Knowledge to Practice:

aci Foundation

Research Project to Help Unify Durability Specifications

Earlier this year, the ACI Foundation's Concrete Research Council (CRC) approved the funding of four deserving research projects. This edition of *Knowledge to Practice* features one of the four projects; the subsequent three editions will focus on each of the remaining research concepts.

Establishing unified durability guidance on chloride ion limits, freezing-and-thawing performance, and external sulfate attack for ACI documents

A recent review of ACI documents pertaining to information on chlorides in concrete revealed that considerable disagreement exists between five different ACI guidance documents. ACI 201, 222, 301, 318, and 350 are not in accord concerning chloride limits in new concrete, strength, and air content for avoiding freezing-and-thawing-related damage and strength requirements for avoiding sulfate damage. These discrepancies between documents have led to confusion among concrete design and construction professionals. This project aims to bring unified guidance concerning chloride ion limits, freezing-and-thawing performance, and external sulfate attack for ACI documents.

"The best way to address concrete durability in specifications and guidance documents is a source of controversy," states Jason Ideker, one of the project's principal investigators. "The results of this research will provide recommendations on unified durability specifications and exposure category descriptions to ACI committees. This will provide a strong foundation for document revision."

The project's goal of bringing congruent information concerning these limits and requirements will be accomplished by rigorous statistical analysis of existing data from field exposure sites, published literature, and laboratory testing. This data analysis will provide evidence-based results that will inform relevant ACI committees on how to establish unified guidance leading to the solution of the current document discrepancies.

The research for this project is estimated to be completed in just over 1 year once analysis begins. The project comprises five stages:

1. Create an industry advisory board;
2. Procure and organize all relevant data from existing literature, laboratory testing, and field exposure sites;
3. Perform the statistical analysis of the organized data;
4. Establish the recommended specification indicators; and
5. Assess the recommended specification indicators.

The principal investigators are Jason Ideker, Oregon State University; Kimberly Kurtis, Georgia Institute of Technology; Michael Thomas, University of New Brunswick; and Anthony Bentivegna, CTLGroup. ACI 201, 222, 318, and 350-B comprise the supporting committees and subcommittee; the project also received industry support from the U.S. Army Corps of Engineers.

Concrete 2029 Continues Building to the Future

The ACI Foundation's Strategic Development Council (SDC) is facilitating the development of Concrete 2029, a strategy and plan for the improvement of the concrete construction industry. An initial workshop for Concrete 2029 was held May 10, 2016, in San Antonio, TX, immediately preceding SDC's Technology Forum #39. Sponsored by the SDC and the American Society of Concrete Contractors (ASCC) and moderated by Peter Emmons, President of the ASCC Foundation and Founder and CEO of STRUCTURAL Group, Columbia, MD, the event focused on issues such as defining and improving in-place concrete quality, workplace productivity, and industry promotion and perception. Presentation topics included:

- The Misconstrued Image of Concrete;
- The Owner's Mindset;
- Consequences of Poor Design;
- What Must Happen to Improve Productivity; and
- Attracting and Training the Right People.

These topics were selected by the Concrete 2029 planning team to take into consideration multiple viewpoints, including those of contractors, designers, and owners, with the goal of moving the entire concrete construction industry forward. Over 65 individuals, representing a broad cross section of the industry, attended the initial workshop—underscoring the importance of Concrete 2029's place in planning for the future of the concrete construction industry.

Following the initial presentations, workshop attendees met as smaller (breakout) groups to analyze the strengths, weaknesses, opportunities, and threats (SWOT) faced by the concrete industry. Specific themes for the breakout groups included contractor certification, the construction workforce, durability assessment of materials and systems, productivity, and image of the industry. While technology was not a separate theme, it was included in every discussion, particularly as it relates to improvement of the industry's quality, productivity, or image. The breakout groups then presented their findings to the full workshop.

The Concrete 2029 planning team has since refined the findings of Workshop 1, and the SDC has announced a second workshop. This event will further define and prioritize the goals for populating a roadmap for the concrete construction industry. "The industry has pulled together to identify the trends that are affecting it," stated Doug Sordyl, Managing Director of the SDC. "Continued vigilance and unified industry action can turn our challenges into an immense opportunity."

Concrete 2029 Workshop 2 is scheduled for September 7, 2016, in Salt Lake City, UT, preceding SDC's Technology Forum #40. Registration information for the upcoming Concrete 2029 workshop, as well as the presentations and agenda from the first workshop, are available at **www.ConcreteSDC.org**.

2029 Planning Team

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- Scott Anderson, Keystone Structural Concrete, LLC
- Ann Daugherty, ACI Foundation
- Peter Emmons, STRUCTURAL
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- John Hausfeld, Baker Concrete Construction, Inc.
- Bill Palmer, Hanley Wood, LLC
- Bill Phelan, The Euclid Chemical Company
- Chris Plue, Webcor Builders
- Doug Sordyl, Strategic Development Council

Stehly Memorial Hockey Game is a Tremendous Success

The fourth annual installment of the Richard D. Stehly Memorial Hockey Game raised over $2350 for the Richard D. Stehly Memorial Scholarship. "I really want to thank everyone who came out to watch, skate, and donate," said Larry Sutter, the organizer of this year's game, "Especially, I want to mention the support this game received from the local Wisconsin ACI Chapter; without their help in organizing the logistics of this event, it would not have been possible."

The latest Richard D. Stehly Memorial Hockey Game took place during The ACI Concrete Convention and Exposition in Milwaukee, WI, this past April. ACI members and staff comprised the rosters of the two competing teams. The fifth installment of the Richard D. Stehly Memorial Hockey Game is being planned for next year's spring ACI Convention, March 26-30, 2017, in Detroit, MI. Sutter hopes that the Richard D. Stehly Memorial Hockey Game becomes an annual tradition with the hosting chapter competing to better the fundraising efforts of the previous hosting chapter; all funds go to support the Richard D. Stehly Memorial Scholarship.

Richard (Dick) Stehly had been a member of ACI since 1980 and was elected President in 2010. He believed that attracting and educating ACI's youngest members was crucial for both the future of the concrete industry and ACI. His conviction for investing in ACI's posterity led him to bequeath a portion of his estate to fund future ACI scholarships and fellowships. Stehly personally organized the first two editions of this hockey game before his passing. The game was then memorialized in his honor. "It was very much in Dick's character to quietly organize things like this game," said Sutter. "Once Dick passed, the Minnesota Chapter and now the Wisconsin Chapter stepped up to honor Dick and raise money for his scholarship."

The Richard D. Stehly Scholarship is awarded annually through the ACI Foundation to an outstanding student enrolled in an undergraduate degree program studying concrete with an emphasis on structural design, materials, or construction. More information about the Foundation's Fellowships and Scholarships can be found at **www.ACIFoundation.org**.

ACI members and staff pose for a team picture before the Richard D. Stehly Memorial Hockey Game