

## State Planning and Research Program Quarterly Report

**PROJECT TITLE:** *Identification and Recommendations for Correction of Equipment Factors Causing Fatigue in Snowplow Operations*

**OBJECTIVE:** Identify in-cab and external equipment factors that cause operator fatigue in snowplow operations

**PERIOD COVERED:** January 1, 2017, to March 31, 2017

**PARTICIPATING AGENCIES:** Minnesota Department of Transportation and the Clear Roads Technical Advisory Committee

**PROJECT MANAGER:**

Debra Fick/Tom Peters

**SP&R PROJECT NO:**

MnDOT Contract No.

**PROJECT IS:**

☐ Planning

☒ Research & Development

**LEAD AGENCY:** Mn/DOT

Federal Project Number:  
TPF-5(218)

**PRINCIPAL INVESTIGATOR:**

Jeffrey Hickman

**ANNUAL BUDGET:** \$200,000 (project budget)

**PROJECT EXPENDITURES TO DATE:** \$29,164.13

### WORK COMPLETED:

- **Task 7: Full-Scale Implementation of Questionnaire.** Virginia Tech Transportation Institute (VTTI) researchers closed the online version of the operator questionnaire on March 15, 2017. Approximately 1,000 operators completed the online version of the questionnaire. We also received approximately 900 paper versions of the operator questionnaire (which have not yet been manually entered in the database). Thus, we estimate a total of 1,900 respondents. Additionally, the Clear Roads subcommittee provided VTTI with contact information for equipment manufacturers on February 17, 2017. VTTI researchers are currently conducting phone interviews with these equipment manufacturers.

### SUMMARY OF ACTIVITIES EXPECTED TO BE PERFORMED NEXT QUARTER:

- The research team will complete phone interviews with the equipment manufacturers by April 30.
- We will complete the manual entry of operator responses on the questionnaire.
- VTTI researchers will analyze the operator questionnaire and equipment manufacturer interview results. Descriptive analyses will be used to assess snowplow drivers' opinions and perceptions of equipment factors that cause fatigue. The analyses will be completed by May 31, 2017.
- The research team will develop a prioritized scale of equipment fatigue identified in the literature review and questionnaire results. Additionally, the research team will consult the Clear Roads Subcommittee to gather information regarding the costs associated with the solutions identified through the literature review and questionnaires. The costs of implementing each solution will include all non-recurring costs (e.g., the initial cost of the equipment, installation, and initial training) as well as all recurring and operational costs (e.g., maintenance and training). This task will be completed June 30, 2017.

### STATUS AND COMPLETION DATE:

This project is currently ongoing and ends on September 30, 2017.