



TRIMM is supported by funding from the 7th Framework Programme Call: SST.2011.5.2-2.
Theme: Advanced and cost effective road infrastructure construction, management and maintenance



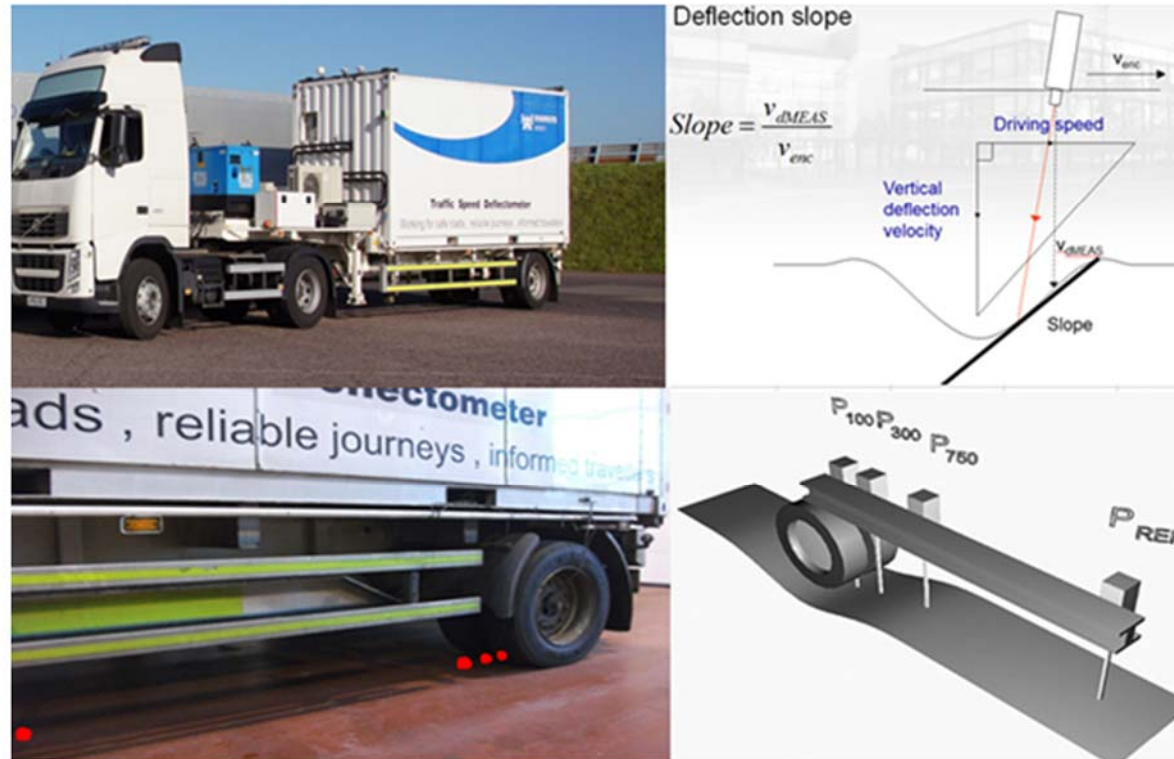
Traffic speed structural condition monitoring

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TOMORROW'S ROAD INFRASTRUCTURE MONITORING AND MANAGEMENT

Traffic Speed Deflectometer (TSD)



TOMORROW'S ROAD RESEARCH MONITORING & MANAGEMENT

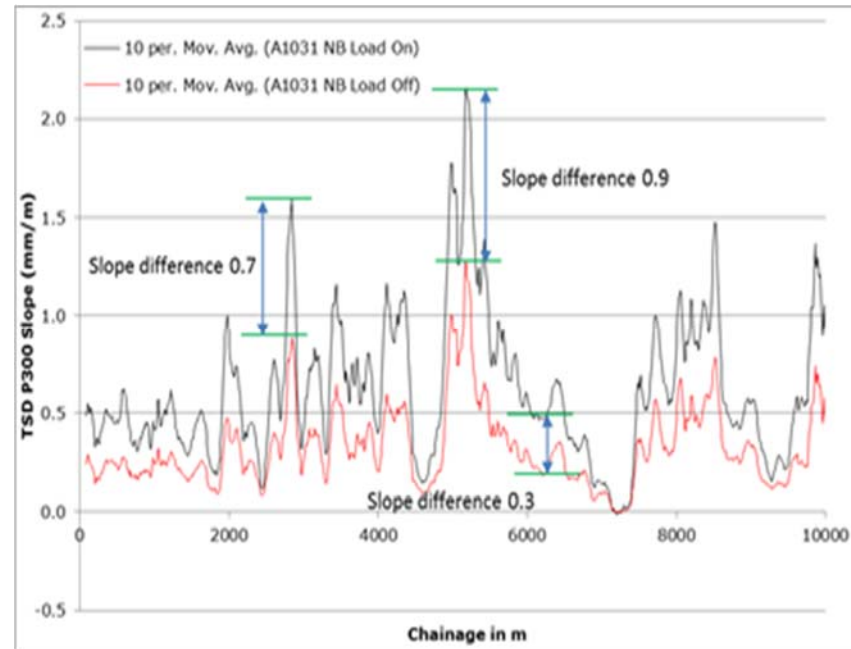
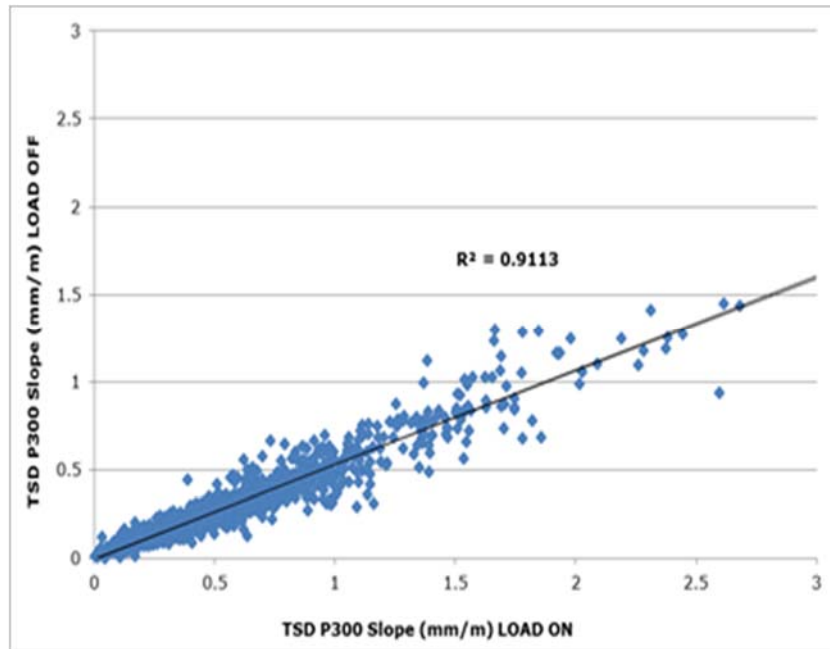


TSD for ‘Local Roads’



- ▶ TSD operates on major highways
- ▶ Major highways have a stiff construction and allow TSD to operate at high speed
- ▶ ‘Local Roads’ have weaker construction, different geometry, slower speeds
- ▶ Can a smaller, lighter TSD operate effectively on a ‘Local Road’?

Lighter TSD Testing



Correlation between Load-on and Load-off TSD

Load-on v Load-off TSD slope data

TSD Load On v Load Off



- Road Structural condition categorised into 5 bands – A to E
- Load on and Load off surveys both show good correlation with Deflectograph trials

TSD Load On

E	8	6	20		
D	10	15		78	61
C	8		71		19
B		79		11	14
A	75		9	10	6
	A	B	C	D	E

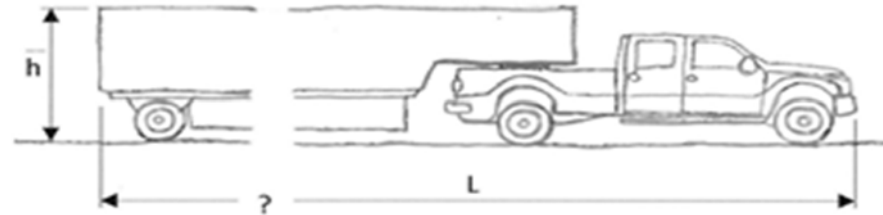
DFG

TSD Load Off

E	2	5	13		
D	2	13		86	76
C	7		78		16
B		82		8	8
A	90		9	6	1
	A	B	C	D	E

DFG

TSD for 'Local Roads'



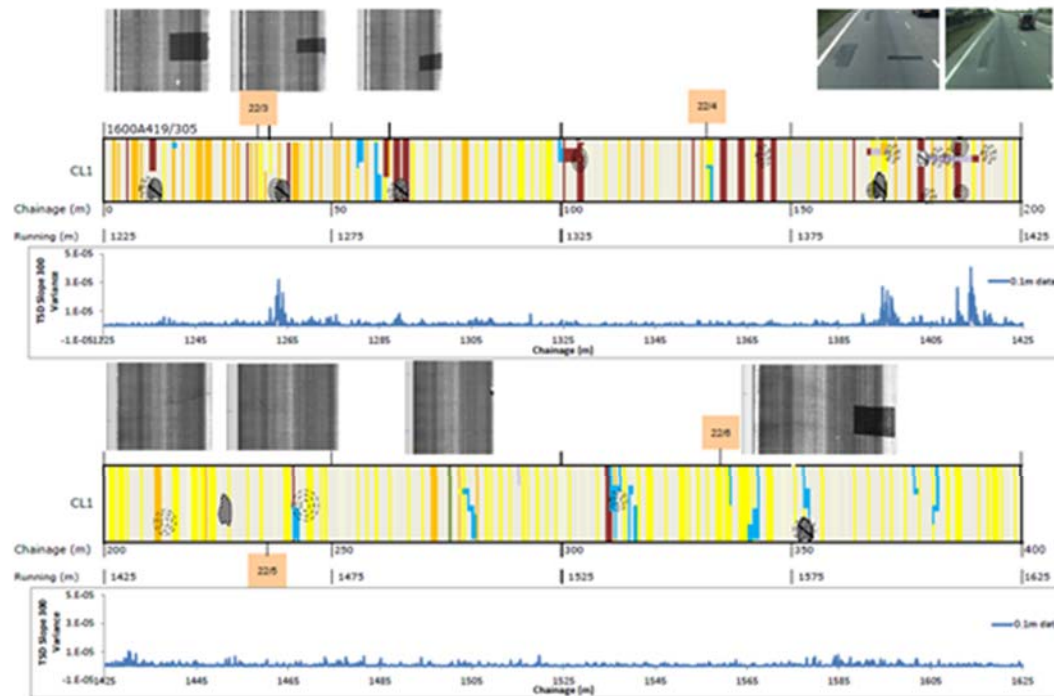
- Potential design for a TSD for 'Local Roads'
- Potential Trailer + pick up truck design
- Operates at low speeds
- Low axle weight
- Only 2 Doppler sensors
- Results could be relative to the rest of the road rather than absolute

TSD for Concrete Roads



- ▶ Visual Surveys of concrete roads look for cracking and other defects
- ▶ TSD surveys were carried out on concrete roads
- ▶ Traffic Speed forward-facing video was captured and analysed for road defects
- ▶ Data sets were compared

TSD for Concrete Roads



Variance of slope values recorded by the TSD complement Manual Analysis of video data and provide additional information about potential defects

TSD for Local Roads



▶ Conclusions

- Load on v Load off comparison shows usable TSD data can be captured on 'local roads' using a light axle load
- A smaller TSD could theoretically be built that is designed to operate on 'local roads'
- TSD slope data can provide information that helps visual analysis of concrete roads