A passion for researching precast

William Atkinson

Clay Naito, a professor in the Department of Civil and Environmental Engineering at Lehigh University in Bethlehem, Pa., grew up in Honolulu, Hawaii, where his main hobbies were bodyboarding and mountain biking. "I still mountain bike a few times a week out here in Pennsylvania," he says.

While in Hawaii, Naito did some work in residential and commercial construction but did not have the opportunity to work in precast concrete prior to arriving at Lehigh University.

Naito attended the University of Hawaii in Manoa where he earned his bachelor's degree in civil engineering. He then went on to get his master of science and doctoral degrees in structural engineering from the University of California, Berkeley.

"My doctoral studies were focused on the design of reinforced concrete bridge systems," he says. "After joining Lehigh University in 2002, I was exposed to the research needs of PCI and found that the members are dedicated and passionate about improving the understanding and state of the art for precast, prestressed concrete design. It has been a pleasure to learn from the industry and help advance the knowledge to make precast structures more resilient."

Naito became a member of the faculty at Lehigh University in 2002 following his graduate studies in California. "My expertise revolves around large-scale testing of structures and components," he says. "Lehigh is one of the premiere structural engineering university research facilities in the country." The laboratories include a 5 million lb [22,000 kN] capacity, 70 ft [21 m] tall universal testing machine, as well as a 100 by 40 ft [30 by 12 m] test floor and reaction walls. The facility also features actuators and control equipment that allow for evaluation of everything from full-scale bridge beams to multistory buildings.

Naito joined PCI shortly after arriving at Lehigh. "Our ATLSS Research Center had an ongoing partnership with PCI to assist with addressing any research needs that arose," he says. The Advanced Technology for Large Structural Systems (ATLSS) Engineering Research Center is a national center for research and education on structures and materials of the infrastructure.

Naito has been very active in PCI since he joined. "I have had the opportunity to work on a wide range of research topics related to precast concrete," he says. These have included the development of a design methodology for seismic design of precast diaphragms, assessment of the blast and ballistic resistance of precast concrete walls, welding of precast connections in harsh environmental conditions, fatigue performance of connections in parking structures, and strand bond. "To facilitate transfer of these research results to practice and to learn from the experts in fabrication and design, I became involved in a number of associated committees at PCI," he says.

"Working with the precast industry has allowed me to address tangible issues, which is something I enjoy as a researcher," he says. And he says he is proud of the fact that some of his research has improved the state of the knowledge of structural engineering design.

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For people who are new to PCI and the precast concrete industry, Naito says, "PCI is a progressive group that is dedicated to making precast, prestressed structures efficient, safe, and resilient." He strongly recommends attending the annual convention and PCI Committee Days, joining committees, and participating. "There is a lot of effort dedicated to developing new design concepts, updating codified approaches, incorporating new materials, and looking toward the future. To be a part of it, show up!"