

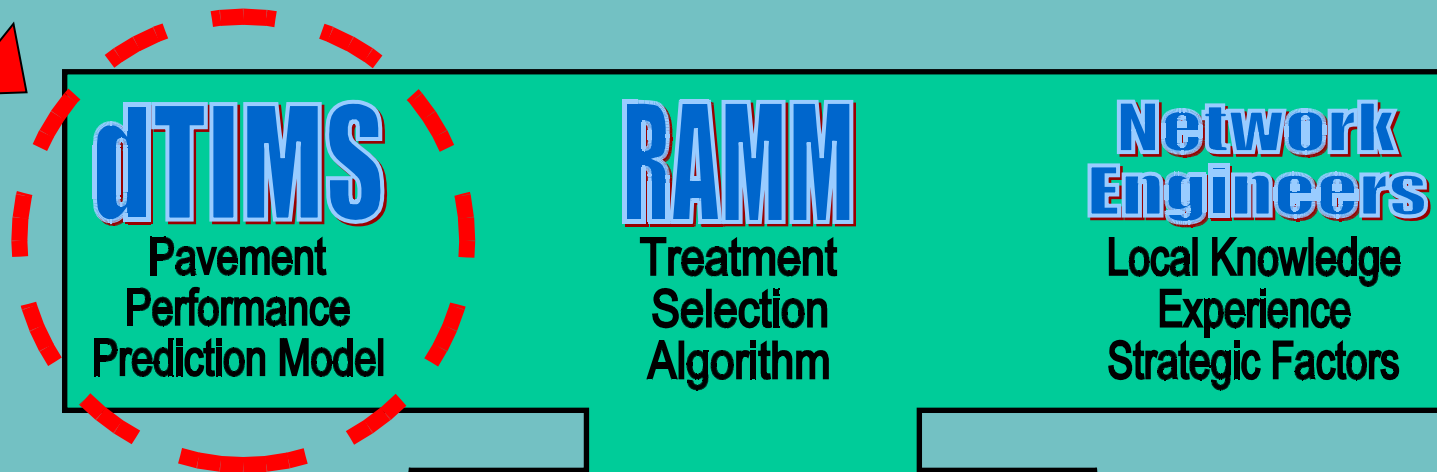


A Falling Weight Deflectometer Testing Strategy to Develop Forward Works Programmes

Presented by
Anuradha Premathilaka

LOW VOLUME ROADS WORKSHOP - THE KEY ISSUES
18 – 20 July 2007
Rutherford Hotel, Nelson

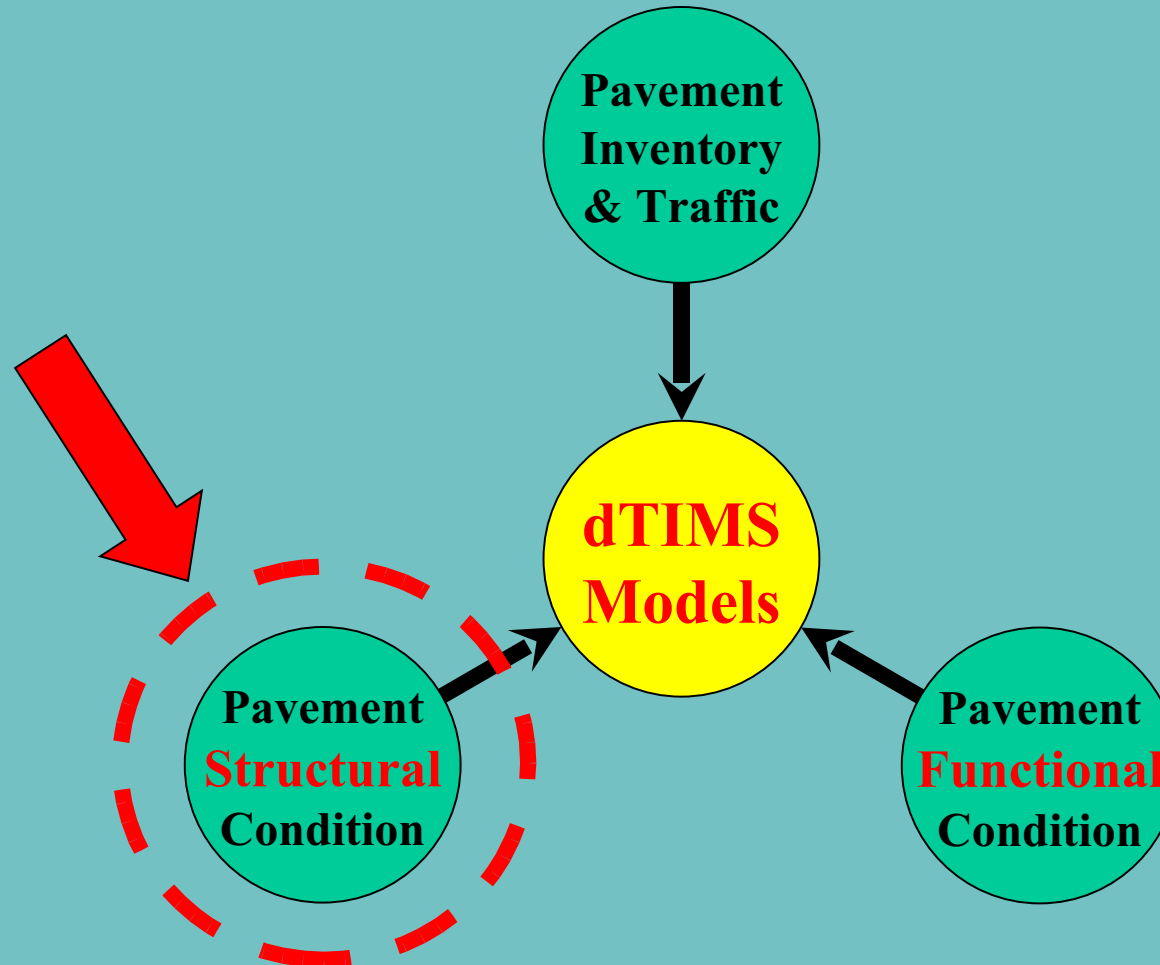
Forward Works Programming in HBC



Field Validation and Economic Evaluations

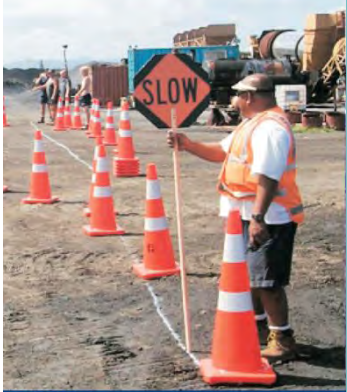
Forward Works Programme

Data Required for Pavement Modelling in Simple Terms





Video of Pavement Management Systems Limited FWD in Operation



Falling Weight Deflectometer Data

- ❑ Only means of determining measurable pavement structural strength in RDC.
- ❑ SNP is the primary strength parameter in pavement deterioration relationships (i.e. cracking, rutting, etc.)
- ❑ In turn, SNP affects the triggering of most treatment predictions.
- ❑ More coverage of network – “More Confident” forward work programmes

Preparation of FWD Testing Guidelines

Key Objectives

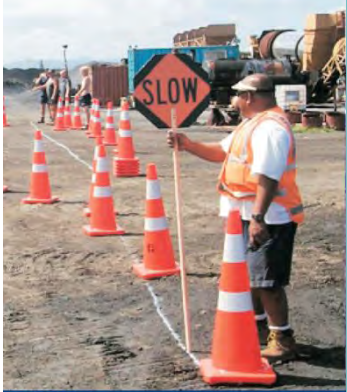
- ✓ Determine most effective testing frequency
- ✓ Determine most effective test spacing

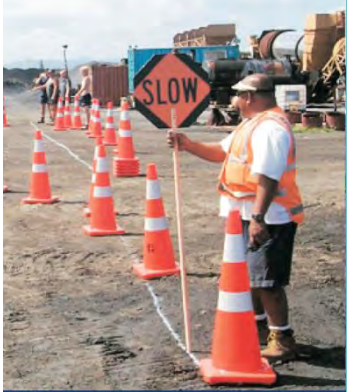
While

- ✓ Maximising network coverage of FWD data
- ✓ Aligning with annual funding availability

How

- ✓ By prioritising road sections for FWD testing





Rodney District Council

Falling Weight Deflectometer (FWD) Testing Guidelines

RDC RAMM Road Hierarchy

1. Strategic Roads
2. Regional Arterials
3. District Arterials
4. Principal Roads
5. Collector Roads
6. Local Roads (as required)
7. Access Ways
8. Service Lanes

Unsealed Roads

Not Included in FWD Testing Programme

Sealed Roads

Area Wide Pavement Treatment (AWPT)

Test Every 25m Staggered Between Lanes

Testing Strategy

Select Priority (AADT)
Select Spacing (Length)

FWD Priority 1

All Regional Arterials
District Arterials ≥ 5001 AADT
Other Roads ≥ 5001 AADT

Test Annually

FWD Priority 2

District Arterials ≤ 5000 AADT
Other Roads $5000 \geq$ AADT ≥ 501

Test Every 3 Years

FWD Priority 3

Other Roads $500 \geq$ AADT ≥ 201

Test Every 5 Years

FWD Priority 4

Other Roads $200 \geq$ AADT

Test As Required

Test Spacing

Spacing Based on Length of Road

All Lengths

Test Every 50m Staggered Between Lanes

0m – 200m

Test Every 50m Staggered Between Lanes

201m – 2000m

Test Every 100m Staggered Between Lanes

≥ 2001 m

Test Every 200m Staggered Between Lanes

Effect of FWD Testing Strategy

Before:

All Roads > 500AADT only Tested (1-2 year intervals)
All other roads – SNP assumed on engineering judgement
Common practice

After:

All sealed roads tested in 2007 – Benchmarked network
Future testing according to the flowchart
Less assumptions on network pavement strength

Result:

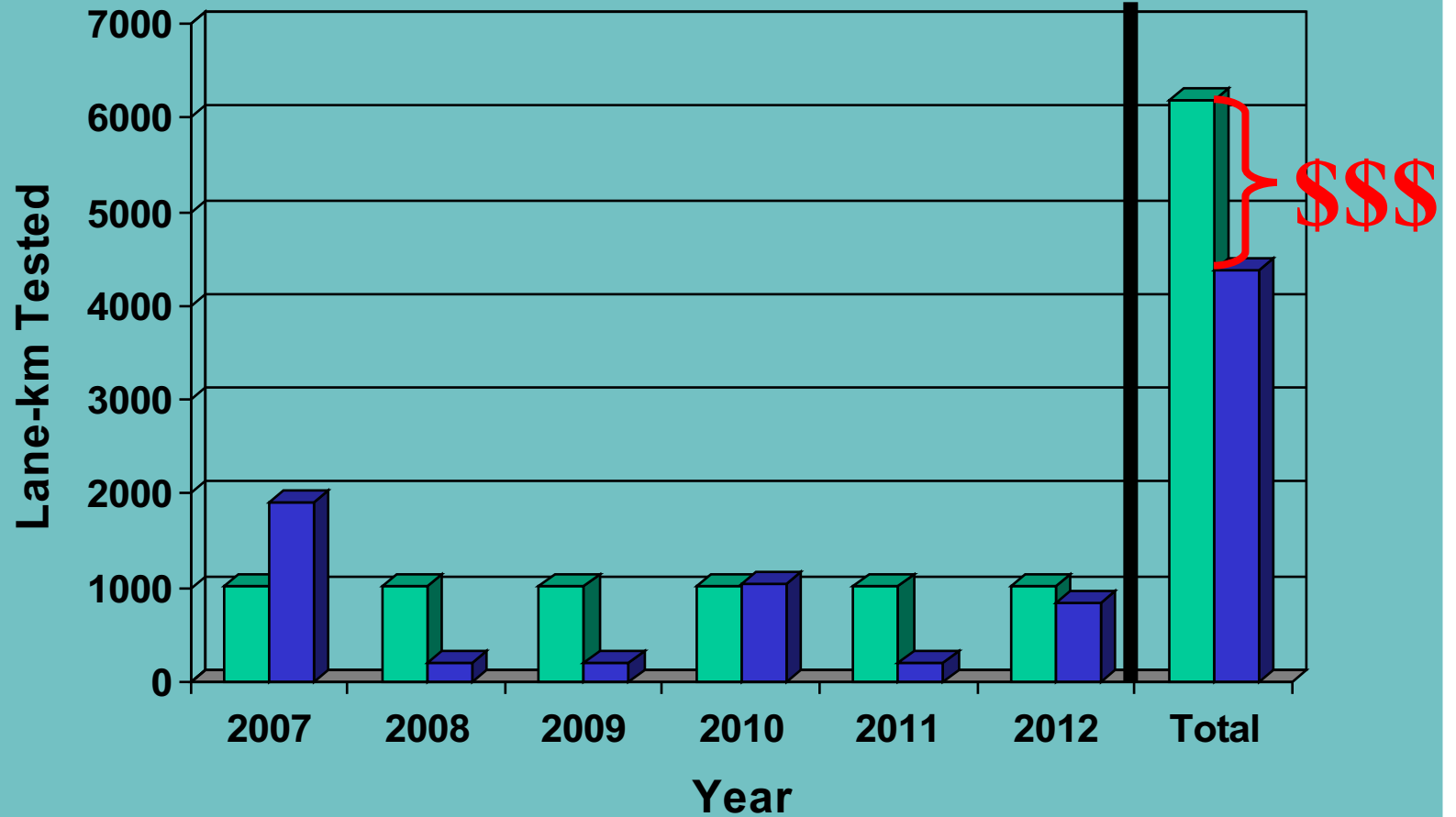
Strategy ensures more network coverage – better forecasting
Improved confidence expected in dTIMS FWP
Guidelines also ensure cost effective data collection



Effect of FWD Testing Strategy



■ Past Strategy
 ■ New Strategy



Key Points on FWD Guidelines

Can customise FWD Testing Guidelines to suit;

- Type of Road Network (i.e. Low Volume Roads, etc.)
- Local Requirements
- Funding Availability

Best value for your data collection money



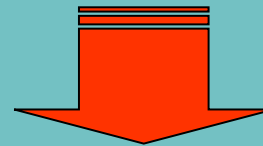
Key Points on FWD Guidelines (cont...)



**Increased Network Coverage
of FWD Testing**



**Better Picture of the
“Actual” Structural Condition of Network**



**“More Confident”
Forward Works Programmes**

Forward Works Programming in HBC

dTIMS

Pavement
Performance
Prediction Model

RAMM

Treatment
Selection
Algorithm

**Network
Engineers**

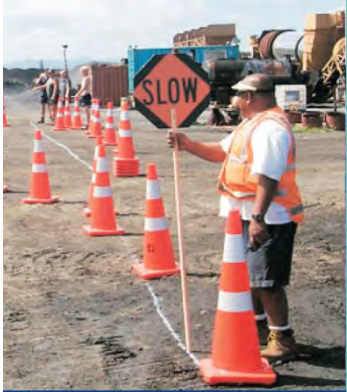
Local Knowledge
Experience
Strategic Factors

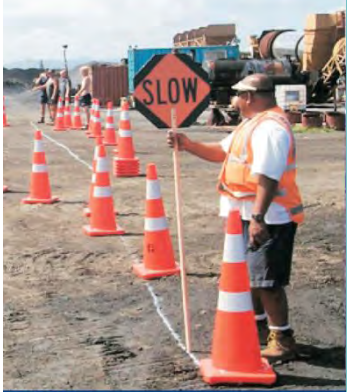
Field Validation and Economic Evaluations

Forward Works Programme



Annual Forward Works Programme in Maps





Final Comment

Key to 'practical' asset management

- A good understanding of the client's requirements
- Recognise there is no one answer suitable for all

"Best for Roads"

Technically
Financially
Politically
Strategically
Practicality

Project Level
Application

Network Level
Application



Thank You!



Fulton Hogan Ltd

North Harbour

Anuradha Premathilaka (Anu) BE, MEngSt (Transp)
Regional Technical Engineer

40 Flexman Place, PO Box 305, Silverdale
Auckland, New Zealand.

Telephone 09 427 9384, Facsimile 09 427 9382

Mobile 027 693 9011, Email anuradha.premathilaka@fh.co.nz



www.fh.co.nz



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