Preserving Our Pavement Investment

49th Annual Illinois Bituminous Paving Conference

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National Center for Pavement Preservation

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"Definition"

Pavement Preservation
is
Applied Asset Management

- ✓ Combines Engineering,
- ✓ Business,
- ✓ Economic Theory

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- Routine Maintenance
- Preventive Maintenance
- Minor Rehabilitation

- Sustainable Financing
- Long-Term Network Planning
- Cost-Effective Decision Making
- Pavement Management System
- Optimization

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"Definition"

Pavement preservation is a program employing a network level, long-term strategy that enhances pavement performance by using an integrated, cost-effective set of practices that extend pavement life, improve safety and meet motorist expectations.

Flexible Pavement Treatments

- ✓ Crack Filling
- ✓ Chip Seals
- ✓ Fog Seals
- ✓ Slurry Seals
- ✓ Micro-surfacing
- ✓ Ultra-thin Overlays
- ✓ Profile Milling
- ✓ Crack Sealing
- ✓ Cape Seals
- ✓ Sand Seals
- ✓ Scrub Seals
- ✓ Bonded Wearing Course
- ✓ Thin Overlays
- ✓ Mill & Resurface

….and many others!

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Pavement Preservation is *NOT* about Maintenance as Usual

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Typical Life Extensions
(Years)

Treatment	Good Condition (PCI=80)	Fair Condition (PCI=60)	Poor Condition (PCI=40)
Fog Seal	1 - 3	0 - 1	0
Chip Seal	4 - 10	3 - 5	0 - 3
Slurry Seal	3 – 5	1 - 3	0 - 1
Micro-Surfacing	4 – 8	3 - 5	1 - 4
Thin HMA	4 - 10	3 - 7	2 - 4

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Pavement Preservation
Technical Appraisal

Agency Programs

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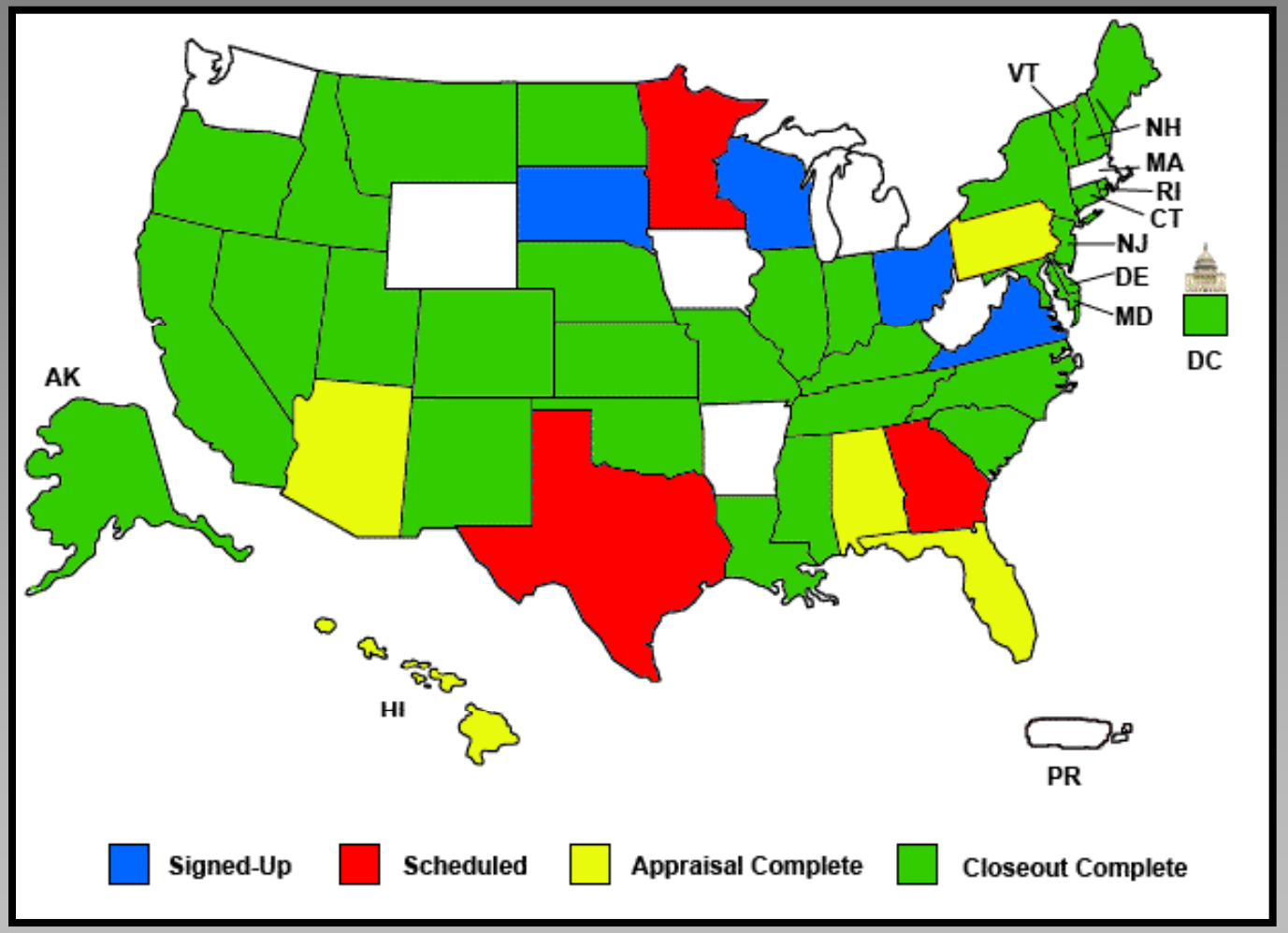
Appraisal Status Map



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What is it ?

- ✓Develop guidelines for improvement
- ✓Agency self-assessment

- ✓Provide state appraisal results
- ✓Identify national trends
- ✓Comparisons of agency results to national or regional trends

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Treatment Toolbox

What treatments are currently used in the agency's preservation "toolbox"?:

(Agencies may choose more than one)

View the Comments for this Question

Treatment	Percent	Treatment	Percent	Treatment	Percent
None	0	Full Depth Repair	43	Rejuvenators	17
Cape Seals	6	Joint Re/Sealing	43	Scrub Seals	3
Chip Seals	86	Microsurfacing	77	Slab Replacement	6
Crack Filling	69	Mill & Resurfacing	54	Slurry Seals	40
Crack Sealing	63	Novachip ®	34	Spall Repair	14
Diamond Grinding	54	Other	37	Recycling - Cold In-place	23
Dowel Bar Retrofits	40	Overlays - HMA	97	Recycling - Hot In-place	34
Flush Seals	3	Partial Depth Repair	23		
Fog Seals	31	Polymer Surface Treatments	9		

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Greatest Potential for Success

What pavement preservation treatment has the greatest potential for success?:

View the Comments for this Question

Treatment	Percent	Treatment	Percent	Treatment	Percent
None	29	Flush Seals	0	Polymer Surface Treatments	3
Cape Seals	0	Fog Seals	3	Rejuvinators	0
Chip Seals	37	Full Depth Repair	0	Scrub Seals	0
Corner Break Repair	0	Joint Sealing	0	Slab Replacement	0
Crack Filling	11	Microsurfacing	0	Slurry Seals	0
Crack Sealing	3	Mill & Resurfacing	3	Spall Repair	0
Diamond Grinding	0	HMA Overlays	6	Surface CIR Recycling	0
Dowel Bar Retrofits	0	Partial Depth Repair	3	Surface HIR Recycling	11
Other	0	Novachip	0		

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Chip Seal - 5 months old

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Greatest Potential for Failure

What pavement preservation treatment has the greatest potential for failure?:

View the Comments for this Question

Treatment	Percent	Treatment	Percent	Treatment	Percent
None	11	Flush Seals	0	Polymer Surface Treatments	0
Cape Seals	0	Fog Seals	3	Rejuvinators	0
Chip Seals	43	Full Depth Repair	0	Scrub Seals	3
Corner Break Repair	0	Joint Sealing	0	Slab Replacement	0
Crack Filling	6	Microsurfacing	20	Slurry Seals	3
Crack Sealing	0	Mill & Resurfacing	0	Spall Repair	0
Diamond Grinding	0	HMA Overlays	0	Surface CIR Recycling	0
Dowel Bar Retrofits	0	Partial Depth Repair	3	Surface HIR Recycling	6
Other	3	Novachip	0		

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Network Evaluation

Quick Assessment Method

A Quick Check of Your Highway Network Health

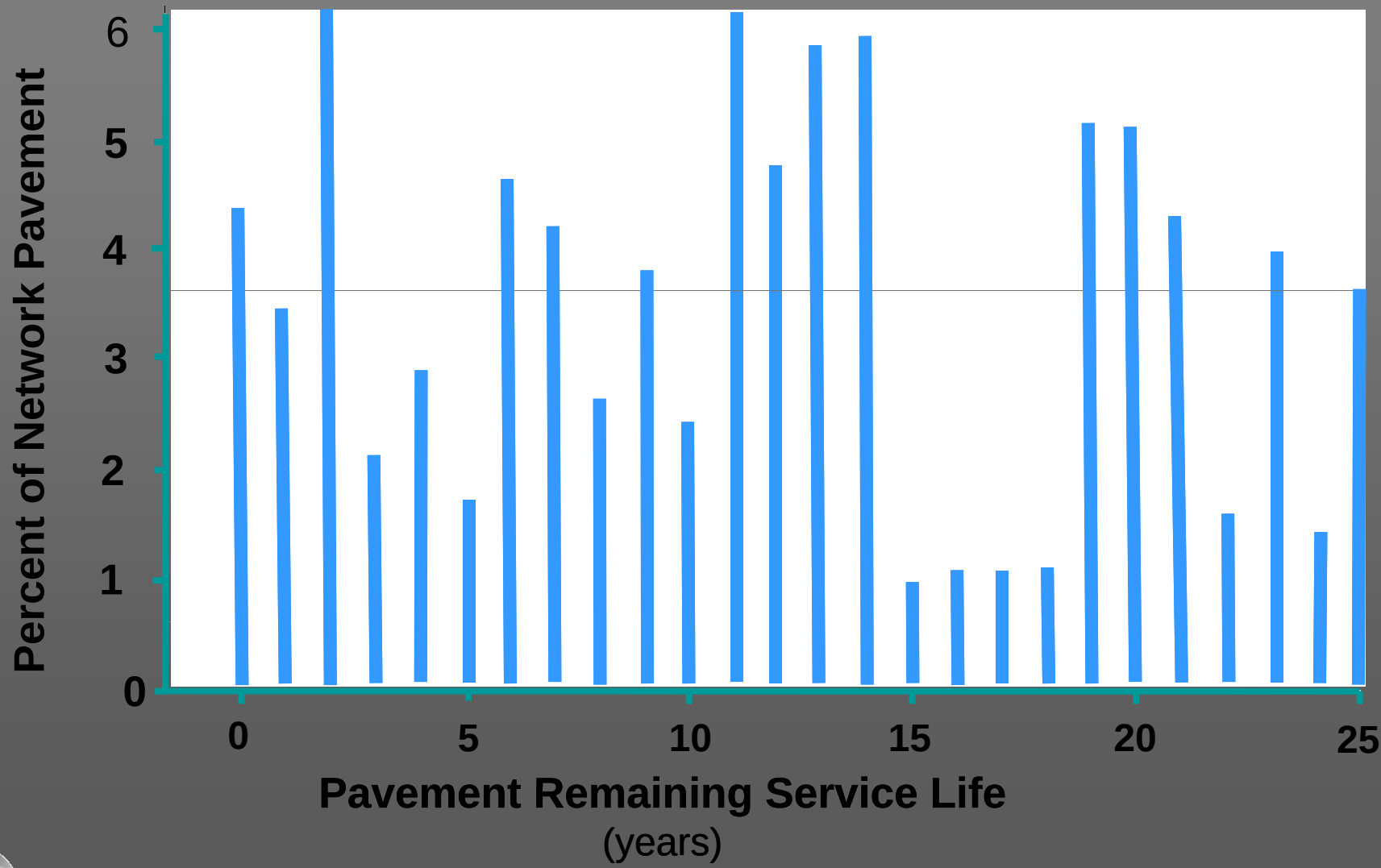
by Larry Galehouse, Director,
National Center for Pavement Preservation
and
Jim Sorenson, Team Leader,
FHWA Office of Asset Management

Example:

Agency Highway Network

Network Size = 4,356 lane miles

Current Condition



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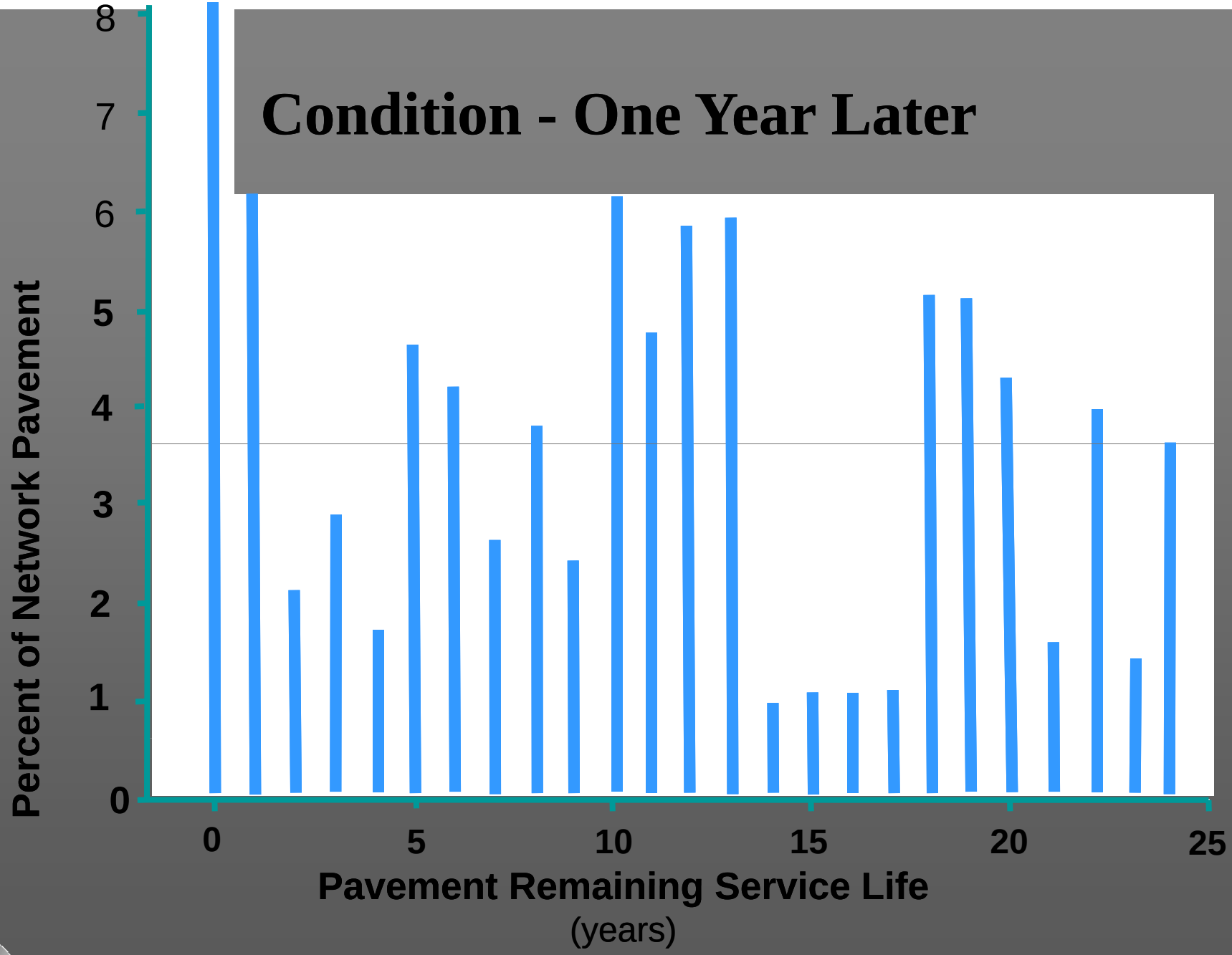
Condition - One Year Later



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Agency Highway Network = 4,356 lane miles

Each year the network will lose

4,356 lane mile years

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Reconstruction Evaluation

Project	Lane Miles	Design Life	Lane Mile Years	Lane Mile Costs	Total Cost
#1	22	25 yrs	550	$463,425	$10,195,350
#2	18	30 yrs	540	$556,110	$10,009,980
Total	=		1,090		$20,205,330

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Rehabilitation Evaluation

Project	Lane Miles	Design Life	Lane Mile Years	Lane Mile Costs	Total Cost
#3	22	18 yrs	396	$263,268	$5,791,896
#4	28	15 yrs	420	$219,390	$6,142,920
#5	32	12 yrs	384	$115,848	$3,707,136
Total	=		1,200		$15,641,952

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Pavement Preservation Evaluation

Project	Lane Miles	Life Ext.	Lane Mile Years	Lane Mile Costs	Total Cost
#101	12	2 yrs	24	$2,562	$30,744
#102	22	3 yrs	66	$7,743	$170,346
#103	26	5 yrs	130	$13,980	$363,480
#104	16	7 yrs	112	$29,750	$476,000
#105	8	10 yrs	80	$54,410	$435,280
Total	=		412		$1,475,850

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Network Trend

Required: 4,356 lane mile years

Programmed Activity	Lane Mile Years	Total Cost
Reconstruction $$$$ *(40 lane miles)*	**1,090**	**$20,205,330**
Rehabilitation $$$ *(82 lane miles)*	**1,200**	**$15,641,952**
Pavement Preservation $ *(84 lane miles)*	**412**	**$1,475,850**
Total =	**2,702**	**$37,323,132**

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Network Needs Summary

Network Size *(needs)*	**4,356 *(lane mile years)***
Programmed Activity	**2,702 *(lane mile years)***
Deficit =	**1,654 *(lane mile years)***

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Steps to Address Minimal Needs

Required: 4,356 lane mile years

Programmed Activity	Lane Mile Years
Reconstruction *(31 lan* *(40 lane*	*820* ~~**1,090**~~
Rehabilit *les)* *les)*	*1,125* ~~**1,200**~~
Pavem reservation *(84 lane miles)*	**412**
Total =	*2,357* ~~**2,702**~~

Savings = $ 6.1 M

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Program Modification

Savings = $ 6,101,940 Needs = 1,999 LMY

Preservation Treatment	*Life Ext*	*Lane Miles*	*Lane Mile Years*	*Total Cost*
Concrete Reseal	**4 yrs**	**31**	**124**	**$979,600**
Thin HMA Overlay	**10 yrs**	**16**	**160**	**$870,560**
Micro-surfacing	**7 yrs**	**44**	**308**	**$1,309,000**
Chip Seal	**5 yrs**	**79**	**395**	**$1,104,420**
Crack Seal	**2 yrs**	**506**	**1,012**	**$1,296,372**
			1,999	**$5,559,952**

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Revised Network Strategy

Required: 4,356 lane mile years

Programmed Activity	Lane Mile Years
Reconstruction *(31 lane miles)*	*820*
Rehabilitation *(77 lane miles)*	*1,125*
Pavement Preservation *(2,083 lane miles)*	*2,411*
Total =	**4,356**

Net Savings = $ 541,988

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Quick Assessment Method

- **Establishes Network Need**
- **Evaluates**
  - Reconstruction
  - Rehabilitation
  - Preventive Maintenance
- **Incorporates**
  - Design Life
  - Life Extensions

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Questions ?

Thank You !