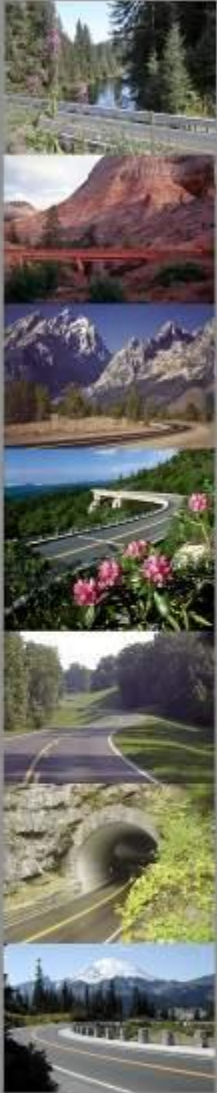


Pavement Preservation in the Federal Lands Highway Program



MPPP Meeting, Des Moines, Iowa – October 27, 2010

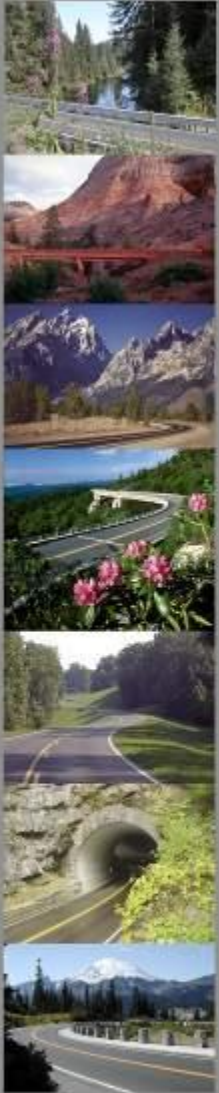


Topics

- ◆ Who we are. Where we work.
- ◆ Pavement Preservation Project Delivery
- ◆ Use of Pavement Management
- ◆ Construction



FLH Division Offices



Vancouver, WA

WFLHD

Lakewood, CO

CFLHD

Sterling, VA

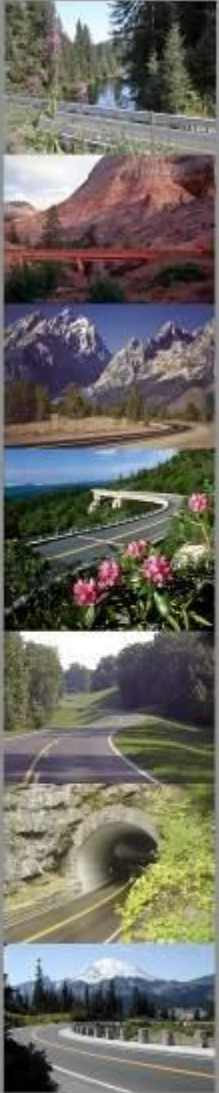
EFLHD



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Partner Agencies

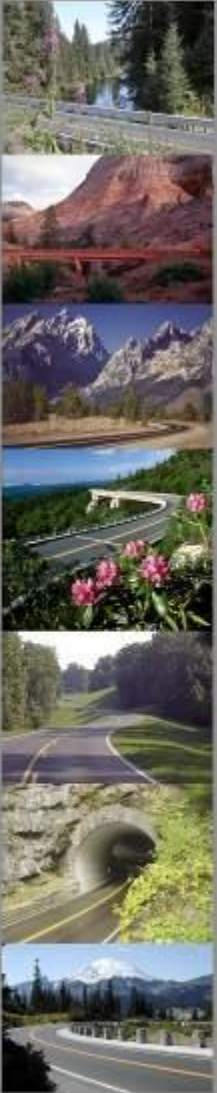


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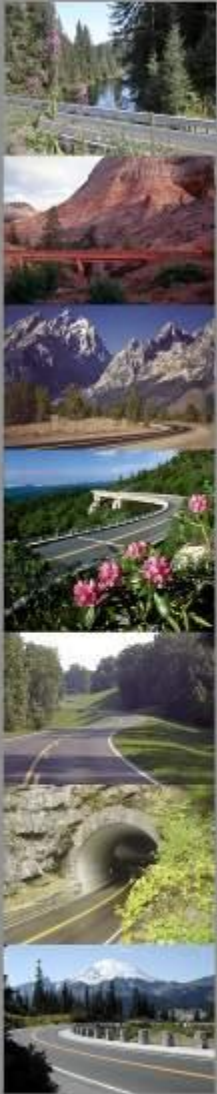
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Road Mileages

- ◆ NPS: 8,127 miles
- ◆ Forest Highways: 29,200 miles
- ◆ FWS: 4,103 miles (mostly gravel)
- ◆ Indian Reservation Roads: 54,700 miles



Our Settings...



Saguaro N.P.



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Federal Lands Highway Division

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Bryce Canyon National Park



Death Valley National Park



BADWATER BASIN

282 FEET / 855 METERS

BELOW SEA LEVEL

03/01/2006



Olympic National Park



San Juan Island



Routt National Forest



Delaware Water Gap N.R.A.



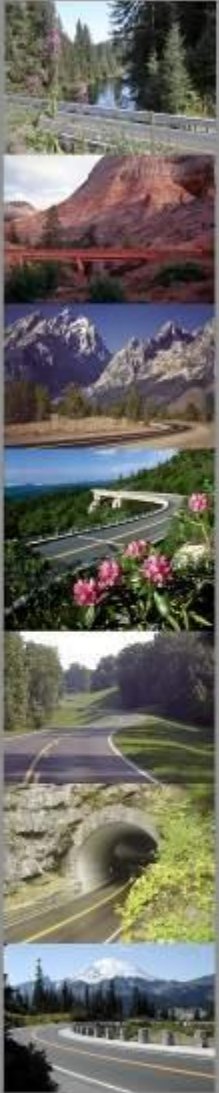
Fire Island – Aggregate Surfacing



Pennsylvania Avenue – White House



Cuyahoga Valley National Park



Current FLH Role in Pavement Preservation

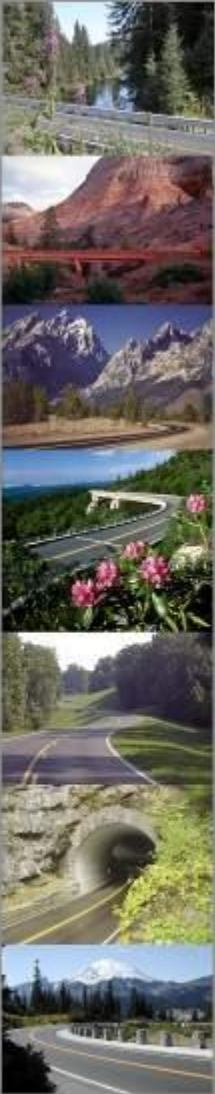
- ◆ **NPS** – design and construct
- ◆ **FWS**
 - Gravel Roads – FWS maintenance staff
 - Paved Roads – FLH design & construct
- ◆ **IRR** – primarily 3R and 4R
- ◆ **Forest Highways** – 3R and 4R; some informal PP



Pavement Preservation Program

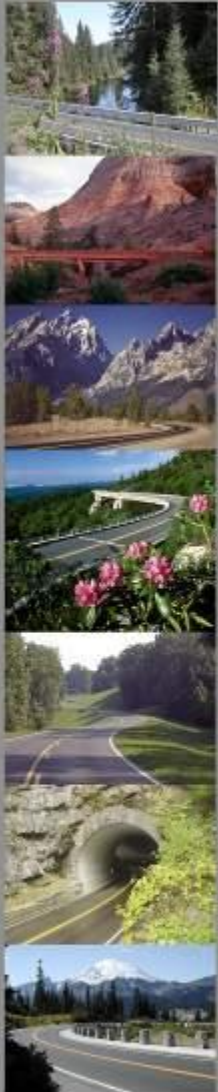
◆ Challenges

- Geographic spread
- Practical procurement
- New type of work
- Multiple funding sources
- Contractor availability
- How much pre-treatment repair



Pavement Preservation Program - NPS

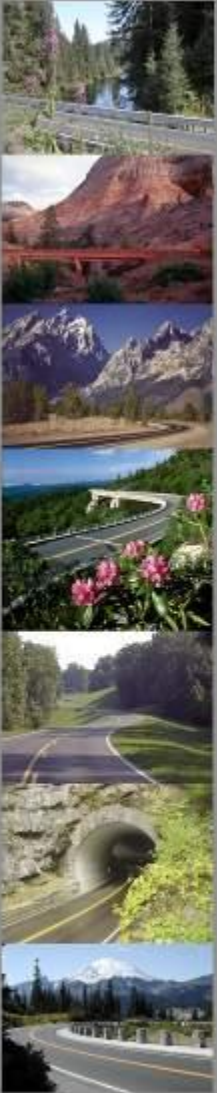
Our Most
Developed
&
Formalized
Program



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Engineering America's Scenic Highways

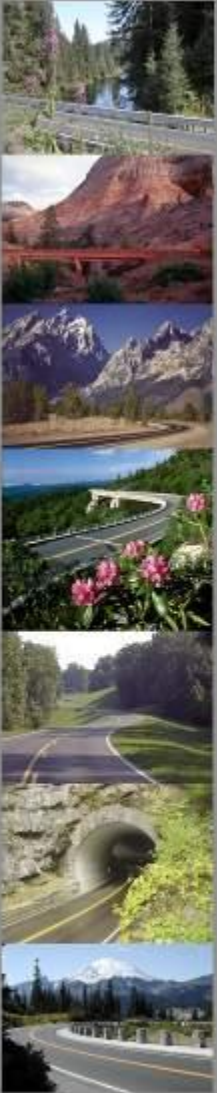
Pavement Preservation Program - NPS



Three NPS Regions have a dedicated PP Program.

Other Regions will hopefully soon follow.



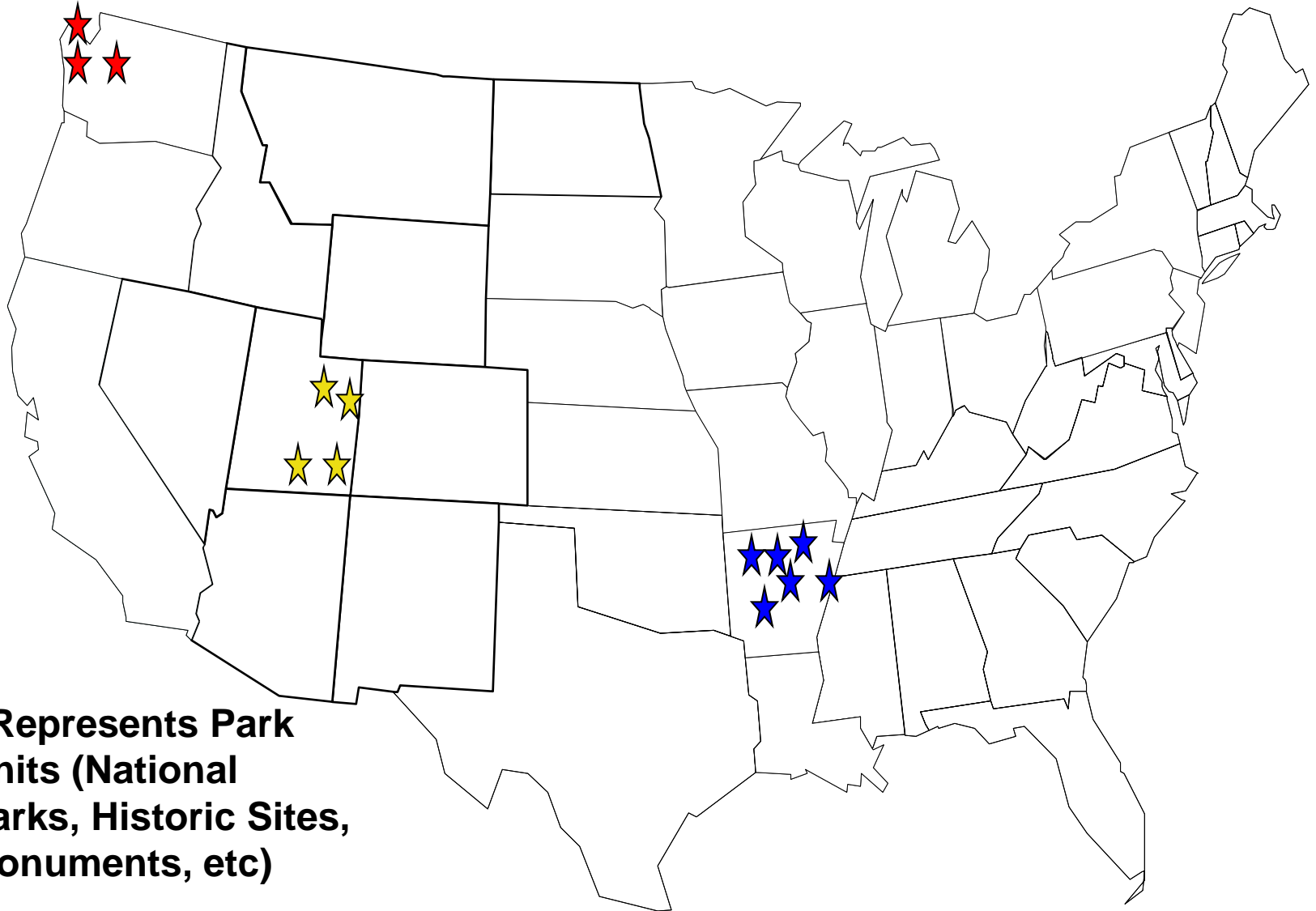


Pavement Preservation Program - NPS

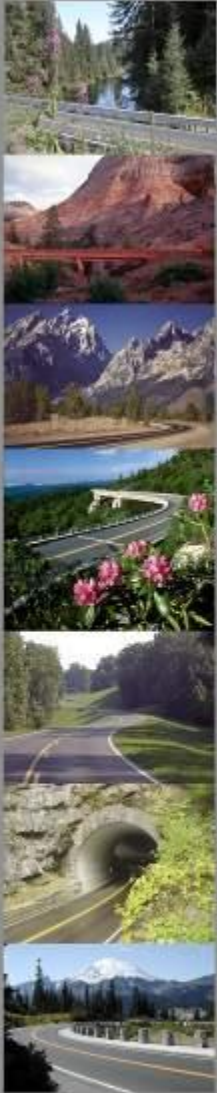
- ◆ Project Delivery Approach / Strategy
 - Assume an 8 to 10 year treatment cycle to estimate budget need
 - Cradle-to-grave project management
 - Cluster parks into one project development package (some sacrifice of best timing)
 - Tight control on PE / CE costs



Examples of “Clustering” or Grouping of Parks into a Single Project



★ - Represents Park Units (National Parks, Historic Sites, Monuments, etc)



NPS Midwest Region Example

Centerline Miles	Parking Area (square yard)	Costs per unit *	Total Cost
215	922,500	\$75,000 / mile \$5.20 / sq yd	\$21,000,000

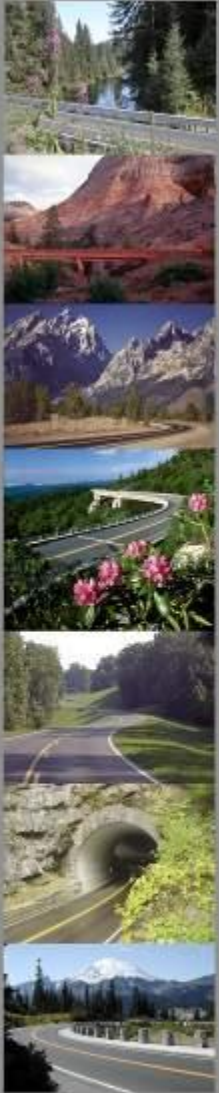
***All project delivery costs**

Subtractions:

- Based on condition data ~10% beyond PP
- Rehabilitation & reconstruction ~10%

\$16,800,000 / 8 years = \$2,100,000 per year

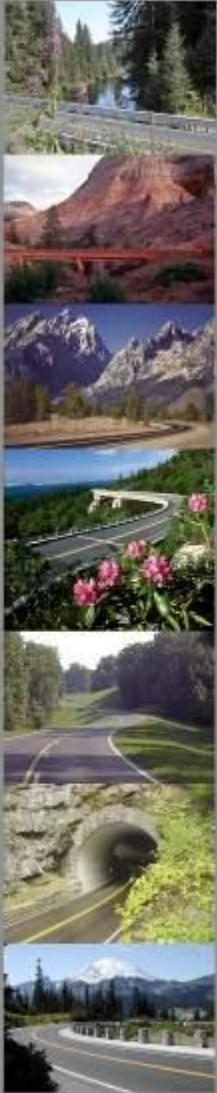




NPS Midwest Region Example

◆ <u>2011 Arkansas Cluster</u>	◆ Program/Scope
– Arkansas Post	– \$111,000/\$158,000
– Buffalo River	– \$777,000/\$740,000
– Central High School	– \$3,000/\$50,000
– Fort Smith	– \$39,000/\$1,000
– Hot Springs	– \$510,000/\$425,000
– Pea Ridge	– \$430,000,\$419,000
◆ Total	◆ \$1.87M / \$1.79M





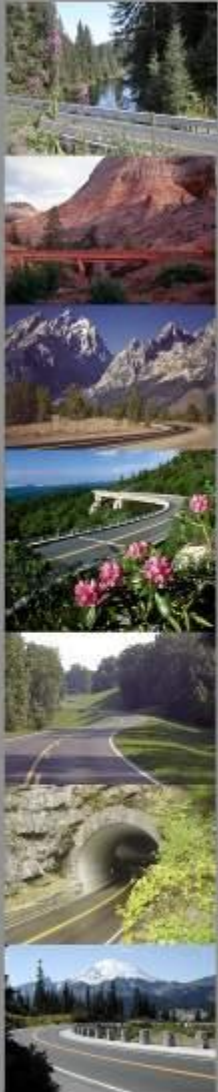
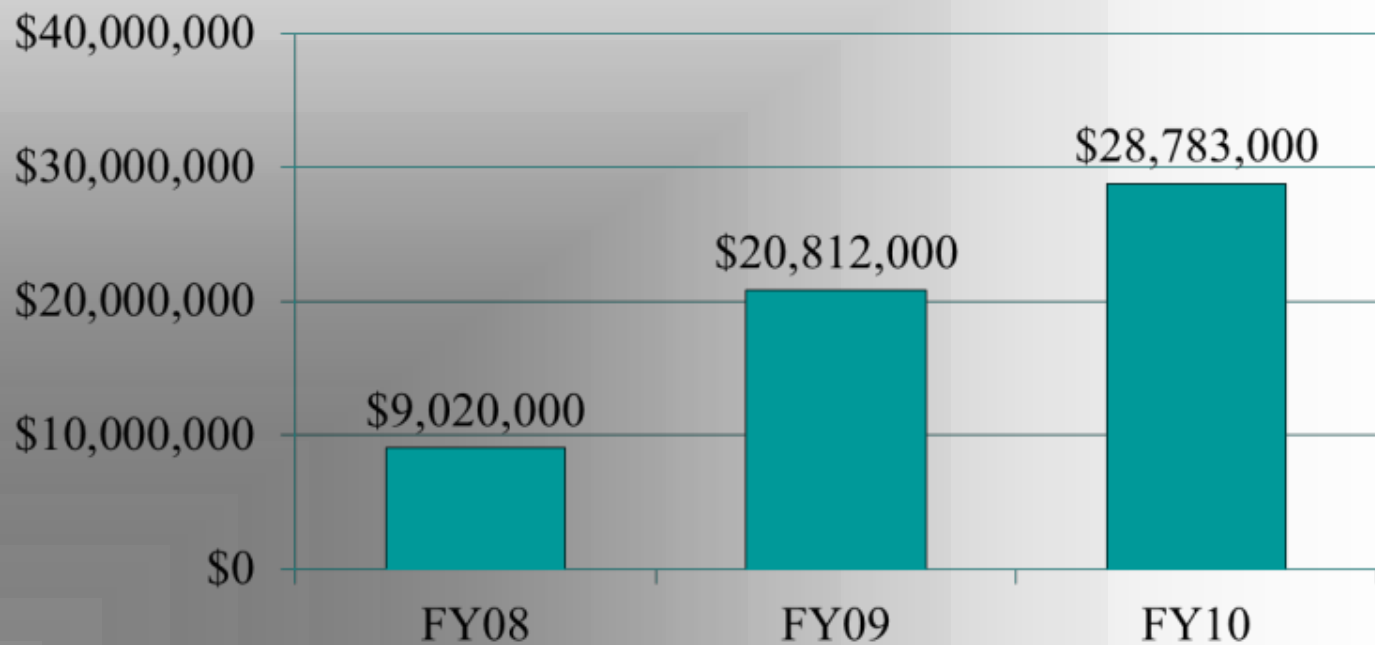
NPS Midwest Region Example

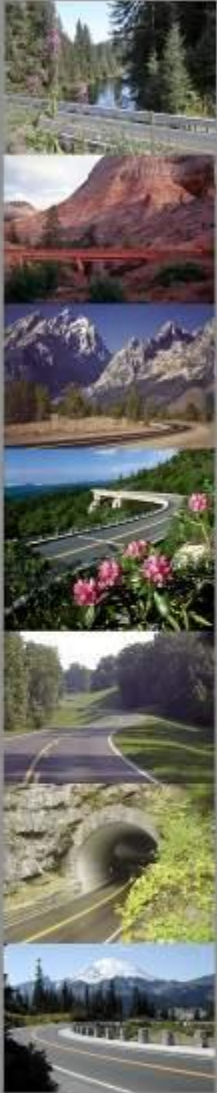
◆ <u>2014 Indiana Cluster</u>	◆ Program Amount
– George Rogers Clark	– \$32,000
– Indiana Dunes	– \$1,810,000
– Lincoln Boyhood	– \$78,000
◆ Total	◆ \$1,920,000



Stimulus /ARRA Impact

Preservation \$





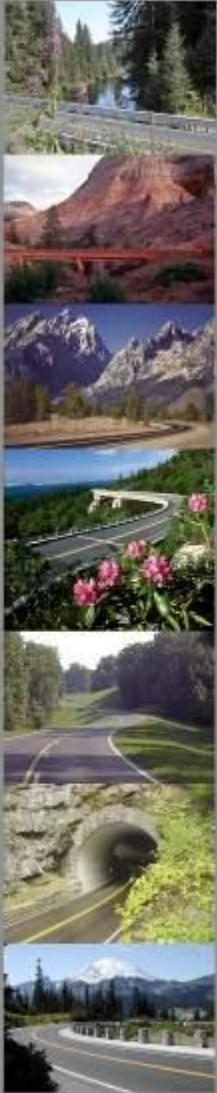
Pavement Preservation Program - NPS

Use of Pavement Management



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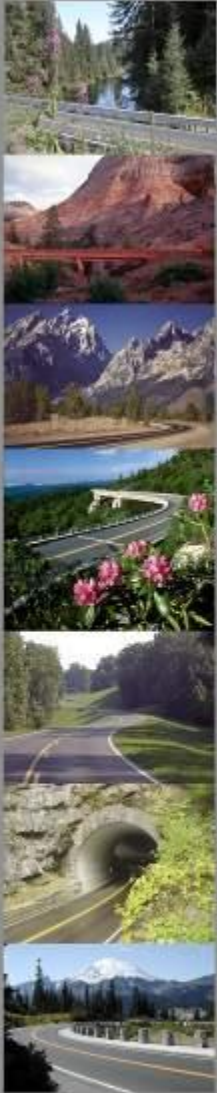


Pavement Preservation Program - NPS

◆ PMS

- Use Stantec's HPMA system
 - ◆ As-built data base
 - ◆ Decision Tree
 - ◆ Prioritization or Optimization
- Incorporates pavement condition rating (0 to 100 scale) based on roughness, rutting, and cracking
 - ◆ Collected by automated data collection vehicle ~4 years

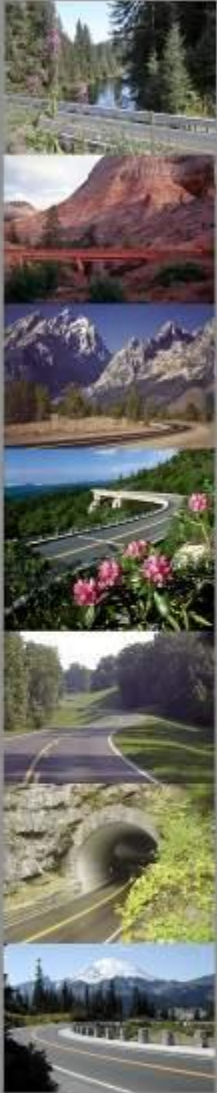




PMS Work Scopes

- ◆ Reconstruction
- ◆ Pavement Rehabilitation
 - Light Rehab: Thin overlays, Mill & overlay
 - Heavy Rehab: CIR, FDR, thick overlays
- ◆ Preventive Maintenance
 - Chip seals, slurry seals, etc.





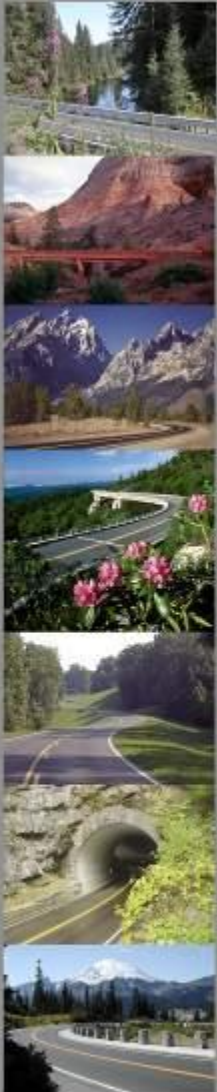
Use of Pavement Management

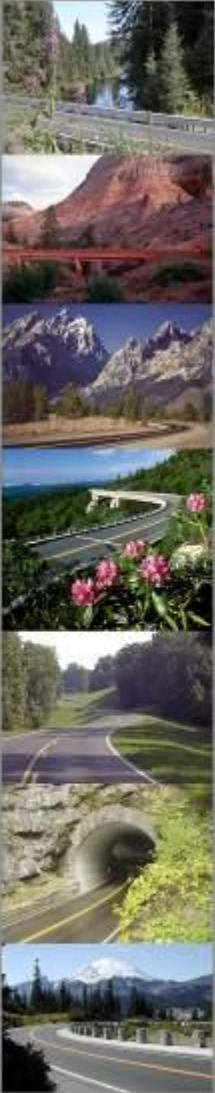
- ◆ Currently PMS is under-utilized for pavement preservation project delivery
 - Need pavement condition data more frequently
 - Need to validate / develop performance models (benefits & life extension) for preservation treatments



Use of Pavement Management

- ◆ PMS Output
- ◆ NPS Midwest Region Example





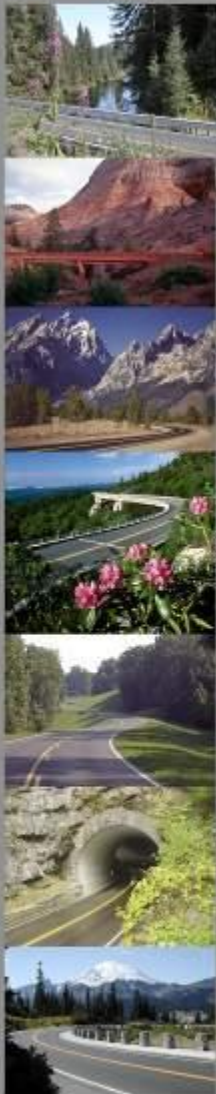
Use of Pavement Management

Reinforce importance of preservation

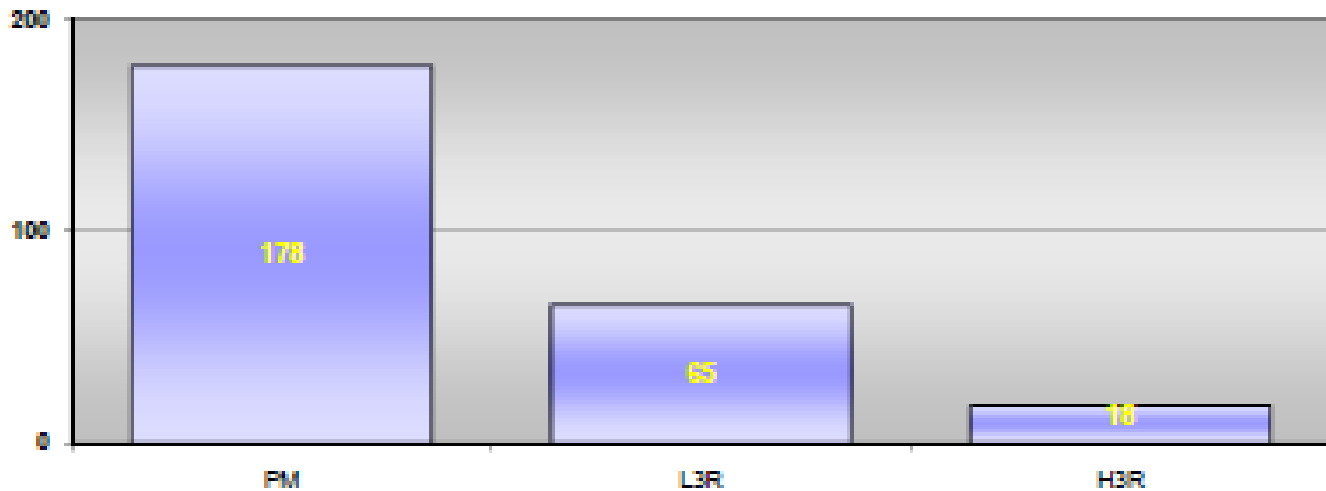
MWR 2013-2017 Needs	\$51,067,871
2018-2022 Needs From Implementation Strategies	
Strategy 1 – Worst First	\$63,598,188
Strategy 2 – Preservation	\$53,753,275
Strategy 3 – CE Score	\$54,488,679
Strategy 4 – Mix of Fixes	\$55,974,433



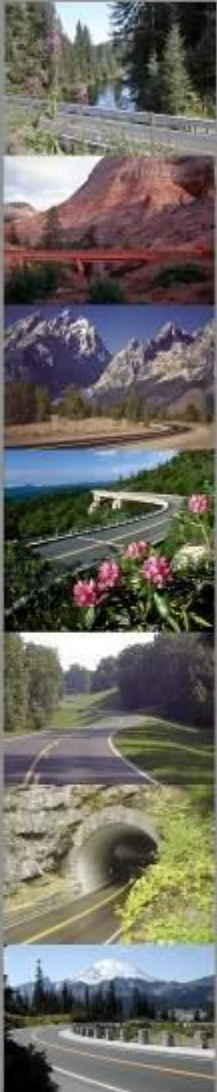
Breakdown of Network Treatment Needs



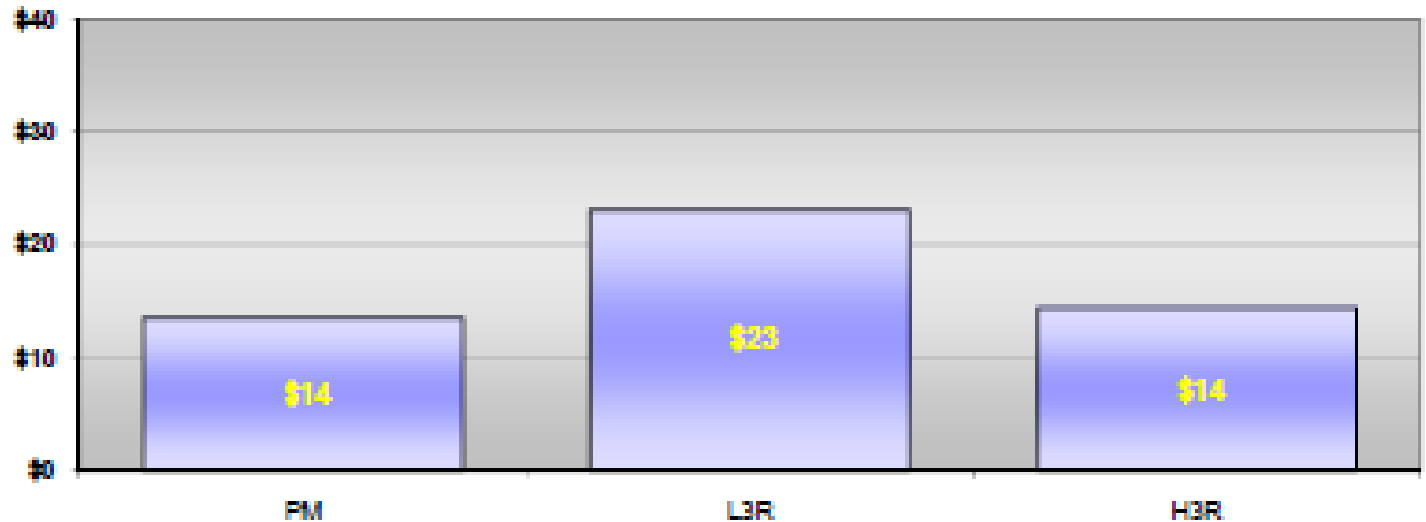
M&R Treatment Type Breakdown by Mileage
2013-2017 Pavement Needs



Breakdown by Costs



M&R Treatment Type Breakdown by Cost (millions)
2013-2017 Pavement Needs



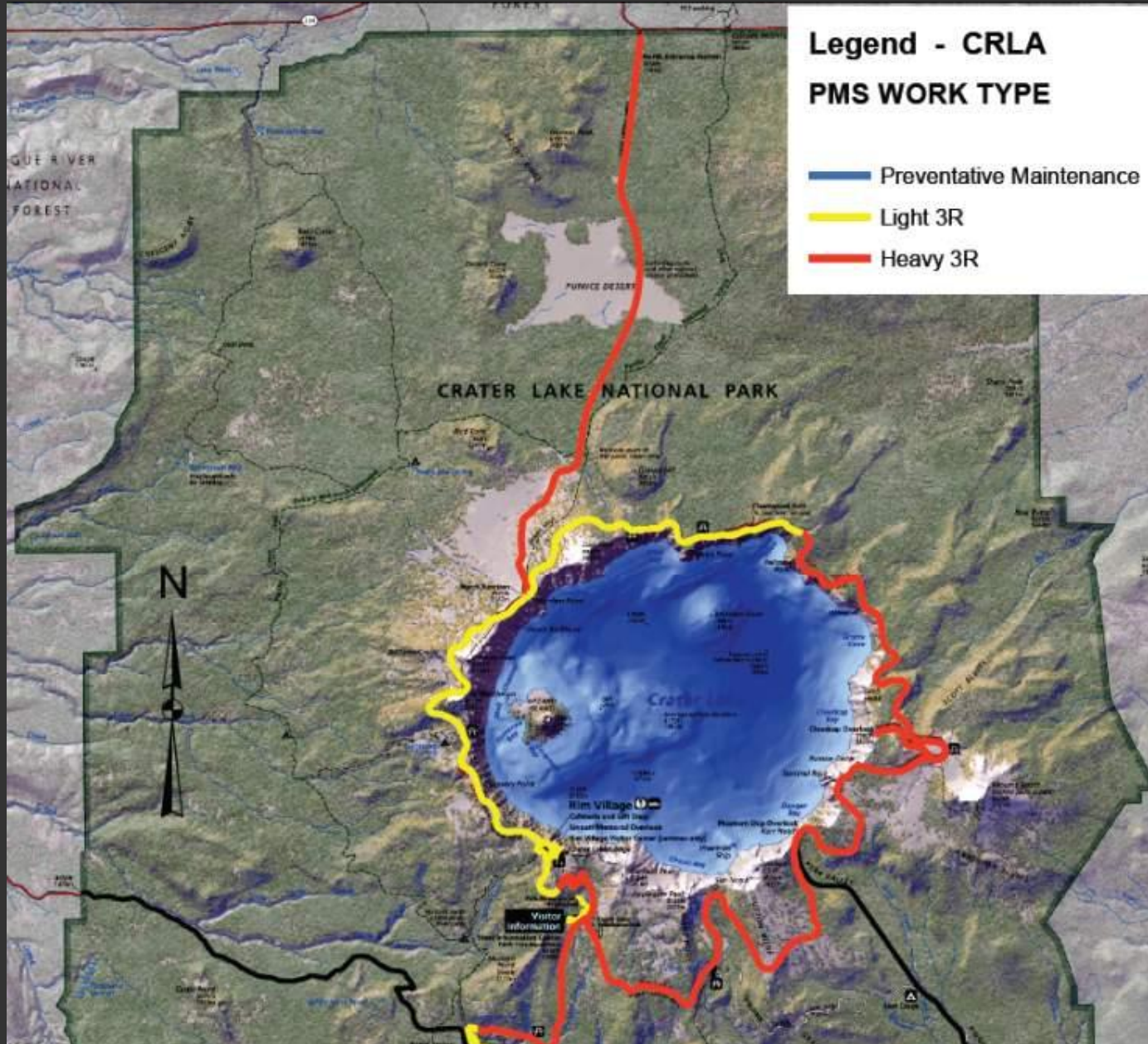
Development of Prioritization Lists

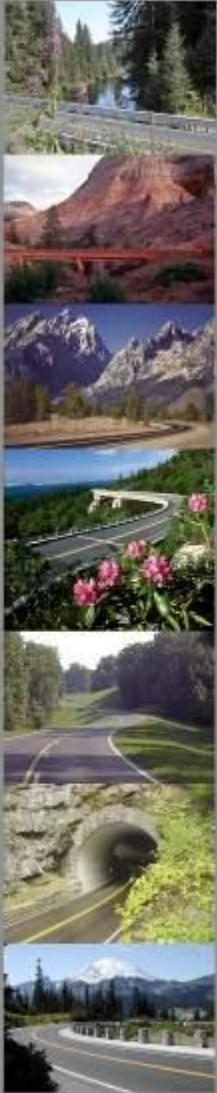
2010 Midwest Region HPMA Prioritization

August 2010

HPMA SECTION DATA							Prior Activities		Future Activities		2013-2017 HPMA Recommendation		
Route Type	Route ID	FMSS #	Route Name	From	To	Pave Type	Work Type	Year	Work Type	Year	Treatment Type	Section Cost	CE SCORE
CP	CUVA-0101	42380	CUYAHOGA VALLEY EEC ROAD	0	0.33	ACP					H3R	\$167,970	70
SP	CUVA-0200	42381	OLD ROCKSIDE ROAD	0	0.12	ACP					L3R	\$45,840	10
CP	CUVA-0201	42382	PINE LANE TRAILHEAD ROAD	0	0.24	ACP					H3R	\$122,160	80
CP	CUVA-0202	24583	OCTAGON ROAD	0	0.48	ACP	PM	2005			PM	\$36,000	100
CP	CUVA-0203	24484	LEDGES ROAD	0	0.34	ACP	PM	2005			PM	\$25,500	100
SP	CUVA-0204	42389	EEC LIPSCOMB CAMPUS ROAD	0	0.05	ACP					L3R	\$19,100	10
SP	CUVA-0205	25589	EEC ADMINISTRATION ROAD	0	0.05	ACP					L3R	\$19,100	10
AR	CUVA-0400	42391	FITZWATER MAINTENANCE YARD ROAD	0	0.34	ACP					L3R	\$129,880	10
CP	CUVA-0403	42478	HINE HOUSE LOOP ROAD	0	0.1	ACP					H3R	\$50,900	40
SP	CUVA-0434	42392	BRANDYWINE FALLS LOWER ROAD	0	0.09	ACP	PM	2006			PM	\$6,750	20
PA	CUVA-0900	42393	LOCK 39 TRAILHEAD PARKING	0	0.381	ACP	PM	2008			PM	\$14,288	70
PA	CUVA-0901	42395	OLD CANAL VISITOR CENTER PARKING	0	0.233	ACP					H3R	\$39,808	30
PA	CUVA-0902	23304	CANAL VISITOR CENTER PARKING	0	0.772	ACP	PM	2006			PM	\$28,950	90
PA	CUVA-0903	42397	FITZWATER MAINTENANCE YARD PARKING	0	0.884	ACP					L3R	\$168,844	30
PA	CUVA-0904	23310	FRAZEE HOUSE PARKING	0	0.087	ACP	PM	2006			PM	\$3,263	90

Crater Lake N.P.



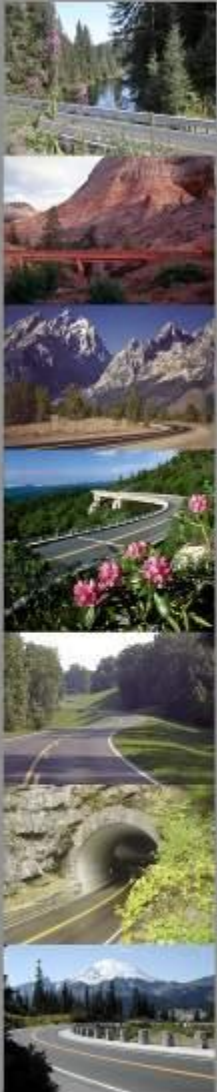


Construction – Treatment Types

- ◆ Chip Seals
- ◆ Slurry / Micro-surfacing
- ◆ Crack sealing (mainly prior to surface treatment)
- ◆ Cape Seals
- ◆ Ultra-thin overlays / friction courses



Construction – Chip Seal



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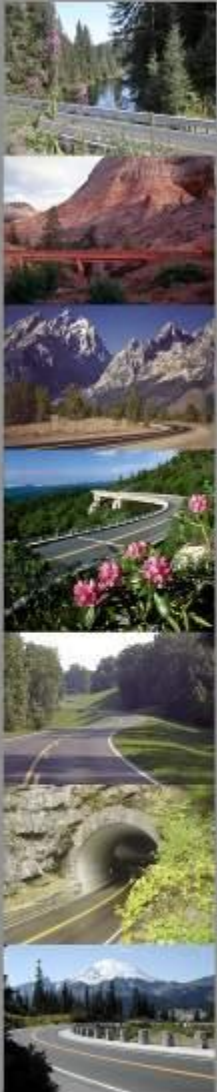
Construction – Chip Seal



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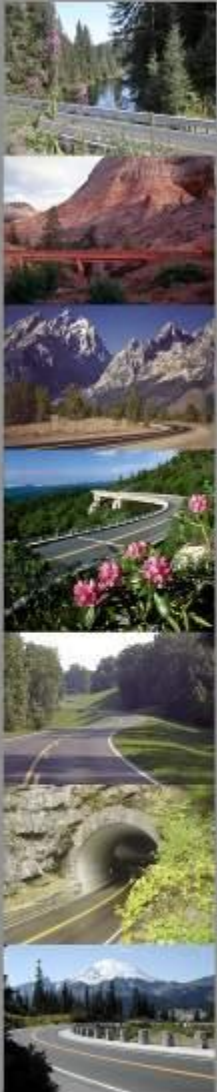
Before....



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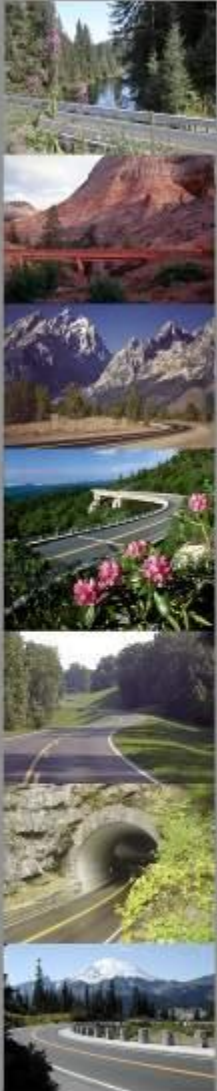
...After



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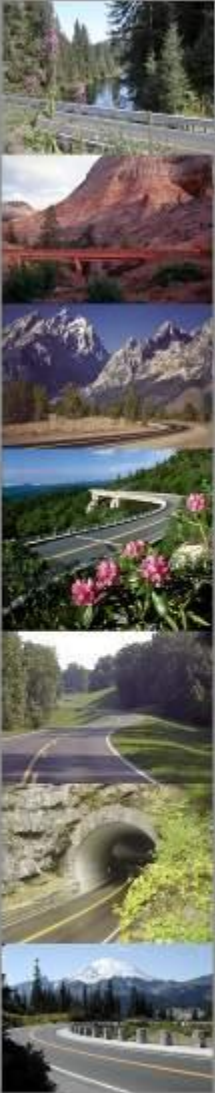
Construction – Slurry & Micro



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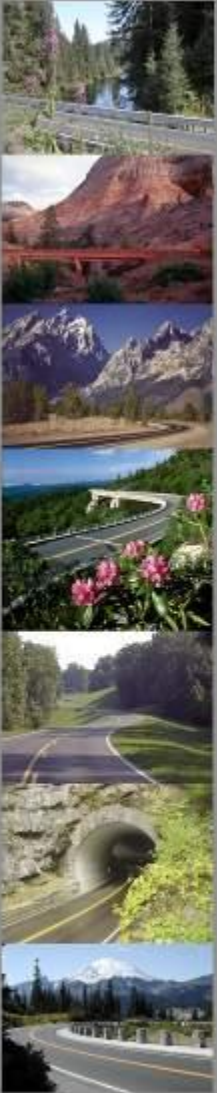
Construction – Slurry & Micro



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Questions?



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