

Structural Engineers: The Hidden Foundation of Society

Structural engineers possess a deep understanding of the critical role played by a structural foundation - a supporting structure or system that efficiently transfers the load of buildings, bridges, and other infrastructure to the underlying soil or rock. Serving as the crucial interface between a structure and the ground, foundations ensure stability, prevent excessive settlement, and safeguard the long-term safety and durability of constructions. Despite its undeniable significance, the foundation, much like the work of structural engineers, often goes unnoticed by casual observers once construction is complete, often remaining unseen throughout the structure's lifespan. This metaphor powerfully captures the public's perception of structural engineers - underappreciated and unseen contributors to the built environment.

As a first-generation college graduate, I embarked on my studies at the University of Louisville nearly six years ago with a limited understanding of the expansive field of structural engineering, much like the prevailing public perception. When asked about my choice of civil engineering, my response was simply, "I think bridges are really cool." While my initial fascination with bridges persists, my journey through academia and recent introduction to the professional field has allowed me to progressively deepen my knowledge and develop a profound appreciation for the remarkable achievements of structural engineers. Like the concealed foundation system that underpins structures, structural engineers play a significant yet often hidden role in driving the success of society, including its economic development. While their work may go unnoticed by the general public, the impact of their contributions reverberates throughout various sectors of the economy.

In a case that hits close to home, the Brent Spence Bridge serves as a compelling example of the significant role structural engineers play in driving economic development. This double-decked cantilever bridge connects Cincinnati, Ohio, and Covington, Kentucky, carrying the heavy traffic of Interstate 71 and Interstate 75 over the Ohio River. According to data from the Kentucky Transportation Cabinet and the Ohio Department of Transportation, the bridge handles a staggering average of around 160,000 vehicles per day, as well as an astounding freight load equivalent to 3% of the nation's GDP. However, despite its vital importance, the Brent Spence Bridge has been labeled as structurally deficient and functionally obsolete for over two decades.

The bridge's criticality was further highlighted by a truck accident on the northbound lower deck in the early morning of November 11th, 2020, which resulted in a fire that caused extensive damage to crucial components throughout both the upper and lower decks. As a result, the bridge was completely shut down, and an immediate investigation and repair effort ensued. Remarkably, through an extraordinary collaboration between diverse teams and professionals, the bridge was safely reopened just 41 days later. The public, though not fully comprehending the technical intricacies involved, showered endless praise on the construction and design team for their heroic efforts in restoring safety and normal transit times that were once taken for granted.

While this exceptional achievement occurred under extraordinary circumstances, it exemplifies the question of how structural engineers can gain recognition for their everyday contributions to ensuring safety and reliability are standard practice, rather than privilege. How can we draw attention to the unseen foundations of our built environment before they become compromised and neglected? Although there is no definitive answer, there are avenues through which we can cultivate a more appreciative and positive outlook on the field of structural engineering.

One important approach to improving the recognition and awareness of the structural engineering profession is leveraging the power of social media, which has become an integral part of people's lives worldwide. Structural engineers can capitalize on this platform by sharing captivating images, videos, and stories about their completed projects. By highlighting the design process, the challenges faced, and the innovative solutions implemented, they can educate the public about the significance of their work and its impact on the built environment. A prime example of this approach can be seen on [Walt Disney Imagineering's](#) Instagram page, where they have amassed a following of over half a million people. Through their captivating storytelling, Walt Disney Imagineering showcases how they ingeniously combine logistics and technical aspects to create beloved theme parks, such as this year's conference host Disneyland, resonating with audiences of all backgrounds and ages. Sharing insights, expertise, and trends on social media can establish structural engineers as thought leaders in their field. Additionally, social media offers an ideal platform for raising awareness about structural safety. By posting about building codes, structural inspections, maintenance, and retrofitting, engineers can debunk common misconceptions, provide tips for identifying potential issues, and emphasize the importance of hiring qualified professionals for construction and renovation projects.

Another effective method for increasing recognition and awareness of the structural engineering profession is to prioritize outreach to future generations. This involves implementing engineering-specific programs in public and private schools from a young age. These programs can include dedicated engineering classes or after-school activities supported and funded by professional engineering societies, including those focused on structural engineering. While some local colleges and universities may already provide community-level outreach, a nationwide coalition program would ensure broad education and emphasize the practical applications of engineering in real-world scenarios. Such initiatives help children connect their learning to tangible situations, fostering a sense of relevance and meaning. They also cultivate an understanding of how engineering addresses societal needs and positively impacts the world. Moreover, these programs can play a pivotal role in fostering diversity by exposing young individuals from diverse backgrounds to engineering opportunities. By making engineering outreach accessible, the profession can contribute to creating a more equitable and inclusive future. Engaging in engineering outreach at a young age plants the seeds of interest and passion, develops essential skills, and broadens career perspectives, ultimately establishing a pipeline of talented individuals who can contribute to innovation, problem-solving, and societal progress.

In conclusion, the public's perception of structural engineers often lacks appreciation and understanding, similar to the unseen foundations they work on. However, there are effective ways to increase recognition and awareness of the profession. By leveraging social media and implementing outreach initiatives, structural engineers can draw attention to their vital work and cultivate a more appreciative and positive perception of the profession in society. After all, to quote Dr. Ashraf, "Structural engineers preserve, protect, progress, and prosper for all of us today, and for countless generations to come." If that's not something to celebrate and recognize, then what is?