2014 International Crosstie & Fastening System Symposium

3-5 June 2014

Rail Transportation and Engineering Center (RailTEC)
University of Illinois at Urbana-Champaign (UIUC)
Newmark Civil Engineering Lab
205 N. Mathews Avenue
Urbana, IL 61801
Dear 2014 Symposium Attendee,

Welcome to Champaign-Urbana, IL and the Department of Civil and Environmental Engineering (CEE) at the University of Illinois at Urbana-Champaign (UIUC). UIUC is home to the Rail Transportation and Engineering Center (RailTEC), and we look forward to you meeting the students, staff, and faculty that work within RailTEC. We are pleased that you have chosen to attend the 2014 Symposium and hope you will actively participate in discussions and engage your fellow attendees throughout the event. Our primary objective in organizing the 2014 Symposium was to facilitate the transfer of technology and knowledge as well as to further domestic and international communication and collaboration on the design and performance challenges and solutions for crossties and fastening systems. We are hopeful that you will enjoy the technical presentations, research discussions, and technical tours of voestalpine Nortrak in Decatur, IL and the new RailTEC Research and Innovation Laboratory (RaIL) here at UIUC.

We would like to provide specific recognition to Amsted RPS for their ongoing support of research and testing here at UIUC since 2009. Financial support from Amsted RPS has been foundational in allowing us to build a program in crossties and fastening systems, and we are very grateful for our partnership with them. We would also like to thank the Federal Railroad Administration (FRA) for their sponsorship of concrete crosstie and fastening system research at UIUC under the High Speed and Intercity Passenger Rail Broad Agency Announcement (BAA) program. Additionally, we sincerely appreciate the ongoing research support from the Association of American Railroads (AAR), NURail, GIC Ingeniería y Construcción, and IntegriCo Composites. Without these organizations and the many other individuals and organizations that frequently provide input and guidance for our research we would not be able to conduct research and host an event such as this.

If there is anything that our team can do to make your stay at UIUC more enjoyable, please do not hesitate to contact one of the faculty, staff, or students within RailTEC.

Sincerely,
Bassem O. Andrawes
Christopher P.L. Barkan
Marcus S. Dersch
J. Riley Edwards
Ryan Kernes
Daniel Kuchma
David A. Lange
Conrad Ruppert, Jr.

http://ict.illinois.edu/railroad
### Tuesday 3 June

- **Registration (Yeh Center Atrium, 1st Floor)**: 7:00am - 5:00pm
- **Light Breakfast**: 7:00am - 8:00am
- **Opening Remarks**: 8:00am - 8:30am
- **Technical Session**: 8:30am - 9:30am
- **Break**: 9:30am - 10:00am
- **Technical Session**: 10:00am - 12:00pm
- **Lunch (UIUC's Beckman Institute)**: 12:00pm - 1:30pm
- **Technical Session**: 1:30pm - 3:00pm
- **Break**: 3:30pm - 5:00pm
- **Technical Session**: 3:30pm - 5:00pm
- **Reception (Murphy's Pub)**: 5:30pm - 7:00pm

### Wednesday 4 June

- **Registration (Yeh Center Atrium, 1st Floor)**: 6:30am - 5:30pm
- **Light Breakfast**: 6:30am - 8:30am
- **Technical Tour Departs (see page 12)**: 7:15am - 12:00pm
- **RTA Technical Tour Departs (see page 12)**: 8:30am - 12:00pm
- **Lunch (Illinois Terminal - City View)**: 12:00pm - 1:30pm
- **Technical Session**: 1:30pm - 3:30pm
- **Break**: 3:30pm - 3:45pm
- **Technical Session**: 3:45pm - 5:30pm
- **Reception (UIUC's Memorial Stadium)**: 6:00pm - 7:00pm
- **Keynote Dinner & Speech (Memorial Stadium)**: 7:00pm
  - Joseph Smak (Amtrak & AREMA)

### Thursday 5 June

- **Light Breakfast**: 7:00am - 8:00am
- **Technical Sessions**: 8:00am - 10:15am
- **Closing Remarks**: 10:15am - 10:30am
- **Start of AREMA Committee 30 Meeting**: 11:00am

### Symposium Locations

- **Newmark Civil Engineering Laboratory**
  - Yeh Student Center - All Technical Sessions will be held in 1310 Yeh Center unless otherwise noted
  - 205 N. Mathews Avenue - Urbana, IL 61801

- **Beckman Institute**
  - 405 N. Mathews Avenue - Urbana, IL 61801

- **Illinois Terminal**
  - 45 E. University Avenue - Champaign, IL 61821

- **Memorial Stadium**
  - 1402 S. 1st Street - Champaign, IL 61820

- **Murphy's Pub**
  - 604 E Green Street - Champaign, IL 61820
Parking: Parking on campus is extremely limited. We do have a small number of parking passes for $20 daily, available through the registration website.

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

Conference Contacts:

Riley Edwards: 931-624-4623, jedward2@illinois.edu (conference director)
Marcus Dersch: 812-779-1750, mdersch2@illinois.edu (program development)
Angie Stanford: 217-300-8544, astanfrd@illinois.edu (conference registrar)

http://ict.uiuc.edu/railroad/Crosstie
Spoken Presentations

**TUESDAY 3 JUNE**

7:00  Registration/Continental Breakfast (Yeh Center Atrium, First Floor)

8:00  Safety Briefing and Introductory Remarks - Riley Edwards  
UIUC Civil and Environmental Engineering (CEE) Department Welcome - Associate Head Liang Liu  
UIUC RailTEC Welcome - Executive Director and Professor Chris Barkan  
Federal Railroad Administration (FRA) Welcome - Cam Stuart  
Recognition of Amsted RPS - UIUC Research Sponsor  
Overview of Symposium Objectives - Riley Edwards

**Track 1: Concrete Crossties and Fastening Systems Track**

8:30  **Panel Discussion (Session 1-1)**  
*Session Moderator: Marcus Dersch - University of Illinois at Urbana-Champaign*

Concrete Crosstie and Fastening System Successes, Challenges, and Research Needs  
*Steven Ashmore (Union Pacific Railroad)*  
*Mike Brown (Transportation Technology Center, Inc. (TTCI))*  
*Erik Frohberg (BNSF Railway)*  
*Jose Mediavilla (Amsted RPS)*  
*Cam Stuart (Federal Railroad Administration (FRA))*

9:30  Break

10:00  **Fastening System Design Priorities (Session 1-2)**  
*Session Moderator: John Bosshart (BNSF Retired)*

Summary of Union Pacific’s Fastening System Design Priorities  
*Steven Ashmore (Union Pacific)*

The Effect of Fastening System Design on the Occurrence of Rail Seat Deterioration  
*David Herron (Pandrol Limited)*

Lateral and Vertical Load Path - Summary of Field Results  
*Brent Williams and Matthew Greve (University of Illinois at Urbana-Champaign)*

Development of a New-Generation Dowel and Screw Combination  
*Brandon Van Dyk (Vossloh Fastening Systems, GmbH)*

Basic Properties of Thermoplastic Polyurethane Materials Used in Rail Pads  
*Jeff Degross (BASF)*
Spoken Presentations

12:00 **Lunch** - Beckman Institute - 5th Floor  
405 N. Mathews Avenue - Urbana, IL 61801

1:30 **Concrete Crosstie Design Priorities (Session 1-3)**  
*Session Moderator: Scott Tripple (Pandrol USA)*

Concrete Ties - The Amtrak Experience  
*Al Cloutier (Amtrak)*

Case Study of a Concrete Tie Base Wear Site with Implications for Crosstie Performance  
*Ted Sussmann (Volpe Center)*

Investigating Factors That Affect Air Entrainment During Fabrication of Concrete Railroad Ties  
*Kyle Riding and Mohammed Albahtiti (Kansas State University)*

Mechanistic Design of Crossties and Fastening Systems - An Overview  
*Andrew Scheppe (University of Illinois at Urbana-Champaign)*

3:00 Break

3:30 **Concrete Crosstie and Fastening System Modeling (Session 1-4)**  
*Session Moderator: Bassem Andrawes (University of Illinois at Urbana-Champaign)*

Railroad Concrete Tie Failure Analysis  
*Hailing Yu (Volpe Center)*

Finite Element Modeling of Concrete Crossties and Fastening Systems  
*George Chen (University of Illinois at Urbana-Champaign)*

I-TRACK - Analytical Tool for the Analysis of Track Behavior  
*J. Riley Edwards (University of Illinois at Urbana-Champaign)*

5:00 Adjourn Technical Session

5:30 Social Hour - Murphy’s Pub  
604 E Green St., Champaign, IL 61820

7:00 Dinner on your own (see page 13 for suggested restaurants)
Spoken Presentations

**WEDNESDAY 4 JUNE**

6:30  Registration/Continental Breakfast (Yeh Center Atrium, 1st Floor)
7:15  Technical Tour Departs (Via Charter Bus)  Schedule on pg. 12
8:30  RTA Technical Tour Departs (Via Charter Bus)  Schedule on pg. 12
12:00 Railway Tie Association (RTA) Welcome - Jim Gauntt
     Illinois Terminal Welcome - Tom Costello - Champaign-Urbana Mass Transit District (CUMTD)
     2014 Symposium Sponsor Recognition

**Track 2: Timber Crosstie Track**

1:30  **Timber Crossties and Tie Treatment (Session 2-1)**  1310 NewmarK
      (concurrent with Session 1-5)
      **Session Moderator: Jim Gauntt (Railway Tie Association - RTA)**

      Wood Tie Industry Economic and Research Overview  
      *Jim Gauntt (Railway Tie Association (RTA))*

      Creosote Performance and Dermal Skin Effects  
      *David A. Webb (Creosote Council)*

      Dual Tie Treatment Methodologies Compared  
      *Adam Taylor (University of Tennessee-Knoxville)*

      Cost Effective Life Extension of Bridge Timbers with Copper Naphthenate and Borates  
      *Jeffery Lloyd (Nisus Corporation)*

3:15  Break

3:30  **Timber Crossties and Tie Treatment (Session 2-2)**  1310 NewmarK  
      (concurrent with Session 1-6)
      **Session Moderator: Jim Gauntt (Railway Tie Association - RTA)**

      The Newest AWPA Standardized Treatment for Crossties  
      *Tim Carey (Arch Wood Protection, Inc. a Lonza company) ACZA*

      Copper Naphthenate – A Review and Update  
      *Jeffery Lloyd (Nisus Corporation)*

      Supplemental In-Situ Treatment of Wood Ties with Borate Rods  
      *Jim Renfroe (Wood Care Systems)*

      Third Party Audits and Inspections for New Wood Protection Systems  
      *Terry Amburgey (Golden Spike Inspection Group)*

      Environmental Life Cycle Assessment of Wood Ties Compared to Alternative Tie Materials  
      *Stephen Smith (Stephen Smith Consulting)*
Spoken Presentations

1:30  Concrete Crosstie Innovation (Session 1-5) 2311 NewmarK
(concurrent with Session 2-1)
Session Moderator: Robert Peterman (Kansas State University)

Tie and Fastener Research at the Transportation Technology Center, Inc.
Mike McHenry (Transportation Technology Center, Inc. (TTCI))

Report from a Sleeper Manufacturer - Standardised Concrete Ties and Rail Fastening Systems in Austria
Hermann Gruber (SSL - Schwellenwerk und Steuerungstechnik Linz GmbH)

Innovative Sleeper Design With Under Sleeper Pads as an Efficient Method to Reduce Railway Induced Vibration Propagation
Arnold Pieringer (RAIL.ONE GmbH)

Network Effects and Cost of Railroad Crosstie Maintenance and Replacement
Alexander Lovett (University of Illinois at Urbana-Champaign)

3:15  Break

3:30  Concrete Crosstie Materials Technology and Quality Assessment (Session 1-6) 2311 Newmark
(concurrent with Session 2-2)
Session Moderator: Mike McHenry
(Transportation Technology Center, Inc.)

A Quality Control Bond Test for Prestressing Wires
Robert Peterman (Kansas State University)

Efficacy of Laboratory Pre-tensioned Prism Specimens in Predicting Transfer Lengths of Real Concrete Railroad Ties
Naga Narendra Babu Bodapati (Kansas State University)

Development of an Automated Transfer Length Measurement System for Quality Control of Railroad Cross-Tie Production
Terry Beck (Kansas State University)

Monitoring Crosstie Behavior and Crosstie/Ballast Interaction
Tim Stark (University of Illinois at Urbana-Champaign)

The Abrasion Resistance of Concrete for Concrete Railway Crosstie Applications
Emily Van Dam (University of Illinois at Urbana-Champaign)

5:30  Adjourn Technical Sessions

5:45  Charter bus available to transport to social hour and dinner

(Continued on next page)
Spoken Presentations

6:00  **Social Hour** (UIUC Memorial Stadium
1402 South 1st Street, Champaign, IL) See page 4 for parking information and directions

**Enter Stadium at Gate 16 on the West Side**, take elevators to the 6th floor to the 77th Club

7:00  **Keynote Dinner and Presentation**
Joseph Smak  
Senior Director of Track Maintenance and Compliance at Amtrak  
Current President and Chairman of the Board of Governors of AREMA

9:00  Charter busses available to transport to Yeh Center and Hotels

**THURSDAY 5 JUNE**

7:00  Registration/Continental Breakfast (Yeh Center Atrium, 1st Floor)

**Track 3: Composite Crossties and Track Inspection**

8:00  **Composite Crossties (Session 3-1)**
Summary of Current State of Practice for Composite Crossties  
*Rich Lampo (U.S. Army Engineering Research & Development Center)*

8:30  **Inspection Technologies for Crossties and Fastening Systems (Session 3-2)**
*Session Moderator: Cam Stuart (FRA)*
Utilization of System-wide Automated Wood Tie Inspection Data  
*Greg Grissom and Todd Euston (GREX)*
Condition Assessment of Concrete Ties With Nondestructive Impact Velocity and Echo Measurements  
*Paul Fisk (NDT Corporation)*
Approaches to Assess Concrete Tie Damage Using Ultrasonic Scans  
*John Popovics and Suyun Ham (University of Illinois at Urbana-Champaign)*
Machine-vision-based Evaluation of Concrete Tie Degradation in High Speed Applications  
*Jeff Henderson (ENSCO)*

10:15  Final Closing Remarks

10:30  Adjourn Symposium

11:00  Start of AREMA Committee 30 Ties Meeting
Poster Presentations

Analysis of the Shear Behavior of rail Pad Assemblies as a Component of the Concrete Sleeper Fastening System
*Thiago Bizarria do Carmo, Christopher P. L. Barkan, J. Riley Edwards, Bassem O. Andrawes, Ryan G. Kernes, University of Illinois Urbana-Champaign (UIUC)*

Quantification of Concrete Sleeper and Elastic Fastening System Demands Utilizing Concrete Sleeper Rail Contact Area
*Matthew Greve, Chris Rapp, Marcus Dersch, J. Riley Edwards, Christopher P.L. Barkan, University of Illinois Urbana-Champaign (UIUC); Jose Mediavilla, Amsted RPS; Brent Wilson, Amsted Rail, Inc.*

Geometrical Feature Variation of Pre-stressing Reinforcement Wire in Concrete Ties
*Mark Haynes, Kansas State University (KSU)*

Tensioned Pullout Test Used to Investigate Indented Pre-stressing Wire Splitting Characteristics and Possible Prevention
*Joseph Holste, Kansas State University (KSU)*

Framework of an Integrated Railroad Track Maintenance Planning Model
*Alexander Lovett, Tyler Dick, Conrad Ruppert, Chris Barkan, University of Illinois Urbana-Champaign (UIUC)*

Non-destructive In-place Condition Assessment Technologies for Damage in Concrete Ties
*John S. Popovics, Suyun Ham, University of Illinois Urbana-Champaign (UIUC)*

Attenuation of Vibrations in Fresh Concrete
*Kyle Riding, Ahmad Ghadban, Mohammed Albahtiti, Kansas State University and David Lange, University of Illinois Urbana-Champaign (UIUC)*

Derailment Prevention - Concrete Tie & Fastener Research
*Cam Stuart, Federal Railroad Administration (FRA)*

Evaluation of Existing Loading Environment in North America for Improved Concrete Sleepers and Fastening Systems
*Brandon J. Van Dyk, Conrad J Ruppert Jr., Andrew Scheppe, Christopher T. Rapp, J. Riley Edwards, Marcus S. Dersch, Christopher P. L. Barkan, University of Illinois Urbana-Champaign (UIUC)*

Improved Concrete Crosstie Fastening System Insulator Design
*Brent A. Williams, J. Riley Edwards, Ryan G. Kernes, Christopher P. L. Barkan, University of Illinois Urbana-Champaign (UIUC)*
RailTEC and Railway Tie Association (RTA) would like to welcome you to the Symposium Technical Tour. RailTEC would like to extend our appreciation to voestalpine Nortrak Inc. for hosting the technical tour at their facility in Decatur, IL. Specifically, we would like to thank Sean Betty, Perry Nuernberger, and David Millard at voestalpine Nortrak Inc.

Wednesday 4 June 2014 (Morning)

6:30-7:00 Symposium Attendees that are not on the RTA Field Trip Assemble at Yeh Center (Conference Venue) for Breakfast

7:15 Busses 1 and 2 (non RTA Field Trip Attendees) Depart Yeh Center

8:30 Bus 3 (RTA Field Trip Attendees) Depart Yeh Center

Bus 1 (non-RTA Field Trip Attendees):

7:15-8:15 Travel from Yeh Center to voestalpine Nortrak Decatur
8:15-9:30 voestalpine Nortrak Decatur Tour
9:30-10:30 Travel from voestalpine Nortrak Decatur to RailTEC Research and Innovation Laboratory
10:30-11:30 Tour RailTEC Research and Innovation Laboratory
11:30-12:00 Travel from RailTEC Research and Innovation Laboratory to Illinois Terminal
12:00 Arrive at Illinois Terminal in Champaign, IL for lunch

Bus 2 (non-RTA Field Trip Attendees):

7:15-7:45 Travel from Yeh Center to RailTEC Research and Innovation Laboratory
7:45-8:45 Tour RailTEC Research and Innovation Laboratory
8:45-9:45 Travel from RailTEC Research and Innovation Laboratory to voestalpine Nortrak Decatur
9:45-11:00 voestalpine Nortrak Decatur Tour
11:00-12:00 Travel from voestalpine Nortrak Decatur to Illinois Terminal
12:00 Arrive at Illinois Terminal in Champaign, IL for lunch

Bus 3 (RTA Field Trip Attendees):

8:15-9:15 Light Breakfast and Registration
9:15-9:45 Travel from Yeh Center to RailTEC Research and Innovation Laboratory
9:45-10:30 Tour RailTEC Research and Innovation Laboratory
10:30-11:00 Travel from RailTEC Research and Innovation Laboratory to UIUC Wood Engineering Laboratory
11:00-11:40 UIUC Wood Engineering Laboratory Tour
11:40-12:00 Travel from UIUC Wood Engineering Laboratory to Illinois Terminal
12:00 Arrive at Illinois Terminal in Champaign, IL for lunch

Notes:

Steel toed boots are required for all technical tour locations. Please plan accordingly when packing for this trip. Hard hats (with RailTEC logo) and safety glasses will be provided to conference attendees as a gift for attending the conference.

Non-US Citizens:

A portion of the technical tour takes place on the US Army Corps of Engineers facility that houses the new RailTEC Research and Innovation Laboratory. All non-US Citizens that submitted their passports by the requested deadline (1 May 2014) MUST bring their passport on the day of this tour (Wednesday 4 June 2014).

US Citizens:

You MUST bring a state ID (driver’s license) on the day of the tour in order to access the new RailTEC Research and Innovation Laboratory (Wednesday 4 June 2014).
# Champaign-Urbana Recommended Restaurant List

<table>
<thead>
<tr>
<th>Name</th>
<th>Address</th>
<th>Phone</th>
</tr>
</thead>
<tbody>
<tr>
<td>301 Mongolia - Mongolian</td>
<td>301 N. Neil Street, Champaign, IL</td>
<td>217-531-1153</td>
</tr>
<tr>
<td>(stir fry)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alexander’s Steakhouse</td>
<td>202 W. Anthony Dr., Champaign, IL</td>
<td>217-359-1789</td>
</tr>
<tr>
<td>Bacaro - Italian (fine dining)</td>
<td>113 N Walnut St., Champaign, IL</td>
<td>217-398-6982</td>
</tr>
<tr>
<td>Black Dog Smoke &amp; Ale House</td>
<td>201 N Broadway Ave., Urbana, IL</td>
<td>217-344-9334</td>
</tr>
<tr>
<td>(casual bar)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Courier Cafe</td>
<td>111 N Race St., Urbana, IL</td>
<td>(217) 328-1811</td>
</tr>
<tr>
<td>Destihl (gastrobrewpub)</td>
<td>301 N. Neil St, Champaign, IL</td>
<td>217-356-0301</td>
</tr>
<tr>
<td>Dublin O’Neil’s - Irish Pub</td>
<td>301 N. Neil St., Champaign, IL</td>
<td>217-531-1152</td>
</tr>
<tr>
<td>Escobar - Native Latino</td>
<td>6 E Columbia Ave., Champaign, IL</td>
<td>217-352-7467</td>
</tr>
<tr>
<td>Great Impasta - Italian</td>
<td>156 Lincoln Sq # D, Urbana, IL</td>
<td>217-359-7377</td>
</tr>
<tr>
<td>Kofusion - Asian (sushi)</td>
<td>1 E Main St # 104, Champaign, IL</td>
<td>217-531-1166</td>
</tr>
<tr>
<td>Radio Maria - Spanish</td>
<td>119 N Walnut St., Champaign, IL</td>
<td>217-398-7729</td>
</tr>
<tr>
<td>Silvercreek (casual fine dining)</td>
<td>402 N Race St., Urbana, IL 61801</td>
<td>217-328-3402</td>
</tr>
</tbody>
</table>

## Useful Businesses

<table>
<thead>
<tr>
<th>Name</th>
<th>Address</th>
<th>Phone</th>
</tr>
</thead>
<tbody>
<tr>
<td>FedEx Office Print and Ship</td>
<td>613 South Wright St., Champaign, IL</td>
<td>217-344-2085</td>
</tr>
<tr>
<td>Walgreens</td>
<td>407 East Green St., Champaign, IL</td>
<td>217-344-0121</td>
</tr>
<tr>
<td>Expresso Royale Cafe</td>
<td>Illini Union Courtyard Cafe, Urbana, IL</td>
<td>217-333-7106</td>
</tr>
<tr>
<td>Cocomero (Frozen Yogurt)</td>
<td>709 South Wright St., Champaign, IL</td>
<td>217-328-3888</td>
</tr>
<tr>
<td>Starbucks</td>
<td>503 E Green St., Champaign, IL</td>
<td>217-344-8613</td>
</tr>
<tr>
<td>Illini Union Bookstore</td>
<td>809 South Wright St., Champaign, IL</td>
<td>217-333-2050</td>
</tr>
<tr>
<td>T.I.S. Bookstore</td>
<td>707 South Sixth St., Champaign, IL</td>
<td>217-337-4900</td>
</tr>
<tr>
<td>Cold Stone Creamery</td>
<td>505 E Green St, Champaign, IL</td>
<td>217-367-5555</td>
</tr>
</tbody>
</table>

## Useful Telephone Numbers

<table>
<thead>
<tr>
<th>Name</th>
<th>Phone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hampton Inn</td>
<td>217-337-1100</td>
</tr>
<tr>
<td>Hawthorn Suites</td>
<td>217-398-3400</td>
</tr>
<tr>
<td>iHotel</td>
<td>217-819-5000</td>
</tr>
<tr>
<td>Illini Union Hotel</td>
<td>217-333-3030</td>
</tr>
<tr>
<td>Illini Taxi</td>
<td>217-359-8634</td>
</tr>
<tr>
<td>Yellow Cab</td>
<td>217-355-3553</td>
</tr>
<tr>
<td>U of I Golf Courses</td>
<td>217-359-5613</td>
</tr>
</tbody>
</table>
Yeh Student Center (Newmark Civil Engineering Lab)

1ST FLOOR

2ND FLOOR

3RD FLOOR
**Yeh Student Center** - Newmark Civil Engineering Laboratory, 205 N. Mathews Ave, Urbana, IL 61801

**Memorial Stadium** - (Dinner in the 77th Club on 6th Floor - Enter Stadium at Gate 16 on the West side) - 1402 South 1st Street, Champaign, IL 61820

Bus Transportation will be provided from the hotels and the Yeh Student Center. If you wish to drive there are 2 parking options:

**Parking Option 1** - Campus Recreation (metered spots)  
201 East Peabody Drive, Champaign, IL 61820

**Parking Option 2** - Assembly Hall  
1800 South 1st Street Champaign, IL 61820
Invitation to Join Bi-Monthly Web-Conferences

Please consider signing up for bi-monthly web-conferences designed to encourage a dialogue between international institutions interested in the domain of sleepers and fastening systems. Participants include academics, manufacturers, government research centers, and researchers and managers at railways. Web-conferences began in November 2013.

The objectives of the web-conferences are as follows:

• Discuss the objectives of current research efforts that are aimed at concrete sleeper and fastening system design and performance.
• Provide updates on relevant research progress.
• Determine research synergies and opportunities for collaboration.
• Develop action items to increase the depth of our understanding of research progress and performance of components.
• Discuss critical areas for future research.

If you would like to sign up for the email distribution list or you would like to present on one of the web-conferences, please email Riley Edwards at jedward2@illinois.edu.
ANNOUNCING THE NEW

RailTEC Rail Research & Innovation Laboratory
at the Schnabel Geotechnical Laboratory

Rail Transportation and Engineering Center (RailTEC)
Department of Civil and Environmental Engineering
College of Engineering
University of Illinois at Urbana-Champaign
GLXS 2014 will be the principal international conference bringing together engineering, safety, security, human factors, technology experts practitioners, academics and researchers from the global highway, rail, law enforcement and regulatory communities. It provides an opportunity to exchange information, discuss the latest research and share best practices to improve the safety of the at-grade interface between highway and rail systems.

There will be a large exhibition room and space is available
To receive future announcements send a message with your name, email address and “GLXS 2014 Info” in the Subject line to GLXS-2014@Illinois.edu

For more information go to:
http://go.Illinois.edu/GLXS2014
Questions and Notes

Download PDF’s of the PPT’s

PDFs of Spoken Presentations Available for Download after the Symposium at:

http://ict.uiuc.edu/railroad/Crosstie/2014/crossties.php