

Putting PM into StreetSaver

MTC Technology Transfer
November 5, 2008
Ontario, CA



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Overview

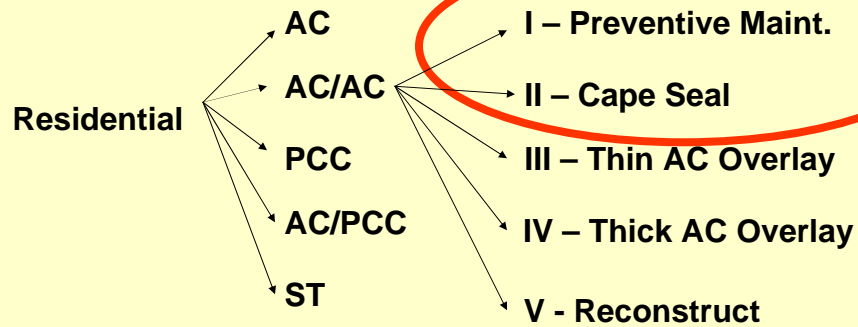
- *How do you program preventive maintenance into StreetSaver?*
- *Estimating unit costs*
- *Impacts on network condition*
- *Document benefits of preventive maintenance*



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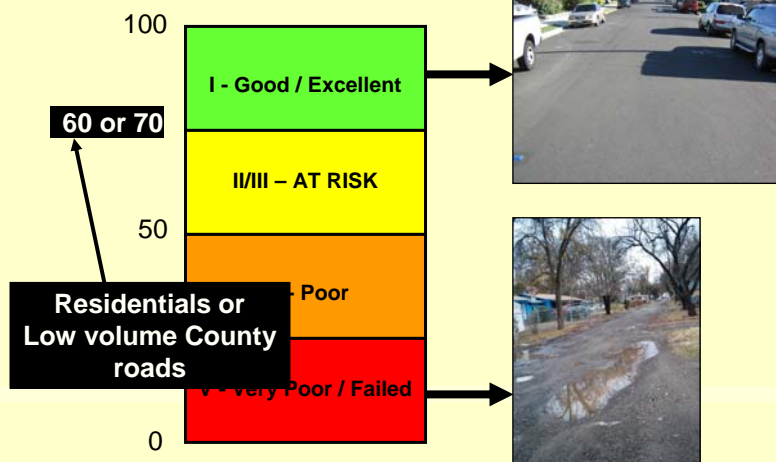
M&R Decision Tree

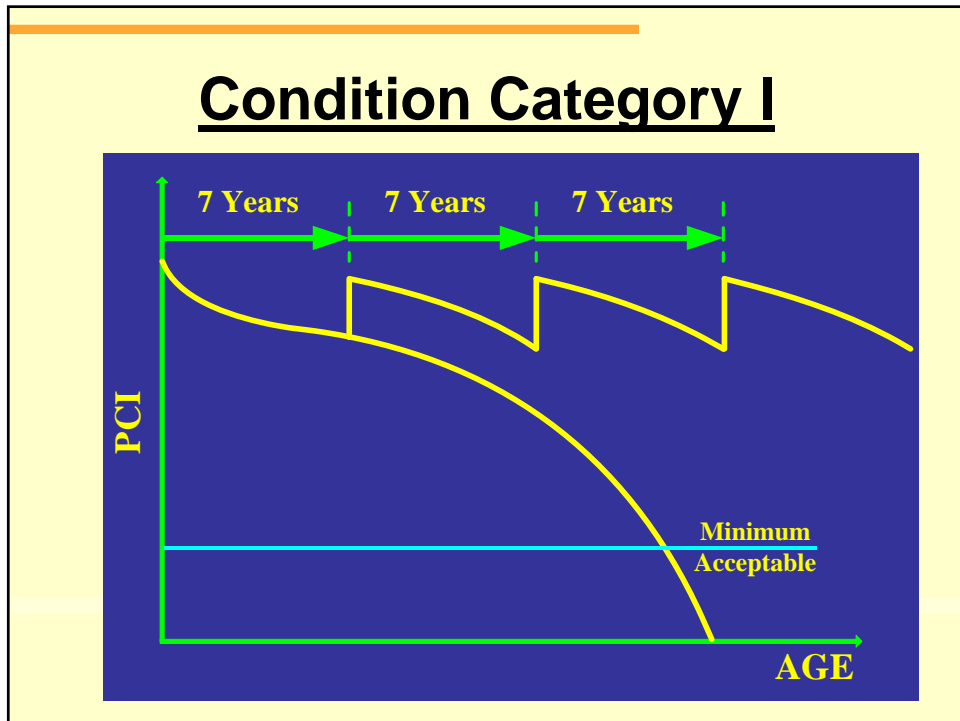
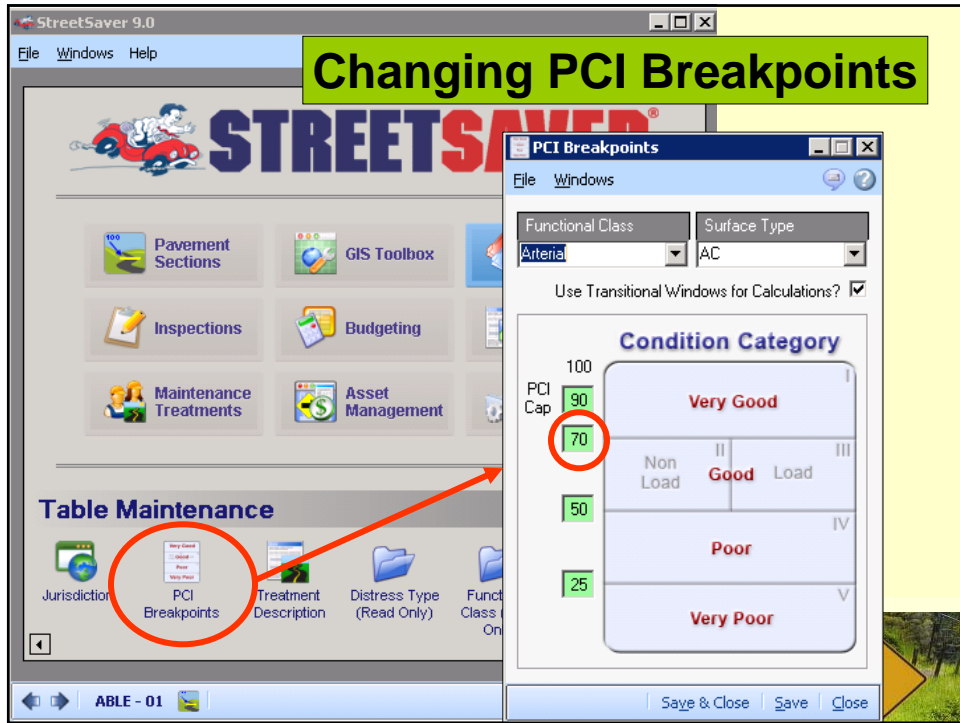


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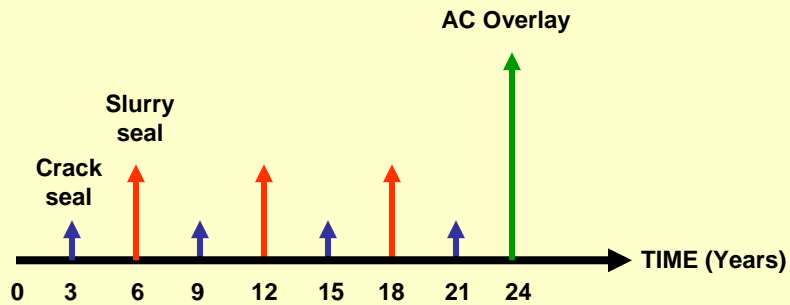


Pavement Condition Categories





Life Cycle of Pavement



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Decision Tree

File

- Arterial
- Collector
- Residential/Local
 - AC
 - Condition Category I - Very Good
 - Crack Treatment
 - Surface Treatment
 - Restoration Treatment
 - Condition Category II - Good, Non-Load Related
 - Condition Category III - Good, Load Related
 - Condition Category IV - Poor
 - Condition Category V - Very Poor
 - AC/AC
 - AC/PCC
 - ST
 - PCC
 - Other

Treatment Information

Treatment: SLURRY SEAL

Cost/Sq.Yd. except Seal Cracks in LF: 3.70

Years Between Surface Seals: 6

This is what the Decision Tree looks like in StreetSaver

Calculate Unit Costs

- *Contractor costs*
 - Materials e.g. asphalt, aggregates
 - Removal – grind, mill
 - Traffic control
 - Paint striping & markings
 - Manholes
 - Etc



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What Else Should be Included?

- *ADA ramps*
- *Curb & gutter repairs*
- *Signal loops*
- *Medians*
- *Etc*



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Don't forget ...

- *Design (in-house or consultant)*
 - Usually 10%
- *Construction inspection & management*
 - Usually 10-15%
 - Includes testing
- *Contingencies*



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Example – Slurry Seal Costs

- *Traffic control*
- *Prep*
 - Crack seal
 - Localized repairs e.g. patches/digouts
- *Slurry Seal*
- *Paint striping/markings*



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Bid Tab

ITEM		EST.	UNITS	Contractor #1	
No.	DESCRIPTION	Quantity		Unit Bid	Amount
1	Signs & Traffic Control	1	LS	\$53,945.05	\$53,945.05
2	Clearing & Grubbing	1	LS	\$10,000.00	\$10,000.00
3	Slurry Seal	163,982	SY	\$1.95	\$319,764.90
4	Cape Seal	137,184	SY	\$3.50	\$480,144.00
5	Traffic Stripe-Detail 1	3,909	LF	\$0.35	\$1,368.15
6	Traffic Stripe-Detail 16	4,361	LF	\$0.60	\$2,616.60
7	Traffic Stripe-Detail 21	4,390	LF	\$0.80	\$3,512.00
8	Traffic Stripe-Detail 22	47,349	LF	\$0.90	\$42,614.10
9	Traffic Stripe-Detail 27B	82,918	LF	\$0.50	\$41,459.00
10	Traffic Stripe-Detail 38	108	LF	\$2.00	\$216.00
11	Pavement Markings	2,251	SF	\$6.20	\$13,956.20
12	Reflective Markers	69	EA	\$16.00	\$1,104.00
			Total	\$970,700.00	

Some Notes

- *Traffic control/paint make up 18% of total costs*
- *Engineering & design – 5%?*
- *Construction inspection – 5-10%?*



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Example – Slurry Seal

Items	\$/sy
Slurry Seal	\$ 1.95
Other items (18%)	\$ 0.35
Engr & Design (5%)	\$ 0.10
Const. Inspection	\$ 0.10
Total	\$ 2.50



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AC OVERLAYS

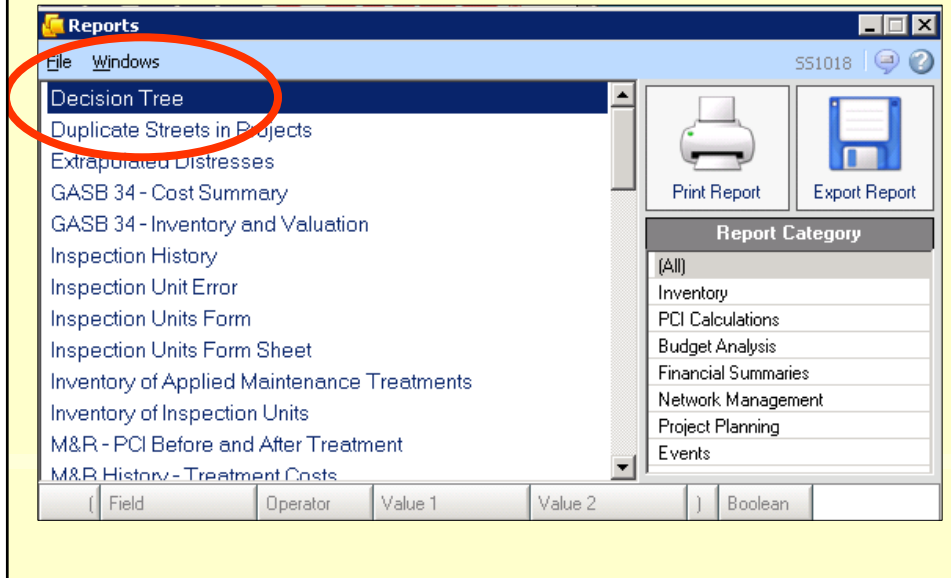


Example – AC Overlay

Item	%	\$/sy
AC overlay	27%	\$24.14
Concrete/raise iron/conforms	13%	\$11.31
Crack Seal & digouts	8%	\$6.88
Grinding	2%	\$1.38
Pavement Geosynthetic	10%	\$9.00
Striping	1%	\$1.18
Traffic control/clear & grub	14%	\$12.50
Engr & Design (10%)	10%	\$8.63
Construction inspection (15%)	15%	\$13.28
Total	100%	\$88.30

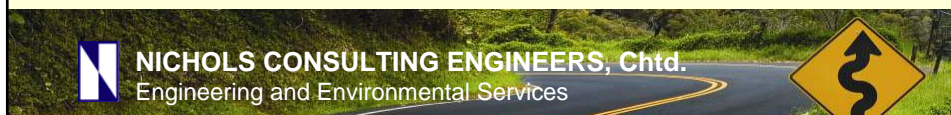
The screenshot shows a software interface for decision-making in pavement maintenance. On the left is a tree view with categories like Arterial, Collector, Residential/Local, AC, and Other. Under 'AC', there are sub-categories for Condition Category I-V and various treatments like Crack Treatment, Surface Treatment, and Restoration Treatment. On the right is a 'Treatment Information' panel. A red circle highlights this panel, which shows the selected treatment as 'CAPE SEAL & CRACK SEAL', a cost of 3.70 per square yard (excluding seal cracks in LF), and a frequency of 7 years between surface seals. At the bottom of the interface, a yellow box contains the text 'Modify treatments & costs'.

Print & Check Decision Tree



Decision Tree Report

Surface	Condition Category	Treatment Type	Treatment	Cost/Sq Yd, except Seal Cracks in LF:	Yr C
AC	I - Very Good	Crack Treatment	DO NOTHING	\$0.00	
		Surface Treatment	SLURRY SEAL & CRACK SEAL	\$2.50	
		Restoration Treatment	DO NOTHING	\$0.00	
	II - Good, Non-Load Related		2IN RAC OVERLAY	\$27.00	
	III - Good, Load Related		2IN RAC OVERLAY	\$33.00	
	IV - Poor		MILL & REPLACE	\$63.00	
	V - Very Poor		RECONSTRUCT STRUCTURE (AC)	\$132.00	



Cond Cat	Treatment	\$/sy or \$/ft	Years Bet. CS	Years Bet SS	# SS before OL
I	Crack Seal	\$ 1.60	3		
	Slurry Seal	\$ 1.74		6	
	Mill and Fill	\$ 15.40			3
II	CAPE Seal	\$ 2.50		7	
III	Thin Overlay	\$ 17.90			
I	Thick Overlay	\$ 25.70			
V	Reconstruct	\$ 42.50			

Check Life Extension

Scenarios - Section Remaining Life

Scenario: 4.8 M/m

Printed: 10/31/2008

Functional Class	Surface	Treatment	PCI before	PCI after	Life Ext.	Remaining Life
Residential/Local	A - AC	CAPE SEAL & CRACK SEAL	65.76	75.44	4.65	20.39
Residential/Local	A - AC	CAPE SEAL & CRACK SEAL	68.05	77.33	6.38	26.07
Residential/Local	O - AC/AC	CAPE SEAL & CRACK SEAL	69.17	78.16	6.28	28.35
Residential/Local	A - AC	CAPE SEAL & CRACK SEAL	64.61	74.18	5.34	21.54
Residential/Local	A - AC	CAPE SEAL & CRACK SEAL	63.09	73.22	4.03	17.20
Residential/Local	A - AC	CAPE SEAL & CRACK SEAL	66.08	75.72	5.85	23.64
Residential/Local	A - AC	CAPE SEAL & CRACK SEAL	69.82	78.92	7.22	28.95
Arterial	O - AC/AC	2IN RAC OVERLAY	62.65	100.00	16.79	29.37
Residential/Local	A - AC	CAPE SEAL & CRACK SEAL	66.44	76.00	7.01	26.31
Residential/Local	A - AC	CAPE SEAL & CRACK SEAL	69.24	78.41	6.59	27.32

PCI Increases

Street Name	Treatment	PCI before	PCI after	Delta PCI	Life Extension (yrs)
CHAMA WAY - CHAMA	Cape seal	80	88	8	9
MACMILLAN WAY - MACMIL	Cape seal	70	79	9	6
TEMPLE WAY - TEMPLE	Cape seal	62	72	10	6
SHARD CT - SHARD	Cape seal	50	63	14	7
DORTHA CT - DORTHA	Cape seal	42	59	17	8
LOMA DR - LOMA	Cape seal	19	50	31	9

Summary

- *Decide on appropriate treatment*
- *Calculate unit costs*
- *Make changes in StreetSaver*
- *Print and check reports!*
- *Double check !!*
- *Triple check !!!*



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What if I Make Mistakes?

- *Recommendations/costs for repair will not be correct – credibility questioned*
- *\$\$ needs will be over or under estimated*
- *Scenarios will not be accurate*



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Next Step

- *Enter your completed M&R activities into StreetSaver as soon as possible*
- *Why?*
 - Tracks preventive maintenance activities
 - Documents performance of treatments



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Enter M&R History

Maintenance Date	Treatment	Thickness	Area	Cost	New PCI	Old PCI
4/1/1993	SEAL CRACKS	0	4,147	\$0	82	80
5/1/1993	SLURRY SEAL	0	4,147	\$0	89	82
9/7/1999	CAPE SEAL	0	0	\$0	58	63
6/1/2008	DOUBLE CHIP SEAL	0	0	\$0	78	68

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Questions?

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