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# CENTER FOR TRANSPORTATION INFRASTRUCTURE AND SAFETY

## **Outreach Activities in Support of the Missouri S&T National UTC**

by

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**NUTC  
ETT224**

**A National University Transportation Center  
at Missouri University of Science and Technology**

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16. Abstract This report describes a comprehensive initiative providing outreach for the Missouri S&T National University Transportation Center. The goal of this comprehensive outreach program was to provide opportunities for students and faculty members to engage with leaders in the transportation industry from: private consulting and construction firms; the Missouri Department of Transportation (MoDOT); other state departments of transportation; Federal Highway Administration (FHWA); local government agencies; and other university-based transportation centers while also creating technology transfer opportunities in support of the projects undertaken through the Missouri S&T NUTC.			
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Project Objective:

The Missouri Transportation Institute developed a comprehensive outreach program for the National University Transportation Center in order to provide opportunities for students and faculty members to engage with leaders in the transportation industry from: private consulting and construction firms; the Missouri Department of Transportation (MoDOT); other state departments of transportation; Federal Highway Administration (FHWA); local government agencies; and other university-based transportation centers while also creating technology transfer opportunities in support of the projects undertaken through the Missouri S&T NUTC.

Project Approach and Methodology:

Outreach efforts fell within the following areas:

1. Coordination of transportation research for MoDOT and MTI in the theme areas of: Structures, Geotechnical, and Environmental Sustainability & Energy Efficiency:

In coordination with MoDOT, the Missouri S&T National UTC (NUTC), the Missouri S&T Center for Engineering Infrastructure Studies (CIES), and the University of Missouri-Columbia (UMC) School of Engineering, MTI coordinated a long-term research program within the theme areas of Structures and Geotechnical Engineering. MoDOT committed one million dollars per year to a two-year collaborative research program. The Missouri S&T NUTC, MU, and UMKC contributed matching funds toward the program to extend MoDOT's \$2M contribution to a \$3.35M research program.

The Geotechnical Research Program includes the following tasks:

<b>Project/Item</b>	<b>Budget</b>
Task 1 - Probabilistic Site Characterization	\$450,000
Task 2 - Foundation Load Test Program	\$800,000
Task 3 - Acceptable Risks	\$150,000
Task 4 - LRFD Calibr./Spec's	\$280,000
<b>Total Program Budget:</b>	<b>\$1,680,000</b>

Researchers involved in the Geotechnical Research Program are:

- Dr. John Bowders, MU
- Dr. Louis Ge, Missouri S&T
- Dr. Bill Likos, MU
- Dr. Erik Loehr, MU
- Dr. Ronaldo Luna, Missouri S&T
- Dr. Norbert Maerz, Missouri S&T

- Dr. Brent Rosenblad, MU
- Dr. Rick Stephenson, Missouri S&T

The Structures Research Program includes the following tasks and researchers:

Project Number	Project Title	PI	Co-PIs	Budget - Total
1a	Structural steel coatings for corrosion mitigation	Dr. J. Myers - S&T	Dr. Glen Washer - MU	\$295,677
1b	Spalling solutions for pre-cast pre-tensioned bridge deck panels	Dr. D.J. Belarbi - S&T	Dr. Lesley Sneed – S&T	\$316,245
2a	Reliability-based evaluation of bridge components for consistent safety margins	Dr. O. Kwon - S&T	Dr. Sarah Orton; Dr. Hani Salim - MU	\$257,524
2b	Coated steel rebar for enhanced concrete-steel bond strength and corrosion resistance	Dr. G. Chen - S&T	Dr. Jeffry Volz; Dr. Richard Brow – S&T	\$397,751
2c	Alternative and cost-effective bridge approach slabs	Dr. G. Thiagarajan - UMKC	Dr. Vellore Gopalaratnam - MU	\$275,048
2d	Calibration of load and resistance factors for LRFD foundation design	Dr. G. Chen - S&T	None	\$125,000

## 2. Annual Transportation Conference Planning:

MTI coordinated a Transportation Research Conference/University Showcase co-sponsored by the NUTC and the Missouri chapter of the Institute for Transportation Engineers (MOVITE) on the Missouri S&T campus on December 3, 2009.

The agenda for the Conference was as follows:

9:30 – 10:00 Registration

10:00 – 10:30 Welcome Dr. Jack Carney, Chancellor, Missouri S&T , Mr. Shawn Leight, President, MOVITE, Mr. Kevin Keith, Chief Engineer, MoDOT

10:30 – 11:00 MoDOT Research Needs Ms. Mara Campbell, Organizational Results Director, MoDOT

11:00 – 11:45 MoDOT/University Research Moderator: Ms. Angela Rolufs, MTI Director, Missouri S&T

11:45 – 12:45 Lunch MOVITE – Networking Opportunity & Poster Session

1:00 – 1:45 S&T NUTC Fellowship Student Research Moderator: Dr. John Myers, NUTC Director, Missouri S&T

1:45 – 2:00 Break

2:00 – 2:45 S&T/Industry Partnership Research Moderator: Mr. Tom Ryan, HDR

2:45 – 3:00 Wrap-up and distribute PDHs Mr. Brian Chandler, State Director, MOVITE

3:00 – 5:00 Campus Tours: Hydrogen Fueling Station, Coordinators: Angela Rolufs, John Myers, and John Sheffield

The mission of the MOVITE/University Showcase was to: 1) Showcase noteworthy transportation research, innovative solutions, faculty and students at Missouri's Universities; and 2) Provide an opportunity to develop and foster relationships between transportation practitioners and academia.

More than 50 students, industry professionals, engineers and educators took advantage of the opportunity to network within the transportation community and to learn more about the wide variety of transportation research at Missouri S&T. In addition to faculty and industry presentations, several NUTC students provided presentations on their research. Time was provided for conference attendees to visit with additional student researchers during a follow-on poster session.

Per MOVITE State Director Brian Chandler, the conference ...**“was an excellent start to a series of annual events to share the efforts of University transportation research efforts with practitioners and co-researchers in the region.”**

### 3. Monthly Seminars/Lecture Series:

In order to increase both Technology Transfer and partnership opportunities, MTI coordinated monthly seminars with industry, MoDOT, and others engaged in the transportation field.

Coordination and execution of monthly seminars included: selection of topics, speaker coordination, venue selection, advertising, coordination of luncheons and other side meetings with guest speakers, registration, and evaluation.

The schedule for the fall research forums was as follows:

DATE	SPEAKER	TOPIC
Friday, September 12, 2008	Kevin Keith, Chief Engineer, MoDOT Jerry Mugg, Vice President, HNTB Corporation	The Future of Transportation I-70 Corridor Across Missouri and the Nation
Friday, October 10, 2008	Scott Ghoeri, HNTB Corporation	Missouri's Rail System
Friday, November 14, 2008	Thomas Manion, Bloomsdale Excavation Company	Highway Construction

### 4. Partnerships with Industry, MoDOT, US DOT, other state DOTs, and local government agencies:

MTI actively solicited partnership opportunities with consulting and construction firms engaged in transportation activities, including:

- Development of a Master Research Agreement with HDR.
- Coordination of a “Missouri Transportation Partners” booth at TRB.
- MTI coordinated a collaborative industry/faculty response to the following research proposals:
  - MoDOT - Truck Lanes on I-70 and I-44 (Partnership with Wilbur Smith Associates)
  - MoDOT - Evaluation of Variable Speed Limits on I-270 (Partnership with HDR) - Missouri S&T partners include Dr. Suzie Long, Dr. Ghulam Bham, Dr. Lance Gentry, and Dr. Hojong Baik
  - SHRP2 – In-Vehicle Driving Behavior Field Study

### Findings and Conclusions:

Development of a long-term collaborative research program for MoDOT has proven to be successful so far. Relationships are being forged between researchers and MoDOT technical representatives, which should set the stage for future research opportunities. Researchers have been timely in reporting progress to MoDOT and MoDOT has expressed overall satisfaction with the program.

Our partnerships with industry have improved, with several collaborative grants submitted to MoDOT.

We brought in excellent speakers for the fall transportation seminar series, but student response and participation was below expectations.

Our first Transportation Research Conference/University Showcase in partnership with the Missouri Valley Chapter of the Institute for Transportation Engineers (MOVITE) was a success. Several opportunities were provided for interaction among students, faculty, industry, and government and new partnerships were forged.

### Recommendations:

Continue to forge relationships with MoDOT through successful delivery of the two-year research program. Continue outreach efforts with MoDOT and private industry partners.

An alternate method for monthly transportation seminars must be explored. Partnerships with MoDOT and private consulting and construction firms could be damaged if individuals accept our invitation to provide a presentation to our students, take the time to develop the presentation and drive to Rolla, and then no students attend the presentation.

The MOVITE Transportation Conference provided excellent opportunities for our students and faculty to interact with government and industry transportation leaders. Partnerships with MOVITE should continue for future events.