

**State Planning and Research Program  
Annual Report**

**PROJECT TITLE:** Pavement Surface Characteristics Rehabilitation MnROAD Study. TPF 5-(134).

**OBJECTIVES:** To demonstrate and field-validate some lab-tested unique diamond grinding configurations that optimize noise, Friction, Texture and Ride Quality

**PERIOD COVERED:** Jan – March 2011. **STATUS:** Active.

**LEAD STATE:** Minnesota Department of Transportation

**PARTICIPATING AGENCIES:** Mn/DOT, TXDOT, FHWA, ACPA, IGGA.

**PROJECT MANAGER:**

Bernard Izevbekhai

**LEAD AGENCY:**

Mn/DOT

**PRINCIPAL INVESTIGATORS:**

**(1) Data Analysis, Rolling Resistance**

W. James Wilde, PhD, P.E. MSU  
Jerzy Ejsmont DSc. Tech University  
of Gdansk, Poland

**(2) Statistical Pass By**

Tim Casey (HDR) Inc

**3) ROBOTIC texture evaluation**

To be decided

**SP&R PROJECT NO:**

TPF5-(134)

**PROJECT IS:**

☐ Planning  
☒ Research &  
Development

## State Planning and Research Program Annual Report

**ANNUAL BUDGET:**

\$275,000 for 5 years  
+\$40000 for Rolling Resistance

**PROJECT EXPENDITURES TO DATE:**

Non-Federal Match.

In-Kind Cost of Grinding And Noise Testing On Cell 37 MnRoad. As A Proof Of Concept.

Full Width Grinding On Cells 7-8 MnRoad Mainline I-94

Mn/DOT Initial Testing, Mn/Dot Rodeo (June 2008)

Spring Noise Texture, Ride Friction Measurements

Consultant Appointed For Data Analysis And Reporting

Strategies For Additional Testing

Testing And Monitoring of Cell 9

Draft Brief on cell 9

Construction Report 7 8 & 9.

**Spring OBSI testing**

**Spring Ride Quality testing**

**Publication of Task 1 (Jim Wilde)**

**Completion of Draft Report on SPPB Tests on I-94 and MnROAD Cells**

**Completion of HDR SPPB /Mn/DOT OBSI Report.**

**Development of Rolling Resistance Initiative**

**Assistance with Technology Deployment: Mn/DOT Metro, Mn/DOT District 1 Duluth Projects**

**Summer OBSI, Ride Texture and Friction measurement**

**Fall OBSI, Ride Texture and Friction Measurement**

**Test Strip #5 Ground on Cell 37. Innovative with Improved friction.**

**Contract extended to accommodate Rolling Resistance testing**

**Contract documents initiated for comprehensive Robotex texture evaluation of cells at MnROAD**

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### WORK COMPLETED:

- ACPA / IGGA performed the Grinding of 3 configurations at MnROAD Cell 37 for a proof –of – Concept and Preliminary On-Board -Sound –Intensity (OBSI) pre and post grind measurements on the 3 configurations + control. Mn/DOT performed Ride Friction, and Texture measurements on the same pre and post grind configurations.
- Memorandum of Understanding with Diamond Surface Incorporated to perform the Diamond Grinding Full width on cell 7 and 8 MnROAD.
- Measurements of Surface Characteristics parameters on the MnROAD Low volume Road
- Actual grinding of the Mainline cells 7 and 8 to the current and Innovative grinding configurations.
- Pre-grind Measurements for the MnROAD Mainline
- Grinding of Cells 7 and 8 full Width by Diamond Surfaces Inc.
- Initial Post Construction Ride texture friction Ride measurement by Mn/.DOT
- Draft Construction (Grinding Report for cells 7 and 8 Innovative Grinding & Conventional configurations)
- Development of Limited Scope of Consultant Activity for MnSCU Mankato
- Mn/DOT Initial Testing, Mn/DOT Rodeo (June 2008)
- Spring Testing Noise texture, Ride friction Measurements
- Consultant (Minnesota State University, Mankato) Appointed for Data Analysis and Reporting. Principal Investigator is W. James Wilde, PhD.
- MnROAD Cell 9 Ultimate Grinding Cell Created Ground and Tested.
- Spring Testing (Texture ASTM E-965, E-2157, Friction GN & FN, IRI, OBSI)
- Proposal to Conduct comprehensive evaluation (OBSI, CPB, SPB) on a Real Roadway. (Prescott WI or Monticello TH 94 MN) Estimated to Cost \$62,000. (\$20,000 Approved from by the Pooled Fund) Contract with HDR executed.
- OBSI and SPB in Progress near Hasty MN. The 1000-ft section is ground and east of that section an unground portion is being evaluated.
- Successful Web meeting on June 1 2009. Plans for a RODEO discussed but not yet done.
- Analysis of Friction Ride and OBSI over time Presented by W.J. Wilde
- Omnibus Cell 7 8 & 9 Report
- Mn/DOT Transtec Rodeo on Cells 37 7,8, 9 and others.
- OBSI and SPB in Progress near Hasty MN. The 1000-ft section is ground and east of that section an unground portion is being evaluated. Draft SPB Report Review.
- Summer 2009 Measurements
- Fall 2009 Measurements
- **Statistical Pass Bys Testing Completed.**
- **Draft report on Statistical Pass Bys Testing Completed.**
- **Spring testing by Mn/DOT OBSI Ride and texture.**
- **Final Statistical pass-by report Submitted for Publication**
- **Test Strip #5 ground on cell 37.**
- **Cell 71 ground innovative driving and conventional passing lanes**
- Construction and initial Performance Report Published
- Final Statistical Passby evaluation published

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| <b>SUMMARY OF ACTIVITIES EXPECTED TO BE PERFORMED NEXT Quarter:</b> |
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| <ul style="list-style-type: none"><li>• Continuous monitoring</li><li>• Final Report on SPB</li><li>• Rolling Resistance Contracts</li><li>• Award of Robotex Measurements, Possible Robotex Measurement</li><li>• </li></ul> |
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| <b>STATUS AND COMPLETION DATE:</b> |
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| <ul style="list-style-type: none"><li>• Project is on schedule. Consultant Task 1 Draft report Completed</li><li>• Annual reports completed</li><li>• Data Analysis (OBSI Friction, texture , IRI)</li><li>• Can be completed On Schedule</li></ul> |
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