67th Annual
CONCRETE CONFERENCE

Thursday, December 7, 2017
Earle Brown Heritage Center
6155 Earle Brown Drive
Brooklyn Center, Minnesota

cce.umn.edu/concrete

Sponsored by:
College of Continuing Education
University of Minnesota
Department of Civil, Environmental, and Geo-Engineering, College of Science and Engineering, University of Minnesota
About the Conference

In 1950, concrete industry professionals met with University of Minnesota engineering faculty and continuing education staff to design a professional development program for engineers, contractors, architects, consultants, educators, and engineering students. The result, an inaugural conference in December 1951, became an annual University offering now in its 67th year.

Who Should Attend

Conference attendees include practicing engineers, engineering faculty, consultants, contractors, concrete contractors, and state and county agencies’ employees.

Award Recipients

Since 1974, the Concrete Conference Planning Committee has presented an award to concrete industry professionals for outstanding service to the industry. Award recipients include:

1974
Theodore A. Hoffmeyer
Edward F. Young

1975
Edgar Carsberg
Theodore W. Thomas

1976
Arthur Egan
Fred R. McComb

1977
Dr. Paul Andersen

1978
Charles W. Britzius

1979
Gust Reiersen
Ole Reiersen

1980
Robert W. Randall

1981
Charles McGough

1982
Joseph Shiely, Jr.

1983
Norman Henning

1984
John Meyer

1985
Irving J. Dahlstrom

1986
Richard C. McNamara

1987
Don Johnson

1988
Stan Lee

1989
E. J. (Al) Renier
Chester Sazenski

1990
W.T. McCalla

1991
Charles Ballou

1992
James Hill

1993
David Hanson

1994
Richard Vasatka

1995
Tom Becken

1996
John Bailey, Jr.

1997
Brian Pashina

1998
Ladislav Cerny

1999
Vern Jellum
Ralph Swanson

2000
Terry Behlmer

2001
Dick Stehly

2002
Doug Schwartz

2003
Gary Brenno

2004
Wayne Brock

2005
Roger Rauum

2006
Don Flemming

2007
Roger Cole

2008
Ralph Rattray, Awarded Posthumously
David Buesing

2009
Michael Ramerth

2010
Dave Pace

2011
Darrell Stahlecker

2012
Catherine French

2013
Kevin MacDonald

2014
Dan Dorgan

2015
Peter Fischer

2016
Michael Johnson

2017
Thomas J. Downs
7:45 a.m.  Welcome  
John Rivisto, Conference Planning Committee Chair

Morning Session Co-Moderators: John Rivisto and Kevin MacDonald

7:50  Admixture—State of the Industry
Joseph A. Daczko, FACI, Business Development Manager, BASF Construction Chemicals, Beachwood, Ohio

This session will briefly review the fundamental performance of admixtures in concrete and how this performance affects all members of the concrete construction process, from concrete producer to contractor, engineer, and architect. The session will then discuss how greater awareness of current and future admixture technologies, combined with a holistic view of the construction process, has the potential to greatly improve concrete construction safety and efficiency.

Joseph A. Daczko, FACI, is the Business Development Manager with the admixtures systems group of BASF Construction Chemicals, Cleveland, Ohio. Mr. Daczko has over 25 years of experience in concrete materials and is the author of a book on self-consolidating concrete entitled *Self-Consolidating Concrete: Applying What We Know*. He is a Fellow of the American Concrete Institute and a member and former Chairman of ACI Committee 237 - Self-Consolidating Concrete.

8:35  The Completion of a Vision—Formwork Design, Construction, and Placement of the Guam Naval Hospital Replacement
Eric Peterson, Construction Manager, Webcor Concrete, San Francisco, California

The Guam Naval Hospital Replacement Project exists as an almost obscure project few have heard of, yet it was designed and constructed with significant architectural appeal. Constructed on an island 5,600 miles from the mainland coast of the continental United States, the Naval hospital was built in an environment with the potential for the highest categories of tropical storms and seismic events. This presentation will discuss the logistical, formwork, and physical challenges undertaken for the construction of this new Naval facility, from the builder’s perspective, with emphasis being placed on formwork design and construction and placement methods.

Eric Peterson holds the title of Construction Manager and is employed by Webcor Builders of San Francisco, California. He has been involved in concrete construction for over forty years, starting his career as a formwork carpenter. His project experience has included projects in the residential, commercial, industrial, environmental, and transportation sectors. He has been involved with the American Concrete Institute for over 10 years and currently serves on Committees 117, 237, 301, and 347.
Concrete, Corn, and Cold Weather

Ken Hover, Professor of Civil & Environmental Engineering, and Weiss Presidential Fellow, Cornell University, Ithaca, New York

There is a lot more to cold-weather concrete than just preventing freezing. When early-age concrete strength is important, as for removal of forms or shores, prestressing, construction loads, or carrying service loads, cold-weather depression of strength gain becomes critical. Cold temperatures retard hydration, setting, and strength gain of portland cement, and likewise retard the growth of grass and field crops. This is why the age at which a concrete pavement can be opened to traffic and the optimal date for harvesting corn can be predicted using an agricultural technique called the “Maturity Method.” But just like you have to adjust maturity predictions for different corn hybrids, you have to adjust concrete strength predictions for different concrete mixtures. And you have to take into account the strange complication that for both corn and concrete, as the temperature begins to warm up, strength gain and growth rate increase, but when the temperature gets too high, the reverse happens!

Ken Hover served as a captain in the US Army Combat Engineers and was project engineer and project manager for Dugan and Meyers Construction Co. in Cincinnati, working on buildings, interstate bridges, and water treatment plants. Joining THP Structural Engineers in Cincinnati, he became partner and manager engaged in the design of buildings and industrial facilities. He holds bachelor’s and master’s degrees in civil engineering from the University of Cincinnati and a PhD in structural engineering from Cornell University. Ken joined the Cornell faculty after winning the Exxon Fellowship, designed to bring experienced professionals to engineering programs at US universities. He teaches reinforced and prestressed concrete design, concrete materials, and construction management. His research focuses on freeze-thaw durability, mixture proportions and ingredients, behavior and testing of fresh concrete, and the impact of construction operations and construction environment on concrete quality. Ken is a licensed professional engineer in Ohio and New York, a past president of the American Concrete Institute, and a Distinguished Member of ASCE. In 2006 he was named one of the “Ten Most Influential People in the Concrete Construction Industry.”

Break

Evaluation and Use of Recycled Concrete Aggregate

Chris Rogers, MSc, Chair, Canadian Standards Committee on Concrete Materials and Methods of Concrete Construction, Beeton, Ontario, Canada

As aggregate supplies dwindle, engineers are seeking to use recycled concrete as aggregate. The speaker will discuss how to evaluate recycled concrete for this application and some of the possible pitfalls with the use of RCA and how to obtain good concrete performance.

Chris Rogers teaches Geology for Engineers at Ryerson University in Toronto, Ontario, Canada. In 2008 he retired from the Ministry of Transportation of Ontario where he had worked for 32 years. He had been Manager of the Soils and Aggregates Section in the Materials Engineering and Research Office. He is involved in studies of aggregate and concrete durability, having published over 90 papers on these topics. He is a member of the Canadian Standards Association Concrete and Concrete Materials Committee, and also a member of the American Society for Testing and Materials (ASTM) committee on concrete and concrete aggregates (C9).

Reinforced Shotcrete Repair of Prestressed Bridge Girder Ends

Carol K. Shield, PE, PhD, College of Science and Engineering Distinguished Professor, Department of Civil, Environmental, and Geo- Engineering, University of Minnesota, Minneapolis, Minnesota

Over time, some of the girder ends on Bridge 2756 suffered significant corrosion damage that exposed shear reinforcement, exterior flange prestressing strands, and the sole plate anchorages. Girder ends were repaired in September 2013 by encasing a four-foot length of the end using a system of dowels, additional shear reinforcement, and shotcrete. As the bridge was demolished for replacement, four girder ends were salvaged to experimentally determine the efficacy of the repair.

Carol Shield is a CSE Distinguished Professor in the Department of Civil, Environmental, and Geo- Engineering at the University of Minnesota. She served as chair of ACI Committee 440 from 2009–2016 and is currently vice-chair of Subcommittee 440H Internal Reinforcement. Her primary research interests are the use of composite materials in infrastructure and the behavior of prestressed concrete structures.
<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
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<tr>
<td>11:45</td>
<td><strong>Concrete Award Presentation</strong></td>
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<td>2017 award presented to Thomas J. Downs, Forensic Experts PLLC</td>
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<td>Noon</td>
<td><strong>Lunch</strong></td>
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<td>1:00 p.m.</td>
<td><strong>ACI Guidance on the Design of Concrete Internally Reinforced with FRP Reinforcement</strong></td>
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<td>Carol K. Shield, PE, PhD, College of Science and Engineering Distinguished Professor, Department of Civil, Environmental, and Geo-Engineering, University of Minnesota, Minneapolis, Minnesota</td>
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<td>The ACI Committee 440 Fiber-Reinforced Polymer Reinforcement updated the 440.1R-15 Guide for the Design and Construction of Structural Concrete Reinforced with Fiber-Reinforced Polymer (FRP) Bars and is currently working on creating a design code, dependent on ACI 318 Building Code Requirements for Structural Concrete. This talk will go over the major points of designing flexural members internally reinforced with FRP.</td>
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<td>1:45</td>
<td><strong>Curing Concrete: When, Where, and Why?</strong></td>
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<td>Ken Hover, Professor of Civil &amp; Environmental Engineering, and Weiss Presidential Fellow, Cornell University, Ithaca, New York</td>
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<td>The critical need for curing arises from the inescapable fact that the hydration of portland cement requires water, and the volume occupied by water in the fresh concrete will ultimately translate to empty pores in the hardened concrete. Like in any love-hate relationship, strong, durable concrete can’t live with water, and it can’t live without it! Aside from hydration, the loss of water from concrete leads to shrinkage, and this process begins far sooner than measured by standard shrinkage tests. So a key to sustaining hydration of cement, and delaying shrinkage until the concrete is tough enough to handle it, is to not let the concrete surface even think about starting to dry, and applying curing water to that surface as soon as it can tolerate it. There are first-class to no-class ways to cure concrete, but the question is, do you really have to cure at all? The answer depends on how much of your concrete mixture’s potential strength and durability you want to achieve.</td>
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<td>Ken Hover served as a captain in the US Army Combat Engineers, and was project engineer and project manager for Dugan and Meyers Construction Co. in Cincinnati, working on buildings, interstate bridges, and water treatment plants. Joining THP Structural Engineers in Cincinnati, he became partner and manager engaged in the design of buildings and industrial facilities. He holds bachelor’s and master’s degrees in civil engineering from the University of Cincinnati, and a PhD in structural engineering from Cornell University. Ken joined the Cornell faculty after winning the Exxon Fellowship, designed to bring experienced professionals to engineering programs at US universities. He teaches reinforced and prestressed concrete design, concrete materials, and construction management. His research focuses on freeze-thaw durability, mixture proportions and ingredients, behavior and testing of fresh concrete, and the impact of construction operations and construction environment on concrete quality. Ken is a licensed professional engineer in Ohio and New York, a past president of the American Concrete Institute, and a Distinguished Member of ASCE. In 2006 he was named one of the “Ten Most Influential People in the Concrete Construction Industry.”</td>
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<td>2:30</td>
<td><strong>Break</strong></td>
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3:00  Performance Evaluation and Specification of Fresh and Hardened Concrete Using Its Electrical Properties

O. Burkan Isgor, PhD, PE (ON), Professor, Oregon State University, Corvallis, Oregon

Electrical properties of fresh and hardened concrete, such as its electrical resistivity and formation factor, can be used to assess its in-service performance. Therefore, these properties can also be used to specify performance-based concrete. In this presentation, we will demonstrate the recent developments in these applications of electrical properties of concrete.

O. Burkan Isgor is a Professor of Civil Engineering and Materials Science at Oregon State University, Corvallis, Oregon. The ultimate goal of his research is to develop integrated numerical and sensory tools for infrastructure owners and operators so that they can better evaluate the state of their assets and make informed decisions on their future. These tools help engineers manage infrastructure by allowing them to schedule maintenance, rehabilitation, and replacement operations more efficiently and accurately.

3:45  US Cement Outlook

Edward Sullivan, Chief Economist and Group Vice-President, Portland Cement Association, Skokie, Illinois

Edward Sullivan will present a brief assessment of current economic and market conditions and provide insight into the future direction of the US economy, construction markets, and the US cement outlook.

Edward Sullivan is chief economist and group vice-president for PCA and heads their Market Intelligence Group. As chief economist he directs all of PCA’s assessments for target markets and provides forecast guidance on the economy, cement consumption, and the construction industry for the United States and internationally.

Edward Sullivan has been named among the top ten influencers in the concrete industry domestically and internationally by industry trade magazines. In past years, he was named by the Chicago Federal Reserve as the most accurate forecaster among 30 top economists. Various other forecasting surveys have placed him among the most accurate construction economists in the country. Edward’s analysis and views regarding the construction, cement, and concrete industries are widely used in corporate planning efforts, government policy, and media.

4:30  Exhibitor Reception and Cash Bar - NEW THIS YEAR!

6:30  Adjourn
Other Offerings for Design and Construction Professionals

Structural Engineering Series
January 30, February 6, 13, 20, 27, March 6, 2018
cc.e.umn.edu/structural-engineering-seminar-series

Professional Development Programs
The University of Minnesota, College of Continuing Education offers certificates in Project Management, Business Analysis, Process Improvement, and more. For further information please visit cce.umn.edu/professional education or contact one of our learner representatives at 612-624-4000.

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Saint Paul, Minnesota

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University of Minnesota
Saint Paul, Minnesota

Katherine Hagberg
University of Minnesota
Saint Paul, Minnesota

*Planning Committee Chair
General Information

Location and Hotel Accommodations

The conference is held at the Earle Brown Heritage Center, 6155 Earle Brown Drive, Brooklyn Center, MN 55430. For directions, please visit their website: www.earlebrown.com. The Earle Brown Heritage Center is located near the intersection of I-94/694 and Shingle Creek Parkway. There is ample free parking surrounding the facility.

Convenient lodging for out-of-town participants is available at the Embassy Suites Minneapolis-Brooklyn Center Hotel, 6300 Earle Brown Drive, Brooklyn Center, MN 55430. The rate is $129, plus tax, for a two-queen suite. Participants are responsible for making their own lodging reservations. To make a reservation, call 763-560-2700 or 800-362-2779. To receive the special conference rate, please identify yourself as a participant of the 67th Annual Concrete Conference. Reservations must be made by November 14, 2017. After this date reservations will be accepted on a space-and-rate-available basis. The hotel is next to the Earle Brown Heritage Center and parking is free.

Registration and Fees

The early registration fee is $155 for registrations received by November 17; after November 17 the fee is $175. You are encouraged to register early to take advantage of the early fee. The conference fee includes conference materials, continental breakfast, luncheon, and breaks.

A refund, minus $30, will be issued for registration cancellations received by November 20. If you cancel after this date, you will not be eligible for a refund. A full refund will be issued if the University of Minnesota cancels the conference.

Continuing Education Units (CEUs)

This conference awards 0.65 University of Minnesota, College of Continuing Education CEUs to those attending all sessions. One University of Minnesota, College of Continuing Education CEU is defined as 10 contact hours of participation in an organized continuing education experience under responsible sponsorship, capable direction, and qualified instruction. A CEU certificate will be sent to each participant after the conference. A permanent record of CEUs earned will be maintained by the University of Minnesota Admissions and Record Transcript Office.

Exhibitor Reception—New This Year!

The exhibitor reception will be held on Thursday, December 7 from 4:30–6:30 p.m. Conference attendees are invited to attend this reception to view the exhibits, meet the exhibitors, and enjoy appetizers and a cash bar.

Program Information
Email: cceconf3@umn.edu
Phone: 612-624-4230

Registration Information
Email: ccereg@umn.edu
Phone: 612-625-2900
67th Annual Concrete Conference
Thursday, December 7, 2017 · Earle Brown Heritage Center, Brooklyn Center, Minnesota

Registration Form

Please print or type

Last Name

First Name

MI

Company/Institution

Title/Position

Email

Work Address

City

State

ZIP Code

Daytime Telephone

Meal Options

☐ I request a vegetarian lunch. ☐ I request a vegan lunch. ☐ I request a gluten-free lunch.

Payment

☐ Enclosed is $155 (check or money order) in full payment of the conference registration fee (on or before November 17).

☐ Enclosed is $175 (check or money order) in full payment of the conference registration fee (after November 17).

☐ Please bill my organization (purchase order or letter of authorization attached).

☐ Please charge my: ☐ VISA ☐ MasterCard ☐ American Express ☐ Discover

Card Number

Expiration Date

Dollar amount to charge

Name as it appears on card (please print)

Signature of cardholder

How to Register

Online at: cce.umn.edu/concrete

Mail registration to: University of Minnesota, College of Continuing Education, 353 Ruttan Hall, 1994 Buford Ave, Saint Paul, MN 55108

Fax registration with credit card or purchase order to: 612-624-5359. (This fax will be received in a secure location.)

If your check is returned because of insufficient funds, closed account, or because you have made a stop payment request you will be charged a check-handling fee of $20.

The information on this form is private data, used to identify and locate you, obtain payment, and enable instructors to better know their audience. Name, address, and payment method are mandatory. Information on this form may be shared with instructors and program co-sponsors.
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This brochure is available in alternative formats. Disability accommodations are available upon request. Please contact Katherine Hagberg, 612-624-4230 or email cceconf3@umn.edu.

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