

Pursuing Success

ACI Foundation Fellowship recipient Ziad Elaghoury talks about his passion for concrete

Each year, the ACI Foundation Fellowship program awards more than \$200,000 to undergraduate and graduate students to help them further their studies. With 38 scholarships and fellowships currently available, 2022-23 recipient Ziad Elaghoury says more students should apply.

“Aside from the financial aid, there are so many other benefits. You have opportunities to meet many different people from ACI and make valuable connections in the industry, and some scholarships come with internships,” he explained.

Elaghoury is a PhD student at the University of Western Ontario, London, ON, Canada, studying the assessment of concrete structures. He is the recipient of the Daniel W. Falconer Memorial Fellowship, named in memory of ACI’s former Managing Director of Engineering. The ACI Foundation grants the award to graduate students studying structural engineering with an emphasis on reinforced concrete design. It comes with an optional internship in the ACI Engineering Department.

“I’ve found that some students did not realize the full extent of fellowships and scholarships offered by the ACI Foundation, and some thought applying for one was a long shot. So, I’ve been advocating, and encouraging everybody to apply,” he said.

The Road to Concrete...and ACI

Elaghoury grew up in Dubai, the most populated city in the United Arab Emirates. The city has been experiencing a construction boom that started in the 1980s, accelerated in the 1990s, and continued at a rapid pace in the 2000s.

“I witnessed the construction of the Burj Khalifa, which is currently the world’s tallest building,” he said. “I remember poking my head through temporary fencing to see what was going on inside construction sites.”

Watching buildings rise all around him helped foster an interest in the structural engineering field. Hands-on experience as a civil engineering student turned that interest into a passion for building with concrete.

“I did an internship while an undergraduate working on a concrete construction site, which included making sure everything was up to code. That was a cool experience because there was always something interesting happening,” said Elaghoury. “There was always something going up, something coming down. Concrete was being mixed, being

placed. Reinforcing bar was installed. Formwork was set up, then stripped. You could also encounter the occasional problem, such as water leakage in the basement. I thought concrete construction was exciting.”

He chose to study concrete design in graduate school. During that time, Elaghoury was introduced to ACI.

“I received my undergraduate education and training in Canada, which has its own building codes. My first exposure to ACI codes was when I was working on concrete creep and shrinkage and came across this very nice ACI guide. I also was working on deflections, and ACI has an active committee that publishes useful documents on the topic. That’s when I started to dive into ACI documents, guides, and standards.”

Elaghoury’s master’s research initiated a review of the provisions in the CSA A23.3 Code, “Design of Concrete Structures,” concerning long-term deflections and a revision to Chapter 6 (Deflections) in the Cement Association of Canada’s *Concrete Design Handbook*. He presented his research at the Canadian Society for Civil Engineering 2019 Annual Conference, and his thesis paper, “Long-Term Deflections of Reinforced Concrete Beams,” was published in the conference proceedings.

The ACI resources were so helpful to his research that, upon finishing his degree, Elaghoury immediately applied to ACI Committee 435, Deflection of Concrete Building Structures. “It’s what my master’s thesis was on, and I wanted to collaborate with leaders in the field,” he said. “I was appointed as an associate member, and I really liked it. I wanted to be part of the development of the documents that I found very useful during my studies and my practice.”

Real-World Influences

With his master’s degree in civil engineering in hand, Elaghoury joined LeMessurier Consultants in Boston, MA, USA, as a structural engineer-in-training, working alongside structural engineers and architects to evaluate and rehabilitate existing concrete structures and design new ones. He recalls a project at a New Jersey high school for which they had to transform a concrete structure built in the early 1940s into a weight room.

“It was going to experience much heavier loads than it was designed for, so we had to come up with a scheme to assess the structure and then also rehabilitate it as needed. That was a cool project.”

Through his work, Elaghoury realized a whole new dimension to concrete design and construction: assessment of existing concrete structures. He began attending ACI committee meetings about the assessment and repair of structures, eventually becoming a voting member and Secretary of ACI Subcommittee 562-B, Loads, which is a subcommittee of ACI Committee 562, Evaluation, Repair, and Rehabilitation of Concrete Structures. The subcommittee is chaired by his master's (and now doctoral) advisor, F. Michael Bartlett, FACI.

Elaghoury also joined the Massachusetts ACI Initiatives Collaboration Group, a task force that helped facilitate the adoption of ACI CODE-562-19 in the Massachusetts State Building Code.

Research Project

“My decision to pursue a PhD is driven by my enjoyment from serving on ACI committees, my interest in existing concrete structures, and my continued passion for making contributions to knowledge,” Elaghoury said.

His doctoral research topic is the reliability-based assessment of existing concrete structures. The ultimate objective is to develop pragmatic code criteria that allow practitioners to make decisions on the anticipated remaining life of an existing structure, determine the scope and depth of assessment, and quantify the extent of necessary strengthening. Elaghoury's work also will contribute to sustainability, as it should enable the continued use of existing concrete infrastructure.

He is conducting the research under the supervision of Bartlett. An ACI Fellow, Bartlett encouraged Elaghoury to apply for the ACI Foundation's fellowships.

The Value of an ACI Foundation Fellowship

Elaghoury is starting his second year in his doctoral program. While the first year was dedicated to required courses, he says his research work is now taking off.

“The second year of a PhD program tends to be the busiest year,” he explained. “You're wrapping up coursework and starting to really focus on research. At the same time, you have to write a proposal for a comprehensive exam—and then take a comprehensive exam. Plus, you've got to write papers for publications to establish yourself as a competent, competitive applicant for future scholarships. So not having to worry about money right now is great!”

The benefits are not all financial. Since receiving the Fellowship, Elaghoury said several ACI members have reached out to connect with him, including Board of Direction members. He's looking forward to meeting them in person at the next ACI Concrete Convention.

“There's been a lot of support from ACI members. These are the people whose work I've read or am currently reading, whose presentations I saw. To have them contact me was really nice. It was a confidence boost.”

Elaghoury plans to pursue an academic career where he



Elaghoury (left) with his advisor, F. Michael Bartlett



Elaghoury giving a conference presentation

can conduct research to improve the quality and economy of concrete construction, and through teaching, encourage bright young minds to find rewarding careers in the concrete industry. He plans to remain involved with ACI and contribute to the continued development of codes and standards.

“That intersection between academics and industry is where I want to be,” Elaghoury said. “I'm also hoping to use my knowledge of concrete to help reduce global warming or help achieve net-zero carbon emissions in the concrete building sector. It was an honor to receive an ACI Fellowship to support my pursuit of these goals.”

Elaghoury said he is grateful to the ACI Foundation for making his application experience as painless as possible: “This has probably been the smoothest application process that I've ever been through. The ACI Foundation contacts I worked with were communicative, helpful, and patient. I just want to thank everyone who was involved.”