



New Mexico DEPARTMENT OF
TRANSPORTATION
MOBILITY FOR EVERYONE

Transportation Infrastructure Revenue Subcommittee

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Pavement Preservation



Pavement preservation represents a proactive approach in maintaining our existing highways. It enables STAs to reduce costly, time consuming rehabilitation and reconstruction projects and the associated traffic disruptions. With timely preservation we can provide the traveling public with improved safety and mobility, reduced congestion, and smoother, longer lasting pavements. This is the true goal of pavement preservation, a goal in which the FHWA, through its partnership with States, local agencies, industry organizations, and other interested stakeholders, is committed to achieve.

FY24 - \$130.2M


How It Is Collected

- NMDOT manages a pavement network of over 13,000 centerline miles, or slightly over 28,000 lane miles.
- Thirty nine percent (11,054 lane miles) of the State-maintained lane miles are on the National Highway System (NHS), including 4,182 Interstate lane mile.
- Automatic Road Analyzer (ARAN) laser truck scanning the roadway pavement while moving at posted speed are used to collect roadway pavement condition data.
- (ARAN) truck scan the right lane of the roadway while driving.

NMDOT State Roadway Routes Classification

FUNCTIONAL CLASSIFICATION	CENTERLINE MILES	LANE MILES
INTERSTATE (NHS)	999	4182
NON-INTERSTATE (NHS)	3050	6872
NHS TOTAL	4049	11054
NON-NHS	9070	17064
ALL NETWORK	13119	28118

Automatic Road Analyzer ARAN



> PAVEMENT DISTRESS
With the ARAN'S pavement imaging subsystem, planar-view digital pavement images are recorded directly to disk for 100% of the driven lane.

> POSITIONING - GPS
Every ARAN is equipped with a GPS and is integrated with other subsystems so that if the receiver cannot lock on enough satellites to determine its position, the ARAN DMI and the ARAN Inertial Reference System will fill in the gaps.

> RIGHT-OF-WAY VIDEO
The ARAN can be outfitted with as many as six HDTV cameras which captures right-of-way images allowing you to virtually view the road from the comfort and safety of your office.

> RUTTING
The Laser Transverse Profiler uses dual scanning lasers to accurately measure the transverse profile of the road with 1280 points over 4 meters.

> ROUGHNESS
The Laser SDP is a longitudinal profile measurement system that provides road profile data capture and real-time roughness index calculation using a combination of high-speed lasers and accelerometers.

> TEXTURE
Smart Texture utilizes high frequency lasers to measure the mean profile depth of road surface macrotexture.

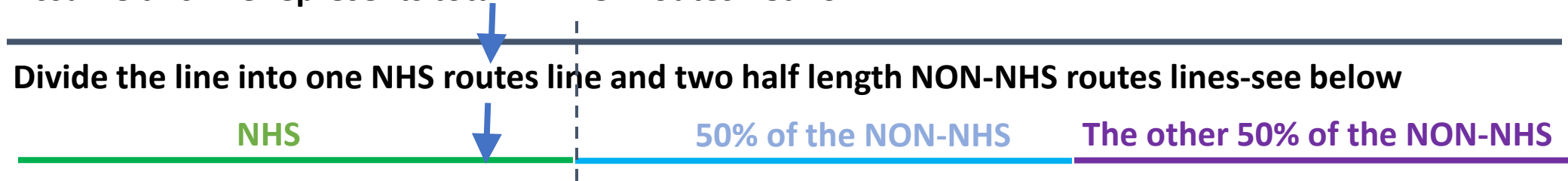
> POSITIONING - DMI
The Distance Measuring Instrument measures ARAN chainage and linear distance travelled. Every ARAN is equipped with a GPS and is integrated with other subsystems so that if the receiver cannot lock on enough satellites to determine its position, the ARAN DMI and the ARAN Inertial Reference System will fill in the gaps.

> GROUND PENETRATING RADAR
An electromagnetic device used to detect changes in road structure, including material thickness, changes in material and changes in material condition.

How Often

- Vendors contracted with NMDOT collect pavement condition data every year for a period of 4 years cycle.
- Collection of NHS routes is **completed every year**, and collection of NON-NHS routes is **completed every two years**. The schedule is shown below.

Assume this line represents total NMDOT routes network



Network Collection Routes Schedule 4-year Cycle

First Year

NHS

50% of the NON-NHS

Second Year

NHS

The other 50% of the NON-NHS

Third Year

NHS

50% of the NON-NHS

Fourth Year

NHS

The other 50% of the NON-NHS

NHS (green line) is completed every year

Non-NHS blue line and purple line are completed every 2 years

NMDOT

What Does It Measure

- The collection of pavement condition data includes International Roughness Index (IRI), Cracking, Rutting, Faulting, and other Pavement Distress data.
- Collected individual distresses is delivered in 1/10-mile segments.
- Then imported into PMS to calculate the integrated Pavement Condition Rating (PCR) index for 2-mile segments.
- PCR is NMDOT State measure(0-100). Good, fair, poor conditions are FHWA measures.

Distress Pavement Conditions Measures

Flexible Pavements	Rigid Pavements
Alligator Cracking	Corner Breaks
Transverse Cracking	Faulting
Edge Cracking	Joint Seal Damage
Longitudinal Cracking	Lane/Shoulder Drop-off
Patching	Longitudinal Cracks
Bleeding	Patch Deterioration
Weathering & Raveling	Spalling of Joints & Cracks
	Transverse & Diagonal Cracks

What Does It Measure

PCR is NMDOT State Measure

Pavement Condition Rating Categories

PCR Range	Condition	Suggested Treatment
86-100	Very Good	Monitor – none to minor preservation, fog seals or other surface coats.
66-85	Good	Major preservation, overlays – to minor rehabilitation, thin mill and inlay.
51-65	Fair	Minor to major rehabilitation – mill and inlay between 2.5 and 5 inches
46-50	At Risk	Minor to major rehabilitation
26-45	Poor	Major rehabilitation 5 inches deep to PPC, FDR
0-25	Very Poor	Reconstruction

Good-Fair-Poor Measures are FHWA measures

FHWA Guidelines

Pavement Condition	Roughness (IRI)* (inches/mile)	Rutting** (inches)	Cracking Percent *** (%)
Good	<95	<0.20	<5
Fair	95 - 170	0.20 - 0.40	5 - 20
Poor	> 170	> 0.40	> 20

What Does It Measure

Pavement	Good	Fair	Poor	Lane Mile
Interstate	56.4%	40.8%	2.9%	4,188
Non-Interstate NHS	34.9%	60.7%	4.4%	6,599
Non-NHS	14.6%	77.6%	7.7%	16,401
Total Pavement	26.0%	67.8%	6.2%	27,188

How The Data Combines With The Local Knowledge

- NMDOT Districts are encouraged to use local knowledge in addition to pavement condition data contained in PMS to define pavement preservation and maintenance treatments.
- Pavement condition data is used during the early stages of project development. Rehabilitation and reconstruction treatments that are described in STIP and selected based on local knowledge is verified by checking the existing pavement condition contained in PMS.
- Pavement Condition data is used on the network level to define budget scenarios and asset performance in the NMDOT Transportation Asset Management Plan (TAMP) reported to FHWA.
- Pavement Condition data and performance measures of the State routes are reported to the State Legislative Finance Committee.
- Other applications to NMDOT Pavement Bureau in Design and Management tasks.

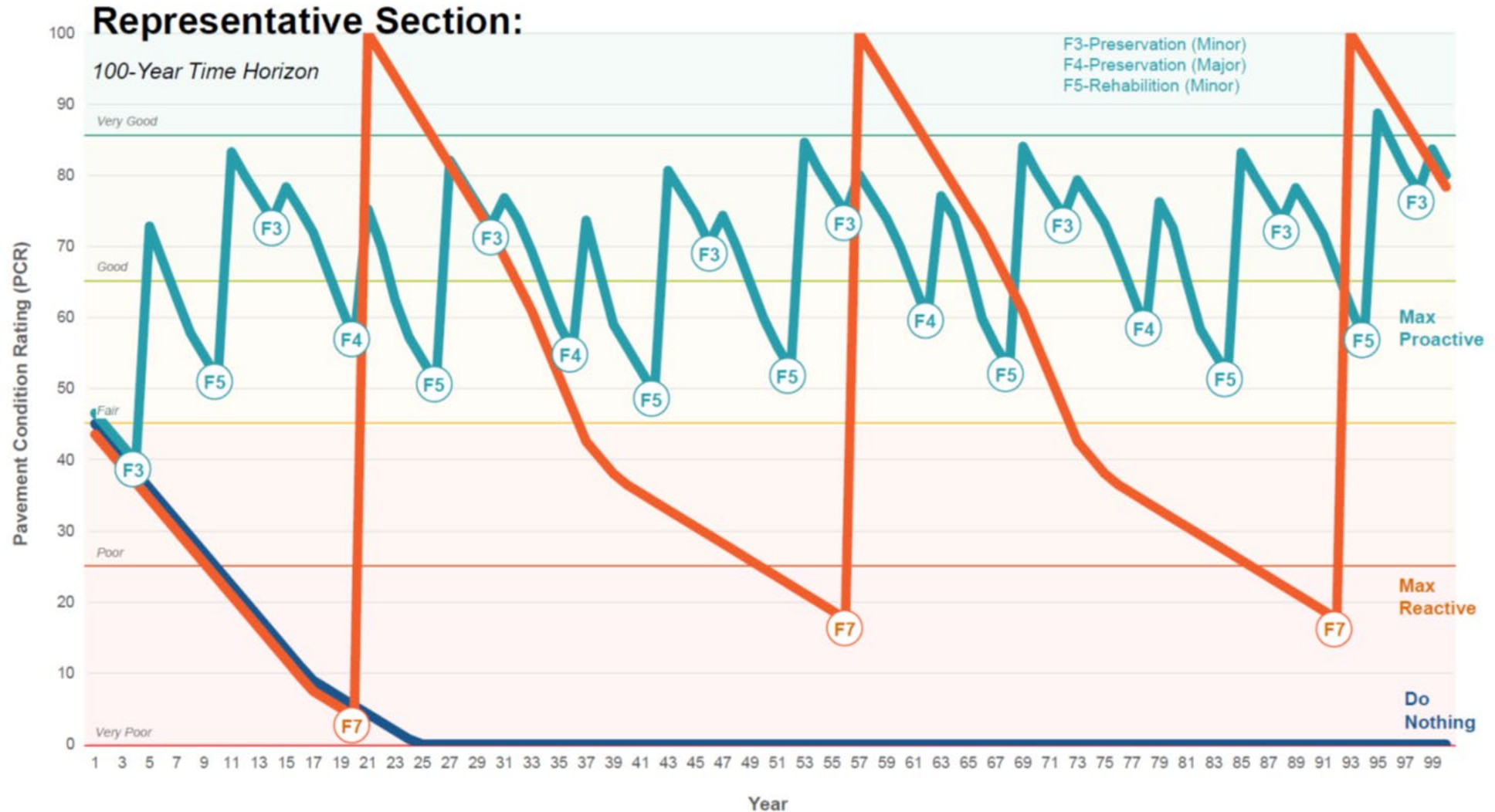
Basics of Asphalt Preservation

The key to extending pavement life is to preserve the asphalt binder. **STOP OXIDATION!**

- Oxidation causes:
 - Raveling (loss of bond between aggregate and binder)
 - Cracking
 - Potholes



Pavement Conditions Rating



Pavement Treatments

Minor Preservation

- Cost per Lane Mile
 - \$6,800 – \$7,700
- Added Time to road
 - 3 to 5 Years

Major Preservation

- Cost per Lane Mile
 - \$78,000 – \$121,900
- Added Time to road
 - 5 to 7 Years

Minor to Major Rehabilitation

- Cost per Lane Mile
 - \$121,9000 - \$225,000
- Added Time to road
 - 7+ Years

Major Rehabilitation

- Cost per Lane Mile
 - \$1.5M
- Added Time to road
 - 10 Years

Reconstruction

- Cost per Lane Mile
 - \$2.5M - \$3.5M
- Added Time to road
 - 20 Years

Annual Pavement Preservation Funding Needs - \$250M

Minor Preservation

- **Fog Seal**
 - Light application of asphalt emulsion to the surface of an aged (oxidized) pavement surface
- **Crack Seal**
 - Placement of an adhesive material into and/or over working cracks
- **Chip Seal**
 - Surface treatment that combines layers asphalt and aggregate
- **Wearing Course**
 - Improve the surface texture and protect an asphalt surface
 - Provides friction

Major Preservation

- **Mill and Inlay/Overlay**
 - Remove layer of old asphalt and replace with new
 - No recycling
- **Hot in Place Recycling**
 - Heat and scarify pavement
 - Rejuvenated mix and lay recycled material
 - Wearing Course applied
- **Cold Mix Recycled Asphalt**
 - Crush stockpiled recycled asphalt to spec
 - Mix with emulsified asphalt and place
 - Wearing-course applied (after set)

Budget Process

One-time Appropriation

- Divided amongst the 6 Districts
- Districts then have the discretion to allocate funds to specific projects, based on knowledge of priorities, Pavement Management System and engineering judgment

Recurring State Road Fund

- Based on population and size of the transportation network
- Districts then have the discretion to allocate funds to specific programs, based on knowledge of priorities and engineering judgment

Federal Funds and Maintenance

- Draw from our existing Federal Program
- More involved project oversight
- Not conducive to Pavement Preservation

FY26 Maintenance Projects

District 1

Route	Mile Marker	Anticipated Process	Anticipated Contractor	Final Program	Landmark and Remarks
NM 26	0 to 15	FDR/Overlay		\$ 10,000,000	Dona Ana County
			Total	\$ 10,000,000	

District 2

Route	Mile Marker	Anticipated Process	Anticipated Contractor	Final Program	Landmark and Remarks
US 70	392 to 397	Nova Chip	Brasier	\$ 3,000,000	Elida
US 285	67.4 to 72	Nova Chip	Brasier	\$ 3,000,000	Artesia
Various	Various	Crack Seal	TBD	\$ 500,000	Districtwide
Various	Various	Fog Seal	TBD	\$ 500,000	Districtwide
Various	Various	Striping	TBD	\$ 1,000,000	Districtwide
US 82	142.5 to 146.9	Mill & Inlay	Moutain States	\$ 1,783,145	Maljimar
			Total	\$ 9,783,145	

District 3

Route	Mile Marker	Anticipated Process	Anticipated Contractor	Final Program	Landmark and Remarks
I 40	140 to 146	Mill & Inlay + OGFC	TBD	\$ 5,000,000	I-40 Route 66 Casino East for 5 Miles
I 25	235 to 240	Nova Chip	Brasier	\$ 3,000,000	I-25 Between Albuquerque/Bernalillo
NM 337	14 to 29	Metal Barrier Replacement	TBD	\$ 1,000,000	Tijeras to Chilili
I 40	163 to 171	Eradication/Replace Thermo Markings	TBD	\$ 500,000	I-40 Wyoming to Carnuel
Various	Various	Field Supplies	TBD	\$ 500,000	Patrol Materials
			Total	\$ 10,000,000	

District 4

Route	Mile Marker	Anticipated Process	Anticipated Contractor	Final Program	Landmark and Remarks
I 40	276 to 286	Mill & Inlay	MSI	\$ 4,058,614	East of Santa Rosa
NM 34	8 to 16	NovaChip/Millings Recycle	Brasier	\$ 1,245,856	West of Rowe
US 84	31 to 38	Hot in-place Recycling	Cutler	\$ 2,425,163	South of Santa Rosa
NM 63	0 to 6	Hot in-place Recycling	Dustrol	\$ 770,368	North of Rowe
Various	Various	Field Supplies	TBD	\$ 1,500,000	Patrol Materials
			Total	\$ 10,000,000	

FY26 Maintenance Projects

District 5

Route	Mile Marker	Anticipated Process	Anticipated Contractor	Estimated Cost	Landmark and Remarks
NM 344	2 to 9	HIR	Cutler	\$ 1,200,000	Cedar Grove
NM 511	0 to 32	HIR/Micro	Dustrol/Geneva Rock	\$ 4,000,000	Navajo Lake
NM 4	61 to 68	HIR/NovaChip	Dustrol/Brasier	\$ 3,300,000	White Rock
Various	Various	Field Supplies	Various	\$ 1,000,000	Patrol Materials
Various	Various	Striping	TBD	\$ 500,000	District Wide
			Total	\$ 10,000,000	

District 6

Route	Mile Marker	Anticipated Process	Anticipated Contractor	Final Program	Landmark and Remarks
US 180	5 to 26	HIR	Cutler	\$ 1,500,000	
NM 371	12 to 29	HIR	Cutler	\$ 2,400,000	
I-40	103 to 109	Mill & Inlay	General Pave	\$ 1,600,000	
I-40	52 to 63	Mill & Inlay	General Pave	\$ 2,000,000	
NM 117	5 to 14	Nova Chip	Brasier	\$ 1,500,000	
District Wide	Various	Contract Trucking		\$ 1,000,000	District-wide
			Total	\$ 10,000,000	

General Office

Route	Mile Marker	Anticipated Process	Anticipated Contractor	Final Program	Landmark and Remarks
US 285	183 to 200	HIR	Dustrol	\$2,000,000	South of Vaughn
Field Supplies	Operations Program			\$3,000,000	Bulk Fuel, Equipment repair, Utilities, PerDiem
			Total	\$ 5,000,000	