2010 Joint Rail Conference

High-Speed and Intercity Passenger Rail

Final Program

April 27-29, 2010
Urbana, IL
Chair’s Welcome Message

Welcome to the 2010 Joint Rail Conference (JRC) hosted by the Railroad Engineering Program at the University of Illinois at Urbana-Champaign. The 2010 Joint Rail Conference is a cooperative effort of the rail groups of the American Society of Civil Engineers (ASCE), American Society of Mechanical Engineers (ASME), Institute of Electrical and Electronics Engineers (IEEE), American Railway Engineering and Maintenance of Way Association (AREMA) and the Transportation Research Board (TRB) of the National Academies, representing the leading rail transportation engineering educational and academic research organizations in North America. The expertise and perspective offered by these organizations has led to a conference that has both breadth and depth in a wide range of current rail transportation and engineering topics.

In light of the new North American focus on developing High-speed and Intercity Passenger Rail, the organizers selected this as the 2010 conference theme. A worldwide call for papers and presentations on both passenger and freight rail subjects was issued, requesting abstracts on all aspects of rail transport. The response was overwhelming; over 270 abstracts were received from six continents and 23 different countries on a wide variety of rail engineering, transportation, management, planning, safety and operations topics.

The conference program will include approximately 200 spoken presentations, a special poster presentation session, invited speakers and plenary sessions. Session topics will cover a wide range of passenger and freight railroad civil, mechanical, electrical and systems engineering topics, as well as rail safety, planning, design, financing, operations and management.

1 – Railroad Infrastructure Engineering
2 – Rail Equipment Engineering
3 – High-Speed Rail Experience & Development
4 – Shared Corridors
5 – Planning, Management & Operation
6 – Safety, Security & Environment

We want to extend a particularly warm welcome to our many international participants and guests. With the proliferation of high-speed rail systems elsewhere in the world, North Americans recognize that we have a great deal to learn from the experience and expertise of the international rail community. We sincerely appreciate that so many of you chose to attend JRC 2010 and share your knowledge. We also hope that representatives from nations developing or expanding their heavy haul freight rail capability and capacity will find the knowledge they gain from North Americans, and other heavy haul railroad participants at JRC 2010, beneficial to the success of freight railroad safety, efficiency and reliability in your nation or region.

Conference Organizers

Conference Co-Chairs:
Chris Barkan (ASCE) - University of Illinois
Richard Bruss (IEEE) - Amtrak
Gerald Anderson (ASME) - TTCI
Dale Muellerleile (AREMA) - HDR
Robert Dorer (TRB) - Volpe

Track Teams (Leader in Bold):
Track 1 - Riley Edwards - University of Illinois
Conrad Ruppert - Amtrak
David Davis - AAR/TTCI
Tyler Dick - HDR Engineering Inc.
Kevin Day - CN
Don Uzarski - University of Illinois
Henry Lees - BNSF Railway
Robert Sweeney - Modjeski and Masters, Inc.
Steven Chrismer - Amtrak
James Hyslip - HyGround Engineering
Jerry Rose - University of Kentucky
Travis Painter - Hanson Professional Services
Paul DelSignore - Amtrak

Track 2 - Michelle Muhlanger - Volpe Center
Gerald Anderson - TTCI
Matthew Dick - Rail Sciences
David Tyrell - Volpe Center

Track 3 - Chris Barkan - University of Illinois
Michael Garcia - Illinois DOT
Tsung Chung Kao - National Taiwan University
George Martin - Illinois DOT and AECOM (retired)
Mark Walbrun - CH2MHILL

Track 4 - Lamont Ward - Amtrak
Michael Franke - Amtrak
John Gray - AAR
DJ Mitchell - BNSF Railway

Track 5 - Avery Grimes
David Clarke - University of Tennessee
Yung-Cheng Lai - National Taiwan University
Andrew Nash
Moshe Givony
Anthony Perl - Simon Fraser University
Dan Brand
Eric Tyer

Track 6 - Robert Dorer - Volpe Center
Larry Kellerborn - Interfleet NA
Melissa Shurland - FRA
Patrick Simmons - North Carolina Rail Office
David Thurston - Parsons
John Tunna - TTCI / AAR
Sesto Vespa - Transport Canada

Program Planning Committee:
Gerald Anderson - TTCI
Chris Barkan - University of Illinois
Richard Bruss - Amtrak
Steve Chrismer - Amtrak
Matthew Dick - Rail Sciences
Robert Dorer - Volpe Center
Riley Edwards - University of Illinois
Robert Gray - Penn State University
Avery Grimes - Steel River
Kim Hagemann - University of Illinois
Cameron Lonsdale - Amsted
Dale Muellerleile - HDR
Michelle Muhlanger - Volpe Center
Anthony Perl - Simon Fraser University
Jason Reiling - Strato, Inc.
Conrad Ruppert - Amtrak
David Tyrell - Volpe Center
Lamont Ward - Amtrak
Samuel Williams - ASME

Publicity Committee:
Tom Berg - ASME
Pasi Lautala - Michigan Tech
Martyn Chymera - IEEE
Steve Dedmon - Standard Steel

Conference Treasurer Registrar:
Jason Reiling - Strato, Inc.
Deborah Edelman - Strato, Inc.
Preliminary Program

MEETING LOCATION
Concurrent sessions will be held in the Illini Union - 1401 W. Green St., Urbana, IL 61801.

REGISTRATION DESK:
Registration will be held in the Illini Union hallway outside Illini Rooms ABC, starting Tuesday, April 27th at 7:00am and will remain open all day Wednesday, April 28th and Thursday, April 29th from 7:00am until 12:50pm. All persons attending the conference will be required to register, and pay the appropriate fee for registration. Please wear your badges to all sessions and activities.

REGISTRATION HOURS
Registration desk will be open at the Foyer area outside Illini Room A

<table>
<thead>
<tr>
<th>Day</th>
<th>Hours</th>
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<tbody>
<tr>
<td>Tuesday, April 27</td>
<td>7:00am - 5:00pm</td>
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<tr>
<td>Wednesday, April 28</td>
<td>7:00am - 5:00pm</td>
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<tr>
<td>Thursday, April 29</td>
<td>7:00am - 12:00pm</td>
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REGISTRATION FEES
Members/Authors/Session Chair Full Conference*** $350.00
Members/Authors/Session Chair Single Day** $250.00
Non Members Full Conference*** $480.00
Non Members Single Day** $300.00
Students/Retirees Full Conference* $100.00
Students/Retirees Single Day* $75.00
Additional Late Registration Fee (after April 5, 2010) $100.00

(Additional Dinner Tickets & Proceedings are available at the Registration Desk)

* Conference fees do not include Proceedings & Dinner Reception
** Conference fees do include Proceedings but does not include Dinner Reception
*** Conference fees include Proceedings & Dinner Reception

Please note: Non-members who pay full conference rate will be eligible for one year free membership in ASME. Fill out the application forms that are available at the registration desk.

CONFERENCE DINNER AND RECEPTION:
All conference attendees and guests are encouraged to take the opportunity to meet and discuss ideas with industry peers at the Conference Dinner and Reception. The Conference Reception will be held on Wednesday, April 28th from 5:00 to 6:30 PM in the Illini Union South Lounge. The Conference Dinner Program will be held immediately following the reception on Wednesday, April 28th from 6:30pm to 9:00 PM in Illini Union Ballroom. Conference Reception and Dinner tickets are provided to Full Conference Registrants with your name badge. Additional tickets for the Conference Reception and Dinner may be purchased for $50 at the registration desk.

AIRPORT TRANSPORTATION: The Champaign-Urbana (Willard) airport is located on Rt. 45 (Neil St. in Champaign) approximately 6 miles south of downtown. Allow 25 minutes to drive there from campus. Taxi’s can be used for about $12: Yellow Cab 217-355-3553, Illini Taxi 217-359-8634.

SCHEDULE: The conference program begins at 8:00am Tuesday morning and will be held in Illini Union A, B, C, & South Lounge, 210, 404, 405, 406, 407 of the Illini Union. There will be a continental breakfast each morning beginning at 7:00am in Illini Union Room B. Lunch will be provided to conference registrants on Tuesday and Wednesday. Thursday lunch is on your own.

ATTIRE: The recommended dress for the conference is “business casual”

PUBLICATION SALES:
All ASME/IEEE/ASCE Joint Rail Conference technical papers are compiled into a Proceedings Volume CD. One copy is included in the Full and Member/Non-member Single Day Conference Registration Fee. Additional copies of the ASME/IEEE/ASCE Joint Rail Conference Technical Proceedings can be purchased at the registration desk for $50 each. Additional copies can also be ordered from:

ASME Order Department
22 Law Drive
Box 2300 Fairfield, NJ 07007-2300
**Conference Schedule**

**MONDAY, APRIL 26TH, 2010**
Exhibitor set-up 1:00pm - 5:00pm

**TUESDAY, APRIL 27TH, 2010**
Author Breakfast (Colonial Room 1st Floor) 7:00am - 7:45am
Continental Breakfast 7:00am - 9:00am
Registration Open 7:30am - 5:00pm
Concurrent Presentation Sessions 8:00am - 11:45am
Luncheon 11:45am - 1:00pm
Concurrent Presentation Sessions 1:00pm - 5:05pm
Reception/Poster Presentations 5:05pm - 7:00pm

**WEDNESDAY, APRIL 28TH, 2010**
Author Breakfast (Colonial Room 1st Floor) 7:00am - 7:45am
Continental Breakfast 7:00am - 9:00am
Registration Open 7:30am - 5:00pm
Plenary Presentation Sessions 8:00am - 11:50am
Luncheon 11:50am - 1:05pm
Concurrent Presentation Sessions 1:05pm - 5:10pm
Reception 5:10pm - 6:30pm
**BANQUET**- Illini Union Ballroom - 2nd Floor 6:30pm - 9:00pm

**THURSDAY, APRIL 29TH, 2010**
Author Breakfast (Colonial Room 1st Floor) 7:00am - 7:45am
Continental Breakfast (Exhibit hall) 7:00am - 9:00am
Concurrent Presentation Sessions 8:00am - 12:05pm
Tour of University of Illinois Research Centers** 1:30pm

*Advance tickets required for banquet*
**Advance tickets required to participate in tour**

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**Committee Meetings**

**MONDAY, APRIL 26TH, 2010**
RTD Executive Committee Meeting (room 210) 1:00 pm - 2:30 pm
RTD General Committee Meeting (room 210) 2:45 pm - 4:15 pm
RTD, ASCE, IEEE joint committee meeting (room 210) 4:30 pm - 5:30 pm
Committee Dinner (room 210) 6:00 pm

**TUESDAY, APRIL 27TH, 2010**
TRB AR030 Mid-year Meeting (Lunch Included) 12:00 pm - 2:30 pm
335 Grainger Engineering Library (inquire at registration for directions)
Travel Information: Champaign-Urbana

Champaign-Urbana is about 140 miles from Chicago, 190 miles from St. Louis, and 110 miles from Indianapolis. Served by American Airlines and Northwest Airlink, the Champaign (CMI) airport offers seven daily flights in and out. Alternative airports include: Chicago, IL, St. Louis, MO, Bloomington, IL, and Indianapolis, IN. Champaign is also served by three daily Amtrak trains and a shuttle (LEX) to-and-from the Chicago airports. For additional travel information visit:

Willard (Champaign-Urbana) Airport: www.flycmi.com

Champaign-Urbana Mass Transit: www.cumtd.com

Amtrak: www.amtrak.com 1-800-872-7245

LEX: www.lincolnlandexpress.com 1-800-223-9313 (shuttle from Chicago, IL, Bloomington, IL, Indianapolis, IN to Champaign, IL)

Illini Shuttle: http://www.illinishuttle.com/ (shuttle to/from Chicago to Champaign)

Lodging

Hampton Inn: 217-337-1100
Walking Distance
1200 W. University, Urbana, IL 61801

Hawthorn Suites: 217-398-3400
Shuttle bus
101 Trade Centre, Champaign, IL 61820

I-Hotel: 217-819-5000
Shuttle bus
1900 S. 1st Street, Champaign, IL 61820

Illini Union Hotel: 217-333-3030
Conference bus
1401 W. Green St., Urbana, IL 61801

Hilton Garden Inn: 217-352-9970
Shuttle bus
1501 S. Neil St., Champaign, IL 61820

Champaign-Urbana showing Illini Union and conference hotels
TRACK 1 RAILROAD INFRASTRUCTURE ENGINEERING
1-1 Concrete Tie Fasteners - Tuesday, April 27th, 3:25 - 5:05pm
1-2 Concrete Tie Design and Performance - Tuesday, April 27th, 9:40 - 11:45am
1-3 Composite and Alternative Tie Designs - Tuesday, April 27th, 1:00 - 3:05pm
1-4 Ballastless Track Design and Performance - Tuesday, April 27th, 1:00 - 3:05pm
1-5 Track Alignment Prediction Modeling - Wednesday, April 28th, 3:25 - 5:10pm
1-6 Track Inspection Technologies - Wednesday, April 28th, 1:05 - 3:10pm
1-7 Track Maintenance Planning - Wednesday, April 28th, 1:05 - 3:10pm
1-8 High-Speed Rail Special Trackwork Design and Performance - Tuesday, April 27th, 3:25 - 5:05pm
1-9 High-Speed Rail Structures - Wednesday, April 28th, 10:35 - 11:50am
1-10 Rail - Thursday, April 29th 10:25 - 12:05pm
1-11 Rail Stress Management - Wednesday, April 28th, 1:05 - 3:10pm
1-12 Track Design and Construction - Thursday, April 29th 8:00 - 10:05am
1-13 Track Substructure - Thursday, April 29th 8:00 - 10:05am and 10:25 - 12:05pm
1-14 Composite Structures and Rehabilitation - Wednesday, April 28th, 10:35 - 11:50am
1-15 Electrification - Tuesday, April 27th, 3:25 - 5:05pm

TRACK 2 RAIL EQUIPMENT ENGINEERING
2-1 Crashworthiness - Tuesday, April 27th, 9:40 - 11:45am
2-2 Bearing Design and Testing - Tuesday, April 27th, 1:00 - 3:05pm
2-3 Fluid Dynamics in Rail - Tuesday, April 27th, 3:25 - 5:05pm
2-4 Vehicle Track Interaction - Wednesday, April 28th, 1:05 - 3:10pm
2-5 Traction - Tuesday, April 27th, 1:00 - 3:05pm
2-7 Wheel Design and Analysis - Tuesday, April 27th, 1:00 - 3:05pm
2-8 Rolling Stock Design - Thursday, April 29th 10:25 - 12:05pm
2-9 Inspection Technology - Wednesday, April 28th, 10:35 - 11:50am
2-11 High-Speed Vehicle Track Interaction - Wednesday, April 28th, 3:25 - 5:10pm

TRACK 3 HSR EXPERIENCE & DEVELOPMENT
3-2 FRA/USDOT High-Speed Intercity Passenger Rail Program
3-3 California - Tuesday, April 27th, 1:00 - 3:05pm
3-5 FRA Office Research and Development - Tuesday, April 27th, 3:25 - 5:05pm
3-6 State Programs - Tuesday, April 27th, 3:25 - 5:05pm
3-7 Asian Technology and Systems - Wednesday, April 28th, 3:25 - 5:10pm
3-9 Asian High-Speed Experience - Wednesday, April 28th, 1:05 - 3:10pm
3-10 European High-Speed Rail Technology - Thursday, April 29th 8:00 - 10:05am

TRACK 4 SHARED CORRIDORS
4-1 Shared Corridors - Tuesday, April 27th, 9:40 - 11:45am and 1:00 - 3:05pm

TRACK 5 PLANNING, MANAGEMENT & OPERATION
5-1 Capacity Modeling - Tuesday, April 27th, 9:40 - 11:45am
5-2 Network Modeling - Tuesday, April 27th, 1:00 - 3:05pm
5-3 Demand Forecasting - Thursday, April 29th 8:00 - 10:05am
5-4 PPP & Risk Analysis - Wednesday, April 28th, 3:25 - 5:10pm
5-5 Resource Planning - Wednesday, April 28th, 10:35 - 11:50am
5-6 Station Design and Passenger Services - Thursday, April 29th 10:25 - 12:05pm
5-7 Finance and Economics - Tuesday, April 27th, 3:25 - 5:05pm
5-8 Railroad Education - Tuesday, April 27th, 9:40 - 11:45am
5-9 Case Studies - Thursday, April 29th 8:00 - 10:05am

TRACK 6 SAFETY, SECURITY & ENVIRONMENT
6-1 System Safety Assurance in Rail Operations - Tuesday, April 27th, 9:40 - 11:45am
6-2 Risk Assessment of Hazardous Good Transport - Wednesday, April 28th, 3:25 - 5:10pm
6-3 Positive Train Control (PTC) - Technology and Regulation - Thursday, April 29th 10:25 - 12:05pm
6-4 Human Factors in Rail Engineering and Operations - Wednesday, April 28th, 10:35 - 11:50am
6-5 Energy and Environmental Issues in Rail System Design and Operation - Wednesday, April 28th, 1:05 - 3:10pm
6-6 Grade Crossing and Right-of-way Safety - Thursday, April 29th 8:00 - 10:05am
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<tr>
<th>Time</th>
<th>8:00</th>
<th>8:10</th>
<th>8:35</th>
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<tr>
<td><strong>Room A</strong></td>
<td><strong>ILLINE</strong></td>
<td><strong>PLENARY SESSION</strong></td>
<td><strong>Chair:</strong></td>
<td><strong>Break:</strong></td>
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<tr>
<td><strong>ILLINE Room A</strong></td>
<td>Opening Remarks</td>
<td>JRC2010-36096 Full Span Precast and Launching Construction in Taiwan’s High Speed Rail Project</td>
<td>JRC2010-36014 High Speed Locomotive Development - A European Experience</td>
<td>The FRA High-Speed Intercity Passenger Rail Program</td>
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<td>James Chung Tai, Dennis Jang, Heather Gaffney, and John Flint</td>
<td>James Vitins - Bombardier Transportation</td>
<td>Mark Yachmetz - Federal Railroad Administration</td>
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<tr>
<th>Room</th>
<th>210</th>
<th>404</th>
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<td><strong>210</strong></td>
<td>No AM Sessions Scheduled in 210</td>
<td>No AM Sessions Scheduled in 404</td>
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<td>No AM Sessions Scheduled in 406</td>
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<td><strong>407</strong></td>
<td>No AM Sessions Scheduled in 407</td>
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### Tuesday, April 27 - Morning Sessions

<table>
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<tr>
<th>Time</th>
<th>Session</th>
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| 9:40   | **4-1 SHARED CORRIDOR 1**  
Chair: Dale Muellerleile - HDR                                       |
| 9:40   | JRC2010-36062 Shared Corridor: International Delivery: UK (WCML) and Saudi Railway Programs  
Vinay Mudholkar - Louis Berger Group, INC                           |
| 9:55   | JRC2010-36263 Guidebook for Implementing Passenger Service on Shared Passenger and Freight Rail Corridors  
Alan Bing - ICF International  
David P Simpson - David P. Simpson Consultants LLC.                |
| 10:10  | JRC2010-36264 Joint Benefits for Use of Freight Railroad Corridors in High Speed Rail Development  
Mark Walbran - CH2M Hill  
David Phillips - TransSystems                                     |
| 10:25  | JRC2010-36286 Best Practices in Host Railroad Partnerships: Protecting the Public’s Investment  
Jason Maga - Amtrak Operations                                      |
| 10:40  | JRC2010-36116 Synergism in High-Speed Rail Planning - A Case Study  
Art Peterson - Parsons Brinkerhoff George Weber - Illinois Department of Transportation  
Mark Bristol - Union Pacific Railroad                               |
| 11:05  | **5-8 RAILROAD EDUCATION PANEL DISCUSSION**  
Chair: Chris Barkan - University of Illinois at Urbana-Champaign    |
| 11:05  | JRC2010-36293 TBD  
(ASCE RTC)                                                           |
| 11:20  | JRC2010-36293 TBD  
Mehdi Ahmadian - VTU (ASME RTD)                                     |
| 11:35  | JRC2010-36293 TBD  
Dallas Richards - Arcadis                                           |
| 11:50  | **6-1 SYSTEM SAFETY ASSURANCE IN RAIL OPERATIONS**  
Chair: John Zeman - University of Illinois at Urbana-Champaign      |
| 12:05  | JRC2010-36219 Evaluating the Potential for Damaging Hydraulic Pressure in the Concrete Tie Rail Seat  
John Zeman, J. Riley Edwards, David A. Lange, and Chris Barkan - University of Illinois at Urbana-Champaign |
| 12:20  | JRC2010-36069 Sleep Analysis Based on the Methodology Life Cycle Cost “LCC”  
Rachel Maximo - VALE  
Pablo Silva - Military Institute of Engineering                      |
| 12:35  | JRC2010-36075 The Use of Strain Attenuating Tie Pad and Their Influence on Rail Seat Load in Heavy-Haul Railroads  
Konstantinos Giannakos - University of Thessaly, Greece            |
| 12:50  | JRC2010-36025 Developing Railway Higher Education in the European Union and United States  
Pasi Lautala and William Sproule - Michigan Tech University  
Rosario Macario - Universidade de Técnica de Lisboa  
Joern Pachl - Technische Universität Braunschweig  
J. Riley Edwards - UIUC                                           |
| 13:05  | JRC2010-36293 TBD  
Kevin Kesler - Federal Railroad Administration                     |
| 13:20  | **1-2 CONCRETE TIE DESIGN AND PERFORMANCE**  
Chair: John Zeman - University of Illinois at Urbana-Champaign      |
| 13:20  | JRC2010-36219 Evaluating the Potential for Damaging Hydraulic Pressure in the Concrete Tie Rail Seat  
John Zeman, J. Riley Edwards, David A. Lange, and Chris Barkan - University of Illinois at Urbana-Champaign |
| 13:35  | JRC2010-36069 Sleep Analysis Based on the Methodology Life Cycle Cost “LCC”  
Rachel Maximo - VALE  
Pablo Silva - Military Institute of Engineering                      |
| 13:50  | JRC2010-36095 Rail track Solutions for Demanding Requirements  
Ludwig Schoell - RAIL.ONE GmbH                                     |
| 14:05  | JRC2010-361147 Cyclic Loading Tests of Concrete Sleepers with Varying Ballast Condition  
Antti Nurminen, Olli Kerokoski, and Tommi Rantala - Tampere University of Technology  
Tuomo Viitala - Finnish Rail Administration                        |
| 14:20  | **5-1 CAPACITY MODELING**  
Chair: John Tunna - TTCI                                           |
| 14:20  | JRC2010-36029 Benefit-Cost Analysis of Infrastructure Improvement to Improve Train Safety  
Xiang Liu and Chris Barkan - University of Illinois at Urbana-Champaign |
| 14:35  | JRC2010-36074 The Development of a Railway Safety Assessment Program in South Korea  
Hee-Min Noh, J.B. Wang, and Y.O Cho - Korea Railroad Research Institute |
| 14:50  | JRC2010-36180 The Vulnerability Assessment of Railway Network  
Wang Wei, Jun Liu, Haoying Li, and Jiang Xi - Beijing Jiaotong University |
| 15:05  | JRC2010-36073 Commuter Rail Safety in the Presence of Freight Rail  
Alan Hoback and Angel DuPree - University of Detroit Mercy           |
| 15:20  | **2-1 CRASHWORTHINESS**  
Chair: Kris Severson - Volpe Center                                 |
| 15:20  | JRC2010-36031 Determining the Causes of Train Delay  
Mark Dingler, Chris Barkan, Amanda Koenig - University of Illinois at Urbana-Champaign |
| 15:35  | JRC2010-36158 Strategic Capacity Planning Process for Intercity Passenger Rail  
Yang-Cheng Lai and Mei-Cheng Shih - National Taiwan University     |
| 15:50  | JRC2010-36277 Impact of Positive Train Control on Railway Capacity  
Mark Dingler and Christopher P.L. Barkan - University of Illinois at Urbana-Champaign  
Yang-Cheng Lai - National Taiwan University                         |
| 16:05  | JRC2010-36280 Railway Capacity Challenge: Measuring and Managing in Britain  
Melody Khadem-Sameti, John Preston, John Armstrong - University of Southampton |
| 16:20  | JRC2010-36132 Optimization Model and Algorithm for Routing of Railway Passenger Flow  
La Tong, Lei Nie, Hui Ling Fu - Beijing Jiaotong University          |
| 16:35  | JRC2010-36020 Update on Alternative Occupant Volume Testing  
Michael Carolan and Michelle Mulhanger - Volpe Center               |
| 16:50  | JRC2010-36247 Using a Physical Based Model to Predict Failure Behavior of Impacted Railroad Tank Car  
Fazle AlHaid, K. Enakoutsa, K.N. Solanki, and D.J. Bannmann - Mississippi State University |
| 17:05  | JRC2010-36059 Glazed Bodyside Systems in Railway Vehicles  
Chris Hogg - Independent Glass  
P. Matthews - Poised Joint Management                                 |
| 17:20  | JRC2010-36227 Tank Car Fittings Protection in Rollover Derailment Conditions  
Francisco Gonzalez, III - Federal Railroad Administration            |
| 17:35  | JRC2010-36201 Estimated Weight Increase Resulting From Modifying European Trains To Meet F.R.A. Safety Rules  
Brian Scales - Transportation Engineer                             |
<table>
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<tr>
<th>Time</th>
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<th>Session</th>
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<tr>
<td>1:00 - 1:25</td>
<td><strong>4-1 SHARED CORRIDOR 2</strong> Chair: Dallas Richards - ARCADIS</td>
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<tr>
<td><strong>ILLINI ROOM A</strong></td>
<td>JRC2010-36042 Can the Nation’s Railroads be Used to Accommodate Very High Speed Passenger Rail? William Burgel - HDR Engineering</td>
<td>JRC2010-36079 High Speed Rail in Canada: Motivation, Need, and Demand Murtaza Haider - Ryerson University</td>
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<tr>
<td>JRC2010-36093 A Constraint-Based Scheduling Model for Optimal Train Dispatching Joaquin Rodríguez, Grégory Marlière, and Sonia Sobieraj - Université Lille-Nord de France</td>
<td>JRC2010-36092 Planning Capacity Improvements for High Speed Rail Using the Rail Traffic Controller Rail Operations Simulation Model Alan Tobias, David House, and Randy Wade - HNTB</td>
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<td>JRC2010-36285 Applying the European HSR Experience to North America Rod Case, Kevin Foy, David Hunt, and David Leidback - Oliver Wyman</td>
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<td>1:25 - 1:50</td>
<td><strong>3-3 CALIFORNIA</strong> Chair:</td>
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<td>JRC2010-36078 California High Speed Train Project Alternatives Analysis Process Steven Wolf - Parsons Brinckerhoff</td>
<td>JRC2010-36105 When is High-speed Rail Fast Enough? Kenneth Sisak - AECOM</td>
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<td>JRC2010-36138 The Altamont Corridor Rail Project Joint Use Corridor Brent Ogden - AECOM Dan Leavitt - California High Speed Rail Authority</td>
<td>JRC2010-36265 Lessons Learned Preparing the Project Level EIR/ EIS and Preliminary Engineering Documents on the LA to Anaheim Section of the California High Speed Rail Project David Thomson - STV Inc.</td>
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<td>1:50 - 2:15</td>
<td><strong>1-4 BALLASTLESS TRACK DESIGN AND PERFORMANCE</strong> Chair: Donald Uzarski - UIUC</td>
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<td>JRC2010-36046 Slab Track Testing for Shared Freight and High Speed Passenger Service Dingqing Li - TTCL David Bilow - Heifer Industries Theodore Sussmann - Volpe Center</td>
<td>JRC2010-36149 Slab Track System Zeublin Viktor Enoki - Ed. Zeublin AG</td>
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<td>JRC2010-36057 Composite Plastic Ties in MRS Brazil Heavy Haul Cela Rodrigues - MRS LOGISTICA S/A</td>
<td>JRC2010-36121 Development and Implementation of Recycled Thermoplastic RR Ties PV Vijay, Ganga Rao Kota, Venugopal Chada, and Muhammad Qureshi - West Virginia University</td>
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<td>2:15 - 2:40</td>
<td><strong>1-3 COMPOSITE AND ALTERNATIVE TIE DESIGNS</strong> Chair: Donald Uzarski - UIUC</td>
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<tr>
<td>JRC2010-36262 Lessons Learned Design Method for High Speed Wheel Profiles by Considering Rolling Radii Difference Function Gang Shen and Xia And Xiaobo Zhong - Tongji University</td>
<td>JRC2010-36291 Thermoplastic Composites as Degradation-Resistant Material Systems for Railroad Bridge Ties and Timber Bridge Structures Richard Lampo - U.S. Army Engineer Research &amp; Development Center</td>
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<td>2:40 - 3:05</td>
<td><strong>2-2 BEARING DESIGN AND TESTING</strong> Chair: Gerald Anderson - TTCL</td>
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<td>JRC2010-36269 Improved Rail Bearing Performance Through Ultrasonic Quantification of Bearing Steel Quality Joseph Turner, Lucas W. Koester, and Chase Nielson - University of Nebraska-Lincoln Goutam Ghoshal - UIUC Brent M. Wilson - Amsted Allen J. Fuller - Breco</td>
<td>JRC2010-36204 Vertical Split Rim Failure Analysis in Railroad Wheels Veekata Sura and Sankaran Mahadevan - Vanderbilt University</td>
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<td>3:05 - 3:30</td>
<td><strong>2-7 WHEEL DESIGN AND ANALYSIS</strong> Chair: Gerald Anderson - TTCL</td>
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<td>JRC2010-36093 A Constraint-Based Scheduling Model for Optimal Train Dispatching Joaquin Rodríguez, Grégory Marlière, and Sonia Sobieraj - Université Lille-Nord de France</td>
<td>JRC2010-36167 Dynamic Scheduling Model and Algorithm for Dispatching Trains in High-speed Railway Passenger Station Yixiang Yue and Leishan Zhou - Beijing Jiaotong University</td>
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<td>JRC2010-36181 Research on Optimization of Urban Mass Transit Network Schedule Based on Coordination of Connecting Time between Different Lines Xiaohong Fang, Zhou Leishan, and Xia Ming - Beijing Jiaotong University</td>
<td>JRC2010-36229 Wheel-Rail Dynamic Model and Stochastic Analysis of the Friction in the Contact Patch HyunWook Lee, Carvel Holton, and Corina Sandu - Virginia Tech</td>
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<td>JRC2010-36010 Effective Friction Control for Optimization of High Speed Rail Operations Donald Eadie and Ron Hui - Kelsan Technologies Corporation Kervin Oldknow - Portec Rail Inc. Ysushi Oka - Sumitomo Metal Peter Krauss Peter Mattick - RailSciences</td>
<td>JRC2010-36011 Top of Rail Friction Control as Means to Mitigate Damaging Lateral Loads Due to Overbalanced Operation of Heavy Axle Load freight Traffic in Shared HSR Corridors Kervin Oldknow and Donald Eadie - Portec Rail, Inc</td>
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<td>JRC2010-36054 Implementation of Wheel-Rail Friction Management Strategy on MRS Railroad Cristiao Jorge - MRS LOGISTICA S/A Walter Vidon Jr. and Felipe Vidon - Ch Vidon Rail Consultant Rob Caldwell - NRC-CSTT</td>
<td>JRC2010-36206 Field Investigations on the Performance of Rolling Stock Components Against Low Adhesion Conditions Oscar Arias-Cuevas and Zili Li - Delft University of Technology</td>
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| **3-5 FRA OFFICE RESEARCH AND DEVELOPMENT**  
Chair: Kevin Kesler - FRA | **3-6 STATE PROGRAMS**  
Chair: Michael Garcia - IDOT | **1-1 CONCRETE TIE FASTENERS**  
Chair: Kevin Hicks - Union Pacific Railroad | **1-8 HIGH-SPEED RAIL SPECIAL TRACKWORK DESIGN AND PERFORMANCE**  
Chair: Dingqing Li - TTCI | **1-15 ELECTRIFICATION**  
Chair: Dingqing Li - TTCI | **5-7 FINANCE AND ECONOMICS**  
Chair: Avery Grimes | **2-3 FLUID DYNAMICS IN RAIL**  
Chair: Michelle Muhlanger - Volpe Center |
| JRC2010-36287 FRA Office of Research and Development Overview  
Gary Carr - Federal Railroad Administration | JRC2010-36065 Missouri’s Experience in Submitting ARRA High Speed Rail Projects  
Rodd Massman - Missouri DOT | JRC2010-36050 High Speed in China and Latest Developments on Fasteners for High Speed  
Michael Steidl - Vossloh Fastening Systems America Corp. | JRC2010-36114 Influencing Factors of Dynamic Performance of Jointless Turnout on Bridge in High-Speed Railway  
Rang Chen, Ping Wang, and Xiaoping Chen - Southwest Jiaotong University | JRC2010-36118 A Multi-Period Investment Selection Model for Railway Capacity Expansion with Stochastic Demand  
Yung-Cheng Lai and Mei-Cheng Shih - National Taiwan University | JRC2010-36036 Public Benefits Methodology - Can this Process be Standardized?  
Kevin Keller, Fred Kramer, Mark Hemphill - HDR |
| JRC2010-36288 FRA Approach for Train Occupant Protection  
Emmanuel Horowitz - ESH Consult | JRC2010-36274 Advancements in Fastening System  
Design for Concrete Crossties  
Mauricio Gutierrez, J. Riley Edwards, and Christopher P.L. Barkan - University of Illinois at Urbana-Champaign | JRC2010-36222 Improved Performance Track Components for Heavy Axle Loads and High Speed Rail  
David Davis, Semih Kalay, and Joseph LoPresti - Transportation Technology Center, Inc. | JRC2010-36214 Cross Wind Protection Systems for High Speed Railway Lines  
Paula Alvarez Legazpi, Marta Vargas Marín, and Joaquín Botella Malagon SENEX, Ingeniería y Sistemas, S.A.  
José Conrado Martínez Acosta - Administrador de Infraestructuras Ferroviarias (ADIF) | JRC2010-36019 An Approach to Wind Blow-over Risk Reduction at BNSF Railway  
Corey Pasta and Larry R. Million - BNSF  
William Shust - Objective Engineers  
Brian J. Dumont and Jennifer L. Miller - Airflow Sciences Corporation  
Walther Rosenberger - Norfolk Southern |
| JRC2010-36289 Adaptive Enforcement Algorithm Role in PTC Systems  
Terry Tse - Federal Railroad Administration | JRC2010-36205 High Speed and Commuter Rail Planning on the Florida East Coast Railway  
Charles Lynch - Gannett Fleming | JRC2010-36284 Rail Fastenings for High Speed Rail Applications  
Bob Coats and John Forrill - Pandrol USA | JRC2010-36226 Design Considerations in The Development of a North American High Speed Turnout  
Brian Abbott, Gary Click, Ken Ouelette, Tom Lee, and Steve Mattson - VAE NORTRAK | JRC2010-36151 Heavy Haul Railway Electrification - Experiences and Prospects  
Dave Van der Meulen - Railway Corporate Strategy CC | JRC2010-36038 Foundation and Liquefaction Issues of Embankment Foundations  
Sergio Aría-Sánchez, Oscar Lopez-Garcia and Jose Meseguer - Universidad Politécnica de Madrid |
| JRC2010-36290 Autonomous Inspection Technologies  
Ali Tajaddini - Federal Railroad Administration | High Speed Rail in Illinois  
George Weber - Illinois Department of Transportation | JRC2010-36092 Applications of Rail Seat Abrasion Testing to Advancements in Fastening Systems at Unit Rail  
Jose Medeiros - Unit Rail  
José Van der Meulen - Railway Corporate Strategy CC | JRC2010-36288 Rail Fastenings for High Speed Rail Applications  
Bob Coats and John Forrill - Pandrol USA | JRC2010-36292 Applications of Rail Seat Abrasion Testing to Advancements in Fastening Systems at Unit Rail  
Jose Medeiros - Unit Rail  
José Van der Meulen - Railway Corporate Strategy CC | JRC2010-36027 Influence of Embankments With Parapets in the Cross-wind Turbulence Intensity at the Contact Wire of Railway Overheads  
Sergio Aría-Sánchez, Oscar Lopez-Garcia and Jose Meseguer - Universidad Politécnica de Madrid |
| JRC2010-36214 Experimental Study on the Ballast Pick-up Problem in High Speed Trains  
Angel Sanz-Andrés, Fermín Navarro-Medina, Isabel Pérez Grande - Universidad Politécnica de Madrid | **2-4 HIGH-SPEED RAIL SPECIFIC WORKSHOPS**  
**CHICAGO - Pierra Hall Ballroom (3rd Floor)** | **2-5 STUDY OF RAILWAY COMPONENTS**  
**CHICAGO - Hall B (Pier B)** | **2-6 ENGINEERING CONCEPTS**  
**CHICAGO - Hall A (Pier A)** | **2-7 RAILWAY PROTECTION TECHNOLOGIES**  
**CHICAGO - Hall C (Pier C)** | **2-8 RAILWAY ASCRIBED STRATEGIES**  
**CHICAGO - Hall E (Pier E)** |
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**PLENARY SESSION**

Chair: [Name]

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<tr>
<th>Room A</th>
<th>Opening Remarks</th>
<th>JRC2010-36034 Integration of Safety Systems for High-Speed Rail Corridors</th>
<th>JRC2010-36160 Disaster Prevention of a High Speed Rail System - Lessons Learnt in a Recent Earthquake</th>
<th>Shared Corridor Perspectives</th>
<th>Applicability of PPP to High Speed Rail</th>
<th>JRC2010-36267 Facing the Infrastructure Challenges of Operating High Speed Rail in a Mixed Traffic Corridor</th>
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<td>10:15</td>
<td><strong>1-9 HIGH-SPEED RAIL STRUCTURES</strong>&lt;br&gt;Chair: Ray Strelesky - Canadian Pacific Railway</td>
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<td>10:35</td>
<td>JRC2010-36035 Durability Research for Concrete Box Girder of High Speed Railway&lt;br&gt;Junqing Lei and Xin-Hua Zhong - Beijing Jiaotong University&lt;br&gt;Wu-Qin Wang - China Communications Construction Company Limited</td>
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<td>11:00</td>
<td>JRC2010-36129 Taiwan High Speed Rail Viaducts – A Seismic-Safety and Passenger-Comfort Design Approach&lt;br&gt;Shu Hen Cheng, Tony Yen, and S.C. Huang Sinotech Engineering Consultants, Ltd.</td>
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<td>11:25</td>
<td>JRC2010-36053 Rehabilitation of Railroad Bridges Using GFRP Composites&lt;br&gt;Ganga Rao Hota, PV Vijay, and Reza Abhari - West Virginia University</td>
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<td><strong>1-14 COMPOSITE STRUCTURES AND REHABILITATION</strong>&lt;br&gt;Chair: Ray Strelesky - Canadian Pacific Railway</td>
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<td>11:50</td>
<td><strong>6-4 HUMAN FACTORS IN RAIL ENGINEERING AND OPERATIONS</strong>&lt;br&gt;Chair: Monique Stewart - FRA</td>
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<td>10:35</td>
<td>JRC2010-36195 Measuring Operator Fatigue as Part of FRMS&lt;br&gt;John Caldwell - Fatigue Science&lt;br&gt;Steve Hursh - IBR</td>
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<td>11:00</td>
<td>JRC2010-36261 Estimating Crew Alertness From Speech&lt;br&gt;Parham Shahidi - Virginia Tech&lt;br&gt;Steve C. Southward and Mehdi Ahmadian - Railway Technologies Laboratory</td>
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<td>11:25</td>
<td>Stimulating Safety Culture Change in Four Field Demonstration Pilots&lt;br&gt;Michael Zuschlag - Volpe</td>
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<td><strong>5-5 RESOURCE PLANNING</strong>&lt;br&gt;Chair: Steve Clark - ARUP</td>
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<td>10:35</td>
<td>JRC2010-36177 Study on Determination Method of Train-set Circulation Range Based on Maintenance Depot&lt;br&gt;Hua Li, Baoming Han, and Dewei Li - Beijing Jiaotong University</td>
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<td>JRC2010-36235 Case Studies in Planning Railroad Crew Members&lt;br&gt;Joao Martins and Ernesto Morgado - SISCOG</td>
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<td>JRC2010-36262 Optimal Fueling Strategies for Locomotive Fleets in Railroad Networks&lt;br&gt;Seyed Mohammad Nourbakhsh and Yanfeng Ouyang - University of Illinois at Urbana-Champaign</td>
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<td><strong>2-9 INSPECTION TECHNOLOGY</strong>&lt;br&gt;Chair: Eloy Martinez - FRA</td>
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<td>10:35</td>
<td>JRC2010-36006 A Framework for Integrated Rail Vehicle Health Management&lt;br&gt;Luis Hernandez - Global Strategic Solutions</td>
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<td>11:00</td>
<td>JRC2010-36199 Nondestructive Inspection Methods for Railroad Castings&lt;br&gt;Daniel Carter and Kari Gonzales - Transportation Technology Center, Inc.</td>
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<td>11:25</td>
<td>JRC2010-36258 Impact of Automated Inspection Technology on Unit Train Performance&lt;br&gt;Bryan Schlake, Christopher P. L. Barkan, and J. Riley Edwards - University of Illinois at Urbana-Champaign</td>
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### Wednesday, April 28 - Afternoon Sessions

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<tr>
<td><strong>3-9 ASIAN HIGH-SPEED EXPERIENCE</strong>&lt;br&gt;Chair: TC Kao - University of Illinois/National Taiwan University&lt;br&gt;&lt;br&gt;JRC2010-36052 The Experience of the Development of High-Speed Train Systems in Korea&lt;br&gt;Cheonsoo Park, Kihwan Kim, and Sungmoon Choi - Korean Railroad Research Institute</td>
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<td><strong>6-5 ENERGY AND ENVIRONMENTAL ISSUES IN RAIL SYSTEM DESIGN AND OPERATION</strong>&lt;br&gt;Chair: Melissa Shurland - FRA&lt;br&gt;&lt;br&gt;JRC2010-36213 Development of a Machine Vision System for Inspection of Railroad Track&lt;br&gt;Luis Fernando Molina - University of Illinois at Urbana-Champaign</td>
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<td><strong>1-6 TRACK INSPECTION TECHNOLOGIES</strong>&lt;br&gt;Chair: Boris Nejikovsky - Ensco&lt;br&gt;&lt;br&gt;JRC2010-36208 The Canadian Pacific DGRMS – The First Use of Deployable GRMS in a Production Mode&lt;br&gt;Jeffrey Bloom - ENSCO</td>
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<td><strong>1-7 TRACK MAINTENANCE PLANNING</strong>&lt;br&gt;Chair: Boris Nejikovsky - Ensco&lt;br&gt;&lt;br&gt;JRC2010-36200 A Heuristic Approach to Railroad Track Maintenance Scheduling Problem&lt;br&gt;Fan Peng, Seungko Kang, Xiaopeng Li, Yanfeng Qian - University of Illinois at Urbana-Champaign</td>
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<td><strong>1-11 RAIL STRESS MANAGEMENT</strong>&lt;br&gt;Chair: David Davis - TTCI&lt;br&gt;&lt;br&gt;JRC2010-36214 Ultrasonic Guided Waves in Continuously Welded Rails for Buckling Prediction&lt;br&gt;Ivan Bartoli, Robert Phillips, Stefano Coccia, Francesco Lanza di Scalea - University of California San Diego</td>
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<td><strong>2-4 VEHICLE TRACK INTERACTION</strong>&lt;br&gt;Chair: Brian Marquis - Volpe Center&lt;br&gt;&lt;br&gt;JRC2010-36217 Dynamic Analysis of Unstable Vibration of KTX&lt;br&gt;Babyoung Kang - Korea Railroad Research Institute</td>
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### Abstracts

#### 3-9 ASIAN HIGH-SPEED EXPERIENCE

- **JRC2010-36052 The Experience of the Development of High-Speed Train Systems in Korea**
  - Cheonsoo Park, Kihwan Kim, and Sungmoon Choi - Korean Railroad Research Institute

#### 6-5 ENERGY AND ENVIRONMENTAL ISSUES IN RAIL SYSTEM DESIGN AND OPERATION

- **JRC2010-36213 Development of a Machine Vision System for Inspection of Railroad Track**
  - Luis Fernando Molina - University of Illinois at Urbana-Champaign

#### 1-6 TRACK INSPECTION TECHNOLOGIES

- **JRC2010-36208 The Canadian Pacific DGRMS – The First Use of Deployable GRMS in a Production Mode**
  - Jeffrey Bloom - ENSCO

#### 1-7 TRACK MAINTENANCE PLANNING

- **JRC2010-36200 A Heuristic Approach to Railroad Track Maintenance Scheduling Problem**
  - Fan Peng, Seungko Kang, Xiaopeng Li, Yanfeng Qian - University of Illinois at Urbana-Champaign

#### 1-11 RAIL STRESS MANAGEMENT

- **JRC2010-36214 Ultrasonic Guided Waves in Continuously Welded Rails for Buckling Prediction**
  - Ivan Bartoli, Robert Phillips, Stefano Coccia, Francesco Lanza di Scalea - University of California San Diego

#### 2-4 VEHICLE TRACK INTERACTION

- **JRC2010-36217 Dynamic Analysis of Unstable Vibration of KTX**
  - Babyoung Kang - Korea Railroad Research Institute
<table>
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<th>Time</th>
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<th>Presenters</th>
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</table>
| 3:10  | 3-7     | ASIAN TECHNOLOGY AND SYSTEMS                                         | Chair:                                          | Exportation of Japanese High Speed Rail Technology  
Masashi Ishizuka - Kawasaki Heavy Industries, Ltd. (KHI)  
High Speed Train Development in China  
Changhong Zheng - China South Locomotive and Rolling Stock Co. (CSR)  
Lessons Learned in Financing a PPP-based HSR Project  
Bernice Fan - Fan International Consultants, Inc., Taiwan  
Supervising a PPP-based HSR Project from Government View Points  
Bel-Yi Tsuei - CECI Engineering Consultants, Inc., Taiwan |
| 3:30  | 6-2     | RISK ASSESSMENT OF HAZARDOUS GOODS TRANSPORT                          | Chair: Mike Coltman - Volpe                     | JRC2010-36271 Environmental Risk Analysis of Railroad Transportation of Hazardous Materials  
M. Rapik Saat, Christopher P.L. Barkan, Charles J. Werth, David J. Schaeffer, Hongkhyu Yoon, and Amanda Marruffo - University of Illinois at Urbana-Champaign  
JRC2010-36278 Statistical Comparison of Railroad Hazardous Materials Transportation Routes  
Athaphon Kaowprasert and Christopher P. L. Barkan - University of Illinois at Urbana-Champaign  
JRC2010-36279 Options for Rail Route Infrastructure Improvement to Reduce Hazardous Materials Transportation Risk  
Athaphon Kaowprasert and Christopher P. L. Barkan - University of Illinois at Urbana-Champaign |
| 3:55  | 1-5     | TRACK ALIGNMENT PREDICTION MODELING                                  | Chair: Conrad Ruppert - Amtrak                  | JRC2010-36101 A Novel Algorithm for Predicting Track Irregularities of Unit Track Sections  
Rengkui Liu, Peng Xu, and Quanxin Sun - Beijing Jiaotong University  
JRC2010-36110 Research on Track Alignment Irregularity Prediction Models  
Futian Wang, Ran Guo, and Rengkui Liu - Beijing Jiaotong University  
JRC2010-36163 Forecasting of the Track State of BP Neural Network Based on Kalman Filtering  
ChaoLiang Jia and Weixiang Xu - Beijing Jiaotong University  
Xiumin Liu - Capital Normal University, Beijing  
JRC2010-36225 Sustainability in Track – A Precondition for High Speed Traffic  
Peter Velt - Graz University of Technology  
Stefan Marschnig - LLC Rail Consult |
| 4:20  | 5-4     | PPP AND RISK ANALYSIS                                                 | Chair: Phil Pasterak - PB?                      | JRC2010-36100 Planning of Taiwan High Speed Rail Project  
James Chung Tai, Chun Cheng Lin, Heather Gaffney, and John Flint - T. Y. Liu International  
JRC2010-36137 Risk Management for Rail Transportation Projects  
Paul Franklin - Arup  
JRC2010-36198 Using Public Private Partnerships to Deliver Successful Rail Projects  
Steven Clark - Arup  
Nick Higton - Ove Arup and Partners, Ltd.  
JRC2010-36252 Overcoming Uncertainty and Controlling Risk in Planning a New Commuter Rail Service  
Thomas Cornillie - Independent Scholar |
| 4:45  |         |                                                                     |                                                 |                                                                                                      |
Eric Sherrock - ENSCO, Inc.  
Ali Tajaddini - Federal Railroad Administration  
Brian Marquis - US DOT Volpe Center  
JRC2010-36155 Optimizing Wheel/Rail Performance on High Speed, Mixed Traffic Corridors  
Eric Magel - NRC-CSTT  
Brian Helfrich - Amtrak  
Ali Tajaddini - Federal Railroad Administration  
JRC2010-36254 High Speed Rail Vehicle Qualification Requirements  
Michael Trosino - Amtrak  
Kevin Kesler - Federal Railroad Administration  
JRC2010-36188 Modeling Structural Flexibility in High Speed Rail Systems  
Ahmed Shabana and Cheta Rathod - University of Illinois at Chicago |
<p>| 5:30  |         |                                                                     |                                                 |                                                                                                      |</p>
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<tr>
<td><strong>Invited Session on European High-Speed Rail Technology</strong></td>
<td>8:00</td>
<td>Room A</td>
<td>Armin Kick - Siemens&lt;br&gt;Eric Garzon - Alstom&lt;br&gt;Joshua Coran - Talgo&lt;br&gt;Janis Vitins - Bombardier Transportation</td>
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<tr>
<td><strong>3-10 EUROPEAN HIGH-SPEED RAIL TECHNOLOGY</strong></td>
<td>8:25</td>
<td>Room A</td>
<td>Chair: Kevin Kesler - FRA</td>
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<tr>
<td>6-6 GRADE CROSSING AND RIGHT-OF-SAFETY</td>
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<td>Room A</td>
<td>Chair: David Thurston - Parsons</td>
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<td>5-3 DEMAND FORECASTING</td>
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<td>Room A</td>
<td>Chair: Yung-Cheng Lai - National Taiwan University</td>
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<td>1-13 TRACK SUBSTRUCTURE (PART 1)</td>
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**Thursday, April 29 - Morning Sessions**

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Thursday, April 29 - Morning Sessions

10:05 10:25 10:50 11:15 11:40 12:05

2-8 ROLLING STOCK DESIGN Chair: Francisco Gonzalez

JRC2010-36023 Evaluation of Modern Passenger Side Door Types and Integration with Car Design for Heavy and Light Rail Applications in North America Brian Donohue - Parsons Brinckerhoff


S. K. Purovani and Monique F. Stewart - FRA

JRC2010-36256 Analysis of Fatigue Reliability in Aluminum Car Bodies for High Speed Rail Takeru Iwasa and Arghavan Loughhalam - Johns Hopkins University Cheonsoo Park and Sungoon Choi - Korea Railroad Research Institute

JRC2010-36243 Motion-based Energy Harvesting Devices for Railroad Applications Clement Nagode, Mehdi Ahmadian, and Saied Taheri - Virginia Tech

6-3 POSITIVE TRAIN CONTROL (PTC) - TECHNOLOGY AND REGULATION Chair: Bob Dorer - Volpe

JRC2010-36038 Positive Train Control and the Rail Safety Improvement Act of 2008 Mark Hartong - Federal Railroad Administration Rajni Goel - Howard University Dumiinda Wijesekera - George Mason University

JRC2010-36056 Beyond Predictive Braking David Thurston - Parsons


JRC2010-36260 Avoiding Increased Trip Times and Other Operational Impacts When Implementing Positive Train Control Davis Dure and Stephen A. McEvoy - SYSTRA Consulting, Inc.

1-13 TRACK SUBSTRUCTURE (PART 2) Chair: Jerry Rose - Univ. of Kentucky

JRC2010-36215 Polyurethane Coating of Railroad Ballast Aggregate for Improved Performance Erol Tutumluer and Marcus Dersch - University of Illinois at Urbana-Champaign Calvin Peeler and David Bower - BASF Corporation

JRC2010-36232 Track Substructure Design Methodology and Data Theodore Suessmann - Volpe Center James Hyslip

JRC2010-36283 Modeling of the Effect of Embankment Dimensions on the Mechanical Behavior of Railway Track Antti Kallinnen, Pauli Koli, and Antti Nurmikolu - Tampere University of Technology

JRC2010-36258 Analysis of Fatigue Reliability in Aluminum Car Bodies for High Speed Rail Takeru Iwasa and Arghavan Loughhalam - Johns Hopkins University Cheonsoo Park and Sungoon Choi - Korea Railroad Research Institute

JRC2010-36260 Avoiding Increased Trip Times and Other Operational Impacts When Implementing Positive Train Control Davis Dure and Stephen A. McEvoy - SYSTRA Consulting, Inc.

1-10 RAIL Chair: Mike Gilliam - Union Pacific Railroad

JRC2010-36039 Rolling Contact Fatigue in Passenger and Freight Railroads John Tunna - TTCI

JRC2010-36082 Development of High Performance Steels for Rail Applications Raymundo Ordazex, C. Isaac Garcia, and Anthony J. DeArdo - University of Pittsburgh Semih Kalay - Transportation Technology Center, Inc.

JRC2010-36184 Squat Treatment by Way of Minimum Action Based on Early Detection to Reduce Life Cycle Costs Zili Li, Marija Molodova, and Xin Zhao - Delft University of Technology Rolf Dollevoet - ProRail

JRC2010-36189 Rail Wear Simulation and Validation Xinggao Shu, Nicholas Wilson, and Curtis Urban Transportation Technology Center, Inc. Mark Dembosky - Networx Rail

5-6 STATION DESIGN AND PASSENGER SERVICES Chair: Mark Walbrun - CH2MHiIl

JRC2010-36102 Organization of External Traffic Based on Streamline Analysis for Beijing-Shanghai High Speed Railway Stations Xiang Rui, Juanjuan Ren, and Zihan Tang- Southwest Jiaotong University

JRC2010-36128 Study on Optimization of Train Line Planning for High Speed Rail Corridor Based on Analyzing the Importance of Nodes Yong-Tao Niu, Bao-Ming Han, Min Liu, Qing-Lan Zhu - Beijing Jiaotong University

JRC2010-36135 Taiwan High Speed Rail Stations: A Seamless and Integral Approach Shih-Chieh Wang - Sinotech Engineering Consultants, Ltd.

JRC2010-36165 Key Issues on Rain Line Planning for Beijing-Shanghai High Speed Railway Lei Nie, DongBin Fei, HuiLing Fu, Tong Lu - Beijing Jiaotong University Shi Dun Zhou - Chinese Ministry of Railways
Poster Presentations

Poster presentations will be on display throughout the conference. There will be a special reception for poster presenters in the South Lounge on Tuesday, April 27th from 5:15 to 7:00pm.

Track 1 Railroad Infrastructure Engineering - Poster Presentations

JRC2010-36051 FRP Composite Strengthening of Railroad Bridges
Edward Fyfe and Zachery Smith - Fyfe Co

JRC2010-36085 Key Construction Technology of Track Slab in Turnout Zones on Passenger Dedicated Lines
Yong Zeng, Xueyi Liu, and Rongshuan Yang - Southwest Jiaotong University

JRC2010-36086 Microstructural Analysis of Thermite Welds
Konstantin Redkin - University of Pittsburgh & TTCI
Isaac C. Garcia and Anthony J. DeArdo - University of Pittsburgh
Daniel Gutscher and Semih Kalay - Transportation Technology Corporation, Inc.

JRC2010-36104 Research on Compressive Stress and Compression of Hard Foam Board for Longitudinal Coupled Slab Track on Bridges
Juanjuan Ren, Rui Xiang, and Yong Zeng - Southwest Jiaotong University

JRC2010-36115 Dynamic Assessment of Ballastless Track Stiffness and Settlement in High-speed Railway
Ping Wang, Rong Chen, Xiaoping Chen - Southwest Jiaotong University

JRC2010-36161 Study on Calibration and Noise-Reduction of Track Inspection Car in Detecting Data
Chao-long Jia and Wei-xiang Xu - Beijing Jiaotong University
Liu Xumin - Capital Normal University, Beijing

JRC2010-36179 Long-term Behavior and Performance of Ballastless Track Superstructure on China’s Suining-Chongqing Railway Line
Hong-song Lin, Hua Yan, Xueyi Liu, Juanjuan Ren - China Railway Eryuan Engineering Group Co. Ltd

JRC2010-36255 Train-Bridge Dynamic Interaction: Development of Simplified Analysis Techniques
Takeru Igusa and Nicholas P. Jones - Johns Hopkins University
Choonsoo Park, Sunghoon Choi, and Kihwan Kim - Korea Railroad Research Institute

JRC2010-36272 Wireless Networking of Rail Sensors on Continuously Welded Rail
James Bilodeau, Heath Pier, Kevin Clark, David Gregg - DataTraks, Inc

JRC2010-36032 Improved Design Of End Hose Support Strap For Freight Cars
Xiao Zhang and Lin Hua - Strato, Inc.

Track 2 Rail Equipment Engineering - Poster Presentations

JRC2010-36048 Behavior of Vibrations in Rolling Elements with Temperature Variation, in order to Determine Life Span in Bearings. Phase II: Roller Bearings with External Heat Source.
Edgar Alfredo Díaz Pérez, Iván Darío Gómez Lozano, Álvaro Alejandro García Alfonso, and Diego Fernando Pincón Morales - Universidad Libre de Colombia

JRC2010-36140 Study on the Effect of Traction Tonnage on Train Longitudinal Impact
Lifen Ding - Beijing Jiaotong University
JRC2010-36152 Application of Technical FMECA (Failure Mode and Effect Analysis) in Roller Bearing for Freight Car
Julio Jesus - MRS LOGÍSTICA S/A

JRC2010-36156 Technical Platform Construction of High-speed Train
Jun Wang and Ming Gong - CSR Sifang Locomotive and Rolling Stock Co., Ltd.

JRC2010-36185 Analysis and Design Control System Intelligent in Order to Increase the Speed and Safety Network Rail Microeconomic and Options in the Tension
Karim Ghanbari and Keyvan Sadeghi - The Young Researchers Club Kermanshah & The Young Researchers Club Kurdistan
Amjad Zarei - Islamic Azad University of Kurdistan

JRC2010-36209 Control of Indoor CO2 Concentrations in Passenger Cabin by CO2 Adsorbent
Youngmin Cho, Soon-Bark Kwon, and Duck-Shin Park
Korea Railroad Research Institute

JRC2010-36218 Prediction of the thermal stability of wheel in frequent brake for urban rail vehicle
Zhizhuang Yu, Wang Yong, Zuo Jianyong, Han Bin, Gu Lilei - Tongji University

**Track 3 HSR Experience & Development - Poster Presentations**

JRC2010-36063 Maglev High Speed Rail Along the Northeast Corridor
Jack Kinstlinger - KCI Technologies

JRC2010-36197 Prediction and Demonstration of Reliability for a Prototype High-Speed Train System
Sanghoon Choi, Taehyang Lee, and Choonsoo Park
Korea Railroad Research Institute

JRC2010-36236 Who Ride The High Speed Rail in the United States—the Acela Express Case Study
Zhenhua Chen - George Mason University

**Track 5 Planning, Management & Operation - Poster Presentations**

JRC2010-36133 Problems of Planning and Management on the Georgian Railway
Goderdzi Tkeshelashvili - Georgian Technical University

JRC2010-36134 Improvement of Internal Management of Georgian Railway
Tamar Kamkhadze - Georgian Technical University

JRC2010-36139 Analysis and Evaluation on Passenger Flow Organization Scheme of Beijing South Station
Haiying Li, Miao-Jianrui, Li-Dewei, and Jiang-Xi - Beijing Jiaotong University

JRC2010-36141 Taiwan High Speed Rail Depots - Maintainability and Sustainability
Daniel Chen - Parsons Brinckerhoff International, Inc. Taiwan Branch
S. H. Lin - Sinotech Engineering Consultants, Ltd.

JRC2010-36144 Research on the Capacity Calculation and Assessment System Based on UIC for Chinese High Speed Railway
Jiamin Zhang, Bao-Ming Han, and Lei Nie - Beijing Jiaotong University
Poster Presentations

JRC2010-36166 A Simulation Analysis of Train Rescheduling Strategies on Railway Operation of High Speed Railway
Zhenhuan He and Lei Nie - Beijing Jiaotong University

JRC2010-36168 Study on the Algorithmic for Train Operation Adjustment Based on Ordinal Optimization
Yongjun Chen and Leishan Zhou - Beijing Jiaotong University

JRC2010-36169 A Cooperative Model and Algorithm for High-Speed Railway Network Train Operation Adjustment
Ming Xia and Zhou Yanfang - Beijing Jiaotong University
Zhou Leishan - Fang Xiaohong

JRC2010-36173 The Use of Abandoned Railroad Right-of Ways for Transportation Corridors of the Future
David Mangold - University of Akron

JRC2010-36175 Study on Macroscopical Allocation Method of Train-set on Large Scale Railway Network
Hua Li, Bao-Ming Han, and De-Wei Li - Beijing Jiaotong University

JRC2010-36202 Demonstration of the RATSNACCS Heavy Train Velocity Control System
Mark Hayman and Christopher Bosomworth - Insyte Solutions

JRC2010-36230 Proposed High-Speed Rail Plan in the United States: Economic Perspectives
Junwook Chi - Nick J. Rahall II Appalachian Transportation Institute
Rebecca Dingus and Samuel Wangaman - Marshall University

JRC2010-36246 Modeling Periodic Train Service of China Special Passenger Lines
Min Liu and Bao-Ming Han - Beijing Jiaotong University

JRC2010-36248 An Approach for Short-term Forecast of Railway Passenger Flow Based on Daily Booking Data During the Pre-sale Period
Minshu Ma, Jun Liu, Chunyan Li, and Xue Han - Beijing Jiaotong University

JRC2010-36253 An Optimization Method for Locomotive Utilization Based on High Speed Railroad Complex Network
Qin Sheng, Zhou Lei-shan, and Yue Yi-Xiang - Beijing Jiaotong University

JRC2010-36281 Revising UIC 406 Method for Capacity Analysis: Revenue Generating Capacity
Melody Khadem-Sameni and John Preston - University of Southampton
Alex Landrex - Technical University of Denmark

Track 6 Safety, Security & Environment - Poster Presentations

JRC2010-36055 Responding to Environmental Discoveries

JRC2010-36150 NC DOT Phase I through Phase IV Assessment
Patrick Bien-Aime - Volpe Center

JRC2010-36182 Locomotive Whole Body Vibration Exposure: A Critical Review of the Epidemiologic and Technical Literature
Donald C. Sinclair II - Sinclair PLLC Occupational & Environmental Legal Consulting

JRC2010-36190 Implications of Supreme Court Decision on Railroad Liability for Proportionate Share CERCLA Cleanup
Richard Kuntz - Bollinger, Ruberry & Garvey

JRC2010-36212 First for Repairs, Then for Damages: Environmental Liability and Environmental Stewardship in Railroad Stock Prices
Patrick McLaughlin - Federal Railroad Administration
Professional Development Hours Completion Certificate

___________________________________________, received the below checked Professional Development Hours (PDH) for a maximum of 19 for attending the:

2010 Joint Rail Conference

at the University of Illinois at Urbana-Champaign on April 27 through 29, 2010, in Urbana, IL.

Attendee – please check each box for the sessions you attended and write the sum of your total PDH gained in the box below.

☐ 1.5 PDH: April 27, Tuesday Plenary Session – 8:00- 9:25am

☐ 2 PDH: April 27, Tuesday AM Session- 9:40-11:45am
   ☐ 1-2 Concrete Tie Design and Performance
   ☐ 2-1 Crashworthiness
   ☐ 5-8 Rail Education
   ☐ 4-1 Shared Corridor
   ☐ 5-1 Capacity Modeling
   ☐ 6-1 System Safety Assurance in Rail Operations

☐ 3 PDH: April 27, Tuesday PM Session 1- 1:00-3:05pm
   ☐ 2-2 Bearing Design and Testing, 2-7 Wheel Design and Analysis
   ☐ 2-5 Traction
   ☐ 1-4 Ballastless Track Design and Performance, 1-3 Composite and Alternative Tie Designs
   ☐ 4-2 Shared Corridor 2
   ☐ 5-2 Network Modeling
   ☐ 3-3 California

☐ 1.5 PDH: April 27, Tuesday PM Session 2- 3:25- 5:10pm
   ☐ 1-8 High-Speed Rail Special Trackwork Design and Performance
   ☐ 2-3 Fluid Dynamics in Rail
   ☐ 5-7 Finance and Economics
   ☐ 1-1 Concrete Tie Fasteners
   ☐ 3-6 State Programs
   ☐ 3-5 FRA Office Research and Development

continued on next page
2 PDH: April 28, Wednesday Plenary Session 8:00-10:15am

1.5 PDH: April 28, Wednesday AM Session 10:35-11:50am
  - 1-9 High-Speed Rail Structures
  - 6-4 Human Factors in Rail Engineering and Operations
  - 2-9 Inspection Technology
  - 5-5 Resource Planning
  - 3-2 FRA/USDOT High-Speed Intercity Passenger Rail Program

2.5 PDH: April 28, Wednesday PM Session 1 1:05-3:30
  - 3-9 Asian Experience
  - 1-6 Track Inspection Technologies, 1-7 Track maintenance Planning
  - 1-11 Rail Stress Management
  - 6-5 Energy and Environmental Issues in Rail System Design and Operation
  - 2-4 Vehicle Track Interaction

1.5 PDH: April 28, Wednesday PM Session 2 3:30-5:10
  - 3-7 Asian Technology and Systems
  - 1-5 Track Alignment Prediction Modeling
  - 2-11 High-Speed Vehicle Track Interaction
  - 5-4 PPP and Risk Analysis
  - 6-2 Risk Assessment of Hazardous Goods Transport

2 PDH: April 29, Thursday AM Session 1 8:00-10:05
  - 1-12 Track Design Construction
  - 3-11 European High-Speed Rail Technology
  - 5-3 Demand Forecasting
  - 6-6 Grade Crossing and Right-of-Way Safety
  - 1-13 Track Substructure
  - 5-9 Case Studies

1.5 PDH: April 29, Thursday AM Session 2 10:25-12:05
  - 1-10 Rail
  - 1-8 Rolling Stock Design
  - 6-3 Positive Train Control (PTC)- Technology and Regulation
  - 1-13 Track Substructure (continued from AM Session 1)
  - 5-6 Station Design and Passenger Services

Kimberley Hagemann
2010 Joint Rail Conference
University of Illinois at Urbana-Champaign, IL
hagemann@illinois.edu
217-244-0841

Total Number of PDH Received
Exhibitors

AECOM
ARCADIS
Harsco Rail
Institute for Transport Policy, Japan
Invensys Rail
Kawasaki Rail Car, Inc.
Macton
Micro-blaze

MTS Systems Corporation
Rail Sciences
Schnabel Foundation Company
Schwab Schwingungstechnik AG
Schwihag AG
SISCOG - Sistemas Cognitivos, SA
Transportation Technology Center, Inc.

2010 JRC Exhibitor Floor Plan
(Not to Scale)