

# Research Need Statement 617

## I. Need Statement Champions and Information

### I.A. Need Statement Champion Information

- I.A.1. First and Last Name of Research Champion: **Jake Rueter**
- I.A.2. Research Champion's Office: **Transit and Active Transportation**
- I.A.3. Research Champion's Phone Number: **651-366-4164**
- I.A.4. Research Champion's Email: [jacob.rueter@state.mn.us](mailto:jacob.rueter@state.mn.us)

### I.B. Research Co-Champion

- I.A.1. First and Last Name of Research Co-Champion: **Amber Dallman**
- I.A.2. Research Co-Champion's Office: **Transit and Active Transportation**
- I.A.3. Research Co-Champion's Phone Number: **651-366-4189**
- I.A.4. Research Co-Champion's Email: [amber.dallman@state.mn.us](mailto:amber.dallman@state.mn.us)

I.C. Research Needs Title (115 Characters): **Designing and Implementing Maintainable Pedestrian Safety Countermeasures**

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.

**Pedestrian fatalities on US roadways have been increasing in recent years. According to the National Highway Traffic Safety Administration, there were 6,283 pedestrian deaths in traffic crashes in 2018, representing more than 17% of all traffic fatalities (NHTSA. Traffic Safety Facts. 2018 Data). This was an increase from 4,700 and 11% in 2007.**

**In Minnesota, while other crash types of traffic fatalities have declined, deaths and serious injuries for people walking have increased annually over the past five years. In 2017, there were 1,056 crashes involving a person walking. In 2016, there was a twenty-five year high with sixty people walking killed on Minnesota roads. Preliminary data for 2019 shows that pedestrians were nearly 14% of traffic fatalities on Minnesota roads.**

**Federal, state, and local transportation agencies are seeking to reverse these trends by installing proven pedestrian safety countermeasures. In Minnesota, one challenge with installing safety countermeasures for people walking and ensuring year-round access to pedestrian infrastructure is winter maintenance. Specific pedestrian safety and accessibility treatments introduce real and perceived challenges to traditional snow removal operations and winter maintenance plans. Snowplows may have difficulty removing snow from around curb extensions, median refuge islands, speed humps, and narrower lanes. Furthermore, roadway snow removal often blocks curb ramps or even results in piles of snow atop curb-tight sidewalks. These issues negatively affect pedestrian mobility and accessibility in winter and complicate efforts to install such safety treatments.**

**Transportation agencies need best practice guidance and solutions for designing and installing pedestrian safety countermeasures that can be effectively maintained year-round without placing undue strain on maintenance resources.**

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?

**This project seeks to identify best practices for designing and implementing pedestrian safety countermeasures that ensure year-round maintainability. Some specific research questions may include:**

- **What are the design characteristics that make pedestrian safety countermeasures easier to maintain in winter with existing MnDOT equipment?**

- **Are MnDOT (Minnesota) winter maintenance plans, policies, maintenance agreements, and procedures providing year-round safety and accessibility of pedestrian facilities?**

### 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:

III.A.4. Safety: **This research will benefit communities with the goal of designing pedestrian safety countermeasures that are maintainable without undue burden on existing maintenance practices and preserve safe access to sidewalks and improved pedestrian facilities and networks even during adverse weather conditions.**

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:

**Identify design characteristics that make pedestrian safety countermeasures easier to maintain in winter with existing MnDOT equipment. (Consider the potential of installing demonstration treatments and testing performance through the winter)**

**Review of winter maintenance plans, policies, maintenance agreements, and procedures for considerations of snow removal, de-icing, and other maintenance of sidewalks and in-road**

pedestrian safety treatments (curb extensions, median refuge islands, speed humps, narrow lanes, etc.).

**Identify best practices for winter maintenance of in-road pedestrian safety treatments.**

**Identify potential solutions for dealing with snow removal at the street-sidewalk interface (curb ramps at intersections, access to pedestrian push-buttons, curb-tight sidewalks, etc.).**

**Summarize best practice case studies of how agencies in different types of communities (large cities to small towns) deal with winter maintenance of pedestrian infrastructure.**

**Recommend winter maintenance options for agencies with varying capacities and capabilities for snow removal.**

### 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 Choose an item.

III.C.7. Reduce Risk **Other reduced risk.**

**Safer access to sidewalks and pedestrian facilities for people walking.**

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

III.C.9. Safety **Reduction of crash frequency**  
**Reduction of crash severity**

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.

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](mailto:marcus.bekele@state.mn.us)