Research Need Statement 566

I. Need Statement Champions and Information

I.A. Need Statement Champion Information
   I.A.1. First and Last Name of Research Champion: Gene Hicks
   I.A.2. Research Champion’s Office: Transportation System Management
   I.A.3. Research Champion’s Phone Number: 651-366-3856
   I.A.4. Research Champion’s Email: gene.hicks@state.mn.us

I.B. Research Co-Champion
   I.A.1. First and Last Name of Research Co-Champion:
   I.A.2. Research Co-Champion’s Office:
   I.A.3. Research Co-Champion’s Phone Number:
   I.A.4. Research Co-Champion’s Email:

I.C. Research Needs Title (115 Characters): Inductive Loop Signature Technology for Statewide Vehicle Classification Counts – Implementation

I.D. Project Sponsor: MnDOT Research Program

II. Research Need Background and Description

II.A. Research Need Background
   II.A.1. Describe the problem or opportunity.
   With higher traffic volumes and greater restrictions on placing road tubes to do vehicle classification counts we need to find alternate ways to get vehicle class data. A new technology is being implemented at the California Department of Transportation that uses existing loops to obtain vehicle signatures to classify vehicles. The loop signature technology could be a huge innovation that can replace existing data collection methods and would save the state a lot of time and money. In addition it would give us more and better data on ramps and freeways in the metro area where it is difficult and time consuming to collect vehicle class counts.

   We propose to take advantage of the development of the loop signature technology and validate its performance in Minnesota. Our goal is to convert current loop detectors at signals, on freeways and at our Automatic Traffic Recorders (ATRs) into classification sites using the existing loop detectors.
II.A.2. If applicable, describe how this project will build on previous research.

Building off of previous research project:
https://projectpagesp.dot.state.mn.us/projectpages/pages/projectDetails.jsf?id=18079&type=CONTRACT&jftfdi=&jffi=projectDetails%3Fid%3D18079%26type%3DCONTRACT

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

II.A.4. What is the objective of the proposed research?

This project would be an implementation of a previous research project "Investigating Inductive Loop Signature Technology for Statewide Vehicle Classification Counts". The objective of this research is to perform additional testing at traffic signals and Automatic Traffic Recorder (ATR) sites to better understand loop signature performance issues, to improve the classification accuracy, and develop an enhanced pattern recognition based on the signature profiles of various types of vehicles in Minnesota.

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: Improving upon current traffic count collection methods. This project would help validate the accuracy of loop signature’s counts and classification recognition.

III.A.2. Advancing Equity:

III.A.3. Asset Management: More efficient technology that if implemented could save the state time and money.

III.A.4. Safety: Use of this technology would reduce need for field traffic counts which have become increasingly more difficult due to higher traffic volumes and restrictions on road tube placement.

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
☒ Other. Please specify below:

Validation and conclusions from data collected using Inductive Loop Signature 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 Choose an item.

III.C.6. Operations and Maintenance Savings Reduced time

III.C.7. Reduce Risk Other reduced risk. Please describe below

Less field traffic counts.

III.C.8. Reduce Road User Cost Choose an item.

III.C.9. Safety Improve worker safety (i.e. workzone safety)

III.C.10. Technology New technology

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.

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, (651)366-3903, marcus.bekele@state.mn.us