

# Perspective of an Early(ish)–Career Professor

by Dr. David Garber, Florida International University

The life of a professor is a balancing act, with work responsibilities typically grouped into three categories: research, teaching, and service. Time commitments depend on one's annual assignments, interests, and levels of competency. Through the lens of a graduate student entering academia, academic life is all about research: submitting proposals, conducting research, advising students. The general public (including most family and friends) view academia as all about teaching: *What courses are you teaching? What are you doing with your summers off? If you are only teaching one (or two) courses this semester, what do you do with all of your free time?* From the perspective of a professor's spouse (or close friends and family), a key question is, "How do you have the time and mental capacity to complete everything?"

I was honored to receive one of the two PCI 2021 Educator of the Year Awards. I was asked to reflect on how my involvement with PCI and the precast concrete industry has been valuable for me professionally and how it has helped me to balance the many responsibilities of a professor with family life.

Nobody can really fully prepare a graduate student for entering academia



Dr. Garber (second from left) and three of his PhD students from Florida International University attended the 2019 PCI Convention in Louisville, Ky. All Photos: David Garber.

or industry. Advisors give students an opportunity to "lead" research projects (with differing levels of oversight), present the work at conferences and at peer-reviewed venues, and possibly participate in grant writing. However, research expectations are magnified in tenure-track faculty positions. Students take courses during their graduate studies, but they typically do not

receive much instruction on the aspect of teaching. A student may also have the opportunity to participate in and possibly lead student organizations or other activities, but that is far different from navigating university service and departmental politics.

I came out of high school thinking that I wanted to be an engineer—after

Florida International University students participating in a plant tour sponsored by the Florida Prestressed Concrete Association.



all, my father was an engineer and I was good at math and physics. In my youth, I enjoyed buildings, bridges, and construction, and I spent a summer on a road crew for the Pennsylvania Department of Transportation, which led me to pursue civil engineering. After graduating with my bachelor of science degree in civil engineering from Johns Hopkins University, I decided to continue my studies at the University of Texas at Austin. I was blessed to be able to work on several different research projects and help my laboratory colleagues with their projects.

I was given my first introduction to PCI when a convention was held in Fort Worth, Tex. My advisor, Dr. Oguzhan Bayrak, arranged for me to present my work on prestress losses to the Committee on Bridges (COBs), which was one of my first presentation experiences and my first committee meeting. My first PCI COBs meeting was positive, exciting, and intimidating. The committee had many questions, but I appreciated that the members were generally supportive even if they had different opinions.

I joined Florida International University (FIU) in August 2014 as an assistant professor. During my first few years, I continued to participate in PCI by joining several committees and regularly attending Committee Days and the annual PCI convention. During the first few years, I was able to obtain travel support as a new faculty member, so I also regularly attended events and meetings of other concrete-related organizations. After this funding source ended, I needed to evaluate in which organizations I wanted to continue to actively participate. I appreciated the balance between academia and industry as well as the collegial environment at PCI, so I decided to continue with this organization.

Participation in PCI committees and regularly attending Committee Days and conventions has helped me to better understand the many facets of precast and prestressed concrete, including fabrication, erection, and design. I have learned more about the subject and research needs through a few hours in committee meetings and informal discussions with industry professionals



A group of students from Florida International University casting their beam at Coreslab Structures (Miami) Inc. for the 2020–2021 PCI Big Beam Competition.

than in all my time reading textbooks and journal articles. I have also learned about the numerous resources available (many of them free) related to precast and prestressed concrete. Being able to participate in discussions with subject matter experts in the field is an invaluable experience.

I have also appreciated the support that PCI, its regional affiliates, and the PCI Foundation provide to professors. PCI offers numerous resources at no cost that have helped me develop content for my courses, including *Prestressed in a Box* (which I am currently revising), the *PCI Bridge Design Manual*, eLearning Modules, and many other assets that are available to professors and students. The Florida Prestressed Concrete Association, a regional chapter of PCI, has been incredibly supportive by facilitating plant tours, industry events, and invitations to regional chapter meetings, and providing resources for me and my students. The connections I have made through PCI have also provided unique opportunities for my students, as many industry professionals have presented in my classes either in person or virtually. In addition, the PCI Foundation has been supportive through its annual Professors Seminar and studio programs.

The Foundation has sponsored studios at more than 40 different universities, with more than 6000 students having participated to date. These studios help universities develop or improve their curricula related to precast and prestressed concrete design. The studio program emphasizes connecting students and faculty to industry. I was awarded a PCI Foundation Studio,

"Advanced Building and Bridge Construction with Precast Concrete," in January 2020. There were two primary goals for the studio: to develop a new course, "Precast Concrete Design," and to transform an existing course, "Prestressed Concrete Design," into a hybrid course with both synchronous and asynchronous components. Thanks to the support of the studio, I was able to develop the new course, including 633 pages of notes and 962 slides of content, to lead undergraduate and graduate students through the basic design and construction of precast concrete buildings and bridges. I also created 46 videos and more than 23 hours of content (publicly available on YouTube) based on 543 pages of notes and 734 slides for "Prestressed Concrete Design," and I provided students with the opportunity to interact with more than 30 different industry experts through guest speakers, plant tours, participation in PCI's Engineering Student Design (Big Beam) Competition, and end-of-semester design competitions with a panel of industry judges.

More recently, I have had a few additional balls to juggle: having three children ages three and under and being appointed interim department chair. Participation in PCI has continued to help me balance my time through this busy period.

While I have shared my experience with PCI, there are many other organizations that offer similar support. My recommendation to young engineers is to get involved and actively participate in organizations that best align with your interests and career goals. 