

**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: July, 2008- September, 2008

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 \$60,000 on testing plan development, data collection, and data analysis.

WORK COMPLETED:

One week of traffic testing was conducted in August of 2008. Five vehicles were tested: the four vehicles shown in the figure below and the MnROAD 80-kip truck.



The testing was conducted at load levels of 0%, 25%, 50%, and 80% of the full capacity of each vehicle. There were 16 runs for each load level. Within those sixteen runs the wheel location (offset from the pavement edge), tire pressure, and speed of the vehicle were varied. Asphalt strain, pavement deformation and base vertical pressure measurements were collected. Data analysis of these measurements has been initiated.

The data analysis of the spring test results revealed the importance of the traffic wander measurement. MnROAD staff made scales, which was painted on the pavement to measure wheel offset. In the August testing, the lateral vehicle positions were recorded using two video cameras when vehicles were passing the instrumentation. The figure below shows a marking on the pavement.



The research team continued work on completion of Tasks 2 and 3 and analysis of data collected in spring 2008 testing.

A conference call was made among MnDOT, research team and the private sector to arrange vehicles for coming spring testing. The MnROAD 102,000lbs 5 axle semi truck should be tested in the spring test.

SUMMARY OF ACTIVITIES EXPECTED TO BE PERFORMED NEXT QUARTER:

The research team will complete task 2, 3, and 4 reports and continue data analysis of the field data collected.

STATUS AND COMPLETION DATE:

The task 3 report will be completed by **October 31, 2008**

The tasks 2 and 4 reports will be completed by **November 15, 2008**

The completion date of the project: Spring, 2010.