



**MARCH 11 2020**



**TEMPE, ARIZONA, UNITED STATES**

# **Prevention through Design Workshop 2020**

## **Keynote Speakers:**

**Jonathan A. Bach, PE, CSP, CIH**

**Safety Engineer**

**CDC/NIOSH Prevention through Design**

**John Gambatese, PhD, PE**

**Professor**

**Oregon State University**

**Michael D. Flowers, PE, LMASCE**

**National Academy of Construction**

**Retired President and CEO**

**American Bridge Company**

**TJ Lyons, OHST CSP CRIS**

**Regional SHE Manager**

**Total Facility Solutions**

**Michael Toole, PhD, PE**

**Dean**

**College of Engineering**

**The University of Toledo**



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NATIONAL ACADEMY  
OF CONSTRUCTION

## **PtD Workshop 2020: CURRENT AND FUTURE STATE-OF-THE-ART ON RESEARCH, PRACTICE, & EDUCATION**

The first PtD workshop identified, exchanged, and leveraged experiences and expertise on PtD research, practice, and education efforts at engineering, design, contractor, client and owner organizations, insurers, US colleges and universities, and agencies. Workshop participants actively engaged in the assessment and comparison between outstanding and poor implementation and education cases. With subject matter expert (SME) feedback, a baseline on the current PtD state-of-the-art was established. Past, current, and potential PtD research efforts were discussed. High payoff research topics were characterized. Synergistic and collaborative opportunities were sought among SMEs, researchers, and academics.

The first PtD workshop was scheduled the day after CRC 2020 at the same venue, and thus it became an excellent opportunity for CRC attendees willing to contribute to the advancement of PtD and seeking to interact with SMEs and officers at multiple agencies. Representatives of NIOSH, CPWR, ASSP, ASCE, ISSS, and NAC attended the workshop.

# Agenda

- 7:30 – 8:00            Gather and Check In  
Light refreshments, coffee
- 8:00 – 8:15            Welcome and Introduction (Dr. Grau and Dr. Gibson)
- 8:15 – 8:35            [NIOSH and PtD \(Jonathan Bach\)](#)

## State of Art Research

- 8:35 – 9:10            [PtD Research: Why Implement Prevention Through Design \(Dr. John Gambatese\)](#)
- 9:10 – 9:45            [Moving from Risk Management to Risk Elimination \(TJ Lyons\)](#)
- 9:45 – 10:05           Networking Break
- 10:05 – 11:30           Facilitated Breakout on Research and PtD Practices (with report outs)
- 11:30 – 12:30           Networking Lunch

## State of Art Practice

- 12:30 – 1:00            [Engineering Education and Project Execution \(Mike Flowers\)](#)

1:00 – 1:30

(Dr. Mike Toole)

Opportunities and Challenges for PtD Education

1:30 – 2:50

report outs)

Facilitated Breakouts Education and Practice (with

2:50 – 3:10

Networking Break

3:10 – 3:30

Dr. Gibson)

Summary and wrapup, path forward (Dr. Grau and

## Summary Report

Prevention through Design 2020: Current and Future State-of-the-Art on Research, Practice and Education

## Keynote Presentations



## Jonathan A. Bach, PE, CSP, CIH

Safety Engineer

CDC/NIOSH Prevention through Design

### **NIOSH Prevention through Design**

**Abstract:** The keynote presentation provides a relevant history of PtD, highlights work by NIOSH and others, provides no-cost PtD educational resources covering key construction features and trades, and summarizes both the “Priority” and the “Process” of PtD. A summary of key resources and accomplishments is provided. In addition, the presentation demonstrates by means of hard numbers the powerful advantages of PtD methods and their ability to amplify the impact by construction professionals.

[Keynote Presentation](#)

[Keynote Slides](#)

#### **Short Bio**

Mr. Bach is a professional engineer serving at the National Institute for Occupational Safety and Health, NIOSH, as the coordinator for the Prevention through Design (PtD) program. He is certified in industrial hygiene and safety. After gaining his engineering degree at Syracuse University, Mr. Bach served as an active duty Bioenvironmental

Engineering officer with the U.S. Air Force in Colorado, Turkey, Italy, and Pennsylvania. In 2002 he became a regional industrial hygiene manager for Naval Healthcare New England. In 2004 Mr. Bach moved to Germany to serve with the U.S. Army Corps of Engineers as an environmental project manager and the industrial hygienist for European operations. In 2007, Mr. Bach became the overall Health and Safety Manager for the Army Corps of Engineers in Europe. From 2014 to this date, Mr. Bach's work has focused on PtD with NIOSH.



## **Dr. John Gambatese, Ph.D., PE**

Professor, School of Civil and Construction Engineering

Oregon State University

## **PtD Research: Why Implement Prevention through Design?**

**Abstract:** This presentation describes research that supports selecting PtD as a safety control on projects. Multiple research studies have been conducted to explore the benefits of PtD, best practices for its implementation, and factors that inhibit its implementation in the design and construction industry. The presentation explains the results of PtD research with the goal of demonstrating the value of addressing and mitigating construction site safety in the design of a project.

[Keynote Presentation](#)

## Keynote Slides

### Short Bio

Dr. Gambatese's educational background includes Bachelor and Master of Science degrees in Civil Engineering from the University of California at Berkeley, and a PhD in Civil Engineering from the University of Washington. He has worked in industry for six years as a structural engineer in San Francisco and for one year as a project engineer for a construction management firm in Seattle. Dr. Gambatese's expertise is in the broad areas of construction engineering and management, and structural engineering. He has performed research and published numerous articles on construction worker safety, work zone design and safety, prevention through design, risk management, sustainability, constructability, innovation, and construction contracting. He is a member of the American Society of Civil Engineers (ASCE) and American Society of Safety Professionals (ASSP). He is a licensed Professional Civil Engineer in California.



**TJ Lyons, OHST CSP CRIS**

Regional SHE Manager

## Total Facility Solution

# We need to move from Risk Management to Risk Elimination or Moving from Risk Management to Risk Elimination?

**Abstract:** The keynote presentation focuses on honest conversations on the value of PtD including case histories here in the US and overseas. Blunt examples of how several current practices provide “killing conditions” to workers and owners long after construction is done are discussed. How firms can use PtD to increase efficiency and, indeed, profit while realizing a safer project by default is demonstrated. An emphasis is placed on how Ptd not only supports a “safety thing” but also a good business practice. The presentation is supported with numerous examples of PtD applications that firms have already incorporated leveraging the need for their competitors to step up and embrace a philosophy to succeed.

[Keynote Presentation](#)

[Keynote Slides](#)

### Short Bio

Mr. Lyons is the Regional Environmental, Health, and Safety Manager for Total Facility Solutions, a company of the Exyte Group. For many years, he has worked for some of the largest construction firms in the US and with substantial experience working with Department of Defense. He is Board certified as an Occupational Health and Safety Technologist and Certified Safety Professional. As a result of his long-term advocacy and advancement of health and safety in the design and construction industry, Mr. Lyons is the recipient of multiple awards, including the 2018 [IRMI Words of Wisdom \(WOW\) Award](#) and 2001 IRMI [Gary E. Bird Horizon Award](#). Mr. Lyons was a past chapter writer for the American Society of Testing of Materials and for the recent American Society of

Safety Professionals' Construction Safety Management and Engineering. He is Past president of the Hudson River Valley Chapter of the American Society of Safety Engineers. His current focus aside from PtD is helping bring awareness to suicide in the construction industry.



## **Michael Flowers, PE, LMASCE**

National Academy of Construction

Retired President and CEO

American Bridge Company

## **Prevention through Design – Engineering Education and Project Execution**

**Abstract:** The keynote presentation emphasizes the synergistic relationship between PtD education (or lack of) and safety conditions during project execution. Based on a critique of current state-of-the-art

design and construction practices, PtD opportunities are identified, exemplified, and discussed. Structural stability concepts and practices are leveraged to highlight the opportunity that sophisticated owner, design, and contractor organizations leverage by integrating prevention analysis in the design process.

## [Keynote Presentation](#)

## [Keynote Slides](#)

### **Short Bio**

Michael D. Flowers is the retired President and CEO of American Bridge Company. He received his Bachelor of Science in Civil Engineering from West Virginia University and his Master of Science Degree from the University of Pittsburgh. Flower's has worked over 44 years in the engineering and construction of high-rise buildings and complex bridges. He oversaw several notable bridge projects in his career including the rehabilitation of the Williamsburg Bridge in New York City, the Lions Gate Bridge in Vancouver, the historic Wheeling Suspension Bridge in West Virginia, the retrofit of the Tagus River Bridge in Lisbon, Portugal, and the Woodrow Wilson Bridge in Alexandria, VA. Mike is the recipient of multiple awards including the prestigious Golden Beaver Award for his work on the new Bay Bridge, and ASCE's Roebling Award for outstanding leadership in construction of the most challenging bridge projects ever attempted in the modern era. Mike is an active member of the National Academy of Construction, ASCE, the West Virginia Academy of Civil Engineers, serves with an advisory capacity at both West Virginia University and University of Pittsburgh, and is a trustee at Berea College in Kentucky.



## **Dr. Michael Toole, Ph.D., PE**

Dean, College of Engineering

The University of Toledo

### **Opportunities and Challenges for PtD Education**

**Abstract:** If designing out hazards is a powerful way of making our construction sites and other workplaces safer, shouldn't all engineers receive training on occupational safety and on preventing injuries through design? This presentation focuses on how PtD can be an excellent way to address topics included in engineering program criteria that are frequently not given sufficient attention, including engineering ethics, social sustainability, integrated design and construction, life-cycle perspectives, public policy and leadership.

[Keynote Presentation](#)

[Keynote Slides](#)

**Short Bio**

T. Michael Toole is the Dean of the College of Engineering at the University of Toledo. Previous employment includes serving as an officer in the U.S. Navy Civil Engineer Corps, management positions with a publicly traded homebuilder and a multidisciplinary engineering firm, and Associate Dean of Engineering and Professor of Civil and Environmental Engineering at Bucknell University. Mike received his B.S. from Bucknell and his Masters and Ph.D. from M.I.T. He is a professional civil engineer, a member of NSPE, a Fellow in ASCE, the Chair of the Ohio Engineering Deans Council, and hosts [www.designforconstructionsafety.org](http://www.designforconstructionsafety.org).

## Venue

The workshop was held in College Avenue Commons, home to ASU's School of Sustainable Engineering and the Built Environment and its Del E. Webb School of Construction, located at 660 S. College Avenue, Tempe, AZ 85287.



## Contact

David Grau, Ph.D., PE [david.grau@asu.edu](mailto:david.grau@asu.edu)

G. Edward Gibson Jr, Ph.D., PE [GEwardGibsonJr@asu.edu](mailto:GEwardGibsonJr@asu.edu)



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