

**State Planning and Research Program
Quarterly Report**

PROJECT TITLE: The Effects of Implements of Husbandry on Pavement Performance TPF (148)

OBJECTIVES: 1. Determine pavement responses to selected farm equipment.
2. Compare pavement damage/response to typical 5-axle semi.

PERIOD COVERED: April, 2010- July, 2010

PARTICIPATING AGENCIES: MnDOT, Minnesota Local Road Research Board, Iowa DOT, Illinois DOT, Professional Nutrient Applicators Association of Wisconsin.

PROJECT MANAGER: Dr. Shongtao Dai

SP&R PROJECT NO:

PROJECT IS:

LEAD AGENCY: Mn/DOT

TPF-148

Planning
 Research &
Development

PRINCIPAL INVESTIGATOR: Lev Khazanovich.

ANNUAL BUDGET:

\$430,000 for 3 years

PROJECT EXPENDITURES TO DATE:

About \$158,300 was spent on the construction of the test sections and \$270,000 was spend on testing plan development, data collection, and data analysis.

WORK COMPLETED:

Peak-Pick analysis has been performed for all data collected during Spring 08, Fall 08, Spring 09, Fall 09, and Spring 10 and is currently being summarized. Memos regarding various effects on pavement response are being updated with latest data. Additional Tekscan measurements were collected for vehicles T7 and R6 equipped with radial and flotation tires and Tekscan report is currently being revised. Preliminary simulations of pavement response using layered Elastic analysis, Tekscan contact area measurements, and an optimization software Dakota is underway. It was found that the sensor location had to be re-evaluated/

SUMMARY OF ACTIVITIES EXPECTED TO BE PERFORMED NEXT QUARTER:

The last scheduled fall testing will be conducted in August of 2010. A preliminary damage model will be developed based on collected data. Estimation of elastic moduli of pavement layers will be performed by matching measured strains and stresses through layered elastic models.

STATUS AND COMPLETION DATE:

Due to delay in MnROAD test section construction, the data collection process cannot be completed until the end of summer of 2010. Therefore, there will be a need for a no-cost time extension of the project. The request will be submitted in April 2010 and granted in July 2010.