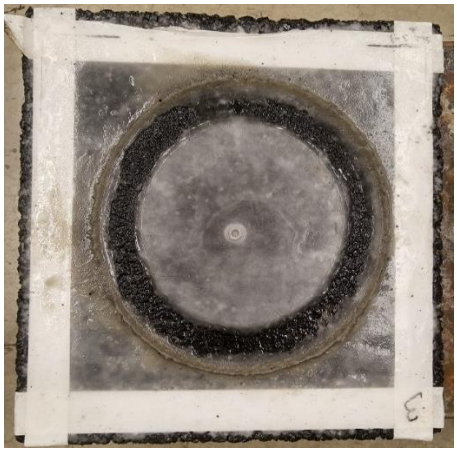
UTC Project Information	
Project Title	Pavement Winter Operations in Cold Regions
University	University of Idaho
Principal Investigator	Emad Kassem
PI Contact Information	ekassem@uidaho.edu
Funding Source(s) and Amounts Provided (by each agency or organization)	University of Washington PacTrans $40,000 University of Idaho $ 40,000
Total Project Cost	$80,000
Agency ID or Contract Number	69A3551747110
Start and End Dates	August 16, 2020-August 15, 2022
Brief Description of Research Project	The proposed study will use a new laboratory testing protocol to evaluate the performance of different deicing and anti-icing materials at different conditions for efficient winter maintenance operations. This study has two main objectives: 1) develop and evaluate a new laboratory testing protocol that can be used to evaluate the effectiveness of various deicing and anti-icing chemicals at similar conditions in the field 2) develop guidelines and recommendations for anti-icing and deicing material selection and proper application rate. The outcome of this study will assist the transportation agencies to make informed decisions that lead to efficient winter maintenance operations.

Describe Implementation of Research Outcomes (or why not implemented) Place Any Photos Here	This study evaluated a laboratory testing protocol to examine the performance of different deicing and anti-icing materials at different conditions for efficient winter maintenance operations. The proposed laboratory evaluation protocol included three tests: the friction test, the accelerated loading test, and the debonding test. Based on the results of this study, the proposed three testing protocols combined can provide a comprehensive assessment of the performance of various products at different environmental and operational conditions for efficient winter maintenance operations.  Three-wheel polisher to simulate the effect of traffic loading during winter treatment operations  Tested asphalt slabs using Three-wheel polisher

Impacts/Benefits of Implementation (actual, or anticipated)	The selection of proper type as well as application rate of deicing and anti-icing materials is necessary for optimal performance. The lack of test methods used to evaluate the effectiveness of different materials and application rates limit viable options for effective winter maintenance operations. This study proposed a laboratory evaluation protocol that can be used to examine the effectiveness of deicing and anti-icing materials at different conditions. These methods can be used by transportation agencies to ensure efficient winter maintenance operations. The proposed protocol includes the use of a portable three-wheel polisher to simulate the effect of traffic loading during winter treatment operations. The dynamic friction tester can be used to measure the frictional characteristics of the test surfaces before and after the application of the test products. In addition, a new method was used to evaluate ice-pavement debonding by measuring the shear force required to break the bond between the ice and test surfaces.
Web Links • Reports • Project Website	