



Trunk Highway 6 Mix Rejuvenator Field Sections NRRRA Flexible Team

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Illinois Asphalt Pavement
iapa

What do I have to share from this project to help improve asphalt
co

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**Strategic implementation through
cooperative pavement research.**

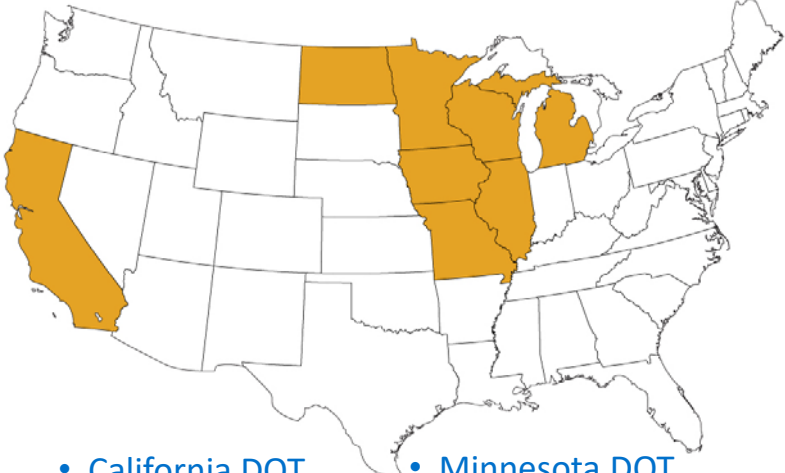

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Joining forces
to improve the future
of our nation's roads:

- Government agencies
- Associations
- Academia
- Private industry

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- California DOT
- Illinois Tollway
- Illinois DOT
- Iowa DOT
- Michigan DOT
- Minnesota DOT
- Minnesota Local Road Research Board
- Missouri DOT
- North Dakota DOT
- Wisconsin DOT

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Our goal is to achieve consistent benefits from real world research.

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Our five teams study the breadth of pavement topics:

- Flexible
- Rigid
- Geotechnical
- Intelligent Construction Technologies
- Preventive Maintenance

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6; projects funded

' 717P funded research

Since 2015

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43 government agencies
 ; associations
 48 academic institutions
 68 private companies

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NRRRA | National Road Research Alliance

AGENCY MEMBERS



ASSOCIATE MEMBERS



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NRRA Workshop



2020 NRRA PAVEMENT WORKSHOP

FALL 2020 | Shoreview, Minnesota

mndot.gov/mnroad/nrra/pavement-workshop

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Asphalt Mix Rejuvenators - Background

- Rejuvenators/Recycling Agents are an emerging technology in HMA
- Increase recycled (RAP or RAS) content in mix
- Many producers, sources, and sales-representatives
- NCHRP research on lab testing and dosing
- Limited field performance available



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Objective

NRRA Flexible Team wanted to answer:

1. Can mix rejuvenator be incorporated into the HMA plant and construction process?
2. How well do these products perform in real world conditions?
3. What are rejuvenators doing to our asphalt and how long does it last?



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Project Details

TH6 from south of Emily to Outing, MN

- 5 inch existing asphalt
- 2 inch mill and fill
- 1.5 inch wearing course overlay (SPWEA340B)
 - Rejuvenators in this lift only
- All Research Sections placed in southbound direction



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Coordination

- Rejuvenator producers paid Anderson Brothers directly for construction delays and plant upgrade (\$63,000/7 participants = \$9,000 each)
- NRRA agencies to do mix testing
- Flexible Team \$100,000 for performance analysis and binder testing (RFP currently open)



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Field Sections

- **Section 6001** – Cargill - Anova 1815 Rejuvenator
- **Section 6002** – Poet - JIVE

Not a direct comparison or ranking of product performance
but a comparison to control



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Dosage Targets

- Project used PG 58S-28
 - LTPP Bind -34 and -40
- RAP grade \approx 75-23
- Target xx-34
 - Based on plant mix extracted binder + PAV
- Reported higher than typical “dosages”



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Construction and Mix Sampling

- Construction on mornings of August 28-29, 2019
- No major issues during construction. All suppliers were happy with their sections
 - Anderson Brothers plant & paving crew were invaluable
- 300+ buckets collected
 - 30 buckets of HMA collected per section
 - Also collected: RAP, aggregates, virgin binder, and rejuvenator
- NRRA state agency testing
 - MnDOT- DCT & Hamburg
 - Illinois – I-FIT
 - Missouri – TSR
 - Wisconsin – IDEAL CT
 - Potentially others



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Since Construction

- Initial testing has occurred (Gmm)
- Cored sections 6 weeks after construction for future binder testing
- RFP for binder testing and long-term evaluation closed 2/3/2020
 - A lot of interest in this project nationally
- Ride has been measured twice (fall 2019)
 - IRI < 40 in /mile
- 500' test sections have been established for long-term performance monitoring
- MnDOT OMRR Research staff will continue to monitor ride and take cores



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Early Reflective Cracking

noticed in January 2020



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THANK YOU AGAIN!!!

- NRRRA TAP and Flex Team Members
- MnDOT Bituminous Office
 - **Only possible with team effort facilitated by NRRRA!!!**
- MnDOT District 3
- Contractor – Anderson Brothers
- MnDOT Research Staff
 - Ben Worel and Dr. Raul Velasquez
- Rejuvenator Suppliers/producers



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Questions???



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NRRA Workshop

NRRA National Road
Research Alliance
presents

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May 19-21, 2020 | Shoreview, Minnesota

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