**Introduction or Problem Statement**

Potential issues with the ITD/Vaisala method for calculating winter performance of roadway snow and ice control (RSIC) include:

- the “black-box” computation of Grip
- the need for additional, Vermont-based validation of Grip
- the need for revisions to the measures of storm severity

Validation of the thresholds where Grip corresponds to traffic speeds and safety are also needed to relate Grip to VTrans’ “safe roads at safe speeds” goal.

**Methodology and Action Taken**

Task completed for this project include:
- Collect winter 2016 – 2017 and 2017-2018 data
- Reverse-engineer the proprietary Grip formula
- Review all available literature on Grip and surface condition
- Compare Grip to ADD to explore whether crashes can be related to Grip and ADD
- Review storm/winter severity indices for Vermont applicability

**Conclusions and Next Steps**

A combined exponential / log model for calculating Grip from ice, snow and water thickness was derived that yields an $R^2$ of 0.96. The model was validated on the data from 2017-2018 and again it yielded an $R^2$ of 0.96.

Instances when ADD and Grip converge have been identified and are being cross-referenced with crashes and state-police responses, but that work is ongoing.

**Potential Impacts and VTrans Benefits**

This project relates directly to VTrans Strategic Goals Two (to preserve, maintain and operate the transportation system in a cost effective and environmentally responsible manner) and Three (to cultivate and continually pursue innovation, excellence and quality customer service). Since cost effectiveness cannot be evaluated without an outcome measure, effective performance measures are essential for documenting, and potentially improving upon, the cost effectiveness of SIC operations. In addition, the performance measures provide an opportunity to improve customer satisfaction through information transparency.