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Choosing the Right Treatment to Meet Your Needs

Virginia Pavement Recycling Conference

Glen Allen, Virginia

Presented by:

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November 27, 2012

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Our Visit

1. • FHWA
   Pavement & Materials Program
2. • Recycling Program
   • MAP-21
3. • Choosing the Right Treatments
   • Case Studies
4. • Summary

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Stakeholder Engagement in the FHWA Pavement & Materials Program

- Asphalt Pavements
  - Mixture ETG
    - WMA Task Group
    - RAP/RAS Task Group
    - Performance Testers TG
    - Construction Task Group
  - Binder ETG
    - MSCR Task Group
    - Linear Amplitude Sweep TG
    - GTR Task Group
    - Others as Needed
  - Models ETG
  - Sustainability ETG
    - Pavement Preservation ETG
    - RPUG Surface Characteristics
    - IRI ETG
    - AASHTO Subcommittees
      - Construction
      - Maintenance
      - Materials
    - AASHTO JTP DGIT
  - Executive ETG
- Concrete Pavements
  - Engineering ETG
    - Roadmap Track Team
    - Roadmap Track Team
    - Roadmap Track Team…

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Moving Ahead for Progress in the 21st Century (MAP-21)

- SEC. 1304. INNOVATIVE PROJECT DELIVERY METHODS
  - Sub SEC. (3) INNOVATIVE PROJECT DELIVERY

    Permits State Agencies to use 100% Federal Funding, for various innovative project delivery methods including In-place recycling technologies.

MAP-21

CONFERENCE REPORT

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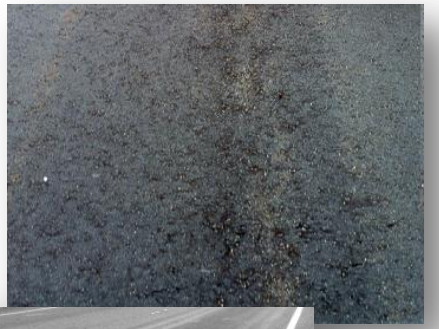
In-Place Recycling Selection Considerations

- Pavement condition
  - Distress type, extent and severity
- Engineering factors
- Economic considerations

Pavement Condition

Types of Distress

- Surface defects
- Deformation
- Cracking
  - Load-related
  - Non load-related
  - Reflective
- Patching



Impact of Pavement Distress on Recycling Methods

Technique	Distress Characteristics	Typical Milling Depths
HIR	Minimal deterioration, distress contained in surface, no load distress	2 in.
CIR	More high-severity, non load distress extending deeper into surface	4 in.
FDR	Any	6 to 14 in.

Engineering Factors

- Expected treatment design life
- Suitability of materials for recycling
- Expected traffic growth
- Traffic control
- Construction logistics
- Presence of underground utilities
- Need for geometric corrections or safety enhancements
- Environmental factors
- Drainage improvements

Economic Considerations

- Financial comparisons
- User delay
- Traffic control
- Length of construction period
- Local business impact
- Utilities

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Case Studies

- Considerations
  - Pavement condition, engineering factors and economic considerations
- Project Decisions
  - Type of Recycling
  - Depth of Recycling
  - Use of Additives
  - Other Information as Available

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Colorado DOT, Region 1 Case Study #1

SH-86 near Kiowa

Before

Colorado DOT, Region 1 Case Study #1

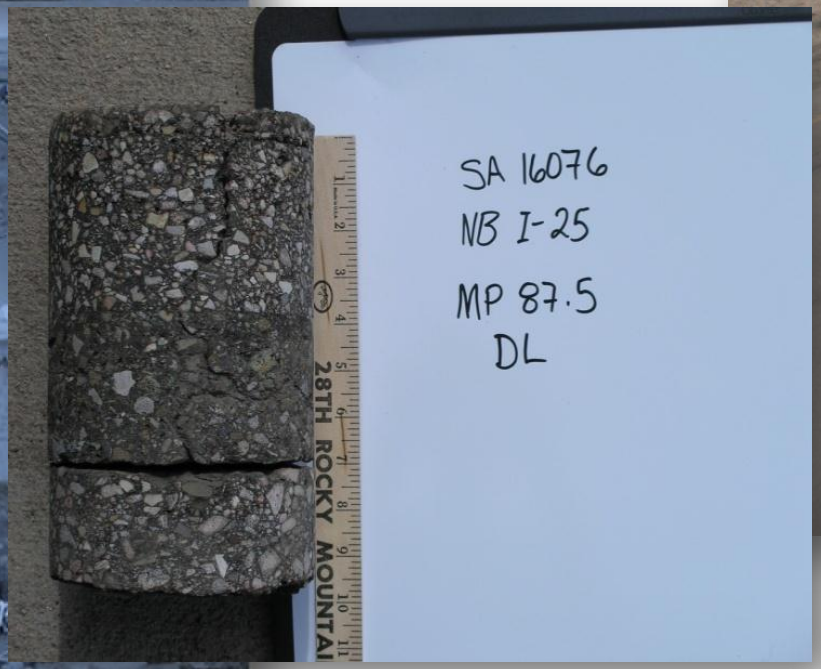
SH-86 near Kiowa During

Colorado DOT, Region 1 Case Study #1
SH-86 near Kiowa NOTE

- Cores are important
  - What does the distress look like below the surface?
- CIR passed Hamburg wheel-tracking test

Colorado DOT, Region 2
I-25 south of Pueblo

Case Study #2
Before



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Colorado DOT, Region 2
I-25 south of Pueblo

Case Study #2
During

Colorado DOT, Region 2 Case Study #2
I-25 south of Pueblo NOTE

- Life Cycle Cost Analysis
  - 6-inch CIR and 4-inch overlay ($24.7M)
  - 4-inch mill and 5.5-inch overlay ($28.9M)
- **"Go Green"** Calculations
  - Save 17,000 tons of aggregate
  - Save 1,200 tons of binder
  - Recycle 85,000 tons of material

Colorado DOT, Region 3 Case Study #3
SH-141 through Unaweep Canyon Before

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Colorado DOT, Region 3 Case Study #3
SH-141 through Unaweep Canyon During

Colorado DOT, Region 3 Case Study #3
SH-141 through Unaweep Canyon NOTE

- Pavement smoothness award
- When HIR is selected, CDOT has project selection guidelines for the 3 types of HIR:
  - Surface recycling
  - Heater remixing
  - Heater repaving

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Colorado DOT, Region 4
US-385 at Idalia

Case Study #4
Before

Colorado DOT, Region 4
US-385 at Idalia

Case Study #4
During





Colorado DOT, Region 4 Case Study #4
US-385 at Idalia NOTE

- "Exposed" FDR
  - Maximum length of 4 miles
  - Maximum time of 3 days
- Trimmer required for grade control prior to paving

Colorado DOT, Region 5 Case Study #5

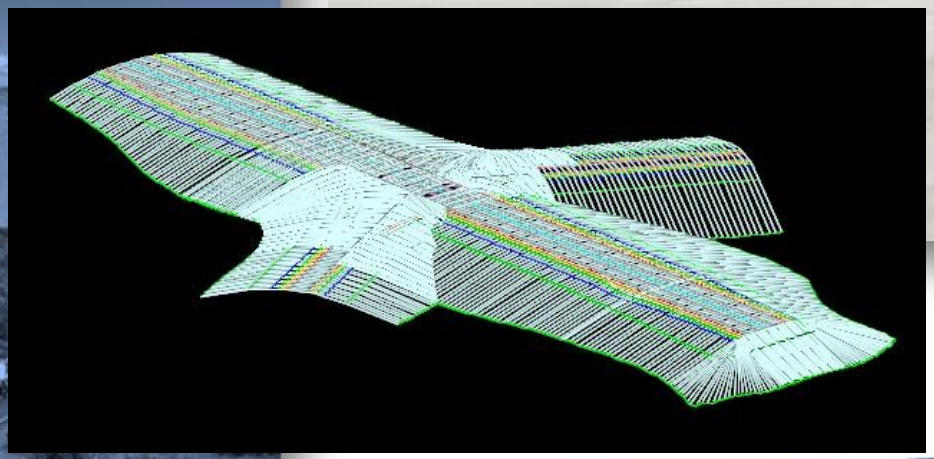
US-160 near the four corners Before

Colorado DOT, Region 5 Case Study #5

US-160 near the four corners During

Colorado DOT, Region 5 Case Study #5
US-160 near the four corners NOTE

- 3D Modeling
  - Balance delivery of aggregates
  - Blade in front of reclaimer had AMG
  - Blade behind reclaimer had AMG
- Pavement Award



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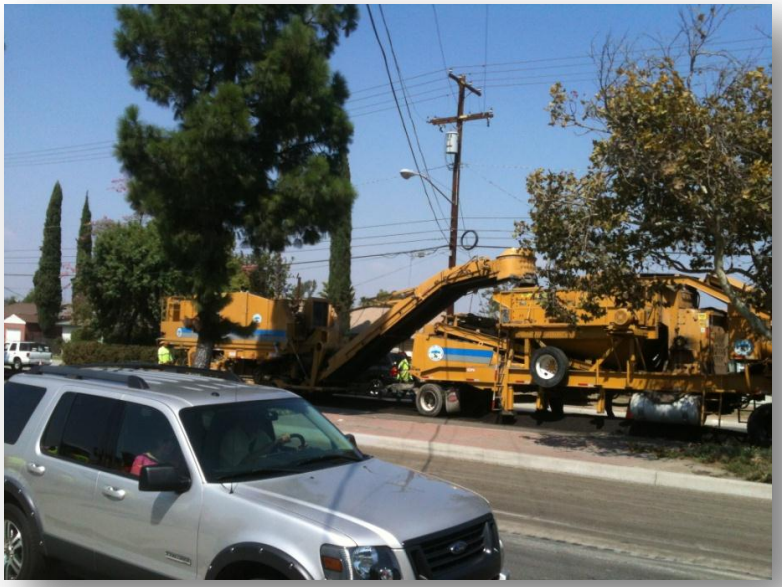
Case Study #6
AADT = 35,000, 5% Trucks



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Summary

- Pavement Condition
  - Surface distresses
  - Cores (distress below surface & pavement depth)
- Engineering Factors
  - Design life, constructability, geometrics, drainage, others
- Economic Considerations
  - LCCA, user delay, local businesses, "go green"

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QUESTIONS ?

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