

Recently Completed Research Projects

Several research projects supported by the ACI Foundation's funding initiatives have been completed. These projects address critical challenges in materials, structural design, and construction practices, contributing valuable insights and advancements to the concrete industry.

Nano-Modified Calcined Clay-Based Cement Concrete: A High Modulus Concrete with Low Carbon Footprint

Principal Investigator: ACI member Panagiotis Danoglidis, The University of Texas at Arlington, Arlington, TX, USA

Endorsement: ACI Committee 236, Material Science of Concrete

This project explored the use of carbon nanotubes (CNTs) in metakaolin-based cementitious composites, resulting in significant improvements in mechanical properties like

compressive strength (+21%), modulus of elasticity (+34%), and flexural strength (+88%). The findings demonstrate the potential for creating high-performance, low-carbon concrete, offering a sustainable solution for the industry.

Novel Concrete Containments for Nuclear Reactors – Delamination Testing of Curved Wall Sections

Principal Investigator: ACI member Christopher Jones, Kansas State University, Manhattan, KS, USA

Endorsement: Joint ACI-ASME Committee 359, Concrete Containments for Nuclear Reactors

This research focused on preventing delamination failures in curved post-tensioned concrete structures, such as nuclear containment buildings. The study validated the effectiveness of steel fibers and optimized reinforcement designs to enhance structural performance and safety. These findings will inform design provisions for critical infrastructure.

Sustainable and Safe Reinforced Concrete Retaining Walls

Principal Investigator: ACI member Luis B. Fargier-Gabaldón, University of Notre Dame, Notre Dame, IN, USA

Endorsements: ACI Subcommittee 318-F, Foundations (discharged), and ACI Subcommittee 318-E, Section and Member Strength

This project evaluated the impact of shear design provisions in ACI 318-19 on retaining wall designs. The findings recommend reverting to the shear design equations from ACI 318-14 to ensure safe, cost-effective, and environmentally sustainable retaining walls.

One-Way Shear Strength of Large Beams and Foundation Elements Containing High-Strength Longitudinal Reinforcement

Principal Investigator: Honorary Member Jack Moehle, University of California, Berkeley, Berkeley, CA, USA

Endorsement: ACI Subcommittee 318-F, Foundations (discharged)

This study used finite element modeling to investigate the one-way shear strength of mat foundations and large beams. The results provide valuable insights into the effects of axial loads, member depth, and reinforcement ratios, offering practical recommendations for designing safer and more efficient foundation systems.

These projects exemplify the ACI Foundation's commitment to advancing concrete knowledge and practice. For final reports and to explore other ACI Foundation-funded research projects, visit www.acifoundation.org/research/researchprojectportal.aspx.

Plan Your Legacy

Have you thought about the advancement of the concrete industry in the years to come? The ACI Foundation programs focus on building the future of the concrete industry and rely on organizations and individuals like you who want to pay it forward and give back to the industry that you helped advance and for which you have a passion.

- A gift to the ACI Foundation is an opportunity to invest in the next generation of leaders, new technical knowledge, and innovation.
- A gift to the ACI Foundation as part of your financial plan, whether through your estate, will, donor-advised fund, cash, stocks, bonds, insurance, or other retirement assets, will carry your technical legacy into the future of the concrete industry.

It's never too early to plan your legacy. To start the conversation, contact Kari Martin, ACI Foundation Fundraising Manager, at +1.248.848.3757 or kari.martin@acifoundation.org.

Tribute Donations

Honor the memory of someone who made a significant impact in your life with a tribute donation to the ACI Foundation. Your gift will preserve their legacy while also making a positive impact on the industry. A tribute donation lays the groundwork for a bright future while honoring the past. Donate online at www.acifoundation.org/giving.

Dates and Location for the 2026 Concrete Innovation Forum

The ACI Foundation's Concrete Innovation Council (CIC) recently gathered with participants and presenters to discuss innovation and technology at the 2025 Concrete Innovation Forum. The successful event was held August 12-14, 2025, at the Hotel Clio in Denver, CO, USA. If you were unable to attend this year, the 2026 Concrete Innovation Forum will be taking place August 18-20, 2026, at the Hyatt Regency Columbus in Columbus, OH, USA. To learn more about the Concrete Innovation Forum, visit www.acifoundation.org/innovation/forums.

New Collaboration with Charles Pankow Foundation and Other Industry Organizations

The ACI Foundation is partnering with the Charles Pankow Foundation (CPF), American Institute of Steel Construction (AISC), National Council of Structural

Engineers Associations (NCSEA), Magnusson Klemencic Associates (MKA) Foundation, and the American Society of Civil Engineers (ASCE) Foundation to fund "CURE – Code Updates for Reduction of Embodied-Carbon." The objective of this CPF-led project is to identify and prioritize provisions in current codes and standards that could result in a substantial reduction of embodied carbon without compromising safety. Many codes and standards, such as ASCE/SEI 7, ACI CODE-318, and the AISC specification, guide civil and structural engineering practices. The scope of this project is to review those primary codes and standards and produce a "road map" identifying areas in those documents that should be studied for potential change. The Principal Investigator is Abbie Liel, Clark Endowed Faculty Fellow, University of Colorado Boulder, Boulder, CO, USA; and the Co-Principal Investigator is ACI member Ian McFarlane, Senior Principal, Magnusson Klemencic Associates.



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