



Illinois' Development & Implementation of Asset Management



Illinois Department
of Transportation



Illinois Facts

1818 - 2018

- 1,892 Interstate Centerline miles
- 11,427 Other Marked Routes Centerline Miles
- 2,580 Unmarked Route Centerline miles
- Morton, IL is the “pumpkin capital of the world”
- Illinois is home to the Twinkie, Ice Cream Sundae and the Horseshoe



Outline

- TAMP Development
 - Looking back on IDOT's previous practices
 - The change to pavement preservation
 - The New Bar
 - Expectations with new practices
- TAMP Implementation
 - Data
 - Tools
 - Guidance
 - Processes
- Questions



TAMP Development

Katie Zimmerman

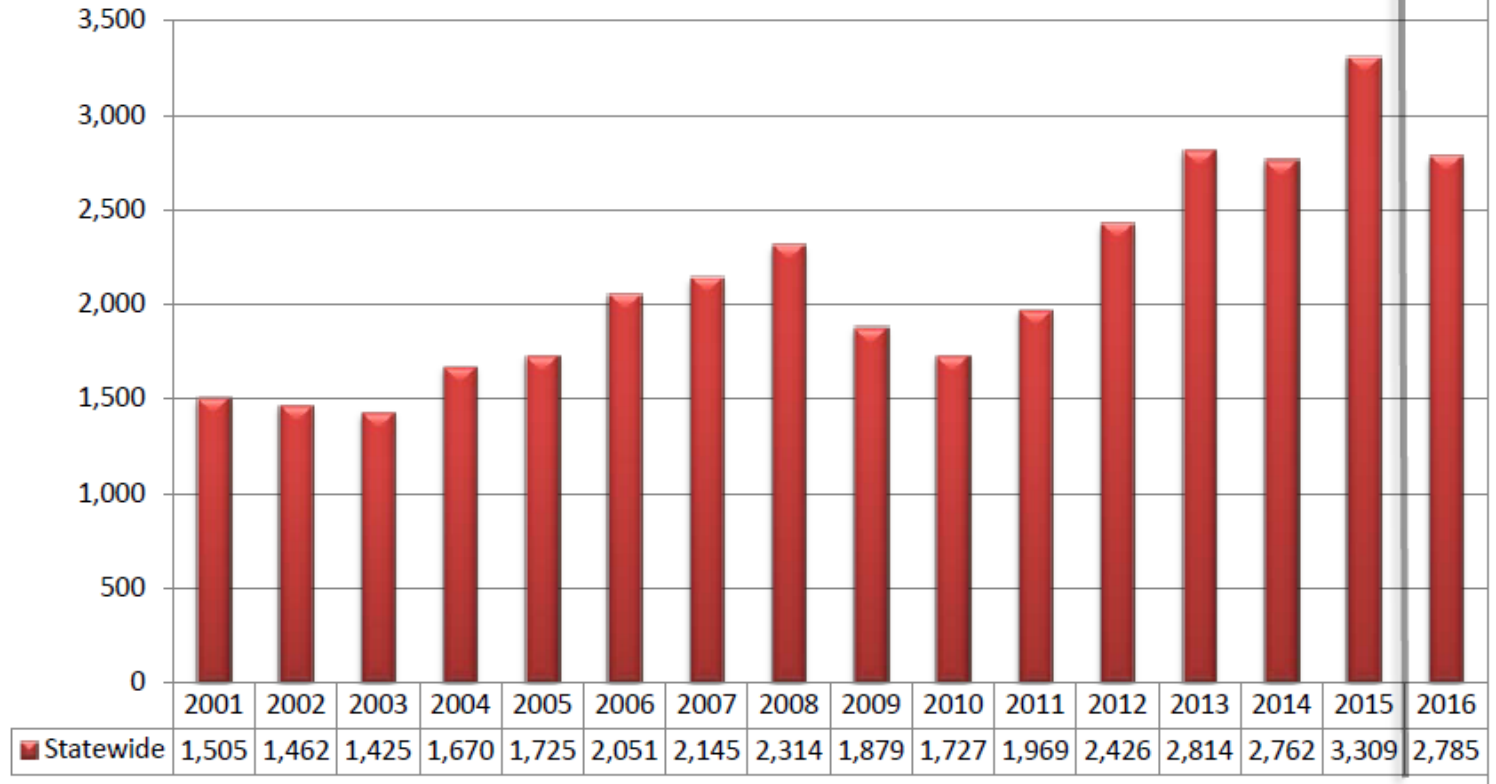
Applied Pavement Technology, Inc.



IDOT's Historical Approach

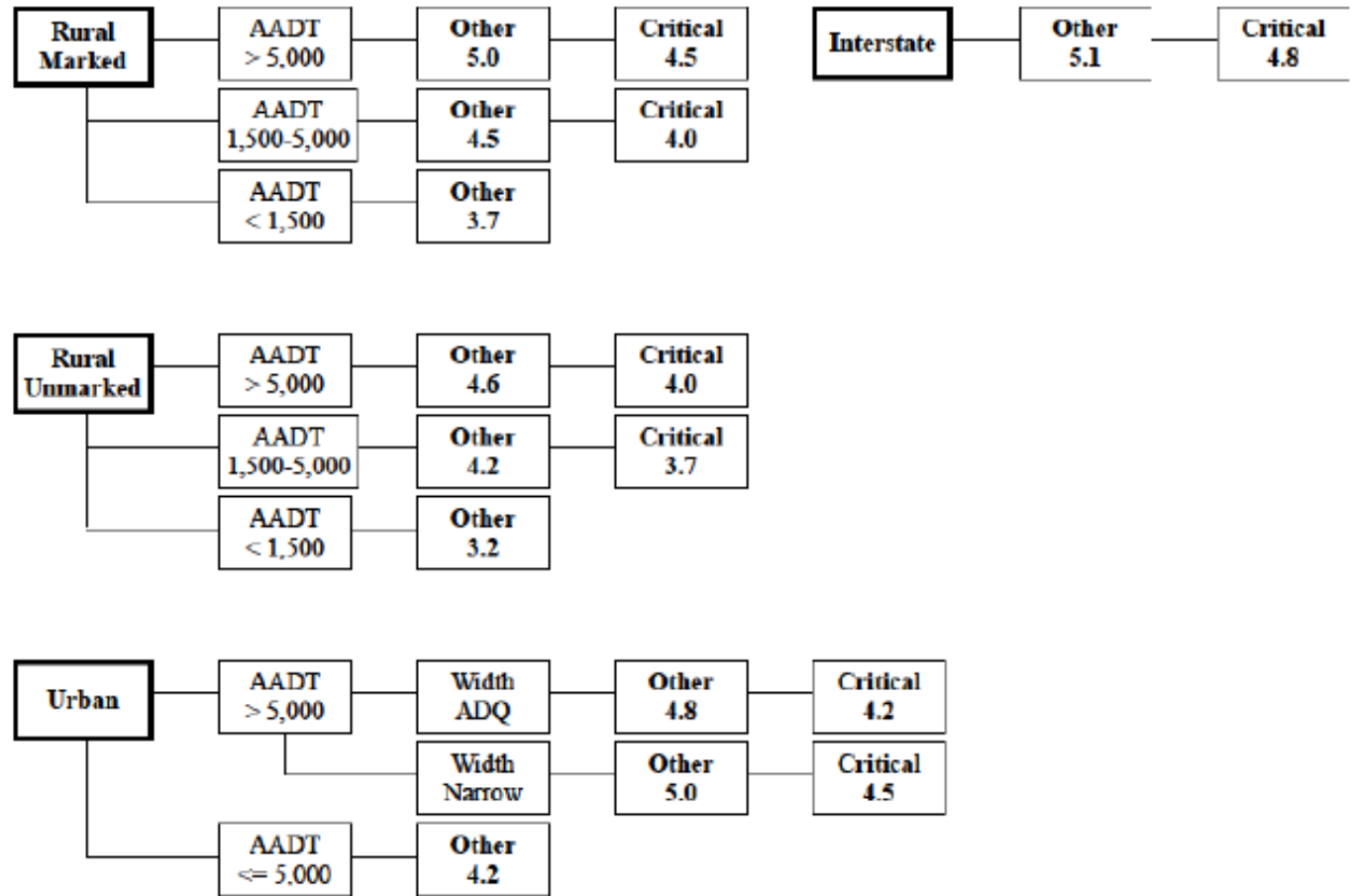
- Used performance measures focused on Backlog (repairs needed now or past due) & Accruing Backlog (will be a need in 6 years)
- Targeted repairs on deteriorated pavements
- Reported number of miles in Backlog condition
- Set targets that were unachievable

Historical Needs (Backlog) Mileage



Backlog Definitions

- Based on CRS values (Condition Rating Survey) and traffic levels for each system
- CRS is a 0 to 9.0 scale, with ratings < 4.5 representing a Poor condition
- Other Backlog = current need
- Critical Backlog = past due need





IDOT's Asset Management Activities Are **Raising the Bar** by Taking Advantage Of:

- ✓ New technology
- ✓ New ways of doing business
- ✓ Improved transparency and accountability

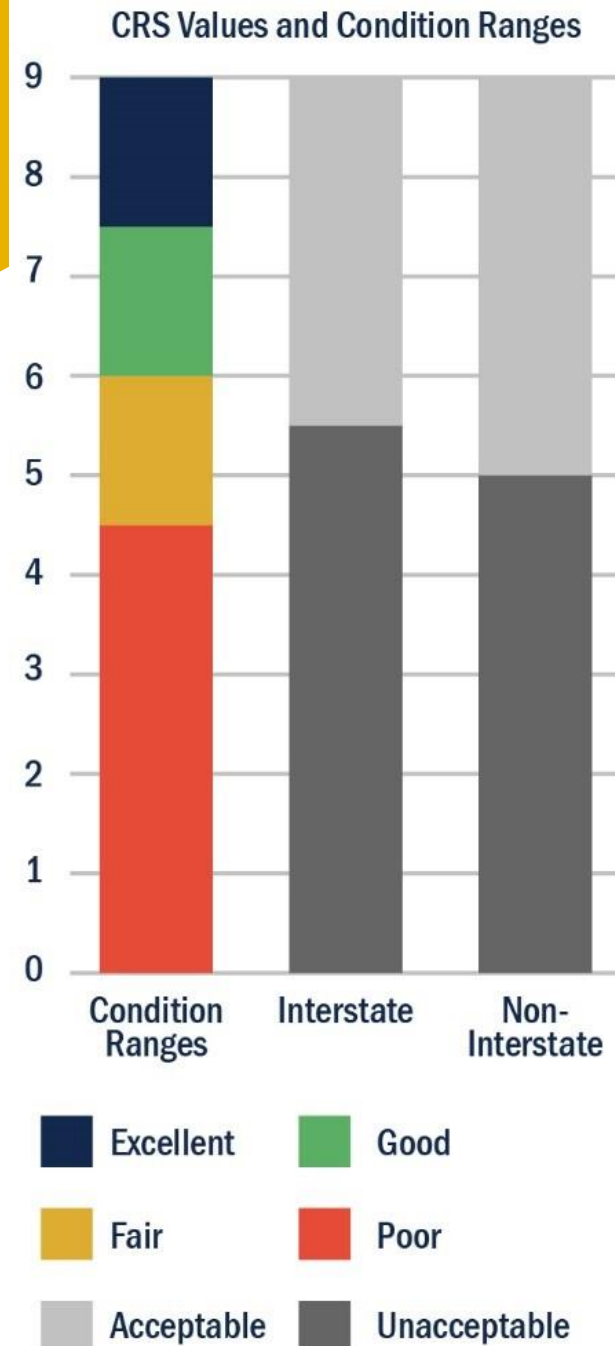
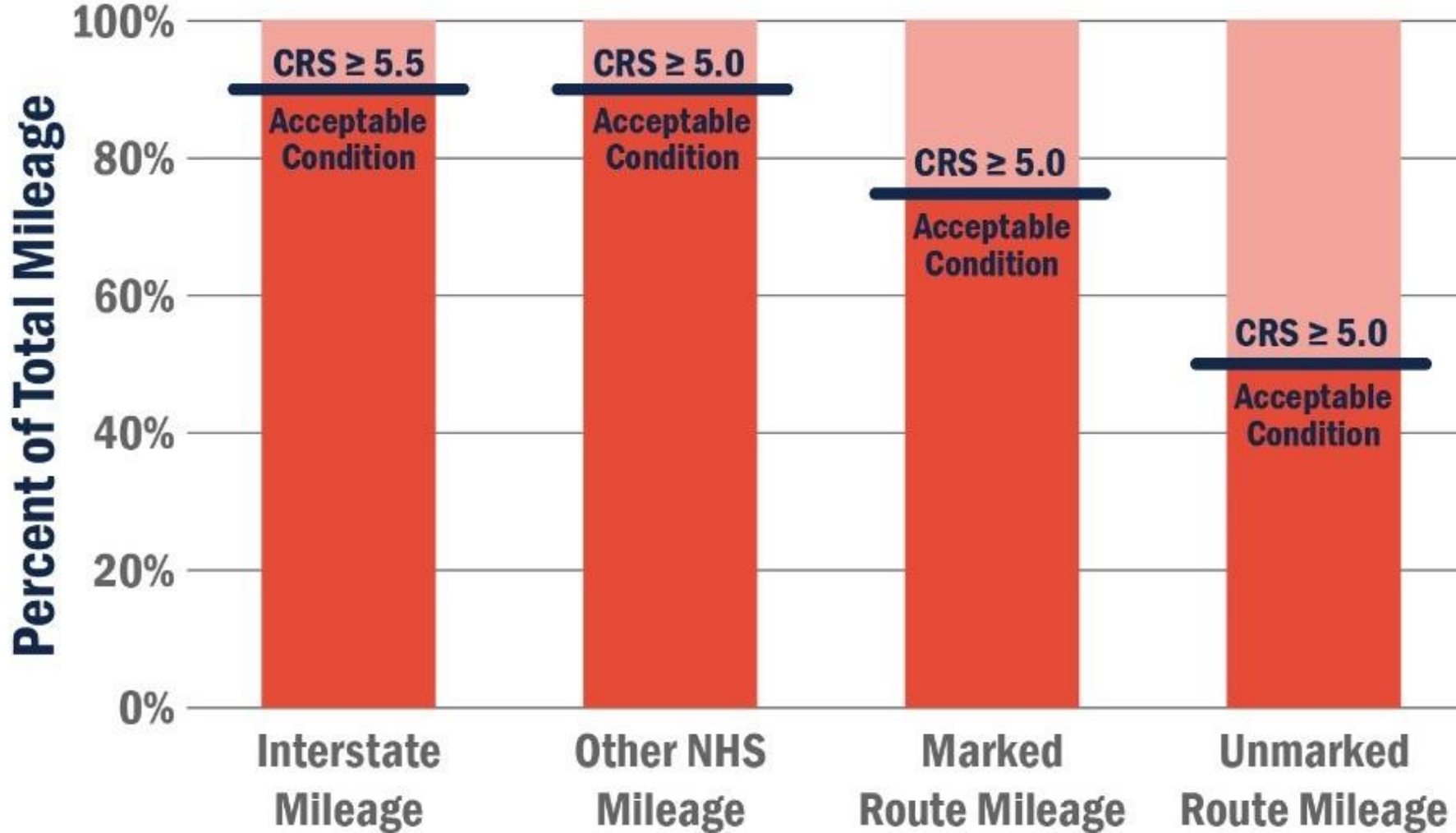


by **extending** the useful lives of existing assets while **reducing** long-term preservation costs.

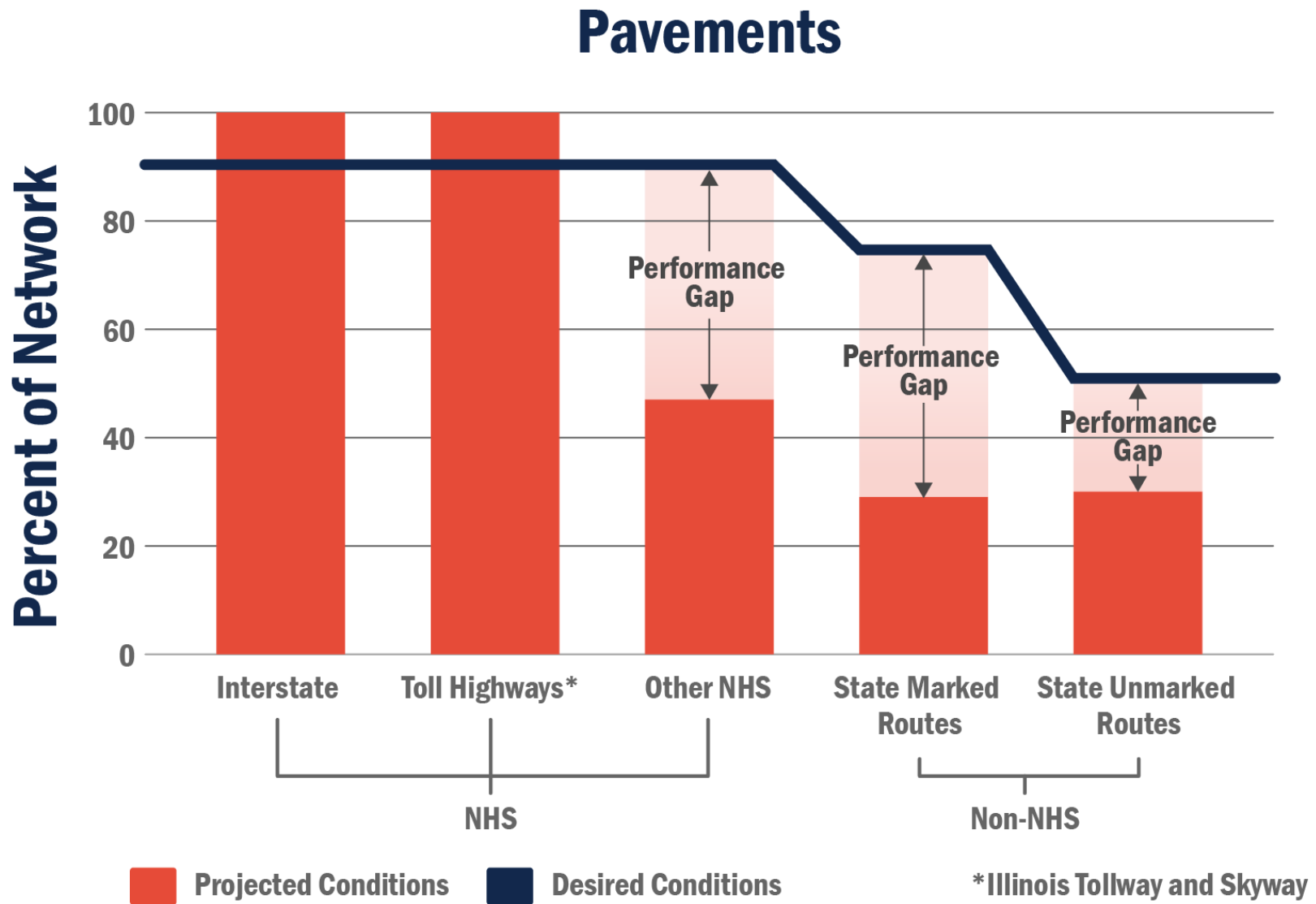
IDOT's TAM Goal Is To Raise the Bar



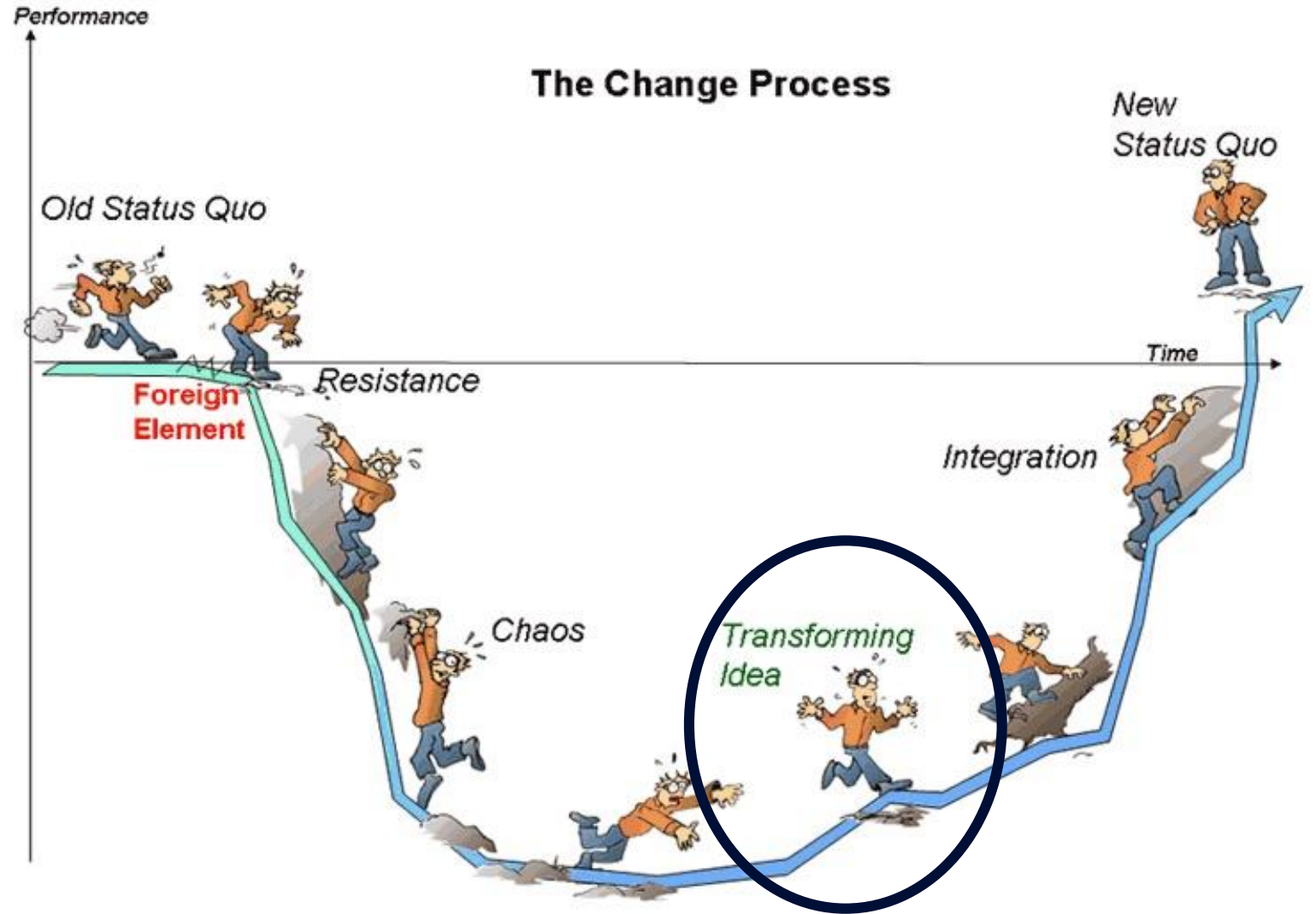
Desired State of Acceptable Condition



Predicted 10-Year Performance



IDOT's Success Depends on Implementation



This Photo by Unknown Author is licensed under [CC BY](#)



TAMP Implementation

John Senger

Illinois Department of Transportation

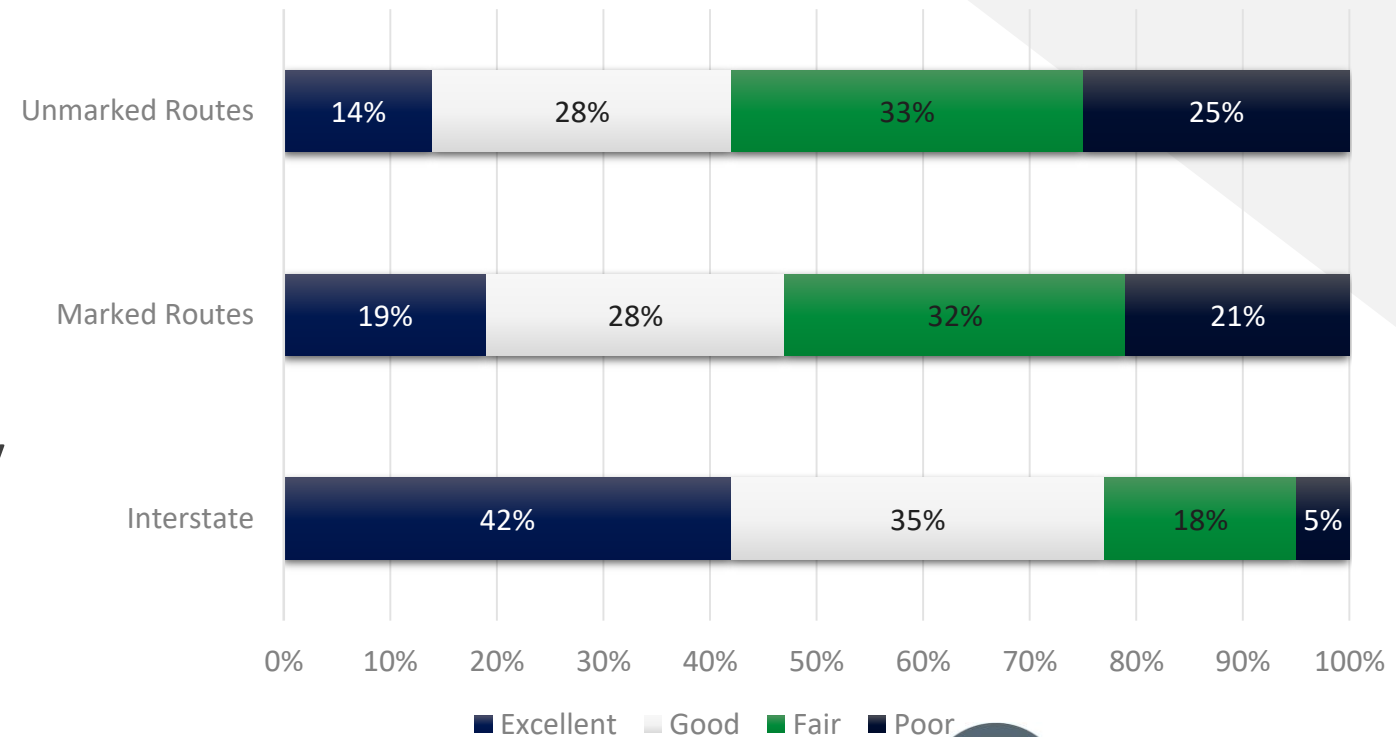


Current State of Highways

CRS Inputs

- International Roughness Index
- Rutting (HMA surface only)
- Faulting (PCC Surface Only)
- Functional and Structural Distresses
 - Weight increases with frequency and severity

Pavement CRS Metric



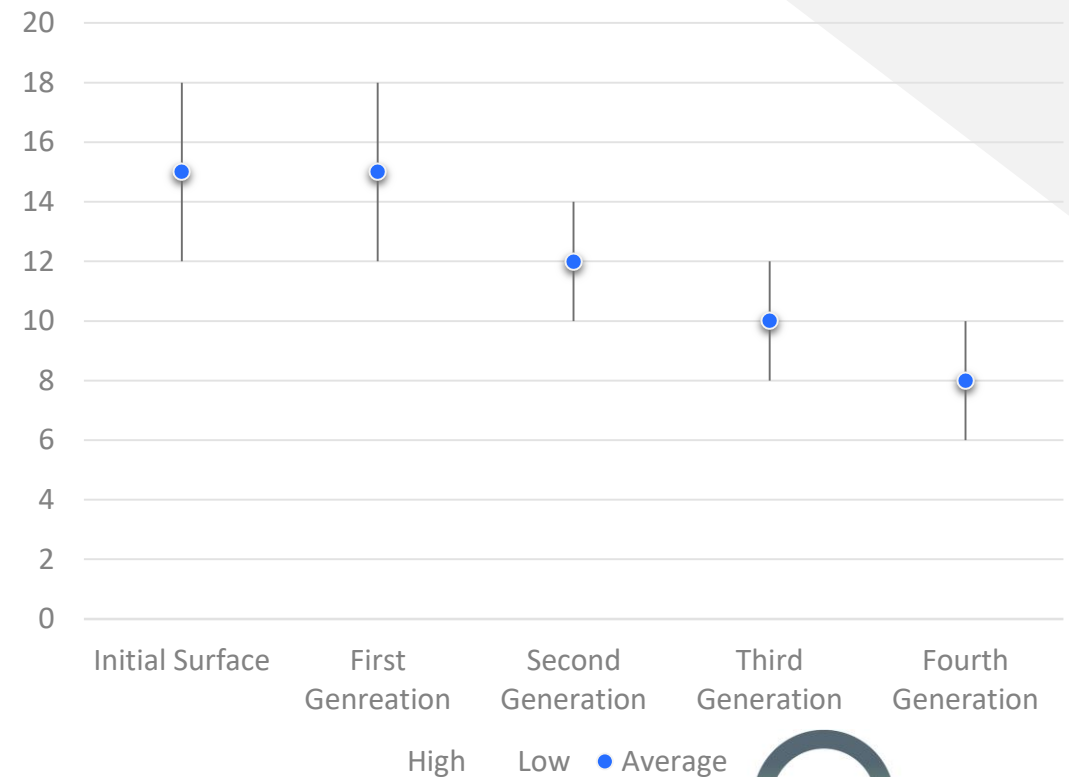
Current State of Highways – PM2

	Poor Miles	Poor Percentage	Fair Miles	Fair Percentage	Good Miles	Good Percentage
Interstate	7.31	0.38%	689.03	36.26%	1132.5	59.60%
Non-Interstate	284.99	8.56%	2127.89	63.93%	876.93	26.53%

Data Collection and Usage

- Automated Data Collection and Identification
- Distress frequency and severity
- Pavement cross section and history
- Focused on trends and performance

HMA Surface Life



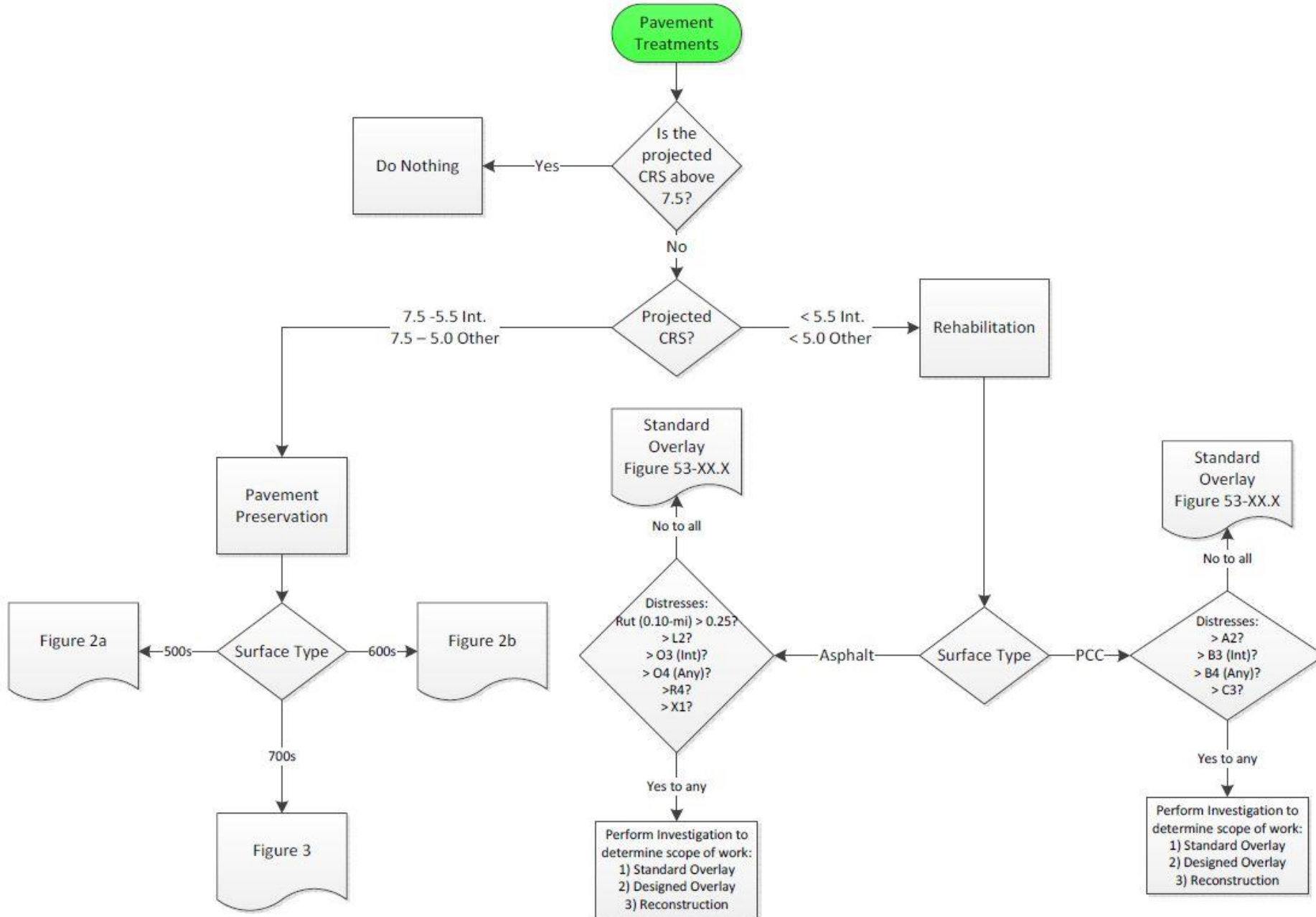
The Black Box

- Pavement inventory, history, and condition ratings
- Updated Deterioration models
- Upgrading from in-house system
- Working with big data

Decision Trees

- Created a Pavement Working Group
- Created several iterations
- Districts retain lots of options
- Preservation, Minor Rehabilitation, Major Rehabilitation, Reconstruction

Initial Decision Screening



Pavement Preservation

- High and Low Preservation
- Patching only with full lane treatment
- Pavements only in the good and fair
- Preservation Committee

- High Preservation
 - SMART Overlay
 - CIR and HIR
 - Long. Joint Part-Depth Repair
 - UTBWC
 - LTR
- Low Preservation
 - Chip Seal
 - Micro-surfacing and slurry seal
 - Cape Seal
 - Half SMART
- Maintenance
 - Crack Filling/Sealing
 - Fog Seal
 - Milling
 - Diamond Grinding / Grooving

Full-Depth HMA Options

Asphalt-Surfaced Pavement Preservation Decision Matrix - 500s Pavement Type

Surface Type	Preservation Treatment ^{3/}	Allowable Treatments for Interstates	Distresses Best Mitigated with Preservation Treatment										Longitudinal Joint Cracking ^{2/}		
			Alligator Cracking	Block Cracking		Rutting (Stable)		Transverse/Reflective Cracking		Longitudinal Crack		Oxidation/ Weathering/ Raveling/Segregation		Low (S1)	Medium (S2, S3)
				Low (L1)	Low (M1, M2)	Medium (M3)	Low (≤ 0.13)	Medium (≤ 0.25)	Low (O1-O3)	Medium (O4)	Low (Q1)	Medium (Q2, Q3)	Low (W1, W2)		
Full-Depth HMA (500s)	Crack Filling / Joint Filling / Joint Sealing	X	X					X			X			X	
	Bituminous Surface Treatment (A-1, A-2, A-3)		X	X		X		X		X		X			
	Micro-Surfacing ^{3/}	X	X	X			X		X		X		X		
	Centerline/Longitudinal Joint Micro-Surfacing	X													X
	Longitudinal Joint Partial-Depth Repair	X													X
	Cape Seal		X	X		X		X		X					X
	Half S.M.A.R.T.		X	X		X		X		X					X
	Ultra-Thin Bonded Wearing Course	X	X		X		X		X		X				X
	S.M.A.R.T. Overlay	X	X		X		X			X		X			X
	Hot In-Place Recycling		X		X		X			X		X			X
	Cold In-Place Recycling		X		X		X			X		X			X

Notes:

1/ ADT ≤ 25,000 use 1-pass; ADT > 25,000 use 2-pass

2/ If this is the only distress present, use indicated treatments. If other distresses are also present, use the treatment that addresses the distresses across the full lane.

3/ Full-Depth and Partial-Depth patching will only be allowed as a mitigating activity. A maximum of 1.00 percent will be allowed with any preservation treatment.

HMA Over PCC Pavements

Asphalt-Surfaced Pavement Preservation Decision Matrix - 600s Pavement Type

Surface Type	Preservation Treatment ^{3/}	Allowable Treatments for Interstates	Distresses Best Mitigated with Preservation Treatment										Longitudinal Joint Cracking ^{2/}		
			Alligator Cracking	Block Cracking		Rutting (Stable)		Transverse/Reflective Cracking		Longitudinal Crack		Oxidation/ Weathering/ Raveling/Segregation		Low (S1)	Medium (S2, S3)
				Low (L1)	Low (M1, M2)	Medium (M3)	Low (≤ 0.13)	Medium (≤ 0.25)	Low (O1-O3)	Medium (O4)	Low (Q1)	Medium (Q2, Q3)	Low (W1, W2)		
HMA Over Concrete (600s)	Crack Filling / Joint Filling / Joint Sealing	X	X					X			X			X	
	Bituminous Surface Treatment (A-1, A-2, A-3)		X	X		X		X		X		X			
	Micro-Surfacing ^{1/}	X	X	X		X		X		X		X			
	Centerline/Longitudinal Joint Micro-Surfacing	X	X												X
	Longitudinal Joint Partial-Depth Repair	X	X												X
	Cape Seal		X	X		X		X			X				X
	Half S.M.A.R.T.		X	X		X		X			X				X
	Ultra-Thin Bonded Wearing Course	X	X		X		X		X			X			X
	S.M.A.R.T. Overlay	X	X		X		X		X			X			X
	Hot In-Place Recycling		X		X		X		X			X			X
	Cold In-Place Recycling		X		X		X			X		X			X

Notes:

1/ ADT \leq 25,000 use 1-pass; ADT $>$ 25,000 use 2-pass

2/ If this is the only distress present, use indicated treatments. If other distresses are also present, use the treatment that addresses the distresses across the full lane.

3/ Full-Depth and Partial-Depth patching will only be allowed as a mitigating activity. A maximum of 1.00 percent will be allowed with any preservation treatment.

PCC Preservation Options

Concrete-Surfaced Pavement Preservation Decision Matrix

Surface Type	Preservation Treatment ^{3/}	Distresses Best Mitigated with Preservation Treatment									
		D-Cracking	Transverse Cracking		Trans. Joint Deterioration	Longitudinal Joint Deterioration	Longitudinal Cracking	Faulting	Map Cracking/Scaling	Popouts/ High Steel	Permanent Patch Deterioration
		Low (A1, A2)	Low (B2)	Medium (B3)	Medium (≤C2)	Low (D1)	Medium (≤E2)	Medium (≤G3)	I1 - I3	J1 - J2	Low (K1)
PCC (700s)	Crack and Joint Sealing	X		X	X	X	X				X
	Load Transfer Restoration				X			X			
	Diamond Grinding ^{1/}				X			X	X		
	Cross-Stitching ^{2/}						X				
	Ultra-Thin Bonded Wearing Course	X	X		X	X	X		X	X	X

Notes:

- 1/ If intermittent bump grinding, no additional activity necessary. However, if large areas or > 100 ft in length, must also perform diamond grooving.
- 2/ Requires an Experimental Feature.
- 3/ Full-Depth and Partial-Depth patching will only be allowed as a mitigating activity. A maximum of 1.00 percent will be allowed with any preservation treatment.

Changes to Rehabilitation Options

Standard Overlays and Designed Overlays

- Existing Policy Overlays
 - 2.25" Non-Interstate
 - 3.75" Interstate
- Standard Overlays
 - 2" – 3" Non-Interstate
 - 3" – 4.25" Interstate
- Designed Overlays



Standard Overlay Options

Interstate 3 – 4.25 in.

Non-Interstate 2 – 3 in.

	Lift Thickness (in.)
IL-19.0 (Interstate binder only)	2.25
IL-9.5	1.50
IL-9.5FG	1.25
IL-4.75* (binder only)	0.75 – 1.00
SMA 12.5	2.00
SMA 9.5**	1.75

*Use 1.00 inch on bare PCC.

**Will be adopted as standard specification soon

Standardization of New Policies

- Updates to Bureau of Design and Environment Manual
- Programming Guidelines update
- CRS Ratings Changes



New Initiatives in HMA

Full Lane Sealant



Longitudinal Joint Seal





Thank You.



Katie Zimmerman



217 398 3977



kzimmerman@appliedpavement.com



John Senger



217 782 8582



John.Senger@Illinois.gov

