Beyond Traffic: Growing Transportation Research @ Tech

April 3, 2018
VISION: Partnering for the Future of Transportation

- Proposal Development/Editorial Support
- Large Proposal Development Support
- Event & Agency Coordination
- Major & Minor Initiatives
- Education & Outreach
- Post Award Support

$51,639,290 awarded

- 15 Years
- 418 Projects
- 100+ PIs
- 16 Departments
MTTI Leadership
Director
Pasi Lautala – Term expires July 1, 2019

Coordinator
Pam Hannon

Executive Committee
Stan Vitton (CEE) Principal – Term expires July 1, 2018 - CHAIR
Jake Hiller (CEE) Affiliate – Term expires July 1, 2019 – VICE CHAIR
Thomas Oommen (GMES) Principal – Term expires July 1, 2019
Colin Brooks (MTRI) Principal – Term expires July 1, 2020
Chris Gilbertson (CTT) Affiliate – Term expires July 1, 2020

Next MTTI election will take place in spring 2018 for 1 principal position – currently Vitton.
Path to MTTI Membership
FRIENDS
Open to anyone on campus interested in MTTI activities

AFFILIATES
< $5,000 IDC
Co-PI on 3 proposals

PRINCIPALS
> $5,000 IDC
AVERAGE PER YEAR OVER 3 YEARS

MTTI will contact eligible candidates to confirm interest in membership at the end of the fiscal year.
MEMBERSHIP BENEFITS

• Administrative – Pre-Award Support
• Research Funding (Initiatives)
• Travel Funding
• Student/Education Support
• Letters of Support
• Other: Facilities/Equipment Upgrades, Stop Gap Funding

NEW additions:
- Proposals editorial support
- Large proposal support
- Post-award support (coming)
Minor Initiatives
Minor Initiative Funding Available

Up to $10,000 available for Max. 2 year projects. 100% cost sharing is required. Application form on MTTI website under Membership/Forms.

Types of funding available:

• Proof-of-Concept
• Data Collection
• Student Support
• Equipment
• Broaden Research Activities
• Speaker/Workshop Events
Dave Nelson (CEE) – “Rail Crossing Behavior with NDS Data”

• $10,000 request will provide funding for data acquisition fees and travel.

• **Cost share**: Lautala start up and NURail funding (external project) for staff and student salaries and fringes to prepare data request and pay for extraction of data from the data enclave.

RESULTS: Project with Federal Railroad Administration. 2 year project. $271,000 awarded.

“Driver Behavior at Highway-Rail Grade Crossing Using NDS & Driving Simulators”

PI: Pasi Lautala (CEE)
CoPI: Dave Nelson (RTP/CEE)
CoPI: Myounghoon (Philart) Jeon (CLS)
Zhen Liu & Quingli Dai (CEE) – “Development of Advanced Ultrasonic Techniques for Air Void Size Distribution in Early-Age and Hardened Concrete”

• $10,000 request mainly covers the student semester and summer support and lab supply costs for two undergraduate students.

• Cost share matching from PI start-up and REF seed grant.

RESULTS: 2 externally funded projects.

1. “Fiber-reinforced High-performance Rubber Concrete for Concrete Structure Construction and Repair” – Q. Dai (PI) - MIDEQ – Total Project Value $575,036

2. “Incorporating Surface-Treated Rubber Particles into Portland Cement and Geopolymer Concrete to Improve Field Performance” – Q. Dai (PI) – MIDEQ – Total Project Value $666,296
John Velat (CEE) – “Minor Initiative Proposal for an Ad-Hoc Center for Rural and Tribal Community Resilience”

- $10,000 request will provide approximately 100 hours of labor each for John Velat and Scott Bershing to business development

- **Cost share**: Matching from CEE, VPR, and IRAD reserves.
National Road Research Alliance and MTTI
About NRRA

• A pooled fund that focuses on solving problems for local, regional and national research, tech transfer and implementation needs.

• Started in 2004 as Transportation Engineering and Road Research Alliance (TERRA)

• Outside partners to support on-going research activities at MnROAD facility
  • MnDOT constructed and supported facility (1994)
  • 50+ instrumented cells
  • Low volume loop and I-94
  • One of largest full-scale test facilities in world

• Evolved into NRRA in 2016 to expand on partnerships and broaden focus for third phase of research facility
NRRA Partners

- Leverage $2.5M of yearly MnDOT support
- Agency Members (7 @ $150k yearly)
  - Set program objectives
  - Project and team selection
- Associate members (36 @ $2k yearly)
  - Academic members
  - Industry
  - Associations
  - Help advise project selection and research topic planning
- [http://www.dot.state.mn.us/mnroad/nrra/ourpartners/index.html](http://www.dot.state.mn.us/mnroad/nrra/ourpartners/index.html)
Benefits of Working with NRRA

• Find innovative, cost-saving technologies that help preserve pavements and improve their performance
• Evaluate pavement performance, materials, and design under real world conditions
• Examine how factors such as moisture, frost, traffic, construction practices, and materials interact through the use of instrumentation
• Design customized experiments supporting specific research needs that utilize the experienced MnROAD research staff and equipment
• Conduct tests in a safe work zone because of MnROAD's unique ability to divert traffic
• Develop tools and methods based on actual performance data to improve the design, construction, and maintenance of pavements
Benefits, cont’d

• Cost Savings through research in Minnesota due to MnROAD
  • Phase I (1994-2006) - $33 million/year - (9/1 benefit-to-cost ratio)
  • Phase II (2007-2015) - $10.3 million/year - (4/1 benefit-to-cost ratio)
  • Phase III (2016 – present) – expect similar benefits for NRRA members
NRRA Project Teams

- Flexible Pavements – Zhanping You (CEE), member
- Rigid Pavements – Jake Hiller (CEE), member
- Geotechnical
- Preventive Maintenance
- Technology Transfer
- Opportunities to work with DOTs, industry, and other academic institutions to help shape transportation infrastructure interests

- MTTI Highlights
- 5 year master contract with MnDOT led by MTTI
- Spotlight on MTTI in NRRA Newsletter – March 2018
- Recent Projects: Zhanping You (CEE) – “Is Seal Coating Counterproductive or Not?” $140,508 - 28 months.
MDOT Program Development Process
MDOT Research Development Process

- MDOT “Priority Areas”
- Request for “Project Ideas”
- Selection of “Tentative Topics”
- Research Program Development Meeting
- RFPs Released
Research Program Development Meeting

OVER 130 IDEAS SUBMITTED TO MDOT. 5 OF 24 SELECTED FROM MICHIGAN TECH.

April 30
- Construction
- Intelligent Transportation Systems
- Transportation Safety

May 1
- Worker Safety
- Design
- Maintenance
- Unmanned Aerial Vehicles

May 9:
- Bridges & Structures
- Bridge Scour
- Pavements & Materials
- Multi-Modal
Other Upcoming Funding Opportunities
Federal Railroad Administration - Broad Agency Announcement

BAA #1:
Track, Rolling Stock and Equipment, Train Control, and Human Factors
• Budget between $50,000 - $500,000
• 2 step process
DUE May 24, 2018

BAA #2:
Intelligent Railroad System Research (ONLY open to UNIVERSITY teams)
• Funding available up to $1,000,000 for all projects
• 1 step process
Program objectives within this plan include:
• Enabling Safer Vehicles and Roadways
• Enhancing Mobility
• Limiting Environmental Impacts
• Promoting Innovation, and
• Supporting Transportation Connectivity
DUE July 27, 2018

https://www.fra.dot.gov/Page/P0506
Transportation Research Board – Innovations Deserving Exploratory Analysis (IDEA) (Transit)

• Proposals are permitted up to $100,000 in IDEA funds.

• 4 high priority focus areas for this program: improving transit safety or security; improving transit capital or operating efficiencies; increasing transit ridership; or protecting the environment and promoting energy independence.

DUE May 1, 2018

http://www.trb.org/IDEAProgram/Public/IDEAProgram.aspx
MTTI looking for campus collaborators. Lead – John Velat (CEE)

“Guide for Behavioral Traffic Safety Messaging on Variable Message Signs”
• 18 month project
• $350,000 budget
- DUE May 8, 2018

“Examining the Implications of Legislation and Enforcement on Electronic Device Use While Driving”
• 16 months
• $250,000 budget
DUE May 17, 2018
Small Business Innovation Research/Small Business Technology Transfer

Campus coordinated webinar for information – April 10, 2018
- 10:00 am – 12:00 pm ATDC (must register with Robin Kolehmainen by Friday April 6.

- Off site registration, must sign up online:
  
  https://attendee.gototraining.com/r/4005016573673621506

Recent submission to SBIR:
“Drone-Based Track Safety Inspection System” - $49,995

Colin Brooks (MTRI) – PI
Pasi Lautala (CEE/RTP) – Co-PI
Illinois Center for Transportation – RFPs

RFP 18-01: Optimizing the Benefits of Smoother Roads against the Increased Costs to Build Them
• $225,000 total, including a required 25% ($56,250) cost share

RFP 18-02: Construction of Pedestrian Infrastructure Along Transit Corridors
• $250,000 total, including a required 25% ($62,500) cost share

RFP 18-03: Motor Vehicle Crashes Among Older Population
• $100,000 total, including a required 25% ($25,000) cost share

RFP 18-04: Roadway Lighting’s Effect on Pedestrian Safety at Intersection and Midblock Crosswalks
• $375,000 total, including a required 25% (93,750) cost share

DUE April 30, 2018

http://ict.illinois.edu/ict-requests-for-proposal/
Open Discussion