


SEAUPG 2004 Conference - Baton Rouge Presented By Randy Battey - Mississippi DOT




MDOT's Success Through Pavement Management

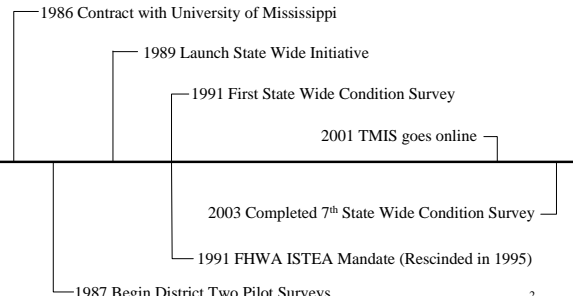
**2004 SEAUPG Annual Meeting
November 17, 2004
Baton Rouge, LA**

Randy Battey, P.E.
State Research Engineer
Mississippi Department of Transportation

1



PMS Timeline



1986 Contract with University of Mississippi

1987 Begin District Two Pilot Surveys

1989 Launch State Wide Initiative


1991 First State Wide Condition Survey

1991 FHWA ISTEA Mandate (Rescinded in 1995)

2001 TMIS goes online

2003 Completed 7th State Wide Condition Survey

2




What's in MDOT PMS?

Inventory/History

- Geometric (county, route, log mile)
- Lane (number of lanes, lane & shoulder widths)
- Crossing information (log mile of intersecting route)

3




What's in MDOT PMS?

Construction/Rehabilitation

- Original construction (date, thickness, material properties)
- Rehabilitation projects i.e. overlays, milling, etc. (date, type, thickness, material properties)

4




What's in MDOT PMS?

Distress Information

- Collected by contract every two years
- In-House QC 5% random sample
- Data includes:
 - International Roughness Index (IRI)
 - Pavement Condition Rating (PCR)
 - Distress (Rutting, cracking, etc.)
- Video log

5



What's in MDOT PMS?

Other Data

- Traffic
- Surface friction on selected sections
- Falling Weight Deflectometer (FWD) on selected sections

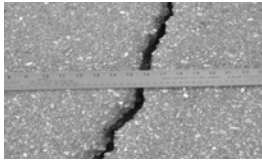
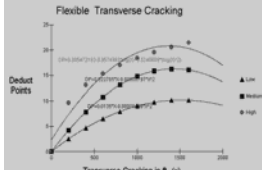
6

SEAUPG 2004 Conference - Baton Rouge Presented By Randy Battey - Mississippi DOT

MDOT PMS 101


- Pavement Condition Rating (PCR) 0-100 scale
 - Composite Index
 - IRI & Distress
 - Collected on 500' samples
 - Average of each sample within homogeneous section

PCR=100(12-IRI/12)^{0.9567}(205-DP/205)^{1.4857}

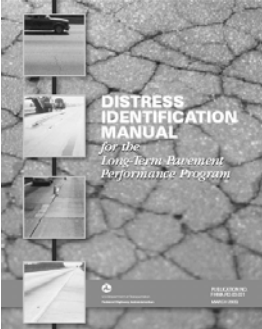
Asphalt Distresses

- Alligator cracking
- Block cracking
- Reflection cracking
- Edge cracking
- Long. or trans. cracking
- Potholes
- Rutting
- Raveling/segregation
- Surface bleeding




Concrete Distresses

- Corner breaks
- Joint faulting
- Joint seal damage
- Long. or trans. cracking
- Spalling of longitudinal joints
- Spalling of transverse joints
- Map cracking & scaling



PCR

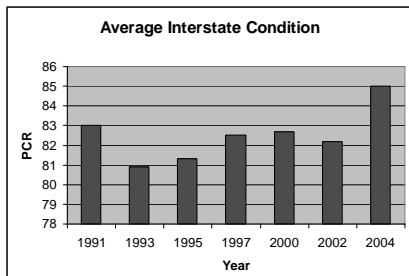


10

Data Uses

Upper Management & Legislative Projections

Average Interstate Condition



11

Data Uses

Project Prioritization
PCR < 72 or rut > .25”
“select the worst first until you run out of money”

Project Optimization
Upcoming Pavement Analysis Package (PAP)
Input \$ and an optimum project list is generated

12


SEAUPG 2004 Conference - Baton Rouge Presented By Randy Battey - Mississippi DOT

MDOT

Data Uses

Product/Process Evaluation

- Polymer Modified HMA
- Reflective Crack Prevention Methods
- SMA
- OGFC
- Performance of Rubblized Sections
- Resin Modified Pavement
- Thin & Ultra-thin Whitetopping



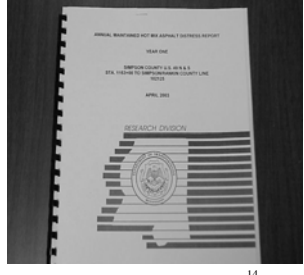
13

MDOT

Data Uses

“Maintained Pavement” Program

- Currently 10 projects
- 5 year, 7 year & 10 year
- 9 asphalt & 1 concrete
- “Clock is ticking” on 5
- Warranty time on the oldest one began May 2002
- MDOT PMS distress deduct concept utilized for annual enforcement

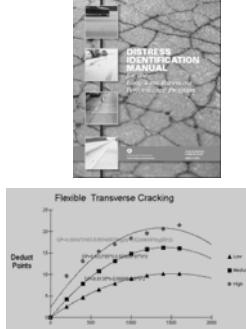


14

MDOT

Warranty Deducts

Alligator Cracking	10.0
Block Cracking	3.0
Reflection Cracking	9.0
Edge Cracking	3.0
Longitudinal Cracking	4.0
Transverse Cracking	3.0
Potholes	5.0
Rutting	5.0
Raveling/Segregation	0.2
Surface Bleeding	0.4
Friction	35



15

MDOT

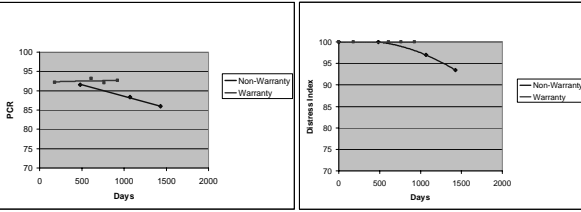
US 49 Simpson County



16

MDOT

Warranty vs. Non-Warranty



PCR vs. Time

Distress Index vs. Time

17

MDOT

Data Uses

Research Projects

- Adoption of 200x Design Guide
- Asphalt Pavement Analyzer (APA) Study
- Polymer Modifier Field Trial

FWD Overlay Recommendations

18

SEAUPG 2004 Conference - Baton Rouge Presented By Randy Battey - Mississippi DOT



Data Uses

Pavement Selection Life Cycle Cost Analysis

for new flexible pavements (4 lane routes):

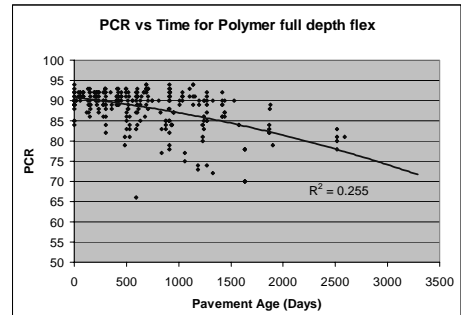
- Overlay #1 is performed after 11.53 years
 - 41.7% of the time 1 lift with no milling
 - 17.6% of the time 1 lift with milling
- Overlay #2 is performed after 9.24 more years
 - 52.3% of the time 2 lifts with milling
 - 32.7% of the time 1 lift with no milling

Based on this for LCCA an overlay is scheduled in Year 12, Year 21, etc.

19



Polymer vs. Time



20



Data Uses

Development of preventative maintenance decision trees & remaining service life curves

General data mining in response to various inquiries

21



MDOT Pavement Management Data

Powerful tool used by the Department to justify & support various decisions

- Operations
- Design
- Planning
- Research
- Public Affairs
- Safety
- Maintenance
- Product Evaluation
- Fiscal Responsibility

22