



CIR for Low-Volume Roads in Nevada

Western Regional In-Place Recycling Conference

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Nevada Department of Transportation (NDOT)



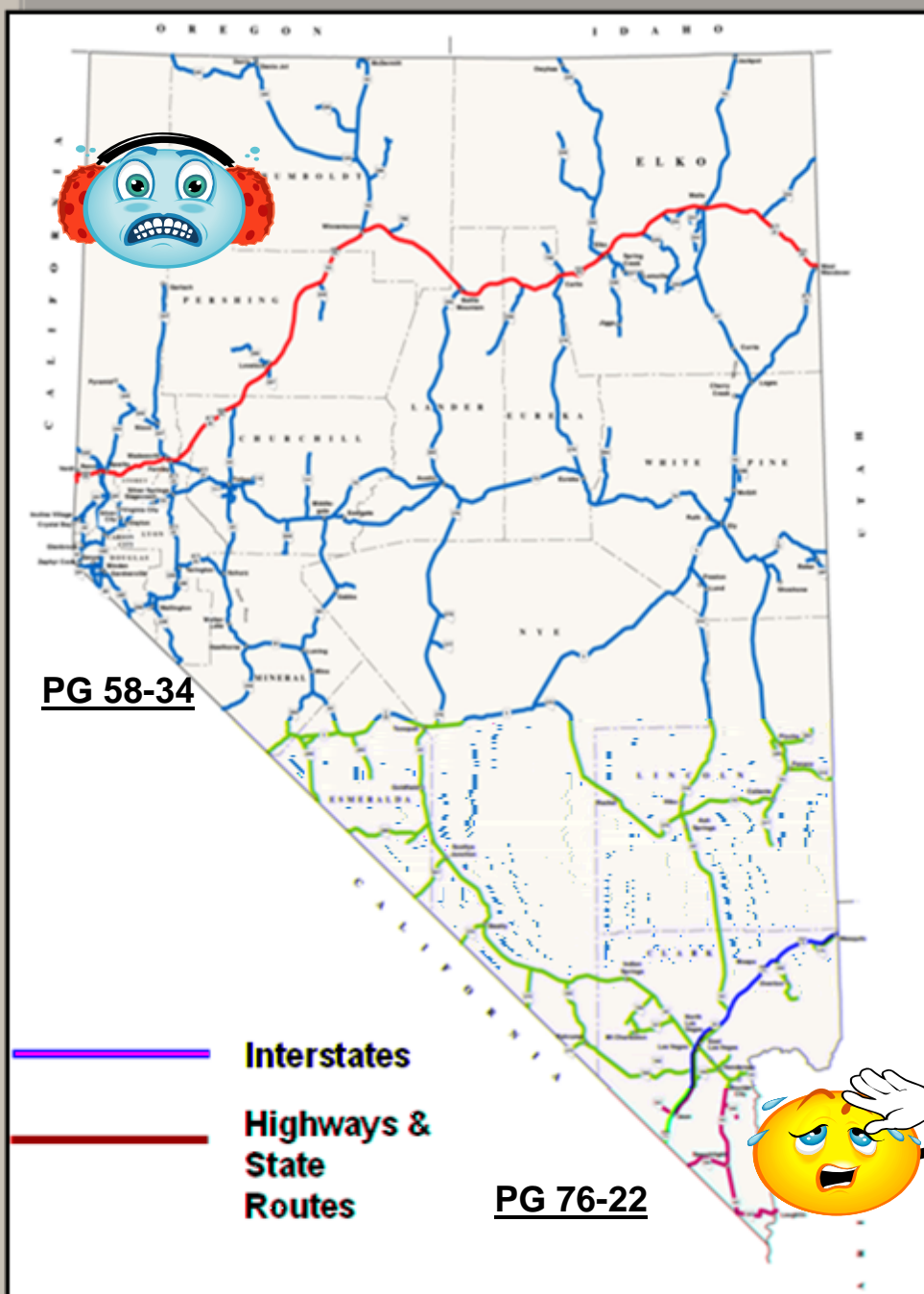
June 4th, 2008

COLD of Northern Nevada



HEAT AND TRAFFIC OF LAS VEGAS





- 13,000 Lane Miles
(Total Statewide)
- 3,385 Low Volume
(ADT of 400 or less)
- LVR = 26% System



Rehabilitation Schedule & Costs

Prioritization Category	Two-Directional Traffic	Frequency of Rehabilitation In Years	System Percentage	Annual Reactive Cost	Annual Proactive Cost	Cost Difference
1	CONTROLLED ACCESS asphalt concrete	8 18	19	\$50M	\$30M	\$20M
2	ESAL > 540 OR ADT > 10,000	10	19	\$42M	\$37M	\$5M
3	540 >= ESAL >405 OR 1600 < ADT <= 10,000 + NHS	12	21	\$30M	\$17M	\$13M
4	405 >= ESAL > 270 OR 400 < ADT <= 1600	15	15	\$14M	\$10M	\$4M
5A	280 < ADT <=400	20	6			
5B	120 < ADT <= 280	20	10	\$5M	\$5M	\$0M
5C	ADT <= 120	20	9			
TOTAL				\$141M	\$99M	\$42M







LVR Rehabilitation Research Project

- 29 Combinations of Surface and Rehab Strategies
- FDR – Lime & Emulsion, Liquid Stabilizer, Cement & Foamed Asphalt
- CIR – 188 Lane Miles Constructed Solvent Free, CMS-2S & Polymer Modified
- Report Published in January of 2008



LVR Research Initial Findings

- \$104K Savings per CL Mile Using CIR and Double Chip Versus 2" HMA
- \$8,400,000 per Year Savings if Recycling Strategies are properly executed.
- Rehabilitation Guidelines Developed

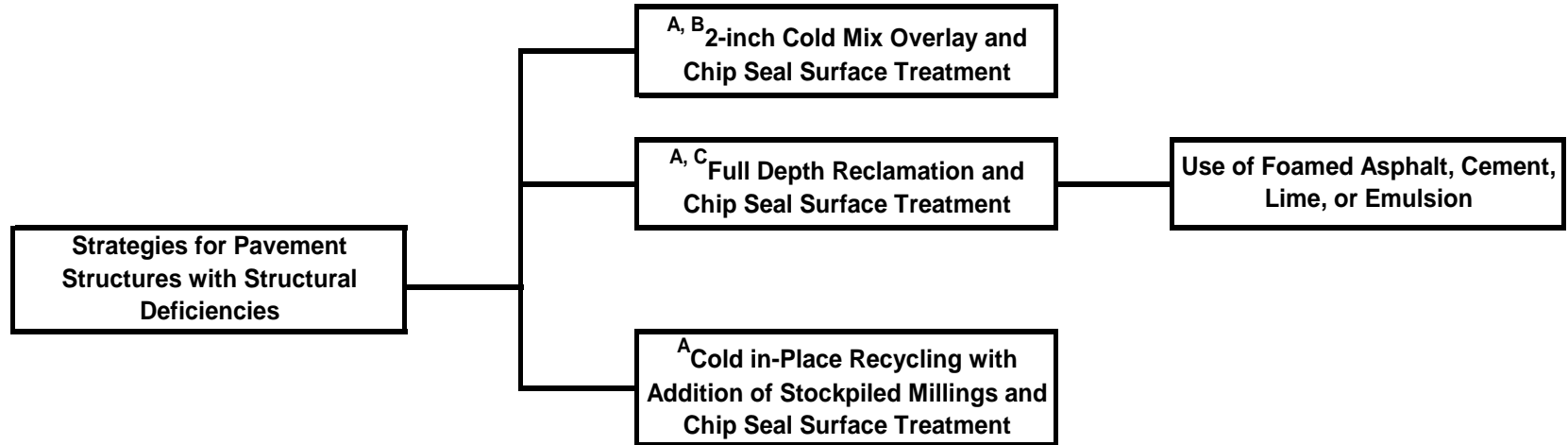


Preliminary Results of Research Effort

- Microsurfacing and slurry seal program has been incorporated into statewide pavement management plan
- A CIR with chip seal surface treatment can effectively rehabilitate a LVR at almost half the cost of a 2 inch PBS and surface treatment
- It is already standard practice to let a statewide CIR contract for LVRs each year (A double or single chip seal is placed by NDOT's maintenance personnel)

Preliminary Matrix Development

Rehabilitation Strategies for Low Volume Roads



^A Place a single chip seal on roadways where no snowplow activity is expected; place a double chip seal on roadways where snowplow activity is expected.

^B Crack sealing or filling is required before placing cold mix, chip seal, cape seal, or chip seal over pavement fabric.

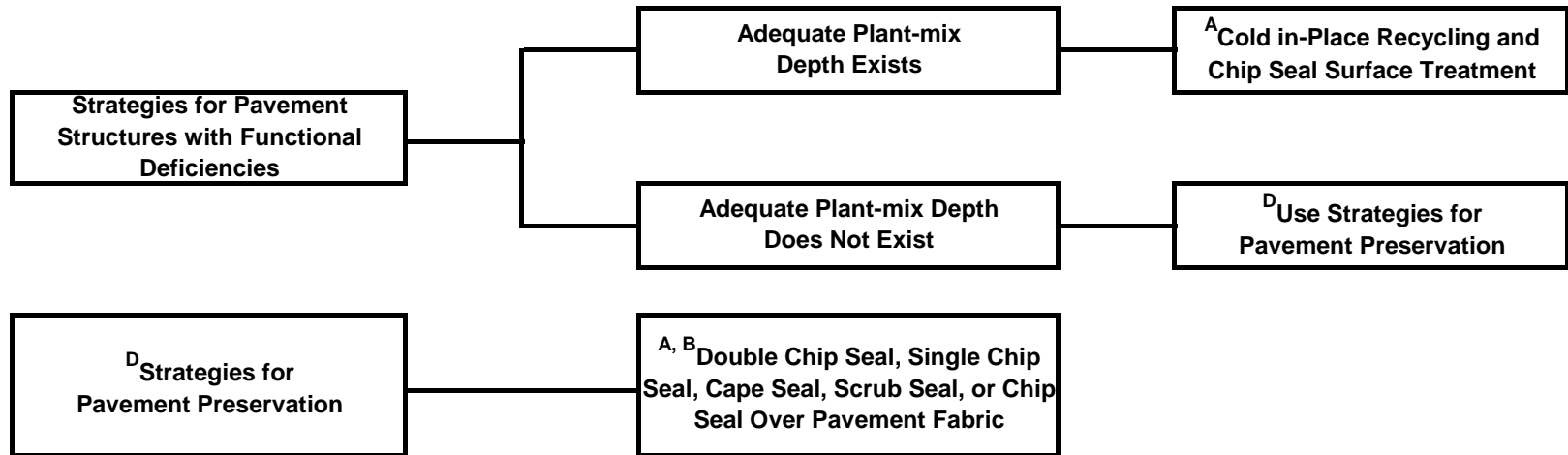
^C Thin plant-mix overlay may be required if ride quality is not achieved.

^D Use pavement preservation strategies to reduce the rate of deterioration and extend the life of the existing pavement.

Pavement preservation strategies will not improve the structural or functional characteristics of the roadway.

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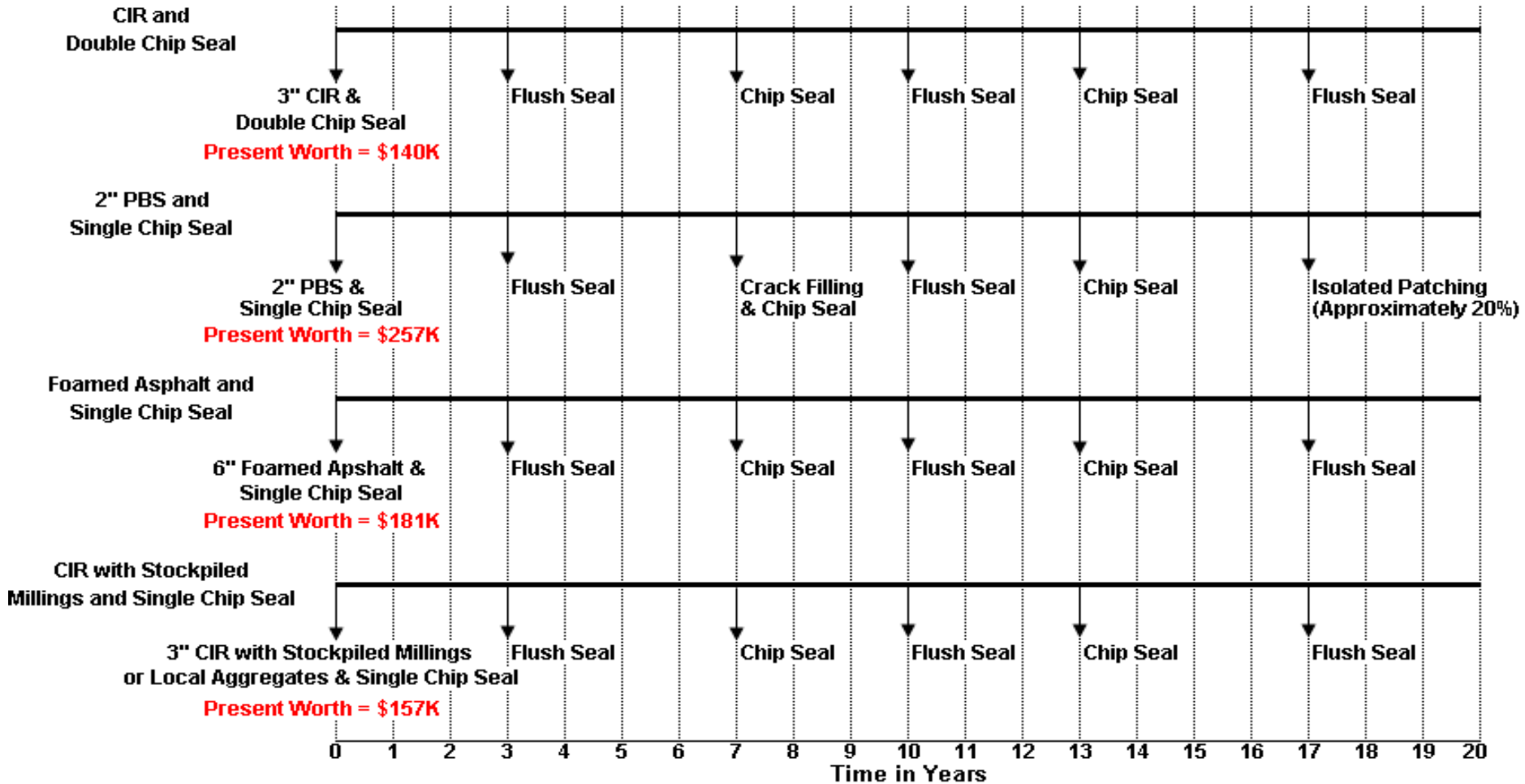
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20-Year Life Cycle Costs for One Centerline Mile





Statewide CIR Contracts

- Low Volume Roads were given to Maintenance for Preservation Responsibility
- Candidate Projects for CIR Include:
 - 1,000 ADT or Less Than 1 Million ESALS
 - Adequate Pavement Thickness
 - Adequate Base and Subbase Strength (During & After Construction)
- Preferred use of CIR are Pavements with “Functional Deficiencies”
 - Block Cracking,
 - Raveling,
 - Rutting, or
 - Thermal Cracking, etc...
- Pavement Condition Surveys Performed each year – Candidate Roadways Selected



Statewide CIR Contracts

- Materials Division Assists with Pavement Analysis Data, i.e., Coring, FWD, & Structural Section Calculations, IRI Data
- Statewide CIR Contract Administered by NDOT Maintenance & Operations Division
- One Statewide Contract that will CIR approx. 200 Lane Miles of Roadway Throughout the State
- District Engineers Provide Construction Administration, Testing & Inspection (NDOT Construction Field Crews)
- State Maintenance Forces Construct Double Chip Seal
- 20 Year Design Life Expected Given Volumes and ESALS



Preservation Program Funding Sources \$114 Million / Year

3R - \$25M

Construction Contracts

Interstate Maintenance – \$40-50M

Construction Contracts

District Contracts - \$11

Smaller Rdwy & Bridge Preservation Projects

Betterments - \$11-13M

State Maintenance Forces / Chip Seals , e.g.

Statewide Maintenance Contracts - \$14M

Microsurfacing / Cold In-Place Recycling

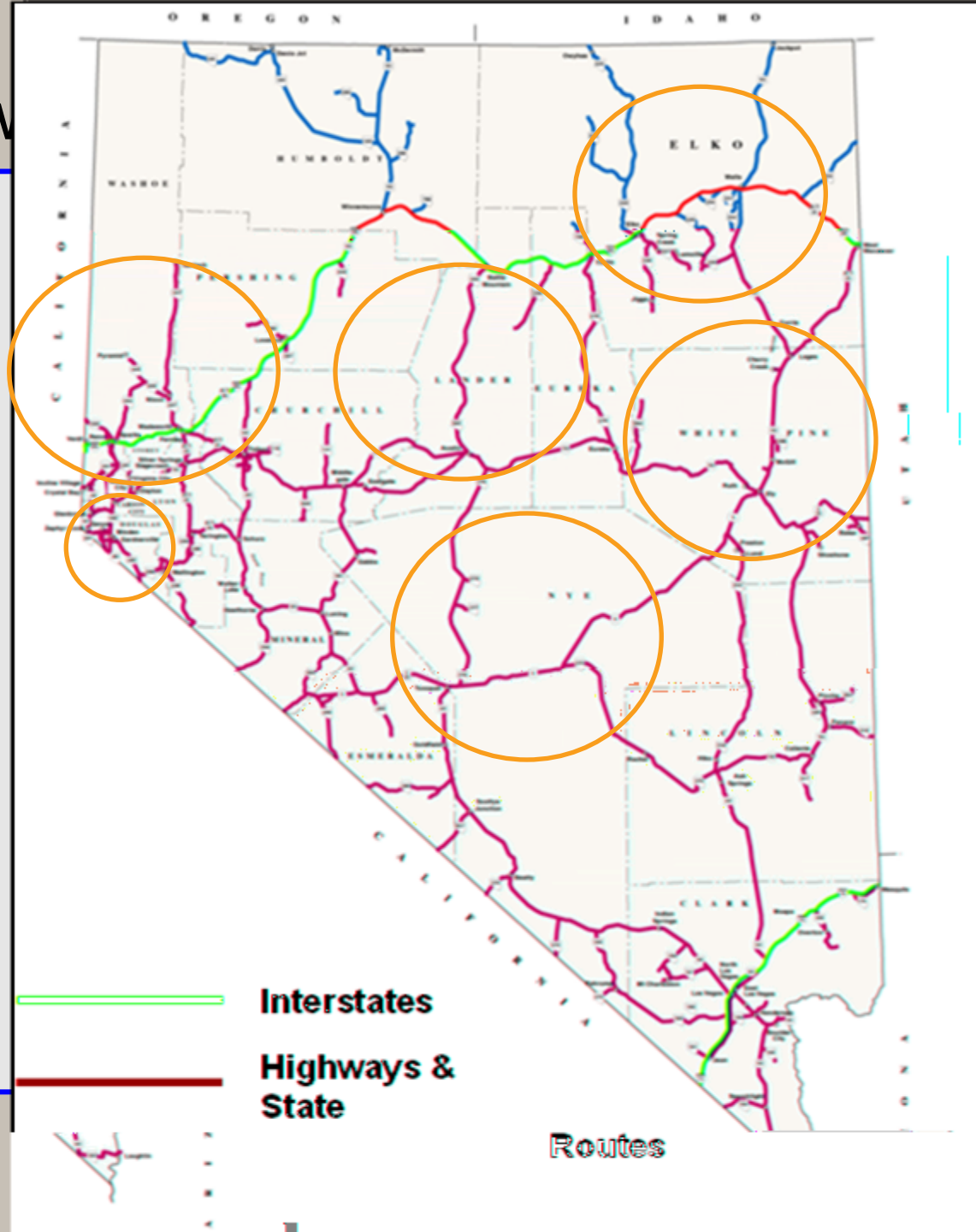
Cost of Maintenance Pavement Preservation Treatments

Treatment	July 1, 2004- June 30, 2005	July 1, 2005- June 30, 2006	July 1, 2006- June 30, 2007	July 1, 2007- April 28, 2008
Chip Seals	\$5,200,581.02	\$5,480,175.51	\$6,152,372.46	\$6,228,827.10
Flush/Fog Seals	\$695,158.54	\$524,863.61	\$245,203.20	\$262,374.88
Scrub Seals	\$160,064.02	\$162,780.21	\$344,948.51	\$328,345.60
Hand Patching	\$232,515.11	\$197,441.41	\$206,262.80	\$174,071.70
Machine Patching	\$351,957.43	\$529,970.45	\$654,440.26	\$499,078.23
Maint. Overlays	\$1,693,563.77	\$2,845,901.44	\$1,834,035.85	\$806,227.00
Crackfilling	\$290,745.03	\$337,089.90	\$533,771.70	\$720,579.36
Micro-surfacing	\$385,646.00	\$551,636.16	\$3,345,345.00	\$3,279,849.50
Cold in place Recycling (Maintenance places Double chip seal)	\$525,427.00	\$965,966.10	\$3,155,147.60	\$3,286,407.32
CIR Awarded for July 2008-June 2009			\$8,697,442.00	
Micro-surfacing Advertised July 2008-June 2009			\$5,765,881.54	



Statewide

- \$8,777,666.00
- 6 Counties
- Contractor Provides Mix Design
- Performance Based Specs
- 200 Lane Miles of CIR Construction



Closing

- NDOT Has an Obligation To Help other States – What Can We do to Help?
- Who are you passing the torch to?
- We need to “REALLY” Partner with Industry!!





Thank You

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