonstration of their experience and qualifications.

Charge 9

Develop a position statement that reflects the education standard defined in the Model Law Engineer 2020 and Model Law Structural Engineer 2020 definitions (as defined prior to removal from Model Law and Model Rules) regarding future education standards for professional engineering licensure. The position statement should further include the Council's desire to work with appropriate organizations/bodies to effect a change to ensure the continued health, safety, and welfare of the public.

Charge 9 resulted from passage of the Oklahoma board motion at the 2014 annual meeting. In developing the proposed position statement shown in Motion 8, ACCA kept its focus on the specific directives of the Oklahoma motion and stayed strictly to the charge. ACCA believes that moving the provisions relating to additional education requirements from the Model Law and Model Rules to the position statement should resolve the apparent confusion about the date of implementation, which was the stated concern behind the Oklahoma motion. Instead of including an effective date of 2020, the position statement instead simply states "in the future."

Having a position statement that addresses the future education requirements is consistent with the NCEES mission and vision statements. NCEES has the responsibility on behalf of the public to look to the future and recommend changes to the licensure process that will safeguard the health, safety, and welfare as reflected in the NCEES strategic plan and the vision and mission statements. The vision statement states the following: "The vision of NCEES is to provide leadership in professional licensure of engineers and surveyors through excellence in uniform laws, licensing standards, and professional ethics in order to safeguard the health, safety and welfare of the public and to shape the future of professional licensure [emphasis added]." Through the new position statement, NCEES is meeting/addressing this obligation by promoting education requirements for licensure in the future.

Having such a position statement will also provide the means for the Council to maintain the conversation about the future qualifications for engineering licensure. In addition, developing the position statement is consistent with NCEES' established processes that use careful deliberation of licensure-related issues and recognizes the related work that NCEES has accomplished over the past 15 years. Education is a complex issue that deserves such deliberation, and the position statement will serve as the platform for it.

MOTIONS

ACCA Motion 1

Move that the Generic P.E. Licensure Plus Protected S.E. Title and Restricted S.E. Practice approach as defined under Charge 2 of the ACCA report be incorporated into the Model Law and Model Rules and that the appropriate committee or task force be charged to develop specific language for that purpose, including the Thresholds definition as described under Charge 2. Further, move that the language be presented to NCEES for approval before being charged to the UPLG Committee for final incorporation into the Model Law and Model Rules.

Rationale

This approach not only protects the S.E. title but also regulates the practice of structural engineering, and thus better safeguards the health, safety, and welfare of the public relative to structures with an elevated level of threat. While it is essentially discipline-specific licensure for one segment of the engineering profession, it still maintains a connection with generic licensure, and the provisions can be embedded in the statutes and rules of most jurisdictions.

ACCA also recommends that the approach include both variations described in its report: the P.E. Plus S.E. and the S.E. Only. If an individual is content to restrict his or her practice to only structural engineering, he or she should not be required to take both the PE and SE exams and maintain both licenses.

Board of Directors' Position

Endorses, non-consent agenda

ACCA Motion 8

Move that Position Statement 35 be adopted as follows:

PS 35 Future Education Requirements for Engineering Licensure

One of the goals of NCEES is to advance licensure standards for all professional engineers. Those standards describe the technical and professional competency needed to safeguard the health, safety, and welfare of the public. The Council recognizes that future demands for increasing technical and professional skills and the reduction that has occurred in the formal education requirements needed to obtain a bachelor's degree in engineering from a program accredited by the Engineering Accreditation Commission of ABET (EAC/ABET) have resulted in the need for additional education beyond the bachelor's degree for those entering the engineering profession.

NCEES has identified several future pathways by which a candidate for licensure as a professional engineer might obtain the body of knowledge needed to meet these educational requirements, including the following:

A. A bachelor's degree in engineering from a program accredited by EAC/ABET and a master's or earned doctoral degree in engineering in the same technical area from an institution that offers EAC/ABET-accredited programs, or the equivalent
B. A bachelor's degree and a master's degree in engineering from a program accredited by EAC/ABET

C. A bachelor's degree from a program accredited by EAC/ABET that has a minimum of 150 semester credit hours, of which at least 115 semester credit hours are in mathematics, science, or engineering combined and at least 75 of these semester credit hours are in engineering
D. A bachelor's degree in engineering from a program accredited by EAC/ABET and at least 30 additional semester credit hours of upper-level undergraduate or graduate-level coursework in engineering on topics relevant to the practice of engineering (e.g., engineering-related science, mathematics, or professional practice topics such as business, communications, contract law, management, ethics, public policy, and quality control) from approved course providers (e.g., institutions that have EAC/ABET-accredited programs, or institutions or organizations accredited by an NCEES-approved accrediting body)

NCEES will continue to explore alternative educational pathways for candidates for licensure as professional engineers to develop the body of knowledge needed for entry into the profession. These alternatives will be developed through collaboration with technical engineering societies and other stakeholders engaged with the engineering profession.

Rationale

At the 2014 NCEES annual meeting, the Oklahoma State Board of Licensure for Professional Engineers and Land Surveyors made a motion, which the Council passed, requesting that

> "… the NCEES president assign a charge to the appropriate committee/task force to draft an NCEES position statement that reflects the education standards defined in the MLE 2020 and the MLSE 2020 definitions regarding further education standards for professional engineering licensure …"

The proposed position statement follows the directives of the motion and includes only the information related to additional education related to professional engineering licensure that was previously included in the NCEES Model Law and Model Rules. The committee made some minor edits to reflect current terminology used in the accreditation and licensure communities. The language was also modified to make no reference to the year 2020, thereby resolving the potential for confusion about an effective date for implementation of additional education requirements for professional engineering licensure. This was stated as the primary concern behind the motion.

NCEES has a responsibility to recommend changes to the licensure process that will ensure protection of the health, safety, and welfare of the public now and in the future as described in the NCEES strategic plan and in the mission and vision statements.

NCEES is continuing to fulfill this responsibility by promoting, through the proposed position statement, education requirements for licensure in the future. Creating this position statement sets the platform for continued dialogue on this important issue. It is consistent with the NCEES-established processes and summarizes NCEES' efforts on future education requirements for professional engineering licensure over the past 15 years—a complex issue requiring careful and continuing deliberation and one that this position statement will serve to facilitate.

Board of Directors' Position

Endorses, consent agenda