Systematic Approach to Determining an Appropriate Pavement Treatment

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New Car in the Garage Theory

Preventive maintenance pays off A study performed by the Michigan DOT's Bureau of Transportation Planning shows that their preventive maintenance strategy is more than six times as cost-effective as rehabilitation and reconstruction projects. The Michigan DOT adopted its preventive maintenance strategy in 1992 as a way to keep its 9,580 miles of highways in the best shape possible despite declining financial resources. Since then, preventative maintenance treatments have been applied to about 2,650 miles of asphalt and portland cement concrete pavements, at a cost of $80 million. Had the DOT not implemented its preventive maintenance strategy, the study found, the DOT would have to spend an estimated $700 million today on rehabilitation and reconstruction projects to bring pavements up to their current condition. That is more than eight times as much money as has been spent on preventive maintenance treatments.

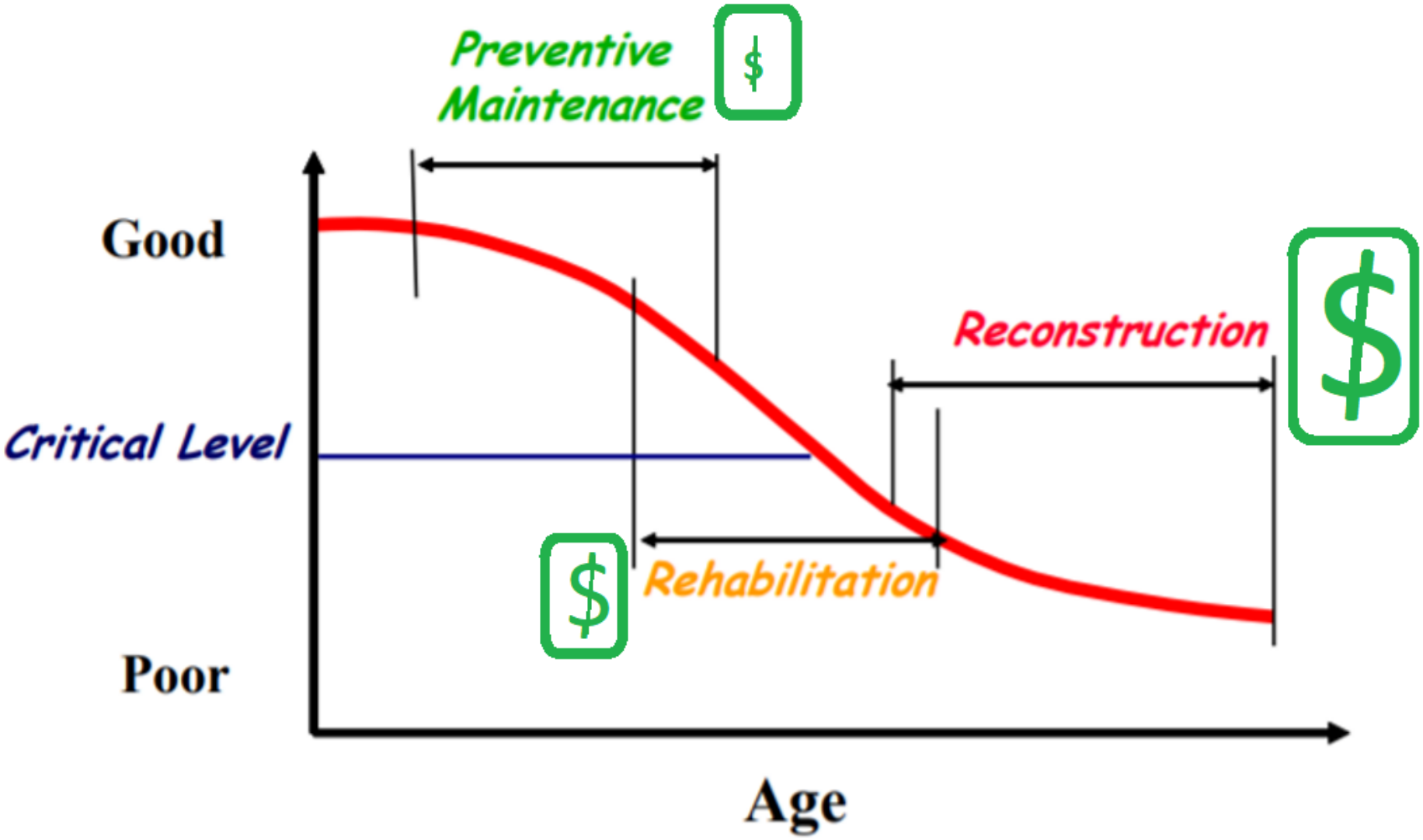
$80,000 * 6 years * $700,000

K M S & Associates

Inspection Procedure

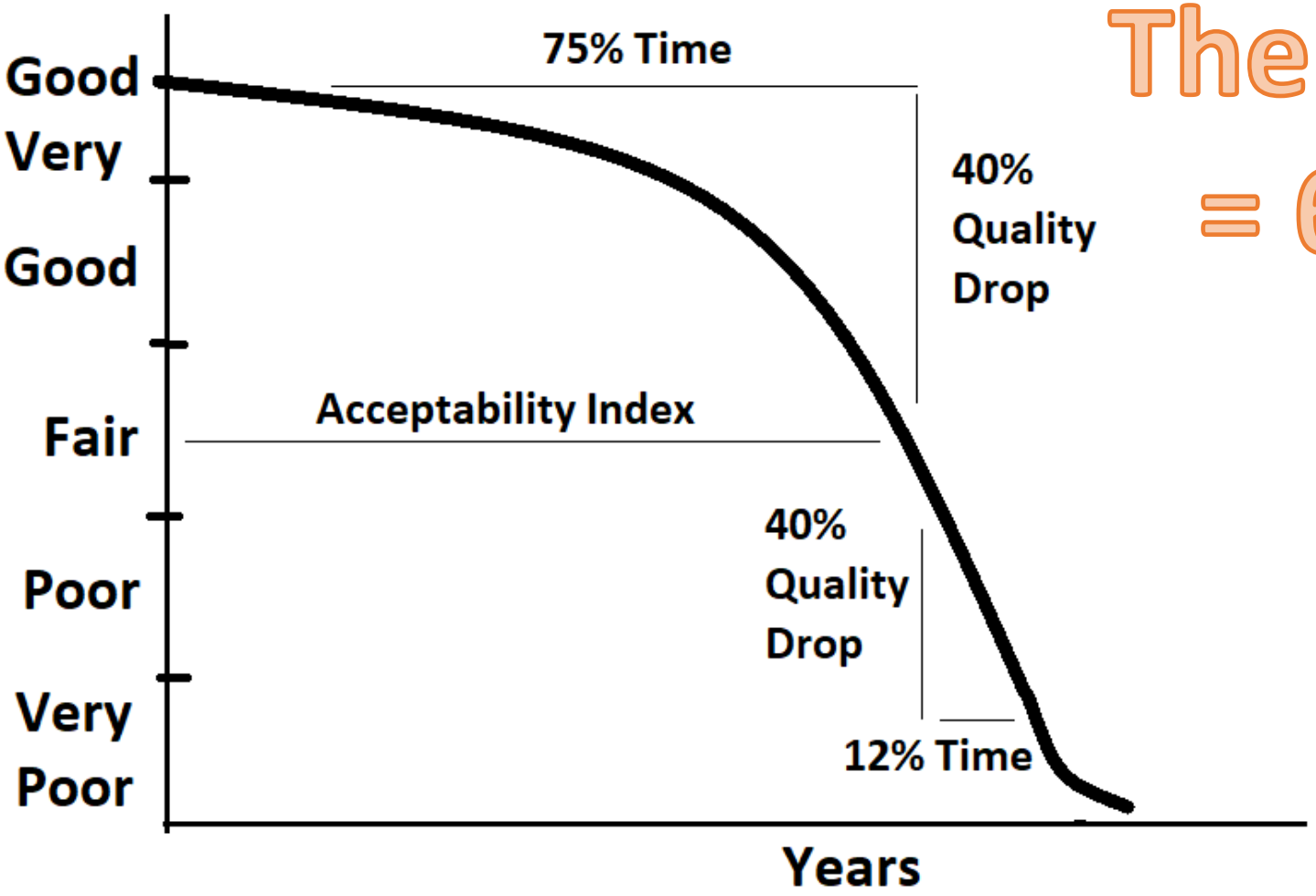
- PAVER PCI methodology ASTM D 6433
- PCR 50 + years by ODOT
- 1 thru 10 subjective by one experienced employee
- 1 thru 5 subjective by consensus of three engineers
- Van - could be someone somewhere in an office determining a number rank from a picture

Pavement Deterioration Curve



Pavement Deterioration Curve

So, When The PCI = 60

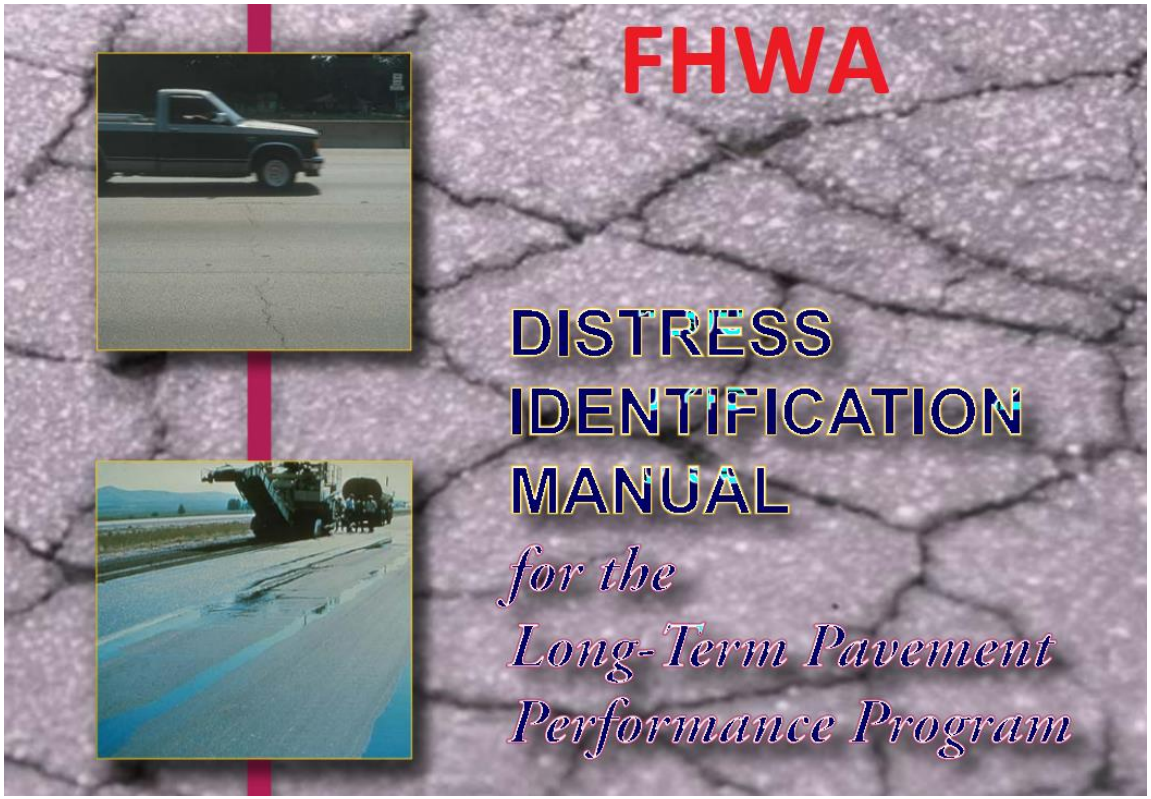


Project Needs & constraints

- Rural, urban, arterial, cul-de-sac
- How long should it last?
- Will traffic loadings change?
- How are the utilities?
- Is this a subdivision?
- Money available

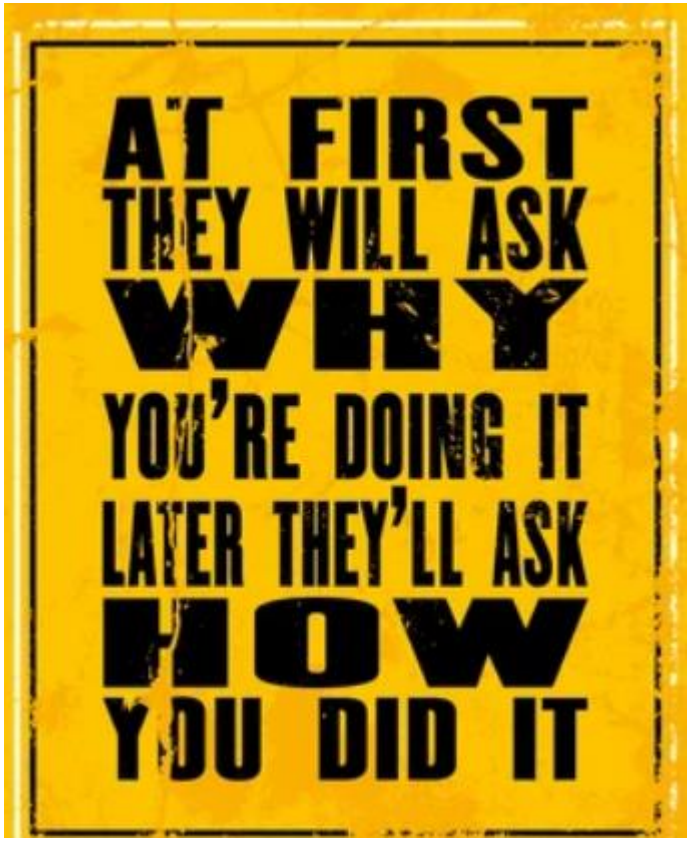
Distress Load or Temperature

- Cracking bottom up = LOAD
- Cracking top down = TEMPERATURE



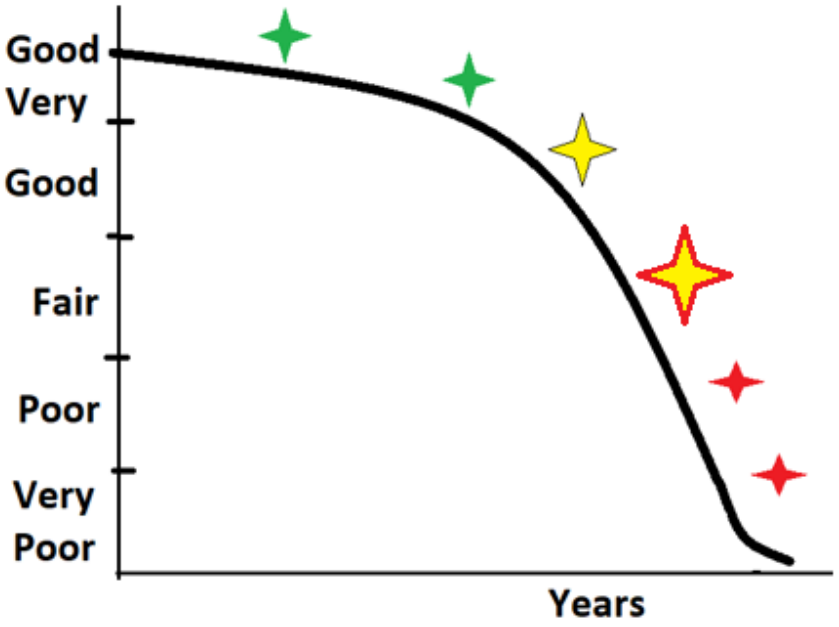
Treatment Characteristics

- How long will it last?
- Is it acceptable (can I sell it)?
- Do I need to educate the homeowners
- Is there a contractor who can do it?
- Are the materials available?



Treatments

- Rejuvenators (Reclamite, Soy)
- Crack seal (route, squeegee, band)
- Surface seals (Onyx, fog)
- Surface seals (wearing course) (micro, chip, cape, scrub)
- Thin asphalt overlays
- Mill & fill
- Cold In-place Recycling
- Cold central plant recycling
- Full depth reclamation
- Reconstruction



Unit Cost, Expected Life, Life Cycle

Treatment	Cost/sy	Exp. Life Years	Life Cycle Cost
Crack seal	$0.60	1 to 2	$0.40
Fog seal	$0.60	1 to 2	$0.40
Rejuvenator	$1.00	2 to 4	$0.30
Chip seal	$2.25	3 to6	$0.50
Microsurfacing	$3.50	5 to 8	$0.55
Double Micro	$4.50	6 to 9	$0.60
Thin Hot-mix	$3.50	6 to 9	$0.50
Cape seal	$6.00	8 to 10	$0.70
1.5"Mill & Fill	$8.00	9 to 11	$0.80
3" Mill & Fill	$22.50	11 to 13	$1.90
Cold In-place Recy*	$14.00	13 to16	$1.00
Full Depth Recy*	$14.00	12 to16	$1.00
* Plus a surface			

Websites available

- **PPRA treatment tool-box**
- Pavement interactive
- Selecting a Preventive Maintenance Treatment for Flexible Pavements – Hicks, Seeds, Peshkin

Condition to Treatment

Distresses	Crack Filling	Rejuvenation	Surface Mill	Seal Coat	Microsurface	Thin Overlay	Thick Overlay	Cold In-place Recycling	Reconstruction
Flushing Bleeding			x	x	x	x			
Surface Raveling		x		x	x	x			
Non Structural Crack	x		x			x			
Insuffient structure							x	x	x
Bad Ride			x				x	x	x
Unstable Base							x	x	x
Aged Pavement				x	x	x	x	x	

Visit Project Site

- Short list from PCI or PCR or what-ever system range, to a list of potential roads
- Project needs
- Treatment for Distress
- Generally, a few treatments would work
  - Choose most acceptable, best life cycle cost

Whenever You have Solved

Choice Results

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Less like this

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