

# Rail Transportation News

The Michigan Tech Rail Transportation Program Newsletter

Summer, 2009

## RTP and Industry Partners

CN joins other industry partners in supporting the Rail Transportation Program.

Over the past year, the Rail Transportation Program (RTP) at Michigan Technological University (Michigan Tech) has continued its strong partnerships with the North American large freight railroads. In addition to its long-time supporters, CSX Transportation and Union Pacific Railroad, CN announced in April its donation of \$250,000 to create the CN Rail Transportation Education Center (CN RTEC) on the Michigan Tech campus. The CN RTEC is expected to open in the fall of 2009 and will function as a central location for student, faculty, and industry collaboration specific to rail activity. It will also provide education and research facilities for the RTP, including computer workstations with rail applications, a reference library, and online learning technologies.

The CN RTEC and support by the program partners are both instrumental in ensuring the future success of the Rail Transportation Program. With a dedicated physical space provided by CN RTEC, the RTP can build its own identity on the Michigan Tech campus, and participating students who come from a wide range of degree programs will have their own place to converse on rail related issues. In addition to the large freight railroads, the RTP has been developing relationships with IBM through its Global Rail Innovation Center in China and locally with the Lake Superior & Ishpeming

Railroad (LS&I), owned by Cleveland Cliffs. Over the next year, Michigan Tech and the RTP will be working with its industry partners to expand opportunities for student and faculty participation in real-world rail development through sponsored projects and research. IBM has already pledged to donate two IBM Notepads to the RTP, and during the fall 2009 semester, Michigan Tech civil engineering, construction management, and surveying students will be working on a track design project for LS&I railroad.



RTP Director Pasi Lautala in front of a CN locomotive.

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### Michigan Tech Rail Transportation Program Supporters

We want to acknowledge the following industry partners for their support of the RTP.



**Michigan Tech**  
Transportation Institute



## Director's Message

The Rail Transportation Program (RTP) at Michigan Tech University has successfully completed its second year of existence and it is an honor for me to report on the program progress. To say that the past year has been exciting for our program and for the rail transportation industry in general is an understatement. Certainly, the economic times have hit rail transportation hard, but that has been shadowed by the unprecedented level of interest and enthusiasm to develop a 21st century rail transportation network for the United States. While the funds reserved in the American Recovery and Reinvestment Act of 2009 are by no means sufficient for this task, they demonstrate a true beginning for developing an efficient rail transportation network that is capable of moving freight and passengers alike. Perhaps one day we will get to experience the rail-based "Interstate II", as envisioned in the 4th Annual Railroad Night by our keynote speaker, former FRA Administrator Mr. Gil Carmichael.

For the RTP, there have been several reasons to get excited over the past year. The first graduate student funded through the program received his degree; the RTP obtained new research funding to continue the development of rail transportation and related education; and we joined forces with IBM and other partners in the Global Rail Innovation Center. With a generous donation by CN, we are on the verge of establishing the "CN Rail Transportation Education Center" that will become a central location for rail-related activities on campus. All these events are major stepping stones for the RTP and a testament to all our students, faculty, and administration who continue their hard work to move our program forward.

The remainder of this newsletter provides highlights of the busy "Year 2" of the Rail Transportation Program at Michigan Tech. Look for a more thorough review of all the activities in the *2008-2009 Annual Report*, which should be posted on our web site at [www.cee.mtu.edu/railroad](http://www.cee.mtu.edu/railroad) by the end of September. The upcoming year is expected to be even busier than the previous one, as we complete our first research projects, continue activities to develop the rail transportation certificate and senior design projects, and get ready for moving into our new space. Without a doubt, it is time for the United States to recognize the importance of rail transportation as an integral part of a well-functioning transportation system and to take the necessary steps in transforming these words into actions. While our capabilities at Michigan Tech to build tracks or move trains are limited, we are certainly eager to harness our students and faculty in assisting the industry towards the realization of the 21st century rail transportation network in the United States. Please stay in touch, as we ride the rails into the future.

*Pasi*

## Rail Engineering Activities Club Update

The 2008/2009 school year saw continued growth for the Railroad Engineering and Activities Club (REAC). Our Fourth Annual Railroad Night was very successful, with 131 guests and nine companies from industry attending. REAC also sponsored a trip to the AREMA conference in Salt Lake City, UT. Those who attended this trip (ten in all) were given an excellent opportunity to network with representatives from a diverse group of companies. The conference also afforded members the chance to explore the many different issues facing the rail industry, as well as the career opportunities presented within the rail industry.

In addition to these events, REAC's membership grew to a new high of 32 during the 2008/2009 school year, including students from a variety of disciplines. We continued to recruit new membership by being involved on campus, and in a wide array of events, including bowling socials, Michigan Tech's Make a Difference Day, as well as field visits to the Lake Superior and Ishpeming Railroad, Loram Maintenance-of-Way World Headquarters, the Union Pacific Railroad, and the Minneapolis North Star Commuter Line Facility. Overall, last year was a huge success, and we have every reason to believe that we will continue to improve during the 2009/2010 school year. Anyone interested in joining REAC should contact Luke Gublo <[ljgublo@mtu.edu](mailto:ljgublo@mtu.edu)> or visit our website <[www.reac.students.mtu.edu](http://www.reac.students.mtu.edu)> for more information.

*Luke Gublo*  
*REAC President*

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# Rail Transportation Program - Global Perspective

Over the past year, the Rail Transportation Program (RTP) has increased its participation in international rail transportation activities around the world by collaborating with academic and industry representatives from several countries.

## Global Rail Innovation Center

In June, RTP Director, Dr. Pasi Lautala and Graduate Student Shane Ferrell participated in the opening ceremonies of the Global Rail Innovation Center (GRIC) at IBM's China Business Innovation Center in Beijing, China. The GRIC will focus on developing technologies that can increase railroad capacity, efficiency, speed, and safety while improving customer service. Michigan Tech joins several U.S. and foreign partners as initial members of the center's advisory board. Other board members include Massachusetts Institute of Technology Professor Joseph M. Sussman; Judge Quentin L. Kopp (chairman of the California High Speed Rail Authority); the German railroad Deutsche Bahn; Motorola; Railinc Corporation (a subsidiary of the American Association of Railroads); and Sabre (a travel network).



Pasi Lautala (left) and Shane Ferrell during opening ceremonies of the Global Rail Innovation Center in Beijing, China.

## China and Russia visits

As part of the Synthesis of Railroad Engineering Best Practices in Deep Seasonal Frost and Permafrost Areas research project, Dr. Lautala and Shane Ferrell presented a paper "Cold Climate Freight Railroads" at the International Heavy Haul Conference in Shanghai, China. RTP representatives also performed visits to several institutions that specialize in railway transportation in China and Russia to discuss cold climate railroad research and railway education. In addition to the research specific discussions, the visits concentrated on potential future collaboration in railway engineering and transportation education. As the first step of the collaboration with Shijiazhuang Railway Institute, RTP will host a visiting scholar from the Institute during in 2010.



Shane Ferrell (left) presents at the International Heavy Haul Conference in Shanghai, China.

## Sixth Consecutive Year of Summer in Finland Program

Seventeen students from several disciplines participated in the International Railroad Engineering and Finnish Cultural Enrichment Study Program in Finland, increasing the total number of participants to 95 over the lifetime of the program. Finlandia Foundation National (FFN) provided a \$3,000 grant to assist in the cultural program activities. The group included a participant from George Mason University and one from Northeastern University. In collaboration with Tampere University of Technology (TTY), one of the program participants was able to expand their railroad experience through an internship with TTY that concentrated on railroad embankment research, focusing on the effects of the embankment width and slope angle to their permanent deformation characteristics.



Summer in Finland 2009 Participants

## Michigan Tech Awarded a Grant by Department of Education in Railway Higher Education

Michigan Tech was recently awarded a research grant by the Department of Education to "tune" and intensify the railway higher education knowledge exchange and collaboration between the European Union and the United States. The project uses comparisons and benchmarking analyses to define the extent, contents, structure, and objectives of current programs, and to identify how well they address the key aspects of modern railway systems. In addition to Michigan Tech, the participating institutions include University of Illinois at Urbana-Champaign in the United States, and Instituto Superior Técnico, Universidade Técnica de Lisboa, Portugal and Technische Universität Braunschweig, Germany in European Union.



Students participating in the National Summer Transportation Institute on the old truss bridge in Eagle River, Michigan.



Gil Carmichael, retired FRA Administrator, gives the keynote presentation at the Fourth Annual Railroad Night.

## Michigan Tech Hosts National Summer Transportation Institute

Michigan's National Summer Transportation Institute (NSTI), the first to be held in Michigan, was hosted by Michigan Technological University (Michigan Tech) July 19 through August 7, 2009. With funding from the Federal Highway Administration, thirty students, ages thirteen to seventeen, spent two weeks on the Michigan Tech campus learning about the transportation profession. Through the AASHTO TRAC (Transportation and Civil Engineering) modules, the students covered topics including bridge design, city planning, highway design and construction, public transit, airports, and railroads. Dr. William Sproule presented an introduction to public transit in North America and Dr. Pasi Lautala introduced the students to railroad transportation and engineering. The presentation covered the history of the railroad network in the United States, what makes rail transportation efficient, and the future of passenger and freight rail in the U.S. To see pictures from the program visit [www.misti.mtu.edu](http://www.misti.mtu.edu) and click on one of the NSTI web page links.

## Fourth Annual Railroad Night

The Fourth Annual Railroad Night was held on February 17th in conjunction with the Michigan Tech 2009 Winter Job Fair. The annual Railroad Night is an opportunity for students, faculty, staff, and administration to meet and socialize with representatives from companies in the Rail Industry. The event, supported by the RTP partners and hosted jointly by the RTP and the REAC, attracted a record-breaking 131 participants. The program featured a visionary keynote speech from a past FRA Administrator, Mr. Gil Carmichael, on the potential for a rail-based "Interstate II" system, and recognition of Dr. Bill Sproule as an honorary REAC member.

## Papers, Presentations, and Publications

- Ferrell, S., Lautala, P.T. and Sproule, W.J. "Railroad Engineering Club Involves Students and the Community." Poster presented at Transportation Research Board (TRB) 2009 Annual Conference, Washington D.C., January 11-15, 2009.
- Lautala, P.T. and Sproule, W.J. "Rebuilding Railroad Engineering Education in the United States with Industry-University Partnerships." Transportation Research Board (TRB) 2009 Annual Conference, Washington D.C., January 11-15, 2009. (Paper accepted for publication in Transportation Research Record journal).
- Lautala, P.T., and Ferrell, S. "Cold Climate Freight Railroads." Paper and presentation at International Heavy Haul Association (IHHA) conference, Shanghai, China, June 21-24, 2009.
- Lutch, R.H., Harris, D.K., and Ahlborn, T.M. "Causes and Preventative Methods for Rail Seat Abrasion in North America's Railroads." Paper and presentation accepted at the American Society of Civil Engineers (ASCE) 14th Conference on Cold Regions Engineering, Duluth, MN, August 30-September 2, 2009.
- Lautala, P.T., and Brokaw, C. "Development of University Rail Transportation Certificate." Paper and presentation accepted to American Railway Engineering and Maintenance of Way Association (AREMA) 2009 Annual Conference, Chicago, IL, September 19-23, 2009.
- Lutch, R.H., Harris, D.K., and Ahlborn, T.M. "Prestressed Concrete Railroads Ties in North America." Paper and presentation accepted to American Railway Engineering and maintenance of Way Association (AREMA) 2009 Annual Conference, Chicago, IL, September 19-23, 2009.

## Student Spotlight - Shane Ferrell

Shane Ferrell became the first student to “graduate” from Michigan Tech’s Rail Transportation Program (RTP). He recently received a MS in Civil Engineering with the completion of his report “*Maintaining Stability Beneath Cold Climate Transportation Infrastructure with Special Emphasis on Railroads.*”

During his years at Michigan Tech, Shane was involved in many of the RTP’s activities. Shane participated in the Summer in Finland Program and successfully completed Public Transit and Engineering and Track Engineering and Design classes. Additionally, he served as Railroad Engineering and Activities Club president and recently presented the “*Cold Climate Freight Railroad*” paper at the 9th International Heavy Haul Conference in Shanghai, China. Shane also worked as a student intern for the Michigan Department of Transportation and for the Union Pacific Railroad. In September, Shane will relocate to Anchorage, Alaska to work for Hanson Professional Services as a Railroad Design Engineer.



Michigan Tech President Glen Mroz (left to right), RTP Director Pasi Lautala, Michigan Tech Civil Engineering Professor Bill Sproule, and Shane Ferrell recently at the Fourth Annual Railroad Night. Shown is Dr. Sproule being named an honorary member of the Railroad Engineering and Activities Club.

## Scholarship Winners

The American Railroad Engineering and Maintenance of Way Association (AREMA) Educational Foundation sponsors a yearly scholarship competition for students showing interest in the rail industry. In addition, RTP partners Union Pacific Railroad and CSX fund internal scholarships for Michigan Tech students. This year eight Michigan Tech students were awarded over \$15,000 in scholarship money from AREMA, Union Pacific, and CSX. The students are listed below, and full biographies of the student scholarship winners can be found in the *2008/2009 RTP Annual Report* coming this fall.

- Luke Gublo – MTU Alumni Scholarship and CSX Diversity Scholarship
- John Hatch – AREMA Committee 27: Maintenance-of-Way Work Equipment Scholarship and CSX Diversity Scholarship
- Lars Leemkuil – AREMA Committee 37: Signal Systems Scholarship and CSX Diversity Scholarship
- Andrew Manty – HNTB Founder’s Scholarship and Union Pacific Railroad Scholarship
- Steffanie Pepin – MTU Alumni Scholarship
- Ryan Rintamaki – CSX Diversity Scholarship
- Ben Sheff – AREMA Educational Foundation Scholarship
- Matt Tronnes – John J. Cunningham Memorial Scholarship and Union Pacific Scholarship

**Congratulations to all of our scholarship recipients!**

### About the Michigan Tech Rail Transportation Program

The vision of Rail Transportation Program (RTP) is to expand its service to the rail industry by offering an interdisciplinary program in railroad engineering and urban rail transit that will provide opportunities for our students and faculty to participate in the development and operation of rail transportation for the 21<sup>st</sup> Century.

*The RTP is a program of the Michigan Tech Transportation Institute.*

## New Funding for Rail Research at Michigan Tech

### Finlandia Foundation National (FFN)



Now in its sixth consecutive summer, almost 100 students have participated in the five week *Railroad Engineering and Finnish Cultural Enrichment Study Program in Finland*. A grant in the amount of \$3,000 from **Finlandia Foundation National (FFN)** contributed to the success of the of the cultural activities, especially the Finnish-American Day where students met with Finnish middle-school students to discuss similarities and differences between Finland and the United States.

### Department of Education



A \$76,000 grant was received from the **E.U.-Atlantis Program** through the Department of Education for a two-year study titled *Policy Project on Tuning Transatlantic Cooperation in Rail Higher Education*. The policy project, known as TUNRail, is intended to study the current railway higher education programs and encourage collaboration between the European Union and the United States. It will use comparisons and benchmarking analyses to define the extent, contents, structure, and objective of academic programs, and identifying how well they address key aspects of modern railway systems.

### Michigan Economic Development Corporation - Frontier Center of Energy Excellence (COEE)



One of Michigan's largest resources lies in her 19 million acres of natural forests. A proposal titled *Frontier Renewable Resources* to address the high priority needs for efficient harvesting, wood processing and transportation supply chain has been awarded through the **Michigan Economic Development Corporation**. The award of \$274,837 supports research focused on providing advanced knowledge for supplying high quality wood chipping at the Kinross, Michigan Frontier Renewable Resources (FRR) facility. The RTP will be leading the efforts to investigate and evaluate the alternatives for the multi-modal bio-mass transportation system.

### About Michigan Technological University

Michigan Technological University is a leading public research university, conducting research, developing new technologies, and preparing students to create the future for a prosperous and sustainable world. Michigan Tech offers more than 120 undergraduate and graduate degree programs in engineering, forestry and environmental sciences, computer sciences, technology, business and economics, natural and physical sciences, arts, humanities and social sciences.

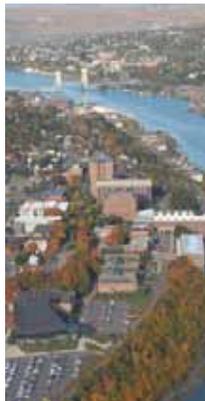
### About the Michigan Tech Transportation Institute

Transportation related activities at Michigan Technological University (Michigan Tech) including research, education and training, outreach, product development or technology transfer, are organized under the umbrella of the Michigan Tech Transportation Institute (MTTI). MTTI brings together principle investigators across all disciplines at Michigan Tech for collaborative research in six areas of transportation to address national and global needs:

- **Structures** research focuses on the built environment including bridges, pavements, geotechnical applications, construction and nanotechnology related to sensors. Research is also conducted on monitoring strategies to extend the service life of aging transportation infrastructure.
- **Materials** used in transportation infrastructure including concrete, asphalt, steel, wood and aggregates are being investigated as well as the use of industrial byproducts and recycled materials including fly ash, slag and cement kiln dust.
- **Systems** groups focus on the planning, design, construction, operations and management of transportation infrastructure and systems including highway networks, railroads, airports, public transit, and waterways.
- **Environmental** studies include the transportation issues of energy, carbon dioxide and other pollutants, flora, fauna and wildlife, and the impact of the environment.
- **Societal** research explores historical developments in transportation, archeological studies of transportation features, human factors, and the interaction of transportation and society through policy, planning, and regulation.
- **Technology transfer** "bridges the gap between research and practice" by providing outreach, management systems, and workforce development programs as well as develops management tools for the transportation industry including GIS, asset management, and project estimating software.

### MichiganTech

Houghton, Michigan



## Michigan Tech

Create the Future

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