11th University Transportation Centers
Spotlight Conference
Rebuilding and Retrofitting the Transportation Infrastructure
September 26-27, 2017
Washington, DC
Organized by
Transportation Research Board
Supported by
The University Transportation Centers Program
Office of the Assistant Secretary for Research and Technology (OST-R)

www.trb.org/conferences/UTC2017.aspx

The National Academies of
SCIENCES • ENGINEERING • MEDICINE

TRANSPORTATION RESEARCH BOARD
## Schedule of Events

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<td>8:00 AM</td>
<td>Plenary Session: Reminder &amp; Charge to Track Groups</td>
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<tr>
<td>8:30 AM</td>
<td>Opening Session: Keynoters &amp; Charge to Track Groups</td>
<td>Track Breakouts (4) Presentations and Wrap Up</td>
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<td>Plenary Session: Report Backs and Discussion: What Did We Learn?</td>
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<td>Implementation Panel and Adjourn</td>
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<td>3:30 PM</td>
<td>Plenary Session: Day One Report</td>
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<td>4:00 PM</td>
<td>Backs on the State of the Practice and Ideas for Advances</td>
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<td>Poster Session and Reception</td>
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### Hotel Shuttle Service

**Tuesday, September 26**
- **Pick-up**
  - 7:00 a.m.–7:15 a.m.: Meet at Hotel Lobby
  - 7:15 a.m.–7:30 a.m.: Leaving the hotel to Keck Center
- **Drop-off**
  - 6:30 p.m.–6:45 p.m.: Meet outside Keck Center
  - 6:45 p.m.–7:00 p.m.: Leaving Keck Center to the hotel

**Wednesday, September 27**
- **Pick-up**
  - 7:00 a.m.–7:15 a.m.: Meet at Hotel Lobby
  - 7:15 a.m.–7:30 a.m.: Leaving the hotel to Keck Center
Please join us in September for the 11th Annual University Transportation Centers Spotlight Conference. This event will bring together those who generate new concepts that address transportation problems and opportunities and those who own and manage our transportation systems. The focus this year will be on rebuilding and retrofitting transportation infrastructure, goals that are critical to our society and economy. The conference will give you the opportunity to share ideas and needs about transportation infrastructure, and through that exchange to enhance transportation performance.

The planning committee has created a rich and informative experience for all of us. Together we encourage you to engage, share ideas, learn, and help define a path toward more effective and efficient transportation infrastructure for the future. We look forward to seeing you at this important conference.

—Joseph Schofer
Chair, 2017 UTC Spotlight Planning Committee
Professor and Associate Dean of Engineering
Northwestern University

Planning Committee
Joseph Schofer, Northwestern University
Sreenivas Alampalli, New York State Department of Transportation
John Bulinski, CALTRANS
Steven Gillen, Illinois Tollway
Shauna Hallmark, Iowa State University
Kamal Khayat, Missouri University of Science and Technology
David Kosnik, CTLGroup
Ali Maher, Rutgers, The State University of New Jersey
Charles Schwartz, University of Maryland

Liaison
Robin Kline, OST-R, U.S. Department of Transportation
Timothy A. Klein, OST-R, U.S. Department of Transportation
Thomas G. Bolle, U.S. Department of Transportation (retired)

TRB Staff
Thomas M. Palmerlee, Associate Division Director
Mai Quynh Le, Associate Program Officer
Conference Sessions

Tuesday, September 26, 2017

7:30 a.m.–5:00 p.m., Outside Keck 100
Registration

7:30 a.m.–8:30 a.m., Outside Keck 100
Breakfast

8:30 a.m.–10:00 a.m., Keck 100
Opening Session

Welcome and Introduction
Joseph Schofer, Professor of Civil Engineering and Transportation, Northwestern University

Keynote Presentations—the Challenges of Today and Tomorrow

- ASCE Grand Challenge
  Anthony Bartolomeo, President, Pennoni Associates
- SEPTA: Pushing Past Just Survival
  Jeffrey Knueppel, General Manager, Southeastern Pennsylvania Transportation Authority (SEPTA)

Charge to the Track Groups
Joseph Schofer, Professor of Civil Engineering and Transportation, Northwestern University

10:00 a.m.–10:30 a.m., Outside Keck 100
Break

10:30 a.m.–Noon
Track Breakouts: Needs, Advances, and Opportunities Before Us

Track 1: How Are We Doing? Condition Assessment and Evaluation, Keck 103
Sreenivas Alampalli, Director, New York State Department of Transportation, presiding
David Kosnik, Senior Engineer, CTL Group, recording

Innovative, practical technologies and approaches to evaluate current and future infrastructure conditions to assure safe and reliable infrastructure and support informed asset management.

- Infrastructure Monitoring and Assessment: State-of-the-Art and Future
  Farhad Ansari, Professor, University of Illinois, Chicago
- Accelerated Testing for Infrastructure Applications: Challenges and Opportunities
  Frank Moon, Professor of Civil and Environmental Engineering, Rutgers University

Track 2: Rehabilitating and Restoring the Current System, Keck 105
Ali Maher, Director of CAIT, Rutgers, The State University of New Jersey, presiding
Kamal Khayat, Professor, Missouri University Of Science and Technology, recording

Method, designs, and materials to rebuild and retrofit transportation infrastructure that will deliver effective and efficient performance and preserve resources for future generations.

- A Roadmap for Test Methods, Models and Specifications for Concrete Durability Performance
  Jason Weiss, Director of the Kiewit Center for Infrastructure and Transportation Research, Oregon State University
- Performance Engineered Concrete Mixtures (PEMs) for Transportation Infrastructure Repair
  Matthew D’Ambrosia, Principal Engineer, CTLGroup
Track 3: Rapid Repair and Keeping Things Moving, Keck 106  
John Bulinski, District Director, CALTRANS, *presiding*  
Steven Gillen, Deputy Program Manager/Materials, Illinois Tollway, *recording*

Technologies and decision tools for quick restoration of deteriorated infrastructure, while assuring network resilience during repair activities, infrastructure failures and natural disasters.

**How the Illinois Tollway Rebuilds/Expands a Metropolitan Expressway System Using 20 Billion Dollars of Private Funding with Minimal Impact to the Daily Commuters**  
Paul Kovacs, Chief Engineering Officer, Illinois State Toll Highway Authority

**Illinois Tollway Life-Cycle Assessment – Tool Development and Implementation**  

Track 4: Managing the Assets, Keck 100  
Shauna Hallmark, Director, Iowa State University, *presiding*  
Sue McNeil, Professor, University of Delaware, *recording*

Strategies and tools for tracking and managing infrastructure assets to ensure the long term preservation of transportation infrastructure.

**Using Transportation Asset Management to Improve System Performance**  
Butch Wlaschin, Head, FHWA Asset Management Office (retired)

**Implementing a Transit Asset Management Program at a Legacy Transit System**  
Laura Zale, Senior Asset Management Engineer, SEPTA

Noon–1:00 p.m., *Outside Keck 100*  
**Lunch**

1:00 p.m.–3:00 p.m.  
**Track Breakouts Discussion (Continued)**

Track 1: How Are We Doing? Condition Assessment and Evaluation, Keck 103  
Sreenivas Alampalli, Director, New York State Department of Transportation, *presiding*  
David Kosnik, Senior Engineer, CTL Group, *recording*

Innovative, practical technologies and approaches to evaluate current and future infrastructure conditions to assure safe and reliable infrastructure and support informed asset management.

**Condition of Our Bridges and of their “Conditions”: An Owner’s Perspective**  
Bojidar Yanev, Executive Director, Bridge Inspection & Bridge Management, New York City Department of Transportation

**Extending Life of Bridges through Robotic Condition Assessment and Minimally Invasive Rehabilitation**  
Nenad Gucunski, Professor and Chair of Civil and Environmental Engineering, Rutgers University

Track 2: Rehabilitating and Restoring the Current System, Keck 105  
Ali Maher, Director of CAIT, Rutgers, The State University of New Jersey, *presiding*  
Kamal Khayat, Professor, Missouri University Of Science and Technology, *recording*

Method, designs, and materials to rebuild and retrofit transportation infrastructure that will deliver effective and efficient performance and preserve resources for future generations.

**The Slow Race: Implementation of Innovations in Materials, Design, and Construction within DOT Organizations**  
Tyson Rupnow, Associate Director, Louisiana Transportation Research Center

**Accelerated Bridge Construction: National Perspective and ABC-UTC Activities**  
Astor Azizinamini, Professor and Chair of Structural and Bridge Engineering, Florida International University
Track 3: Rapid Repair and Keeping Things Moving, Keck 106
John Bulinski, District Director, CALTRANS, presiding
Steven Gillen, Deputy Program Manager/Materials, Illinois Tollway, recording

Technologies and decision tools for quick restoration of deteriorated infrastructure, while assuring network resilience during repair activities, infrastructure failures and natural disasters.

- **Rapid/Overnight Renewal of America’s High Volume Roadways Using Innovative Precast Concrete Pavement Technology**
  Shiraz Tayabji, Senior Principal Engineer, Advanced Concrete Pavement Consultancy LLC

- **Accelerating Construction Using Prefabricated Bridge Elements Connected with UHPC**
  Gregory Nault, Bridge Engineer, LafargeHolcim - Ductal

Track 4: Managing the Assets, Keck 100
Shauna Hallmark, Director, Iowa State University, presiding
Sue McNeil, Professor, University of Delaware, recording

Strategies and tools for tracking and managing infrastructure assets to ensure the long term preservation of transportation infrastructure.

- **Asset Management and Resilience: Connecting the Concepts to Building and Rebuilding Decisions**
  Sue McNeil, Professor, University of Delaware

3:00 p.m.–3:30 p.m., Outside Keck 100

Break

3:30 p.m.–5:00 p.m., Keck 100

Plenary Session: Day One Report Backs on the State of the Practice and Ideas for Advances
Sreenivas Alampalli, New York State Department of Transportation, presiding

5:00 p.m.–6:30 p.m., Keck Atrium

Poster Session and Reception

Track 1: How Are We Doing? Condition Assessment and Evaluation

**Structural Assessment of Existing Road Bridges in Germany**
Matthias Mueller, Juergen Krieger, Federal Highway Research Institut (BASt)

**Allowing 129,000 Pound Trucks on Our Highways; What is the Cost? What are the Benefits?**
Ahmed Ibrahim, Nicholas Saras, University of Idaho

**A Primer on Concrete Pavement Forensics and Deterioration**
Timothy Martin, CTLGroup

**Statistical Method for Long-term Monitoring of Bridge Performance Using Structural Health Monitoring (SHM) and Weigh-in-Motion (WIM) Data**
Fiorella Mete, Northwestern University; David Kosnik, CTLGroup

**Automated Identification and Evaluation of Factors Influencing Highway Construction Projects**
Ashraf Salem, Osama Moselhi, Concordia University

**Health Monitoring Schemes for Double-Track Steel Railway Bridges**
Daniel Linzell, Ahmed Rageh, University of Nebraska-Lincoln

**Road Infrastructure Assessment with Smartphones in Vehicles**
Christoph Mertz, Jinhang Wang, Carnegie Mellon University

**Utilizing Unmanned Aircraft Systems for Infrastructure Management**
Michael O’Connell, Patrick Szary, Rutgers University
Track 2: Rehabilitating and Restoring the Current System

An Advanced Understanding of the Source of the Chemical Damage in Concrete Pavement Exposed to Sodium Chloride Deicing Salt
Fadi Althoey, Yaghoob Farnam, Drexel University

Pat Daly Bridge Design and Construction with Conventional and Fiber Reinforced Polymer Materials - a Case Study of Materials Application and Accelerated Construction
Genda Chen, Missouri University of Science and Technology; Zhibin Lin, North Dakota State University

Enhancing Non-motorized Mobility within Construction Zones
Abul Mazumder, Upul Attanayake, Western Michigan University

Performance of Ultra-high Performance Concrete as Cast-in-Place Thin-Bonded Concrete Overlay
Mahdi Valipour, Kamal Khayat, Missouri University of Science and Technology

Compilation of ABC Solutions
David Garber, Florida International University

Laboratory Investigation of Integral Abutment Connection Details for ABC Projects
Travis Hosteng, Brent Phares, Bridge Engineering Center ISU

Self-Sustained Roadway through Innovative Energy Harvesting Solutions
Abbas Jasim, Hao Wang, Rutgers University

Towards Simulation-aided Predictive Demolition Planning
Seung Jae Lee, Florida International University

Retrofitting Damaged Bridge Elements Using Thin Ultra High Performance Shell Elements
Alireza Valikhani, Azadeh Jaberi Jahromi, Florida International University

Track 3: Rapid Repair and Keeping Things Moving

Corrosion Of Post-Tensioned Tendons With Deficient Grout
Samanbar Peremh, K.K Krishna Vigneshwaran, Florida International University

Seismic Performance of Simple for Dead Load and Continuous for Live Load (SDCL) Steel Bridge System
Amir Sadeghnejad, Atorod Azizinamini, Florida International University

Performance of Fiber-Reinforced Self-Consolidating Concrete for Repair of Flexural Structural Elements
Ahmed Abdelrazik, Kamal Khayat, Missouri University of Science & Technology

Application of Nano-Particle Enriched Epoxy Primer to Enhance Durability of Highway Steel Bridges
Saiada Fuadi Fancy, Md Ahsan Sabbir, Florida International University

Investigation of Macro-Defect Free Concrete for Accelerated Bridge Construction, including Robotic Construction
Katelyn Freeseman, Brent Phares, Iowa State University

Using Elastic Layer Theory to Investigate Use of Existing Pavement and Other Local Materials for Optimizing Concrete Pavement Structures
Richard Rogers, Cement Council Of Texas; Michael Plei, Commercial Metals Company

Alternative ABC Connections Using UHPC
Mohamadreza Shafeieifar, Mahsa Farzad, Florida International University

Achieving Post-Earthquake Operational Performance in Existing Highway Bridges with Ductile Fuse Retrofit
Peter Dusicka, Ramiro Bazaez, Portland State University

Development and Deployment of Concrete Pavement Performance Related Specifications
Track 4: Managing the Assets

Building Spatiotemporal Models for Pavement Surface Deterioration
Ahmad Alhasan, Omar Smadi, Iowa State University

Unsolicited Proposals in Transportation Infrastructure Delivery in the US: Current State and Best Practices
Offei Adarkwa, Omar Smadi, Iowa State University

Making the Case for Funding Highway Preservation First
Anne Carter, P.E., James Havu, Maine Department of Transportation

Rail Fatigue Life Forecasting Using Big Data Analysis Techniques
Allan Zarembski, John Cronin, University of Delaware

Wednesday, September 27, 2017

7:30 a.m.–10:00 a.m., Outside Keck 100
Registration

7:00 a.m.–8:00 a.m., Outside Keck 100
Breakfast

8:00 a.m.–8:30 a.m., Keck 100
Plenary Session: Recharge to the Track Groups and Continued Discussions
Research and action priorities for today and tomorrow
Steve Gillen, Illinois Tollway, presiding

8:30 a.m.–10:00 a.m.
Track Breakouts Continued. Discussion and Wrap Up

Track 1: How Are We Doing? Condition Assessment and Evaluation, Keck 103
Sreenivas Alampalli, New York State Department of Transportation, presiding
David Kosnik, CTL Group, recording

Track 2: Rehabilitating and Restoring the Current System, Keck 105
Ali Maher, Rutgers, The State University of New Jersey, presiding
Kamal Khayat, Missouri University Of Science and Technology, recording

Track 3: Rapid Repair and Keeping Things Moving, Keck 106
John Bulinski, CALTRANS, presiding
Steven Gillen, Illinois Tollway, recording

Track 4: Managing the Assets, Keck 100
Shauna Hallmark, Iowa State University, presiding
Sue McNeil, University of Delaware, recording

10:00 a.m.–10:30 a.m., Outside Keck 100
Break

10:30 a.m.–11:30 a.m., Keck 100
Plenary Session: Report Backs and Discussion: What Did We Learn?
Shauna Hallmark, Iowa State University, presiding

Panel
Sreenivas Alampalli, New York State Department of Transportation
Ali Maher, Rutgers, The State University of New Jersey
John Bulinski, CALTRANS
Shauna Hallmark, Iowa State University

11:30 a.m.–12:30 p.m., Outside Keck 100
Lunch

11:30 a.m.–12:30 p.m., Keck 106
Planning Committee Working Lunch Meeting (invitation only)
12:30 p.m.–1:30 p.m., Keck 100
Implementation Panel: Where Do We Go from Here? How Can We Make Things Happen?
Joseph Schofer, Northwestern University, presiding

Panel
Jason Weiss, Oregon State University
Robert Peskin, AECOM
Paul Kovacs, Illinois State Toll Highway Authority
Charles Schwartz, University of Maryland

1:30 p.m.–2:00 p.m., Keck 100
Wrap Up and Adjourn
Joseph Schofer, Northwestern University, presiding

2:15 p.m.–3:15 p.m., Keck 106
Planning Committee Debriefing (invitation only)
TRB 97th Annual Meeting

January 7-11, 2018

Walter E. Washington Convention Center
Washington, DC
Hotel Information
Capitol Skyline Hotel
10 “I” (eye) St SW
Washington, DC  20024

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Mai Quynh Le, TRB, mqile@nas.edu