



Integrating the RWD into Pavement Management to Achieve MAP-21 State of Good Repair

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Presentation Outline

Background

Study Objectives and Purpose

Data Collection

Pavement Management Analysis

Findings

Conclusions

The RWD

System

- Laser-based system
- 18-kip, single-axle, dual-tire

Operation

- Operates at posted speeds
- No lane closures

Measurements

- Spatially-coincident method
- Averages deflections over 0.1-mile intervals



Key Design Features

- Trailer
- Wheels
- Beam
- Lasers
- Calibration
- Software

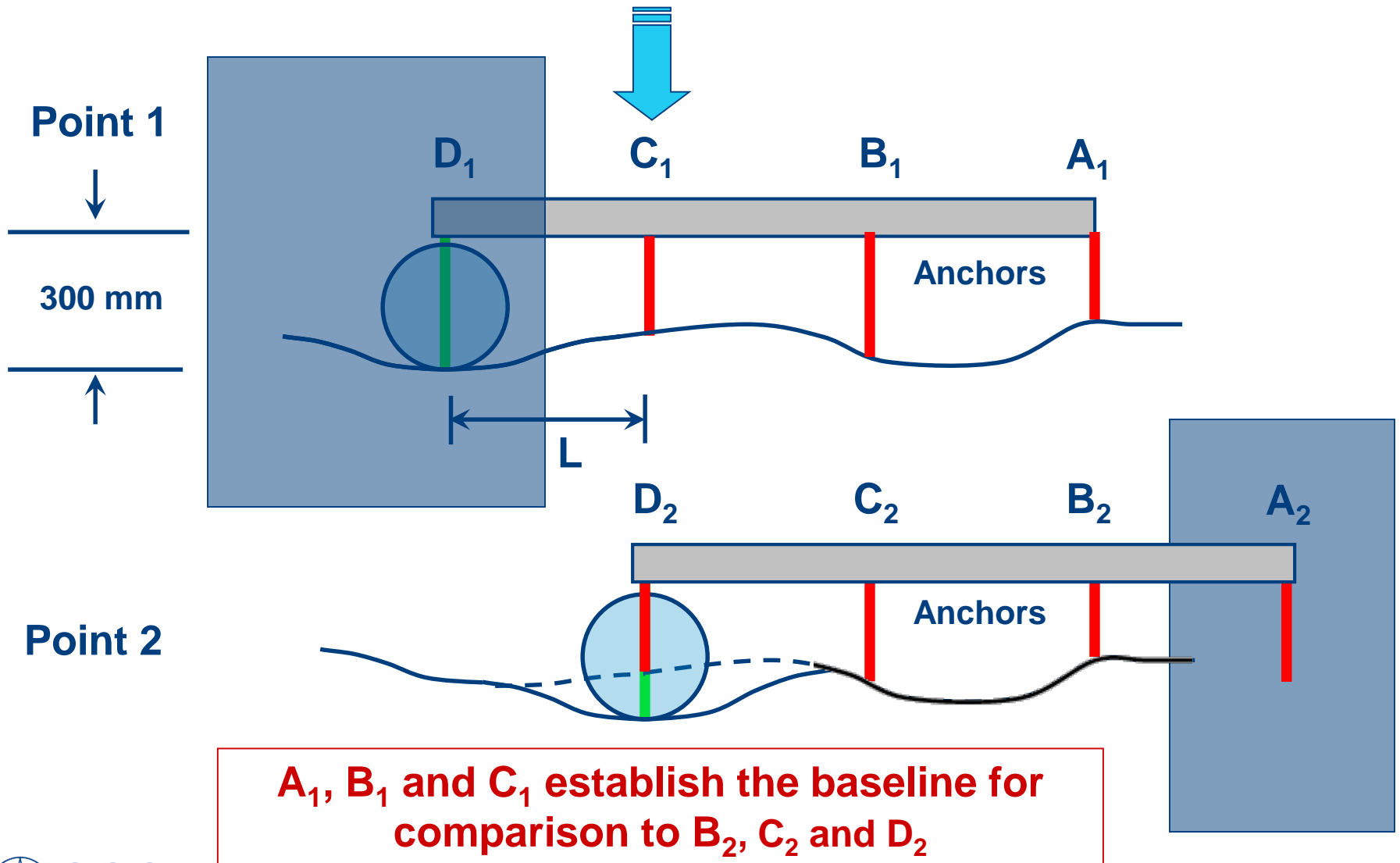


Reference beam and spot lasers



Laser between dual tires

Spatially Coincident Methodology



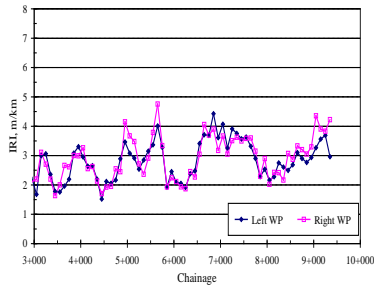
RWD Role in Pavement Management

Network-Level

PQI



IRI



RWD



1,000s of lane-miles

Preservation



Dozens of lane-miles

Project-Level



FWD



Coring

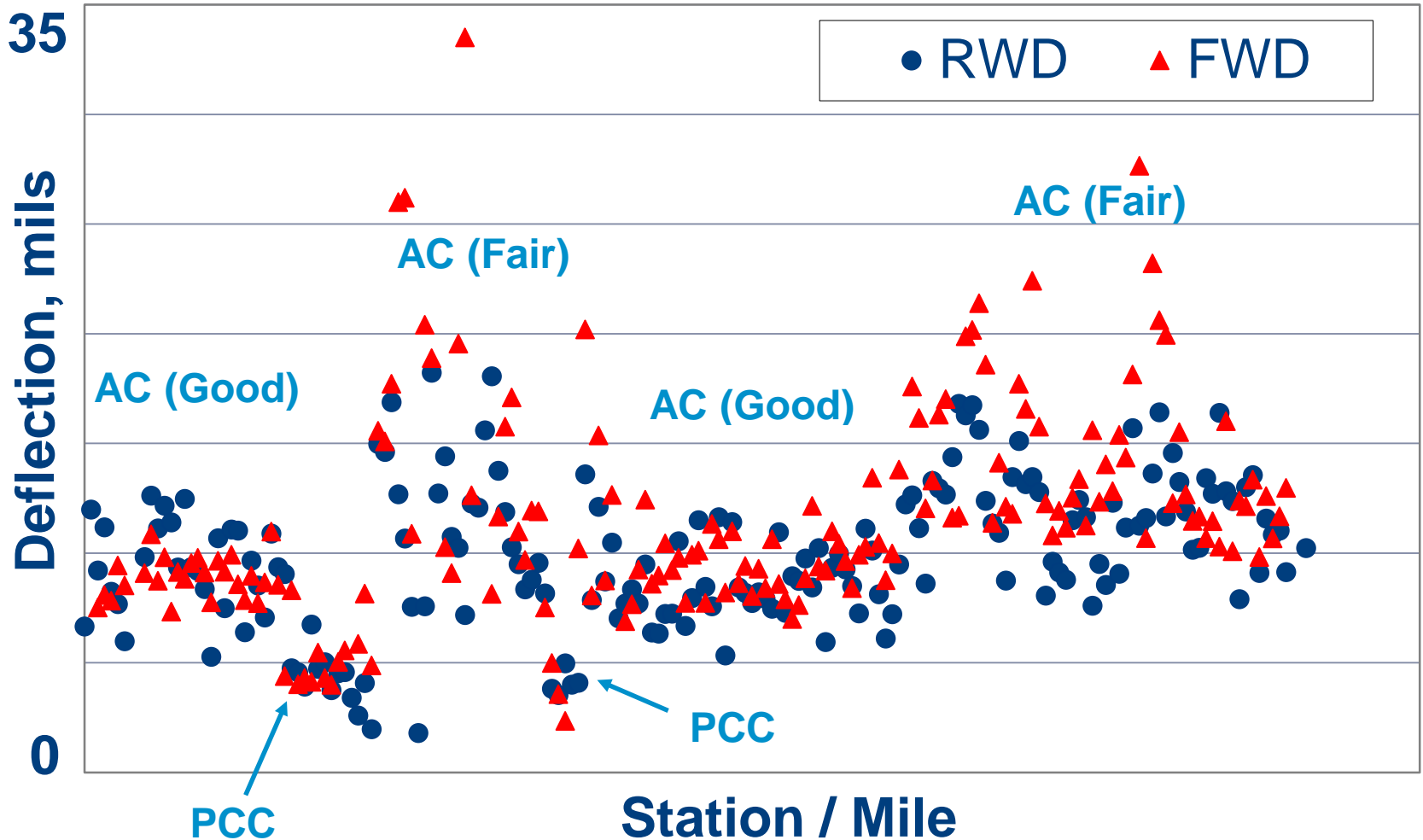


Lab



Rehabilitation or Reconstruction

Sample Deflection Profile



FHWA Case Study - Oklahoma

Evaluate the potential benefits of integrating RWD data into agency PMS

Compare PM analyses and results performed with and without RWD data

- Treatment selection
- Costs
- Performance



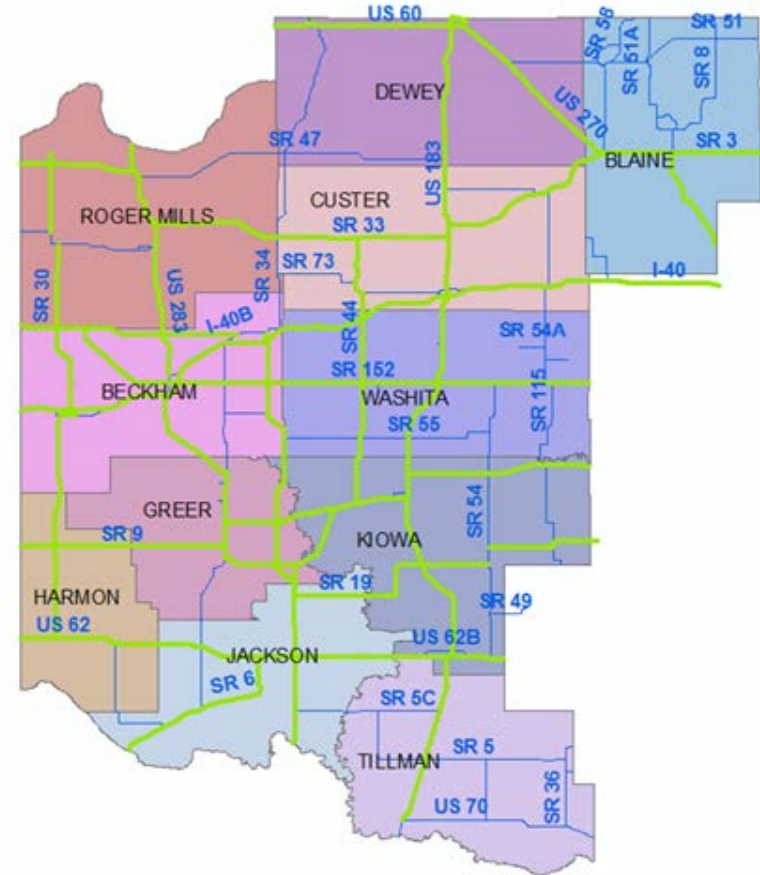
Test Roads

Test Network

- 1,000 miles (ODOT D-5)
- Primarily flexible pavements
- Wide range of functional classifications and traffic

Data Collection

- Continuous data collection
- Averaged data at 0.1-mile intervals
- Testing duration: 4.5 days



Agency PMS Data

Composition / Use

- Pavement age
- Layer types and thicknesses
- Classification, traffic (ADT)

Condition

- Pavement Quality Index (PQI):
 - Ride quality
 - Rutting
 - Distress
- Structural condition
 - FWD data (interstate only)
 - Structural rating (subjective)



Agency PMS Methodology

Software

- Deighton software (dTIMS)



Performance Modeling

- Defined sectioning
- Performance models for each pavement type

Decision Models

- 3 Treatment categories
 - Preservation, rehabilitation, and replacement
- Decision trees
 - PQI, traffic, and structural condition



Approach

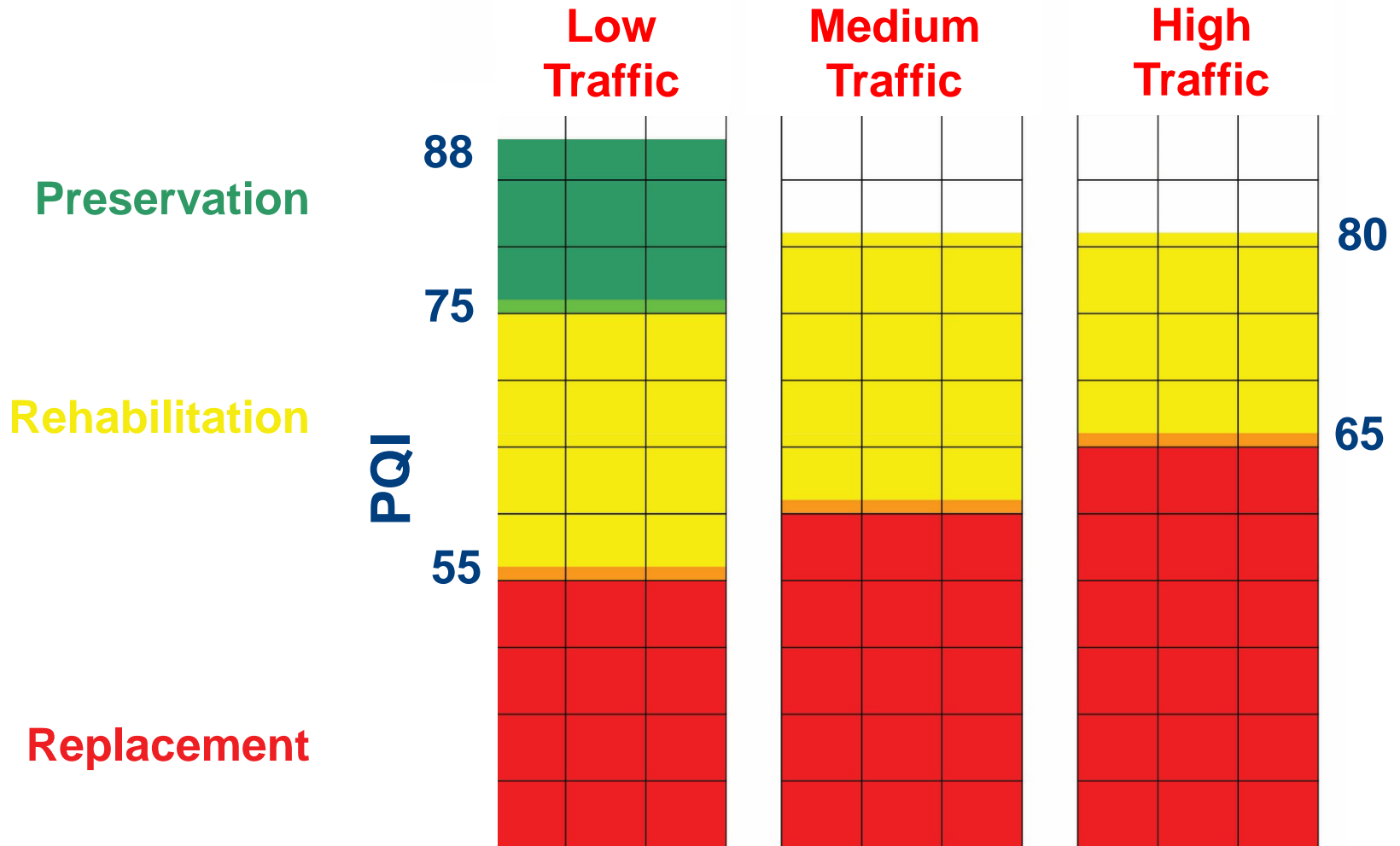
Evaluate multiple M&R treatment strategies

- Base strategy: PQI only
- Two modified strategies: add RWD data

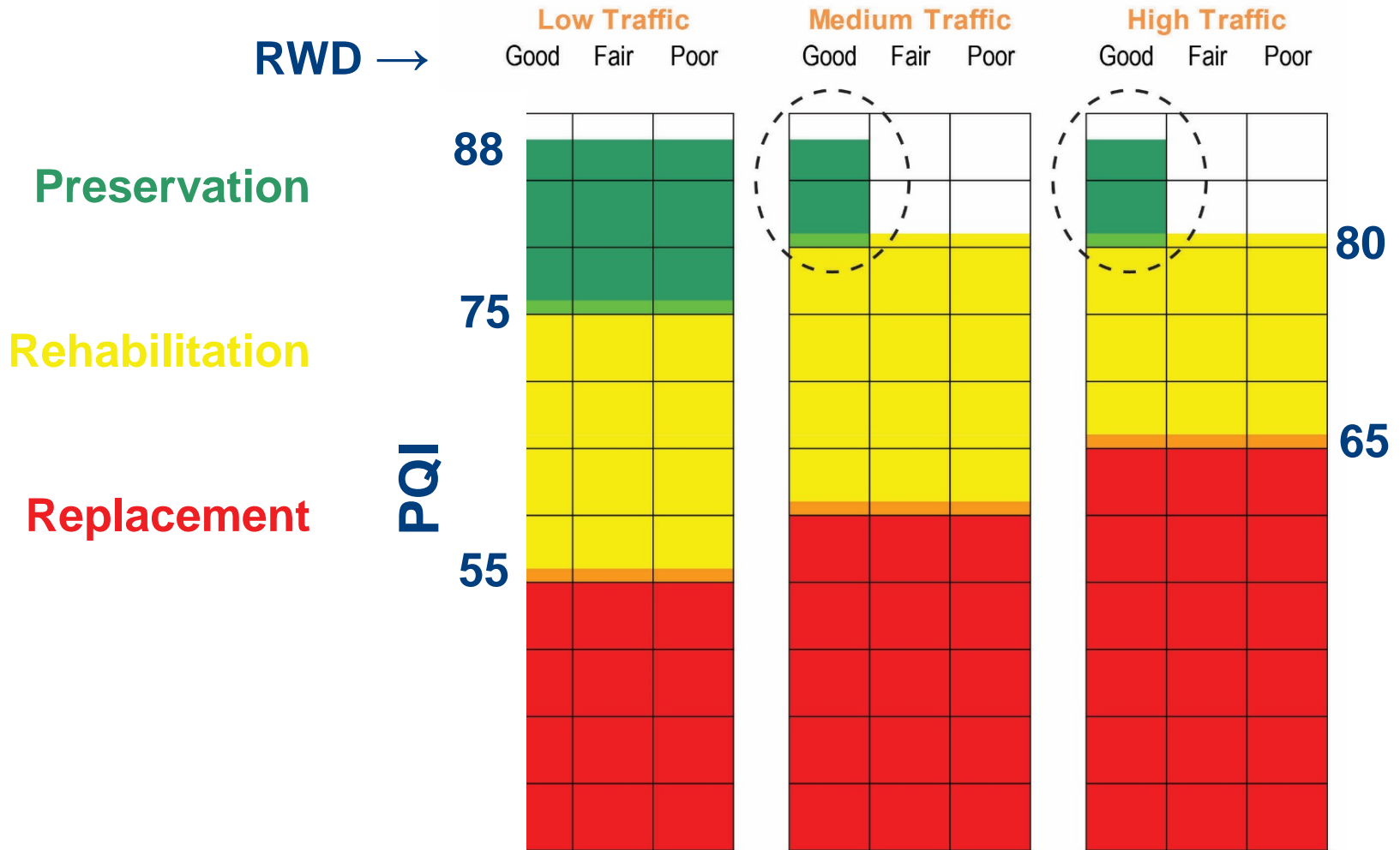
Compare results

- Costs
- Performance (in terms of PQI)

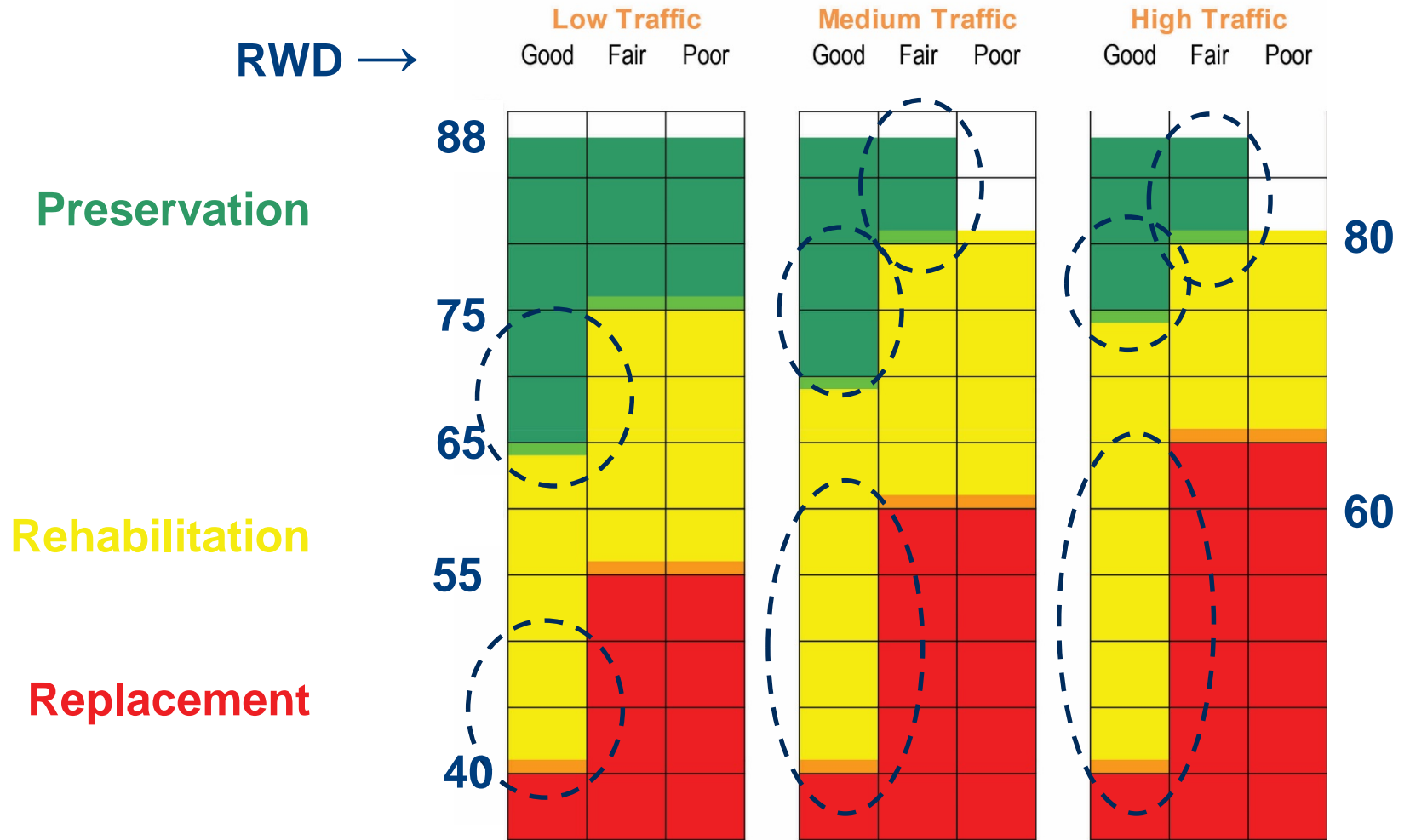
PQI Only – Treatment Matrix



RWD #1 – Treatment Matrix



RWD #2 – Treatment Matrix



Results

Budget Scenario	Percent change in cost (relative to “PQI Only” base case)		
	PQI Only	RWD Option 1	RWD Option 2
Target PQI = 92	0.0 %	-10.6 %	-11.5 %

Conclusions

RWD allows broader, more reliable use of pavement preservation

- Identifies candidate roads in GOOD and FAIR structural conditions
- Prevent use on roads in POOR structural condition

Cost savings can be significant

- In the range of 5 to 10%, in many cases
- Depends on agency's current strategy and road conditions

Thank You!



Questions or Comments?