



# History of Pavement Management ODOT's Perspective

for:

**NW Pavement Management Assoc.**

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# Overview

- 1970's – ODOT begins tracking condition
- 1980's – Preservation concepts take hold
- 1990's – Using PMS for Pavement preservation strategy development and implementation
- 2000's – Refinement – improved data and tools
- 2010 and beyond – Integration with Asset Management

# The Early Years

## Recognition of a Brewing Crisis

- 1969 – First elements of a pavement condition rating system (cracking, patching, rutting raveling, abrasion)
- 1976 – Switched to Windshield Rating by District Maintenance Supervisors
  - 5 Ratings (Very Good, Good, Fair, Poor, Very Poor)



- 1977 – State Highway System Preservation Study
  - First in a long series of reporting tools to communicate our asset conditions and funding needs to decision makers.



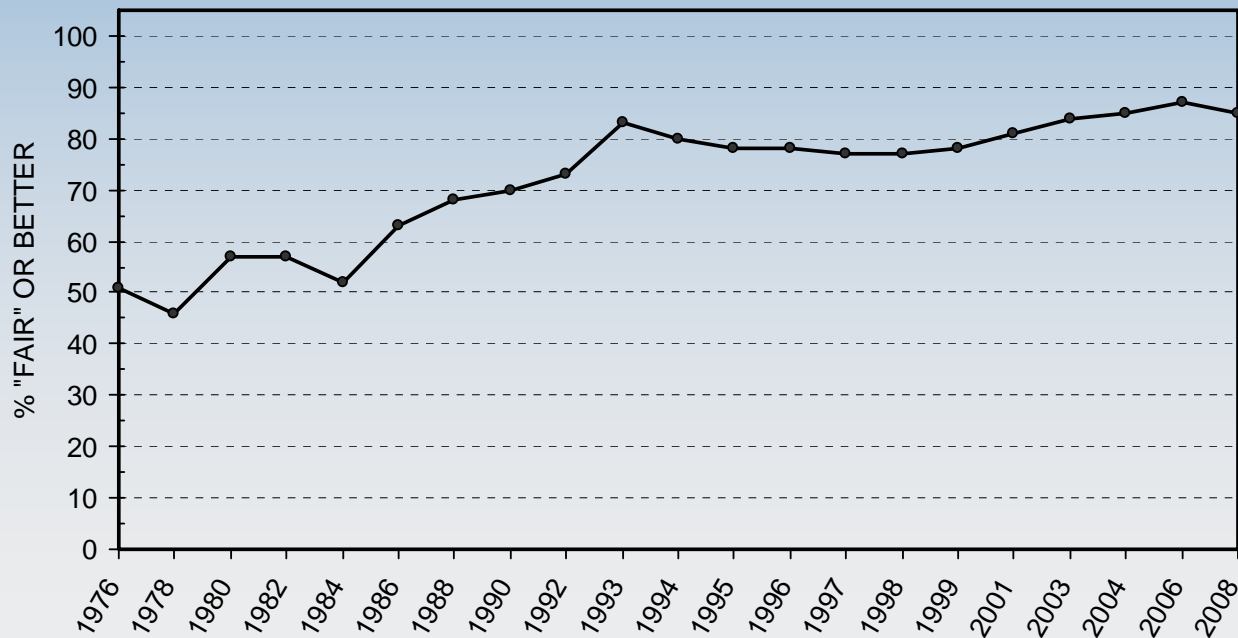
## 1977 State Highway System Preservation Study

- "... approximately 54% of the State Highway System is either extremely or moderately deteriorated and in need of immediate resurfacing, and in some cases, reconstruction."
- "Between 1973 and 1974 construction costs increased 43 percent and gas tax revenues declined 4.5 percent – the first time in history such a financial double indemnity has occurred."
- "In response ... The Oregon Transportation Commission has reoriented its policy emphasis from facility modernization via new construction to protection and maintenance of the existing highway system."



# The Shift towards Preservation

- 1979 – Legislature removed State Police and Parks from Hwy Trust Fund
- 1981 – Legislature passed additional 1 cent per gallon gas tax and accompanying increase in weight mile fees.
- 1984 – OTC approved \$15 million for Surface Preservation Program consisting of chip seals, oil mats, recycling, and thin overlays.





# PMS in the Organizational Structure

- 1981 – State Highway Engineer appoints a Pavement Management Task Force
  - Determine type and detail of data to collect
  - Recommend an organizational structure
  - Determine appropriate funding level
  - Advise how system should be used
- Early Org. Structure
  - Planning Section – Develop and implement PMS
  - Research Section – Study the use of deflection, roughness and skid collection in PMS at network and project level
- Today's Org. Structure
  - Pavement Management reports to Pavements Engineer
  - Work Side by Side with Pavement Design, Materials, and Construction
  - Funded, but not managed, by Planning
  - Close tie to Maintenance



# Top Level Acceptance & Support

## The Pavements Committee

- The original Task Force has evolved into the present day Pavements Committee
- Top level managers cutting across wide level of disciplines and geographic representation
  - Region Manager, Area Manager, Maintenance Manager, Construction Engineer, Pavements Engineer, Safety Engineer, STIP Manager, Planning Manager, Bridge Engineer, Pavement Management Engineer, and FHWA
- Responsibilities:
  - Manage the Interstate Maintenance Program
  - Determine Statewide Pavement Preservation Strategies
  - Set Funding Allocations
  - Make sure the strategy is implemented



# Evolution of ODOT's PMS

## 1990's – Computerization

- Strong push towards computerized PMS by FHWA and Federal mandates
- Corporate inventory database development
  - LRS and GIS ties, lane and widths, surface type, pavement thickness, contract information
- PMS software purchase and development
- Faster, more powerful computers – better retrieval, manipulation, and analysis of data

# Evolution of ODOT's PMS Data Collection

LTPP based distress survey



Roughness (IRI) Reporting



Friction (Skid) Monitoring



# Evolution of ODOT's PMS

## Major Technological Advancements



- Video Logging
- Semi-Automated Distress Data – A pictorial time history
- Improved profilometer and rut depth technology



## Upcoming Challenges

- Data Collection – Need for Automation and Standardization
- Software Configuration / Adaptation
- Historic data – Need to fill the gaps and correct faulty data to improve modeling
- Tie to mix design and QA data
- Tie to maintenance costs



# Keys to Our Success

- Top level commitment to Preservation and Maintenance of assets (pavement, bridge, etc.)
- Pavement Committee Oversight and Support
- Use PMS as a “Preservation Tool”
  - Strategy development
  - Funding Allocations
  - Performance Measures
  - Project Selection
- Organization - PMS housed with Pavement Design, Materials and Construction
- Close ties to Maintenance



# The Ideal Pavement Manager

## “What I have learned on the job”

- Have good computer database and analytical skills
- Have a strong background in fundamentals of pavement design and materials
- Have spent time in maintenance or pavement construction
- Be able to articulate the importance of pavement preservation to agency management and the public
- Be able to work and play well with others
- Know how to make do with less



# History Repeats Itself

## Does this sound familiar?

In the late 1970's, inflating construction costs and declining highway gas tax revenues combined to reduce the amount of money available for highway maintenance and construction. It was in the face of this severe funding shortage that the idea for a pavement management system was first conceived.<sup>1</sup>

<sup>1</sup> "A Pavement Management Research Program for Oregon Highways" Final Report HP&R #5253, December 1989



# My Thoughts for The Future

- We will always be stretched for funds
- We will need to be able to demonstrate we are spending taxpayer money wisely
- Americans will never give up the automobile
- Freight movement by truck will continue to grow
- Most of our existing pavement structural sections are here to stay - we will rarely be able to go in and reconstruct them
- We will be doing more green, sustainable technologies like warm mix and using more recycled material in our asphalt mixes
- We will need to plan and adequately fund a sustainable pavement maintenance and preservation strategy for tomorrow's highways