Research Need Statement 611

I. Need Statement Champions and Information

I.A. Need Statement Champion Information
   I.A.1. First and Last Name of Research Champion: Curt Turgeon
   I.A.2. Research Champion’s Office: Materials & Road Research
   I.A.3. Research Champion’s Phone Number: 651-366-5535
   I.A.4. Research Champion’s Email: curt.turgeon@state.mn.us

I.B. Research Co-Champion
   I.A.1. First and Last Name of Research Co-Champion: Bernard Izevbekhai
   I.A.2. Research Co-Champion’s Office: Materials & Road Research
   I.A.3. Research Co-Champion’s Phone Number: 651-366-5454
   I.A.4. Research Co-Champion’s Email: bernard.izevbekhai@state.mn.us


I.D. Project Sponsor: Joint MnDOT and Local Road Research Board

II. Research Need Background and Description

II.A. Research Need Background
   II.A.1. Describe the problem or opportunity.
   Ice breakers have come into significant use in certain districts. While ice breakers serve the purposes for which they are intended there is a paucity of information as to their short term and long term impacts on pavements.

   II.A.2. If applicable, describe how this project will build on previous research.

   II.A.3. If applicable, include the title/s or previous research.

   II.A.4. What is the objective of the proposed research?
   Ice breakers have been hypothesized as a potential factor that could accelerate pavement degradation. However, this lemma has not been validated and cannot be validated until an experiment is conducted and data is copiously analyzed. It will be beneficial to ascertain if ice breakers are a confounding variable to the default performance curves of our pavement types or if their effects are statistically inconsequential.
III. Strategic Priorities, Benefits, and Expected Outcomes

Section III. is for MnDOT sponsored and co-sponsored projects only; all LRRB projects proceed to section IV.

III.A. MnDOT Strategic Priorities

Instructions: Briefly describe how the project aligns with the following MnDOT Research Strategic Priorities. Complete all that apply.

III.A.1. Innovation & Future Needs:

III.A.2. Advancing Equity:

III.A.3. Asset Management:

The various levels of possible effects that dynamic and contact devices as well as impact breakers may have on pavements could range from accelerated texture degradation (skid resistance) to decrease in ride quality or loss of load transfer efficiency arising from compromised joints. If these effects are detected early and quantified, it will facilitate Skid resistance response, pavement planning and management of our pavement assets. It will also facilitate a creation of default performance curves for breaker-maintained pavement sections.

III.A.4. Safety:

Ability of our pavements to remain in reliable skid resistant condition over time is a primary requirement. After the snow and ice operation, there is the need to ensure that the pavement surfaces that received the ice breaker operation do not exhibit compromised skid resistance and also to ensure that service lives of these pavements are not diminished, otherwise additional policies may be required to establish an optimum usage.

III.A.5 Climate Change & Environment:
III.B. Expected Outcomes

*Instructions:* Check all expected direct outcomes of this research.

- ☐ New or improved technical standard, plan, or specification
- ☐ New or improved manual, handbook, guidelines, or training
- ☒ New or improved policy, rules, or regulations
- ☒ New or improved business practices, procedure, or process
- ☒ New or improved tool or equipment
- ☐ New or improved decision support tool, simulation, or model/algorithm (software)
- ☐ Evaluation of a new commercial product
- ☐ New or improved technical standard, plan, or specification
- ☒ Other. Please specify below:

A proper evaluation of a new technology to ensure that other factors such as safety and asset value over time are not sacrificed at the altar of the immediate benefits of this technology

III.C. Expected Benefits

*Instructions:* Select all expected benefits that may be realized if the findings and recommendations from this research is adopted or implemented

III.C.1. Construction Savings Choose an item.

III.C.2. Decrease Engineering/Administrative Costs Choose an item.

III.C.3. Environmental Aspects Choose an item.

III.C.4. MnDOT Policy Choose an item.

III.C.5. Lifecycle *Reduce maintenance cost*

III.C.6. Operations and Maintenance Savings *Other operational and maintenance savings. Providing a knowledge base for pavement performance variables due to dynamic and contact maintenance devices.*

III.C.7. Reduce Risk Choose an item.

III.C.8. Reduce Road User Cost Choose an item.
III.C.9. Safety Other safety benefit. Possible loss of skid resistance from ice breaker operation may be modulated by this initiative.

III.C.10. Technology Choose an item.

III.C.11. Other, please describe below:
IV. Technical Advisory Panel

*Instructions:* Please list the name and affiliation of individuals to consider for the Technical Advisory Panel.

Bernard Izevbekhai MnDOT OMRR Technical Liaison
Curtis Turgeon; MnDOT OMRR TAP Member
Sue Lohdahl Office of Maintenance Research TAP Member
Chris Thorson; MnDOT District 4 Materials Engineer TAP Member
Luke Johanneck; MnDOT District 3 Resident Engineer TAP member
James Bittmann; MnDOT District 2 Materials/ Construction TAP member
Melissa Cole; MnDOT OMRR TAP member

Your assigned Project Advisor is available to answer questions and provide guidance (assigned by the Office of Research & Innovation).

Your Project Advisor is: Marcus Bekele, marcus.bekele@state.mn.us