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2023 NCSEA Young Member Summit Scholarship

What is your opinion about the public's perception of structural engineers? Provide suggestions for how structural engineers might increase recognition and general public awareness of the profession.

I have lived in Seattle for two years and have loved learning all about the urban history of the city. That of course encompasses buildings and one of my favorites is the 1977 Rainier Tower whose main feature is a tapering 11-story pedestal supporting the rest of the skyscraper. One day I was reading about the initial negative public reactions towards the design and was struck when I read that people were concerned about its structural integrity and questioned if it might collapse in an earthquake or wind storm. They had no credible sources to back up their claim but I was still surprised that people would think engineers, let alone the city permitting department, would allow a tower to be built that had the possibility of falling. Nowadays, I think the general public has a lot of trust in our buildings but they most likely don't grasp the extent of the structural engineer's role in our built environment.

The structures we design do not only account for everyday conditions but also the multitude of hazards that can occur at each site and which we try to comprehensively understand. So much research has been accomplished to determine wind speeds, seismic accelerations, snow loads, geotechnical conditions, tsunami risk, etc. all to make sure that our structures are safe for everyone. The public doesn't want to, nor should they care how each connection in a building is calculated: however, they should have a comfortable idea that it was designed to contribute to the functionality, aesthetics, and most importantly the safety of the structure.

Bill Baker, structural engineer of the Burj Khalifa said that the biggest challenge he faced in engineering the world's tallest building was "without question, understanding and taming, and working with the forces of nature." We design safe structures that work with, not against, nature and that is a substantial skill that our industry should celebrate.

Climate change in recent years has further reinforced the need for high-quality structural engineers. Our environments are rapidly transforming and showing how our designs are not future-proof. We have to evolve our ideas and ways to tackle these new challenges and involved the public in that process. Every part of the world is seeing either more intense hazards like strong hurricanes or are being affected by new hazards they hadn't seen before like tornadoes and wildfires. A lot of communities are experiencing both of these changes at the same time and our existing built environment needs to react. New buildings are easier to design for these hazards but our current building stock is facing the same hazards. Those are the buildings that the majority of the population live, work, and play in and weren't designed with climate change at the forefront. We should encourage the public to be curious about the buildings they interact with and ask

questions like “Is my home safe to be in during a hurricane?” or “Has my old brick office building been seismically retrofitted?”. Questions like these can do a lot of good to keep people involved in the maintenance of our structures and help make our communities more resilient when disaster does occur.

One of the most interesting classes I took in college was “ARCE 206: History of Structures”. This was not a typical architectural history course, it focused on structural engineering as a distinct art form that has only come into being in the past couple centuries as physics and math were used to justify architectural designs. This class was also one of the most popular general elective classes in the whole university. Part of the reason had to do with it being fairly easy to achieve an A but also I think that almost every student, not just the engineering and architecture majors, truly enjoyed learning about the subject matter. Our professor Ed Saliklis had a great enthusiasm for teaching the course and that only drew people in more. The class touched on the social, symbolic, and technical importance of landmark structures such as the Eiffel Tower but also relatively unknown structures such as a restaurant in Mexico City designed by Felix Candela who used a one-and-a-half-inch thick thin concrete shell to span 139 feet. The history of structural engineering is incredible and I think every person in the AEC industry should have some knowledge of it. We can help change the public perception when we understand our history and know how to relate it to everyone else who doesn’t have a technical background.

Structural engineering is beautiful and while the structure doesn’t have to be physically shown off in every building like the Pompidou Centre, for example, we should find other ways to make the public more aware of it. It is always a joy to me when a building or place has plaques that explain the design and why it looks and functions the way it does. It’s a simple thing but I think it can be a positive way to increase our public image and give some gentle reminders that structural engineers are essential to every project.

I am only 24 years old but I have loved buildings since I was a kid. That interest has always been a part of me and that’s why I am an engineer. Most people don’t have that same level of interest in our built environment and that is great because we need people with varied interests to have a functioning society; however, buildings are pieces of life that almost every person interacts with on a daily basis. Our “product” is everywhere and I am hopeful we can leverage that to promote our profession’s importance for years to come.