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Our Fundamental Principles: Ethics and Quality

William N. Nickas, *Editor-in-Chief*

The American Association of State Highway and Transportation Officials (AASHTO) has released a video profile of Victoria Sheehan, the 2020–2021 AASHTO president.¹ She has been commissioner of the New Hampshire Department of Transportation (DOT) since 2015. Sheehan has a master's degree in structural engineering and architecture, and started her career in the accelerated bridge construction program at the Massachusetts DOT. It's pretty neat to see a structures professional in the top agency leadership role. Please take a moment to watch the video and listen to Sheehan's thoughts on diversity, technology, and other changes that will impact core functions of the transportation industry. She emphasizes the need to expand the skill sets of our workforce and to fund a stable program with a long-term horizon, showing leadership the benefits of "predictability for longer-term planning."

Watching the AASHTO video got me to thinking again about the fundamental principles of delivering well-designed, high-quality products and assets to our customers/owners. In the Spring 2021 issue of *ASPIRE*[®], Dr. Richard Miller authored a Professor's Perspective on ethics and judgment and how, as a university professor, he approaches the topic with his engineering students.² In this issue on page 51, Dr. Anna Pridmore continues the discussion with a Perspective on the new American Society of Civil Engineers (ASCE) Code of Ethics³ and what it takes to foster an ethical culture and impact behavior. She reminds us of the importance of fostering a culture of empowerment and communication that will impact behavior within companies and organizations. In her words, "Engineers can drive culture shifts that empower us and others to talk about potential and ongoing problems."

Organizations can strengthen and support our individual professional ethics by sustaining a culture of quality. A quality company culture starts with leadership that sets and upholds solid policies, with clearly stated quality objectives and standard operating practices. A fundamental tenet is that all quality systems begin and end with complete and comprehensive

records. Over the years, I've worked with colleagues who work to maintain transparency in every aspect of our projects, starting with our plans and records. Preserving these critical documents for years after projects are delivered is key. Without good record-keeping, we cannot trace the designs and calculations used in projects or understand how past decisions affect the future of our transportation infrastructure.

How do we ensure that the programs we have in place live up to the demands of our profession? I



suggest that we start with the "AISC/PCI White Paper on Quality Systems in the Construction Industry"⁴ as a primer. This collaborative report is an easy read, provides a bit of background on the roles of technical institutes and certification programs, and outlines the 12 elements of comprehensive quality systems for a technical institute's plant certification program.

A variety of models are available to help us establish quality programs and systems in our organizations. At their core, quality programs demand attention to detail, standardized procedures/work instructions, and an assurance that provided guidance is followed. This outlined approach provides the guidance for establishing the organizational stewardship (body of knowledge) to enhance established quality programs or aid in building a new program starting from ground zero.

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Cover

The design-build team evaluated several alternative structure types for the new twin bridges on Interstate 91 near Rockingham, Vt., ultimately selecting precast concrete spliced-girder bridges that will exceed the 100-year service life requirement. Photo: HDR.

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In Dr. Miller's article on teaching ethics, he explains how he uses the example of an expressway dividing a neighborhood to frame the discussion with his students of the societal, environmental, and economic ramifications of their work (both locally and globally). His students must navigate this engineering dilemma and consider the effects and influence this solution could have on adjacent established communities. They must take into account the human aspects of their designs. This example led me to wonder: Is it at this juncture where engineering decisions shift from science to art?

Now let's talk through indirect impacts: what happens when a seemingly minor misstep becomes a global issue? On March 23, 2021, the *Ever Given*, one of the largest cargo ships in the world, ran aground, essentially shutting down global shipping through the Suez Canal until the ship was freed on March 29. The inability to move cargo through the canal had the potential to cause significant and costly delays for construction industry-based projects globally. Perhaps it delayed the delivery of construction material and heavy equipment to your projects.

If your project is affected, will that cause an out-of-sequence issue? Are you and your team prepared to adjust? During times of uncertainty, our ethics may be tested, and our reliance on quality

procedures, programs, and systems can save the day. Organizations and companies must cultivate a dual mindset of both rigorous adherence to standards and quality control/assurance procedures as well as being open to the spontaneous communication of ideas and concerns. If your organization is contemplating joining forces with an entity that doesn't take open communication, ethics, quality management, quality assurance, and quality control seriously, consider another collaborator.

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1. American Association of State Highway and Transportation Officials. 2021. "AASHTO President Victoria Sheehan Profiled in New Video." www.youtube.com/watch?v=L_c8RzuoEp8.
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3. American Society of Civil Engineers (ASCE). 2020. "ASCE Code of Ethics." <https://www.asce.org/code-of-ethics>.
4. American Institute of Steel Construction (AISC) and Precast/Prestressed Concrete Institute (PCI). "AISC/PCI White Paper on Quality Systems in the Construction Industry." Accessed May 6, 2021. https://www.pci.org/PCI_Docs/Certification/AISC_PCI_Quality_Systems_White_Paper.pdf.



PCI Ultra-High-Performance Concrete Workshop set for September

PCI is hosting an Ultra-High-Performance Concrete Workshop Tuesday, September 21, 2021. This one-day workshop will gather experts from across the precast concrete industry to discuss various research and development initiatives for the implementation of ultra-high-performance concrete (UHPC) in precast concrete components.

The workshop will cover design considerations for architectural and structural precast UHPC components, such as UHPC material selection for nonproprietary mixture designs, characterization and quality control testing of UHPC, and production and fabrication of precast UHPC components.

The workshop will be at Loews O'Hare in Rosemont, Ill. For more information, go to <https://www.pci.org/events>



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