

**Confirmation and Update:**  
***A Vision for the Future of Structural Engineering  
and Structural Engineers:  
A Case for Change***

Task Committee Report to the Structural Engineering  
Institute Board of Governors

April 27, 2019



**STRUCTURAL  
ENGINEERING  
INSTITUTE**

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## PART I - Introduction and History

In 2008, the SEI Board of Governors (BOG) put forth the [SEI Vision Statement](#) (“the Vision”) for the profession to address the goal 25 years into the future. In part, the Vision stated:

*In 2033, The Structural Engineering Profession will be:*

*A unique, fully engaged profession with a strong identity,  
Recognized for the contributions of the profession,  
Stewards of the built environment, and  
Attractive to the best and brightest.*

In 2011, the BOG appointed a follow-up Task Committee to specifically identify topics and strategic issues to consider for action to put the Institute on a path to fulfil the Vision. The Task Committee on the Qualifications of Future Structural Engineers, made up of seven distinguished structural engineering professionals and SEI members, worked for two years on the effort. The final Task Committee report [A Vision for the Future of Structural Engineers: A Case for Change](#) (“Case for Change”) was approved by the BOG on Oct. 16, 2013, and it has become the guiding document for evaluating and aligning the Institutes’ goals, activities, and funding.

In the Case for Change report, the authors concluded that the structural engineering profession currently faces many challenges in areas such as education, licensure, technology, globalization, innovation, and leadership. They identified several features as “enhanced abilities” that will be needed by those in our profession to satisfy the Vision of structural engineering in 2033 and beyond.

In 2015, the BOG published an [Executive Summary of the SEI Vision for the Future](#) (“Executive Summary”) as a reminder of the long-term strategy and an update on progress made to date.

The Executive Summary reminded the profession that “SEI envisions a future where, as stewards of the built environment, structural engineers will make key contributions to the advancement of society on a global scale. They will create and use innovative technologies to design inspiring, resilient structures while ensuring the economic and sustainable use of natural resources. The best and brightest individuals will choose to enter the profession, which will provide them with rewarding and dynamic opportunities for advancement and recognition at every stage of their careers. Structural engineers will be leaders and innovators that play a critical role in improving the safety and well-being of the global population.”

More than ten years have passed since SEI adopted the Vision and it’s been five years since the BOG accepted the 2013 Case for Change report.

In 2017, the BOG appointed a Task Committee for Confirmation and Update of the Vision. The Task Committee is charged with reviewing the ongoing efforts of those individuals and committees that have been charged to advance the objectives, summarizing the progress made, and providing recommendations to the BOG of any adjustments that should be implemented. It is proposed that another similar review will be conducted in another 5 years by a similar task committee.

The Task Committee convened its first conference call on January 12, 2018 and has conducted seven conference calls and one face to face meeting on April 30, 2018 since its formation.

During the first conference call the committee reviewed the proposed tasks and developed the following approach:

- Review of documents including the original 2008 Vision Statement, the 2013 Case for Change report, the 2015 Executive Summary, and others.
- Survey SEI membership and Structures Congress attendees. Review all previous surveys and complete two new surveys in May 2018.
- Organize a panel discussion at the 2018 Structures Congress for discussion with audience about Vision and progress to date.
- Discuss confirmation effort with appropriate relevant SEI committees, including all five SEI Division Executive Committees.
- Hold Task Committee Meetings in person and via web/conference call.
- Interview multiple parties including the original Task Committee members through in-person or phone interviews.
- Request and incorporate comments from colleague organizations.

An interim report was provided to the BOG at their September 2018 meeting and comments were solicited. Generally, the comments were positive, and some suggestions were made regarding additions to the recommendations.

In addition, at a joint leadership meeting between officers and the executive directors of SEI, National Council of Structural Engineering Associations (NCSEA), and the Council of American Structural Engineers (CASE) on April 22, 2018, SEI shared the Case for Change document with those present and requested that their organizations review the document and share their comments and recommendations for consideration of the Task Committee. Comments from NCSEA were received in writing at the next joint leadership meeting on October 23, 2018. The NCSEA memo is included in Appendix K and the comments have been incorporated into this report.

This report is not intended to be a full revision to the previous documents, but to provide an updated supplement to those documents.

## PART II – Progress of 2013 Recommendations for SEI Board of Governors Action

The recommendations in Part V of the 2013 Case for Change report were provided for BOG action so that SEI could mold the profession's future to achieve the 2008 Vision Statement. The many recommendations were organized under two broad topics: Education for Innovation and Leadership, and Professional Practice for Innovation and Leadership. The recommendations are summarized below and those that have been authorized by the Board are indicated.

### Education for Innovation and Leadership

- **[2. Reform SE Education]** Establish a standing committee composed of academics and practitioners with experience related to the educational process and charge this committee with developing and advocating for a fundamentally new system for the undergraduate and professional education of structural engineers so that new structural engineers are trained in skills that support innovation and leadership on the world stage.

Status: This recommendation has been AUTHORIZED as the **Committee for the Reform of Structural Engineering Education** (CROSEE) originally as a standing committee at BOG level, then changed to its current form of a Task Committee. The committee started slowly but has been meeting frequently during the past two years and made significant progress. The committee is working towards a report to the BOG to be completed in 2020. Following are some themes of their work: As academics are increasingly rewarded for research over practice, the Adjunct Professor, an experienced engineering professional, is seen as a key bridge between 'theory' and 'practice' in the molding of students for future careers in the profession. In recognition of that trend, the committee has organized a session at 2019 Structures Congress to explore the importance and future impact of Adjunct Professors on the academy. As a short-term goal CROSEE is investigating ways of upskilling Adjuncts with best practice pedagogy to increase their effectiveness. To this end, CROSEE is exploring best practices currently in service such as the ASCE ExCEED program as well as the unique education models such as Olin College and Arizona State University's Teaching Community. See Appendix A for more details.

- **[4. Enhance professional development]** Establish a committee with like-minded organizations to study the state of continuing education for structural engineers; to recommend enhancements that ensure that providers offer only

meaningful, high-quality courses for study; and recommend industry-wide mechanisms and processes to make continuing education consistent and effective for all structural engineering professionals. This initiative is needed so that structural engineers develop and maintain the skills necessary for their practice and keep abreast of changes impacting our profession.

Status: This recommendation has been AUTHORIZED as a standing board-level **Continuing Education Committee** (CEC). In 2017, an SEI Futures Fund grant was awarded to a task committee comprised of members of SEI, NCSEA, CASE, and SECB, for a workshop on continuing education, aimed at identifying the current concerns and issues relation to continuing education. The task committee presented its findings to the BOG in a report on September 25, 2017. The task committee was then approved by the Board as the new SEI Continuing Education Committee (CEC). The committee has been working with SEI Business and Professional Activities Division on revising the existing ASCE Policy Statement 425, *Continuing Professional Development for Licensure*, to include accreditation. See Appendix B for more details.

- [3. **Improve mentoring of young engineers**] Improving mentoring is a key element identified in the *Vision for the Future* document, tasking our profession with developing a national, standardized framework to launch the careers of young professionals, and creating a meaningful platform for lifelong learning and constant professional growth. Without mentorship on all levels, we risk losing members of our profession to other fields. It is the charge of the members of our profession to help create a platform for career continuity and fluidity. One in which structural engineers remain engaged, cognizant of changes, and active in the profession, in turn passing this framework to younger generations.

Status: This recommendation has been AUTHORIZED as a standing BPAD **Committee on Professional Mentoring**. A Business Practices and Activities Division (BPAD) Committee on Professional Mentoring was approved during the fall, 2015 SEI Board of Governors meeting. Since then, there has been minimal progress to-date in this committee. A Futures Fund proposal was submitted in 2017 to help fund the start-up of the committee but was not approved. A meeting was planned during 2018 Structures Congress, but it did not take place. See Appendix B for more details.

- [1. **Promote the SE as innovator and leader**] Promote the structural engineer as a leader and innovator by designating a champion to solicit authors and speakers for white papers, magazine articles, conference sessions, public media interaction, and/or other means, to make the case for structural engineers to broaden their skill sets and to attract persons with new and diverse talents to the profession.

Status: This recommendation has been AUTHORIZED as a standing board-level **Committee of Professional Practice for Innovation and Leadership**. Approved at the July 22, 2015 BOG meeting, this effort was proposed to be titled, Reimaging SE: How to Promote SE Leaders and Innovators. No further activity has taken place after this authorization. See Appendix C for more details.

- [8. **Address the needs and concerns of structural engineers worldwide**] Establish the *International Activities Division (IAD)* with designated support staff within SEI to advance the role of SEI members on the world stage and facilitate the development of skills that allow SEI members to thrive in the global market. IAD activities could include: marketing efforts to promote SEI, its publications, and its members worldwide; identifying and sponsoring SEI members to serve in prominent roles at foreign professional meetings and conferences; operating a clearinghouse for foreign exchange programs for our best and brightest young engineers; establishing foreign chapters; fostering ways for SEI members to contribute to beneficial development in disadvantaged societies; and others.

Status: The actions related to this recommendation have been AUTHORIZED as a new SEI **Global Activity Division**. At the November 2015 SEI Board meeting, Board members voted unanimously to establish the Global Activities Division within SEI, and the new Division held its first meeting at the 2016 Structures Congress in Phoenix, Arizona. The name of the new Division was changed to the Global Activities Division (GAD) to reflect a wider, more encompassing and more inclusive aspiration for the new Division. In the 3+ years since its inception, the GAD has been active in promoting SEI globally, reaching out to other structural engineering organizations outside the United States, and promoting the concept of global interoperability within structural engineering. See Appendix D for more details.

- [5. **Advocate structural engineering licensure**] Promote structural engineering licensure by supporting the Structural Engineering Licensure



Coalition and its mission to advocate for structural engineering licensure in all jurisdictions.

Status: Specific actions relating to this recommendation have been AUTHORIZED with continuous support of the **Structural Engineering Licensure Coalition** (SELC). Instrumental to the creation of the multi-organization alliance, SEI has participated in meetings of the SELC since 2013. Additionally, SEI has actively participated in initiatives to promote structural engineering licensure, such as attending meetings with NSPE to mitigate their concerns about SE licensure; participating in a task committee to develop rationale for SE licensure; participated in a task committee to develop a Significant Structures document; participating in a task committee to investigate the future of SE licensure. Recently more frequent threats to licensure have heightened the need to collaborate with other organizations to protect not only SE licensure, but PE licensure in general. This includes participating in the Joint Design Profession Coalition attended by the architects, landscape architects, NSPE, ASCE, and other; attending the annual NCEES conference engineering forum to learn about threats and actions; and studying the history and future of structural engineering licensure. See Appendix E for more details.

- [6. **Support performance-based codes and standards**] Establish a standing committee to champion performance-based building and bridge design codes and standards and the reduction of unnecessary constraint on design. This committee should be composed of representatives of SEI and other standard-development organizations to collaborate in the development of codes that focus on essential standardization, supported by appropriate guidance, rather than complete regulation.

Status: Specific actions relating to this recommendation have been AUTHORIZED and a standing board-level **Committee to Advance Performance-based Structural Engineering**. The initial work began as a task committee, which was authorized in 2015, and culminated with a report titled "[Advocating for Performance Based Design](#)" in April 2018. Now, as a standing board-level committee was approved in April 2018 and committee mission and vision was approved in September 2018., the effort is underway to carry on the recommendations contained in the report. Specifically, the committee is developing a plan to engage existing committees within SEI, and eventually other institutes and organizations, for collaboration. See Appendix F for more details.

- [7. **Lead multi-disciplinary summits**] Implement a series of summits on a regular interval to engage the leading related organizations to identify areas of mutual interest and bases for collaboration in education, training, and partnership for the development of technologies that promote the interests of structural engineers.

Status: Specific actions regarding this recommendation have been AUTHORIZED as the board-level **Committee on Interdisciplinary Technical Summits** (ITS) was approved by BOG in 2014 and then was transferred to a Technical Activities Division ExCom initiative in 2016 . ITS organized its first summit “Resilience of Structures and Infrastructure Systems” at Structures Congress in 2018. The 2<sup>nd</sup> summit is planned for 2020. See Appendix G for more details.

- Create a new forum that showcases structural engineers in non-traditional roles and solving problems outside the construction industry.

Status: Specific actions regarding this recommendation have NOT BEEN AUTHORIZED. See Appendix H for more details.

- Create the equivalent of an Opal Award to recognize structural engineering firms that excel in leadership and innovation.

Status: Specific actions regarding this recommendation have NOT BEEN AUTHORIZED. See Appendix I for more details.

- Encourage all SEI members to become involved with philanthropic work, community leadership, political advocacy, professional society activity, media interaction, and other outwardly-focused activities that leverage our skills for the betterment of society. Establish a publication forum to recognize and publicize accomplishments beyond the workplace and expand the SEI award program for the most outstanding accomplishments.

Status: Specific actions regarding this recommendation have NOT BEEN AUTHORIZED. See Appendix J for more details.

## PART III – Updates to 2013 Recommendations and New 2019 Recommendations for SEI Board of Governors’ Action

The Task Committee strongly endorses the initial Vision statement that was adopted in 2008, summarized below:

*“In 2033, The Structural Engineering Profession will be:*

*A unique, fully engaged profession with a strong identity,*

*Recognized for the contributions of the profession,*

*Stewards of the built environment, and*

*Attractive to the best and brightest.*

Based on the Task Committee’s review, progress regarding the 2013 Case for Change Recommendations has proven to be inconsistent. Activities related to some recommendations are well underway and progress on activities related to other recommendations are minimal at best. Generally, those recommendations that have progressed the least do not have an assigned committee or passionate individual to “champion” the work.

Moving forward, the Task Committee has reviewed the 2013 Case for Change Recommendations, adjusted those as deemed appropriate, reorganized others and added new recommendations. These revisions are based on the numerous activities performed by the Task Committee described above, including the collecting of current thinking by our membership and other interested parties.

As part of this effort, it has become apparent that proactive collaboration with other professional organizations and interested parties, including NCSEA and CASE are vital to achieve the Vision. In 2018, the leadership of SEI, NCSEA and CASE established an agreement for collaboration and scheduled regular meetings, usually two times per year. Comments and ideas from both organizations were requested regarding an executive summary of the Case for Change document and they have been incorporated into this report.

### Updated Recommendations

The Task Committee has updated the 2013 recommendations and those updates include the reordering of the recommendations, the division of one recommendation into two separate recommendations, and the addition of three new recommendations.

#### **1. Promote the structural engineer as a leader and innovator —**

*Currently no activities are addressing the following recommendations*

- a. Create programs to educate and promote professional skills to structural engineering students and to young professionals to prepare them as future leaders.
- b. Designate a champion to solicit authors and speakers for white papers, magazine articles, conference sessions, public media interaction, and/or other means, to make the case for structural engineers to broaden their skill sets and to attract persons with new and diverse talents to the profession.
- c. Establish a publication forum to recognize and publicize accomplishments beyond the workplace and expand the SEI award program for the most outstanding non-engineering accomplishments.
- d. Create a new forum that showcases structural engineers in non-traditional roles and solving problems outside the construction industry. Encourage all SEI members to become involved with philanthropic work, community leadership, political advocacy, professional society activity, media interaction, and other outwardly-focused activities that leverage our skills for the betterment of society.
- e. Create the equivalent of an Opal Award to recognize structural engineering firms that excel in leadership and innovation.
- f. Address the perception that structural engineers are undervalued.

2. **Reform structural engineering education —**

Currently the **board-level Committee on Reform of Structural Engineering Education (CROSEE)** is addressing the following recommendations

- a. CROSEE believes engineering education needs to be flexible to better prepare students for a rapidly changing workplace and does not believe there should be special accreditation of an undergraduate program in Structural Engineering.
- b. CROSEE has discussed a number of ideas for improving creativity in engineering programs and feels that educating the educators on this topic, including adjunct professors may be a fruitful future avenue for ASCE. This could be modelled on the successful ASCE ExCEED program used to train professors in better pedagogy and teaching practices but opened up to Adjunct Professors.
- c. CROSEE plans on holding a Stakeholders Workshop in Reston in Summer 2020 to inform the final report on best practices for educating and transitioning students into the profession.
- d. A task report to the SEI Board of Governors will be issued by October 2020. It will address specific topics and include final recommendations.

**3. Improve mentoring of young structural engineers —**

Currently no activities are addressing the following recommendations

- a. Reassemble the BPAD Committee on Professional Mentoring.
- b. Engage young professionals, mid-level, and senior engineers to collaborate on best ways to develop and maintain mentoring relationships.
- c. Team with LAD to bring mentoring to the local level
- d. Support ASCE Mentor Match program by encouraging SEI members as mentors and SEI Young Professional and Student Members to participate.

**4. Enhance professional development of practicing structural engineers —**

Currently some activities are addressing the following recommendations

- a. Continue support for the board-level SEI Continuing Education Committee.
- b. Collaborate on this initiative with other professional organizations.
- c. Support ASCE Career Paths programs promoting leadership and career development.

**5. Advocate structural engineering licensure —**

Currently the **Structural Engineering Licensure Coalition (SELC)** is engaged in some activities addressing the following recommendations

- a. Continue to actively participate in SELC and participate in task committees and initiatives that promote SE licensure.
- b. Support the SELC committee currently tasked with investigating and reporting on the vision for the future of structural engineering licensure. Implement those recommendations from this committee that are consistent with the SEI Vision.
- c. Attend the Joint Design Professions Coalition monthly meetings to both gain knowledge on the licensure threats, as well as collaborate and take action when necessary to promote SE licensure.
- d. Investigate and promote mobility of SE licensure globally. Collaborate with GAD to determine a strategy and implementation.

**6. Support performance-based codes and standards —**

Currently the **board-level Committee to Advance Performance-based Structural Engineering** is addressing the following recommendations

- a. Develop a report summarizing current PBD activities and efforts (within SEI and by other organizations).
- b. Develop a report summarizing key PBD needs of stakeholders, challenges, necessary collaborations, and obstacles.

- c. Prepare Best Practice Guidelines for Design Professionals on Building Structures, Non-structural Building Systems, and Non-building structures.
- d. Prepare a report documenting how to specify performance goals and objectives for a desired reliability and risk levels.
- e. Develop PBD Best Practice Guidelines for the peer review process.
- f. Develop PBD Pre-Standards for Design Professionals on Building Structures, Non-structural Building Systems, and Non-building structures.
- g. Develop PBD Pre-Standards for the peer review process and Building Officials.
- h. Develop PBD Standards for Design Professionals on Building Structures, Non-structural Building Systems, and Non-building structures.
- i. Develop PBD Standards for the peer review process and Building Officials.
- j. Prepare materials to educate design professionals on PBD topics.

**7. Lead multi-disciplinary workshops on technical matters of broad interest —**

*Currently **Interdisciplinary Technology Summits** with TAD ExCom is engaged in some activities addressing the following recommendations*

- a. Include more disciplines beyond traditional structural engineering, to be truly interdisciplinary.
- b. Increase the frequency of technical/technology summits, beyond a Structures Congress session every two years.
- c. Expand the topics to engage more structural engineers, in continuous effort to apply the most advanced technologies.
- d. Besides the summits, there can be follow-up activities and recommendations to address the Vision.
- e. Structural engineers can lead multi-disciplinary collaboration
  - i. Across committees within the Technical Activities Division (e.g., Advances in Information Technology)
  - ii. Across SEI divisions (e.g., Global Activities Division)
  - iii. Across ASCE institutes (e.g., Engineering Mechanics Institute)
  - iv. With other organizations (e.g., American Association for the Advancement of Science)
- f. Innovative technologies that will transform the future of structural engineering include, but are not limited to, artificial intelligence, high performance computing,

building information modeling, 3D printing, automation, virtual and augmented reality. As technologies are rapidly changing and key to structural engineers being innovators and leaders, continuous updates and developments are needed to embrace new and emerging technologies in the future and to engage the younger generations to think outside the box towards realizing the Vision in 2033.

## **8. Address the needs and concerns of structural engineers worldwide —**

Currently the **Global Activities Division** is addressing the following recommendations

- a. Promote increased interaction between GAD and the other SEI Divisions.
- b. Establish partnerships with other international structural engineering organizations and with domestic organizations with international name recognition.
- c. Promote and enable global interoperability such that our industry is structured to readily facilitate people, organizations, and systems to work across geographic and other boundaries.

### New Recommendations

In addition to the updates to the recommendations included in the 2013 Case for Change documents, the Task Committee also recommends the following new recommendations. Some of these are direct result of collaboration with partner organizations of SEI, see Appendix K.

## **9. Encourage resilience in all structures.**

- a. Support ASCE Policy 500 Resilient Infrastructure as applicable within the structural engineering community.
- b. Support programs on resiliency with collaborating organizations including, but not limited to, NCSEA, NIST, FEMA, ICC, and SEER.
- c. Include resilience as topic in Call for Papers at conference sessions.

## **10. Promote diversity by supporting ASCE Policy Statement 417- Diversity and Inclusion.**

- a. Review SEI Bylaws and Policy and Procedures to ensure reflect commitment and support of diversity and inclusion within SEI
- b. Encourage recruitment and retention practices within all SEI activities and communications.
- c. Engage in strategic collaborations with other organizations including but not limited to SE3 Committee, NSBE, AISES, SHE, SWE, and WiSE.

**11. Support proactive collaboration between other interested parties and professional organizations with a similar Vision for the Structural Engineers profession.**

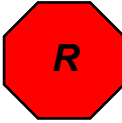
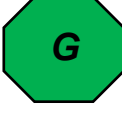
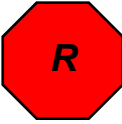
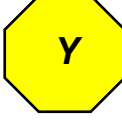
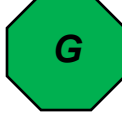
- a. A brief executive summary of the Vision should be prepared and presented for endorsement by the respective Boards of SEI, NCSEA and CASE to help articulate and ensure that the three organizations are striving to achieve the same overall Vision of the future of Structural Engineering. This document should not include specific steps, but the relevant initiatives to achieve our common goal. This concept was discussed and agreed upon at the October 23, 2018 joint leadership meeting. The document should be shared with other similar organizations as appropriate, such as IstructE and IABSE.
- b. Where possible, the assigned “champion” committees or individuals in each of the three organizations should work together on the new recommendations. As NCSEA, SEI, and CASE work to align their efforts to minimize duplication and move forward together, identifying committees in this fashion will highlight specific opportunities for collaboration. In some cases, joint committees should be formed, and in others, representatives from other organization’s relevant committees should be assigned to ensure that the goals and actions are relevant, tasks are covered, and duplication of efforts is minimized. The leadership of these organizations have committed to meeting regularly and reviewing the recommendations as part of their agenda so that they can update the others on current activities and coordinate.

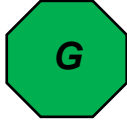
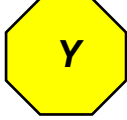
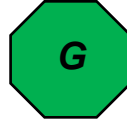
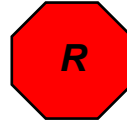
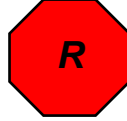
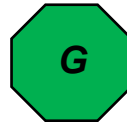


PART IV - Conclusions

The Task Committee was charged with reviewing the ongoing efforts of those individuals and committees that have been charged to advance the objectives, and to summarize the progress and provide recommendations to the Board of Governors of any adjustments that should be implemented. These efforts have been concluded and summarized in this report.

Each of the recommendations is listed in the table below with the responsible party, a description of status and a rating regarding progress: Green signifies “active”, Yellow signifies “progress but needs extra assistance”, and Red signifies “No progress and needs special attention” by the Board of Governors.

Recommendation	Responsible	<div style="display: inline-block; width: 15px; height: 15px; background-color: green; border: 1px solid black; margin-right: 5px;"></div> <div style="display: inline-block; width: 15px; height: 15px; background-color: yellow; border: 1px solid black; margin-right: 5px;"></div> <div style="display: inline-block; width: 15px; height: 15px; background-color: red; border: 1px solid black;"></div>	Status
<b>1. Promote the structural engineer as a leader and innovator</b>	Committee of Professional Practice for Innovation and Leadership		RED A proposal to establish a BOG level Committee was approved, but no action was taken. Committee is inactive.
<b>2.Reform SE Education</b>	Task Committee on Reform of Structural Engineering Education		GREEN Committee has been meeting regularly and completing activities. A report is due fall of 2019
<b>3.Improve mentoring of young structural engineers</b>	BPAD Committee on Professional Mentoring		RED BPAD to support committee.
<b>4.Enhance professional development of practicing structural engineers</b>	SEI Continuing Education Committee		YELLOW: Chair is appointed, Committee Charge needs BOG approval.
<b>5.Advocate structural engineering licensure</b>	Representatives to the Structural Engineering Licensure Coalition		GREEN: SELC is meeting at least twice a year and has been active and working

<b>6.Support performance-based codes and standards</b>	BOG Level Committee to Advance Performance-based Structural Engineering		GREEN: Committee is actively meeting and working
<b>7.Lead multi-disciplinary workshops on technical matters of broad interest</b>	Committee on Interdisciplinary Technology Summits		YELLOW: Active, but need a “permanent” Chair and committee members from TAD
<b>8.Address the needs and concerns of structural engineers worldwide</b>	Global Activities Division		GREEN: Well established and active.
<b>9.Encourage resilience in all structures</b>	NEW Recommendation		RED: No authorization or action has been taken
<b>10.Promote diversity by supporting ASCE Policy Statement 417- Diversity and Inclusion</b>	NEW Recommendation		RED: No authorization or action has been taken
<b>11.Support proactive collaboration between other interested parties and professional organizations with a similar Vision for the Structural Engineers profession.</b>	NEW Recommendation - SEI Exec. Director and current President, Board of Governors		GREEN: SEI Leadership has started regular meeting schedule with NCSEA and CASE Leadership, writing a mutual Vision statement. Appointed Liaison to IStructE board, attending IABSE conferences.

The profession is at a critical turning point. Increasing complexity, computer automation, contractual stipulations, and global interconnectivity are among the trends that are fundamentally changing the practice of structural engineering. The challenge is to foresee the impacts of these trends in a way that reinforces and expands the critical role of structural engineers in improving the health, safety, and welfare of the public. The Vision is the basis for a long-term strategy to ensure a vibrant and dynamic future.

It is strongly recommended that another BOG Task Committee be organized to conduct a similar review in another 5 years.



## Appendix A

*A Case for Change* Recommendation:

**Establish a standing committee composed of academics and practitioners with experience related to the educational process and charge this committee with developing and advocating for a fundamentally new system for the undergraduate and professional education of structural engineers so that new structural engineers are trained in skills that support innovation and leadership on the world stage.**

### **Validation of 2013 recommendation to meet Vision by 2033:**

The Committee for the Reform of Structural Engineering Education (CROSEE) has strongly endorsed the 2013 recommendation and agree that the educational process must significantly be changed to position our profession as the industry changes.

### **Confirmation of assigned responsibility:**

CROSEE was created by the Board of Governors to consider improved and new approaches to education the future profession and to help advance the thinking about SE education for the benefit of the profession. By considering future demands and current best practices, the committee will report back to the BOG.

As part of the activities to advance the SEI Vision, CROSEE has been working to address and advance the goal of redefining structural engineering education to meet the future needs of the profession.

In addition, CROSEE has been working in parallel with other groups, specifically Communities of Best Practice in Teaching Pedagogy at Olin College and Arizona State University. The Committee has also sought to understand how other engineering disciplines are tackling these issues.

### **Summary of progress to-date:**

CROSEE organized a session at 2019 Structures Congress to explore the importance and future impact of Adjunct Professors on the academy who are seen as a key bridge between 'theory' and 'practice' in the molding of students for future careers in the profession.

CROSEE is exploring several best practices in teaching pedagogy currently in service such as ASCE ExCEED program, unique education models such as Olin College. A survey of CE Heads of Department (HOD) is underway to determine the increasingly important role that adjuncts play. The Committee will use the outcomes of the Structures Congress Session, the

HOD Survey committee plans and their own deliberations to plan and host a workshop to solicit feedback from a greater stakeholder group. These contributions will lead to a final report to the SEI Board of Governors including recommendations to go forward to advance the SEI Vision relative to the topic.

**Any deviations from 2013 recommendation concepts:**

To date, there do not seem to be any deviations from the original concepts provided in the *Vision* document. Successes include active engagement with best practice champions as well as sessions at Structures Congress. This committee is engaged and believes in the mission and proactively working to address such a large, extensive topic. There are no current or anticipated problems on the horizon at this time.

**Recommended current changes:**

CROSEE has some potential recommendations:

- a. CROSEE believes engineering education needs to be flexible to better prepare students for a rapidly changing workplace and does not believe there should be special accreditation of an undergraduate program in Structural Engineering.
- b. CROSEE has discussed a number of ideas for improving creativity in engineering programs and feels that educating the educators on this topic, including adjunct professors may be a fruitful future avenue for ASCE. This could be modelled on the successful ASCE ExCEED program used to train professors in better pedagogy and teaching practices but opened up to Adjunct Professors.
- c. CROSEE plans on holding a Stakeholders Workshop in Reston in Summer 2020 to inform the final report on best practices for educating and transitioning students into the profession.

A final report to the SEI Board of Governors will be issued by October 2020 with final recommendations.

## Appendix B

### A Case for Change Recommendation:

**Establish a committee with like-minded organizations to study the state of continuing education for structural engineers; to recommend enhancements that ensure that providers offer only meaningful, high quality courses for study; and recommend industry-wide mechanisms and processes to make continuing education consistent and effective for all structural engineering professionals. This initiative is needed so that structural engineers develop and maintain the skills necessary for their practice and keep abreast of changes impacting our profession.**

### Continuing Education

#### Validations of 2013 recommendation to meet Vision by 2033:

Continuing education plays a vital role in nearly all professions. It keeps members informed of industry changes, refreshes skills, and presents new technology and research. As pointed out in the *Vision*, there lacks a governing body over continuing education. Some states require state-recognized professional development hours reported by the vendor directly to the state, and other states require no continuing education. The structural engineering profession needs a comprehensive approach to education after graduation to maintain a consistent standard of professional development.

#### **Confirmation of assigned responsibility:**

The Board of Governors approved the Board Level committee, SEI Continuing Education Committee, on September 25, 2017. John Greishaber was named chair of the committee, with Andy Herrmann as the SEI Board lead, and SEI Director Laura Champion as staff liaison. The committee Charge is yet to be approved and the committee roster to be filled.

#### **Summary of progress to-date:**

In 2017, an SEI Futures Fund grant was awarded to a task committee comprised of members of SEI, NCSEA, CASE, and SECB, for a workshop on continuing education, aimed at identifying the current concerns and issues relation to continuing education. The primary goal of the workshop was to outline a comprehensive approach to education after graduation. The task committee presented its findings to the SEI Board of Governors in a report on September 25, 2017. The task committee was then approved by the Board as the new SEI Continuing Education Committee (CEC).

SEI put out a call for members in May, highlighting the mission of the committee: to coordinate and implement the recommendations contained in “SEI Strategies for Continuing Education”. As stated in the call, the strategies include development of competency based on education tools, maintaining and further developing a database of structural continuing education courses, collaborating with engineering firms, universities, and other professional organizations to create, distribute or re-purpose existing programs that fit quality requirements and meet the needs of our profession, and expanding the use of social networks for learning. To maintain a well-rounded group, the hope was to include six members spanning across Business Practices, Codes and Standards, Technical Activities, Global Activities, and Local Activities, with at least three younger members. The committee charge and membership needs to be affirmed by SEI Board of Governors.

The committee chair has been working on revising the existing ASCE Policy Statement 425, *Continuing Professional Development for Licensure*, to include accreditation. The chair of the SEI CEC also serves on ASCE’s Public Policy Committee (PPC) and felt that updating an existing policy statement would be more streamlined. ASCE’s PPC provided feedback that more of a ‘bottom up’ approach, initiated at the institute level, would result in a quicker review and trigger a more expedient review from other ASCE entities.

A draft of the policy statement was presented at the Structures Congress to the SEI Professional Activities Division. Based on their discussion, the draft will be updated to address “measurable standards” and will define accreditation in terms of continuing education. The chair of the CEC is working with Joe McClary, the executive direction of the International Association of Continuing Education and Training.

The goal was to have the first face-to-face committee meeting in September or October of 2018 at ASCE’s headquarters, which would facilitate coordination with ASCE’s continuing education department, but funding for this committee is uncertain. The Charge requires Board approval and the roster needs to be filled.

**Any deviations from 2013 recommendation concepts:**

There do not seem to be any deviations from the original concepts provided in the *Vision* document.

**Recommended change:**

The committee appears to be making good headway, but the Charge needs to be submitted for Board approval and the committee roster needs to be filled. Funding is required to move forward. The January 2018 update to the SEI BOG shows an expected completion date of

September 2017, for this committee. One recommendation would be to review AIA's model for continuing education. It appears straightforward, consistent, and efficient.

## **Mentoring**

### **Validation of 2013 recommendation to meet Vision by 2033:**

The *Vision* document emphasizes the need for a “mechanism that seamlessly progresses from formal education to professional employment to leadership and includes... all levels...”

Mentorship is critical at all stages of a professional career and will help realize the goals outlined in the *Vision*. While it is not specifically identified as a key initiative, those who provide and receive mentorship tend to be involved in his or her career and will be at the forefront of leading our profession.

### **Confirmation of assigned responsibility:**

The BPAD Committee on Professional Mentoring was approved during the fall, 2015 SEI Board of Governors meeting. Donna Friis was named chair of the committee, with David Cocke as the SEI Board lead, and Suzanne Fisher as the SEI staff liaison.

### **Summary of progress to-date:**

There has been minimal progress to-date in this committee. A Futures Fund proposal was submitted in 2017 to help fund the start-up of the committee but was not approved. The Futures Fund Board provided recommendations for improvement of future funding proposals. A meeting was planned during Structures Congress in Fort Worth, TX, in 2018, and this meeting did not occur. Previous notes mention work on a mentoring program and an article for STRUCTURE Magazine.

### **Any deviations from 2013 recommendation concepts:**

The concepts as stating in the original recommendations are still valid. There has not been much traction with this committee, so there is still a good deal of work to be done.

### **Recommended changes:**

The committee likely needs to regroup. Suggestions have been made to bring the mentoring topic back to the local level (and LAD) to help establish mentoring relationships for structural engineers in the same or relatively close location.

Another proposal for the Futures Fund should be written, perhaps with a more focused and narrow scope, possibly a pilot mentorship program. The challenges with mentorship have been twofold: younger professionals want mentors and sometimes mid-level and senior professionals lack the time or interest.



Or, the opposite may be true, where young professionals aren't engaging the more experienced engineers. Each person is responsible for his or her own career path, but young professionals may lack the tools necessary to develop successful relationships with a mentor. A 'path to success' or roadmap could be helpful.

Coordinating and supporting the new ASCE Mentor March program should be evaluated.

## Appendix C

*A Case for Change* Recommendation:

**Promote the structural engineer as a leader and innovator by designating a champion to solicit authors and speakers for white papers, magazine articles, conference sessions, public media interaction, and/or other means, to make the case for structural engineers to broaden their skill sets and to attract persons with new and diverse talents to the profession.**

### **Validations of 2013 recommendation to meet Vision by 2033:**

This recommendation is still valid, although fairly specific and has been broadened as a recommendation.

### **Confirmation of assigned responsibility:**

A standing BOG level Committee for Promotion of Structural Engineers as Leaders was authorized at the July 22, 2015 BOG conference call meeting. Little activity has taken place since this authorization.

### **Summary of progress to-date:**

Several SEI leaders were asked to consider participating in a new committee to determine ways to address this recommendation. Most people were receptive to joining the committee, but none were willing to serve as chair. Several discussions occurred among the Task Level Committee regarding the need for leadership and potential candidates to lead a new committee.

### **Any deviations from 2013 recommendation concepts:**

Consider making this the top priority/recommendation going forward.

### **Recommended changes:**

A strong recommendation is to nominate a leader to establish and lead the previously approved committee, review the approved charge, make recommendations for changes, and move forward. Guidance should be provided to this leader to establish expectations

and measurements for success. A timeline should also be established with deadlines to achieve desired goals.

## Appendix D

### *A Case for Change Recommendation:*

**Establish the *International Activities Division (IAD)* with designated support staff within SEI to advance the role of SEI members on the world stage and facilitate the development of skills that allow SEI members to thrive in the global market. IAD activities could include: marketing efforts to promote SEI, its publications, and its members worldwide; identifying and sponsoring SEI members to serve in prominent roles at foreign professional meetings and conferences; operating a clearinghouse for foreign exchange programs for our best and brightest young engineers; establishing foreign chapters; fostering ways for SEI members to contribute to beneficial development in disadvantaged societies; and others.**

### **Validations of 2013 recommendation to meet Vision by 2033:**

Now, nearly 5 years since the release of the original Case for Change report, the desire for SEI to take a global perspective is still strong and, in many ways, more relevant than ever. The forces of globalization continue to grow with increasing numbers of large global firms performing work across borders. With the continued growth of the internet, work can increasingly be done from any part of the world and large signature projects frequently require input from specialists around the world.

To meet this growing trend, SEI established its Global Activities Division in the Fall of 2015 with its first face-to-face meeting occurring at the 2016 Structures Congress in Phoenix. The title “International Activities Division” recommended in the Case for Change report was subsequently changed to the “Global Activities Division” to reflect a wider, more encompassing and more inclusive aspiration for the new Division. The current mission statement for the GAD reads as follows:

*The Global Activities Division (GAD) of the Structural Engineering Institute (SEI) is created to:*

- 1. Increase SEI member’s awareness of global issues that impact our profession*
- 2. Advance the role of SEI and its members globally and to promote global interoperability.*
- 3. Facilitate the development of skills that allow SEI members to thrive in the world market*
- 4. Serve as the communications mechanism for Global Chapters and member to express needs and make recommendations to the Board of Governors.*

5. *Support and participate in the global activities of the profession of structural engineering.*
6. *Act as a global voice on behalf of structural engineers.*
7. *Promote high quality services that are global in scope.*

*The GAD shall work closely with the other SEI Divisions and other related organizations to achieve its goals. To the extent justified by cost and purpose, the GAD shall form and manage committees, task committees, seminars, workshops, and such other activities as are necessary to advance its mission.*

### **Confirmation of assigned responsibility:**

SEI Board of Governors unanimously voted to establish a new Global Activities Division (GAD) in November 2015. Currently, GAD is under the direction of Past Chair Mustafa Mahamid, Chair, Anne Ellis, Vice Chair Ed Huston, and Secretary Fernando Martinez. SEI Board Representatives are Glenn Bell and SK Ghosh and the Committee on Young Professional Liaison is Rudraprasad Bhattacharyya.

### **Summary of progress to-date:**

Progress to date on this Case for Change Recommendation has been steady. The following is a list of activities and achievements to date:

- Received a \$29,000 SEI Futures Fund Grant to:
  - Present SEI Resource Workshops in global regions in which SEI would like to expand
    - § SK Ghosh conducted a seminar at Reunión Del Concreto 2018 in Cartagena, Columbia, a joint conference of the Colombian ASCE Chapter, ACI Colombian Chapter, and AIS (Colombian Earthquake Engineering Society. Sept 10-14, 2018) and Mustafa Mahamid presented ASCE 7 update to the ASCE Israel Branch..
  - Develop an SEI Global Practice Guide
    - § The guide is being finalized to be available as SEI member benefit in April 2019 with Chapter authors Anne Ellis, Mustafa Mahamid, Beverly Tompkins, and Marty Mullins.
  - Secure globally prominent speakers for the Structures Congress
- Hosted a 90-minute panel discussion on Structural Engineering Interoperability at the 2017 IABSE Vancouver Symposium and at the September 2019 IABSE NYC symposium.
- Identified five areas of global concentration for GAD. Each area is led by a GAD member.

- SEI Global Branding/Messaging – Develop a global brand marketing campaign to establish global name recognition for SEI.
  - § Involvement in the SEI BOG Branding Exercise
  - § Co-sponsoring an international structural conference with IStructE in September 2019 in Dubai, UAE, “Iconic Global Structures| Lessons Learned”.
- Expansion of SEI Products – Standards and Publications – Establish a plan to make SEI products attractive to a global market.
  - § Developing business plan for hard Metric conversion of ASCE 7-16.
- Inter-Organizational Collaboration – Establish partnerships with other international structural engineering organizations and with domestic organizations with international name recognition.
  - § Glenn Bell is continuing as a member of the IStructE Board and also serves as the GAD representative to the SEI Board.
  - § Fernando has drafted an SEI Global Outreach draft letter that will be sent to prospective partner global organizations to solicit collaboration with SEI.
  - § GAD is reviewing having exhibit booth at IABSE 2019 NYC Conference in addition to panel session that was accepted on Global Interoperability.
  - § Discussed the possibility of teaming with other global structural engineering organizations to participate in activities such as B2P or EWB.
  - § Planning on launching web site in June 2019 to bring CROSS (Confidential Reporting on Structural Safety) to the US. This is a program in the UK supported by IStructE where structural issues can be reported confidentially, and lessons learned are distributed without implicating the parties involved.
- SEI Member Resource Database & Global Project Guide – Create a printed and online resource to assist SEI members in practicing abroad.
  - § Create a printed information resource and an online resource to develop documents and tools to assist SEI members in practicing abroad. Web based meetings to develop these tools.
  - § Develop a Global Project Guide - TBD after project is reviewed by ASCE WEB Team.
- Global Credentials – Assume a leadership position to enable global structural engineering credentials

§ Work with SECB and SELC to include global transportability of SE Equivalent licensure

§ Discuss the concept of license transportability with NCEES - SEI leadership to meet with NCEES.

§ Research possible interoperability initiatives of other internationally focused organizations such as the

International Engineering Alliance (IEA) and the International Professional Engineers Agreement (IPEA)

§ Continue exploratory discussions with IStructE regarding a joint SE global credential

§ Worked with IStructE to conduct interviews at the 2018 and 2019 Structures Congress to allow US licensed SEs to take the test to become IStructE chartered SEs.

§ We need to continue to promote SE Licensure in the US to help facilitate interoperability in the future. Should continue discussions with NCEES and support SELC and SECB.

#### **Any deviations from 2013 recommendation concepts:**

Although the crux of the initial recommendation to broaden SEI's global influence remains the same, the perspective of our actions has shifted significantly. The original focus of the Case for Change recommendation to establish an International Activities Division was somewhat SEI-centric in that the goals were largely to globally promote SEI and its products. In establishing the GAD, its ExCom came to realize that in our relationships with other structural engineering organizations, there was more to be gained through collaboration rather than competition. This is especially true for our relationship with IStructE where each organization has its strengths and through closer collaboration, both organizations are seeing benefits. Collaboration to establish a CROSS (Confidential Reporting on Structural Safety) website in the U.S. and a possible joint SEI/IStructE conference are just 2 examples of the mutual benefits gained by organizational collaboration.

The concept of global interoperability for structural engineers is another shift that has taken place since the original Case for Change report. Interoperability was a concept raised by Glenn Bell and was the focus of the GAD's special session at the 2017 IABSE Symposium in Vancouver, Canada. Global Interoperability in its most general sense is a vision where our industry is structured to readily facilitate people, organizations, and systems to work across geographic and other boundaries. The idea of Global Interoperability does not imply a homogenization of education, licensure, standards, and language. In fact, regional differences in approach are both expected and desirable to foster innovation. Instead, the goal of Global Interoperability is to identify and break down barriers to collaboration and enable the advancement of the profession worldwide. The overarching, long term mission for the GAD is to position SEI to take a leadership role in Structural Engineering Global Interoperability.

#### **Recommended changes:**

As we continue to advance GAD's goals, one area of improvement may be to promote increased interaction between GAD and the other SEI Divisions. During the inception of the GAD, one concept considered was to promote global activities by making international activities an additional focus area within the existing Divisions. The thought being that since globalization will impact all Divisions, each Division could pursue its own globalization goals. Ultimately, the establishment of a separate Division, the GAD, was chosen to promote a unified effort benefitting SEI. The concept was always to create a strong mechanism for collaboration among the Divisions however, the GAD's activities to date have been somewhat isolated from the other Divisions. Remedies for this can be discussed, but one solution may be for each Division to designate a liaison to the GAD. Whatever the solution, it seems clear that stronger ties are necessary between GAD and the other Divisions.



## Appendix E

*A Case for Change* Recommendation:

**Promote structural engineering licensure by supporting the Structural Engineering Licensure Coalition and its mission to advocate for structural engineering licensure in all jurisdictions.**

### **Validation of 2013 recommendation to meet Vision by 2033:**

Licensure is the mode by which engineers demonstrate to the public that they have minimal competency to provide designs that meet the standards for the safety, health and well-being of the public. It is not a perfect method of demonstrating competence, but it is a thoroughly tried and tested method having evolved since 1915. To obtain a license a candidate must meet stringent requirements for education, experience and examination, the three E's. The National Council for the Examination of Engineers and Surveyors (NCEES) has developed the process over almost the last 100 years and it is a process that attempts to be wise, just and fair with a view to protecting the public. The question is asked whether the promotion of structural engineering licensure should remain a recommendation or initiative for the Vision of SEI. The three collaborating organizations of SELC, NCSEA, CASE and SECB continue to hold SE licensure as a goal for all jurisdictions. A current study is addressing threats to licensure from without and within the structural engineering community including the possibility of eliminating SE licensure and using certifications instead of SE licensure. Until the SELC task committee concludes their investigation, SE licensure should continue to be promoted. This continuing initiative is needed to promote public safety in the built environment.

### **Confirmation of assigned responsibility:**

Within SEI, the Professional Activities Committee (PAC) has historically focused on SE licensure. One of the members of SELC is a PAC member.

### **Summary of progress to-date:**

One of the recommendations from the 2013 Case for Change document was promoting structural engineering licensure by supporting the Structural Engineering Licensure Coalition (SELC) and its mission to advocate for SE licensure in all jurisdictions. The SELC was just getting up and running having been organized by Sam Rihani and Susie Jorgensen in 2012. It was organized to have a unified voice from four organizations for the promotion of SE licensure. The four organizations were the Structural Engineering Institute (SEI), National Council of Structural Engineering Associations (NCSEA), Council for American Structural Engineers (CASE) and the Structural Engineering Certification Board (SECB). It provided a platform for

collaboration on SE licensure efforts rather than the four organizations working separately and in parallel.

The SELC is made of two representatives from each of the four organizations with the possibility of an alternate from each organization as well. Additionally, the executive director of each organization is also part of the SELC. The SELC has a Position Statement, Operating Rules document and Mission and Goals document.

The leadership rotates from organization to organization every two years. The position statement essentially states that the SELC provides a voice for the common goal of the promotion of SE licensure in all jurisdictions. The four tenants of the position statement are:

1. SELC endorses the Model Law Structural Engineer (MLSE) standard developed by the National Council of Examiners for Engineering and Surveying (NCEES) as establishing the minimum set of qualifications for a licensed Structural Engineer (S.E.).
2. SELC advocates that jurisdictions require S.E. licensure for anyone who provides structural engineering services for designated structures. SELC recommends that each licensing board adopt rules to define appropriate thresholds for these structures.
3. SELC recognizes that, when S.E. licensure is enacted in each jurisdiction, it is important to ensure that an equitable transition process, as defined by the licensing board, is available for any individual who has been practicing structural engineering as a licensed Professional Engineer (P.E.).
4. SELC encourages all jurisdictions to incorporate these provisions into their current engineering licensure laws, adapting them to their unique individual situations. SELC supports the modification of existing P.E. statutes and regulations to implement S.E. licensure as a post-P.E. credential.

The goals include the following:

Goal 1. Develop supporting rationale.

Goal 2. Communicate the need and rationale for SE licensure in all jurisdictions.

Goal 3. Enhance the visibility of structural engineering licensure on the national level.

Goal 4. Work toward implementation of SE licensure in all jurisdictions.

Some of the activities that SELC has completed include the following:

- 1) Meeting with NSPE in early 2017 to try to convince them to not obstruct licensing efforts in different states. This was partially successful in that they agreed to the SELC position of:
  - a. Certain Significant Structures require more advanced competency for the safety of the public.

- b. A licensed SE has displayed this advanced competency by passing an objective examination and other requirements for education and experience.
  - c. The SE should be preceded by a PE. PE first.
  - d. An equitable transition period for those that are able to provide evidence of competent work in the past.
- 2) A task committee from members of SELC organizations collaborated on an investigation into the rationale for SE licensure resulting in a white paper.
  - 3) A task committee from members of SELC collaborated on a model document defining Significant Structures.
  - 4) Three of the four organizations collaborated to fund a booth promoting licensure at the 2018 AIA conference.
  - 5) SELC funded lanyards promoting SELC at the 2015 Structures Congress to celebrate the 100<sup>th</sup> anniversary of SE licensure in Illinois.
  - 6) SELC collaborated to provide a brochure describing 100 years of SE licensure.
  - 7) SELC is collaborating on a joint position document endorsing Continuing Education for SE's. NSPE asked for this.
  - 8) SELC is collaborating on an investigation of the future of structural engineering licensure.

**Any deviation from 2013 recommendation concepts:**

Within the last few years there have been additional threats to SE licensure besides NSPE's efforts. Many states have had to deal with efforts to do away with professional licensure altogether. The claim is that licensure inhibits employment and, as a result, the growth in the economy. There are some occupations that attempt to regulate their occupation purely as a way to protect their jobs. Unfortunately, professional engineers, who license to protect the public, get lumped in with these other occupations. A couple of years ago the governor of Indiana threatened to do away with engineering licensure. This effort was overcome by efforts of groups like ASCE and NSPE. Whereas NSPE was interested in talking to SELC in early 2017, these threats to licensure across the US have distracted their interest and concentrated their efforts to defend PE licensure.

Another threat to licensure is from within the ranks of the SE profession. Some feel like NSPE, that there is no need for an additional license beyond the PE for structural engineers. Rather, additional credentialing should be accommodated by certificates or a diplomate status. These structural engineers feel that the structural license is obsolete. Rather, something like a "board-certified" structural engineer should be established similar to doctors who specialize in an area.

As a result of these threats it is recommended that a SELC committee investigate the future of structural engineering licensure. This committee can: provide a thorough review of the history of SE licensure including the examination; investigate the examination versus other forms of

determining competency; review how other professions license or certify; review how other countries determine competency of engineers; and weigh the data collected to come to some conclusions as to the trends for the future of licensure.

Some language of the C4C document is no longer valid and should be changed. Specifically, under Licensure on pages 8 and 9, it should be emphasized that Licensure is not for the protection of our profession, but for the protection of the public. This is unclear in the current document.

On page 25, the discussion includes the phrase “ANSI-approved *NCEES Model Law Structural Engineer*”. The ANSI approval is no longer valid.

Results of the task committee for the future of SE licensure may have an effect on the current recommendation.

Develop a strategy to enable and promote SE licensure globally.

Attendance at the Joint Design Professions Coalition is recommended to glean insight into threats and collaborate with other design professions toward this end.

**Recommended changes:**

None.

## Appendix F

### *A Case for Change Recommendation:*

**Establish a standing committee to champion performance-based building and bridge design codes and standards and the reduction of unnecessary constraint on design. This committee should be composed of representatives of SEI and other standard-development organizations to collaborate in the development of codes that focus on essential standardization, supported by appropriate guidance, rather than complete regulation.**

### **Validation of 2013 recommendation to meet Vision by 2033:**

The 2013 Case for Change report recommended that SEI advance the profession toward implementation of performance-based codes and standards. When the SEI Board of Governors accepted that recommendation, it established a Task Committee to undertake planning to accomplish that goal. That Task Committee completed its work in the spring of 2018, and sent its report, titled “Advocating for Performance Based Design” to the Board for consideration at its meeting in April.

The Board accepted the Task Committee’s report, which contained 10 specific activities to be pursued, and directed drafting of a proposal for a committee to undertake the identified activities. The proposal to form a standing Board-level committee, the Committee to Advance Performance-based Structural Engineering was approved at the September 2018 SEI Board meeting.

Those 10 recommendations include:

1	Report summarizing current PBD activities and efforts (within SEI and by other organizations).
2	Report summarizing key PBD needs of stakeholders, challenges, necessary collaborations, and obstacles.
3	Prepare Best Practice Guidelines for Design Professionals on Building Structures, Non-structural Building Systems, and Non-building structures.

4	Report documenting how to specify performance goals and objectives for a desired reliability and risk levels.
5	PBD Best Practice Guidelines for the peer review process.
6	PBD Pre-Standards for Design Professionals on Building Structures, Non- structural Building Systems, and Non-building structures.
7	PBD Pre-Standards for the peer review process and Building Officials.
8	PBD Standards for Design Professionals on Building Structures, Non-structural Building Systems, and Non-building structures.
9	PBD Standards for the peer review process and Building Officials.
10	Educational materials to educate design professionals on PBD topics.

**Confirmation of assigned responsibility:**

Committee Chair: Donald Dusenberry

**Summary of progress to-date:**

The committee has met in person and by telephone several times. It has conducted a survey of SEI committees to identify which are engaged in issues related to performance-based design. The committee will meet at the Structures Congress to discuss the survey and to plan next steps.

**Any deviation from 2013 recommendation concepts:**

None.

**Recommended changes:**

None.

## Appendix G

*A Case for Change Recommendation:*

**Implement a series of summits on a regular interval to engage the leading related organizations to identify areas of mutual interest and bases for collaboration in education, training, and partnership for the development of technologies that promote the interests of structural engineers.**

### **Validation of 2013 recommendation to meet Vision by 2033:**

The recommendation is still valid. Whether it will result in the Vision by 2033 depends on further progress by the committee in charge and beyond.

### **Confirmation of assigned responsibility:**

Committee in Charge: Committee on Interdisciplinary Technical Summits (ITS). Current Membership: Committee Chair - Satish Nagarajaiah; Committee Members - two TAD ExCom members serving on the committee on a rotational basis (the current and past TAD ExCom chairs).

### **Summary of progress to date:**

The committee organized its first summit at Structures Congress in 2018. A brief timeline of committee history and future plan is provided below.

- 2014 Committee on Interdisciplinary Technical/Technology Summits (ITS), led and executed by the Technical Activities Division, was approved by BOG to respond to recommendation of biennial interdisciplinary technology summits
- 2015 First Committee Chair term ended  
BOG charged Satish Nagarajaiah with heading the Tech Summits
- 2017 BOG voted to delete Biennial from the committee title since these summits can be held annually
- 2018 1st Summit: Resilience of Structures and Infrastructure Systems (see below)
- 2019 Committee Chair Nagarajaiah term ends  
BOG will appoint a new Committee Chair from the members of BOG.  
Nagarajaiah will work with the new Chair during the transition period

2020 2nd Summit: Artificial Intelligence and Data Science and its role in Structural Engineering.

New Chair will lead the effort from 2020 onwards

**Any deviations from 2013 recommendation concepts:**

Perspectives from the ITS Committee: Chair Nagarajaiah does not see the need for expanding the makeup of this committee, as he believes that the current structure keeps the effort focused and is working well. Since Tech Summits were envisaged by BOG once every two years, the first and the second summits are in 2018 and 2020 respectively. Nagarajaiah will continue to spearhead the next Tech Summit in 2020, and work with the new Committee Chair who will take charge of the Tech Summits from 2020 onwards. Nagarajaiah had discussions about this with TAD ExCom members in Fort Worth and will finalize the plan and propose it in 2019 before his term ends.

Discussion: The BOG recommended summits (either biennial or annual) originally aim to encourage interdisciplinary collaboration to tackle common problems of interest, with a technology focus, to push the boundaries beyond traditional structural engineering. The current format as of 2018 is a 90-minute panel session organized by the ITS Committee at Structures Congress represented mostly by structural engineering professors with expertise in resilience along with representatives from industry and government agencies within civil engineering (see Appendix). The planned 2020 summit seems to focus more on technology and aligns well with the recommendation. The ongoing committee effort, with a summit every two years, perhaps partially implements the original concept of the recommendation.

**Recommended changes:**

Ongoing effort: The ITS Committee can perhaps include more disciplines beyond traditional structural engineering (to be truly interdisciplinary), increase its frequency of technical/technology summits (beyond a Structures Congress session every two years), and expand its topics to engage more structural engineers (in continuous effort to apply the most advanced technologies). Besides the summits, there can be follow-up activities and recommendations to address the Vision.

Related effort: Besides the ITS Committee, the Committee on Advances in Information Technology (AIT) within the SEI Technical Activities Division, with support from TAD ExCom, organized a workshop “The Role of Advanced Technologies in Structural Engineering for More Resilient Communities” hosted by the National Academies in September 2017 ([http://sites.nationalacademies.org/pga/resilientamerica/pga\\_180622](http://sites.nationalacademies.org/pga/resilientamerica/pga_180622), with its archived videos <https://vimeo.com/album/4810712> as “webcast”). The AIT Committee also discussed follow-up publications and meetings during the 11th National Conference on Earthquake Engineering in June 2018. More committees can perhaps be mobilized to make progress towards the Vision. Collaboration: Structural engineers can lead multi-disciplinary collaboration

- Across committees within the Technical Activities Division
- Across SEI divisions (e.g., Global Activities Division)
- Across ASCE institutes (e.g., Engineering Mechanics Institute)



- With other organizations (e.g., American Association for the Advancement of Science)

The SEI community expressed strong interest in IV, I, and III. These can be potential next steps led by the ITS Committee.

Technology: The Vision document highlights the importance of technology in structural engineering, but none of the recommendations directly addresses technology with explicit actions. Among all, the recommendation resulting in the ITS Committee is the closest - one step towards advancing technology. The technology element can be embedded in the ITS Committee with further progress in ongoing effort and/or recommended as a new initiative with extensive coverage. Innovative technologies that will transform the future of structural engineering include, but are not limited to, artificial intelligence, high performance computing, building information modeling, 3D printing, automation, virtual and augmented reality. As technologies are rapidly changing and key to structural engineers being innovators and leaders, continuous updates and developments are needed to embrace new and emerging technologies in the future and to engage the younger generations to think outside the box towards realizing the Vision in 2033.

Technical summits are a vital part of SEI strategic vision and a call to action is needed for the future of SEI and our profession.

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The details of the first technical summit, held at **Structures Congress 2018, Fort Worth, TX**, are as follows:

### **First Interdisciplinary Technical Summit (ITS): Resilience of Structures and Infrastructure Systems**

The focus of the first interdisciplinary technical summit is on the broad topic of community resilience. The term resilience is applied to a range of topics including cyber-physical security, emergency planning, hazard mitigation, structure and infrastructure's (e.g., buildings, bridges, airport facilities, transportation systems, and utilities) ability to resist and rapidly recover from disruptive events. The summit focuses on needs for achieving resilience of structures and infrastructure systems.

Natural disasters such as hurricanes Katrina or Sandy in the United States in 2005 and 2012, respectively, the 2011 Tohoku earthquake causing coastal tsunami in Japan, have raised serious questions and concerns about the resilience of communities to function and rebound when structures and infrastructural systems are affected by natural and man-made hazards. There is an urgent need to better understand the impact of inter-dependencies and raise awareness of cascading effects that result from interacting failures among infrastructure systems, such as when loss of power interrupts water service. In view of such urgent need, US Government funding has become available for studies on community resilience through several United States agencies, such as the National Institute of Standards and Technology, the Department of Homeland Security, the National Science Foundation, the National Academies of Science and Engineering, the National Oceanic and Atmospheric Administration, the Federal Emergency Management Agency, the Department of Defense, and other public/private

agencies. These initiatives seek to understand, quantify and enhance resilience of structures and infrastructure systems. It is within this context that the Structural Engineering Institute's first technical summit brings to the attention of structural engineers emerging ideas and rigorous methods to assess and enhance the resilience of structures and infrastructure systems at the core of urban systems and the communities that they serve. The summit will explore metrics, strategies, plan of action for resilience at the national and international level. It will attempt to identify important common challenges or research needs related to resilience. The summit brings together leaders in resilience of structures and infrastructure systems, and structural engineers/researchers, so that they can share challenges, emerging methods and successes they have encountered in enhancing resilience in their respective communities.

## Appendix H

*A Case for Change* Recommendation:

**Create a new forum that showcases structural engineers in non-traditional roles and solving problems outside the construction industry.**

### **Validation of 2013 recommendation to meet Vision by 2033:**

This recommendation is still valid and is important to the Vision of Structural Engineering.

### **Confirmation of assigned responsibility:**

A standing BOG level Committee for Promotion of Structural Engineers as Leaders was authorized at the July 22, 2015 BOG conference call meeting. Little activity has taken place since this authorization.

### **Summary of progress to-date:**

Little formal progress has been made regarding this recommendation.

### **Any deviation from 2013 recommendation concepts:**

The committee does not feel that any deviations are needed.

### **Recommended changes:**

This task is needed and should be included in the charge for the reconstituted Committee for Promotion of Structural Engineers as Leaders.

## Appendix I

*A Case for Change* Recommendation:

**Create the equivalent of an Opal Award to recognize structural engineering firms that excel in leadership and innovation.**

**Validation of 2013 recommendation to meet Vision by 2033:**

This recommendation is still valid and is important to the Vision of Structural Engineering.

**Confirmation of assigned responsibility:**

A standing BOG level Committee for Promotion of Structural Engineers as Leaders was authorized at the July 22, 2015 BOG conference call meeting. Little activity has taken place since this authorization.

**Summary of progress to-date:**

Little formal progress has been made regarding this recommendation.

**Any deviation from 2013 recommendation concepts:**

The committee does not feel that any deviations are needed.

**Recommended changes:**

This task is needed and should be included with the charge for the reconstituted Committee for Promotion of Structural Engineers as Leaders.

## Appendix J

*A Case for Change* Recommendation:

**Encourage all SEI members to become involved with philanthropic work, community leadership, political advocacy, professional society activity, media interaction, and other outwardly-focused activities that leverage our skills for the betterment of society. Establish a publication forum to recognize and publicize accomplishments beyond the workplace and expand the SEI award program for the most outstanding accomplishments.**

**Validation of 2013 recommendation to meet Vision by 2033:**

This recommendation is still valid and is important to the Vision of Structural Engineering.

**Confirmation of assigned responsibility:**

A standing BOG level Committee for Promotion of Structural Engineers as Leaders was authorized at the July 22, 2015 BOG conference call meeting. Little activity has taken place since this authorization.

**Summary of progress to-date:**

Little formal progress has been made regarding this recommendation.

**Any deviation from 2013 recommendation concepts:**

The committee does not feel that any deviations are needed.

**Recommended changes:**

This task is needed and should be included with the charge for the reconstituted Committee for Promotion of Structural Engineers as Lead

## Appendix K

**October 23, 2018**

**To: SEI BOG & Vision Task Force**  
**From: NCSEA BOD**  
**Re: Feedback for SEI's Vision for the Future**

With the goal of developing a Vision for the Future of Structural Engineering that NCSEA supports, the following is a list of initiatives that NCSEA believes are key to the future of the profession. This list has minor changes from the seven initiatives originally developed by SEI, including:

- addition of one initiative (#7);
- division of one initiative into two (#2 and #3);
- broadening of one initiative so that it is not specific to SEI (#9);
- reordering the initiatives, including the placement of “leader and innovator” first since this is the over-arching objective from which all others flow.

Moreover, each listed initiative references the NCSEA Committee(s) that would have primary responsibility for the corresponding efforts. As NCSEA, SEI, and CASE work to align their efforts to minimize duplication and move forward together, identifying committees in this fashion highlights specific opportunities for collaboration.

### **Initiatives for a Joint Vision for the Future**

1. Promote the structural engineer as a leader and innovator
  - NCSEA Communications Committee
2. Reform structural engineering education
  - NCSEA Basic Education Committee
3. Improve mentoring of young structural engineers
  - NCSEA Structural Engagement & Equity Committee
  - NCSEA Young Member Group Support Committee
4. Enhance professional development of practicing structural engineers
  - NCSEA Continuing Education Committee
  - NCSEA Publications Committee
  - *STRUCTURE* Editorial Board
5. Advocate structural engineering licensure
  - NCSEA Structural Licensure Committee
6. Support performance-based codes and standards
  - NCSEA Code Advisory Committee
7. Encourage resilience, including disaster response planning
  - NCSEA Code Advisory Committee
  - NCSEA Structural Engineering Emergency Response Committee
8. Lead multi-disciplinary workshops on technical matters of broad interest
  - NCSEA Communications Committee
  - NCSEA Structural Engineering Summit Committee
9. Address the needs and concerns of structural engineers worldwide
  - All NCSEA Committees

Finally, NCSEA recommends implementation of these initiatives at the state and local levels through its Member Organizations (MOs). NCSEA Committees can help make that connection with their MO counterpart committees, and the NCSEA Delegate(s) within each MO can facilitate communication in both directions.