

# The Future of Pavement Preservation

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LADONNA ROWDEN, P.E.  
BUREAU CHIEF OF RESEARCH



Illinois Department  
of Transportation

# Outline

## OVERVIEW

Network and Condition Ratings

IDOT's Previous Practices

Why Change Philosophy?

## IDOT AND ASSET MANAGEMENT

New Pavement Management Philosophy

Selecting Treatments

Guidance and Processes

## FURTHER EFFORTS

# OVERVIEW

**Network and Condition Ratings**

# Illinois Highway Network Overview

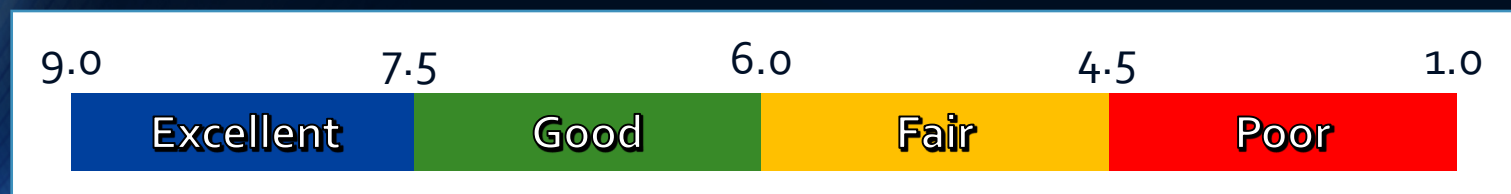
- **Highway Network**
  - All Highways - 145,054 (3<sup>rd</sup> Overall Nationally)
  - Federal-Aid Highways - 34,550 (5<sup>th</sup> Overall Nationally)
  - National Highway System - 7,937 (5<sup>th</sup> Overall Nationally)
- **IDOT Maintained:**
  - Interstate - 1,892
  - Other Marked Routes - 11,427
  - Unmarked Routes - 2,580

# Pavement Condition Monitoring

- **Network condition collected by Mandli Communications**
  - LCMS (Laser Crack Measurement System)
  - High Speed Cameras: 3D profiles, 2D Road Images
  - Sensor Data: Roughness (IRI), Rutting, Faulting
- **Entire network collected over 2 years**
  - Interstate every year
  - Non-interstate split over two years
    - Even Years: Cook County; Districts 4, 5, 8, and 9
    - Odd Years: Collar Counties; Districts 2, 3, 6, and 7

# Determination of Condition Index

- Vendor data used to conduct semi-automated survey
  - Condition Rating Survey (CRS) Models
  - Direct input of sensor data
  - Up to 5 Predominant Distresses
- Manual override possible
  - More than 5 predominant distresses
  - Model inaccurately representing section



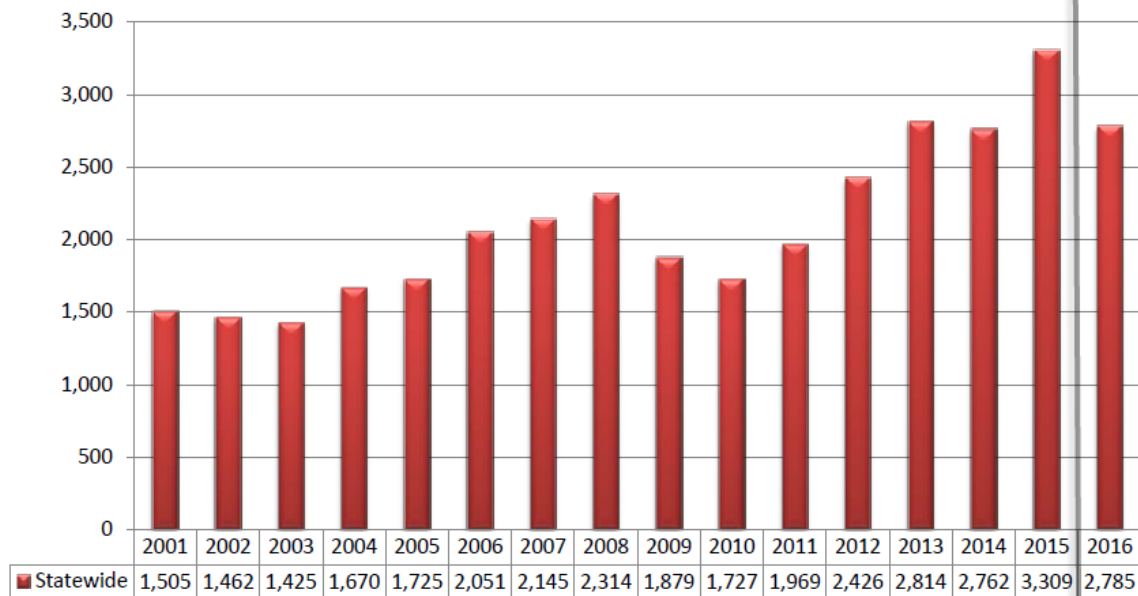
# OVERVIEW

**IDOT's Previous Practices**

# Historical Programming Approach

Lowest CRS = Highest Priority: "Worst First Strategy"

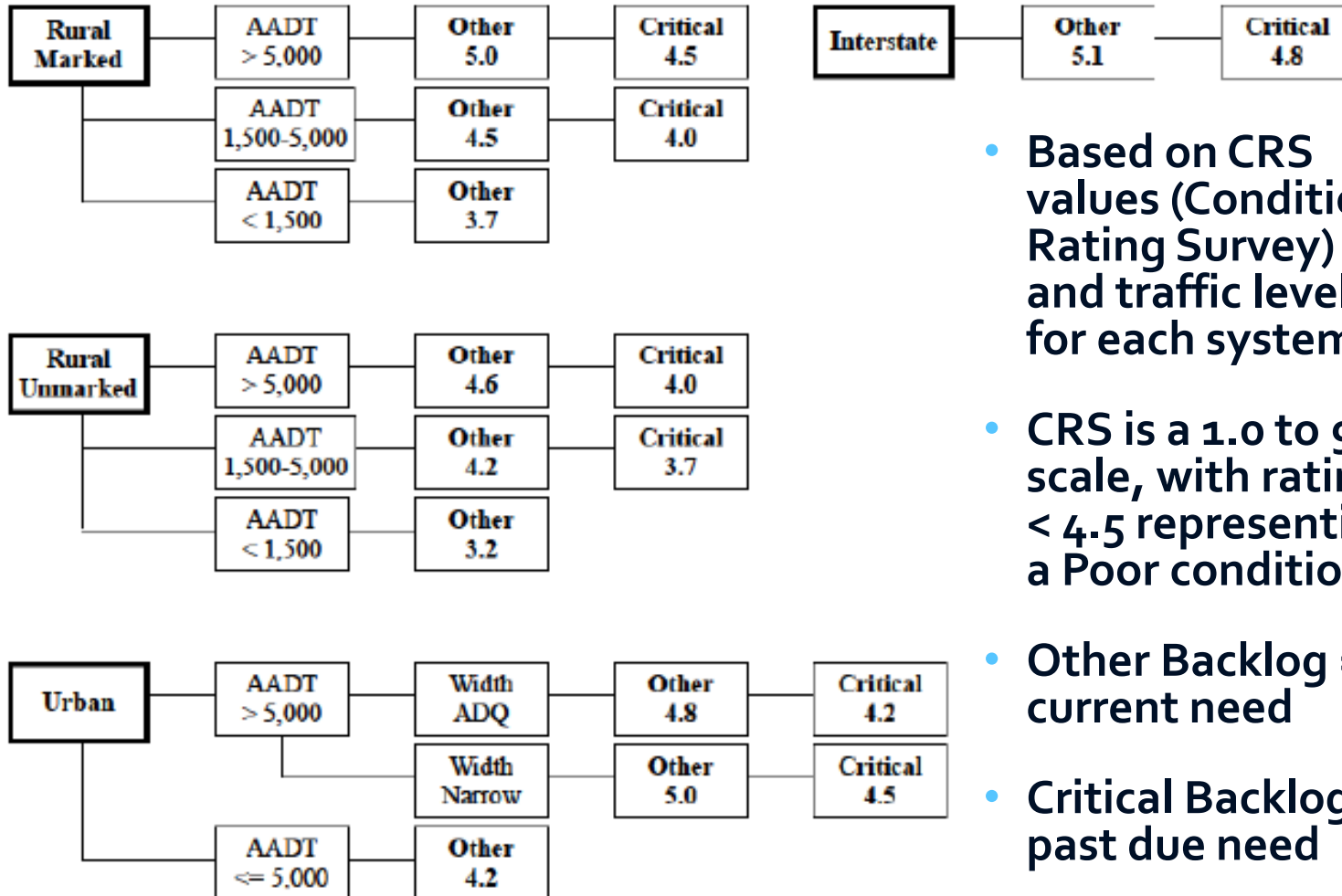
Historical Needs (Backlog) Mileage



- Performance measures focused on:
  - Backlog (repairs needed now or past due)
  - Accruing Backlog (repairs needed within 6 years)
- Target of 90% Good Condition
  - Entire system
  - Unrealistic goal



# Backlog Definitions



- Based on CRS values (Condition Rating Survey) and traffic levels for each system
- CRS is a 1.0 to 9.0 scale, with ratings < 4.5 representing a Poor condition
- Other Backlog = current need
- Critical Backlog = past due need

# Pavement Preservation Program – The Early Years

## FY 2005

- Executive Staff Commitment
- 3 Projects
- \$100K per project
- Limited Treatments

## FY 2008 -2014

- Various Funding Levels
- Even split
- District project selection

## FY 2015 - 2017

- Statewide Line Item - \$7.5M
- Percentage of network
- District choice

## FY 2018

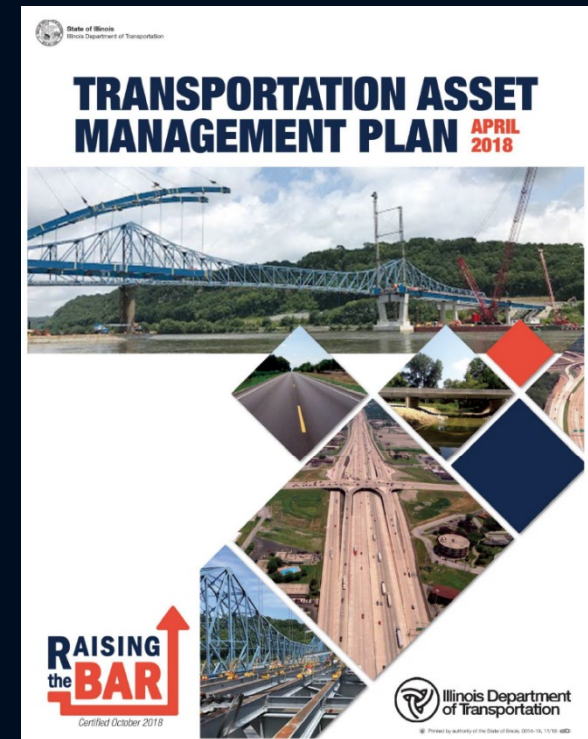
- Districts submitted projects
- Committee decided final selection

# OVERVIEW

Why Change Philosophy?

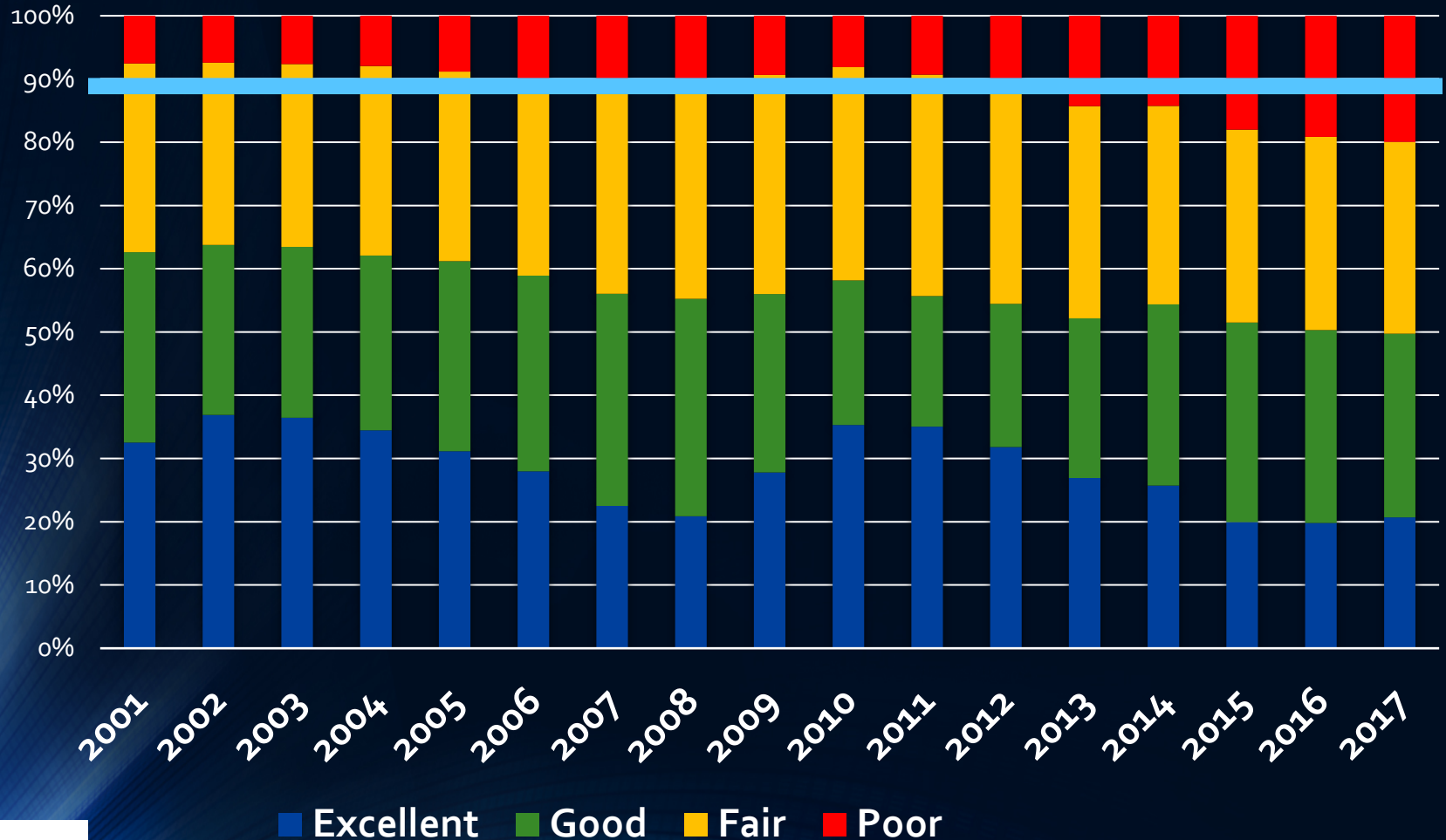
# Federal Changes

- MAP-21 and FAST Act
  - MAP-21: July 6, 2012
  - FAST Act: December 4, 2015
- New Requirements
  - Transportation Asset Management Plan (TAMP)
  - Minimum components for Pavement Management System
  - Performance Measures



# Historical Pavement Condition

## Pavement CRS Metric



# **IDOT AND ASSET MANAGEMENT**

**New Pavement Management  
Philosophy**

# Transformed Vision at IDOT

- Federal Requirements and TAMP Development Critical in changing philosophy
- Embrace Asset Management Principles
  - Developed improved Performance Measure
  - Keep roads in Good and Fair Condition as long as possible
  - Set realistic targets



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

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

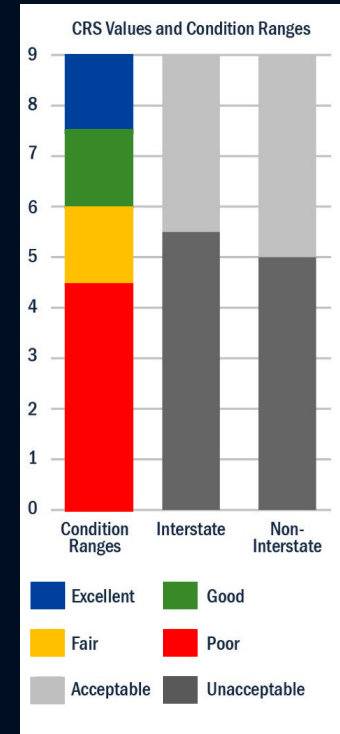
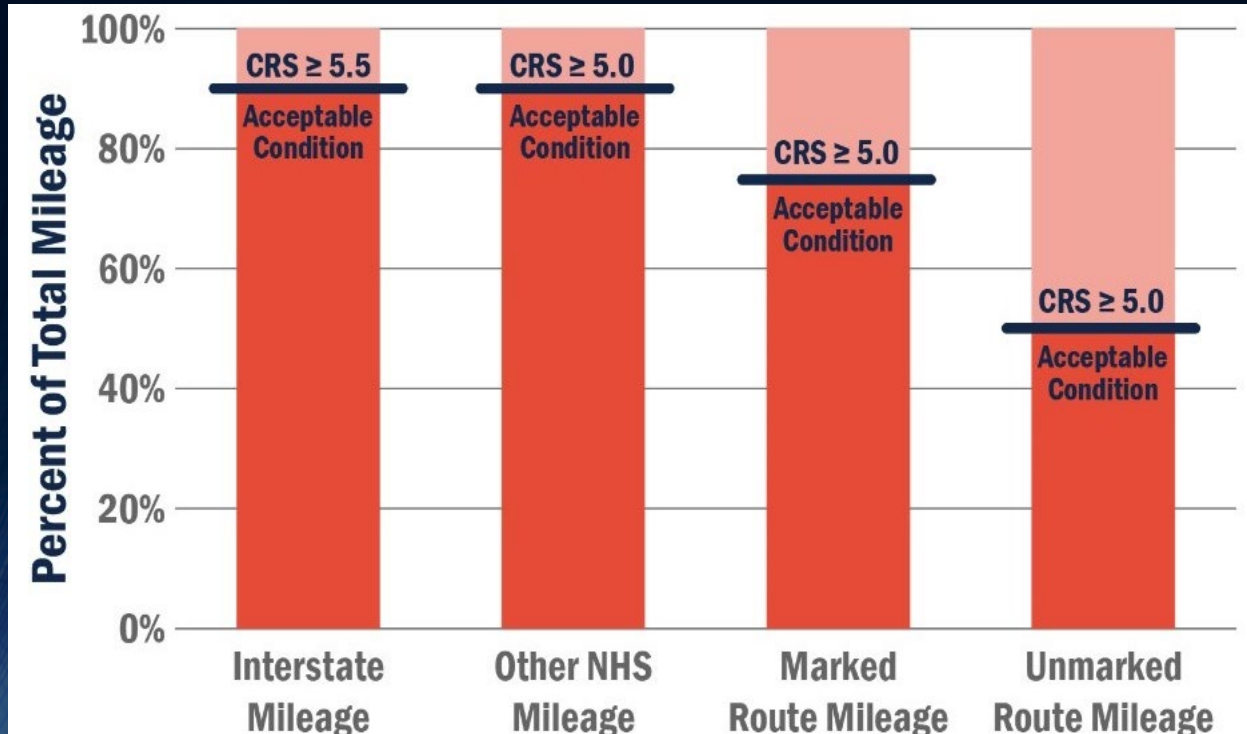
# Improved Performance Measure

- **Desired State of Acceptable Condition**
  - Set consistent threshold
  - Condition level where preservation treatments are viable option
- **Impact on Network**
  - FHWA Focus on NHS System
  - IDOT will use measure on all functional classes
  - Use percent acceptable to establish priorities.

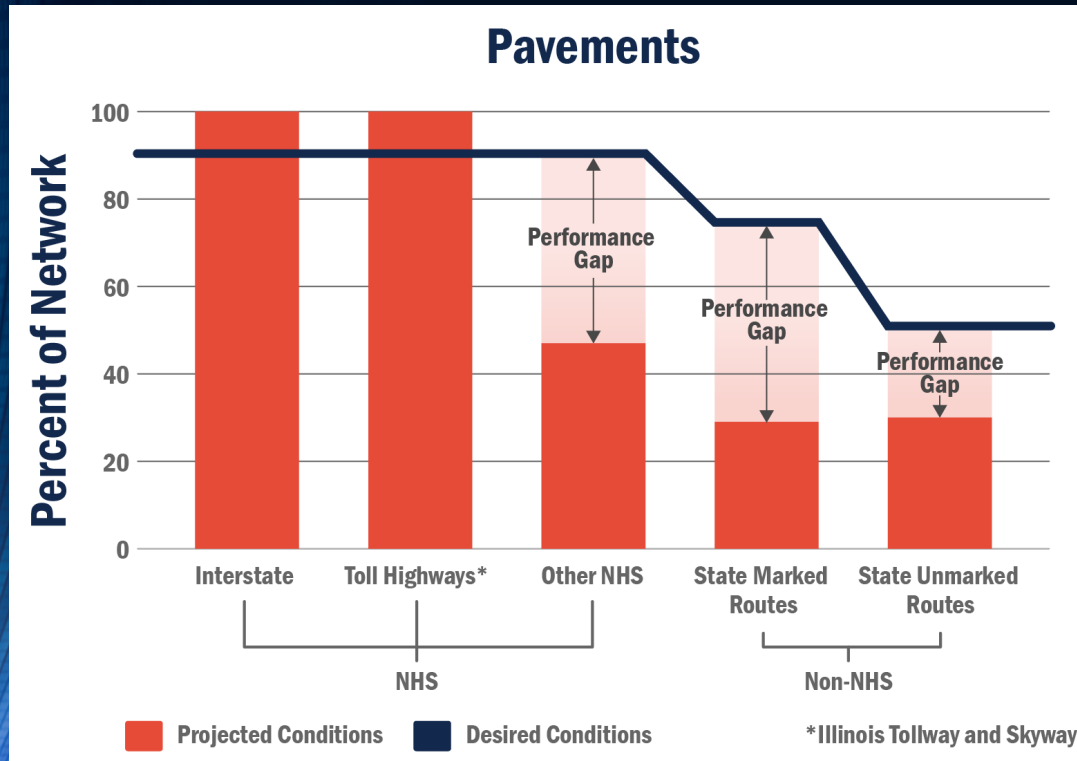




# Desired State of Acceptable Condition



# Predicted 10-Year Performance



- Comparison to Targets

- Interstates ✓
- Other NHS ✗
- Non-NHS Marked ✗
- Unmarked ✗

- Other refinements

- Improved treatment selection
- Better project selection

# **IDOT AND ASSET MANAGEMENT**

## **Selecting Treatments**

# Redefined Treatment Categories

- Started with FY 2019 program
- Established CRS Ranges for each category

Category	Subcategory	CRS Range	
		Interstate	Non-Int.
Reconstruction	--	< 4.0	< 3.5
Rehabilitation	Designed Overlay	4.0 – 4.5	3.5 – 4.3
	Standard Overlay	4.6 – 5.4	4.4 – 4.9
Preservation	High Preservation	5.5 – 6.5	5.0 – 6.5
	Low Preservation	6.6 – 7.5	6.6 – 7.5
	Proactive Maintenance	> 6.0	> 6.0
Reactive Measures	--	< 5.5	< 5.0

# Rehabilitation Treatments

- **Designed Overlay**
  - Former Structural Exception
  - Thickness determined through investigation
- **Standard Overlay**
  - Former Policy Overlay
  - No Structural Distresses Allowed
  - Thickness range for interstate and non-interstate
  - Select mixtures using minimum layer thicknesses



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# Preservation Treatments

- Expanded treatment options
- Percentage of Unrestricted Program
- Final approval by Preservation Committee



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High Preservation	Low Preservation	Proactive Maintenance
SMART Overlay	Bituminous Surface Treatment (A-1, A-2, A-3)	Crack Filling/Sealing
Longitudinal Joint Partial Depth Repair	Micro-Surfacing	Joint Sealing/Sealing
Ultra-Thin Bonded Wearing Course	Slurry Seal	Fog Seal
Functional Cold In-Place Recycling	Cape Seal	Micro-Milling
Hot In-Place Recycling	Half-SMART	Diamond Grinding

# **IDOT AND ASSET MANAGEMENT**

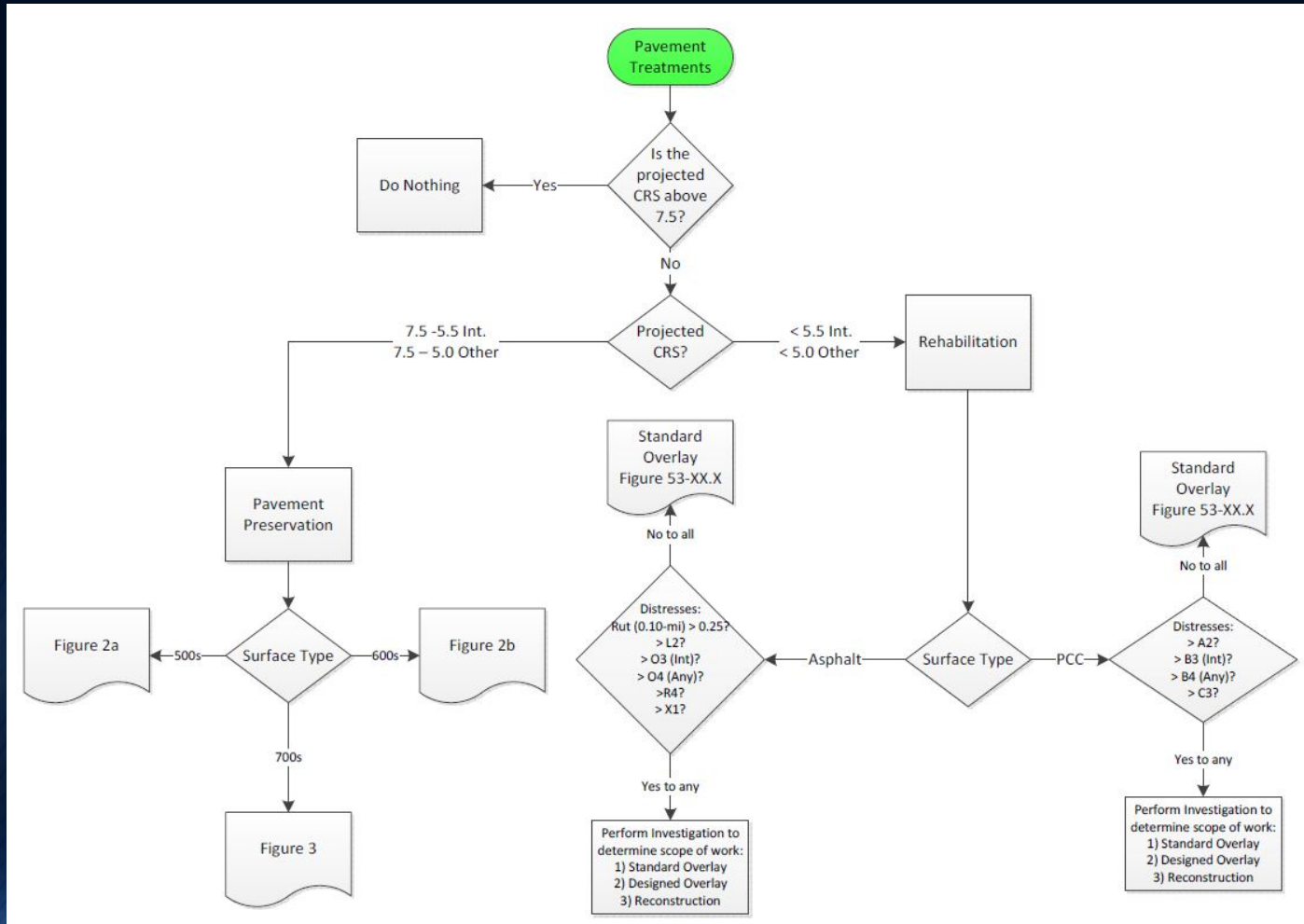
**Guidance and Processes**

# Revisions to Policies

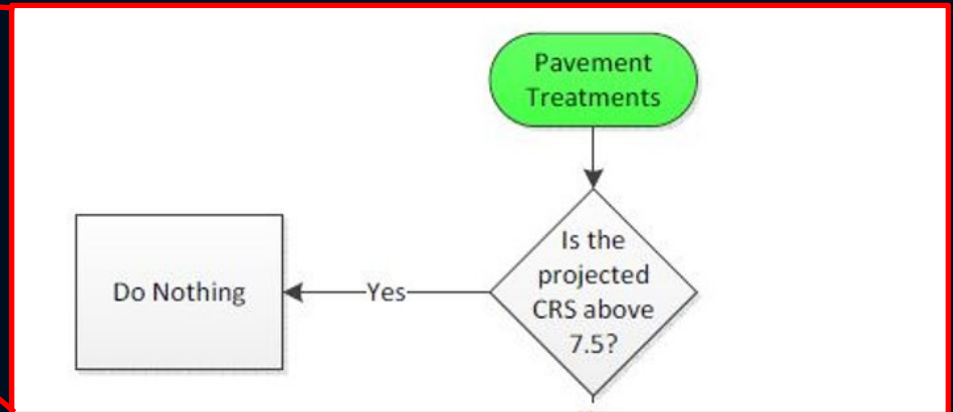
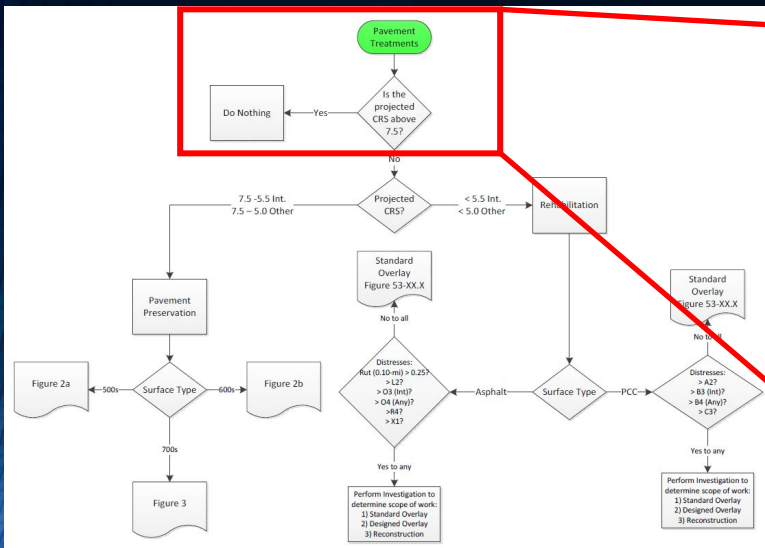
- Pavement Working Group revising policies
- New Decision Trees and Updated Information
  - Projected CRS
  - Distresses (Functional vs. Structural)
- Updated Programming Guidelines
- BDE Manual will be updated with revisions
  - Chapter 52 (Preservation)
  - Chapter 53 (Rehabilitation)



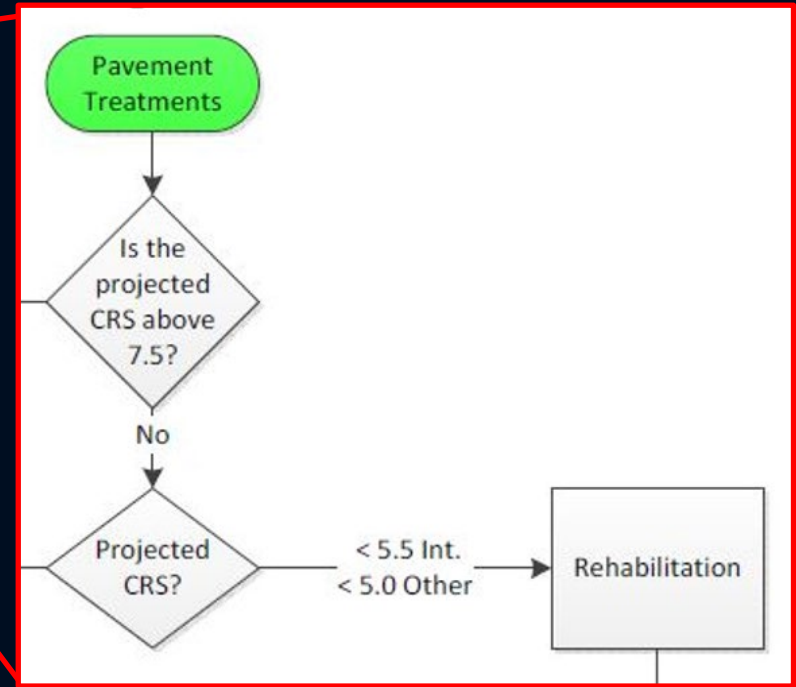
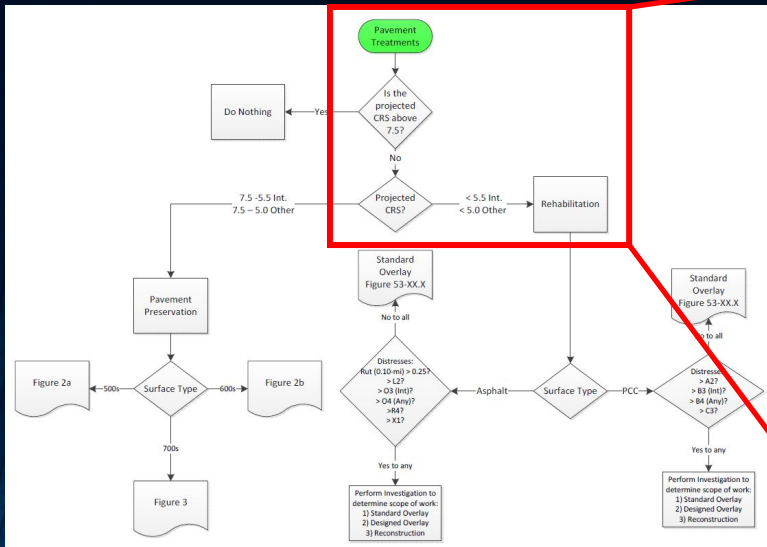
# Category Selection Process



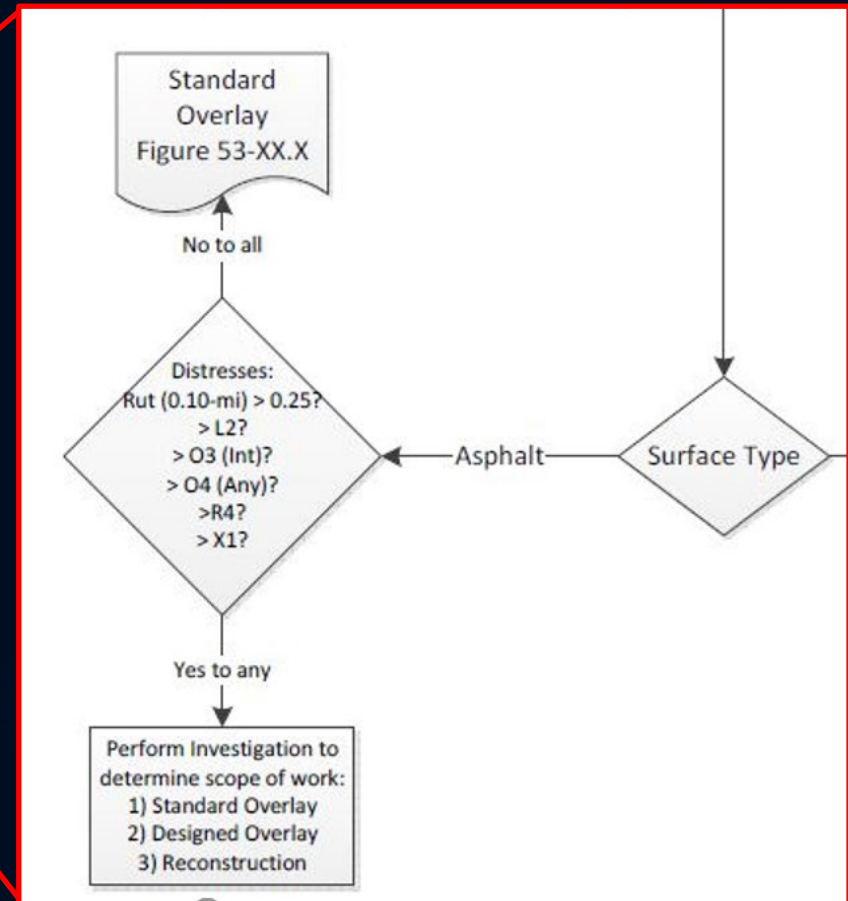
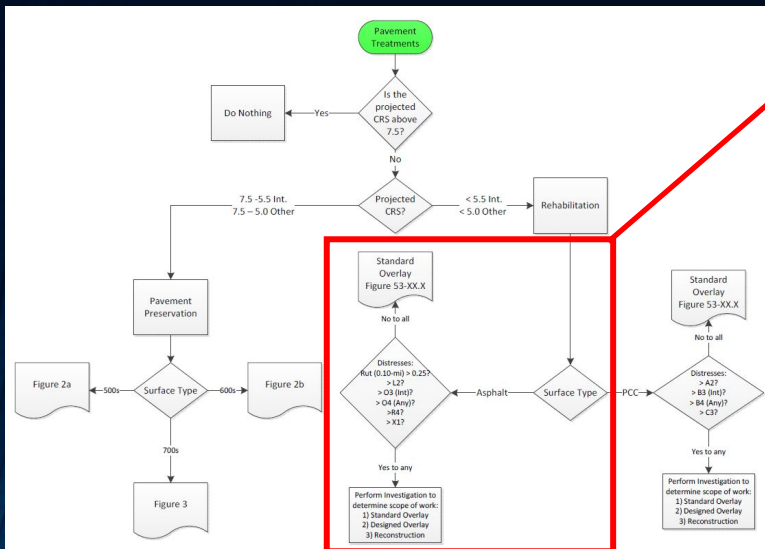
# Do Nothing



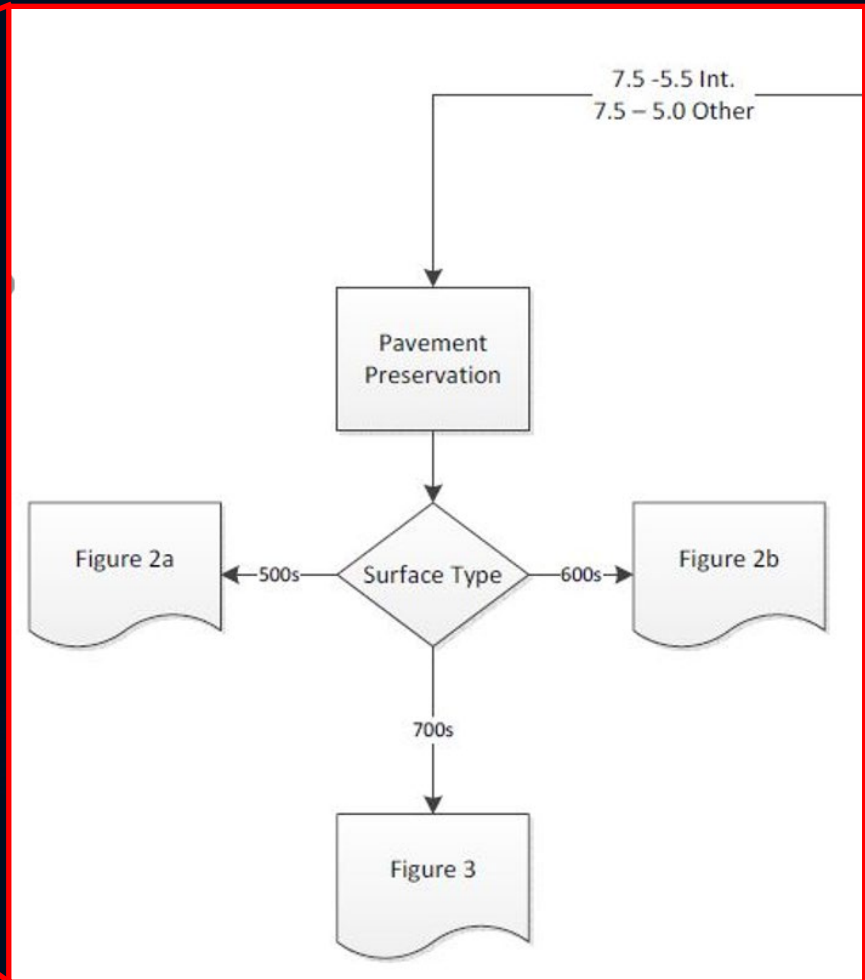
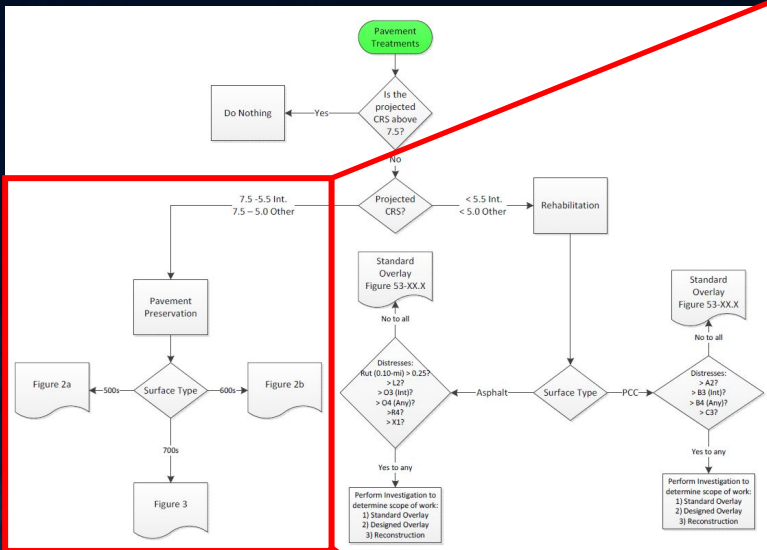
# Rehabilitation



# Rehabilitation



# Preservation



**FURTHER EFFORTS**

# Continued Focus to Implement

- Continue refining policies
- Review performance data and adjust
- Work toward Preservation Agreement with FHWA



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# Other Activities

- **Every Day Counts (EDC-4)**
  - **Pavement Preservation: When, Where, How**
- **FHWA Preservation Workshops**
  - **Planning for Spring 2019**
- **Transportation Pooled Fund Studies**
  - **NCAT – MnROAD**
  - **National Road Research Alliance**





# Thank you!



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LaDonna Rowden



(217) 782-8582



[LaDonna.Rowden@Illinois.gov](mailto:LaDonna.Rowden@Illinois.gov)



John Senger



(217) 782-8582



[John.Senger@illinois.gov](mailto:John.Senger@illinois.gov)