University of Illinois at Urbana-Champaign (UIUC)
Rail Transportation and Engineering Center (RailTEC)

Guide to RailTEC Presentations
TRB 95th Annual Meeting
Washington, D.C.
January 10-14, 2016
Overview of Sessions with RailTEC Session Chairs or Presentations

SUNDAY

Design of Concrete Crossties and Fastening Systems: Latest Advances in Research and Development
Sunday 9:00 AM - 12:00 PM - Convention Center, 143C
Workshop 141

Crude by Rail: Opportunities and Challenges in North America
Sunday 1:30 PM - 4:30 PM - Convention Center, 143C
Workshop 190

MONDAY

Best of the Best: Raising the Bar on Intercity Passenger Rail Performance
Monday 8:00AM - 9:45AM Convention Center, 147A
Session 233

New Technologies for Ballast Condition Assessment and Management
Monday 8:00AM - 9:45AM Convention Center, 143A
Session 234

Railroad Operational Safety Research
Monday 8:00 AM - 9:45 AM Convention Center, 147B
Session 235

Intercity Passenger Rail Intermodal Interface Subcommittee, AR010 (1)
Monday 8:00 AM - 9:45 AM Marriott Marquis, Woodley Park (M3)

New Technologies for Track Condition Assessment and Management
Monday 10:15 AM - 12:00 PM Convention Center, 143B
Session 290

Innovations in Highway-Rail Crossing Safety
Monday 1:30 PM - 3:15 PM Convention Center, 101
Session 355

Current Research on Freight Rail Transportation
Monday 1:30 PM - 3:15 PM Convention Center, 149
Session 367

Railway Maintenance Committee, AR060
Monday 1:30 PM - 3:15 PM Marriott Marquis, Mount Vernon Square (M3)

Railroad Track Structure System Design Committee, AR050
Monday 3:45PM- 5:30PM Marriott Marquis, Chinatown (M3)
Hazardous Materials Transportation Research  
*Monday 3:45PM- 5:30PM Convention Center, 144A*
Session 428

Railroad Operating Technologies Committee  
*Monday 3:45PM- 5:30PM Marriott Marquis, Woodley Park (M3)*

Research Topics in Railroad Network Capacity  
*Monday 7:30PM- 9:30PM Convention Center, 144C*
Session 471

Standing Committee on Commuter Rail Transportation (AP070)  
Subcommittee on Research (AP070(2))  
*Monday 7:30 PM - 9:30 PM, Marriott Marquis, Judiciary Square (M3)*

Shared Rail Corridors and Facilities Joint Subcommittee of AP065(3), AP045, AP070, AP075, AR010, AR040  
*Monday 7:30 PM - 9:30 PM, Marriott Marquis, Congress (M4)*

**TUESDAY**

Improvements in Turnout Design  
*Tuesday 8:00 AM - 9:45 AM Convention Center, 144A*
Session 512

Rail Transit System Technical Issues  
*Tuesday 8:00 AM - 9:45 AM Convention Center, 143B*
Session 513

Dwight David Eisenhower Transportation Fellowship Program Research Showcase  
*Tuesday 8:00 AM - 12:00 PM Convention Center, 202B*
Session 519

Energy Efficiency Technologies for Rail Transportation  
*Tuesday 10:15 AM- 12:00 PM Convention Center, 147B*
Session 576

Research in Railroad Track Structure System Design  
*Tuesday 10:45 PM - 12:30 PM Convention Center, Hall E*
Session 594

Rail Safety IDEA Program  
*Tuesday 10:45 PM - 12:30 PM Convention Center, Hall E*
Session 595

Current Research in Railway Maintenance  
*Tuesday 10:45 PM - 12:30 PM Convention Center, Hall E*
Session 596
Applications of Unmanned Aircraft Systems Within the Rail Industry
Tuesday 1:30 PM - 3:15 PM Convention Center, 143B
Session 628

Transit, Freight, and Logistics Modeling Subcommittee, ADB30 (1)
Tuesday 1:30 PM - 3:15 PM Marriott Marquis, Independence H (M4)

Freight Rail Transportation Committee, AR040
Tuesday 1:30 PM - 5:30 PM Marriott Marquis, Chinatown (M3)

Nonintrusive Testing of Track Structure and Substructure
Tuesday 3:45 PM - 5:30 PM Convention Center, 149
Session 704

Crude Oil Transportation Subcommittee, AT040 (1)
Tuesday 3:45 PM - 5:30 PM Marriott Marquis, Archives (M4)

Starting Over: The Challenge of Sustaining Passenger Rail Performance and Restoring Discontinued Services
Tuesday 3:45 PM - 5:30 PM Convention Center, 144B
Session 703

Current Research on Freight Rail Transportation
Tuesday 4:15 PM - 6:00 PM Convention Center, Hall E
Session 734

Research in Railway Operating Technologies
Tuesday 4:15 PM - 6:00 PM Convention Center, Hall E
Session 733

Schedule Details
(RailTEC faculty, staff, student and alumni presentations in blue)

SUNDAY

Design of Concrete Crossties and Fastening Systems: Latest Advances in Research and Development
Sunday, January 10, 2016 9:00 AM - 12:00 PM Convention Center, 143C
Workshop 141
J. Riley Edwards and Marcus S. Dersch  University of Illinois, Urbana Champaign, presiding

This workshop will focus on the latest research on concrete crossties and fastening systems for rail transit, intercity passenger rail, and heavy-haul freight railroads. Topics will include field and laboratory experimentation and analytical modeling to better inform the design of systems with the objective of increasing component life cycles. Presentations will be given by academic and industry researchers, infrastructure owners, and the supply community that manufactures these components.
Transportation Test Center Crosstie and Fastening Research
Michael McHenry, Transportation Technology Center, Inc.

Rail Transit Operator Perspective - Design and Maintenance of Concrete Crossties and Fastening Systems
Antonio Cabrera, New York City Transit

Laboratory Quantification of Flexural Demand on Concrete Crossties under Different Support Conditions
Josué César Bastos, University of Illinois, Urbana Champaign
J. Riley Edwards, University of Illinois, Urbana Champaign
Marcus Dersch, University of Illinois, Urbana Champaign

Design of High Strength Low Modulus Concrete Crossties
Dimitris Rizos, University of South Carolina

FRA Concrete Crosstie Design Project Results
Robert Peterman, Kansas State University

Panel Discussion
J. Riley Edwards, University of Illinois, Urbana Champaign
Michael McHenry, Transportation Technology Center, Inc.
Antonio Cabrera, New York City Transit
Dimitris Rizos, University of South Carolina
Robert Peterman, Kansas State University
Marcus Dersch, University of Illinois, Urbana Champaign

Crude by Rail: Opportunities and Challenges in North America
Sunday, January 10, 2016 1:30PM - 4:30PM  Convention Center, 143C
Workshop 190
David Willauer, IEM, Inc., presiding
George Grimes, Patriot Rail Company, presiding

Crude by rail has burgeoned in recent years, in part due to the domestic availability of shale oil in North America. This workshop will include recent US and Canadian rulemaking, preliminary findings from the DOE Tight Oil Study, the implications from rulemaking on Class I railroads, modeling the probability of crude oil derailments and subsequent releases, issues and challenges with mid-stream oil transportation, and crude oil characteristics with implications for transport in North America.

Part 1: Crude by Rail Federal Response and Industry Challenges

New USDOT and Canada Rules on the Safe Transportation of Flammable Liquids by Rail:
Issues for Industry and Regulators
Edward Pritchard, Paladin Consulting Group, Inc.

Challenges and Implications for Class 1 Railroads
John Gray, Association of American Railroads (AAR)

Shipper Challenges in the Petroleum Industry
O. Chris Jackson, Shell Oil Company

Part 2: Crude Oil Characteristics: Implications for Risk and Transport

Crude by Rail: Findings from Risk Research
Christopher Barkan, University of Illinois, Urbana Champaign

USDOE Crude Oil Characteristics Research: Current Status
Richard Elliott, U.S. Department of Energy

Developments in Methodology and Best Practices for Crude Oil Characterization
Randy Segato, Canadian Crude Quality Technical Association
MONDAY

Best of the Best: Raising the Bar on Intercity Passenger Rail Performance
Monday, January 11, 2016 8:00AM - 9:45AM Convention Center, 147A
Session 233
Genaro Mejia, Arup, presiding

Model for Optimal Selection of Projects to Improve Running Time and Operating Cost Efficiency on Passenger Rail Corridors
Haichuan Tang, Southwest Jiaotong University
Tyler Dick, University of Illinois, Urbana-Champaign
Brennan Caughron, University of Illinois, Urbana-Champaign
Xiaoyun Feng, Southwest Jiaotong University
Christopher Barkan, University of Illinois, Urbana-Champaign

Impact of On-Time Performance and Fuel Prices on Amtrak Ridership and Revenue
Mark Feldman, Steer Davies and Gleave, Inc.
William Sheridan, National Railroad Passenger Corporation (Amtrak)
Bruce Williams, National Railroad Passenger Corporation (Amtrak)
Masroor Hasan, Steer Davies and Gleave, Inc.
Kate Yu, Steer Davies and Gleave, Inc.
Megan Brock, Steer Davies and Gleave, Inc.

Challenges and Opportunities in Implementation of the Future California Rail Network
Samuel Levy, Massachusetts Institute of Technology
A. Awadagin Faulkner, Massachusetts Institute of Technology
Joseph Sussman, Massachusetts Institute of Technology

Quality Versus Quantity in Integrated Railroad Network: Rolling Stock Procurement Valuation for Madrid-Perpignan High-Speed Line
Fernando Barreiro Pereira, Universidad Nacional de Educacion a distancia

New Technologies for Ballast Condition Assessment and Management
Monday, January 11, 2016 8:00AM - 9:45AM Convention Center, 143A
Session 234
Carlton Ho, University of Massachusetts, Amherst, presiding
Hai Huang, Pennsylvania State University, presiding
James Hyslip, HyGround Engineering, LLC, presiding

Morphological Characterization of Railroad Ballast Degradation Trends in the Field and Laboratory
Maziar Moaveni, University of Illinois, Urbana Champaign
Issam Qamha, University of Illinois, Urbana Champaign
Erol Tutumluer, University of Illinois, Urbana Champaign
Colin Basye, Transportation Technology Center, Inc.
Dingqing Li, Association of American Railroads (AAR)
Samuel Douglas, Union Pacific Railroad Company

Rapid Estimation of Fouled Ballast Material Properties
Madan Neupane, University of Kansas
Robert Parsons, University of Kansas
Jie Han, University of Kansas
Evaluating Correlation Between Geotechnical Index and Electromagnetic Properties of Fouled Ballasted Track by Full-Scale Laboratory Model
Hamed Faghihi Kashani, University of Massachusetts, Amherst
Carlton Ho, University of Massachusetts, Amherst
William Clement, University of Massachusetts, Amherst
Charles Oden, Earth Science Systems, LLC

Effect of Geogrid on Railroad Ballast Studied by SmartRock
Shushu Liu, Penn State University
Hai Huang, Pennsylvania State University
Tong Qiu
Jayhyun Kwon, Tensar International Corporation

Railroad Operational Safety Research
Monday, January 11, 2016 8:00AM - 9:45AM Convention Center, 147B
Session 235
Xiang Liu, Rutgers, The State University of New Jersey, presiding

Freight Train Collision Risk Analysis in the United States, 2000 to 2014
Xiang Liu, Rutgers, The State University of New Jersey

Fault Tree Analysis of Adjacent Track Accidents on Shared-Use Rail Corridors
Chen-Yu Lin, University of Illinois, Urbana Champaign
M. Rapik Saat, University of Illinois, Urbana Champaign
Christopher Barkan, University of Illinois, Urbana Champaign

Evaluation of Confidential Close Call Reporting System: New Findings on Implementation and Impact
Joyce Ranney, Office of the Assistant Secretary for Research and Technology (OST-R)
Jonathan Morell, Fulcrum Corporation
Melinda Davey, Jacobs

Moving map displays: Using CTIL and Eye Tracking Technologies to Measure Operator Glance Durations and Performance in Locomotive Cabs
Jared Young, University of Massachusetts, Amherst

Intericity Passenger Rail Intermodal Interface Subcommittee, AR010(1)
Monday, January 11, 2016 8:00AM – 9:45AM Marriot Marquis, Woodley Park (M3)
Eric C. Peterson, presiding

Optimal pricing for high-speed rail under competition with airplane and car: The case of the United States Northeast Corridor
Moschoula Pternea, University of Maryland
Ali Haghani, University of Maryland
Lei Zhang, University of Maryland, College Park

A Multi-Stage Approach to Air-Rail Competition: Focus on Rail Agency Objective, Train Technology and Station Access
Ahmadreza Talebian, University of Illinois, Chicago
Bo Zou, University of Illinois, Chicago

New Technologies for Track Condition Assessment and Management
Monday, January 11, 2016 10:15AM - 12:00PM Convention Center, 143B
Session 290
Francesco Lanza Di Scalea, University of California, San Diego, presiding
Theodore Sussmann, Office of the Assistant Secretary for Research and Technology (OST-R), presiding
The Role of Comprehensive Track Assessment in Track Improvement Projects
A Case Study with Pan Am Railways
Jacinda Clemenzi, ENSCO, Inc.
Hugh Thompson, Federal Railroad Administration (FRA)
Robert Wilson, Federal Railroad Administration (FRA)
Theodore Sussmann, Office of the Assistant Secretary for Research and Technology (OST-R)

Air-Coupled Ultrasonic Inspection of Crossties
John Popovics, University of Illinois, Urbana Champaign
Su Yun Ham, University of Nebraska, Lincoln
Chi-Luen Huang, University of Illinois, Urbana Champaign

Alternate Inspection Approach to Reduce Derailment Risk
Gary Carr, Federal Railroad Administration (FRA)
James Rome, Rome Navigation Innovations, Inc.

Application of Non-Contacting LIDAR Sensors for Track Geometry Assessment
Mehdi Ahmadian, Virginia Polytechnic Institute and State University
Masood Taheri, Virginia Polytechnic Institute and State University
Josh Munoz, Virginia Polytechnic Institute and State University

Innovations in Highway-Rail Crossing Safety
Monday, January 11, 2016 1:30PM – 3:15PM Convention Center, 101
Session 355
Aemal Khattak, University of Nebraska, Lincoln, presiding

Application of Light Detection and Ranging Technology to Assess Safe Passage of Low-Ground Clearance Vehicles at Highway-Rail Grade Crossings
Myungwoo Lee, University of Nebraska, Lincoln
Aemal Khattak, University of Nebraska, Lincoln

Rehabilitation of Railway-Highway At-Grade Crossings: Recommendations and Guides
Jerry Rose, University of Kentucky

Microwave Radar Vehicle Detection Performance at Railroad Grade Crossings with Quad Gates in Normal and Adverse Weather Conditions
Juan Medina, University of Utah
Rahim Benekohal, University of Illinois, Urbana Champaign

Impacts of Rail-Road Crossings: International Synthesis and Research Gaps
Chris De Gruyter, Monash University
Graham Currie, Monash University

Railway Maintenance Committee, AR060
Monday 1:30PM- 3:15PM Marriott Marquis, Mount Vernon Square (M3)
Dwight Clark, Union Pacific Railroad Company, presiding

Current Research on Freight Rail Transportation
Monday, January 11, 2016 1:30 PM- 3:15 PM Convention Center, 149
Session 367
George Grimes, Patriot Rail Company, presiding
Short Line Railroads: Meeting 21st Century Demand with 19th Century Infrastructure
Jeremy Sage, Washington State University
Kenneth Casavant, Washington State University
James Eustice, Washington State University
Chris Herman, Washington State Department of Transportation

Review and Evaluation of New Jersey Rail Grant Program
Bekir Bärtaş, Istanbul Kemerburgaz University
Kaan Ozbay, New York University (NYU)
W. Allen, University of Pennsylvania
Shrisan Iyer, Rutgers, The State University of New Jersey
Martin Robins, Rutgers, The State University of New Jersey
Marc Weiner, Rutgers, The State University of New Jersey
Hani Nassif, Rutgers, The State University of New Jersey

Enhanced Resource Conflict Graph Rescheduling Model for Freight Rail Traffic: Introducing Energy Saving
Ambra Toletti, ETHZ - Swiss Federal Institute of Technology
Valerio De Martinis, ETHZ - Swiss Federal Institute of Technology
Ulrich Weidmann, ETHZ - Swiss Federal Institute of Technology
Andrew Nash, Green City Streets

Heterogeneous Valuation of Railway Freight Service Quality Dimensions by Chinese Shippers: Choice-Based Conjoint Analysis
Lorant Tavasszy, Delft University of Technology
Liwei Duan, Southwest Jiaotong University
Jafar Rezaei, Delft University of Technology
Caspar Chorus, Delft University of Technology

Railroad Track Structure System Design Committee
Monday, January 11, 2016 3:45PM – 5:30PM  Marriott Marquis, Chinatown (M3)
J. Riley Edwards, University of Illinois, Urbana Champaign, presiding

Influence of Track Variables and Product Design on Insulated Rail Joints
Emre Can Soylemez, L. B. Foster Company
Korhan Ciloglu, L. B. Foster Company

Hazardous Materials Transportation Research
Monday, January 11, 2016 3:45PM – 5:30PM  Convention Center, 144A
Session 428
Richard Bornhorst, Federal Aviation Administration (FAA), presiding

Resolution Agile Remote Sensing for Transportation Safety
Raj Bridgelall, North Dakota State University
James Rafert, NDSU/UGPTI Transportation Safety Systems Center
Denver Tolliver, Upper Great Plains Transportation Institute
EunSu Lee, New Jersey City University

Risk Analysis of Transporting Crude Oil by Rail: Methodology and Decision Support System
Xiang Liu, Rutgers, The State University of New Jersey

Hierarchical Framework for Mitigating the Risk of Hazardous Materials Transportation
Sara Masoud, University of Arizona
Sojung Kim
Young-Jun Son, University of Arizona
Risk Analysis of Natural Gas Distribution Lines Subjected to Natural Forces
Khalid Farrag, Gas Technology Institute
Jie Gong, Rutgers, The State University of New Jersey

Classification of Water-Reactive Materials That Emit Toxic Gases
Steve Hwang, Department of Transportation

Railroad Operating Technologies Committee
Monday, January 11, 2016 3:45PM – 5:30PM Marriott Marquis, Woodley Park (M3)
Yung-Cheng Lai, National Taiwan University, presiding

Use Of Mouse Tracking To Evaluate The Operator Efficiency On Train Dispatcher Workstations
Joern Pachl, Technical University of Braunschweig

Barriers and Public Policies for Technology Adoption in the EU Railways Sector
Vasco Reis, Instituto Superior Tecnico
Rosário Macário, Instituto Superior Tecnico

Research Topics in Railroad Network Capacity
Monday, January 11, 2016 7:30PM – 9:30PM Convention Center, 144C
Session 471
David Clarke, University of Tennessee, Knoxville, presiding

Evaluating Rail Network Assets and Capacity Allocation Using a Profit-Maximizing Capacity Framework
Yung-Cheng Lai, National Taiwan University
Yi-Ju Lin, National Taiwan University
Nien-Tsu Han, National Taiwan University

Operational Schedule Flexibility and Infrastructure Investment: A Capacity Trade-off on Single-Track Railways
Tyler Dick, University of Illinois, Urbana Champaign
Darkhan Mussanov, University of Illinois, Urbana Champaign

Scheduling and Routing Freight Trains with Multiple Cost Functions
Andy Chow, University College London
E-Yang Tan, University College London
Ben Ng, University College London
Aris Pavlides, University College London
Konrad Babinski, Steer Davies Gleave

Dynamic Capacity Allocation of Multileg Railway Container Transportation Based on Bid Price
Xiaoqiang Zhang, Southwest Jiaotong University
Ma Lang, Southwest Jiaotong University
Xu Weiqiang, Zhejiang Sci-Tech University

Standing Committee on Commuter Rail Transportation (AP070)
Subcommittee on Research (AP070(2))
Monday 7:30 PM - 9:30 PM, Marriott Marquis, Judiciary Square (M3)
Thomas Cornillie, presiding

Shared Rail Corridors and Facilities Joint Subcommittee of AP065(3), AP045, AP070, AP075, AR010, AR040
Monday 7:30 PM - 9:30 PM, Marriott Marquis, Congress (M4)
Mark Walbrun, Hatch Mott MacDonald, presiding
Improvements in Turnout Design
Tuesday 8:00AM - 9:45AM Convention Center, 144A
Session 512
David Davis, Association of American Railroads (AAR), presiding

Obtaining Higher Speeds from Conventional Length Turnouts
Paul Rice, National Railroad Passenger Corporation (Amtrak)

Improved Performance Mainline Turnouts
David Davis, Association of American Railroads (AAR)

Performance of Continuous Mainline Turnouts on BNSF
Erik Frohberg, Burlington Northern Santa Fe Railway (BNSF)

Performance of Four Frog Configurations at NS Mega-site
Brad Kerchof, Norfolk Southern Railway

Rail Transit System Technical Issues
Tuesday, January 12, 2016 8:00AM - 9:45AM Convention Center, 143B
Session 513
Anthony Bohara, HDR, Inc., presiding

TTC's New Streetcar Procurement Process and Lessons Learned
Stephen Lam, Toronto Transit Commission

Load Quantification for Light Rail, Heavy Rail, and Commuter Rail Transit Infrastructure
Xiao Lin, University of Illinois, Urbana Champaign
J. Riley Edwards, University of Illinois, Urbana Champaign
Marcus Dersch, University of Illinois, Urbana Champaign
Conrad Ruppert, University of Illinois, Urbana Champaign

METRO Green Line Transit Signal Priority: Implementation and Lessons Learned
JoNette Kuhnau, Kimley-Horn and Associates
Dan Soler, Metro Transit - Minneapolis, St. Paul

Development of Analysis and Planning Process for Renewal and Repair of Track Substructure
Willem Ebersohn, ENCADA, LLC

Dwight David Eisenhower Transportation Fellowship Program Research Showcase
Tuesday, January 12, 2016 8:00 AM – 12:00 PM Convention Center, 202B
Session 519
Fawn Thompson, Federal Highway Administration (FHWA), presiding

Evaluation of Road Diet Projects on Roadways with 5+ Lanes
John Cebe, Georgia Institute of Technology (Georgia Tech)

Trends in Cities Converting Freeways for Sustainability: Case Study of Interstate 81, Syracuse, New York
Ryan Reeves, University of California, Berkeley
Application of Multicriteria, Multistakeholder Decision Analysis to Federal Transportation Performance Management  
Timothy Doyle, Massachusetts Institute of Technology

Michigan Urban Trunkline Segments Safety Performance Function Development  
Patricia Thompson, Iowa State University

Quantifying Train Derailment Risk at Highway-Rail Grade Crossings  
Samantha Chadwick, University of Illinois, Urbana Champaign

Today's Perception of Vehicle Safety and Its Impact on Preparing for Tomorrow's Autonomous Vehicles  
Deja Jackson, University of Florida

Applications of Bluetooth Probe Data for Freeway Systems  
John Wagner

Dampening Traffic Waves with Autonomous Vehicles  
Raphael Stern, University of Illinois, Urbana Champaign

Better, Quicker, Together: Mobile Crowdsourcing Approach to Real-Time Sensing of Transit Service Quality and Customer Satisfaction  
Corinna Li

Energy Efficiency Technologies for Rail Transportation  
Tuesday, January 12, 2016 10:15 AM - 12:00 PM Convention Center, 147B  
Session 576  
Adrian Hellman, Office of the Assistant Secretary for Research and Technology (OST-R), presiding

Rail Energy Technologies for the 21st Century: Summary Review and Analysis  
Raphael Isaac, University of California, Davis  
Lewis Fulton, University of California, Davis

Evaluation of Freight Train Energy-Saving Potential Using Onboard Monitoring Data  
Valerio De Martinis, ETHZ - Swiss Federal Institute of Technology  
Ulrich Weidmann, ETHZ - Swiss Federal Institute of Technology  
Andrew Nash, Green City Streets

Economic, Efficiency, and Technology Factors That Determine Viability of Fuel Cell Use in Class 1 Heavy-Freight Locomotion  
Jeffrey Lidicker, Jeffrey Lidicker Consulting  
Adriano Rothschild, Michigan Technological University  
Lisa Dunnebacke, Dunnebacke Communications

Two-Train Trajectory Optimization with Green Wave Policy  
Pengling Wang, Delft University of Technology  
Rob Goverde

NCRRP Project 02-01: Comparison of Passenger Rail Energy Consumption with Competing Modes  
Gordon English, Transys LTD  
Tyler Dick, University of Illinois, Urbana Champaign

Research in Railroad Track Structure System Design  
Tuesday, January 12, 2016 10:45AM - 12:30PM  Convention Center, Hall E  
Session 594  
J. Riley Edwards, University of Illinois, Urbana Champaign, presiding
Field Measurement of Bending Moments in Prestressed Concrete Monoblock Crossties Under Heavy-Haul Freight Railroad Loads
Henry Wolf, University of Illinois, Urbana Champaign
J. Riley Edwards, University of Illinois, Urbana Champaign
Marcus Dersch, University of Illinois, Urbana Champaign
Yu Qian, University of Illinois, Urbana Champaign
David Lange, University of Illinois

Finite Element Analysis of Effects of Bolt Condition on Bolted Rail Joint Stresses
Kaijun Zhu, University of Illinois, Urbana Champaign
J. Riley Edwards, University of Illinois, Urbana Champaign
Yu Qian, University of Illinois, Urbana Champaign
Bassem Andrawes, University of Illinois, Urbana Champaign

Role of Initial Particle Arrangement in Ballast Mechanical Behavior
Yu Qian, University of Illinois, Urbana Champaign
Seung Jae Lee, Florida International University
Erol Tutumluer, University of Illinois, Urbana Champaign
Youssef Hashash, University of Illinois, Urbana Champaign
Jamshid Ghaboussi, University of Illinois, Urbana Champaign

Rail Safety IDEA Program
Tuesday, January 12, 2016 10:45AM - 12:30PM  Convention Center, Hall E
Session 595
Jo Allen Gause, Transportation Research Board, presiding

TRB's Rail Safety IDEA Program: Sponsoring Innovation to Improve Railroad Safety and Performance
Jo Allen Gause, Transportation Research Board

Rail Safety IDEA Project 25: Dynamic Impact Factors on Existing Long-Span Steel Truss Railroad Bridges
Ramesh Malla, University of Connecticut

Rail Safety IDEA Project 26: Remote Sensing with Mobile LiDAR and Imaging Sensors for Railroad Bridge Inspections
Luis Otero

Rail Safety IDEA Project 27: Field Evaluation of Ballast Fouling Conditions Using Machine Vision
Erol Tutumluer, University of Illinois, Urbana Champaign

Rail Safety IDEA Project 28: Field Validation of Inspection Gauges for Wheel Climb Safety at Switch Points
Allan Zarembski, University of Delaware

Current Research in Railway Maintenance
Tuesday, January 12, 2016 10:45AM - 12:30PM  Convention Center, Hall E
Session 596
Dwight Clark, Union Pacific Railroad Company, presiding
Conrad Ruppert, University of Illinois, Urbana Champaign, presiding

Noninvasive Techniques for Measuring Vertical Transient Track Displacement
Stephen Wilk, University of Illinois, Urbana Champaign
Timothy Stark, University of Illinois, Urbana Champaign
Jerry Rose, University of Kentucky
Applications of Unmanned Aircraft Systems Within the Rail Industry  
*Tuesday, January 12, 2016 1:30 PM - 3:15 PM  Convention Center, 143B*

Session 628

Joseph Drapa, Transportation Technology Center, Inc., presiding

**UAS Application in CSX**
Elvis Higgins, CSX Corporation, Inc.

**Use of Unmanned Aerial Vehicles in Railroad Trespasser Abatement**
Rich Gent, Hot Rail. LLC

**University Research on UAVs for Construction Inspection and Possible Applications for Railway Inspection and Maintenance**
Tyler Dick, University of Illinois, Urbana Champaign
Mani Golparvar-Fard, University of Illinois, Urbana Champaign

**Transit, Freight, and Logistics Modeling Subcommittee, ADB30(1)**  
*Tuesday, January 12, 2016 1:30PM – 3:15PM  Marriott Marquis, Independence H (M4)*

Yanfeng Ouyang, University of Illinois, Urbana Champaign, presiding

**Freight Rail Transportation Committee, AR040**  
*Tuesday, January 12, 2016 1:30PM – 5:30PM  Marriott Marquis, Chinatown (M3)*

George Grimes, Patriot Rail Company, presiding

**Nonintrusive Testing of Track Structure and Substructure**  
*Tuesday, January 12, 2016 3:45PM - 5:30PM  Convention Center, 149*

Session 704

Carlton Ho, University of Massachusetts, Amherst, presiding

**Design of Well-Performing Railway Transitions**
Timothy Stark, University of Illinois, Urbana Champaign
Stephen Wilk, University of Illinois, Urbana Champaign
Jerry Rose, University of Kentucky

**Use of SASW for Prediction of Substructure Performance**
Carlton Ho, University of Massachusetts, Amherst
Timothy Stark, University of Illinois, Urbana Champaign

**Resistivity Approach of Fouled Ballast Characterization and Introduction of Vertical Resistance Probe**
Madan Neupane, University of Kansas
Robert Parsons, University of Kansas
Jie Han, University of Kansas

**Assessment of Track Geometry and Substructure Conditions to Identify Track Maintenance Needs**
James Hyslip, HyGround Engineering, LLC

**Efficient Track Condition Analysis by Integrating Track Geometry and GPR Data**
Mika Silvast, Roadscanners

**Crude Oil Transportation Subcommittee, AT040(1)**  
*Tuesday, January 12, 2016 3:45 PM - 5:30 PM  Marriott Marquis, Archives (M4)*

David Willauer, IEM, Inc., presiding
Consequence Modeling of Petroleum Crude Oil Release in Transportation
Manuel Martin Ramos, University of Illinois, Urbana Champaign
Jesus Aguilar Serrano, University of Illinois, Urbana Champaign
M. Rapik Saat, University of Illinois, Urbana Champaign

Starting Over: The Challenge of Sustaining Passenger Rail Performance and Restoring Discontinued Services
Tuesday, January 12, 2016 3:45 PM - 5:30 PM  Convention Center, 144B
Session 703
Walter Zullig, presiding

Commuter-Style Interurban Railways and Modern Regional Transit: Rise, Fall and Reuse
John Allen
Herbert Levinson

Rebuilding Connections: Planning, Policy, and the Challenge of Restoring Commuter Rail Service to Southeast Wisconsin
Thomas Cornillie

John Allen
Herbert Levinson

Progress and Challenges in Developing Passenger Rail Services: an international private sector perspective
Henry Posner, Railroad Development Corporation

Current Research on Freight Rail Transportation
Tuesday, January 12, 2016 4:15PM – 6:00PM  Convention Center, Hall E
Session 734
Christopher Barkan, University of Illinois, Urbana Champaign, presiding

Two-Stage Stochastic Programming with Recourse for Railroad Blocking Problem with Uncertain Demand
Reza Mohammad Hasany
Yousef Shafahi, Sharif University of Technology

Calculation of External Costs of Road and Railway Freight Transportation and Internalization
Pei Li, Tongji University
Rong Zhang

Analytical Models of Rail Transportation Service in the Grain Supply Chain: Deconstructing the Operational Advantages of Shuttle Train Service
Michael Hyland, Northwestern University
Hani Mahmassani, Northwestern University
Lama Bou Mjahed, Northwestern University

State of Urban Rail Freight Strategies in European Cities
Tobias Fumasoli, ETHZ - Swiss Federal Institute of Technology
Ulrich Weidmann, ETHZ - Swiss Federal Institute of Technology

Cost functions for mainline train operations and their application to timetable optimization
Aris Pavlides, University College London
Andy Chow, University College London
Optimal Track Utilization in Electric Multiple Unit Depots
Haodong Li, Beijing Jiaotong University
Mingzhou Jin, University of Tennessee, Knoxville
Shiwei He, Beijing Jiaotong University
Zhirui Ye, Southeast University
Jinglu Song, University of Tennessee, Knoxville

Research in Railway Operating Technologies
Tuesday, January 12, 2016 4:15PM – 6:00PM  Convention Center, Hall E
Session 733
Yung-Cheng Lai, National Taiwan University, presiding

Global Navigation Satellite System-Based 1oo2 Train Positioning System Performance Evaluation Method
Shangguan Wei, Beijing Jiaotong University

Synchronous Control System Based on Wireless Data Transmission for 50,000-Ton Heavy-Haul Trains
Huang Shize, Tongji University
Qiyi Guo, Tongji University

Markov Chain Model for Train Rescheduling
Ismail Sahin, Yildiz Technical University

Adaptive Fuzzy Optimal Speed Profile Planning for High-Speed Train Operation Based on Pareto-set
Shangguan Wei, Beijing Jiaotong University

Integrated Planning of Multitype Locomotive Service Facilities
Siyang Xie, University of Illinois, Urbana Champaign
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