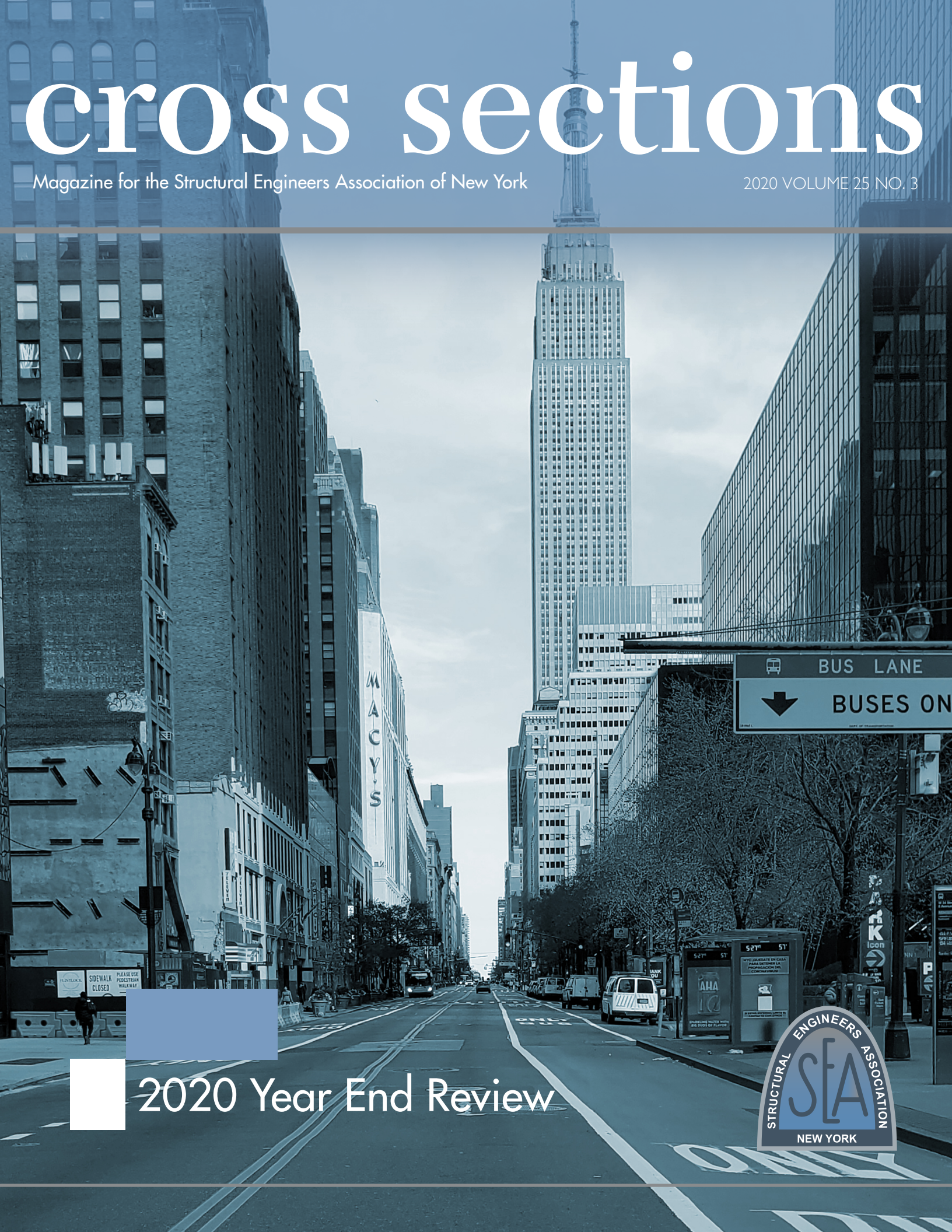
cross sections

Magazine for the Structural Engineers Association of New York

2020 VOLUME 25 NO. 3



2020 Year End Review

STRUCTURAL ENGINEERS ASSOCIATION NEW YORK

SEAoNY
536 LaGuardia Place
New York, NY 10012
www.seaony.org

2020
Year End Review Issue

On the Cover
Absent Intersection
By Alex Azero, PE

Contact us at
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MESSAGES

PRESIDENT'S MESSAGE

The year in review…a pandemic, protests, and a contentious presidential election. 2020 was the first time that most of us worked remotely full-time. For some engineers, it was a challenge not to be in the office or at a jobsite. Others embraced the new workstyle, claiming they first chose physical distancing when they became an engineer, long before 2020. In either case, we spent more time with family by working from home. We can all agree that was not so bad.

SEAoNY transitioned to virtual programming in March without interruption. Earlier this year, SEAoNY held webinars about the grid shell roof at Changi Airport, HSS connections, the interaction between soil and structure, and diversity. There was also virtual ATC training, Candid Conversations, and the President's Round Table. In the past month, the Student Outreach Committee conducted Structures Impossible and the Young Members Group hosted the 5th Annual Trivia Night, the T.R. Higgins Lecture, and a webinar about cross-laminated timber.

In the upcoming year, we are looking for more ways to reach our members. We are in the process of planning the SEAoNY All Day Seminar (being held virtually) and are currently looking for presentation abstracts. The Young Members Group, Diversity, SEER and Programs Committees are organizing their yearly events. We will have, as per usual, the EiSE Awards, the President's Round Table, and Structure Quest. These events will most likely be virtual.

If you are able, I ask that you volunteer some of your time to SEAoNY. Volunteers are able to network with other engineers and will learn more about the industry. You will also receive the satisfaction of helping others in the profession. In this time, when you may feel professionally isolated, this is the perfect opportunity to connect. Whether you are a new grad or an experienced professional, there is something that you can add and something that you will learn.

Be kind and be well.

Bradford T. Kiefer, P.E.

EDITOR'S MESSAGE

Greetings from the City of Brotherly Love. Yes, you read that correctly. I blame the year 2020 for this unexpected change. It was a Thursday in June. The skies were dark, and the winds were howling. Storm clouds were billowing across the swamps of New Jersey as if hunting Manhattan. The Hudson River tried to defend the vulnerable island but was no match for the fury of the year. In the chaos and confusion that ensued, my wife and I stumbled into Penn Station and accidentally bought a one-way ticket, southbound to Philadelphia.

I, along with my wife, miss New York. More than the city itself, however, we miss the people. 2020 has made it clear that there is no substitute for quality interaction with quality people. This is true regarding both personal and professional relationships. Fortunately, despite the uncertainty of this past year, my involvement in SEAoNY has kept me connected with the wonderful people within the structural engineering community. Though no longer living or working in New York, I look forward to my continuing involvement with SEAoNY.

I am writing this on a Monday morning at 9am, still in my pajamas, overlooking a quiet, tree-lined street. It is nothing to complain about. Still, I feel that I should have been in the office over an hour ago. The wrapper from a bacon, egg, and cheese should still be on my desk, waiting to be thrown out in the kitchen as I walk to the desk of a coworker to talk about their weekend. Ah, yes…the people. I miss the people.

Thank you for taking time to read the Year End Review Issue of Cross Sections. I hope that you enjoy it.

Phillip Bellis, PE

COMMITTEE UPDATES

Remember to follow SEAoNY on:

Codes & Standards Committee

EMAIL:	ashear@wje.com (Andrea Shear, PE)
CHAIR / CO-CHAIRS:	Brad Kiefer, PE / Karl Rubenacker, PE, SE, CWI, F.SEI / Doug Gonzalez

The mission of the Codes & Standards Committee is to promote a greater understanding of current codes and provide technical expertise to various jurisdictions to develop and improve future codes. As part of our mission, the Committee may develop guidelines of common practice that will serve the structural engineering community and provide a communication line between SEAoNY and the New York Department of Buildings (DOB). The Committee proactively provides opinions and recommendations to the DOB and other professional organizations regarding the building code, responds to requests from the DOB, and keeps SEAoNY members informed of relevant code changes.

Last year, the committee worked on researching historic materials for use in development of existing building code provisions, summarizing a standard of practice for townhouse renovations and repairs, and providing recommendations to the DOB on DOB NOW and roof live load provisions. The meetings also provided a forum for discussion of changes to business and construction practices during the COVID-19 pandemic.

In the next year, we plan to publish the townhouse document, continue to develop references for use in the development of an anticipated existing buildings code, develop standard of practice information for monitoring of adjacent construction, and publish the information that we have collected in the online SEAoNY reference library. Since April, monthly meetings have been conducted over Zoom. For more information or to be added to the meeting invites and distribution list, please use the contact information found above.

Diversity Committee

EMAIL:	seaonydiversity@gmail.com
CHAIR / CO-CHAIRS:	Hannah Valentine Shaina Saporta

The Diversity Committee continues its mission of advocating for marginalized and underrepresented voices in the structural engineering community. This year, the committee worked with the Board of Directors to develop a statement and plan of action to address racism in our industry. We hosted a summer seminar series entitled "Conversations on Racism for Built Environment Professionals." This series addressed topics ranging from the language of racism to how racism impacts the built environment of New York City. Recordings of select sessions from this series are available on the SEAoNY Diversity website.

We look forward to our 2020-2021 year, in which the Diversity Committee will continue to provide resources for membership on equity, diversity, and inclusion. In January, the committee has planned a panel discussion on the MWBE certification process and its effectiveness in promoting minority and women owned businesses. The committee also continues to work with the NCSEA SE3 committee. The SE3 committee's mission is to improve engagement and equity in the structural engineering

profession. The committee has released several surveys to provide meaningful input on improving both metrics within the industry. The third biannual SE3 survey was released in 2020. Findings from this study should be available in 2021.

Other events for this upcoming year include our annual speed mentoring for structural engineers of all experience levels. Our last speed mentoring event was postponed from 2020 to 2021. This year the event will be virtual, which will enable the committee to expand its network of mentors and participants to a greater number of SEAoNY constituents.

Programs Committee

EMAIL:	seaonyprograms@gmail.com
CHAIR / CO-CHAIRS:	Brian Graves, PE Mohit Savur, PE

The SEAoNY Programs Committee is looking to build on this year's successes as we head in to 2021. Despite the pandemic, we have been able to continue our mission of providing quality educational lectures with continuing education credits. We seamlessly switched to an online platform and have seen monthly seminar attendance increase given the convenient nature of tuning in from personal workstations. From September 2019 to February 2020 (prior to the switch), average attendance was approximately 30 attendees/event. Since then, average attendance has been approximately 130 attendees/event. Our schedule was also expanded to include webinars for the months of June and July, which have historically been off months for SEAoNY Programs. We plan to continue offering the two additional summer webinars in 2021 due to the likelihood that we will still be operating remotely through the first part of next year.

The format of our flagship event, the All-Day Seminar, is being modified for 2021 as well. The event will be held virtually, but the bigger change is that it will be held over two consecutive mornings, February 25 & 26, rather than over one whole day. This revised format was developed in response to a survey evaluating SEAoNY member preferences and will make attendance more convenient. Check the SEAoNY website in the coming weeks as speakers for the All-Day Seminar and the new monthly webinar events are announced.

Resilience Committee

EMAIL:	admin@seaony.org
CHAIR / CO-CHAIRS:	A. Christopher Cerino, PE, SECB, F.SEI, DBIA Amy Macdonald

The disruption and uncertainty of 2020 has highlighted the importance of holistic and comprehensive resilience in our communities and professional organizations. Shortly after the SEAoNY Resilience Committee's first meeting in February (which drew 35 people from various disciplines and sectors), we had to quickly adapt to being completely virtual. As we look back, we are thankful that we were able to have our kick-off meeting in person. The SEAoNY Resilience Committee seeks to provide a multidisciplinary collaboration platform to formulate recommendations and innovations to enhance resilience in the built environment. Committee members include structural engineers, civil and geotechnical engineers, planners, and other resilience specialists. Members represent public agencies, engineering consulting firms, academic institutions, and non-governmental organizations.

Resiliency has steadily gained media attention since Superstorm Sandy caused widespread destruction, disruption, and loss. While most resilience discussions focus on the relationship between the climate and coastal cities like New York City, the COVID-19 Pandemic highlighted the necessity to consider a wider range of shocks and stresses that could disrupt our communities. This has been echoed by the committee's members and will be intentionally explored as we build out the committee's educational

program. The goal of the Resilience Committee is to educate the structural engineering community on resilience approaches to planning, design, and construction through collective experiences in the multi-hazard urban environment. We are planning on coordinating future events in collaboration with other AEC industry partner organizations, including the AIANY Design for Risk and Reconstruction (DfRR) committee and Committee of the Environment (COTE). We will also work closely with our parent committee, the NCSEA Resilience Committee, to ensure that education extends beyond the knowledge base of the New York structural engineering community. Future education will consider hazards that affect the entire United States, from wildfires to earthquakes, hurricanes, and flooding. Keep an eye out for our events in 2021 and feel free to reach out to the committee co-chairs if you have any specific topic requests for future events.

Scholarship Committee

EMAIL: admin@seaony.org

CHAIR / CO-CHAIRS: Joseph Tortorella, PE
John McCue

The Scholarship Committee, like everything else, was challenged by the COVID-19 pandemic. The main fund-raising vehicle, the golf outing, was cancelled in June and tentatively rescheduled for September. We were able to hold our event, albeit at a reduced scope: fewer people, outdoor cocktails, hor d'oeuvres only, no auction, and a smaller than usual raffle. Attended by 55 golfers, the day proved to be another wonderful event planned by the committee. Everyone had a great time and we were still able to fund four - $5,000 scholarships to deserving students. We had to dip into the reserve funds, but the board generously contributed $5,000 of their funds to support the SEAoNY Education Foundation. Two high school students from the Urban Assembly School for Design and Construction were presented their scholarships at an earlier ceremony during the SEAoNY Project Awards presentation. The other two scholarships were presented to students from City College and NYU at the Annual Meeting, where my good friend Rob Murray was, most deservedly, named this year's Honorary Member. We made the best of a difficult year. We hope to see everyone return next year at a full golf outing and to celebrate together the success that the SEAoNY Education Foundation has achieved for over 15 years. Thank you to all who contribute and volunteer.

SE Licensure Committee

EMAIL: admin@seaony.org

CHAIR / CO-CHAIRS: Brian A. Falconer, PE, SE, SECB

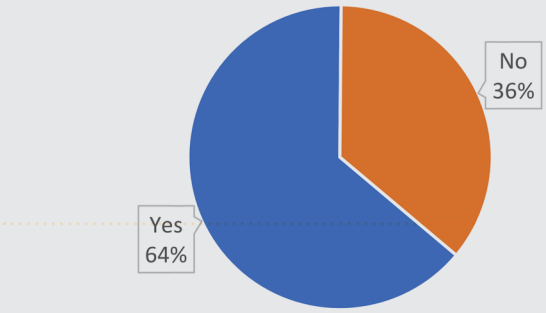
The SEAoNY SE Licensure Committee is responsible for strategic planning towards the implementation of an SE practice Act in New York. The committee is recommending a partial practice act for SE Licensure. This will regulate the use of the title "structural engineer" or "SE" and the provision of structural engineering services for certain types of structures.

We are pursuing SE licensure to raise the proficiency of professionals designing our most critical structures, improve the performance of buildings, and enhance the safety of the public especially during extraordinary events. Many states have already created a licensed Structural Engineer (SE) in recognition of this important specialization in our profession. A New York State SE license would bring New York in line with the developing national standard of practice. More details for the reasons to pursue SE licensure are provided in the "Statement of Purpose".

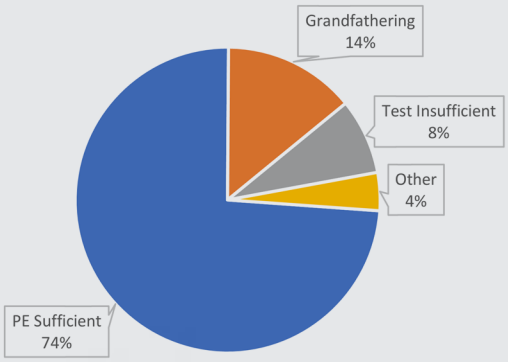
Pursuing SE License in NY state will be a long process, and we are still in the early stages. Over the past few years, the committee researched the requirements in other states and clarified what SE Licensure should mean in New York state. We are currently preparing marketing materials and legislative language, and began reaching out to the state licensing board and legislators earlier this year.

The committee wanted to understand the views of the New York structural engineering community regarding partial practice restriction for SE Licensure in New York as well as to understand how well the community understands the purpose of SE licensure. Through SEAoNY, a survey was launched in August 2020 to gather feedback and to provide valuable information that would allow the committee to assess its future focus.

Do you support SE Licensure in New York?



Why members oppose SE Licensure



Above is a summary of the survey results:

Out of 240 responses (greater than 40% of the SEAoNY membership), about 65% support the committee's push towards SE licensure. The most common responses given to why licensure was supported were to increase the proficiency of professionals designing critical structures and to enhance the safety of the public, which align with the committee's stated goals and the mission and vision statements of SEAoNY and the NCSEA (National Council of Structural Engineering Associations).

The most valuable information in the survey was from the 36% opposed. Concerns with the proposed legislation almost entirely fell into three general categories – threshold structures, grandfathering, and additional licensing in general.

By far, the largest group expressed concerns with the provided list of structures which would be required to be designed by an SE. Some of these comments criticized the ambiguity of the list and others criticized the actual thresholds themselves. Our response to these concerns is as follows: Thank you for letting us know your concerns. You are our stakeholders. We can only respond to your concerns if we know them. Recommended thresholds, with reduced ambiguity, are included in the updated Statement of Purpose as well as posted on the SEAoNY SE Licensure Committee site. The thresholds can, and should, be debated. It is the responsibility of the committee to demonstrate to all stakeholders why designating these structures would fulfill the stated goals of the legislation - to enhance performance of these structures

SE Licensure Statement of Purpose and Recommendations

Currently, a licensed Professional Engineer (PE) can oversee the design of any structure. The practice of structural engineering, however, is constantly changing due to the evolution of design codes, the use of advanced computer applications, and developments in construction materials and their related design procedures. In addition, project schedules continue to be compressed and building designs continue to become more and more complex.

In response to these issues, other states have already adopted restrictions to the practice of structural engineering. Adopting structural engineering licensure in New York would raise the proficiency of professionals designing our most critical structures, improve the performance of buildings, and enhances the safety of the public especially during extraordinary events.

The most valuable information in the survey was from the **36%** opposed.

and therefore public safety. We all need to keep in mind that passing a law is a political process that requires legislators, who may ultimately change the thresholds to get a law passed. Our ultimate goal for thresholds must be that they are accepted by a strong majority of stakeholders.

Another goal for threshold structures is national uniformity. This is not unlike the broad national adoption of the International Building Code. A national standard for SE threshold structures is under development by NCSEA. The current SEAoNY proposal is generally in alignment with it.

The second major concern is with grandfathering - once the legislation is passed, what is to become of those NY state engineers without SE licensure who have been safely and successfully designing critical structures? The proposal states that current practicing PEs can receive SE licensure without taking the 16-hour examination but instead with 4 years of relevant endorsed design experience. One thing to take into consideration regarding grandfathering is reciprocity with other states that require SE licensure, some of which require the 16-hour exam to provide reciprocity. Thus, many practicing PEs may choose to take the exam rather than rely on grandfathering. Furthermore, if New York does not adopt this developing national standard, it is possible that engineers who do not pursue an SE license at this time will not be able to practice structural engineering in other states that require SE licensure. Younger New York engineers today may be at a disadvantage in the future as more states adopt SE licensure requirements.

The final concern expressed by some respondents is more of a philosophical opposition to additional licensing requirements in general. To those concerned practicing engineers, the committee reiterates its belief that the proposed SE licensure requirements will enhance the safety of the public and the performance of the structures which we design.

Support from current engineering professionals is crucial to a successful political effort to enact SE licensure legislation. Understanding and addressing the concerns of those who will be affected is a goal of this committee. To engage in further dialogue with practicing professionals in New York, the committee is planning a virtual town hall meeting in January. The committee will give a brief presentation on the proposed licensing requirements and partial practice restriction, discuss the survey results, then open the floor to a moderated discussion. Whether you have a strong opinion or simply would like to learn more about our

SEAoNY is recommending that the State of New York adopt an SE Licensure requirement for certain types of structures. A structural engineering license will be required when the project meets the following criteria:

- Buildings included in Structural Occupancy Category III or IV.
- Buildings in Occupancy Category II that are greater than 60 feet (18.5m) in height, have a clear span greater than 150 feet (46.3m), are in Seismic Design Category D, or have a total occupant load of more than 1000.
- Buildings that serve as Elementary Schools, Secondary Schools, Hospitals, or Emergency Facilities, regardless of their size.
- Alterations where the Change of Occupancy is from an "SE not required" use to an "SE required" use would require an SE regardless of the level of alteration.
- New York State Level I and Level II Alterations without a Change of Occupancy to a higher Risk Category are excluded.
- Non-Structural Components and Delegated Design are excluded.

New license applicants as well as those applying for reciprocal status must meet the following criteria:

- Professional Experience: 4 Years Endorsed Relevant Experience (or 3 years + MS). Relevant Experience is working as a structural engineer on projects that would require a Licensed SE.
- Passing score on the 16-Hour SE Exam
- Grandfathering: In lieu of examination, an existing PE in New York State (At first renewal cycle) can apply for an SE with 4 years Endorsed Relevant Experience accumulated after receiving their New York State PE License.
- SE by Reciprocity will only be awarded to applicants that have a passing score on the 16-Hour SE Exam.

Continuing Education requirements will be similar to the current NY PE requirements. (36 credits in 3 years. 18 Technical and 18 Non-Technical)

recommendations, we encourage you to join us in the conversation. We also welcome more support from the SEAoNY membership in our ongoing efforts to educate the public and build relationships with the state. If you are interested in participating, reach out to the committee through the information provided above. admin@seaony.org.

Out of 240 responses (greater than 40% of the SEAoNY membership), about 65% support the committee's push towards SE licensure.

Many states have already created a licensed Structural Engineer (SE) in recognition of this important specialization in our profession. Arizona, California, Hawaii, Idaho, Illinois, Nebraska, Nevada, New Mexico, Oregon, Utah, and Washington all recognize the practice of structural engineering and that represents 20% of the population of the United States. There are currently multiple states across the country working to implement SE Licensure to their states, including Connecticut, Florida, Georgia, Maine, Minnesota, Missouri, Ohio, Pennsylvania, and Texas. A New York State SE license would bring New York in line with the developing national standard of practice.

Authors: Brian A. Falconer, PE, SE, Principal, Severud Associates • Yasmin Rehmanjee, PE, SE, Principal, Buro Happold • Yunlu Shen, PE, SE, Assocate Director, Skidmore, Owings & Merrill • Sam Wilson, PE, Senior Structural Engineer, Skidmore, Owings & Merrill

Small Practices Engineering Committee

EMAIL: admin@seaony.org

CHAIR / CO-CHAIRS: Erik Madsen, PE
David Bueno, PE

One in five SEAoNY members work at a structural engineering firm with less than 30 employees, and one in ten work at a firm with less than 10 employees. The Small Practices Engineering Committee (SPEC) strives to support and nurture these firms. We are a group of small business owners and employees who meet once a quarter to share resources and discuss issues commonly encountered in small practices. Some of the topics we covered this past year include best practices for contract structure, tax preparation, best design strategies and practices for structural renovations, building code questions, PPP loans, and adjusting to the pandemic. As a group, we can hold discussions about issues that matter in business practice, technical structural engineering topics, management guidance, ethics and technology. Next year's goals for the committee are to share more of these discussions, build on our past topics, and collaborate with other SEAoNY committees.

Structural Engineering Emergency Response Committee

EMAIL: seaonyseer@gmail.com

CHAIR / CO-CHAIRS: Alberto Marquez, PE
Yun Luo, PE

The four main initiatives of the SEER committee are: training, roster management, assistance coordination, and advocacy in relation to second responders for natural and human-made disasters. Early in the year, SEER committed to organizing trainings including NYC's COOP and to host the nationally recognized CalOES SAP training. The current pandemic offered a unique opportunity to present the COOP in an online shortened version, normally this is a full day event. In collaboration with ASCE's Metropolitan Section, the Mini-COOP was shared with 40+ online attendees. A two-day webinar version of Cal OES SAP training based on ATC 20 and ATC 45 was also provided to 70 professionals. This training not only offered the attendees the opportunity to get the nationally recognized certification, but also increased the second responder roster. SEER members have

also contributed articles to every Cross-sections issue this year covering topics such as: the Puerto Rico earthquake, the Albania Earthquake response, and ATC Training webinar experience. We are also happy to welcome a few new members: Luke Demo, Margarita De La Garza, Andrew Manion, Alexander Stephani.

The following is a list of goals for the upcoming year:

- Host Mini COOP Training, host Cal OES SAP training and other related lectures.
- Develop/Clarify resource library (second responder training requirements, etc.)
- Finalize committee logo
- Increase second responder roster
- Improve website
- Improve committee awareness to public

Student Outreach Committee

EMAIL: seaonyeducation@gmail.com

CHAIR / CO-CHAIRS: Jason Fiore / Matthew Sangen, PE, SE, SECB / Katherine Rivera

This fall brought with it a successful transition into the new school year for the SEAoNY Student Outreach Committee. By moving to all-virtual events, we have been able to connect with more students than ever before. This has motivated us to develop new events to engage with students at the university and high school levels.

Our resume workshops nearly doubled in student attendance from last year's in-person events. We launched a new "hackathon"-style design competition, "Structures Impossible," which involved professional mentors and judges guiding student teams creating proposals for a train and vehicle grade separation problem. Our Student Chapters organized their own events, including a series teaching SAP2000 and a lecture on fire hazards in structures.

The high school outreach initiative made major strides. In early November, a panel of SEAoNY professionals spent two hours speaking with more than 160 New York City public school students about structural engineering.

In November, we started a series of panel-style events called "Candid Conversations". In these events, professionals speak about their experiences and then open the floor to questions from university students regarding different topics in each session. We are also excited to launch our completely reimagined "Structure Quest," our annual structural scavenger hunt, as a virtual event which maintains the vision of exploring and experiencing the structures around us.

The Student Outreach Committee is enthusiastic to continue to engage with students to promote structural engineering and the SEAoNY community. We would love for professionals to reach out to us to help with events, share your experiences with students, or join our committee to help develop our outreach programs further.

Website Committee

EMAIL: seaonywebsitecommittee@gmail.com

CHAIR / CO-CHAIRS: Jacinda L. Collins, PE, LEED Green Associate

The mission of the SEAoNY Website Committee is to maintain a high level of online presence for the organization. With the broad shift to working from home due to the COVID-19 pandemic, New York structural engineers increasingly looked to social media to connect with SEAoNY. Thus, the Website Committee concentrated its focus on SEAoNY's social media presence to provide timely information and ways for members to network with each other and the larger A/E/C community.

For 2021, the Website Committee will focus on refreshing the look of the SEAoNY website. The visual refresh will create a polished look that will align with recent graphic changes to Cross Sections and SEAoNY email updates. Social media templates will also align with the new look to create an online brand for SEAoNY.

The Website Committee will also help the Central Chapter build its unique website. This new website will create a new home for the Chapter and emphasize the Chapter's ongoing growth. And finally, the Website Committee will continue to grow and improve SEAoNY's online outreach.

Young Members Group

EMAIL:	seaonyym@gmail.com
CHAIR / CO-CHAIRS:	Paige Sieffert, PE Anthony Piderit, PE

Our committee's mission is to integrate Young Members into the greater SEAoNY community by providing a variety of events. Progressing into our fifth year, we are happy to report we have successfully created numerous opportunities for Young Members to learn more about the industry, expand their networks, and encourage early development of their careers. Even in these uncertain circumstances, we have adjusted to offer some great virtual events to keep our members connected. We are grateful for the support we have received from the Board and plan to continue our efforts to provide programs geared toward young members.

We had a very busy schedule planned this year, half of which was postponed due to the global pandemic. Fortunately, a few of our events hosted prior to the shutdown were big successes. One of our most well attended and beneficial learning opportunities, was our technical lecture on 'Project Management & Leadership for Engineers' by Anthony Fasano, PE M.ASCE. Mr. Fasano highlighted that engineers devote their entire lives to solving problems and advancing technical skills but are seldom trained to become great leaders. His lecture provided specific strategies to employ to bring out the leader in all those that were attending. The inspirational talk provided great principles for young engineers, putting them on a path to becoming leaders in the structural engineering industry. Mr. Fasano applauded the young engineers present for attending these YMG events, noting that it was a great step towards surrounding themselves with likeminded individuals, one of his recommended principles to follow. We look forward to continuing to provide opportunities for young engineers to gain valuable knowledge and information to further develop their engineering careers.

A new event for us this year was a PE review session leading up to this past October's PE exam. It was a very informative presentation by our Chair-Elect Paige Sieffert and Committee Member Migara Hewavitharana, both of Stantec. The presentation was followed by a question and answer session to help those preparing for their upcoming PE exam. Being that we had a great turn out, we plan to host similar events bi-annually to help those sitting for the exam to better prepare.

A quick thank you to our committee members. We are extremely grateful to those who volunteer their time and effort to make these events possible. While we miss our pizza and beer together at committee meetings, we are keeping close through our committee meetings and frequent events. If you are interested in joining our committee or have any questions about our upcoming events, please reach out to us using the information provided above.

Central New York Chapter

Tim Kivisto, PE *President*

Brian Byrnes, PE *Treasurer* / **Jessica Fadden, PE** *Secretary* /
Dan Beal, *Director* / **Chuck Brooks, PE** *Director*

We have had an unforgettable first year as the Central New York (CNY) Chapter of SEAoNY for a variety of reasons. We would like to, once again, thank the Board of Directors and membership of SEAoNY for supporting the formation of the CNY Chapter and for your continued support in expanding the presence of SEAoNY beyond the NYC area.

Our first official event as a Chapter was held in March with a "Meet the SEAoNY CNY Chapter Board of Directors" event held in downtown Syracuse as a fun way to connect our local membership to our new Chapter Board. We were not aware that it would be our last opportunity to meet in-person for the remainder of the year due to the COVID-19 pandemic.
As with the rest of SEAoNY, we quickly realized the need to shift our focus to providing virtual events for our membership. In a strange way, though still physically separated, the situation we have all found ourselves in has enhanced the connection between Central New York and the greater NYC area. The plethora of virtual events and committee meetings now offered by SEAoNY are much more accessible to SEAoNY membership in the whole state. We in CNY are grateful for these new opportunities arising from this strange new reality.

We took advantage of our improved connection to the whole of SEAoNY by offering a virtual learning opportunity in November on an exciting and relatively new structural system: Cross-Laminated Timber (CLT). Oliver Neve shared his knowledge of the subject and explained how CLT is changing the structural engineering landscape in the UK/Europe. He spoke hopefully of this change spreading to New York and the United States.

We are in the midst of planning some great events for the coming year as we hope to continue expanding our membership and enhancing our ties to the rest of SEAoNY.

BEYOND THE BIO
Interview with SEAoNY Honorary Member

QUESTIONS BY: PHILLIP BELLIS, PE

ROBERT MURRAY, PE

SEAoNY QUESTIONS

You have served SEAoNY as Director of Programs, a Board Member, and Board President. Why is active participation in SEAoNY so important to you? Great question! Why do we get involved in ANY organization? I think that SEAoNY allows me to be part of a huge community of professionals that extends WAY outside of my immediate office. Instead of working in a vacuum, I consider most of SEAoNY's members my friends, colleagues, and cohorts. We are a big, professional family. I enjoy that SEAoNY is about individuals, not companies. We all need to be reminded of that.

I really like working with people. So, the extended SEAoNY family works well for me. One of the smartest roles I filled was to check members in when they showed up for SEAoNY events. Every person had to stand in front of me, give me their name, and spend a moment talking to me. Wow…I have met all, or most, of our famous and hard-working professionals…and I did not even have to buy them dinner!

What do you see as the future of SEAoNY? Our future remains in the hands of our youngest members! I hope and expect that SEAoNY continues to grow from the bottom and the top. When I say bottom, I mean the youngest and least experienced engineers. They are full of energy and have much to learn and contribute. They are ambitious. They will someday run our companies and influence building practice around the world. Our older and more experienced engineers have a lot to share….and maybe to sponsor, right? I would love to see some of our more senior members offer some insight and advice. We all have something to learn and something to share.

I would love to see membership expanded upstate. The combination of remote working and our new expertise and dependence on ZOOM should really allow us to attract more membership. Question…how do we deliver them a bottle of wine or beer and some snacks before the online event starts? We need to grow and learn to appreciate each other for the many talents and tricks we have learned.

If you could make one decree as the SEAoNY Honorary Member, what would it be? I would require that ALL structural engineers gain some construction site work experience before they begin working as structural designers in the office. They should not just stand around with a clipboard and camera, but swing a hammer, carry lumber, and learn how to actually build something. Ok…this needs to happen when these engineers are young, like 16 to 22. We do not want to make our seniors climb up onto roofs in the middle of the summer (not fun). Seriously, I have learned that engineers with construction experience become very reasonable and considerate designers. If an engineer does not gain physical work experience, they should at least get some desk experience with a construction company.

PROFESSIONAL QUESTIONS

When did you realize your passion for structural engineering? I decided that I loved bridge design when I was about 14 years old, then forgot about it while I pursued mathematics and computer science my first year of college. I switched to structural engineering when I realized how this represented applied science in such a real way (that's a little geeky, but true). I followed my passion for bridges into my first job, as a junior engineer with the Port Authority of NY/NJ working in the Tunnels, Bridges and Terminals group. Thank you, Port Authority!

INTERVIEW WITH SEAoNY HONORARY MEMBER

ROBERT MURRAY, PE

What do you consider to be your premier professional accomplishment? Finding and marrying a wonderful woman, my wife Tanya, who is willing to let me work for many years with the schedule necessary to run a small firm. I would not be the structural engineer or business owner that I am without my wife.

Can you speak about some of the biggest challenges of starting your own engineering firm? There are many challenges to starting an engineering firm; finding enough work, finding enough money, and trying to take good care of everyone!

The first big challenge is making the decision to go for it. Some people are driven to do it, some do it out of necessity, some fall into it. In 1998, I found myself ready to leave a prior business partner and had to decide… join another firm or start one of my own. I decided that I was busy enough with work to give it a chance…. so I did. There was certainly initial anxiety about paying salaries and expenses. After years of growth, those feelings continue, but on a very different scale.

Is there a type of project you have yet to work on that you would like to add to your repertoire? I would like to add more innovative panelized building systems to our repertoire. Panelized and componentized building system solutions are growing rapidly. I am enjoying being part of this growth as we help manufacturers figure out how to assembly and close these panelized systems in the field. Every system is a little different and they are all trying to solve the same problems; keep it green, keep it simple, build it cost effectively and minimize site time and labor. I think that it would be great to bring some of this technology to the affordable housing world.

I am happy to report that I find much satisfaction with all my past and current projects. I am interested to use more of my building envelope, building science and construction experience moving forward.

What is the biggest difference in the design process between more standard construction and modular construction? Interesting question. First, it is important to note that we are not talking about wood-framed single family modular buildings. On a much larger scale, developers and modular builders are pursuing hotels, schools, medical facilities and dormitories that are constructed with steel, concrete and other non-combustible materials. Yes, some of these special buildings can be wood, but not many. They are growing bigger and taller every year. We have a modular hotel in midtown Manhattan that will be the tallest modular hotel in the world at 26 stories when it is completed. This is a big departure from the wood-framed house built in Pennsylvania!

On the surface, modular buildings can look like simple boxes stacked up to form a 2, 3 or 4 story building. In fact, they need to be designed to manage vertical AND lateral forces. In addition, modular buildings are limited in height and width due to shipping restrictions. These two differences alone drive much of the modular design process.

Another great challenge with modular design is the lack of experienced professionals as we move to build higher and higher. It is great to work with a modular design team (Architect, Structural, Mechanical) that are all experienced with the practice. Unfortunately, that does not always happen. Three of the most senior people in our firm have been involved in modular work for a combination of over 100 years. However, we are often paired with an architect or mechanical engineer that has never designed a modular building before. THAT…can make modular design work very challenging!

How do you see modular construction fitting into the NYC construction industry? Modular construction works best when you can capitalize on remote, inexpensive skilled labor to

ROBERT MURRAY, PE

construct modular units, then ship them to New York City. What is remote? Historically, the modular factories have been in New Jersey, Pennsylvania, and maybe a few other remote locations along the east coast. Now that everything is traded, shipped and/or manufactured globally, our options for fabrication have grown. New York is fortunate to have a few great ports that can receive large container ships. This puts NYC in a good position to shop around the country or world for modular manufacturing partners. It would be great to promote and develop some facilities near the ports that can assist and/or finish these modules. I think that will be one of our goals as a metropolitan area who wants to maintain skilled trades.

When did you first realize your passion for the conservation of existing buildings? Conservation is a big word. Sometimes too serious a word for what we do every day in NYC. Yes, some buildings need conservation. Many more just need some love, attention, and some money (always tough to squeeze out of building owners). Year-after-year, we all gain tremendous knowledge of how these old buildings were built and the many methods of putting them in "good repair". I think that I have enjoyed being challenged to understand how buildings work…and then trying to help find reasonable repair solutions. Conservation efforts also require knowledge of building science and building materials.

What are the most important lessons a structural engineer can learn from RESTORE Educational Programs? Wow! The RESTORE program. A structural engineer can learn about water and how it tears our buildings apart! That was one of my first opportunities to learn about material science and the efforts necessary to repair and restore building facades in NYC. I think that EVERY structural engineer should find the time to learn more about the materials that clad our buildings. Why? We all want our buildings to be durable and sustainable.

How do the principles of sustainability influence the way you design structures? I have always felt that the most sustainable thing we can do is to help produce buildings that require very little maintenance and repair. How? We need to understand building performance and building envelope performance. How much does the building move? How does the envelope manage water? Will the cladding require attention soon? Is it durable?

I remember a discussion many years ago during design coordination of a school building. It was modular and we were discussing the walls in the corridors of the school. The builder wanted to use sheetrock on metal studs. The architect wanted concrete block walls. Can you imagine sending 200 kids down a hallway every hour and watching them bounce each other off the gypsum board walls? You would be rebuilding the walls every year…that is not sustainable.

LIFESTYLE QUESTIONS

What inspired you to renovate your own home to passive house standards? I am embarrassed first to admit that I was on track, in 2016, to renovate my home and make it "nice". I realized that I would be a hypocrite if I did not try to employ MOST of the building system and envelope advice that I had been peddling to my clients for many years. SO…I decided to go for it. I was initially inspired by the lure of owning a zero-net-energy home (the cheap engineer in me). I incorporated geothermal heating and cooling, air sealing, exterior insulation, exterior window shades, LED lighting, HRV…etc…Along the way, I kept thinking…I deserve all of these cool things that my clients get. So…I learned a few things; (1) My clients have more money than I do, (2) My clients are smart to cut things from the program when they exceed the budget, and (3) I will not GC my own house renovation the next time. In fact, I am very happy with the renovation and the building performance. I would do it all over again!

ROBERT MURRAY, PE

In the renovation of your own house, what has been the most unexpected "existing condition"? Rock. Lots of rock. It was expected, but not appreciated the way it is now. I now better understand and appreciate what it means to clear and maintain land.

Your family has multiple chickens and rabbits. Do you foresee a goat in your family's future? Very funny! Ava & Roz, our goats, arrived last Saturday. They make good companions for the rest of the family farm. Like most parents who give kids a dog…"as long as they promise to feed it", we are realists about our roles. Tanya and I are prepared to help our youngest, Erica, maintain. The four older kids made really clear that they want no part of feeding chickens or goats.

Please weigh in on the controversial question: Where does "upstate" New York begin? North of Westchester County, right??? The REAL upstate New Yorker's would find this funny. For those of us who live and/or work in NYC, anything an hour away is "upstate". However, if you meet someone from Rochester or Utica, they will laugh at this. When I try to describe where Rhinebeck, New York is, I call it "upstate". I stand by it. It is a 90+ minute train commute to Penn Station…that must be upstate, right?

What is the best hiking trail in/around the Hudson Valley? That depends on who you are hiking with, your over-athletic friend, your kids, or your wife/husband. My wife and I hiked up Stissing Mountain last Sunday. It was only a few miles, but long enough to talk and to climb the fire tower at the top for spectacular views.

I think that my favorite hikes are in the Catskill Mountains in all seasons. There are a few that have fire towers, like Hunter Mountain and Round Top. Good day hikes.

While out exploring, whether bicycling, hiking, or climbing, what is your go-to snack? A well-earned BEER at the end of the hike. So…be careful not to hike too early. It is never good to let your kids see you drinking beer before noon.

Do you consider your relationship with the MTA to be friendly, hostile, or a work-in-progress? Interesting question. I wonder what trouble I am in. I love the MTA. First, we are all incredibly lucky to have the MTA system. It is crazy big and well looked after from my perspective. If you are lucky enough to visit the Outside Projects Group at the MTA and look through historic records, it is a treat!

Have you ever fallen asleep and missed your train stop? Only once. I am currently an Amtrak commuter from Rhinecliff. I used to commute on the Metro North to Poughkeepsie…the last stop on the train. So…I could afford to go to sleep!

MISCELLANEOUS QUESTIONS

Is your desk more similar to #4@12" or 2-#9, 3-#7, 1-#6, 3-#3? Man…I'd have to go with #4@12. Why? Maybe familiarity. Don't we all have some #4's @12 in our lives? Look carefully in your closet.

What phi factor would you apply to conversations occurring at 8AM on a Monday morning? 1.0…I am a morning kinda guy.

How many pairs of shoes and/or boots do you have beneath your desk? None, but I have a PILE at home. I'll go out and buy some new shoes or boots, then can't seem to throw out the old. Maybe I'll try again this week!

Detail your reaction to an email with the subject line: "Urgent Approval Needed. Please Expedite." Another note from someone who failed to get it done themselves...and now wants ME to make up for it! Actually, this defines what most of us do every day. Even when clients don't use this language…we still hear it deep down inside.

You hear your favorite song while out in public. Do you nod your head, tap along to the beat, hum the melody, or put on a full concert for everybody within earshot? I am a sing-out-loud kinda guy ONLY when I am operating heavy equipment or a lawn mower. It is safer that way!

Spaghetti with meatballs or meat sauce? Definitely MEATBALLS!

EVENT RECAP
Structures Impossible

BY: DANIEL RICE **COMPANY:** STANTEC

Structures Impossible is a new SEAoNY student design competition that emphasizes the power of collaboration. The inaugural competition was held virtually on October 10th, 2020 on Microsoft Teams. Student competitors were tasked with eliminating an at-grade crossing at the intersection of a railroad and roadway. Design teams, assembled of approximately four students, were equipped with a set of technical provisions, sketches, a Microsoft Teams channel, and hourly messages from mentors to help guide their designs. The teams worked under the pressure of a 5-hour time limit to deliver conceptual plans and calculations. A final presentation tested the thoroughness of each group's thinking and convinced the judges of the most feasible and effective design solution.

10:00 AM – Constraints Govern the Design

Keynote speaker Joseph Viola (WSP) opened the competition by discussing the design constraints of the Olivier Charbonneau cable-stayed bridge in Montreal, Canada. Challenges on this project, such as under-clearance, overhead utilities, lay-down area, and limited construction windows, would prove to be important considerations for the student's design prompt. His message was clear: to deliver the most feasible design, you must address the constraints.

11:00 AM - Problem Overview & General Design Strategy

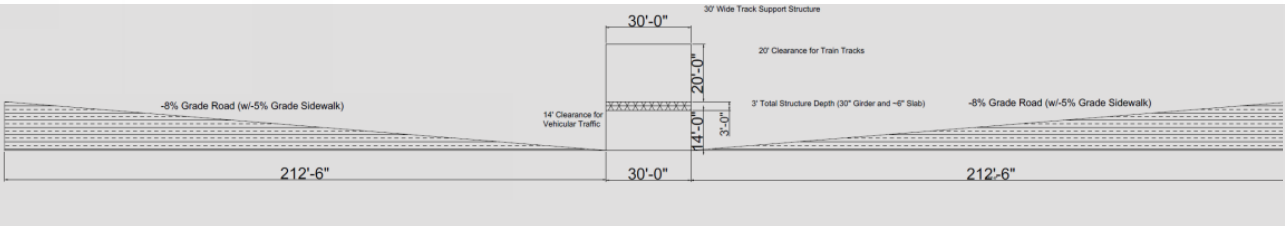
With an abundance of resources and a ticking clock, the student design teams began thinking about the problem at hand. It quickly became clear that the roadway had to cross above or below the existing railroad. But how would this be accomplished without causing significant impact to the community and train service? Matthew Sangen (STV) was the first mentor to help bring some certainty to the situation. He presented the effects that overgrade and undergrade structures may have on the surrounding area and entertained the use of temporary and permanent easements to carry out the operation.

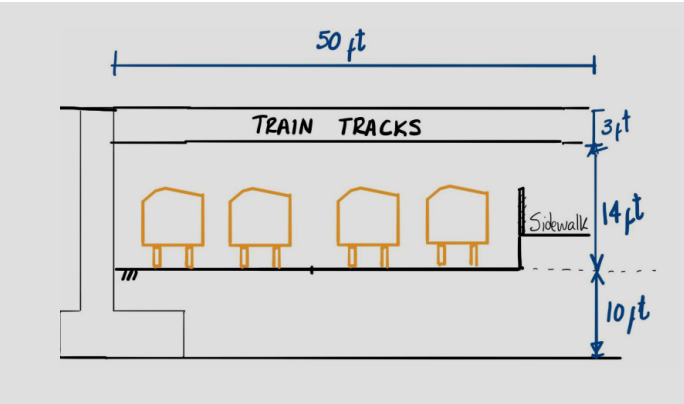
12:00 PM - Designing Around Constraints

The design teams met with the second mentor, Jennifer Pazdon (Cast Connex), to identify and address the constraints that would govern their design. Providing proper clearances was an essential consideration for safe vehicular passage at the proposed structure. Achieving such clearances also had effects on the superstructure depth and length of approach leading up to the structure. A short construction window of one weekend and a double-track outage required major consideration to ensure the solution was installed in a timely manner. Addressing this time constraint influenced the use of prefabricated elements and nearby lay-down area.

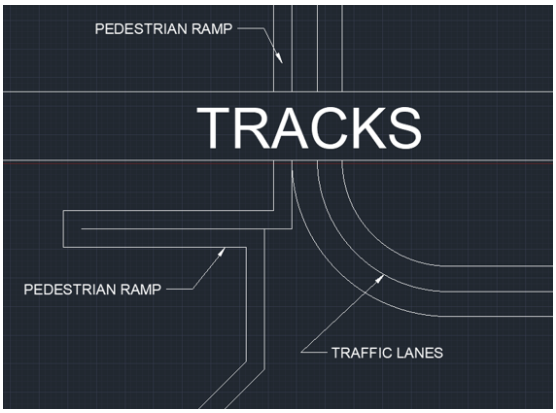
EVENT RECAP Structures Impossible

CONCEPT ELEVATION VIEW





CONCEPT SECTION VIEW



CONCEPT PLAN VIEW

1:00 PM – Visualizing the Design Plan

It was time to begin putting pen to paper. The design teams met with mentors Daniel Rice (Stantec) and Miles Barber (Thornton Tomasetti) to solidify their design solutions and develop the conceptual design. Simple sketches of the proposed plan and elevation views helped visualize the design and its constraints. In one instance, the plan view revealed that the pre-constructed structure had no way of getting to its final location. This team decided to address the issue by using a Self-Propelled Modular Transporter, or SPMT. In another instance, the elevation view highlighted an unsupported face of soil that was subject to railroad loads. This team used a precast modular wall to support the excavation.

2:00 PM – Structural Proof of Concept

The design teams looked to prove their concepts structurally once a general plan was agreed upon. In all cases, the designs required girders to carry the roadway or railroad live loads, and abutments or piers to support the girder reactions. The students completed these calculations with the help of standardized tables and assumptions provided in the technical provisions. In some of the more complex loading conditions, Katherine Rivera (Severud) was there to mentor students through their reasoning.

3:00 PM – Selling the Solution

In a sprint to the finish, the student design teams finalized their visual aids and prepared their critical talking points. The final mentor of the day, Jason Fiore, helped the teams compile their story and set them up to pitch their solution. It was finally time to present five intense hours of collaborative thinking to a panel of judges.

EVENT RECAP Structures Impossible

SELF-PROPELLED MODULAR TRANSPORTER (SPMT)

4:00 PM – Final Presentations

The student teams presented their designs for the elimination of the grade crossing to four senior industry professionals who served as judges. They were Dinesh Jog (Stantec), Sara Steele (Silman), Michael Moskowitz (STV), and Jimmy Vignola (Rand PC). The judges carefully analyzed the presentations and explored the thoroughness of each design. After a short discussion, the judges decided that the best design was presented by Group 3, who proposed an undergrade structure installed by an SPMT.

CONCLUSION

Structures Impossible was a hyper-educational event. The students practiced their structural design skills, but more importantly, stepped into the world of conceptual design. They learned that a design must consider all constraints to be successful. Beyond that, however, the competition demonstrated the power of collaborative thinking. In a short 5-hour design competition, students provided multiple design concepts that could then be further analyzed to determine the most effective, feasible option. It is a model for our industry to follow as we move forward into the future.

Many thanks to all the contributors, mentors, judges, and students who made this event a success! Congratulations to Erika Santos (Columbia), Joshua Kitagorsky (Cooper Union), and Shirley Yan (Cooper Union) who are the inaugural Structures Impossible champions.

Team 1: Julien El Naddaf, Humza Rehmatulla, Abhilekh Prasai, Alexander Moreno
Team 2: Candy Liu, Juan Gomez
Team 3: Erika Santos, Joshua Kitagorsky, Shirley Yan
Team 4: Shivam Sharma, Hayden Codiga, Tajria Afrin, Ateeb Amjid
Judges: Dinesh Jog, Sara Steele, Michael Moskowitz, Jimmy Vignola

***Contributors:** Daniel Rice, Miles Barber, Matthew Sangen, Katherine Rivera, Jason Fiore, Sam Brummell, Jack Greenberg, Joseph Viola, Jennifer Pazdon*

A Student's Experience at SEER's CalOES SAP Training

BY: MARGARITA DE LA GARZA

This past September, I attended the CalOES Safety Assessment Program Training. It was thrilling to learn about the work that second responders do to help communities in need after natural disasters occur. The training was given virtually over the span of two days by certified SAP licensed evaluators, Tim Boyland and Ilya Azarof. Following ATC-20 and ATC-45 field manuals for post-disaster safety evaluation of buildings, the training prepared design and construction professionals to volunteer as second responders to help affected communities. The webinar covered various topics including common earthquake and flood effects on building structures, material specific hazards, field safety, and standard site procedures. Attendees tested their newly acquired knowledge by analyzing case studies and labelling each example structure with a green, yellow, or red tag according to the ATC procedures and guidelines. This was an incredible opportunity for me, a structural engineering master's student, to learn from experienced professionals using their knowledge to analyze nuanced problems.

During the first session, the instructors explained the ATC program and the responsibilities and expectations of a second responder. Both instructors, having participated in multiple deployments themselves, were able to go over these topics by referencing their own experiences. After covering the basics, the instructors elaborated on how each hazard can affect building structures. This section contained many new insights for me, and I found it to be extremely interesting. I learned a wealth of terminology and practical structural behavior that I had not been exposed to previously. I had never seen the true breadth of "theoretical" failures. Suddenly, every code and structural design check began to make sense. The instructors shared in-depth examples of soft story failure, shear cracking (or the "kiss of death"), failure of non-ductile concrete walls, p-delta effects, connection failures, and pounding; I was enthralled.

CalOES (FRED TURNER, EERI)

Another major highlight was the "El Centro Water Tower" case study, in which a 150ft tall water tower appeared stable at first glance, but upon detailed inspection, a failed footing connection posed a collapse hazard. The earthquake caused a bolt to fracture, putting the stability of the structure at risk. Second responders then barricaded the surrounding areas. Through the various case studies, I learned the importance of details in the assessment of risk; no detail can be overlooked when life-safety is a concern. Furthermore, many of the case studies showed that houses and commercial buildings constructed without professional engineering guidance need to be evaluated with the highest level of caution. The instructors emphasized the importance of always being aware of your surroundings and of watching for indications of structural instability alongside general hazards such as downed electrical or gas lines.

CalOES SAP TRAINING

Left:
El Centro Water Tower Bolt Fracture

Right:
El Centro Water Tower Bolt Fracture

At the end of the first session, attendees were placed into small teams to evaluate different structures with varying degrees of damage and to conclude whether to tag the buildings as safe. It was exciting to see experienced professionals approach these situations – to see how they gained useful information from every detail. The experienced engineers would notice a small crack, a slight lean, or a failed connection and use their knowledge to draw informed and logic conclusions. I took this opportunity to observe and begin to build my own engineering judgement. It was truly inspiring. The instructors, Tim and Ilya, often drew from their own experiences to illustrate and give in-depth details about different aspects from the training. This made the sessions much more personal and informative.

During the two days of training, I gained a better understanding of how structures behave when they stop functioning as initially intended. This training made me excited by the possibility of becoming a second responder in the future and utilizing what I learned to help communities in need. Opportunities, such as this one, outside of the classroom allow me to see how theoretical designs translate into practical executions, leading to a better and broader understanding of structural engineering.

WHAT IS THE FUTURE OF STRUCTURAL ENGINEERING FROM THE PERSPECTIVE OF AN ENGINEERING STUDENT?

Mankind is exhausting Earth's natural resources to build star-touching monuments. The future, however, depends on the environment. Thus, it is important to give the environment sufficient consideration when building the great wonders of this world. The future of structural engineering is the survival of greenery.

I believe that we can create a 100% renewable energy-based construction fleet. Instead of using oil-dependent tractors, backhoes, milling machines, etc., we can use solar power-driven equipment to move materials. The sky-touching towers that we build can become energy self-sufficient if we use photovoltaic glass instead of traditional windows. If the building code is updated to mandate rooftop gardens on newly constructed buildings, we can continue urbanization without reducing greenery. This creates fresh air for everyone. If structural engineering is sustainable, we can reduce the amount of CFC particles in the ozone layer and thus stop mankind's altering of the greenhouse effect. This will put an end to manmade climate change.

When we discuss the environmental impacts of structural engineering, we must also discuss the technology used within the industry. Structural analysis and design have heavily depended on computer software for over the past 20 years. For structural engineering to become more environmentally friendly, software needs to be developed that optimizes factors concerning the environment, project management, and structural design. The advancement of structural engineering for the betterment of mankind can be brought about through the advancement of technology to meet the needs of environmental survival.

Structural engineering plays an important role in our lives. From railroads, to houses, to the tunnels that we drive through – these triumphs of mankind are due to structural engineering and the industrialization of society. Throughout the process, however, we disregarded the very element that sustains life. The future of our living condition depends on environmental justice. Thus, the future of structural engineering must include the integration of environmental science into the professional canon. Our civilization depends on it.

Tasnia Hossain

DO YOU THINK THE EDUCATION YOU RECEIVED IS RELEVANT TO THE REAL-WORLD STRUCTURAL ENGINEERING PROFESSION?

I believe that the education I received is relevant to the real-world structural engineering profession due to the professionals who took time from their busy schedules to become adjunct professors. Throughout my education, I have learned the principles of engineering from many great professors who earned doctorates and did fantastic structural engineering research. However, I can only say that I have learned aspects of real world, practical engineering from the adjunct professors who taught classes after their normal workday ended. These professionals taught courses on materials and techniques that are necessary for an engineer, but not taught in standard curriculums.

After taking their courses, I believe that learning design techniques from professionals creates deeper learning and appreciation for the content of the course. For example, rather than using a textbook problem, classes taught by professionals often utilized real design challenges that the adjunct professor faced in their career. In these classes, I felt as if I was an intern, learning on the job, because the assignments were so practical. Our classes also learned about the problems that might arise while working as an engineer, such as quarrels with owners or complications due to unbuildable designs.

Learning from professionals before starting a job has made me a more confident engineer and more familiar with the profession. The unique skills I learned from these courses have helped me stand apart from other applicants while applying for entry level jobs. For these reasons, I encourage professionals who would like to give back to the profession to consider teaching a course at a local college or university. Learning from professionals has made a large difference in my career and I believe many others could benefit from such experiences as well.

Luke Withy-Berry

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