

**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: January, 2010- March, 2010

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

PROJECT MANAGER: Dr. Shongtao Dai
LEAD AGENCY: Mn/DOT
PRINCIPAL INVESTIGATOR: Lev Khazanovich.

SP&R PROJECT NO:
TPF-148

PROJECT IS:
 Planning
 Research & Development

ANNUAL BUDGET:
\$430,000 for 3 years

PROJECT EXPENDITURES TO DATE:
About \$158,300 was spent on the construction of the test sections and \$180,000 was spend on testing plan development, data collection, and data analysis.

WORK COMPLETED:

Spring 2010 testing was conducted from 3/15/2010 to 3/18/2010 on four vehicles (R6, T6, Mn80, and Mn102) at three load levels (0%, 50% and 100%). Significant additional damage was observed on the thin AC section Cell 83 during the course of the Spring 2010 testing. The thicker AC section Cell 84 does not have any visible damage. On the PCC section Cell 32, a corner break developed.

Peak-Pick analysis has been performed for all data collected during Spring 08, Fall 08, Spring 09, and Fall 09 and is currently being summarized. Updates to the memos have been completed and they will be revised. Data reduction and analysis will be performed on the Spring 10 data including videos and Peak-Pick.

SUMMARY OF ACTIVITIES EXPECTED TO BE PERFORMED NEXT QUARTER:

Additional Tekscan measurements will be performed on vehicles which are deemed necessary. The research team will begin the data reduction process for the Spring 10 testing. 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.