Choosing the Right Treatment to Meet Your Needs

Western States Regional In-Place Recycling Conference

Better, Faster, Cost Effective

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applied pavement TECHNOLOGY

providing engineering solutions to improve pavement performance

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

5 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

Colorado DOT, Region 1
SH-86 near Kiowa

Case Study #1
Before

Colorado DOT, Region 1
SH-86 near Kiowa

Case Study #1
During

Colorado DOT, Region 1
SH-86 near Kiowa

Case Study #1
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

Colorado DOT, Region 2
I-25 south of Pueblo

Case Study #2
During

Colorado DOT, Region 2
I-25 south of Pueblo

Case Study #2
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
SH-141 through Unaweep Canyon

Case Study #3

Before

Colorado DOT, Region 3
SH-141 through Unaweep Canyon

Case Study #3

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

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
US-385 at Idalia

Case Study #4
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
US-160 near the four corners

Case Study #5
Before

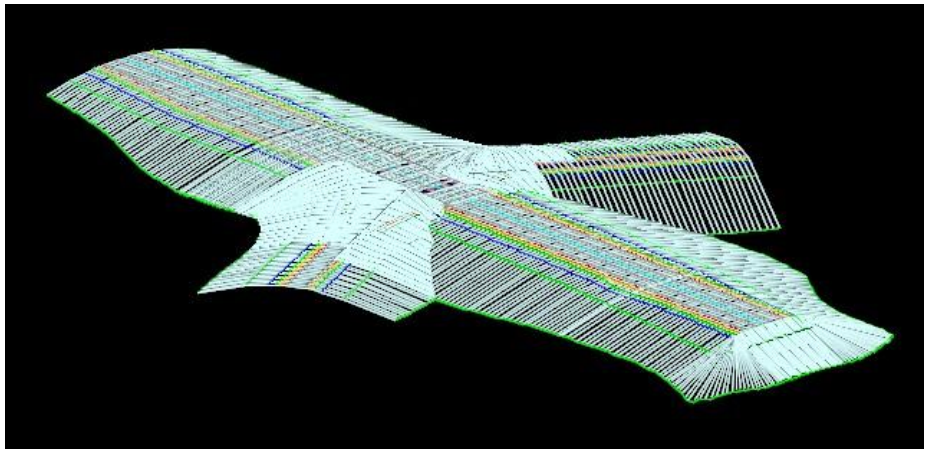
Colorado DOT, Region 5
US-160 near the four corners

Case Study #5
During

Colorado DOT, Region 5
US-160 near the four corners

Case Study #5
Note

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



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

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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