

Research Job Opportunity

CFIRE is hiring a post-doc researcher to work on freight related research activities. A wide variety of freight research backgrounds will be considered. Contact Dr. Teresa Adams (adams@engr.wisc.edu) for more information.

INSIDE HIGHLIGHTS

Page	2
• 2009 TRB reception	
• CMSC, CFIRE Bridge Workshop	
Page	3
• MVFC annual meeting	
Page	4
• Environment commitment tracking tool	
• Freight Research at UTCs	
Page	5
• RFPs for CFIRE Posted	
Page	6
• Student Awards	
• TMP Updates	
Page	7
• Bus Rapid Transit in the Midwest	
Page	8
• Soil Compaction Studies	
• GPS Uses in Construction	
Page	9
• SmartWay Information	
Page	10
• MVFC Truck Parking in USDOT UTC Spotlight	
Page	11
• EPD courses	
Page	12
• Upcoming Events	

From the Director



Teresa M. Adams, Director

The landmark American Recovery & Reinvestment Act (ARRA) is designed to balance state budgets, build or repair roads and bridges, galvanize urban

transit systems, and create approximately four million jobs. It's important that we educate the public on what the legislation will do for them.

Public investment is necessary for a globally competitive, sustainable transportation network to meet demand for freight and passenger movement. Doing nothing makes things worse. Going halfway doesn't do enough. New infrastructure investment is an infusion of energy to get the country moving ahead, not a drain on the economy.

Public investment allows private companies to hire workers to build the freight capacity that serves business and industry across the nation. USDOT estimates that \$1 billion in infrastructure investment will create or

retain 35,000 jobs. Imagine the national economic impact if \$64 billion in highway and bridge projects and another \$12 billion in transit projects got underway this year with an infusion of stimulus funds. With states in our region reporting the worst jobless rates in more than two decades, we can rebuild and replace jobs.

New and improved roads, bridges, and rail systems enhance safe delivery of top commodities to freight distribution centers or intermodal ports. Businesses get their products to consumer and have opportunities to expand at new locations along the transportation network. Companies will invest resulting savings in personnel,

Continued on page 7

REGISTER NOW!
April 14-16, 2009

Mississippi Valley Freight Coalition 2009 Annual Meeting Kansas City, Missouri

Hosted by the Missouri and Kansas Departments of Transportation

Hampton Inn & Suites Kansas City Country Club Plaza
4600 Summit, Kansas City, Missouri



Sponsor
Mississippi Valley Freight Coalition
National Center for Freight & Infrastructure Research and Education (CFIRE) at the University of Wisconsin-Madison
Great Lakes Maritime Research Institute

For information and registration, please visit <http://www.mississippivalleyfreight.org>. See page 3 for details.

NEWSLETTER

TRB Publishes TMP Research

Graduate students in the Transportation Management & Policy (TMP) program at the UW-Madison have had their community transportation research paper accepted for publication in the Transportation Research Record (TRR), a journal of the Transportation Research Board (TRB).

Five student researchers -- Michael Rodriguez, Michelle Scott, David Platz, William Sierzchula, and Ji Zheng -- collaborated on TRB Paper 09-3396 entitled, *Carsharing in a University Community: Assessing Potential Demand and Distinct Market Characteristics*. The students presented their research at the TRB Annual Meeting in January. Dr. Jessica Guo, TMP chair, and CFIRE director Teresa M. Adams co-authored the paper.

The research showed that more people would use car-sharing if they knew about the service and its membership benefits. The students conducted an online survey of UW-Madison students, faculty, and affiliates on the Community Car service that's operated since 2004. Community Car provides vehicles to members who generally walk, bike or ride buses but occasionally need a car for shopping or running errands. Members pay monthly, annual, or hourly fees to reserve vehicles available at designated sites.

Based on more than 4,000 responses, Community Car is most popular with undergraduate students with no car, compared to UW graduate students, faculty, or employees who usually drive. The survey showed that undergraduate members heard about Community Car from its Web site and from e-mails.

Researchers advised Community Car to advertise in student newspapers and alternative media to reach potential members.

To predict membership, researchers used a data model based on demographics, travel preferences and membership plans. Respondents considered fees and walking distance important, and were less likely to join if they owned a vehicle. Some respondents said joining would be a "hassle," a perception Community Car could address in its advertising. Researchers concluded that more market research, demographic data, and comparisons with university communities would better define car-sharing clientele.



Dr. Jessica Guo

CFIRE, CMSC host bridge workshop

Increasing traffic and freight demand is reinforcing the need for stronger bridges with extended durability. Post tensioning is a natural solution to these needs but is not widely used in Wisconsin.

On Feb. 25, CFIRE and the UW-Madison Construction & Materials Support Center (CMSC) held a Wisconsin Bridge Post-Tensioning Workshop to educate the transportation community about post-tensioning applications to bridge design and construction. The meeting was sponsored by the Wisconsin DOT.

The workshop drew 95 attendees including Wisconsin DOT, county highway and city of Milwaukee officials, engineering consultants, contractors, and six UW-Madison graduate students.



CFIRE associate director Michael Oliva said



Wisconsin would benefit from post-tension because the technology prevents cracking in concrete and can considerably extend the life span of bridges, particularly bridges subject to heavy loading from freight



movement.

Eric Tegner of VSL Incorporated of Chicago and Dave Martin of Dywidag Systems International of Chicago discussed components, construction processes and installation of post-tensioning for bridge systems and used a precast concrete beam for a live demonstration.

Wisconsin Reception Again a Hit

More than 250 people attended the 2009 Wisconsin Transportation Reception at the transportation Research Board (TRB) Annual meeting January 11 in Washington. CFIRE co-sponsored the reception, hosted by the Transportation Development Association of Wisconsin. The reception attracted international, federal, state, local, and private-sector students and transportation professionals. Ron Chicka, of the Duluth-Superior Metropolitan Interstate Council walked away the winner of the door prize drawing and is the new owner of a CFIRE embroidered polo.



MVFC Annual Meeting, Kansas City, Missouri

The Mississippi Valley Freight Coalition (MVFC) is holding its 2009 annual meeting April 14-16 in Kansas City, MO.

The meeting will feature keynotes from Secretary Deb Miller of the Kansas DOT, Paul Nowicki of BNSF Railway, and Chris Gutierrez of KC Smartport.

Workshops on Midwest

FreightView, regional multi-state performance measures the I-95 Coalition's Freight Academy, and demonstrations on the Traveler's Information Clearinghouse and Truck Parking programs will also be featured.

Participants will hear from a cross section of panelists from both the shipper and carrier communities, including Watco Companies, Alliance Shippers, Kansas City & Southern, YRC,

International Paper, Kraft Foods, and the Kansas Grain and Feed Association.

On April 16, state and federal representatives will discuss the status of federal transportation authorization efforts. Leo Penne of AASHTO highlights the opening sessions on that day. Representatives of MNDOT, KSDOT and INDOT will take part

in a session on "Best Practices for State Freight Planning."

"We have begun 2009 with a new administration in Washington, D.C., proposals to rebuild infrastructure and the economy, and challenges to develop new sources of energy that would benefit freight and the public as a whole," Wittwer said. "The MVFC annual meeting is an opportunity to present and discuss important issues in a



MVFC Facilitator Ernie Wittwer

networking atmosphere that will help stimulate ideas and solutions."

Aside from the anticipated federal stimulus dollar amounts that have played in the news media, Wittwer said long-range planning must include freight performance measures that ensure greater transparency in the planning process and the application of research and technology.

Another highlight will be a tour of the Hunt Midwest Subtropolis facility, the World's Largest Underground Business Complex. Participants will receive a first hand look at innovative land uses and logistics processes during the tour.

For registration, visit <http://www.mississippivalleyfreight.org>



MVFC Freight Clearinghouse at a Glance

The MVFC freight traveler's information clearinghouse project is aimed at developing ways for on-road truckers to use real-time information to make route choices that increase freight transport efficiency.

The project has explored intelligent transportation systems (ITS) architecture among MVFC member states and other multi-state organizations. Researchers have been collecting input from motor carriers and regulators through Web and telephone surveys, exploring what information is now available to motor carriers, and developing high-level feasibility and operational concepts for a clearinghouse.

A project website (freight.engr.wisc.edu) has information on current and planned systems, and a prototype built on a Google Maps interface is available for review. Researchers anticipate completing this phase of the project by mid-2009. If the MVFC chooses to further pursue the clearinghouse concept, the next phase would involve system and hosting requirements, design, integration, implementation, and subsequent testing and validation. For more details, contact Peter Rafferty at prafferty@wisc.edu

Planned Agenda April 14-16, 2009

<p>April 14</p> <p>12:00p-5:00 Registration Available</p> <p>12:00p-1:00 Lunch & Welcome Teresa Adams, Director, CFIRE</p> <p>1:00-2:30 Workshops 1: FreightView I Peter Lindquist, U. of Toledo</p> <p>I-95 Freight Academy Marygrace Parker, I-95 Coalition</p> <p>MVFC Clearinghouse Ravi Pavuluri, U. of Wisconsin</p> <p>3:00-4:30 Workshops 2: FreightView II Peter Lindquist, U. of Toledo</p> <p>Performance Management: Ernie Wittwer, MVFC</p> <p>Truck Parking & Freight Bottlenecks Praveen Srivastava, U. of Wisc.</p> <p>6:00-9:00 Dinner. By invitation.</p>	<p>April 15</p> <p>8:30-9:30 Host state comments</p> <p>9:30-10:15a Keynote speaker Secretary Deb Miller, Kansas DOT</p> <p>10:30-12:00 Shippers/Panelists: Kansas Grain & Feed Association; Kraft, International Paper; Heidtman Steel</p> <p>12:00p-1:30 Lunch w/ Keynote Speaker Paul Nowicki, BNSF Railway</p> <p>1:30-3:00 Carriers/Panelists: Paul Rhode Waterways Council, Inc.; Mac McMichael, Alliance Shippers; Shellee Currier, Watco Companies; Skip Kalb, BNSF; Warren Erdman, KCS (invited)</p> <p>3:00-5:30: Subtropolis Tour, the World's Largest Underground Business Complex</p> <p>6:00-7:00 Reception Featuring posters of Coalition efforts</p>	<p>April 16</p> <p>8:00-9:30 Federal Authorization Update Leo Penne, AASHTO Beth Nachreiner (invited), Wisconsin DOT and Commission on Surface Transportation Policy and Revenue</p> <p>10:00-11:30 State freight planning Keith Bucklew, Indiana DoT Dave Christianson, Minnesota DoT John Maddox, Kansas DoT</p> <p>11:30-1:00p Lunch with Keynote Speaker Chris Gutierrez, KC Smartport</p> <p>1:00p-1:30 Summary and Adjourn</p>
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N E W S L E T T E R

CFIRE develops tracking tool for environmental mitigation

A CFIRE research team is developing an asset management tool to track environmental commitments made during highway construction projects.

Environmental mitigation commitments may include flood or stormwater management, reforestation, parkland replacement, or noise barriers.

“These projects offset or replace certain environmental functions lost as a result of a transportation construction project,” CFIRE deputy director Jason Bittner said. “The research will involve reviewing how other states do environmental mitigation as a guide to developing the tool,” Project Principal Investigator Teresa Adams said.



An example of a turtle crossing at construction

The Wisconsin Department of Transportation (WisDOT) asked for help in developing a tool to track these commitments, with particular attention to those that need maintenance and monitoring in order to fulfill their intended purpose.

In addition to reviewing environmental mitigation practices in other states, the CFIRE research team will meet with WisDOT officials on current tracking procedures for environmental mitigation commitments, determine priority environmental features for further study, develop and test an electronic inventory and asset management tool for collecting information, devise implementation strategies, and show WisDOT managers how to use the tool. “This will help integrate roads and natural areas important to local communities,”

Bittner added.

Wisconsin has constructed many environmental mitigation projects in conjunction with transportation projects that have been implemented pursuant to the National Environmental Policy Act. Other mitigation projects have been constructed



A natural crossing under construction with a trail

pursuant to discussions and negotiations with Wisconsin DNR.

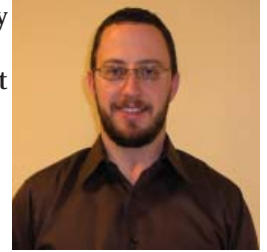
CFIRE Project Assistant Stacy Cook has been the primary researcher for the effort. Ms. Cook has conducted dozens of interviews with WisDOT regional personnel and the Wisconsin Department of Natural Resources. The project is partially funded under WisDOT’s Policy Research Program.

For more information on the environmental mitigation project, go to the CFIRE Web site at http://www.wistrans.org/cfire/research/current_projects

Former CFIRE Student works on state freight plan

Former CFIRE researcher Bill Holloway is helping the Kansas Department of Transportation (KSDOT) complete its first Statewide Multimodal Freight Study.

The study includes a systems view of freight movements into, out of, through, and within the State, including an analysis of all modal systems and the commodities that are moving across them. It also identifies existing and emerging freight transportation, industry, and logistics trends that are affecting goods movement in Kansas. The end result will be a set of strategic infrastructure, institutional, and policy recommendations that can be integrated with the DOT’s long-range planning process to get maximum benefit from the multimodal transportation system. Researchers are also creating graphical, Geographic Information System (GIS)-based tools to guide selection and implementation of future freight decisions.



Former CFIRE student Bill Holloway is working on the Kansas Statewide Freight Plan

TMP Practicum Looks at CAFO Infrastructure Impacts

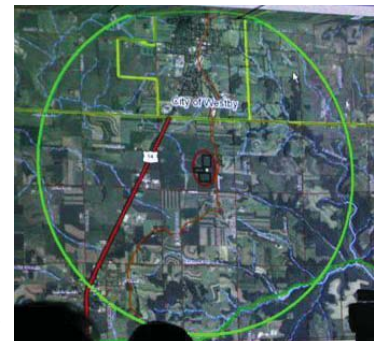
A group of students in the Transportation Management and Policy Graduate Practicum are assisting a rural Wisconsin county with transportation planning and analysis. As part of their project in CEE772: Practicum for Transportation Management and Policy, the student teams will investigate and document the current condition of the transportation infrastructure in Vernon County, Wisconsin.

This includes a look at all businesses in the county. The goal is to present data and analysis to potentially include in the transportation element of the county comprehensive plan.

After such analysis, the team will review the transportation infrastructure impacts of

two potential scenarios. Scenario 1 is the impact of a large scale concentrated animal feeding operation (CAFO) on the transportation infrastructure if located within a mile of state highways in Vernon County. Scenario 2 is the impact of a CAFO on the transportation infrastructure if located 10 miles out, requiring travel along local roads.

CFIRE Director Teresa Adams and CFIRE Associate Director Jessica Guo are the instructors for the Practicum.



This map (above) shows the location (the red oval in the middle) of a proposed 3,200-cow CAFO facility in Vernon County. The green circle shows property within 2 miles. (Matt Johnson photo)

N E W S L E T T E R

Year 3 CFIRE RFPs Posted: Call for Researchers to Submit Innovative Breakthrough Proposals

CFIRE is accepting proposals until **April 27, 2009** for research projects across all four of the signature technical areas of research (STARs). Specific requests for proposals are noted as follow:



CFIRE
NATIONAL CENTER FOR
FREIGHT & INFRASTRUCTURE
RESEARCH & EDUCATION

Design, Materials and Construction Processes for Highway, Harbor, and Rail Infrastructure - - Dr. Michael Oliva, associate director

- **Development of innovative technology for design, construction, and maintenance of freight infrastructure components.**

CFIRE is requesting proposals on a broad range of potential approaches and substantive solutions related to improved infrastructure for freight transportation.

Potential research areas include manufacture of sustainable building materials, evaluation of the impact of increasing freight loads on roadbeds; and Load and Resistance Factor Design (LRFD) techniques for bridge-substructures.

Multimodal Systems Planning and Optimization - - Dr. Jessica Guo, associate director

- **Assessing Public Benefits and Costs of Freight Transportation Projects**

The goal of this RFP is to develop an understanding of the public benefits of freight transportation and developing benefit assessment methodology using case studies, historical data and assessment tools.

- **Methodology for Improving Metropolitan-Area Freight Transportation Demand Forecasting**

This project will advance state-of-the-art methodologies for modeling freight transportation demand. Of particular interest are policy-sensitive models that incorporate supply chain relationships, logistic constraints and other operational considerations.

- **Enhancing the Rail System for the Greater Good: Public Policies and Mechanisms**

CFIRE is seeking innovative research to inform rail public policy, investment strategies, and financial mechanisms to help develop a roadmap to foster future growth in rail market share and for developing a national rail network.

Traffic Operations and Safety - - Dr. David Noyce, associate director

- **Human Factors in Freight Vehicle Driver Operation: Driver Behavior and Performance to Improve Safety**

CFIRE is seeking proposals for innovative research and understanding interaction behavior and comprehension of commercial and passenger drivers. Research will lead to recommendations for design and operations improvements in areas such as highway-rail grade crossings, work zones, interchanges, roundabouts, and adverse weather conditions.

- **Regional Coordination of Freight Operations Technologies**

These proposals will quantify public and private benefits of coordination of freight operations through regional commercial vehicle infrastructure integration.

Energy and Environment - - Dr. Tracey Holloway, associate director

- **Assessment of Environmental and Energy Impacts of Freight Transportation**

CFIRE is requesting proposals on a broad range of potential approaches and substantive solutions related to environmental considerations in freight transportation planning and operations.

Potential areas of research include marketing strategies for fuel-efficient technologies, incentives for improved and sustainable supply chain management, water quality impacts of freight movements, air quality impacts of Great Lakes vessels, emissions characterization of commercial fleets in Wisconsin, and measuring energy intensity of all transportation modes.

For RFP details, submission procedures, or contacts, go to <http://www.wistrans.org/cfire/Research/Requestforproposals.html>



**Responses Due
April 27th, 2009**

NEWSLETTER

UW Grad Student Receives AASHTO Award

Sasanka Gandavarapu, a UW-Madison graduate student, is one of two in the 2009 AASHTO GIS for Transportation Symposium Student Paper Contest.

Sasanka's paper, *"Utilizing GIS to Assess Built Environment Investment Impacts on Travel Behavior, Public Health and Air Quality,"* is part of his research toward his master's thesis.

Gandavarapu will be honored at an April 6 awards ceremony during the opening session of AASHTO's GIS for Transportation Conference. The paper will be presented during the afternoon session.

A five-member committee reviewed each paper and discussed its significance related to current transportation problems. Gandavarapu's paper showed his understanding of built environment impacts on transportation users and use of GIS as an integrated tool for transportation decision makers.

CFIRE associate director Jessica Guo is Gandavarapu's graduate advisor.

TMP Student Chosen for Eno Conference

Ghazan Khan, a Transportation Management & Policy (TMP) student at the University of Wisconsin-Madison, will participate in the 17th annual Eno Leadership Development Conference in Washington, D.C., May 2009.

The Eno Transportation Foundation typically chooses about 20 students nationwide to attend the conference. CFIRE is co-sponsoring Khan's attendance as part of its education program.

The conference gives students a first-hand look at transportation policy development and implementation. Khan will meet with government officials, association leaders, and members of Congress to learn about the transportation policymaking process. The goal is to equip students to understand the policy-making process as they pursue transportation careers.

CFIRE associate director and Eno Alum David Noyce is Khan's graduate advisor.

Praveen Srivastava Joins CFIRE Staff



CFIRE research associate Praveen Srivastava

CFIRE is pleased to announce that Praveen Srivastava has joined our staff as a full-time research associate.

Praveen had been a student project assistant, making valuable contributions to CFIRE research in identifying truck parking shortages and low-cost strategies to address those shortages. Praveen was also part of the CFIRE research team that presented a paper at the Transportation Research Board annual meeting in

January on the use of Web mapping technology to conduct truck parking surveys and use the data to mark serious problem areas in Wisconsin and the Midwest region.

Praveen will continue to apply GIS technology to CFIRE projects. Other responsibilities will include guiding graduate students, co-authoring academic articles, preparing outreach and presentation materials, and developing research proposals.

Praveen graduated from the UW-Madison in December 2008 in Civil Engineering Department, with a focus on GIS development and its applications in transportation planning and operations. After completing a bachelor of technology degree in civil engineering at Indian Institute of Technology, Kanpur (IITK) in 2005, Praveen worked with Oracle India Pvt. Ltd., Hyderabad, India for the E-Business suite development division.

Praveen's interests include developing GIS applications to solve engineering problems. Praveen also has expertise in ArcGIS suite, database technologies, and various programming languages.

Integrating Efforts: Freight Research at UTCs

CFIRE, the Mississippi Valley Freight Coalition (MVFC) and the METTRANS Transportation Center at the University of Southern California and California State-Long Beach are hosting the 2nd national workshop on UTC Freight Research at the Hotel Maya in Long Beach, California on October 20, 2009.



The invitation-only national workshop and forum will set the groundwork for a national freight transportation research priorities. The event will feature speed networking opportunities for freight stakeholders and researchers. National leaders from the freight community and from educational institutions will get updates on the nation's leading freight research activities, explore collaborative freight research opportunities, network with colleagues and contacts, define barriers and challenges for freight research and outreach, learn private sector research priorities, and explore how to meet future training and research needs.

The event builds upon the October 2007 UTC Spotlight Conference on Research Issues in Freight Transportation:

Congestion and System Performance, at which networks of freight researchers developed a greater understanding of the freight research issues and practices. The 2007 proceedings were recently released.

For more information, please contact Jason Bittner, CFIRE deputy director at (608) 262-2746, or visit www.wistrans.org/cfire/IntegratingEfforts/



SPRING 2009

NEWSLETTER

BRT making inroads

Bus rapid transit (BRT) systems have become priorities in the Cleveland and Chicago metropolitan areas during the past year. Regional planners in Cleveland started the Euclid Corridor system and plan to expand BRT services this year. Chicago's Division of Fleet Management has bought hundreds of hybrid buses and is planning several BRT routes to increase bus ridership and ease traffic congestion. Both metro areas plan to spend federal recovery funds to accelerate BRT service plans. Rapid bus transit is becoming an efficient mobility option that



Cleveland hybrid bus (Source: Euclid Corridor Project)

increases ridership, improves service, and reduces traffic congestion.

According to a recent assessment from the Victoria

Transport Policy Institute (VTPI), BRT is an efficient mobility alternative but that local officials need to commit planning and financial resources to these urban transit systems.

Characteristics

A BRT system is a hybrid of bus and rail service operations, with designated bus ways, vanpools, and carpools. Hybrid buses offer clean, quiet, and comfortable rides, with free or discounted transfers between routes and transit modes, pre-paid fares for faster boarding, and wider, multi-passenger doors.

Specially-designed BRT stations often have electronic schedule displays, route maps, GPS traveler

information, kiosks for pre-paid fares, platforms, low-floor boarding, and wheelchair access. Local planners included BRT in transit-oriented community development projects.

Benefits

VTPI researchers found that BRT systems have increased ridership up to 25 percent while improving service, safety, and efficiency. More people walk or ride bikes, too, contributing to public health and air quality.

Case Studies

Boston's BRT system reduced customer travel times from from 25 to 60 percent in the first year of operation.

In Los Angeles, the Orange County Line reduced travel time with slower bus speeds and express buses that get priority passage at traffic signals. In seven months, the OCL surpassed its 2020 goal of 22,000 boardings.

Portland, Oregon's BRT has streamlined routes, traffic signal priority, curb extensions, and low-floor buses for easier boarding. Increasing ridership 60 percent and traffic speed 20 percent by 2025, however, would cost \$20 billion.

Internationally, VTPI found that BRT ridership quickly exceeded expectations in German, China, Brazil, and Australia.

For more info, go to <http://www.vtpi.org/tdm/tdm120.htm>



A BRT bus stop on the Cleveland metro system

Michigan Task Force on Transport Funding

A recent study concluded that the State of Michigan could lose \$1 billion in federal highway funds unless state and local governments double their transportation budgets. In a February 2009 report, the MDOT Transportation Funding Task Force (TF2) recommends immediate increases in registration rates and motor fuel taxes; local revenue options to encourage

“The one option we can't afford is to do nothing.”

-- MDOT

Transportation Funding Task Force 2

local investment; and public-private partnerships to build, expand or repair highways. Long-term solutions include applying a general sales tax increase and fuel sales taxes to transportation.

TF2 favors a \$14 billion state/local transportation investment to sustain 240,000 jobs, match \$2 billion in federal funds, offset rising costs, and add \$28 billion to the Michigan economy. The alternative is losing more than 12,000 jobs and having road conditions regress to 1996 levels.

Another concern is that businesses won't come to Michigan unless infrastructure improves. According TF2, 27% of land-based and 37% of rail trade moves through Michigan. This freight movement requires efficient freight infrastructure to serve the entire regional economy.

Adams from page 1

capital improvements or new technology.

Public investment also makes roads safer and less congested while protecting the environment. For every dollar invested in transportation, we get nearly \$6 back in reduced delays, fewer accidents, lower greenhouse gas emissions, and cost savings in vehicle operation and maintenance.

There's a similar return from urban transit systems that increase mobility, time savings and employment while improving service and reducing congestion and the number of traffic accidents. Green infrastructure projects awaiting stimulus funds will revitalize central cities and riverfronts while restoring natural areas and preventing flood damage.

More importantly, our global competitiveness is at stake. What is global? It means going beyond our cozy localities and working with stakeholders to develop world-class infrastructure that brings quality goods to national and world markets. Our region is a player in the international economy.

Our CFIRE research efforts address regional and global issues in freight transportation. Creating a 21st century transportation system means making wise investment in a sustainable, multimodal network to keep freight moving and improves quality of life. It's not about throwing money at problems or party-line rhetoric. It's about giving people what they need to participate in a dynamic global economy. I am confident that we have the skills necessary to meet such a challenge.



SPRING 2009



N E W S L E T T E R

CFIRE Soil Compaction Study Progresses

CFIRE researchers expect to have test results soon that could reveal ways to save money on Wisconsin highway projects. *“Effective Depth of Soil Compaction in Relation to Applied Compactive Energy,”* has involved laboratory and field tests to monitor and evaluate the degree of soil compaction at various depths to see if current WisDOT specifications for embankment thickness could be changed and thus reduce construction costs.

WisDOT has specifications for soil compaction thickness, density, and water contents, with an embankment thickness range of eight to 12 inches, depending on soil type. WisDOT established the specifications based on contractors’ field experiences. Now, however, modern earth moving equipment could make it possible to produce much thicker layers of soil compaction, potentially reducing costs without sacrificing stability



Researchers use pressure plates and MEMS accelerometers to monitor compaction energy

The purpose of the testing, according to CFIRE researcher Dante Fratta, is to investigate the effects of various soil compactions on the performance of road bases and sub-bases and determine if more embankment thickness, or “lift” will provide uniform compaction necessary for a stable road foundation.

Using data collected from field tests at Stevens Point last July, researchers have been doing numerical modeling and analysis to evaluate the compactive energy propagation in embankment construction operations. The data will help researchers interpret interactions of compactors with different equipment, soil types, and lift thickness. So far this year, researchers have been establishing correlations between field measurements and theoretical/numerical predictive models to estimate compaction energy and the efficiency at depth of different soils and lift thicknesses.

Containerized Movements in Wisconsin Explored

CFIRE, through Wisconsin DOT’s Policy Research Program, is engaged to better understand limitations on international container movements. Focus is on the economic impacts of Wisconsin’s 80,000 lb limit on all international containers moving through/within/into/out of the State. The project is looking at traffic moved by container, not bulk, international shipments.



CFIRE Project Assistant Martin Schilling is the lead student researcher under Co-PIs Teresa Adams and Jason Bittner.

More on the project is available at <http://www.wistrans.org/cfire/Research/CFIRE/CFIRE01-05/01-05.htm>.

GPS Highway Grading Study

Use of Global Positioning System (GPS) technology to guide and control earth-moving equipment is becoming more commonplace in highway construction. In fact, machine-guided grading technology helps contractors complete projects more efficiently, saving time and money.

A CFIRE project, “Implementing Digital Terrain Models (DTMs) for Construction Plans and Determining Earthwork Quantities,” will help WisDOT determine the feasibility of providing construction contractors with 3D DTMs required for using GPS technology for machine-guided highway grading.

Upon completion, the project will have helped WisDOT set directions for maximizing use of its new 3D highway design software. Currently, contractors incur costs by having to convert traditional two-dimensional project designs to three-dimensional representations. In addition, the conversion process can be subject to error, requiring intense checking of the 3D DTMs against the 2D plans upon which they are based. For GPS technology to be effective, researchers say the design phase itself must produce the DTMs.

WisDOT needs to address cultural, legal, and work process questions while implementing its 3D software and before making DTMs available to contractors for machine-guided grading purposes. To date, only one state highway agency uses DTMs as contract documents. To assist WisDOT in pursuing policy changes, CFIRE researchers continue work on the ramifications of providing DTMs for GPS-assisted grading projects.

The project includes evaluation of questionnaire responses, investigation of current WisDOT use of cross-sections;

comparison of DTM-to-DTM versus average-end-area for volume computations; and obtaining input from WisDOT regions, industry, and consultants.

In November, 2008, the project was extended to include development of a formal implementation plan for 3D technologies. The final report is currently in preparation. For a project summary, go to: <http://cfire.wistrans.org/research/current/projects>.

Mid-Century Transportation Symposium 2009

August 20-21, 2009



NEWSLETTER

Doyle: Region could lead in high-speed rail service

Wisconsin Gov. Jim Doyle sees the federal economic recovery package as a prime funding source for high-speed rail systems in Wisconsin and the midwest region.

Wisconsin is one of 14 states to commit funds each year to rail corridors. With a federal partner, the Midwest Regional Rail Initiative may be able to proceed with developing a rail network from Chicago to the Twin Cities, with stops in Milwaukee and Madison and a spur to Green Bay.

Governor Doyle testified to federal lawmakers and state business leaders that high-speed rail offers an efficient alternative to congestion and delays throughout the transportation system. Doyle contends that rail deserves federal assistance now provided for highways and airports. Wisconsin has \$137 million in contracts with the Canadian National Railroad that could get underway in a matter of weeks with federal support.

Wisconsin anticipates using \$564 million in federal stimulus funds for transportation infrastructure.

In January, Doyle established the Office of Recovery and Reinvestment to disburse funds as swiftly as possible.

Wisconsin Association of Railroad Passengers (WisARP) 2002 survey:

- **76.6% said they would use the trains if the planned nine-state Midwest Regional Rail network became available to them.**

- **To reduce current highway congestion, 59% favored alternatives to highways, with rail getting the most support compared to airplanes or buses. Only 35% believed that building more highways was the solution.**

USEPA SmartWay Enrollments Grow Most in Midwest

The Midwest region had the most recruits for the EPA Region 5 SmartWay in 2008.

SmartWay is an EPA-sponsored organization with 765 members nationwide that implements the Midwest Clean Diesel Initiative (MCDI) for the reduction of diesel fuel emissions and the SmartWay Transport Partnership that provides emissions reduction options for truck owners and fleets.

In 2008, more than 200 organizations from six Midwestern states joined EPA SmartWay Region 5. Illinois had the most (49), followed by Wisconsin (38), Ohio (35), Michigan (28), Minnesota (23), and Indiana (22).

In FY2008, EPA Region 5 received approximately \$5 million for MCDI emission reduction projects.

Midwest Clean Diesel (MCDI)

Awards Recognize Local Firm

Each year, MCDI recognizes exceptional emissions reduction projects. The 2008 award winners were:

Roehl Transport, Inc., Marshfield, Wisconsin. Roehl Transport is one of the top 100 trucking companies in the U.S., with more than 4,000 trailers and 1,650 power units. A participant in the EPA Smartway Transport Partnership, 15% of Roehl's fleet is equipped with auxiliary power units (APUs). The company expects full conversion by 2010. Additionally, Roehl's trucks travel at 63 mph maximum speed and have reduced idling by 41% through a company incentive program.

Ohio Environmental Protection Agency. In 2005, the agency initiated grants to school districts for reducing diesel emissions. Since 2005, the Ohio Clean Diesel School Bus Fund has awarded \$1,643,813 to install pollution control equipment on 642 school buses in 33 school districts. Grant funds come from fines assessed against pollution violators. Schools can choose to install diesel oxidation catalysts (DOCs), diesel particulate filters (DPFs), closed crankcase filtration systems, or any other technology that is on EPA's or CARB's verified technology lists. The Ohio Legislature has rewarded the successful fund with \$600,000 in state funding through 2009. Ohio EPA will want to increase funding for future years.

Chicago Department of Fleet Management (DFM). The DFM's emissions reduction program has retrofitted 511 service vehicles with DOCs, purchased E-85 flex-fuel vehicles, 232 hybrid vehicles, & 74 compressed natural gas-powered (CNG) vehicles. By year's end, 750 medium- and heavy-duty trucks will have idle-shutdown devices. The CTA is also considering several BRT routes to improve urban transit service (see page 7). Meanwhile DFM eventually will equip all of the above vehicles with GPS monitoring ability.



USDOT has designated future high-speed rail corridors to connect to major cities. The map shows future corridors and existing Amtrak routes. (Source: Texas Transportation Institute, Texas A&M University)



CFIRE Truck Parking Research in UTC Spotlight

CFIRE and MVFC truck parking studies are featured in an article entitled “Innovative Use of Spatial Data Assists in Solving Truck Parking Shortage” that appeared in the January 9 issue of UTC Spotlight, an online newsletter of the USDOT’s Research and Innovative Technology Administration.

The news brief described truck parking availability as a nationwide concern for the freight transportation industry. With expected increases in freight demand, a “shortage of safe and affordable truck parking facilities increases congestion, decreases overall road safety, hinders compliance with hours of service rules designed to reduce fatigue-related accidents, and impedes national commerce.”

The article also noted that CFIRE has created innovative tools to analyze this shortage and to develop low-cost strategies for expanding truck parking options. Praveen

Srivastava has lead this effort under the direction of Dr. Teresa Adams. The researcher team inventoried truck parking facilities along major freight truck routes in the 10-state Mississippi Valley region and used an interactive map to pinpoint and define locations where parking is a challenge. More than 220 trouble areas have been identified, prompting preliminary low-cost recommendations to increase spaces. These include restriping parking stalls and first in/first out parking patterns.

CFIRE researchers also developed the first use of the Google Maps interface to interactively collect data from truckers, dispatchers, transportation planners, and enforcement officers. CFIRE’s data tool is unique because it captures freight information and promotes interaction between public and private stakeholders. Researchers also worked with state patrols and trucking associations



CFIRE researchers administer truck parking survey

across the region. Students and researchers set up exhibit booths and talked with freight carriers.

One of the highlights was survey collection at the Iowa Truckers Jamboree along I-80 in July 2008. The Jamboree is purported to be the largest truck show in the world and the I-80 Truck Stop in Walcott is the nation’s largest.

Truckers say that large parking sites tend to fill up at peak times, compelling truckers to park overnight on highway ramps or in customer parking lots. Sometimes they have to move during required rest periods. Some truckers miss deadlines looking for spaces, and have lost pay or faced disciplinary action as a

result.

CFIRE and MVFC’s work is not done. The research team has begun to evaluate underutilized parking areas and focus on incentives for making truck parking available in private sector locations. Identified strategies include modifying local ordinances to require industrial or business parks and areas of high truck traffic to include truck parking facilities in site plans. Legislation allowing off-hour deliveries during nonpeak times could also reduce the demand for overnight truck parking.

The next steps are to prioritize and identify major freight corridors, complete the regional truck parking inventory, and do more interviews to identify critical shortages or trouble spots in the region.

The UTC spotlight series features innovative work across the nation’s programs. For specific information, visit: http://utc.dot.gov/utc_new.html.

MVFC’s Wittwer Talks Jobs at Workforce Event

Transportation specialists will be in fierce demand as current employees approach retirement. As a result, agencies need to assess their management structures & recruitment practices.

MVFC’s Ernie Wittwer recently delivered that message to participants at a roundtable entitled, “The Transportation Professional Workforce: Is There a Crisis in the Public Sector?” held at the University of Minnesota.

Wittwer said management structures catering to baby-boomers are becoming outdated and that transportation agencies need to hire more women and minorities.

“Half of the transportation workforce will be eligible to retire in the next 10 years,” Wittwer said. “In addition, fewer people are going into key transportation fields, due to competition for workers from other industries.”

Wittwer said encouraging students to choose transportation careers will help fill future needs.

Higher speed limits for trucks



Ohio truckers have asked to increase the highway speed limit for trucks to 65 miles per hour to make roadways safer.

Tractor-trailers are limited to 55 mph on Ohio’s Interstate highways, except for the Ohio Turnpike, which has had a 65 mph speed limit since 2004 to encourage truck travel.

The Ohio Trucking Association supports a 65 mph for all vehicles including trucks, believing that one speed makes roads safer for all drivers. In 2008, American Trucking Association (ATA) proposed a 65 mph speed limit with other reforms to improve freight movement and safety.

Ohio & Illinois are two of 11 states with 55 mph speed limits for trucks and higher limits for cars. Some western states allow speeds to 75 mph.

Meanwhile, increasing general speed limits beyond 65 is another regional issue. Iowa is considering an increase to 70 mph on interstate highways, the same as Minnesota.

N E W S L E T T E R

GLMRI gets stimulus funding

CFFIRE Partners at the Great Lakes Maritime Research Institute (GLMRI) at UW-Superior and Minnesota-Duluth are grateful for federal stimulus funds that will be floating their way from Washington, D.C.

GLMRI will receive \$950,000 from the American Recovery and Reinvestment Act (ARRA) to continue projects that develop and improve economically and environmentally sustainable maritime commerce on the Great Lakes. Their applied research involves institutions throughout the Midwest region and includes work on the Great Ships Initiative – Ballast Water Research. That project will test and develop ballast water treatment technology to resolve the problem of ship-mediated invasive species in the St. Lawrence Seaway system.

For more on the Great Lakes Maritime Research Institute, please visit www.glmri.org

MVFC States and ARRA

Transportation leaders in the MVFC region have identified infrastructure projects that will get a needed financial infusion with through the American Recovery and Reinvestment Act (ARRA).

State	Highway recovery funds (millions)	Public transit recovery funds (millions)
Illinois	\$935.6	\$467.5
Indiana	\$658.0	\$ 84.3
Iowa	\$358.2	\$ 36.5
Kansas	\$347.8	\$30.7
Kentucky	\$421.1	\$50.3
Michigan	\$847.2	\$135.0
Minnesota	\$502.3	\$94.1
Missouri	\$637.1	\$85.1
Ohio	\$935.7	\$180.0
Wisconsin	\$529.1	\$81.6

According to Recovery.gov, an ARRA Web site that includes a 50-state interactive map and links to recovery funding categories, \$27 billion in new funding is targeted for roads and bridges and another \$8.4 billion for public transit projects.

States will use a majority of the highway funds at their discretion and use separate allocations to upgrade infrastructure in urban, suburban, and rural areas.

CFIRE is working closely with its states to encourage consideration of essential freight infrastructure projects. These broad multi-state projects could substantially improve the efficiency of freight movements throughout the region. Of particular interest are the CREATE projects in Chicago and Wisconsin's high speed rail initiatives.

TRANSPORTATION PROGRAM COURSE OFFERINGS THROUGH:

DEPARTMENT OF *Engineering Professional Development*

The following transportation short-courses are being offered by the University of Wisconsin–Madison. Please refer to the EPD course web pages for more information: <http://epdweb.engr.wisc.edu/> Click on “Courses” then “Civil and Environmental Engineering Courses”. CFIRE scholarships are available for the highlighted freight courses:

Title	Course Number	Date(s)	Location
Drainage Engineering Fundamentals for Non-Engineers	K347	April 2-3	Las Vegas, NV
Soil Engineering for Non-Soil Engineers and Technicians	K495	April 7-8	Madison, WI
Calculating Water Surface Profiles	J970	April 16-17	Madison, WI
Drainage Engineering Fundamentals for Non-Engineers	K416	April 20-21	Madison, WI
Soil Engineering for Roads and Pavements	K420	April 28-29	Cupertino, CA
Fleet Management - Effective Practices for Public and Private Fleets	K326	April 29-30	Madison, WI
Watershed Modeling Using the new HEC-HMS	J968	April 29-May 1	Madison, WI
Using HEC-RAS to Compute Water Surface Profiles for Floodplains, Bridge and Culvert Hydraulics	J969	May 4-6	Madison, WI
Railway Track Systems : Engineering and Design <i>CFIRE Scholarships Available!</i>	K500	May 4-5	Elk Grove Village, IL
Highway-Rail Grade Crossing Safety Course <i>CFIRE Scholarships Available!</i>	K335	May 6-7	Madison, WI
Preparing an Effective Municipal Capital Improvements Plan	K327	May 7-8	Madison, WI
Advanced Steady Flow Modeling Using HEC-RAS 4.0	K307	May 18-19	Madison, WI
Understanding Water Chemistry for Practical Application	K328	June 8-9	Madison, WI
Highway Bridge Design <i>CFIRE Scholarships Available!</i>	K788	June 15-17	Philadelphia, PA
Railway Bridge Engineering <i>CFIRE Scholarships Available!</i>	K789	June 18-19	Philadelphia, PA



U P C O M I N G E V E N T S

March

- 50th Annual Transportation Research Forum, March 16-18, 2009. Portland, Oregon. <http://www.trforum.org/forum/2009/>

April

- 2009 Transportation Research and Education Conference, April 7, 2009, University of Michigan. Hosted by the Michigan Center for Advancing Safe Transportation throughout the Lifespan. m-castl@umich.edu.
- Mississippi Valley Freight Coalition (MVFC) Annual Meeting, April 14-16, 2009, Kansas City, Missouri. See page 3 for details. <http://www.mississippivalleyfreight.org>
- IANA Intermodal Operations & Maintenance Seminar, April 30-May 1, 2009, Oak Brook, Illinois. <http://www.iana.org>

May

- 34th Annual TRB Ports, Waterways, Freight & International Trade Conference, May 4-6, 2009, Beckman Center. Irvine, California. <http://www.trb.org>
- Wheel/Rail Interaction Conference, May 4-7, 2009, Chicago, Illinois. www.wheel-rail-seminars.com/seminars/wheel_rail_09/1-RT/main.htm

June

- ITS America's 2009 Annual Meeting and Exposition, "Moving America Forward," June 1-3, 2009, Gaylord National Resort and Convention Center, National Harbor, Maryland. <http://www.itsa.org/annualmeeting>
- Data and Tools for Understanding the Goods Movement-Air Quality Connection, June 2-3, 2009, Beckman Center of the National Academies, Irvine, California. Organized by the Transportation Research Board (TRB). <http://www.TRB.org/conferences/2009/AirQuality>

July

- Mississippi Valley Conference, Today's Innovation = Tomorrow's Reality, July 15-17, 2009, Amway Grand Plaza, Grand Rapids, Michigan. Hosted by the Michigan Department of Transportation. <http://www.mvc2009.com>
- TRB Joint Summer Meeting, Forging Ahead in Uncertain Times, July 19-22, 2009, Seattle, Washington, www.TRB.org/conferences/2009/Summer

August

- Mid-Continent Transportation Research Symposium, August 20-21, Iowa State University, Ames, Iowa. Sponsored by CFIRE and the Iowa and Wisconsin DOTs. <http://www.ctre.iastate.edu>

September

- North American Freight Flows Conference, Understanding and Improving Data Sources, September 16-17, 2009, Arnold and Mabel Beckman Center of the National Academies, Irvine, California. <http://www.TRB.org/conferences/2009/NAFF>

October

- 8th National Transportation Asset Management Conference. October 19-21, Portland Oregon. <http://www.trb.org/conferences/2009/Asset>
- Freight Research at UTCs: Integrating Efforts, A National Workshop. October 20, 2009. Hotel Maya. Long Beach, California. Hosted by CFIRE. <http://www.wistrans.org/cfire/IntegratingEfforts>
- 3rd National Urban Freight Conference, Long Beach, California. October 21-24, 2009. Hotel Maya. Long Beach, California. <http://www.metrans.org>

The National Center for Freight and Infrastructure Research and Education (CFIRE) at the University of Wisconsin-Madison is one of ten National University Transportation Centers. The CFIRE consortium includes the University of Wisconsin-Milwaukee, University of Illinois at Chicago, University of Toledo, and University of Wisconsin-Superior. CFIRE's mission is to advance technology, knowledge, and expertise in the planning, design, construction and operation of sustainable freight transportation infrastructure through education, research, outreach, training, and technology transfer. Our vision is to be an internationally recognized authority and resource that creates knowledge, advances understanding, develops technologies, and prepares leaders to meet the nation's need for safe, efficient and sustainable infrastructure for the movement of goods.

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