

Southeast Pavement Preservation Partnership



Florida DOT Pavement Preservation

Richard Hewitt, P.E.
State Construction Pavement Engineer



Asphalt Pavement Preservation

- Hot In Place Recycling
 - Two new Developmental Specifications
 - Dev Spec 324
 - Standard HIP with HMA option
 - Dev Spec 325
 - HIP with HMA placed concurrently
 - 2 projects let with more scheduled
- Micro-Surfacing
 - Dev Spec 335
 - Used on US 98 research project



Asphalt Pavement Preservation

- Crack Sealing
 - Brand new Developmental Specification
 - Dev Spec 305
 - Will be used on an experimental project to evaluate performance
- Full Depth Reclamation
 - University evaluated RAP mixed in Base
 - State Materials Office will perform additional research
 - Acceptable results would lead to Dev Spec & pilot projects



Concrete Pavement Preservation

- Grinding Concrete Pavement
 - Standard Specification 352
- Slab Replacements – Concrete Pavement
 - Standard Specification 353



Pavement Preservation Techniques

- Various pavement preservation techniques have been & will be used on Florida roads
- Florida DOT will continue to develop specifications & evaluate pavement preservation techniques for incorporation into our work program
 - John Fowler (State Design Office) has taken the lead in coordination of specification development and selecting projects



Kentucky Transportation Cabinet Pavement Preservation Update

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Background

- Prior to 2005: Very limited program
- 2005: Poor project selection on micro projects
- 2005-2008: Increased crack sealing
- 2008: Administration change. Average of 1-2 microsurfacing projects per year



Funding (2008 to 2012)

- No additional funds were allocated specifically for pavement preservation.
- Funding primarily carved out of Maintenance budget.



Recent Breakthrough

- Transportation Budget included \$4 million for Preventive Maintenance in both Fiscal Years 2013 and 2014.
- Budget Plan includes \$5 million for Fiscal Years 2015-2018.



Moving Forward

- Cautious but more ambitious growth of program.
- Increase awareness further
- Culture change



Oklahoma Department of Transportation
Pavement Preservation Program (3P)

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Oklahoma Department of Transportation

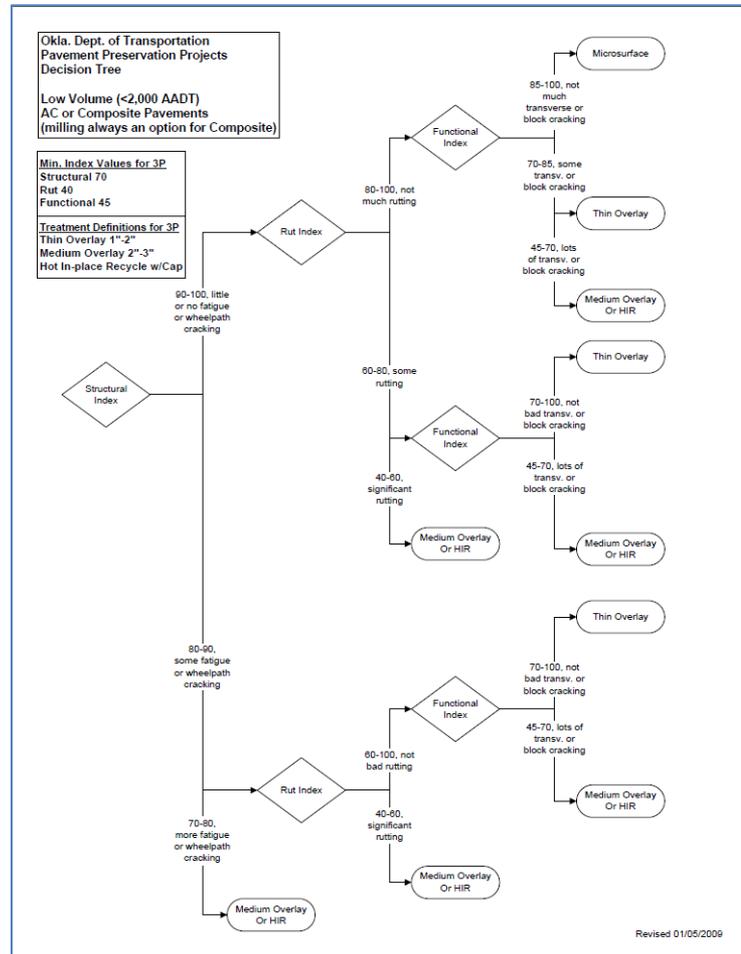
Pavement Preservation Program (3P)

Overview

- 2004: FHWA approved our 3P program to use federal funds for preservation projects
- project selection: decision tree flow charts
- uses pavement condition indexes (Rut, Structural, Functional, Fault, Slab, etc.)
- data collected statewide on a 2-year cycle



3P Flow Chart Example



Oklahoma Department of Transportation

3P Flow Chart Example

Okla. Dept. of Transportation Pavement Preservation Projects Decision Tree

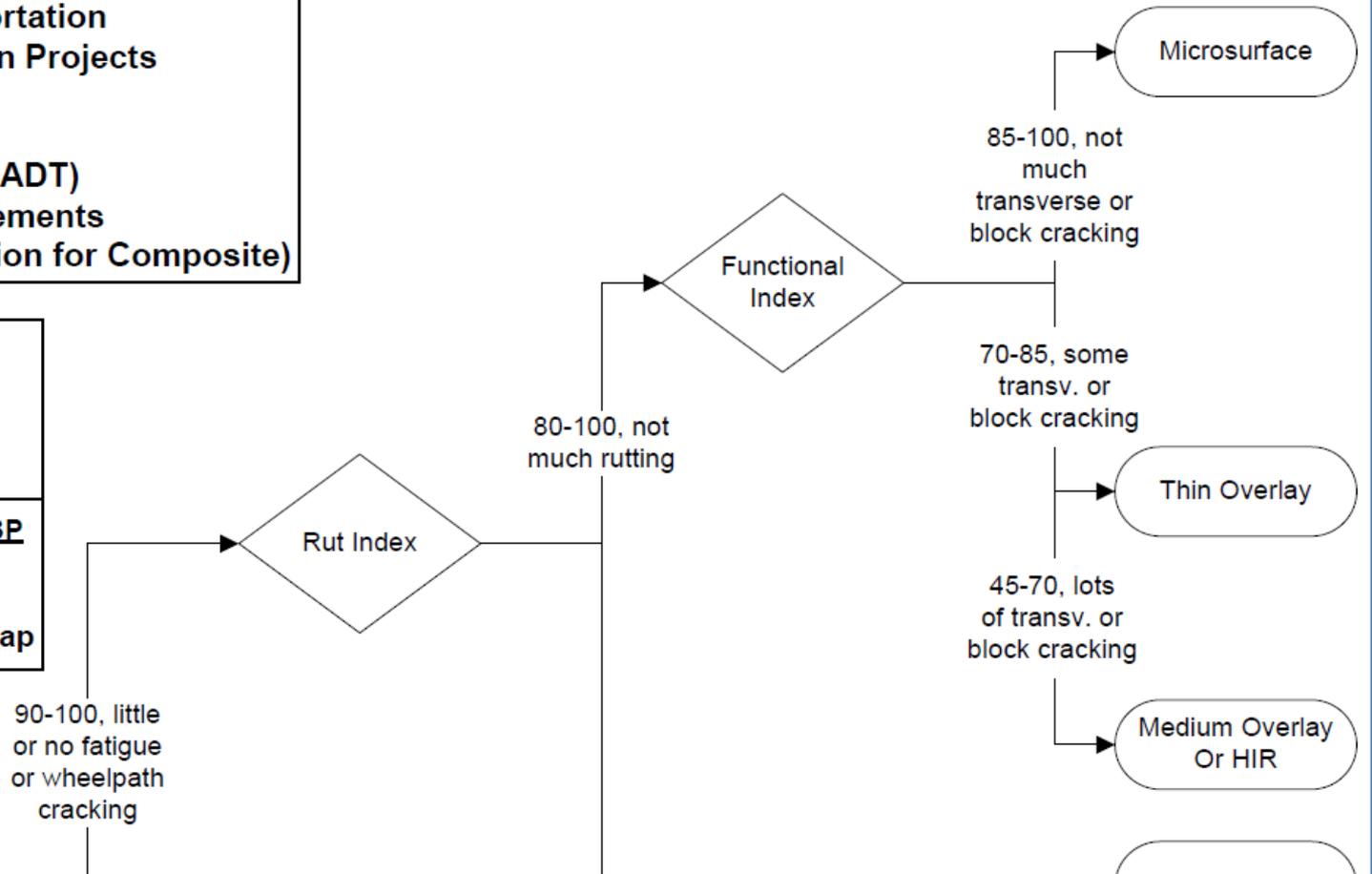
Low Volume (<2,000 AADT)
AC or Composite Pavements
(milling always an option for Composite)

Min. Index Values for 3P

Structural 70
Rut 40
Functional 45

Treatment Definitions for 3P

Thin Overlay 1"-2"
Medium Overlay 2"-3"
Hot In-place Recycle w/Cap



3P Project Selection Flow Charts

9 flow charts for various combinations of...

- pavement types (AC/COMP, JCP, CRCP)
- AADT groups (<2,000, 2,000-10,000, etc.)

Examples of Recommended Treatments:

thin/medium overlay, microsurface, UTBWC, HIR, DBR, diamond grind, slab/joint repair, etc.



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3P Annual Process

- Pavement Management Branch distributes the latest data for highway sections in each of our 8 regions (“Field Divisions”).
- The maintenance engineer in each region develops a new 5-year plan (by refining the previous 5-year plan).

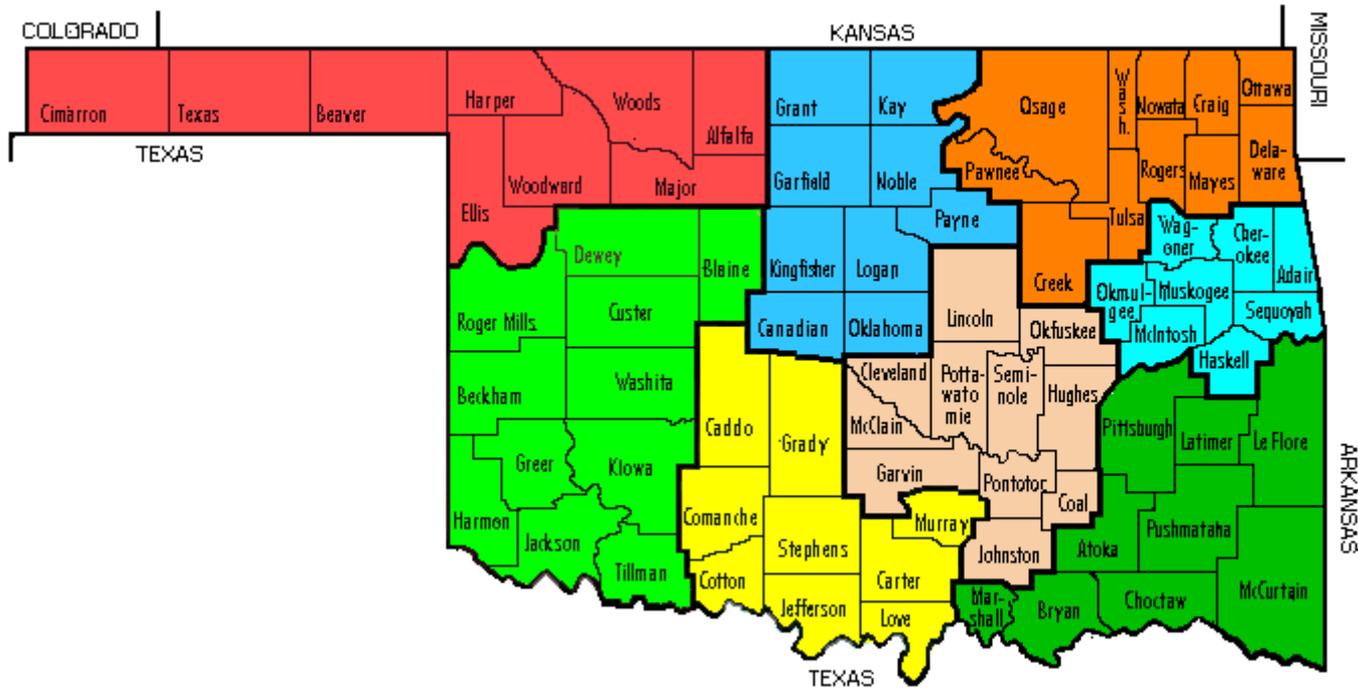


3P Spreadsheet Example

	A	Q	U	X	Y	Z	AA	AB	AC	AD	AJ	A
1	ElementID	AADT	PaveType	Ride_Idx	Rut_Idx	Funct_Idx	Struct_Idx	Fault_Idx	Joint_Idx	Slab_Idx	FlowChartProject	
352	5234 A 5	5709	COMP	59	67	62	57				below minimum index	
353	5234 A 6	5709	AC	69	85	52	49				below minimum index	
354	5235 A 5	5048	AC	98	100	100	100				Microsurface or Chip Seal	
355	5235 A 6	5048	AC	96	82	100	100				Thin Overlay or UTBWC	
356	5237 A 5	920	COMP	94	92	63	48				below minimum index	
357	5504 A 5	19200	COMP	58	51	52	83				below minimum index	
358	5504 B 5	18506	AC	91	84	85	95				Mill & Thin Overlay or HIR	
359	5504 C 5	17123	AC	89	98	100	100				Microsurface	
360	5504 D 5	12818	AC	90	94	85	94				Microsurface	
361	5504 D 6	12818	AC	77	87	55	93				below minimum index	
362	5504 E 5	9139	COMP	96	80	85	95				Thin Overlay or UTBWC	
363	5504 F 5	5618	AC	73	54	73	92				Medium Overlay or HIR	
364	5505 A 5	121428	JPCP	48				69	95	91	pavement design required;	
365	5505 A 6	121428	JPCP	47				73	95	90	pavement design required;	
366	5506 A 5	20084	JPCP	44				83	79	83	DBR, Grind, & Slab Repair	
367	5506 A 6	20084	JPCP	46				82	75	88	DBR, Grind, & Slab Repair	
368	5506 B 5	39269	AC	80	81	66	89				below minimum index	
369	5506 B 6	39269	AC	87	74	70	89				Mill & Medium Overlay or	
370	5507 A 5	141857	JPCP	89				99	98	98	pavement design required;	
371	5507 A 6	141857	JPCP	90				99	97	95	pavement design required;	
372	5507 B 5	105453	JPCP	84				98	96	78	pavement design required;	
373	5507 B 6	105453	JPCP	83				97	92	88	pavement design required;	



ODOT Field Divisions



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3P Limitations

The flow charts can't be used to select a project...

- when a site has major safety issues
- if a condition indexes falls below a minimum threshold (e.g., Structural Index < 70)

Deflection testing and pavement design is required for...

- traffic volume over 40,000 AADT
- Interstates



Thank you for your time!

Questions?

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Oklahoma Department of Transportation

**2012 SOUTHEAST PAVEMENT PRESERVATION
PARTNERSHIP MEETING
(NASHVILLE, TN)**

August 22-30, 2012

Mark E. Woods, P.E.
State Bituminous Engineer
Tennessee Department of Transportation

Why Pavement Preservation?

- ▶ 2008 Bituminous and Fuel Adjustments totaled \$16.9 million (11% of entire program)
- ▶ Lane miles treated (paved for the most part) in 2007 = 1539 lane miles
- ▶ Lane miles treated in 2008 = 1400 lane miles (860 w/hot mix, 525 w/ mostly micro)

State DOT Requirements for a Successful Program

- ▶ Champion within the DOT
- ▶ Upper Management Support (at least to the Chief Engineer level)
- ▶ Freedom to let those responsible try new things
- ▶ FHWA Support
- ▶ Monitoring program
- ▶ Consistency
- ▶ Ability and Patience to withstand criticism

Industry Requirements for a Successful Program

- ▶ Continue Knocking on Doors and Telling Your Story
- ▶ Competition
- ▶ Competitive Prices
- ▶ **A QUALITY PRODUCT**

Alternate Bid Contracts

In the March 2009 contract letting, TDOT announced 9 contracts to be alternate bid between 411TL thin lift asphalt and micro-surface.

- 8 contracts: 45 lb/yd² HMA thin lift vs. 22 lb/yd² micro
- 1 contract: 65 lb/yd² HMA thin lift vs. 36 lb/yd² micro

Alternate items were quantified by the square yard.

Alternate Bid Contracts

March 2009

County	Square Yards	Lowest Unit Price		Application Rate (lbs/yd ²)		L (mi)	Award	Approx cost/ton	
		PG64 411TL	Micro	PG64 411TL	Micro			PG64 411TL	Micro
Clairborne	64,533	2.26	2.26	45	22	4.4	HMA	100.44	205.45
Grundy	78,318	2.06	2.27	45	22	4.8	Micro	91.56	206.36
Hardin	82,368	2.45	2.27	65	36	6.54	HMA	75.38	126.11
Lincoln	201,800	1.91	2.01	45	22	13.76	HMA	84.89	182.73
Macon	78,892	2.20	2.00	45	22	6.19	HMA	97.78	181.82
Overton	64,218	2.5	2.38	45	22	4.12	HMA	111.11	216.36
Sevier	46,206	1.9	2.24	45	22	3.52	HMA	84.44	203.64
Stewart	84,480	1.53	2.27	45	22	6	HMA	68.00	206.36
Warren	98,462	2.05	2.02	45	22	6.62	Micro	91.11	183.64

- 55.95 center line miles total
- 2009 AUP for 411TL by ton: \$79.60
- Approx. 2009 AUP for micro-surface by ton: \$187

Alternate Bid Contracts

March 2010

County	Square Yards	Lowest Unit Price		Application Rate (lbs/yd ²)		L (mi)	Award	Approx cost/ton	
		PG64 411TL	Micro	PG64 411TL	Micro			PG64 411TL	Micro
Bedford	200,831	-	2.42	85	32	12.8	Micro	-	151.25
Hawkins	349,395	3.09	1.81	65	22	24.54	Micro	95.08	164.55

- 37.34 miles total
- 2010 AUP for 411TL by ton: \$74.28
- Approx. 2010 AUP for micro-surface by ton: \$180

Thin Lift and Micro Quantities

Description	Unit	Total Quantity				
		2006	2007	2008	2009	2010
ACS MIX(PG64-22) GRADING D	TON	457369	480619	305301.6	492664.6	279376
ACS MIX(PG64-22) THIN LIFT CS ASPHALT	S.Y.				698574	-
ACS MIX(PG64-22) THIN LIFT CS ASPHALT	TON			5249	13359	9515
ACS MIX(PG76-22) THIN LIFT CS ASPHALT	TON					132
ACS MIX(PG64-22) THIN LIFT D ASPHALT	TON				40556	26341
ACS MIX(PG70-22) THIN LIFT D ASPHALT	TON			11355	16660	14789
EMULSIFIED ASPHALT FOR MICRO-SURFACING	TON	297	2029	3388	2842	2394
AGGREGATE FOR MICRO SURFACING	TON	2462	16763	28189	23701	19899
MICRO SURFACING	S.Y.				176780	837631

As of November 2010, over 300 centerline miles placed of 411TL and 411TLD placed.

Chip Seals

- ▶ In 2010, 9,452 aggregate tons were awarded for chip seal contracts.
- ▶ In 2011, 22,000 tons were awarded.
- ▶ 8,647 tons have been awarded for 2012 as of August.
 - All 2012 awarded chip seal tons were designed to be utilized as a crack relief layer and then covered with another treatment (HMA, micro).

Other techniques/ comments

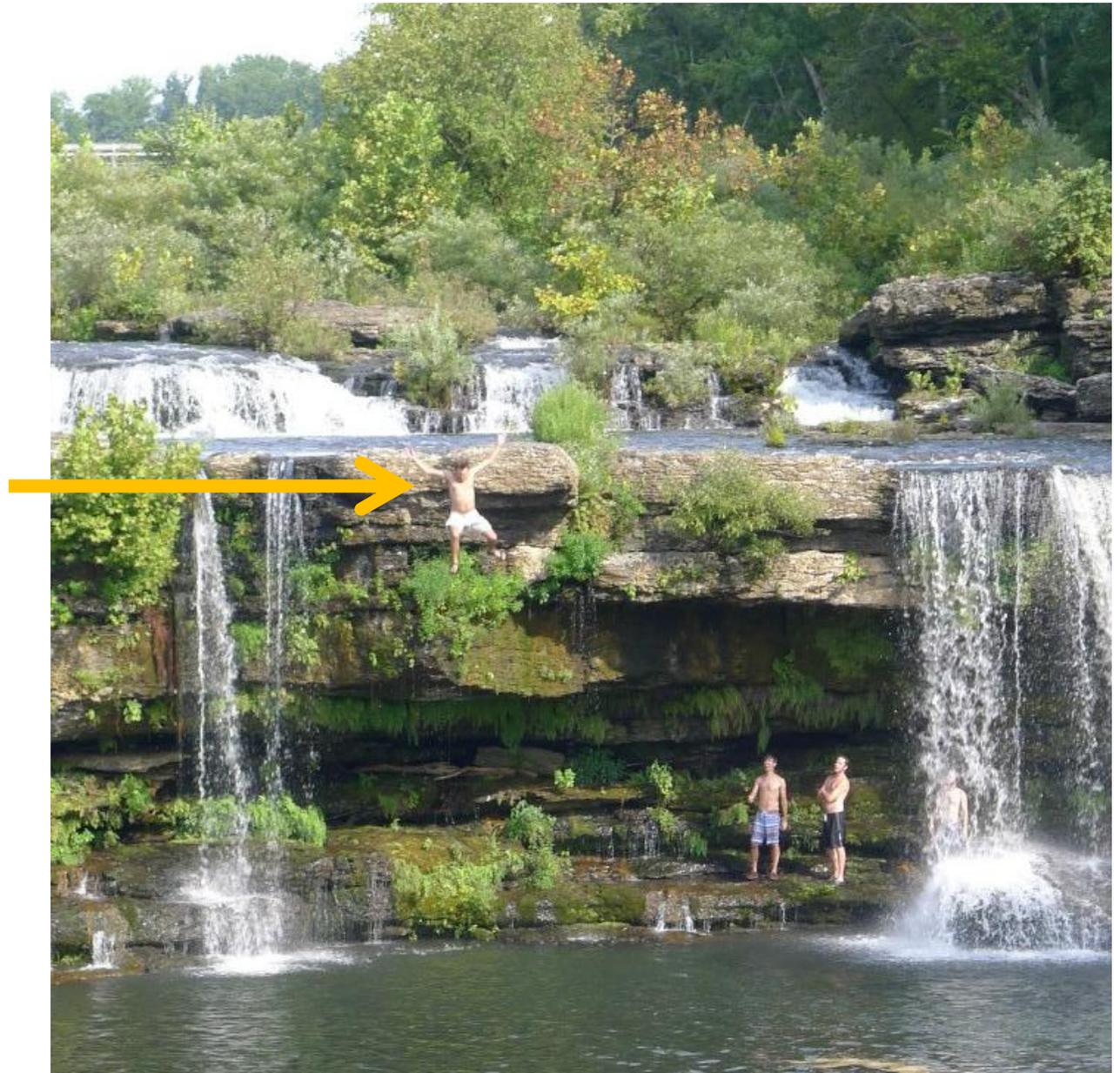
- ▶ 45 lbs/yd² *too* thin!
- ▶ Longitudinal joint sealing
- ▶ Fog sealing shoulders
- ▶ 1st Full Depth Reclamation job this year
- ▶ Support from TDOT upper management has been critical
- ▶ Program has been very successful
- ▶ UT deterioration curves “decision tree” study being put to use.

“Change”

- ▶ "The greatest danger in times of turbulence is not the turbulence; it is to act with yesterday's logic."
— Peter Drucker
- ▶ "If you want to make enemies, try to change something." — Woodrow Wilson
- ▶ "There is a certain relief in change, even though it be from bad to worse; as I have found in traveling in a stagecoach, that it often a comfort to shift one's position and be bruised in a new place." — Washington Irving *Tales of a Traveler* (1824)

Thanks!

*Just do
it!*



Monitoring the Implementation of Preservation Targets for VDOT Network

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Virginia Department of Transportation



Monitoring Network Targets

- Process for establishing District targets
 - Foster accountability and transparency
- Ensuring reasonable targets are established each year
 - Set performance/paving targets using objective information
 - Current condition & predicted deterioration
 - District budget allocation & up-to-date unit costs
- Creating process to monitor project development & execution
 - Verify adequacy of planned work to meet established targets
 - Provide opportunity for course correction during planning process
 - Track planned work through completion
 - Check treatment selection against location's identified needs

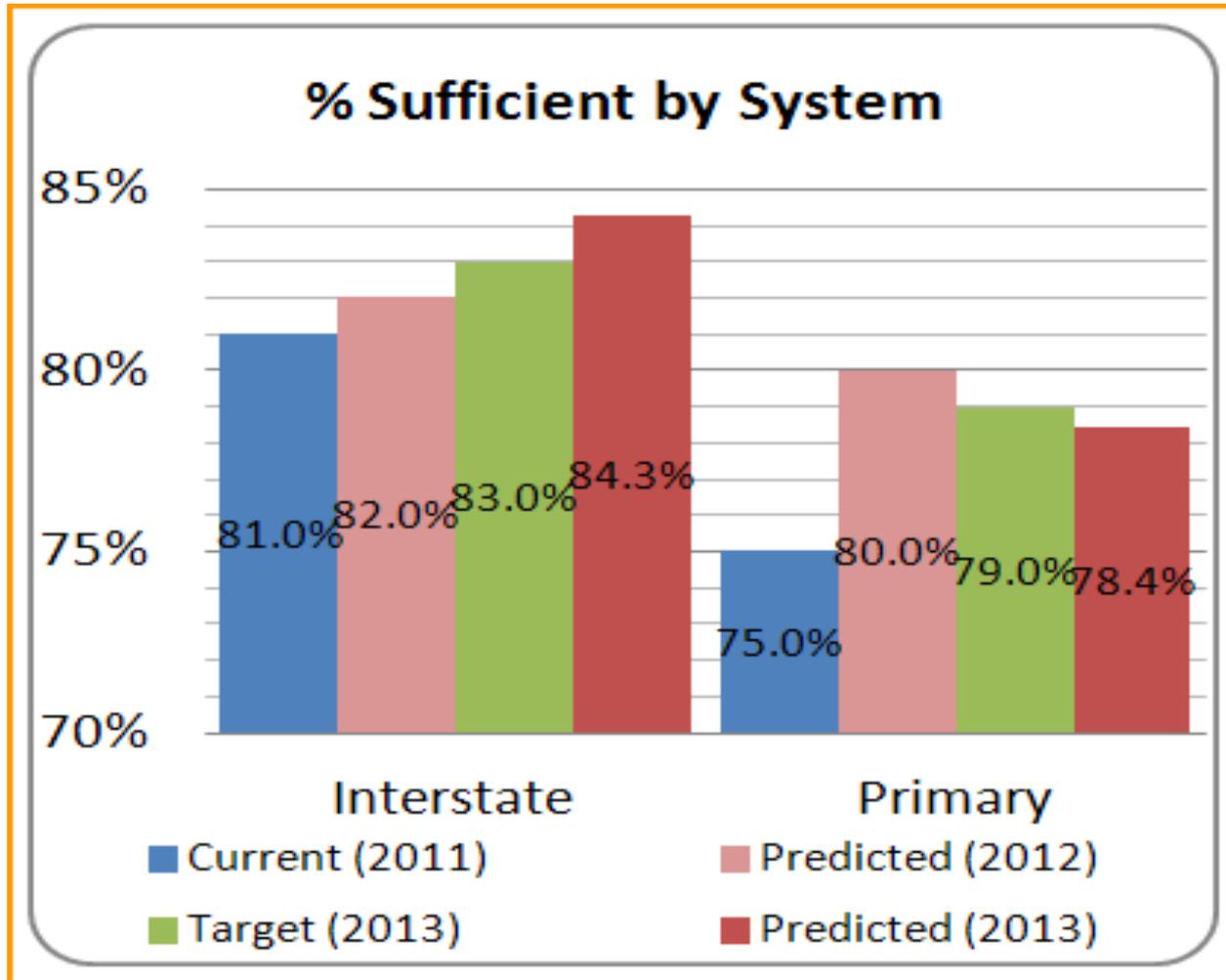


Targets Set by Optimization Analysis

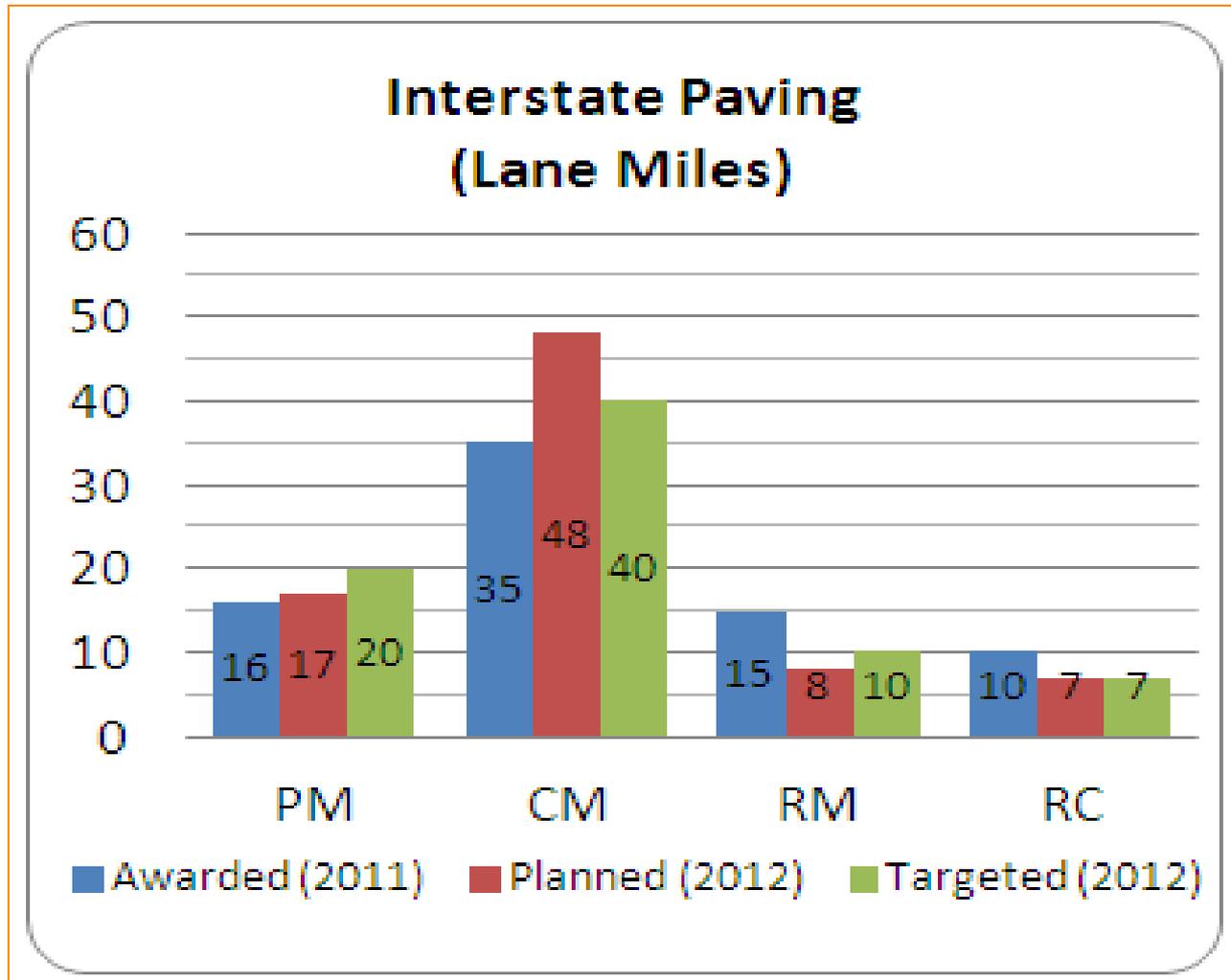
- Pavement Management System to optimize investment of IS & PR pavement allocation, establishes:
 - Baseline performance targets (% Sufficient)
 - Baseline paving targets (Lane Miles)
 - Preventive (PM): Crack sealing, Patching, chip seal, etc.
 - Corrective (CM): 1"-2" overlay
 - Restorative (RM): >2" overlay
 - Reconstruction / Major Rehab (RC): > 2 lift system



Network Condition and Targets



Paving Targets



Benefits of Targeted Preservation

- Transparency
 - Clearly defined performance measures
 - Objective methodology for assessing performance
- Uniformity in Approach
 - Strengthen link between budgeting, program development and execution
 - Traceability between PMS needs analysis and actual work planned/completed
- Accountability
 - Establish achievable performance measures based on funding and condition
 - Analyze planned work to provide opportunities for course correction
 - Track planned work through completion
- Targeted Investment
 - Maximize benefits of limited investment
 - Select the Right treatment, at the Right place, at the Right time



Implementation of Pavement Preservation and Alternate Methods for WV

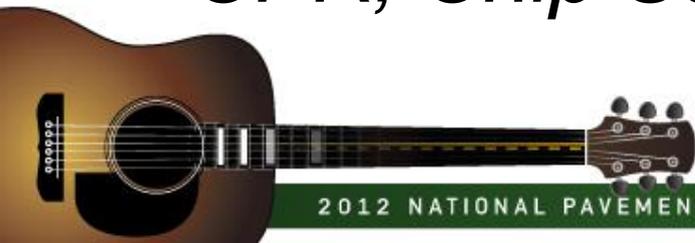
Thomas J. Medvick, PE
WVDOH
Pavement Engineer

*National Pavement Preservation Conference
Renaissance Nashville Hotel – Nashville , TN
August 27, 2012*



Changes to the 2012 Resurfacing Program

- Meeting with Management November 8, 2011
 - Cost increases with traditional methods
 - MAP 21
- Identify projects for implementation of *Micro, CIR, FDR, UTBWC, HPTO*
- Continue advancement of other methods - *CPR, Chip Seals, use of modified binders*



Changes to the 2012 Resurfacing Program

- Approximately three such projects per each of 10 Districts
- Asked to stay within our existing programmed projects
 - Designers were already turning in PSE packets for projects
- Exhaustive field reviews with the districts to select projects based on condition-PMS and PSR



Project Tally - \$30 million

Dist.	Micro	Chip SI	UTBW C	HPTO	CIR	FDR	Mod	CPR
1	3							1
2	2						1	
3				1	1			
4		3 (hmacs and ss)			1	1	1	
5	2							
6	3 w/hma					1		1
7							2	1(pp)
8		2 w/hma						1
9	1			1				
10	1		1	1				1
Total	12	5	0	3	2	2	4	5

Implementation-Specs

- Modify existing specs for
 - Micro (3 yr warranty)
 - FDR (one project)
 - HPTO (3 yr warranty)
- Wrote micromilling spec
- Wrote CIR spec - *emulsion and other additives*
- Still need UTBWC
- Continue development of CPR *specs-partial depth repair*



Implementation-Training, Guidance, Marketing

- Utilized existing training seminars for Construction, Materials, Engineering Personnel
 - Industry Participation
- Guidance info for project designers
- Continue advancement of the Pavement Management System - 5 yrs
- Have begun some radio and newspaper discussion



Implementation-Get Projects Out

- Slow - but basically everything has been bid except for the CIR and FDR work and some HPTO
- Hoping for first CIR to be let on 9-11-12
- Ready to start work on several micro projects during month of September
- *Extensive* evaluation of projects before and after construction-distress surveys, skid, GPR, FWD



2013 and Beyond

- Continue building on current year
- Monitor 2012 projects
- Targeting a similar amount for 2013, but may be less
- Want to see local industry start to develop some of these skills
- Develop a more inclusive Preservation PO
- Continue education and marketing – 3 yr *warranty micro and HPTO performing well!!*

