

Research Need Statement 644

I. Need Statement Champions and Information

I.A. Need Statement Champion Information

- I.A.1. First and Last Name of Research Champion: **Terry Beaudry**
- I.A.2. Research Champion's Office: **MnDOT Materials & Road Research**
- I.A.3. Research Champion's Phone Number: **651-366-5456**
- I.A.4. Research Champion's Email: terry.beaudry@state.mn.us

I.B. Research Co-Champion

- I.A.1. First and Last Name of Research Co-Champion: **Raúl Velasquez**
- I.A.2. Research Co-Champion's Office: **MnDOT Materials & Road Research**
- I.A.3. Research Co-Champion's Phone Number: **651-366-5533**
- I.A.4. Research Co-Champion's Email: Raul.Velasquez@state.mn.us

I.C. Research Needs Title (115 Characters): **Evaluation of Gravel Stabilizer Used on Gravel Roads and Gravel Shoulders**

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.

Many Minnesota counties have been using gravel stabilizers on their gravel roads over the last decade, and have reported decreases in the amount of gravel, grading, dust suppressants, and fossil fuel required to maintain their gravel roads.

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?

The research objective would be to quantify the savings of using gravel stabilizers as well as determine whether savings are possible for their use on gravel shoulders. Savings quantification by a formal Life-Cycle Cost Analysis (LCCA) study with Minnesota-specific project data would better define savings of other users across within the state.

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 use of gravel stabilizers on unpaved sections should reduce maintenance costs of these assets, as well as savings in fuel and aggregate resources.

III.A.4. Safety: Less time will be spent maintaining unpaved sections of roadways, resulting in less collisions between maintenance vehicles and the public.

III.A.5 Climate Change & Environment: Some counties have realized savings in gravel road maintenance costs of +50%. The greatest savings were in the required grading hours, which decreased 75%. This translates into savings in fossil fuel and subsequently greenhouse gases.

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:

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 **Cost savings from reduced labor**

III.C.2. Decrease Engineering/Administrative Costs **Reduced planning/design costs**

III.C.3. Environmental Aspects **Air Pollution**

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

III.C.5. Lifecycle Choose an item.

III.C.6. Operations and Maintenance Savings **Reduced labor**

III.C.7. Reduce Risk **Reduce risk of gravel road and shoulder failures.**

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

III.C.9. Safety Choose an item.

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.

- **MnDOT District Materials**
- **Resident Engineers**
- **Maintenance personnel.**
- **Office of State Aid,**
- **Representative from local agencies**

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