



**WISCONSIN SOCIETY OF
PROFESSIONAL ENGINEERS**

2018 WSPE Discovery Conference

April 25-26, 2018

*WSPE Annual Board Meeting, April 24, 2018 at 4:00-6:00 pm
All members are welcome to attend

TUNDRA LODGE

865 Lombardi Ave Green Bay, WI, 54304
T: (920) 405-8700 or (877) 886-3725
www.tundralodge.com



Registration

Visit www.wspe.org for conference registration

Hotel Reservations/Location

TUNDRA LODGE

865 Lombardi Ave Green Bay, WI, 54304

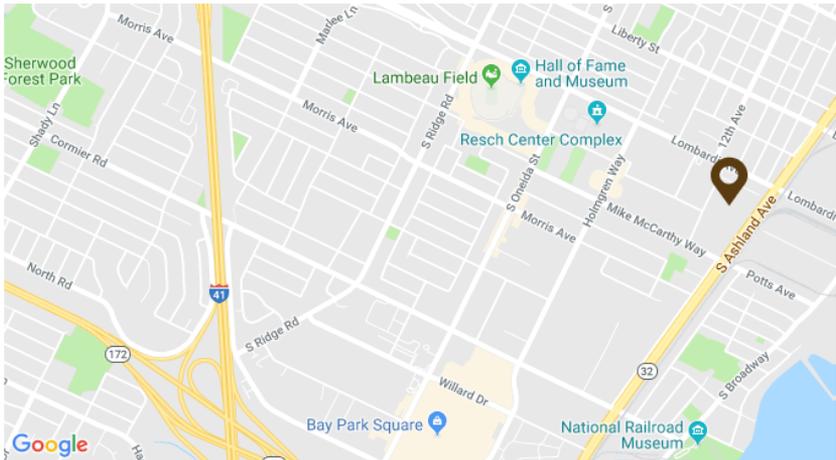
T: (920) 405-8700 or (877) 886-3725

www.tundralodge.com

Room Block for Conference Participants and Attendees

Expires on April 1, 2018

Room rate: \$99.95/night + tax



Supporting Organizations

Silver Sponsor



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Day 1

Conference Schedule

April 25

(7 possible PDH)

Time	Session
7:00 – 7:45 am	Registration and Continental Breakfast
7:45 – 8:00 am	Welcome
8:00 – 9:45 am	General Session 1 <i>Milwaukee Bucks Arena Long Span Roof</i>
9:45 – 10:05 am	Networking Break
10:05 – 10:55 am	Technical Sessions 1
11:05am – 11:55 pm	Technical Sessions 2
12:00 – 1:50 pm	Lunch <i>Dr. Patricia Terry, Director of Engineering Technology, University of WI – Green Bay</i> <i>Kirsten Reader, Department of Safety and Professional Services</i>
2:00 – 2:50 pm	Technical Sessions 3
2:50 – 3:10 pm	Networking Break
3:10 – 4:00 pm	Technical Sessions 4
4:10 – 5:00 pm	General Session 2 <i>David Martini, PE, FNSPE, Vice President - National Society of Professional Engineers</i>

Day 2

Conference Schedule

April 26

(6 possible PDH)

Time	Session
7:30 – 8:30 am	Registration and Continental Breakfast
8:30 – 8:50 am	Welcome
8:50 – 9:40 am	General Session 3 <i>David Martini, PE, FNSPE, Vice President - National Society of Professional Engineers</i>
9:40 - 10:00 am	Networking Break
10:00 - 10:50 am	Technical Sessions 5
11:00 – 11:50 am	Technical Sessions 6
12:00 – 1:30 pm	Lunch <i>Wisconsin Department of Transportation Secretary Dave Ross</i>
1:30 – 2:00 pm	Networking Break
2:00 – 2:50 pm	General Session 4 <i>Brett Wallace, PE</i>
2:50 – 3:10 pm	Networking Break
3:10 – 4:00 pm	Technical Sessions 7
4:10 – 5:00 pm	General Session 5 <i>Susan Finco and Cole Buergi Leonard and Finco Public Relations, Inc.</i>

General Session 1

(2 PDH)

Speakers: Adam Mentink, JP Cullen and Fred Groth, PE, SE, GRAEF

Topic: Bucks Arena Long Span Roof Erection

Speakers will present the details of the erection plan required to erect the (9) long span trusses at the new Milwaukee Bucks Arena that will revitalize the Milwaukee Entertainment District. The session will discuss the engineered erection procedure and sequence established including secondary members, temporary bracing, and shoring towers required to support the roof structure until the permanent roof bracing was in place. Due to the “cantilevered” North and South roof edge design, other aspects such as the concrete gutters along the North and South roof edges also needed to be considered as part of the engineered roof erection plan, as these areas needed to be started prior to the roof diaphragm being complete. Due to the surrounding structure already erected and the tight site restrictions with only having an “ice rink” size erection and steel laydown area, the session will include details on the crane modeling required to ensure the correct equipment was used and the site conditions were exactly as planned at every stage of the erection process.

Technical Sessions 1

(1 PDH Each)

1A

Speaker: Mike Hutchinson, NEBB CP NAMI

Topic: State Archive Preservation Facility Mechanical Systems

The talk will focus on the unique mechanical system(s) installed for this State Archive Preservation Facility. This building has special zoning for cold rooms, humidity and temperature control, etc. Also a review of the unique commissioning requirements required for the facility.

1B

Speakers: Dan Kuczka, PLS and Sammy Van Pelt, Kapur & Associates, Inc.

Topic: Keeping Mega Projects On Track

I-69 Monroe County, Indiana. Under a public-private partnership agreement (P3), the State of Indiana hired a developer to upgrade 21 miles of State Road 37 between Bloomington and Martinsville, Indiana to full Interstate standards. The developer was to design, build, finance and operate the facility for 35 years. When the developer experienced several delays due to financial and other difficulties, the State of Indiana terminated the P3 arrangement citing default on the contract terms and construction being delayed two years from the initial October 2016 completion deadline.

1C

Speaker: John Luczaj, Prof of Geoscience, University of WI – Green Bay

Topic: Aquifer Drawdown and Recovery in the Northeast Groundwater Management Area, Wisconsin: A Century of Groundwater Use

The Northeast Groundwater Management Area (Wisconsin) contains two major cones of depression in a confined sandstone aquifer. Each cone is centered near cities that have used groundwater for over 100 years. Changes in the development of groundwater and surface water resources have resulted in major changes to the potentiometric surface by as much as 70 m in central Brown County.

Technical Sessions 2

(1 PDH Each)

2A

Speakers: Scott Borroughs and Pete Scharenbroch, JP Cullen

Topic: Epic Systems Campus 4 - Design and Construction Challenges

Epic Systems Campus 4 is a 1.3M sqft construction project comprised of 5 office buildings and an underground parking garage that was completed in 28 months. This presentation will focus on the unique design and construction challenges the team solved while constructing this Campus, one of the challenges being 3 of the office buildings are located directly on top of the underground parking structure. The team's use of prefabrication to accelerate schedule and save money will also be highlighted.

2B

Speakers: Brittany Lewin & Larry Wiest

Topic: Engineering and Commercial Building Update

The Department of Safety and Professional Services will cover recent updates including the Occupational License Study, topics related to Professional Engineering, and Commercial Buildings.

2C

Speakers: Sean Hayes (Milwaukee County: MKE - Airport Engineering) & Nathan Guequierre (AECOM)

Topic: Planning for Sustainability at MKE

Milwaukee County has just completed a sustainability management plan for Mitchell Airport. This presentation provides an overview of the planning process and focuses on key initiatives to reduce MKE's environmental footprint and maximize its economic and social benefits for southeast Wisconsin.

Technical Sessions 3

(1 PDH Each)

3A

Speaker: Bachir Mekki, VESDA Manager-Great Lakes

Topic: VESDA-E: Advancements in Technology in Aspirating Smoke Detection (ASD)

VESDA is smoke detection solutions with continuous air sampling from a network of pipes within the protected area. VESDA buys the critical time needed to investigate an alarm and initiate an appropriate response to prevent injury, property damage or business disruption. VESDA have been certified and approved by regulatory bodies worldwide.

3B

Speaker: Jonathan Riehl, Systems Engineer in the Traffic Operations and Safety Lab at the University of WI-Madison

Topic: Automated and Connected Vehicles

The Wisconsin Automated Vehicle Proving Grounds was officially designated by the US Department of Transportation in January 2017. The proving grounds, which is managed by the University of Wisconsin-Madison, involves projects across the state in automated and connected vehicles. This presentation will highlight the past year of developments

3C

Speaker: Scott Stein, Leonard & Finco Public Relations

Topic: Nine years of the Fox River Cleanup Project

The Fox River Cleanup Project is designed to reduce the risk to human health and the environment due to the presence of PCBs. The project spans a 13.3-mile stretch of the river from Little Rapids to the bay and involves a combination of dredging, capping and sand covering.

Technical Sessions 4

(1 PDH Each)

4A

Speakers: Wesley T. Reynolds, AIA/ Principal, and Robert Wheat, AIA, Project Architect, OPN Architects

Topic: UW Madison Health Science Learning Center Renovation

The talk will focus on the renovation of the UW Madison Health Science Learning Center including design and reprogramming new spaces in existing building. The challenges included sequencing construction to minimize disruption, updating interior finishes and meeting an aggressive construction schedule.

4B

Speakers: Robert Rosenberger & Miles Winkler

Topic: Environmental Law Changes

Update on changes related to engineering and Wisconsin Department of Natural Resources

4C

Speaker: Edwin Hahlbeck PE, CMfgE, Powertrain Engineers Inc.

Topic: Gear Design and Application

Gears are used in many applications and require an understanding of how these applications influence their life. We will look at the basics of gear sizing per application, modern methods of life simulation and how design choices influence cost. We will also present an overview on testing and risk reduction for new designs.

General Session 2

(1 PDH)

Speakers: David Martini, PE, FNSPE and Vice President of the National Society of Professional Engineers

David Martini is the current Vice President of NSPE. He is a 1994 graduate of North Dakota State University with a BS in Civil Engineering. In 2002, he also received a MS in Infrastructure Systems Engineering from the University of Minnesota. Mr. Martini is a Principal Engineer with the firm Bolton & Menk, Inc. in Chaska, MN. He is a Licensed Professional Engineer with job responsibilities that include the management of a variety of municipal engineering projects including water supply, wastewater, drainage, and streets. Mr. Martini has been very active in promoting and protecting the value of Professional Engineering Licensure by actively advocating that certain positions and responsibilities require a Licensed Professional Engineer to ensure that the health, safety, and welfare of the public is protected.

Topic: Ethics Presentation 1

Note: Two different ethics presentations are offered. Attending both will fulfill ethics category for WI PE license renewal.

General Session 3

(1 PDH)

Speakers: David Martini, PE, FNSPE and Vice President of the National Society of Professional Engineers

Topic: Ethics Presentation 2

Note: Two different ethics presentations are offered. Attending both will fulfill ethics category for WI PE license renewal.

Technical Sessions 5

(1 PDH Each)

5A

Speaker: Eric Fiele, PE, Pierce Engineers, Inc.

Topic: Hill Farms new WDOT Office Buildings

The talk will focus on the layout and design of structural systems for the new office building and parking structures. The project was design-build with a very tight schedule.

5B

Speaker: Glenn Villa

Topic: Design of Gear drive assemblies. Loads, deflections, and vibrations

There are many design considerations when putting together a motor/drive assembly. Is the foundation strong enough? Are the parts compatible during operation? Will there be any destructive vibrations? The presentation will cover three case studies using Finite Element Analysis of motor/drive systems.

5C

Speaker: Robert Lodge, Ph.D. P.G.

Topic: A “new” engineering frontier in Wisconsin: Understanding the geology of sulfide mines in Wisconsin.

The processes that formed northern Wisconsin’s geology 1.9 billion years ago also produced tremendous quantities of copper, zinc, lead, gold, and silver metallic resources. From a resource perspective, many of these metals are contained in or associated with sulfide minerals. Extraction and processing these minerals can have significant negative impacts on the natural environment. Best practices in the early days of mining perpetuated this negative perspective of the industry. This presentation will discuss the geology of Wisconsin’s sulfide ore bodies, the controversy behind sulfide mining, and potential engineering challenges.

Technical Sessions 6

(1 PDH Each)

6A

Speaker: Robert A Greco, PE, WEC Energy Group

Topic: WEC Energy Group Remediation Program Overview

WEC Energy Group’s remediation program cleans up legacy sites for return to productive use. Since its inception in 2001, there have been many successes with more on the way. One project currently in progress is at the former Milwaukee Coke & Gas site located on Milwaukee’s inner harbor.

6B

Speaker: Bryant Stempki, PE and Vas Dudnik, EIT, GRAEF

Topic: UW Madison Chemistry Building

Chemistry Building is nine story addition with large open lecture areas on the ground floor and research labs, classrooms and offices on upper floors. The structural challenges were reviewing structural systems for transfer beams over ground floor lecture areas, choosing the right structural system for upper floors that will minimize structural depth, meet NIH vibration criteria and provide large open bay spacing (30 to 36 column spacing) for future flexibility.

6C

Speaker: Clare Hirssig, PE and Bill Lynch, VP of Engineering; Faith Technologies

Topic: Gordon Bubolz Nature Preserve Microgrid

This presentation will discuss the most advanced microgrid in the Midwest. This microgrid integrates five distributed energy resources (DER's), weather data, two storage technologies, and economic data. The microgrid was designed to deliver on a multi-part value proposition – beyond economics, resiliency, and sustainability to “redefining what is possible”.

General Session 4

(1 PDH)

Speaker: Brett Wallace, PE, WisDOT Foxconn Project Director

Topic: Wisconsin Department of Transportation's Foxconn Opportunity

Foxconn is building North America's first state-of-the-art advanced display manufacturing campus in Mount Pleasant in Racine County. The Wisconsin Department of Transportation (WisDOT) will give an update on the public infrastructure development in and around the campus. The 20 million square foot campus, equivalent to the size of 13 Lambeau Fields, is the largest economic development project in Wisconsin history and the largest greenfield investment by a foreign-based company in U.S. History.

Technical Sessions 7

(1 PDH Each)

7A

Speaker: Jason Gerke, PE and Bob Jeffers, PE, GRAEF

Topic: UW Madison Health Science Learning Center Renovation

The UW Madison Health Science Learning Center project involves renovation of an existing building for future program spaces. The talk will concentrate on the mechanical and electrical challenges of updating these systems for the new programmed spaces.

7B

Speaker: David Hart

Topic: Mapping depth to bedrock in Wisconsin

Depth to bedrock is important for many land use decisions but maps and data are not always readily available or their limitations well understood. This presentation describes how we determine depth to bedrock and interpret the data to create depth to bedrock maps.

7C

Speaker: Thomas Signund, P.E. NEW Water

Topic: Resource Recovery at NEW Water

NEW Water, the brand of the Green Bay Metropolitan Sewerage District, has completed construction of its \$170 million resource recovery and electrical energy (R2E2) project. The new technologies provide treatment of solids generated at the Green Bay and De Pere facilities with a focus on recovering valuable resources such as energy and nutrients. The presentation will discuss how this innovative project has served as the catalyst for the future for NEW Water.

General Session 5

(1 PDH)

Speakers: Susan Finco and Cole Buergi, Leonard & Finco Public Relations, Inc.

Topic: Ensure Success through Pro-active Public Involvement!

“The squeaky wheel gets the grease” saying is magnified exponentially thanks to social media. In today’s tech driven world, a small group, or even just one person, can create enough backlash to stall or completely stop a new project. Learn the tools and tactics to prevent it.

**Thank You for Attending
the 2018 WSPE
Discovery Conference!**