A life of research in the precast concrete industry

William Atkinson

Amir Fam, who grew up in Alexandria, Egypt, says he was always fascinated by freehand art, architecture, and structures, including architectural renderings.

He completed a five-year bachelor's degree in civil engineering at Alexandria University in 1991 and then completed research master's and doctoral degrees at the University of Manitoba in Winnipeg, Canada, in 1997 and 2000, respectively. He then spent two years as a postdoctoral fellow and instructor at North Carolina State University in Raleigh before starting his tenure-track academic career in 2002 at Queen's University in Kingston, ON, Canada.

Like many, coincidence led him to a profession in the precast concrete industry. "My passion for structures and architecture came together, and the right opportunity came my way," he says. "My master's degree, and then doctoral degree, under the supervision of Professor Sami Rizkalla, a prominent and leading researcher in precast and prestressed concrete, opened the door for me to some incredibly unique and exciting opportunities."

Fam's early research involved building and testing 30 ft (9.1 m) long one-third scale models of American Association of State Highway and Transportation Officials (AASHTO) girders for the first bridge ever built with pretensioned carbon-fiber-reinforced polymer (CFRP) strands harped at an angle and reinforced with CFRP stirrups, which are also used as shear connectors to the cast-in-place slab.

"I designed and helped build these girders at Con-Force Structures Ltd.—later bought by Armtec—in Winnipeg, Manitoba," he says. The results of these tests were instrumental in building the Taylor Bridge in Headingly, MB, Canada. "In my doctoral research, I worked closely with Lafarge to fabricate novel piles of precast concrete–filled glass FRP (GFRP) tubes. Results of this research were directly used to build the Route 40 Bridge in Virginia, the first of its kind in the world."

His continued passion for learning as much as he could about precast concrete plus his passion and enthusiasm for research and teaching combined with a prestigious Canada Research Chair position that was offered to him by Queen's University got him involved in academia.

"I have been at Queen's now for 21 years," Fam says. "My research has been primarily on concrete structures, including both precast and cast-in-situ. I have also been teaching prestressed concrete for nearly 20 years."

Fam joined PCI around 2005 and was named a PCI Fellow in 2018. "I enjoyed joining committees that are very relevant to my research and consistent with my interest, including FRP Composites, Prestressed Concrete Poles, Journal Advisory, and Journal Awards," he says.

Fam names one area of his career that he takes the most pride in. "It would be my research, which is characterized by thinking out of the box, innovation, and actual field applications," he says. "This includes prestressing with CFRP, concrete-filled FRP tubes for which I developed an AASHTO design guide, and, most recently, developing Canada's first and only large-scale rolling load simulator, known as ROLLS, for fatigue testing highway bridges under realistic heavy truck loads, which is one of very few in the world." Fam says he is also proud of his graduate students, who have all succeeded and moved on to have incredible careers. For instance, former student Valon Sylaj has dedicated his career to the precast concrete industry and is the new president of the Canadian Precast/Prestressed Concrete Institute.

In terms of advice to people new to precast concrete and to PCI, Fam recommends attending PCI conventions and Committee Days as often as possible. "You will meet people who will positively influence your career, and you will be treated and hosted very well in these events," he says. "Find interesting committees and join, but also become active and give back."

In reflecting on his career, Fam says he owes so much to many people, including Rizkalla, his mentor, and Amin Ghali of the University of Calgary, who died in April. "The precast, prestressed concrete analytical skills I acquired from him are incredibly valuable and unique," he says. "They also informed a new graduate course I introduced at Queen's."