



Nebraska Department of Roads

Agency Report

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Pavement Preservation Utilizing In-Place Recycling in NE

- History of In-Place Recycling in NE
- Foamed Asphalt Development
- Successes and Current Challenge
- Way Ahead



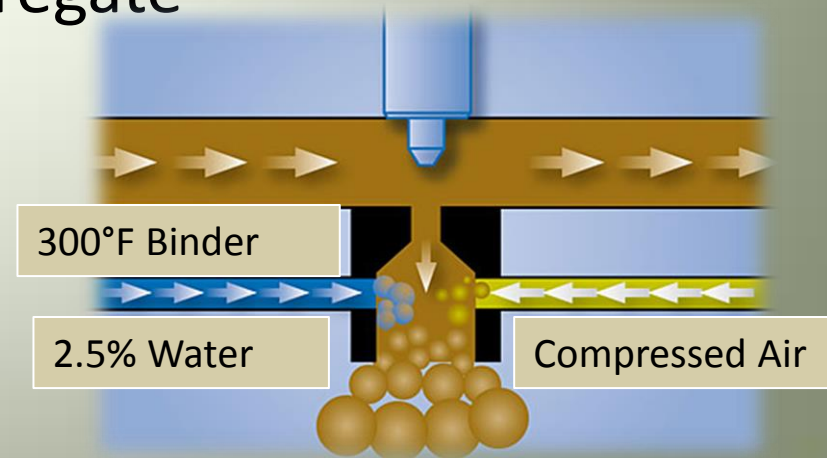
NE In-Place Recycling

- Hot-In-Place Recycling (2")
 - ARA 1P/2P Polymer Modified Emulsion
- Cold-In-Place Recycling (4-6")
 - High Float Emulsion
- Hydrated Lime Slurry Stabilization (4")
 - Hydrated Lime and CSS1 Emulsion
- Full Depth Reclamation (6-12")
 - Fly Ash or Cement
- Foamed Asphalt (4-6")
 - PG Binder





- Foamed Asphalt
 - Cold water and compressed air injected into hot PG Binder in expansion chamber
 - Binder temporarily expands into numerous bubbles w/greatly increased surface area
 - Foaming reduces viscosity of asphalt allowing uniform mixing w/cold aggregate





TSP-2 Transportation System Preservation
Technical Services Program

AASHTO Pavement Preservation
THE VOICE OF TRANSPORTATION

Equipment





- Initial Project – Hwy 74, Jct 281 East, 2012
- Project Summary
 - 18.6 mi
 - 84 TADT
 - 9” average core depth
 - Major stripping in cores
 - Major rutting
- Original Design – 7” CIR w/HFE + 2.5” Overlay
- Contractor Proposal – 6” CIR w/FA + 2.5” Overlay
- Mix Design/Specification based on MnDOT
 - 58-28 Binder, 60 Gyration, (MnDOT)
 - Min 1250lbs Marshall Stability, 70% Retained (NDOR)



N-74 Pavement Condition





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N-74 Construction





• Results

- Rutting and Stripping eliminated
- Expedited Construction
 - Faster curing in Sept Temps
 - Eliminated re-aeration required for HFE
- \$800K savings





- Additional Foamed Asphalt Projects
 - Hwy 91, Dunning Northeast, 2013
 - 2-4" Armor Coats/3-5" Bit Sand Base, 60 TADT
 - Hwy 138, Big Springs South West, 2013
 - 9" HMA, 51 TADT
 - Hwy 92, Ansley East, 2013/2014
 - 9" HMA, 64 TADT
- Built w/NDOR specification based on MN/IA
 - 25 gyrations, PG 52-34 (IDOT)
 - Some field adjustments to oil (lowering)
- Good Construction – Good Performance



- Hwy 26, Oshkosh – Lewellen, 2014
- Project Summary
 - 6 mi
 - 360 TADT
 - 11” average core depth
 - Major stripping in cores
 - Same mix design (25 gyrations, PG 52-34, 2% oil)
- Differences
 - 360 vs. 60 TADT
 - Extended 95°F vs. 70°F Temps
- Results
 - Looked good for 3 days.....



- EVERYTHING RUTTED
- Field Adjustments
 - 2% → 1.5% → 1.2% → 1%
 - PG 52-34 → PG 58-28





- Results
 - ½ of 6 mile segment recycled
 - 4” of 5” depth cored out/replaced with HMA
- Lessons Learned/Current Challenge
 - What’s working in IA will not work for NE
 - Mix Design must be better tailored to NE materials
 - Much more testing will be required
- Way ahead
 - Projects in immediate future to include additional testing
 - PG 52-34, 58-28, 64-22
 - 25 & 60 gyrations
 - 77°F and 100°F+ Lab Temps
 - Further develop Foamed Asphalt as viable recycle option



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