An Open Letter to the 115th United States Congress

As structural engineers, responsible for protecting public safety while helping to advance the state of the art in our built environment, we support the Wood Innovation Grant Program included in the Senate version of the 2018 Farm Bill. The research and development that will be advanced through this program, originally proposed as part of the Timber Innovation Act (S.538 and H.R.1380), will help provide better products and codes to allow mass timber structural systems to become part of every engineer's "toolkit." We believe an increase in the number of mass timber buildings in the US will be an overall benefit to society, and we believe that current conditions unfairly penalize this technology relative to more established materials and methods.

The most compelling benefit of mass timber buildings is the opportunity to help mitigate climate change. The building sector is responsible for nearly half of US greenhouse gas emissions. Although a majority of those emissions are associated with operational energy, the embodied energy of building materials becomes a bigger piece of the puzzle as we improve energy efficiency and generate increasing amounts of energy from renewable sources. Wood structural elements are much less resource-intensive to produce, and they sequester carbon from the atmosphere. Turning trees into building products locks that carbon away for decades and potentially longer, giving designers the opportunity to build buildings that are actually net positive in terms of carbon emissions. Mass timber has a further advantage in the residential sector because it lends itself to high-density housing, which tends to be much more energy-efficient and will be increasingly in demand as our population continues to migrate from rural areas to cities.

Naturally, all of these benefits depend on modern and sustainable forestry practices, evidenced by the widespread adoption of certification programs like those of the Forest Stewardship Council and the Sustainable Forestry Institute. Modern forestry practices in Europe, Canada, and the US have resulted in stable forest stocks with enough capacity to support a growing wood products industry. In fact, selective harvesting can increase the total amount of carbon being sequestered in our forests.

Despite these benefits, mass timber faces a number of systemic hurdles relative to other major building materials. The first is our current regulatory environment: building codes are more advanced than ever but also more prescriptive than ever, which puts any new technology at a disadvantage relative to ones that were developed earlier. Most designers today are loath to step outside the prescriptive code, which stymies innovation. Compounding the problem is the fact that most US universities do not teach wood design with sufficient rigor, sending engineers into the workforce without the necessary fundamentals to pursue performance-based timber designs.

The second hurdle is related to the cost of carbon and carbon-based pollution. Pollution is often used as a textbook example of a market failure: in the absence of a carbon tax or other method for pricing carbon, such as a cap-and-trade system, the prices of carbon-intensive goods and processes do not accurately reflect their true social cost. The Wood Innovation Grant Program will encourage the development and use of carbon-sequestering materials in the building sector as one avenue to help correct this failure and provide for the public good.

Mass timber skeptics often cite concerns about fire safety, but the char behavior of mass timber elements provides inherent fire resistance, which is often misunderstood or ignored by timber industry opponents; they cite instances of large fires in light-frame wood buildings without acknowledging the distinction between light-frame and mass timber buildings. Wood char behavior is well-studied and documented in the building code, and ongoing research has continued to prove out the suitability of mass timber for larger and taller buildings. Recent full-scale fire tests of a multi-unit mass timber apartment building were used to inform code change proposals by the ICC Ad-Hoc Committee on Tall Wood Buildings, which has recommended that our next national model code allow mass timber buildings up to 18 stories. Although these provisions would be a significant change to the US codes, they would merely reflect what's already happening in other parts of the world: in Canada, an 18-story mass timber student residence was completed in 2017, and in Austria, a 24-story mixed-use mass timber building is currently in construction.

We urge Congress to include the Wood Innovation Grant Program in the final version of the Farm Bill. This program will support performance-driven research and development in service of a greener and safer future.

Sincerely,



Dick Schmidt, PhD, PE | Tom Nehil, PE | Tanya Luthi, PE

On Behalf of the Timber Frame Engineering Council – Technical Activities Committee (TFEC-TAC):

Chris Carbone
Jim DeStefano
Lucas Epp
Mark Gillis
Sergio Guindon
Jeff Hershberger
Tim Krahn
Jaret Lynch
John Nicholas