



## Pavement Preservation and the MTC StreetSaver Pavement Management Program

Roger E. Smith, PE, Ph.D.  
TTI & Dept. of Civil Engr.  
Texas A&M University



## Pavement Preservation Concepts

- n Apply:
  - the right treatment
  - to the right pavement
  - at the right time
- n Focuses on preventive maintenance
  - Dedicate funds to preventive maintenance
- n Gain long-term benefits



## Preventive Maintenance Treatments

- n Treatments applied to:
  - Preserve the existing structure
  - Retard deterioration
- n Primarily prevent environmental caused deterioration
- n PM Treatments
  - Applied before major structural damage
  - Relatively inexpensive
  - Results are long term



## Pavement Management Is a Decision Making Process

- Used To:
  - Find Cost-effective Treatments
  - At Designated Times
  - To Provide a Desired Level of Service

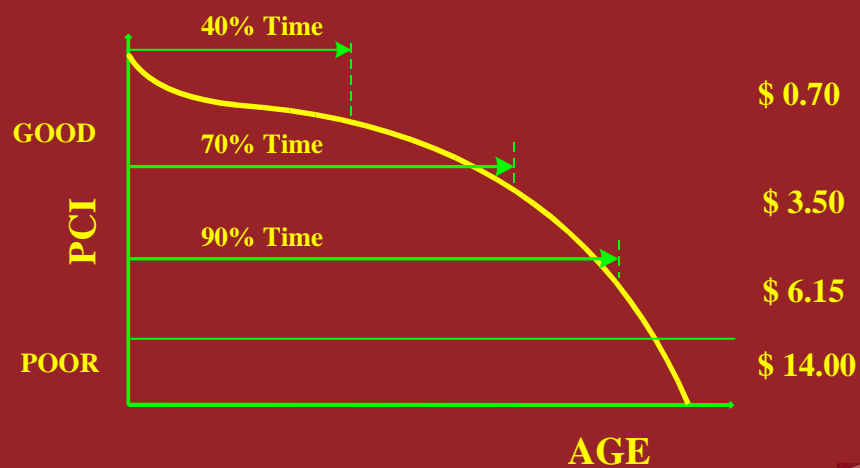


## MTC StreetSaver PMP

- n Network-level with some project selection components
- n Help agencies planning & programming pavement work - M&R
- n Show the impact of different funding
  - levels
  - approaches (PavPres vs Worst First)
- n PM has always been a focus of MTC StreetSaver PMP



## Pay Me Now or Pay Me Later



## Compare

- n Pay Me Now
  - Total \$7.00 /sy for 56 yrs
  
- n Pay Me Later
  - Total \$28.00 /sy for 54 yrs
  
- n Which Gave Better Service?



## MTC StreetSaver PMP Principle

- n It Costs the Maintaining Agencies Less to Have Good Roads Than Bad Roads
  
- n Providing:
  - Reasonable Level of Service Provided
  - Pavements Will Respond to Preventive Maintenance, e.g. they must be Structurally Adequate



## Network-Level Elements

- n Inventory
- n Condition Assessment
- n Determination of Needed Work & Funds
- n Identification of Candidate Projects
- n Determination of Impacts of Funding Alternatives
- n Feedback



## To Incorporate PPP into PMP

- n Each of the element elements were designed to address PPP & PMP



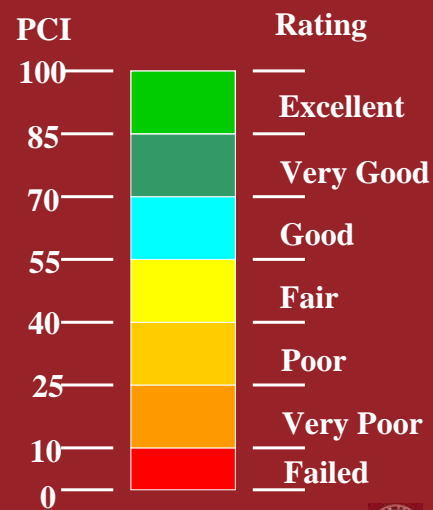
## Inventory

- n What Agency Is Responsible for
- n Where It Is Located
- n Basic Information



## Condition Assessment

- n Health of Individual Segments
  - Engineering
  - Functional
  - Safety
- n Collectively Define Health of Network

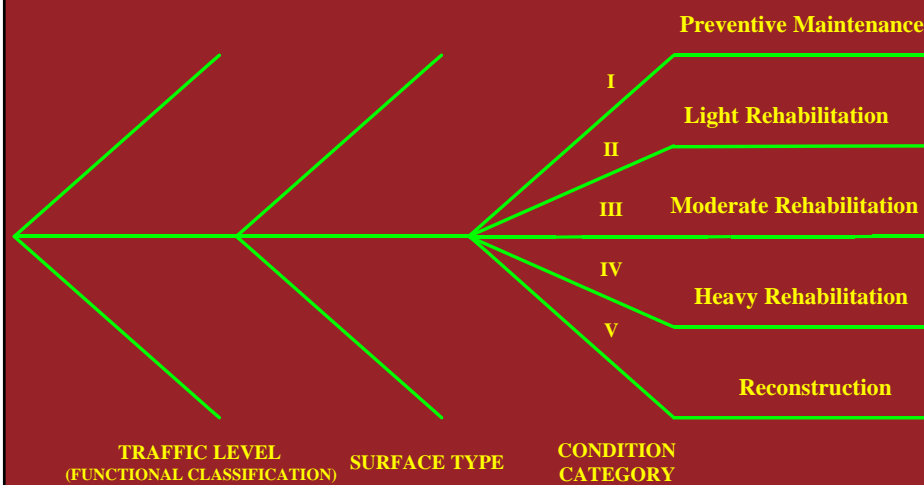


## Needs Analysis

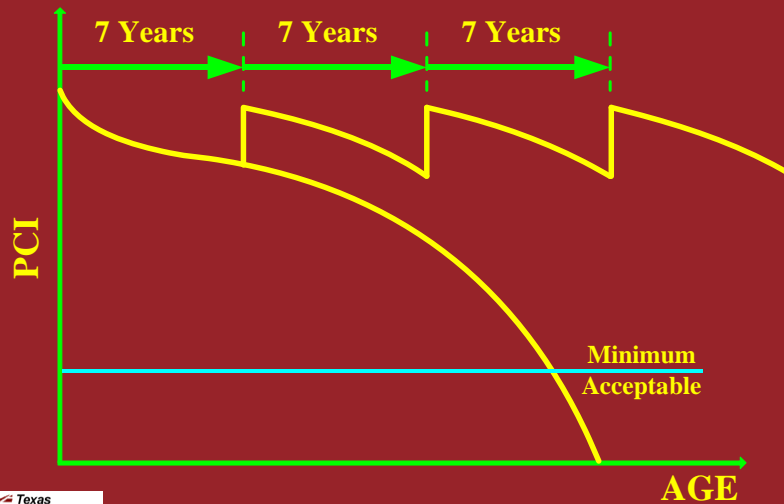
- n Identify Sections Needing Work
- n Estimate Funds Needed
- n Rehabilitation - Condition Driven
- n Preventive Maintenance
  - Minimum Condition &
  - Time Interval



## MTC PMS Uses Decision Tree Approach



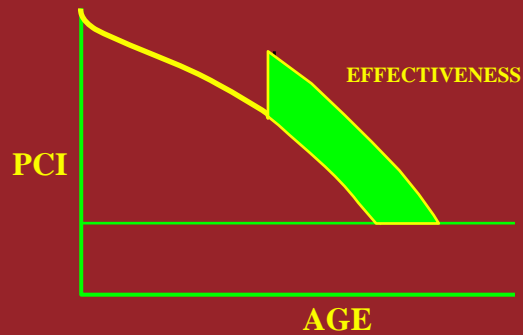
## PM – Time Sequenced



## Prioritizing Candidate Projects

- n Consider Effect of Available Funds
- n Prioritized Listings of Projects Needing Work
- n Goal - Best Pavement Network Over Time for Available Funds

## Weighted Cost-Effectiveness Ratio



$$\text{Weighted Cost-Effectiveness Ratio} = \frac{\text{AREA} / \text{YR}}{\text{EUAC} / \text{SY}} \times \text{WF}$$

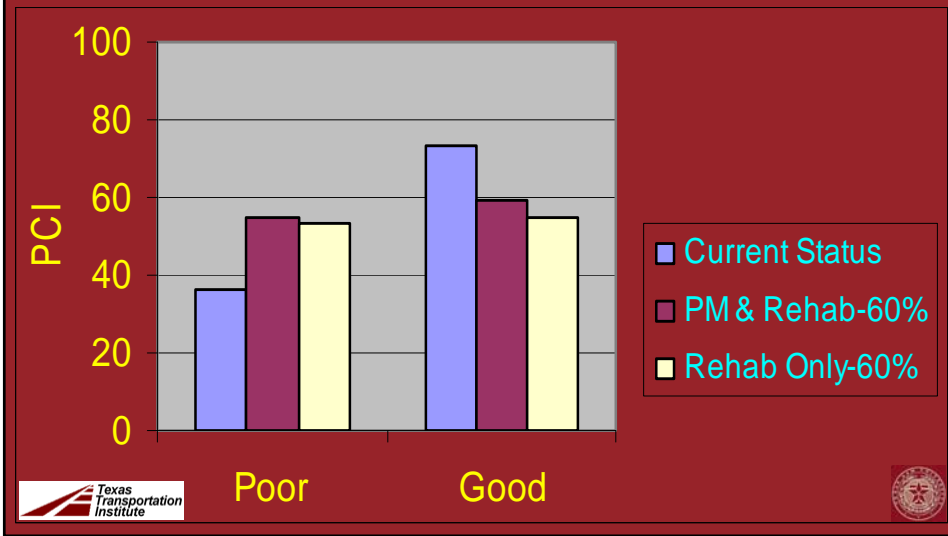


## Impact of Funding Alternatives

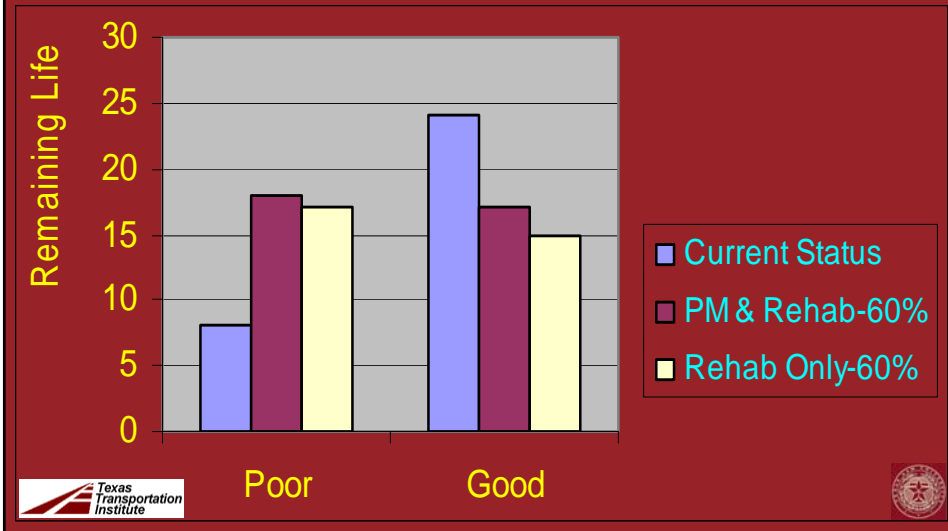
- n Connect PMS to Funding Decisions
- n Justify Fund Requests
- n Support of Allocation Decisions
  - Fix Worst First
  - Apply PM



### Compare Results - Future PCI



### Compare Projected Remaining Life



## Impact Analysis

- n MUST look long-term for impact of Preventive Maintenance
  - 20+ years (30+ for PCC)



## Project-Selection Level

- n Software used to evaluate results
  - Most work requires staff input
  - Finalize candidate project list
    - » Add & Remove projects
    - » Combine projects
  - Consider constraints - other work
  - Change dates
  - Adjust limits of projects
  - Revise cost estimates



## Summary

- n PP included in MTC StreetSaver PMP
  - Specific treatment incorporated in Project Selection
- n PM along with needed rehab provides the best condition for the least money
- n Preventive maintenance (when applied correctly) is cost-effective
- n Preventive maintenance should be a part of every agencies pavement management practices



- n MTC StreetSaver PMP developed to assist with pavement preservation planning
- n Requires agency input
- n Requires resources
  - Staff
  - Expertise
  - Funds
  - Data
- n StreetSaver minimizes resources required
- n Final selection of treatment in project-selection and project design activities

