



68<sup>th</sup> Annual

# CONCRETE CONFERENCE

December 6, 2018

## FINAL PROGRAM

*Earle Brown Heritage Center, Brooklyn Center, MN*

*Sponsored by:*

College of Continuing and Professional Studies,  
University of Minnesota

Department of Civil, Environmental, and  
Geo- Engineering, College of Science and  
Engineering, University of Minnesota



College of Continuing  
& Professional Studies

UNIVERSITY OF MINNESOTA

### **7:00 a.m. Registration and Continental Breakfast**

Moderators: *Kevin MacDonald*, Beton Consulting Engineers;  
*Mike Hemstad*, Short Elliott Hendrickson, Inc.

### **7:45 Welcome – Carriage Hall**

*Kevin MacDonald*, Conference Planning Committee Chair

### **7:50 PCA Award of Excellence**

Presentation of "Award of Excellence in PCA's 2018 16th Concrete Bridge Awards Competition" to Minnesota Department of Transportation

### **8:00 Building the Wanda Vista**

*Maxim Levin*, James McHugh Construction Company

At almost 1,200 feet tall, Vista Tower will become the third-tallest building in Chicago, and the tallest structure in the world designed by a woman. The 96-story glass-and-concrete tower will house the ultra-luxurious Vista Residences condominiums and the five-star Wanda Vista Hotel. The building's unique design and dimensions allow for unparalleled views of the city skyline and Lake Michigan.

### **9:00 Freeze-Resistant Concrete: Is It Possible and Is It Cost Effective?**

*Warren McPherson, Jr.*, Performance Concrete Design, LLC

Sometimes the demands of our industry ask us to do the seemingly impossible. Freeze-resistant concrete, to many, is in that category. In reality, freeze-resistant concrete is possible and affordable, under the right circumstances. Proper mix design and many successful projects will be discussed.

### **9:45 Break**

**10:15 Shear Design Provisions: A New Approach**

*David Sanders, Iowa State University*

The presentation will summarize a multiyear effort that has led to proposed new one-way shear equations for reinforced concrete in ACI 318, Building Code Requirements for Structural Concrete. The equations include size-effect and longitudinal reinforcement terms that are new to ACI 318 shear capacity. The proposed method includes conditions where the existing concrete contribution to shear resistance term (i.e.,  $2\sqrt{f'_c} b_w d$ ) can be used.

**11:00 Legal Issues in Concrete Construction**

*Jeff Coleman, The Coleman Law Firm, LLC*

Like other high-stakes industries, concrete construction invites a fair share of litigation. In this presentation, Mr. Coleman, author of Legal Issues in Concrete Construction, will discuss specific construction and legal topics such as cracking, load tickets, substantial performance, the Spearin doctrine, responsibility for mix designs, impossibility of performance, and many more. The presentation will provide interpretations of the courts' findings and contrast the decisions with other results where possible.

**11:45 Concrete Award Presentation**

2018 award presented to Dan Vruno, American Engineering Testing

**Noon Lunch – Garden City Ballroom and Harvest**

Moderators: *Rachel Detwiler, Beton Consulting Engineers;*  
*Amy Trygestad, Chase Engineering, LLC.*

**1:00 p.m. Why Do You Lose Air Volume When Pumping Air-Entrained Concrete and Why Does the Air Come Back?**

*Tyler Ley, Oklahoma State University*

This presentation summarizes a laboratory and field study that investigated the loss of air while pumping air-entrained concrete. The air was shown to be lost during pumping and then regained over time. This was observed in both the lab and field mixtures by hardened air void analysis, freeze thaw testing, and the Super Air Meter. This means that current specifications for testing air-entrained concrete after a pump should be modified.

**1:45 The History of PCA's Design and Control of Concrete Mixtures**

*Michelle Wilson, Portland Cement Association*

In 1918, Duff A. Abrams's Design of Concrete Mixtures was published as Bulletin 1 of the Lewis Institute's Structural Materials Research Laboratory. Bulletin 1 provided the relationship between strength and water to cement ratio, aggregate grading, and aggregate fineness modulus in designing and proportioning concrete mixtures. In 1924, Design and Control of Concrete Mixtures was first published. The 24-page bulletin focused on the mix design method established by Abrams. The 16th edition has grown to 632 pages, including the many advances in concrete technology that have occurred over the past 100 years, and reflects the latest information on standards, specifications, and test methods.

**2:30 Break****3:00 Do We Need Cylinders? Alternate Methods of Concrete Acceptance**

*Mary Vancura, Beton Consulting Engineers*

Standard-cured concrete cylinders tell us something about the quality of the concrete delivered to the site. If we want to know about the in-place strength we can match-cure cylinders, but once they're broken we can't learn anything more. Maturity helps us monitor and even predict the in-place strength. We can also try out "what if" scenarios in case we want to accelerate the strength gain or minimize cracking. The Silver Ramp at MSP Airport will be used as an illustration of how maturity works in practice.

**3:45 Zero-Lot-Line Shotcrete of Basement Walls**

*Charles Hanskat, American Shotcrete Association; Marcus von der Hofen, Coastal Gunitite Construction Company;*  
*Frank Townsend, Superior Gunitite*

Zero-lot-line building foundations have been widely used for supporting new structures in close proximity to existing buildings in congested metropolitan areas. This presentation from the American Shotcrete Association will cover design and construction aspects of these walls, and highlight how shotcrete placement provides superior strength, flexibility, efficiency, and durability.

**4:30 Adjourn****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 and Professional Studies 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.