

## State News for NSPE Members

### Member Spotlight: Anton Bowden, Ph.D., P.E.

*Professor, Brigham Young University*



Many professional engineers specialize in structures such as bridges, marine vessels, aircraft structures, tunnels, among numerous others. Bowden's structural specialty, however, is one where relatively few PEs practice: the spine. As a mechanical engineering professor and director of the BYU Applied Biomechanics Engineering Laboratory, Bowden's primary research interests are in spinal biomechanics and medical device design, with an emphasis on developing an improved understanding of the mechanical triggers for low back pain.

**Current work:** Bowden is leading a project to develop a wearable nanocomposite sensor system for diagnosing mechanical sources of low back pain and guiding rehabilitation. The work is funded by a \$2.3 million grant from the National Institutes of Health. [Watch a short video.](#)

**How a mechanical engineering undergrad become a specialist in the spine:** In Bowden's senior year as a mechanical engineering student, his capstone project was in biomedical engineering. The project involved a thermoelectric, battery-driven cooling pad that could be used on a patient's knee after a total knee replacement. "That just lit the fire in what I wanted to do and sparked the change in course for me."

That change led to a PhD in bioengineering from the University of Utah, with a focus on FEA with data from medical imaging such as MRIs and CTs. Then, it was off to Philadelphia for four years in the biomechanics practice of Exponent, a large international consulting firm. The firm had just received a large contract to build a spine model, and Bowden was asked to build and validate it. As he started figuring out how the spine works, he realized this was an area he could make a difference. “It just opened my eyes,” he says.

**How to avoid back pain:** Move. “It’s really important to move, stretch. Too many people sit still for too much of the day. It’s part of our culture, right? Just moving and stretching. I do that every single day.”

He adds, exercises like yoga and tai chi are “really are phenomenal” because they individually exercise the 33 functional spinal units. “Too many things make the spine move as a chunk instead of individually. All the nutrition for the discs comes because of movement, so that’s really the key, even when it hurts. Most people get scared when the spine hurts, but it’s actually almost always helpful to just start moving.”

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## **This Move to Utah Is a Record Breaker**

On June 29, a 770-ton reactor pressure vessel started a slow journey from North Las Vegas to Energy Solutions’ Nuclear Waste Facility in Clive, Utah, 75 miles west of Salt Lake City, reports [Engineering-News Record](#). According to a Nevada DOT spokesman, the 2.4-million-pound move is the heaviest load ever to cross Nevada roadways.

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## **Construction Site Raises Public Safety Issues**

Cedar City residents who live near a construction site for a storm water detention basin have raised concerns that the city is not following engineering standards, according to the [St. George News](#). The project has been put on hold as the city determines next steps. The main concern is a 19-foot drop off with inadequate fencing in an area where there are many children and pets. “In the private sector if a builder tried to do something like this, the city would come in and say, ‘No, you have to follow regulation and code,’” one resident told the News. “I’ve been in contact with storm water engineers all over the state of Utah and they said that this is not the way that detention ponds generally work.”

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## **We Want to Hear from You!**

Do you know of engineering news in Utah that would be great for this newsletter?

Maybe it's a project you or your firm is working on, or perhaps you read some interesting engineering news in your local newspaper. Or maybe you know of a fellow PE or student who deserves a little recognition. If so, we want to hear from you. Email your ideas to [pemagazine@nspe.org](mailto:pemagazine@nspe.org).

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## **NSPE Urges Veto of Structural Engineering Bill**

In a letter to Georgia Governor Brian Kemp, NSPE encouraged the veto of a bill to establish a separate licensing system for structural engineers.

President-Elect Tricia Hatley, P.E., F.NSPE, wrote that creating a new licensing system for structural engineering does not improve the public health, safety, or welfare. "Instead, it muddies the water, creating confusion and requiring regulatory authorities to make arbitrary distinctions to define structural engineering," she added. "Rather than reducing regulatory burdens, the change would add a new layer, requiring one engineer to obtain multiple licenses in order to do work that, previously, required only one."

Instead of creating a separate licensing system, NSPE recommends a certification process that occurs after the professional engineering license has already been obtained. "This system would allow for the SE designation, if required or requested by potential employers or RFPs, without drawing the same, hard line between structural and other types of engineering," Hatley wrote.

[Read the full letter.](#)

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## **Take Action on Federal Infrastructure Bills**

You have an important opportunity to add your voice to the debate around pending infrastructure legislation.

The first two bills are the House and Senate's surface transportation infrastructure reauthorization bills—the INVEST in America Act ([H.R. 2](#)) and the America's Transportation Infrastructure Act of 2019 ([S. 2302](#)). This is an opportunity to communicate to members of Congress the importance and value of having PEs involved in engineering decisions to protect the public health, safety, and welfare.

[Take action on surface transportation reauthorization!](#)

The third bill, the SMART Infrastructure Act ([H.R. 4687](#)), would take decision-making authority away from professional engineers and instead give it to state and local authorities, allowing them to select "appropriate" construction materials. The bill would establish that these entities would have the flexibility to select appropriate

construction materials that meet the performance requirements of the contract and enhance the service life, sustainability, and resiliency of the project.

NSPE opposes this bill because its enactment would prevent PEs from making the final decision on the appropriate construction materials for a project. Additionally, it establishes a federal interagency task force charged with deciding whether state and local procurement practices have artificial barriers to competition for new and innovative materials and recommending actions that can be taken to remove barriers. Their decisions could put the public at risk should these new and innovative materials present unforeseen harms to the public.

[Voice your opposition to H.R. 4687!](#)

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## Celebrate PE Day!

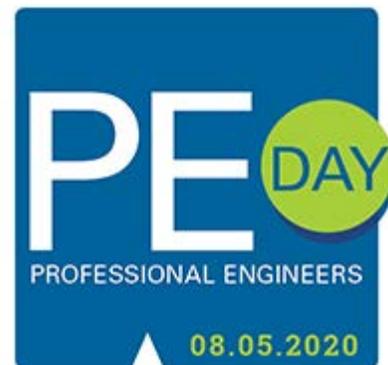
NSPE is celebrating licensed professional engineers with the [fifth annual Professional Engineers Day](#) on Wednesday, **August 5**. Join the Society in raising awareness about what it means to be a PE and showing appreciation for the work they do every day.

In lieu of in-district meetings with legislators, like those conducted last year, NSPE members will be able to participate in a series of panel discussions. The discussions will include members of Congress and/or their staff, who will share information on pending legislation that impacts the engineering profession. NSPE members will have opportunities to ask questions and to take action on the bills that are discussed by the panel.

PE Day falls within the week of the Virtual **PECon** (August 3–7). As a highlight of PE Day, NTSB Chairman Robert Sumwalt III, will discuss [“The Role and Responsibility of Professional Engineers in Ensuring Safety of Our Nation’s Infrastructure.”](#) His presentation will touch on the NTSB’s recommendation for eliminating the PE license exemption for public utility work, and the requirement for a professional engineer’s seal on public utility engineering drawings, stemming from the tragic pipeline explosions and fires in the Merrimack Valley of Massachusetts.

IBM’s Global Chief Technology Officer Ben Amaba, is also featured as a keynote speaker and will cover the [professional engineer’s role](#) in artificial intelligence and technology.

[Register for the Virtual PECon.](#)



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