



# Illinois Local Roads Update

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Special Joint Conference  
HMA Technical Conference  
Illinois Bituminous Paving Conference  
January 9, 2008

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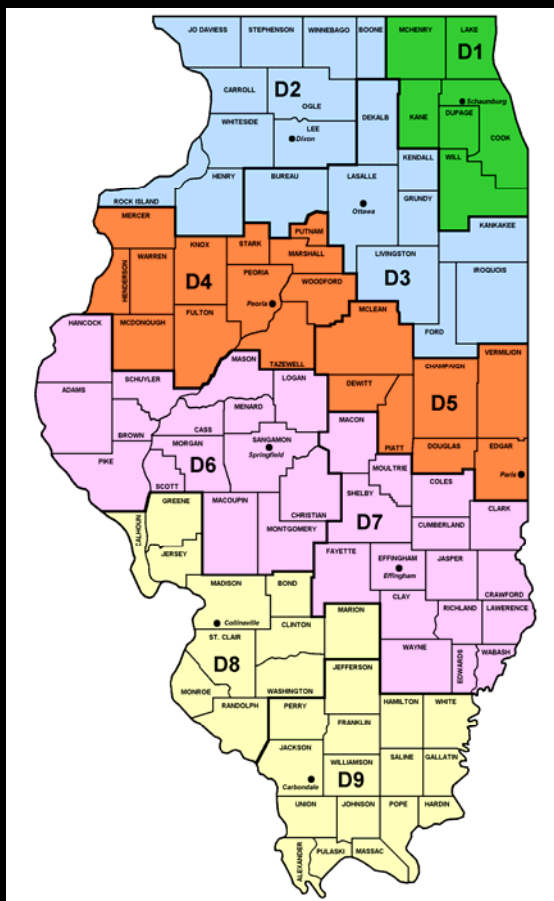


# Topics

- 
-  Overview of Local Agency Highways in Illinois
  -  Reclaimed Asphalt Pavement (RAP) Initiative
  -  Cold In-Place/ Full Depth Recycling
  -  Pavement Preservation Pilot



# Illinois Highway Agencies



County (102)



Road District (1,463)

– Township

– County Unit

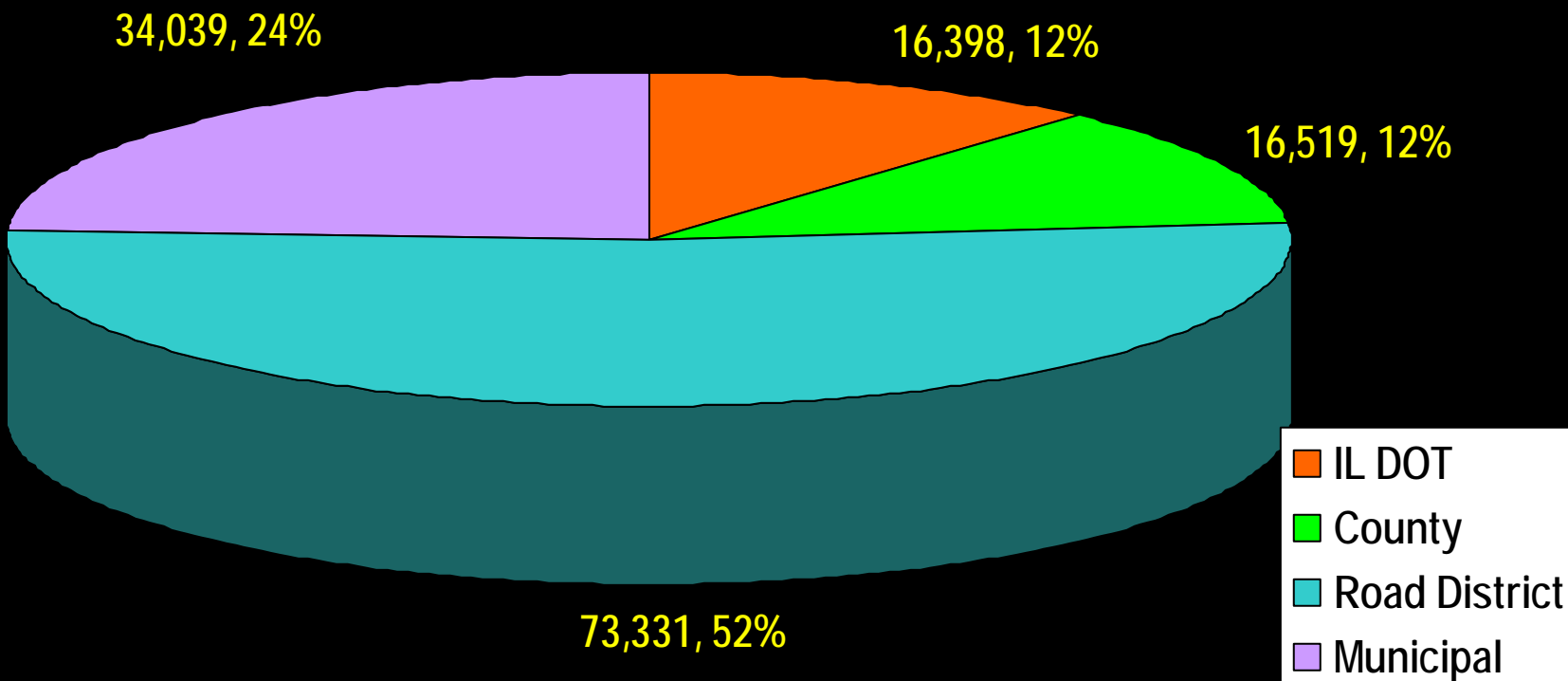
– Road District



Municipality (1,370)

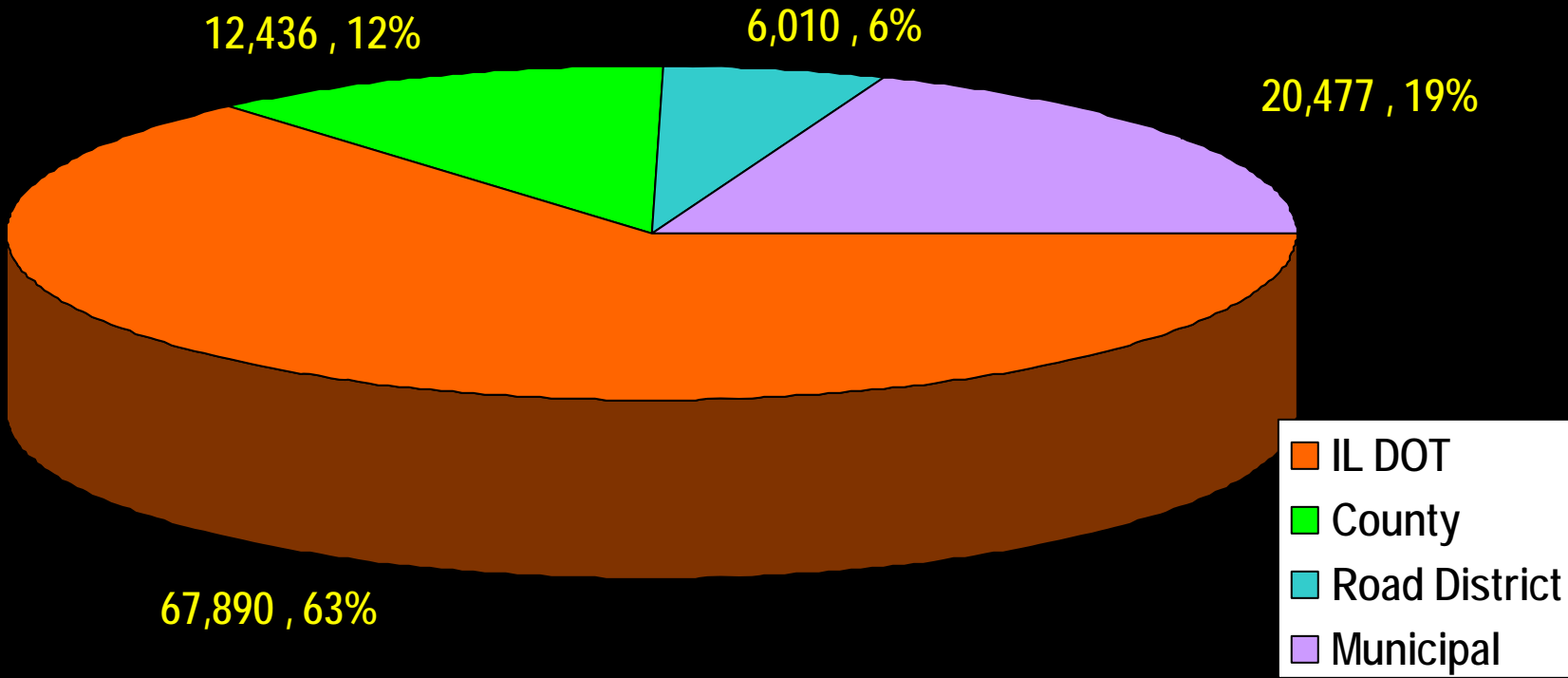


# Illinois Center Lane Miles





# Illinois Annual Vehicle Miles of Travel





# Statutory Highway Designations



 Class I

 Class II




 Class III

 Non-Designated





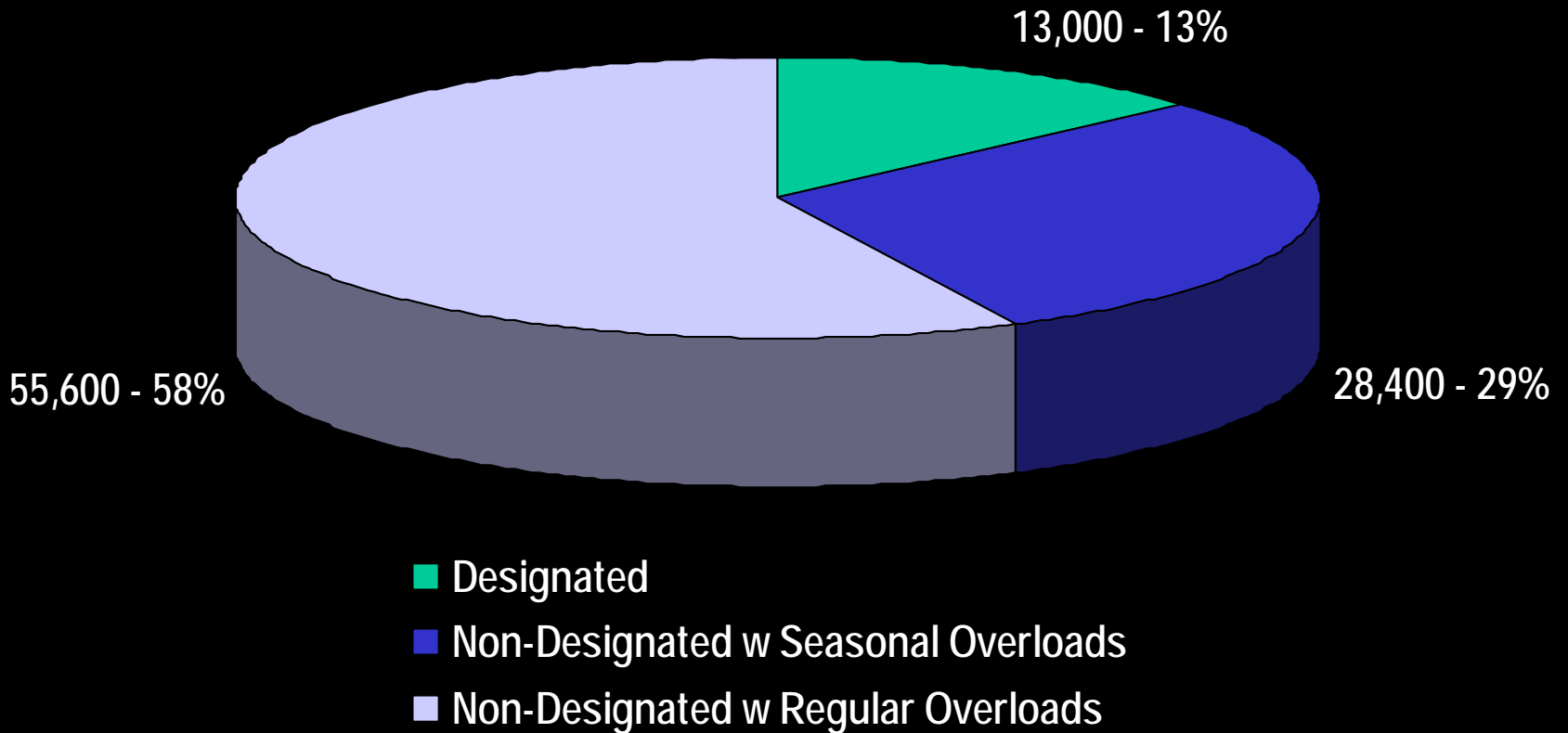
# Truck Route Study

-  Mandated by IL 91<sup>st</sup> General Assembly (CY2001)
-  Upgrade Farm to Market (Rural) Routes and Structures
-  Total Cost Estimate at \$60 Billion





# Rural Mileage







# Summary of Illinois Highways

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 Most Highways under Local Jurisdiction

 Most Miles Traveled on State Highways

 73,280# Weight Limit on Most Rural  
Highways

 Significant Costs to Upgrade Rural System

A decorative horizontal line consisting of ten pairs of parallel yellow bars, resembling road lane markings, spans the width of the slide.

# Reclaimed Asphalt Pavement (RAP) Initiative



# Why Needed?

- 
- 🚗 Large RAP Stockpiles
  - 🚗 Environmental Concerns
  - 🚗 Aggregate Availability
  - 🚗 Improved Quality Control



# Partnership with IL APA

-  Educate Locals on RAP Benefits
-  Develop Training Program
-  Newsletter Article





# Training Program Development

- 
- 🚗 Instructor – Tim Murphy, Murphy Pavement Technology
  - 🚗 Working Group of Industry and State
  - 🚗 Modification to Specifications and Procedures
  - 🚗 Offer 16 Courses Statewide
  - 🚗 332 Attendees to Date



# Newsletter Article

## GOT RAP?

Marvin Taylor, Whole Asphalt Paving Association, Director of Engineering & Research  
Photos courtesy of Dan Gallagher, Gallagher Asphalt

### Construction Material Prices Soar

In April of 2006, the American Association of State Highway Transportation Officials (AASHTO) released the results of its "Survey on Construction Cost Increases and Competition". 91% of responding states said their construction bids had experienced significant increases. The construction bid items experiencing the most increases during the past year were: Earthwork (28 % increase), Steel (26% increase), Concrete (23%), and Asphalt (18% increase).

While this survey was taken among the State Departments of Transportation (DOT's) similar increases have hit local agencies here in Illinois. Soaring costs and flat revenues have created significant challenges for professionals responsible for maintaining our road and bridge network. For those agencies looking to stretch their construction and maintenance dollars without sacrificing quality, the use of Reclaimed Asphalt Pavement (RAP) offers hope.



### RAP as a Component Material in HMA

Hot Mix Asphalt (HMA) is 95% aggregate and 5% asphalt cement (AC). The aggregate and AC (a solid at ambient temperature) are heated to 300° F to allow the AC to coat the aggregate. The mix is transported to the job site hot, placed and compacted before it cools. Once cooled, the asphalt cement returns to a solid state holding the aggregate structure in place.

Before 1970, HMA projects used 100% virgin materials. Specific sands and coarse aggregates were blended to provide the load carrying structure, and the percentage of asphalt cement was chosen to assure durability. The oil embargo of the early 70's spurred interest in the use of RAP as an optional component in HMA. The subsequent development of the milling machine and drum mix plant made it practical and economical.

When public streets owned by the state, county, municipality, or road district are milled, the contractor hauls the

RAP back to the plant for processing and reintroduction into future mixes. The processed RAP becomes another ingredient material – one that has a specific gradation, and specific asphalt content. These properties are an integral part of the HMA design process that the contractor uses to develop a mix. Private millings are kept separate and are not allowed as RAP in future government highway projects.

Research shows that at RAP percentages of 15% and below, the effect on the virgin AC is negligible. At higher percentages, softer virgin asphalt should be used to return the blend to its desired characteristics.

### Significant Savings

Assuming rock sells for \$10.00 per ton and asphalt cement sells for \$400 per ton, the material cost for HMA alone is:  $(.95 \times 10.00) + (.05 \times 400.00) = \$29.50$ . This is the material cost only and does not include overhead, transportation, traffic control, laydown, or profit. On average, the cost for the contractor to transport and process the RAP material is \$6.00/ton.

Therefore, each 10% increment of RAP reduces the contractor's material costs by \$2.35 per ton.

Using these figures, the cost of an HMA mixture with 50% RAP is reduced from \$29.50 to \$17.75. With 20,000,000 tons of HMA produced annually in Illinois, the potential savings from RAP shouldn't be ignored.

### No Decrease in Quality

The Illinois Department of Transportation (IDOT) has allowed (and encouraged) the use of RAP in its mixes since the mid 1970's. Just as IDOT has demanded more consistency



from virgin materials through its QC/QA program, it has developed a similar program governing the processing of RAP. Currently gradation tolerances on RAP are tighter than those demanded of virgin material.

IDOT imposes the same mix design process and criteria on all mixes, whether the contractor chooses to use RAP or not. RAP and virgin mixes must also meet identical density and smoothness requirements during construction. There is absolutely no difference in the quality of a mix with RAP and a mix without RAP.

### IDOT is Increasing the Use of Processed RAP

IDOT and most other State DOT's have historically placed limits on the maximum amount of RAP allowed in mixes. While the industry believes these limits are set too low, many DOT's, including IDOT are raising the allowable percentages as the processing and plant technology improve. Furthermore, recent research has provided DOT's with more information about how RAP behaves in HMA.

### Encouraging the Locals

The City of Chicago Department of Transportation (CDOT) has done its share to be a leader in the use of RAP. Currently, 100% of the HMA placed by the CDOT crews contains RAP. However, many local agencies do not allow RAP on their projects. Part of the problem is that IDOT's allowable percentages of RAP are in the Bureau of Design and Environment's Manual rather than in its Standard Specifications. Another part of the problem is the belief that allowing RAP will decrease pavement performance. However, research has shown that properly controlled and processed RAP does not impact quality.

The Bureau of Local Roads and Streets (BLRS) encourages the use of RAP by all local agencies and will be

organizing a series of 16 seminars around the state to explain in the latest RAP policies. Asphalt industry consultant, Tim Murphy (a former IDOT and Asphalt Institute engineer), will conduct the training. The seminars will begin in District One this fall and will continue through 2007 until all regions of the state have been reached.

BLRS has also developed a Local Roads (LR) Special Provision (containing the same guidelines used by IDOT for its State Routes) that may be inserted into contracts to make it easier for locals to take advantage of RAP. LR 1031 Reclaimed Asphalt Pavement will be available on IDOT's website at <http://www.dot.il.gov/bir/rlstst.html> in October.

### It's the Right Thing to Do

The use of RAP significantly reduces material costs. RAP mixes are as good as virgin mixes. The use of RAP will preserve our limited natural resources while reducing our energy demands. RAP is the most recycled product in the world. To make the most of your project dollars and do the right thing for the environment, make sure you've "GOT RAP" in your mixes.





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# Cold In-Place Recycling (CIR) & Full Depth Recycling (FDR)



# CIR/FDR Concept

- 🚗 Use Existing In-Place Material
- 🚗 Mix with Engineered Emulsion or Foamed Asphalt
- 🚗 Level and Compact
- 🚗 New Base for Surface





# Illinois Usage

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🚗 Usage Expanding across State

🚗 Allowed as Experimental Feature

🚗 Major Projects

- Sangamon County
- Christian County
- Tazewell County



# CIR/FDR Research

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 IL Center for Transportation

 Excellent Results

 Issues

- Overlay Design Thickness
- South Africa Research



# Pavement Preservation Pilot Program



# Pavement Preservation

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 Promoted by FHWA

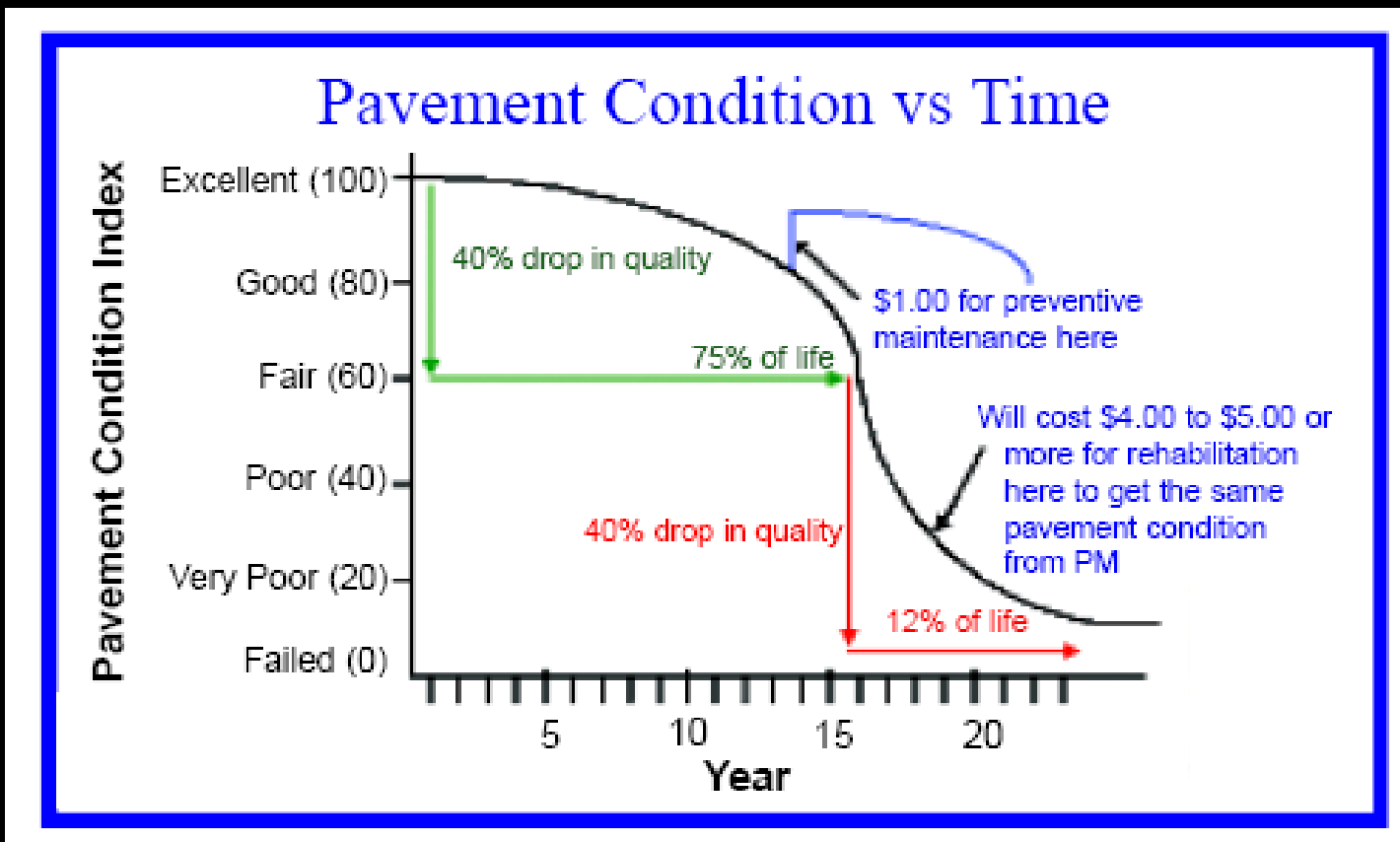
 Right Treatment, Right Road, Right Time

 Extend Service Life of Road Network

 Does It Work?



# Pavement Life Cycle





# Local Requirements

- 
- 🚗 Develop Multiyear Preservation Program
  - 🚗 Submit Annual Report
  - 🚗 Pavement Rating
  - 🚗 All Preservation Treatments Eligible
    - Seal Coat, Microsurfacing, Thin HMA Overlay
    - Crack Sealing
    - Drainage



# Current Status

- 
- 🚗 Pilot Program for Counties
  - 🚗 Draft Policy under Development
  - 🚗 Interested Counties Need to Contact Districts
  - 🚗 TAMS Pavement Management Software



QUESTIONS?