National Road Research Alliance

2018 Pavement Workshop

May 23-24, 2018

+ 46 Associate Members

Maintaining Poor Pavements

NRRA Preventive Maintenance Team
Long Term Research Project

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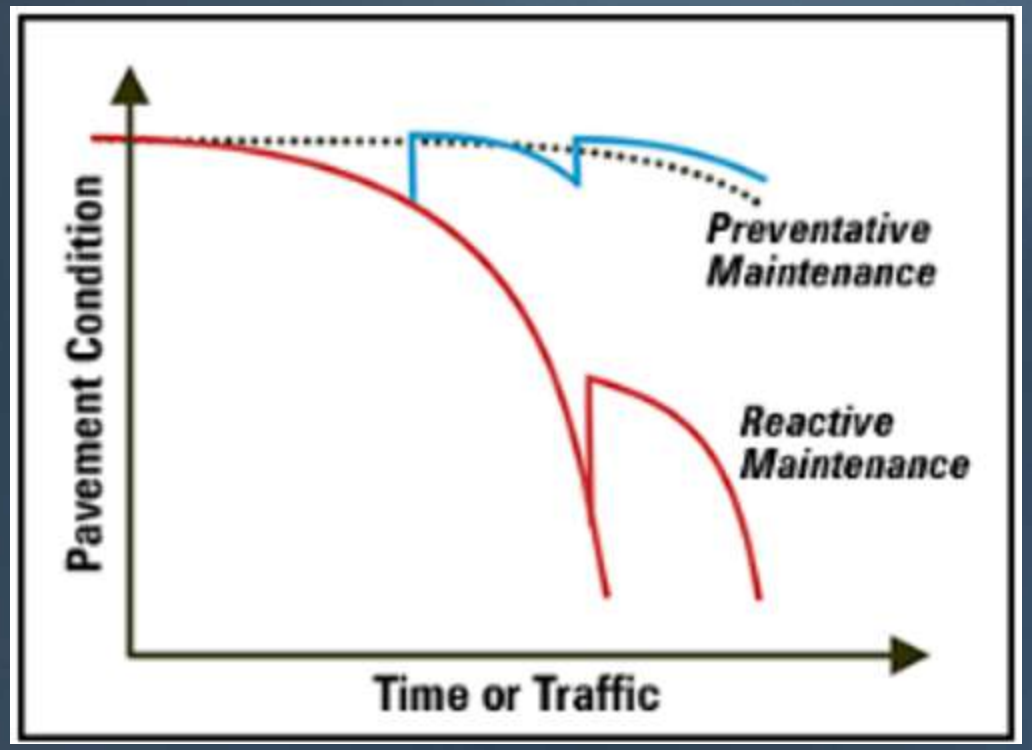
Develop → Collaborate → Research → Implement → Sustain.

Project Objective

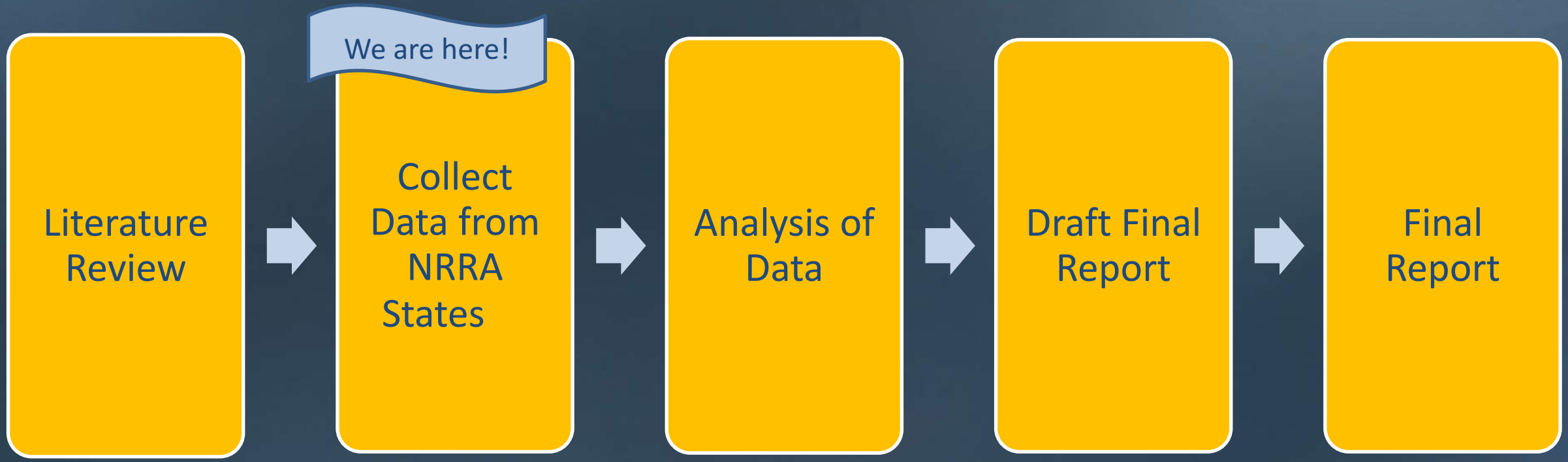
- To identify performance improvement and durability that can be expected for Hot Mix Asphalt (HMA) pavement in poor condition from the application of a thin pavement rehabilitation treatment.



Project Goal

- What are the Practices
- What are the Results
- To summarize practices being performed and collect performance and cost data from NRRA states to then provide guidance to consider for extending service life of lower volume roadways

Project Tasks



Develop Collaborate Research Implement Sustain.

Literature Review

- Completed in May 2018
- Reviewed existing literature
  - relative to management of pavements in poor condition
  - use of thin surface treatments as stop gap measures to improve ride and prolong useful life
- Established definitions of applied treatments
  - Limited to those that are considered

  “Thin” = less than a 2" depth.

General Treatments Considered in the Study	
1. Thin Overlay (with or without milling)	10. Fibermat Chip Seal
2. Thinlay (with or without milling)	11. Scrub Seal
3. Hot in-place recycling (HIR)	12. Cape Seal
4. Open Graded Friction Courses (OGFC)/Plan Mix Seal Courses	13. Fog Seal
5. Texas Under Seal	14. Rejuvenating Fog Seal
6. Ultra Thin Bonded Wearing Course/ Paver Placed Surface Seal/Nova Chip	15. Bio Fog Seal
7. Microsurfacing	16. Otta Seal
8. Slurry Seal	17. Scratch Course
9. Chip Seal	18. Mastic Surface or Crack Treatment

Literature Findings

"Development of Holding Strategies for Deteriorated Low Volume Roads and Evaluation of Performance of Iowa Test Sections"

- Iowa Department of Transportation and Iowa State University, Ames.

Results:

- The study found that a holding strategy can be successfully employed by selecting treatments that use a combination of thin hot mix overlays, surface treatments and in-place recycling.

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Development of holding strategies for deteriorated low-volume roads and evaluation of performance of Iowa test sections

Jianhua Yu
Iowa State University

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Literature Findings

"Cost Effective Means of Managing Pavements in Poor Condition"

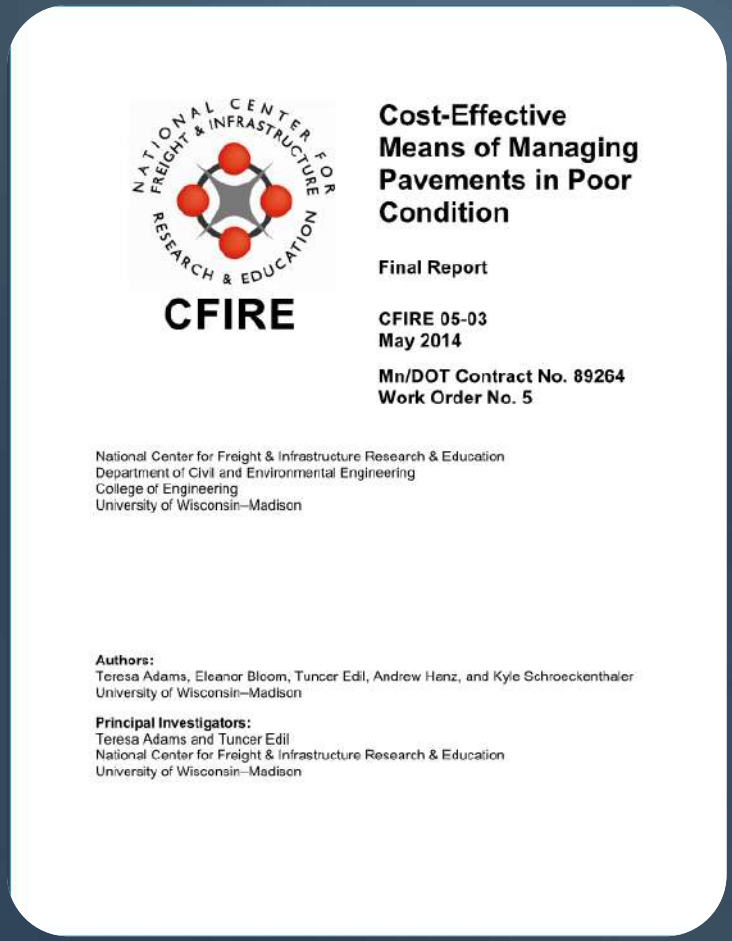
- 2014 - MnDOT
- National Center for Freight and Infrastructure Research
- Univ. of Wis. Madison, Dept of Civil and Environmental Engineering

Goal:

- Identify treatments or materials that could be used to extend the service life of pavements in poor condition.

Objectives:

- Establish a basis for evaluating end-of-life pavement treatments using user needs, cost-effectiveness, and environmental impact.
- Create tools for selecting and analyzing strategies
- Suggest design strategies in resurrecting roads in poor condition.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CFIRE

Cost-Effective Means of Managing Pavements in Poor Condition

Final Report

CFIRE 05-03
May 2014

Mn/DOT Contract No. 89264
Work Order No. 5

National Center for Freight & Infrastructure Research & Education
Department of Civil and Environmental Engineering
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Collect Data from NRRA States

- Questions for Data Gathering: May 2018
- Compiling performance and cost data from NRRA Member States.
- Data is intended to identify
  - performance improvements
  - durability to be expected from the application of a thin surface treatment to an HMA pavement in poor condition

Questions 1-5 for Case Studies

1. Please provide a listing of pavement segments in poor condition that received a thin surface treatment.
2. What surface treatment(s) was performed. *Refer to Definitions.*
   If the treatment performed does not fit into any of the definitions provided, describe.
3. Collect IRI
   (Before/after application of thin surface treatment; After year 1 and successive years where data is available; Any before/after photos?)
4. Collect SR
   (Before/after application of thin surface treatment; After year 1 and successive years where data is available; Any before/after phots?)
5. Cost of surface treatment
   (Total project cost with material/installation; Area covered; Cost per lane mile)

Questions 6-10 for Case Studies

6. When was the next rehabilitation performed?
7. What is the basic structure and construction of history of the roadway segment?
8. Case Studies from NRRA member States.
   Description of roads that were in poor condition and a treatment was applied to extend life.
9. Please describe the most significant distress(s) being addressed.
10. Please describe the methodology or decision making process followed to select the rehabilitation application.

Analysis of Data

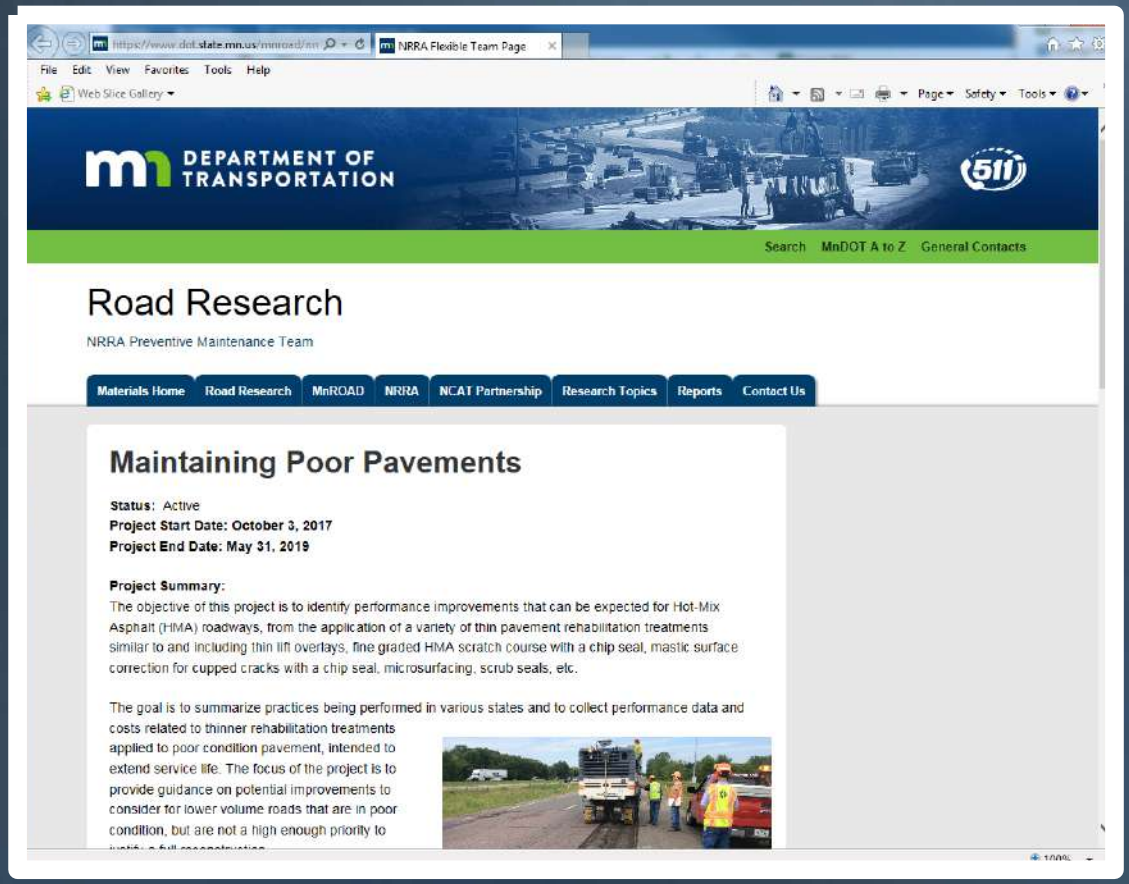
- Data analysis will focus on
  - Effectiveness
    - Initial improvement to ride quality after application of various thin rehabilitation treatments
  - Performance
    - Rate of loss of ride quality after treatment application
  - Comparison of Treatment Performance
    - Do multiple passes or patching improve durability
  - Cost of Treatment
    - Cost Benefit Analysis
    - Life Cycle Cost Assessment

Final Report

- Final Report
  - Expected May 2019
  - Will provide member State's with information related to the cost and performance of various treatments intended to help make planned decisions for maintaining pavements in poor condition.

- The project's NRRA Study web page:

https://www.dot.state.mn.us/mnroad/nrra/structureandteams/preventivemaintenance/longterm1.html



Questions?

- Joe Korzilius
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NRRA
National Road Research Alliance
Thank You
Develop
Collaborate
Research
Implement
Sustain.