

Performance Management: Pavements

What you need to know....

Northwest Pavement Management Association
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PERFORMANCE MEASURES AND TARGETS

- ❑ Purpose of performance measures (and associated targets)
 - Clarify goals
 - Monitor and report progress
 - Identify needs or deficiencies
 - Evaluate alternatives
 - Required by MAP-21



Performance Management: What and Why?

Planning

Asset
Management

Performance
Monitoring



- Transportation Needs
- Environmental
- Economic Development
- STIP and Local Programs
- Long-Term Plan (Regional)
- System Inventory & Condition
- Highway Policies
- Cost Analysis
- Risk Management
- Financial Plans
- Investment Strategies
- Engineering
- Construction
- Maintenance
- Operations
- Preservation
- Emergency Planning

The Details...
(Per MAP-21)

Disclaimer!!!

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Federal Rules : What's Proposed?

Four Major Rules:

- Planning
- Safety
- Pavements and Bridges
- Congestion, Environment ,
and Freight



Federal Rules – Pavements: What's Proposed?

- Legislative
 - Set Targets
 - Report Performance
 - Maintain Minimum Standard for Interstate

PM2 – Pavements: More of What's Required?

- **NPRM**
 - **Target Procedures**
 - **Reporting Details**
 - **Performance Information**

The Details...

(Per NPRM)

NPRM Pavement Focus:

- Data
- Calculate and Report Performance

Walk through the NPRM for Pavements

§ 490.301, 303, and 305:

Purpose, Applicability, Definitions

Walking through...

§ 490.307: Performance Measures

- Interstate
- Rest of NHS



Walking through...

§ 490.309:

Data Requirements

§ 490.311:

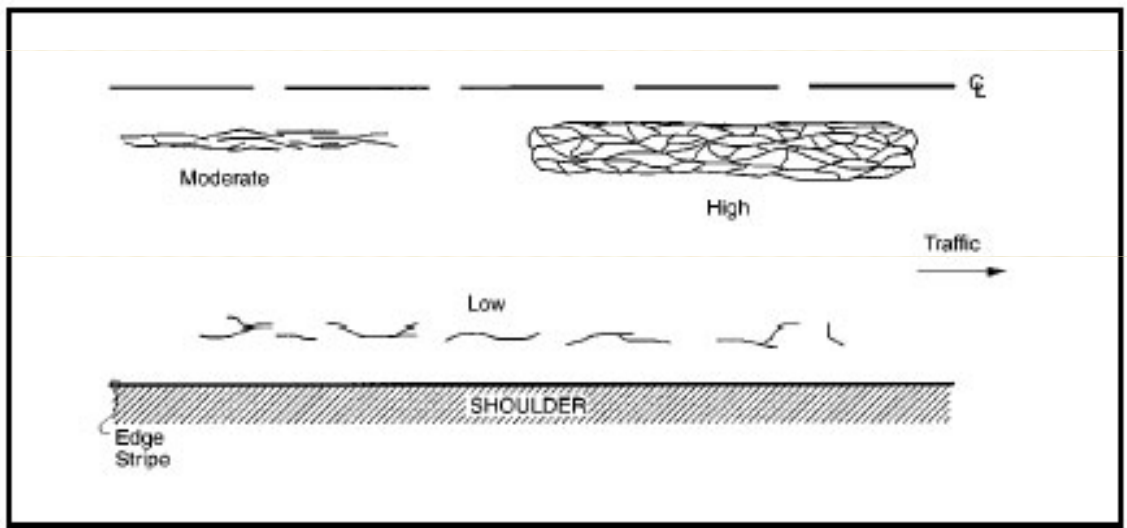
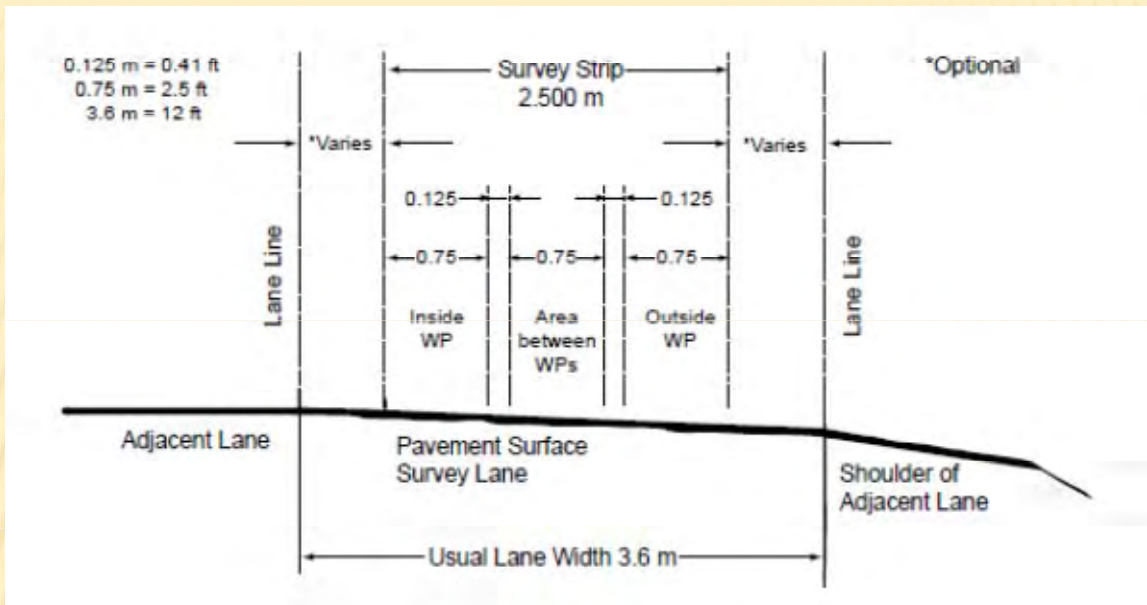
Pavement Metrics

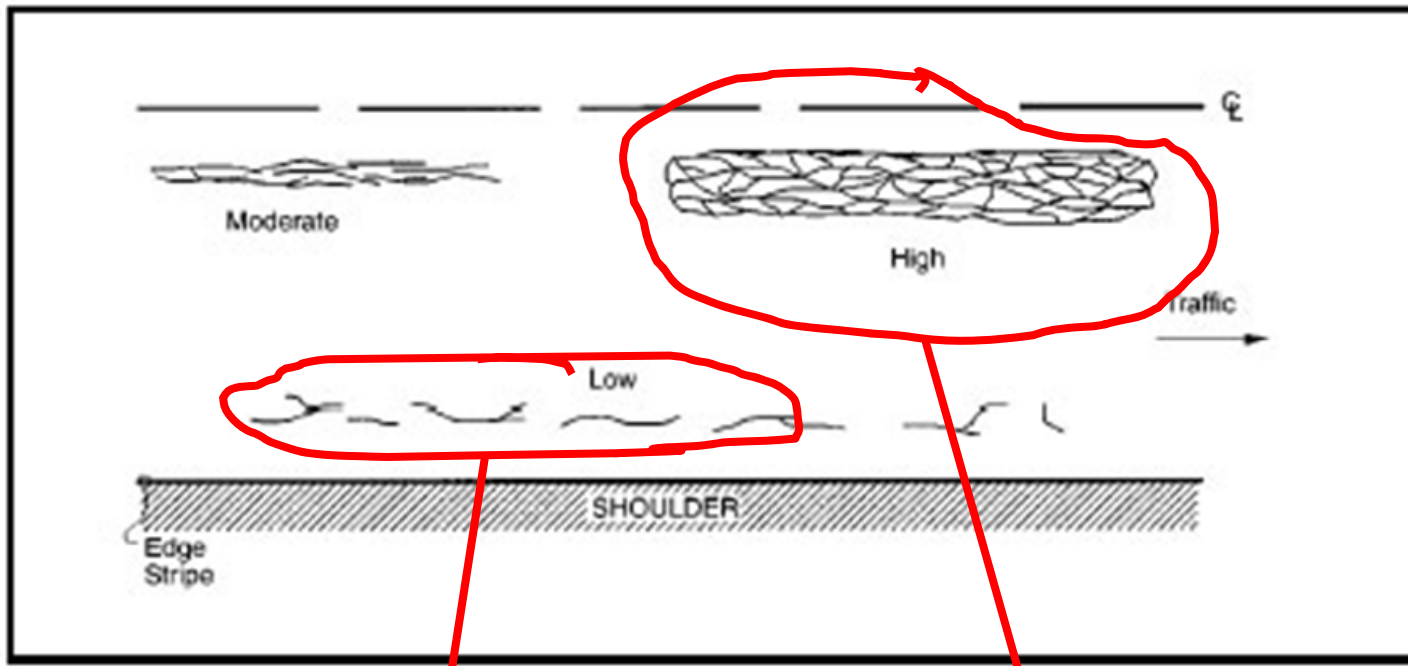
- What data to collect
- Where to collect data
- How to collect the data
- How often to collect the data
- What to Report

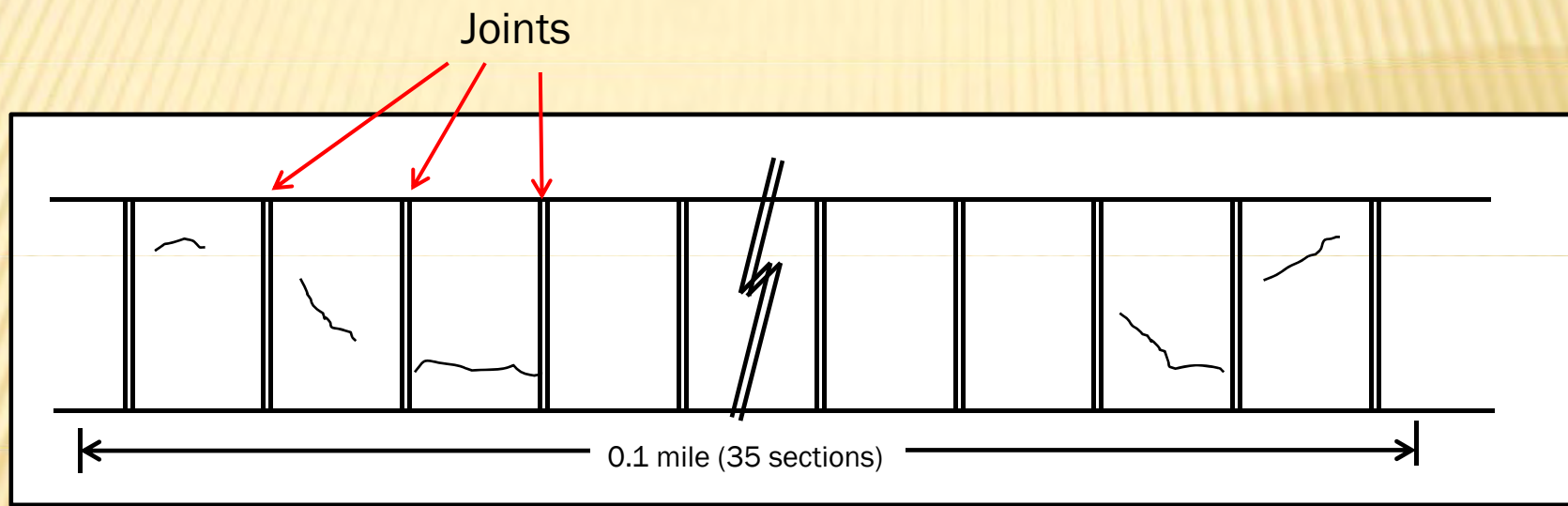
IRI Measurement:

**Pavement Roughness
HPMS Item 47**









Jointed Concrete Pavements

Photo of Rutting,
Measurement equipment
Drawing



Rutting in Asphalt Pavement HPMS Item 50



Rutting in Asphalt Pavement HPMS Item 50

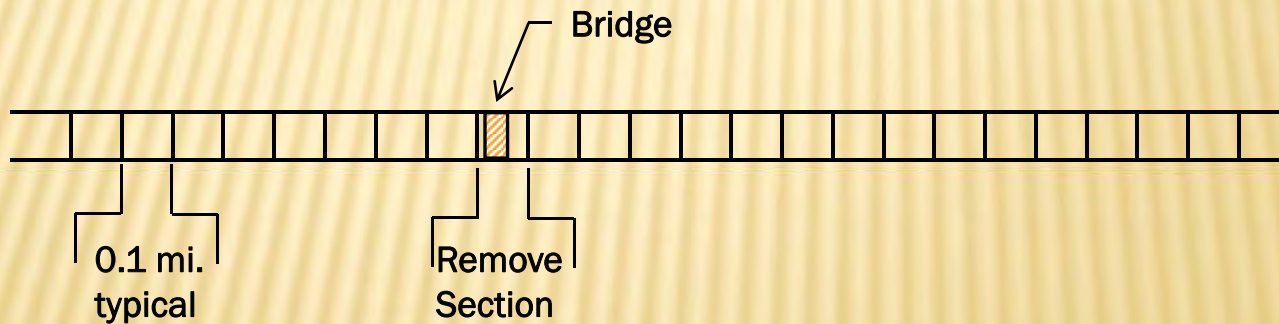


Faulting in Concrete Pavement HPMS Item 51



What else?

Through Lanes, HPMS Item 7
Surface Type, HPMS Item 49
Structure Type, HPMS Item 4



What else?

Metadata:

- Date data collected
- Type of equipment/method

Schedule:

- Interstate – April 15
- Rest of NHS – June 15



Missing Data:

- NPRM – Missing = “Poor”

Still Walking...

§ 490.313:
Calculation of Performance
Management Measures

- Or -

How good is “Good”?
How poor is “Poor”?
What about everything else?

Pavement Metrics...

Metric	Pavement	Good?	Poor?
IRI	All	<95	>170*
Cracking	All	<5%	>10%
Rutting	Asphalt	<.20	>.40
Faulting	Concrete	<.05	>.15

*IRI>220 in “Urbanized Areas”

CRCP has different standards!!

Pavement Metrics...

Overall for 3 metrics:

3 “Good” = “Good”

2 “Poor” = “Poor”

Everything else = “Fair”

Note: Different Measure for CRCP

Pavement Measures

In NPRM:

$$100 \times \frac{\sum_{p=1}^{Poor} \{ (End_Point - Begin_Point) \times Through_lanes \}_{section\ p}}{\sum_{t=1}^{Total} \{ (End_Point - Begin_Point) \times Through_lanes \}_{section\ t}}$$

This means:

$$\% \text{ Good} = 100 \times \frac{\text{Total amount of "Good" pavement}}{\text{Total amount of pavement}}$$

Still Walking...

§ 490.315:

Minimum Standard for Pavement
Conditions on Interstate Highways

- Required by Legislation
- NPRM proposed no more than 5% “Poor”

Still Walking...

§ 490.317:

Penalty for not maintaining Minimum Standard for Pavement Conditions on Interstate Highways

- Set by Legislation
- Applies if States exceeds 5% Poor for two consecutive years
- Re-establishes former Interstate Maintenance Program + some STP funds

And Lastly...

§ 490.319: Other Requirements

- **Formalizes Reporting Dates to HPMS**
- **Requires State to have Data Quality Management Program**

Data Quality Management Program

Contains Processes for:

1. Calibrate/Certify equipment
2. Certify People doing data collection
3. QC measures
4. Data sampling, review, checking
5. Resolving errors and acceptance

NPRM Comments

Major issues:

- Ownership of NHS & Reporting Requirements
- Schedules
- Continuous Measurement of Distresses
- IRI on Low-speed Highways
- Minimum Condition for Interstate Pavements
- Cracking, Rutting and Faulting Metrics
- Missing Data

NPRM Key Items

Lessons from MAP-21:

1. Transparency and Accountability
2. Pavement Data increasing in importance
3. Timeliness Critical
4. Program Scrutiny is increasing



Help!!!

Available Assistance:

- **FHWA Contacts**
- **TPM Courses**
- **TPM Website**
- **Official Guidance**
- **Reference Materials**
- **HPMS Tools**
- **NHPP Funding eligibility**
- **Technology**

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TPM Website:

<https://www.fhwa.dot.gov/tpm/>