

NCHRP SYNTHESIS TOPIC 40-13 RECYCLING AND RECLAMATION OF ASPHALT PAVEMENTS USING IN-PLACE METHODS

JOE SCHROER, PE
MISSOURI DEPT. OF TRANSPORTATION
NCAUPG ANNUAL MEETING
FEBRUARY 5, 2009

Purpose

- TRB Committee on Pavement Rehabilitation
- Cost Effective Alternatives to Virgin Paving Mixtures
- Economical & Sustainable
 - Reduce raw materials
 - Reduce energy consumption
 - Maintain functionality and performance

Panel Members

- Becky McDaniel
 - NCSC
- Sohila Bemanian
 - Parsons Trans. Group
- Don Matthews
 - Pav't Recycling Systems
- Tom Kazmierowski
 - Ontario Min. of Trans.
- Brian Luce
 - Maine DOT
- Shakir Shatnawi
 - CalTrans
- Joe Schroer
 - MoDOT
- Eric Weaver
 - FHWA
- Mike Voth
 - FHWA, Fed. Lands

Principal Investigator

- California Pavement Preservation Center
 - Mary Stroup-Gardiner
 - Gary Hicks



Timeline

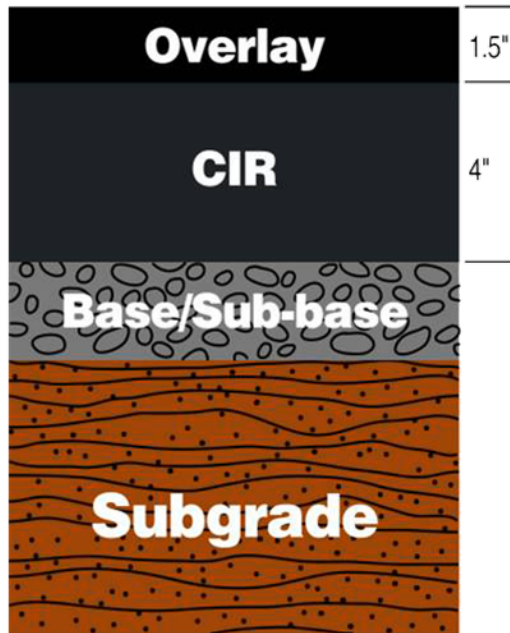
- First Panel Meeting – September 26, 2008
- Teleconference Panel w/ Consultant – October 10, 2008
- Consultant Outline – January 15, 2009
- Recycling Survey – Jan. 15 – Feb. 1, 2009
- Draft Report – August 21, 2009
- Second Panel Meeting – September 11, 2009

Scope

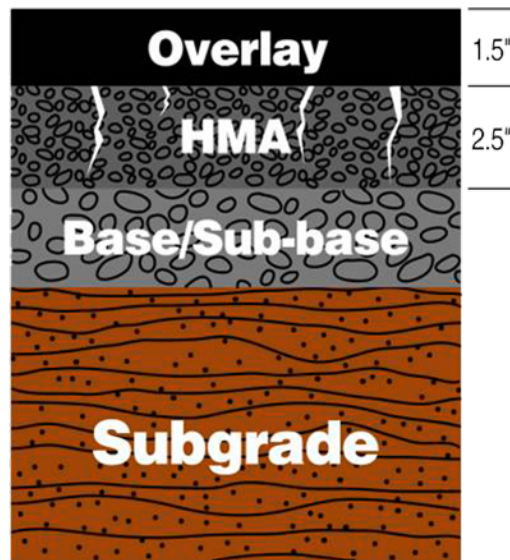
- Focus
 - Hot In-place Recycling (HIR)
 - Cold In-place Recycling (CIR)
 - Full Depth Reclamation (FDR)
- Research Current Literature
- Method Selection Criteria
- Case Studies
- Identify Knowledge Gaps

CIR

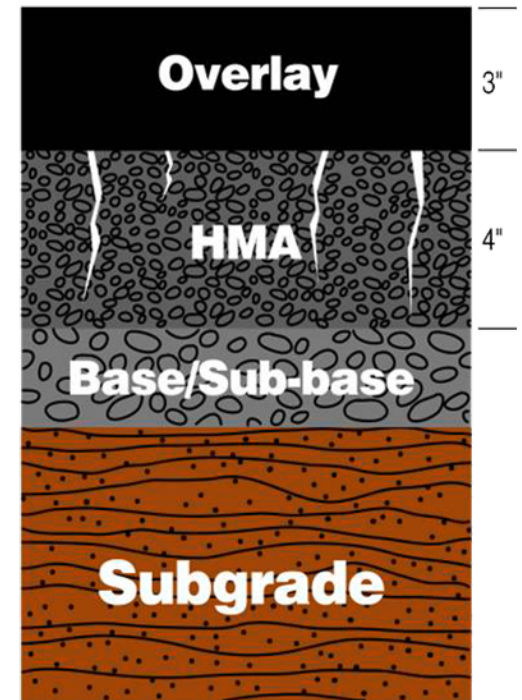
Cold In-Place Recycle



Mill & Fill

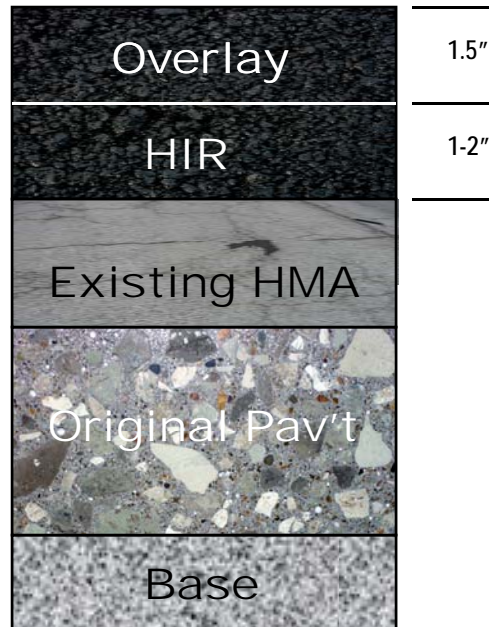


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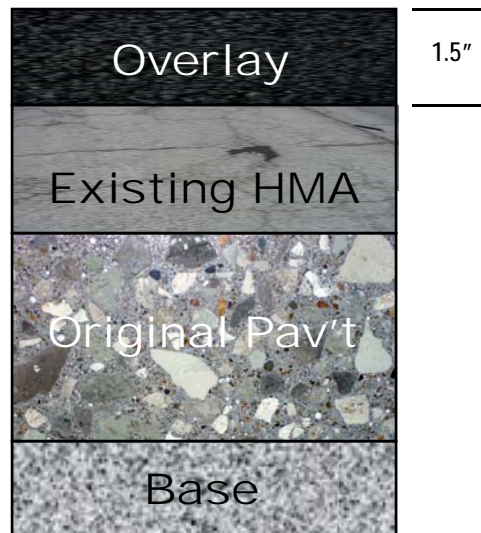


HIR

Hot In-Place Recycle



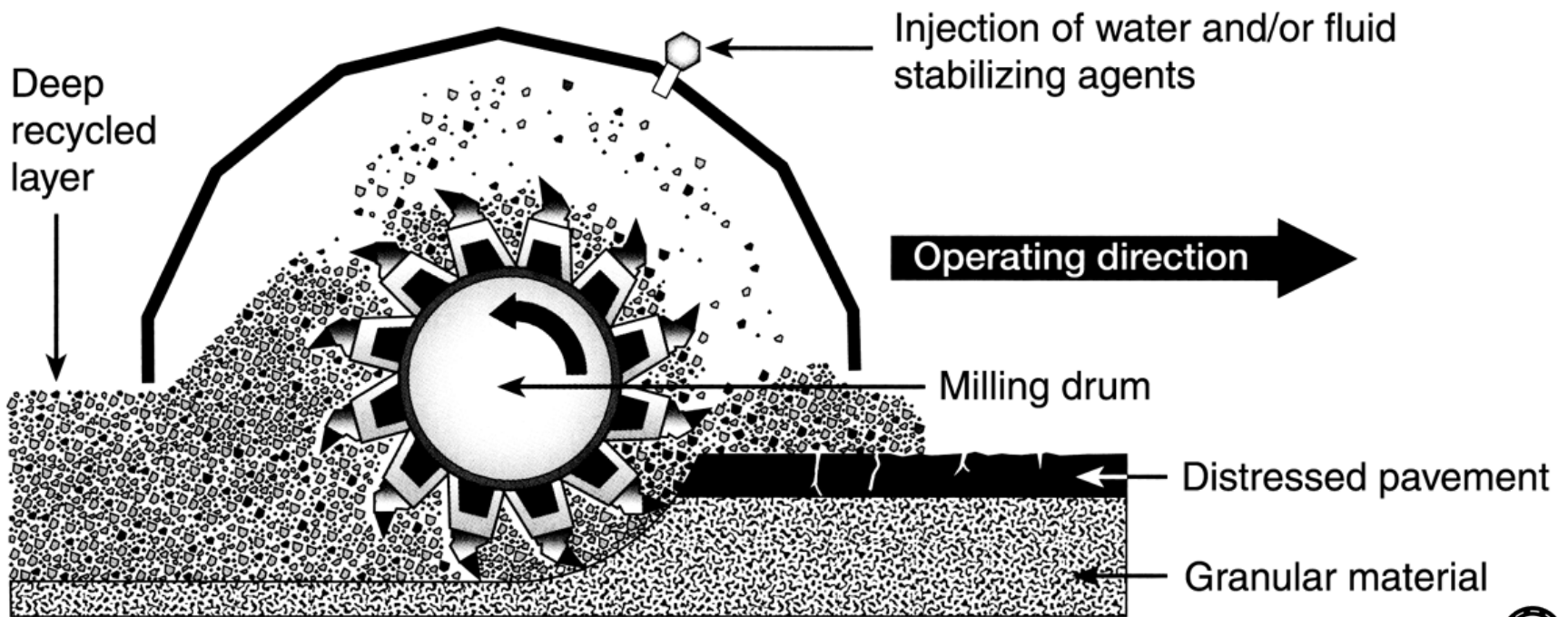
Mill & Fill



Overlay



FDR



Key Issues

- Project Selection
- Extent of Annual Construction Program
- Selection for Type of Process
- Barriers to Implementation
- Documented Performance, Costs and Benefits
- Quantify Environmental Benefits

Project Selection

- Pavement Condition, Geometrics & Environmental
- In-place Material Testing & Evaluation
- Criteria Used for Selection of Strategy



Extent of Annual Construction Program

- Potential for Savings
- Attractiveness to Start in Areas Where Not Previously Used

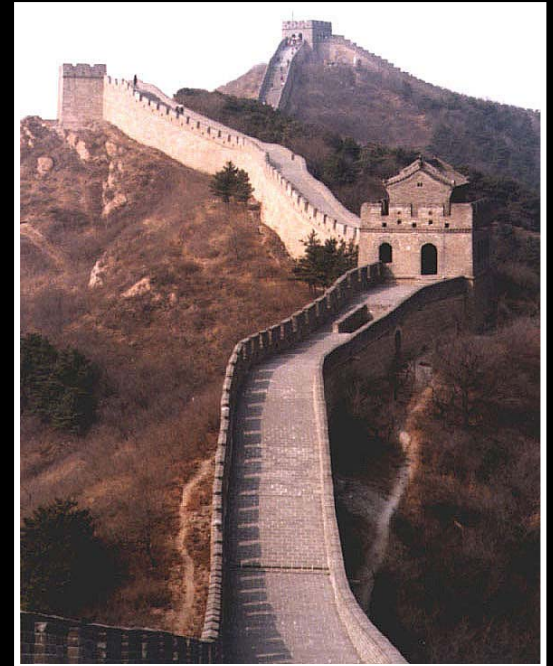


Selection for Type of Process

- Type of Stabilizer
- Mixture Design Method
- Structural Design Consideration
- Processing Methods and Equipment
- Inspection and QA
- Wearing Course

Barriers to Implementation

- Lack of Engineering Design Standards
- Lack of Evidence It Will Work
- Lack of Local, Experienced Contractors
- Previous Failures
- Competing Industries





Documented Performance, Costs and Benefits

- Some Cases Not Well Documented
- Documentation Sporadic
- Lack of Comparison Between Stabilizers
- Past Studies Used Older Technology
 - Emulsion vs. Cutback
 - S_n vs. M_r vs. E^*

Quantify Environmental Benefits

- Reduction in Greenhouse Gases
- Eliminate Need for Asphalt &/or Aggregate (in some cases)
- Reduced Energy Demand



Information?

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