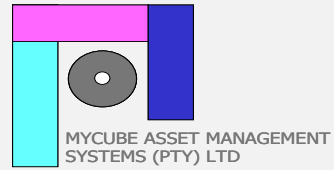


# PURPOSE OF CONDITION ASSESSMENT

- **Network level**
  - ☐ Identify needs
  - ☐ Quantify needs
  - ☐ Prioritise
- **Project level**
  - ☐ Confirm need and appropriate measure
  - ☐ Uniform sections
  - ☐ Factors influencing selection and design
- **Design**
  - ☐ Texture measurement
  - ☐ Ball penetration testing

# SEAL DESIGN PROCESS



- **Site investigation**
- **Define uniform sections**
- **Sample and test material**
- **Select appropriate seal and binder type**
- **Measurement and interpretation of design input parameters**
- **Calculate binder application rates**
- **Determine aggregate spread rates**
- **Monitor conditions on site and early performance and make adjustments**

Introduction...

# CONDITION ASSESSMENT

- **METHODS**

- ☐ Visual Techniques

- GLOBAL ASSESSMENT (TMH9)
    - Detail (TMH6, TRH12)
    - SAMPLING (Paver)

- ☐ Mechanical

- Road roughness
    - Rut depth
    - Texture
    - Skid resistance
    - Deflection

- **ATTRIBUTES OF DISTRESS**

- ☐ Type
- ☐ Degree
- ☐ Extent
- ☐ Spacing
- ☐ Location
- ☐ Urgency rating

# ASSESSMENT SEGMENTS

- **CONSIDERATIONS**

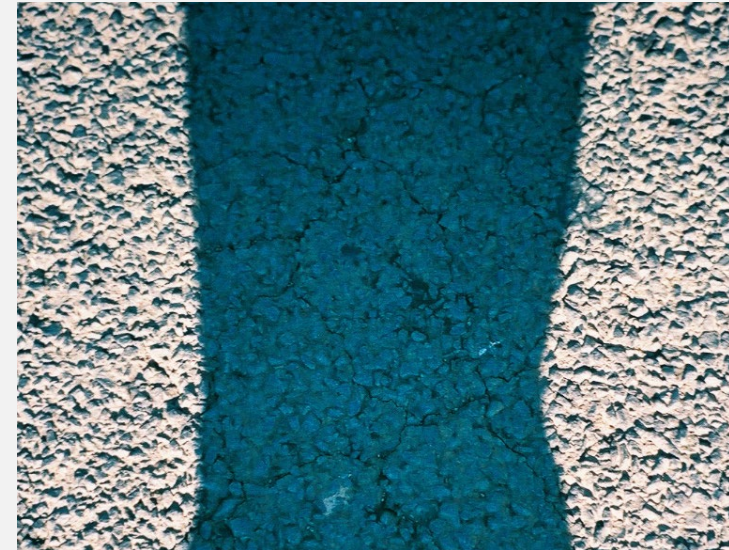
- ☐ Visible Start and End
- ☐ Preferably uniform length
- ☐ Detail required
- ☐ Network vs project level

- **PROJECT LEVEL**

- ☐ Detailed continuous
- ☐ Quantities (Repair, seal areas)
- ☐ Location
- ☐ Unique sections/areas

# OTHER ASPECTS

- **FREQUENCY**
- **TIME OF YEAR**
  - ☐ Rain
  - ☐ Temp effects
- **PRACTICAL HINTS**
  - ☐ Angle of sun
  - ☐ Height above road
  - ☐ Dry/ wet road
  - ☐ Tired ?
  - ☐ 2 Assessors
  - ☐ Stop/ check
  - ☐ Road temperature



# ASSESSMENT PARAMETERS



# Texture (VF)





# Texture (Fine)





# Texture (medium)





# Texture (Medium)





# Texture (Coarse)





# Texture (Very coarse)





# Texture ( varying)





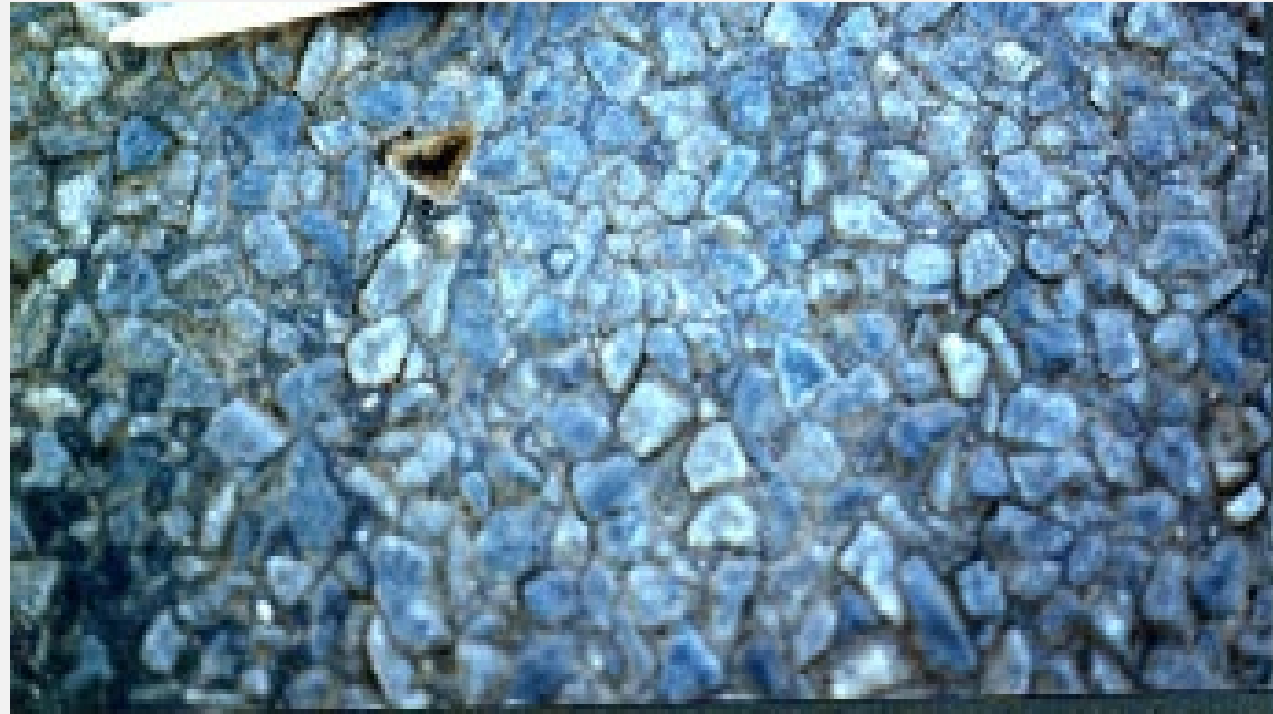
# Bleeding / Fattiness



# Binder condition 1



# Binder condition 3



# Binder condition 5





# Aggregate loss 1





# Aggregate loss 3





# Aggregate loss 5



# Edge breaking 1





# Edge breaking 3



# Edge breaking 5



# Riding Quality





# Skid resistance





# Surfacing Cracking 1

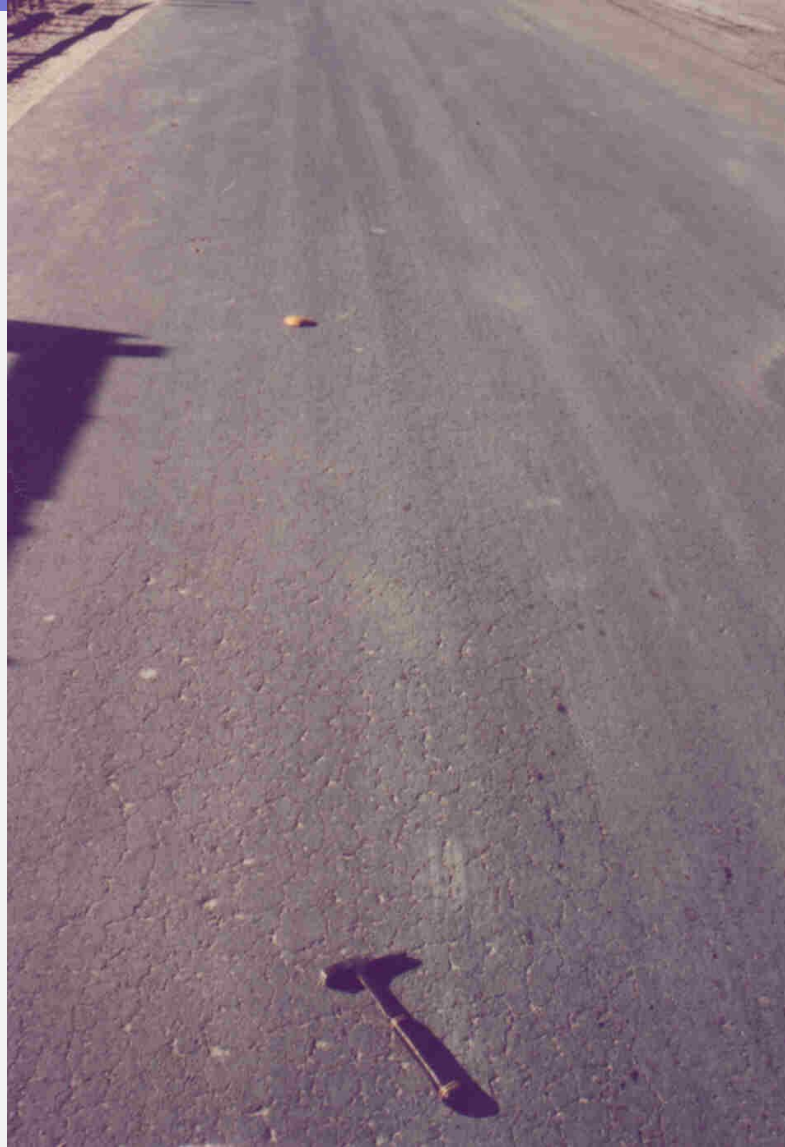


# Surfacing cracking 3





# Surfacing cracking 5

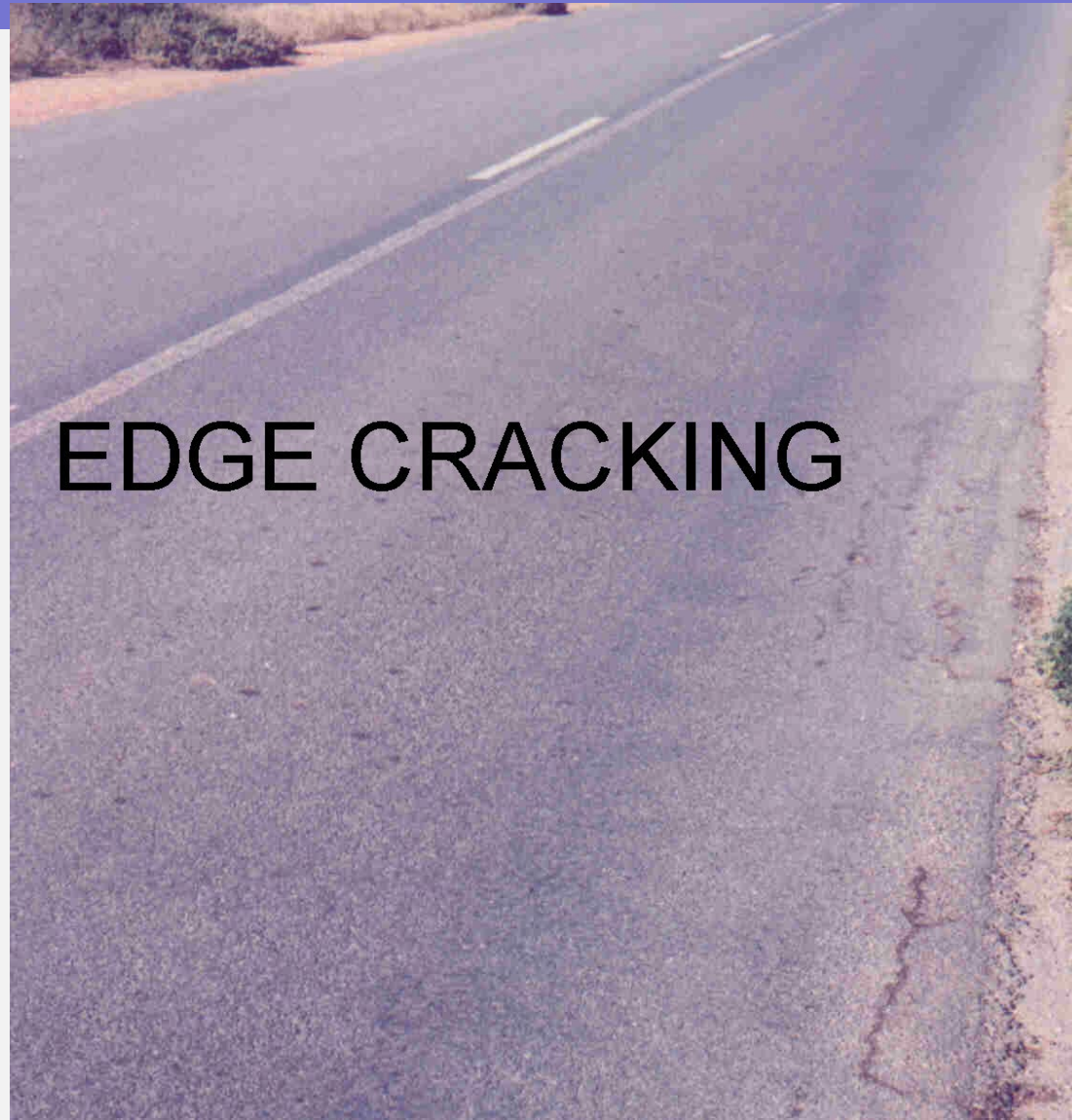


# Longitudinal cracking 3



WHEEL PATH

# Longitudinal cracking 3



**EDGE CRACKING**



# Longitudinal cracking 5

IRREGULAR





# Transverse Cracking 3



# Transverse cracking 5





# Block cracking 3



# Block cracking 3





# Block cracking 5



# Block cracking 5





# Crocodile (Fatigue) 1



# Crocodile(Fatigue) 3





# Crocodile (Fatigue) 5



# Pumping 1





# Pumping 3



# Pumping 5





# Surfacing failures 1



# Surfacing failures 3





# Surfacing failures 5



# Structural failures 5





# Potholes 3



# Potholes 5





# Surfacing patching 1?



# Structural patching 1





# Structural patching 3



# Structural patching 5





# Surfacing deformation 3+



# Surfacing deformation 3+





# Rutting



# Rutting

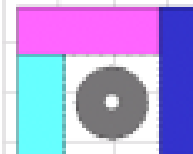




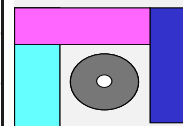


Client Logo

# VISUAL ASSESSMENT: FLEXIBLE PAVEMENTS



MYCUBE ASSET MANAGEMENT  
SYSTEMS (PTY) LTD



MYCUBE ASSET MANAGEMENT  
SYSTEMS (PTY) LTD

## INVENTORY

Network		Date Surveyed	
District/Suburb		Surveyor	
Road/Street/Parking Area		Climate During Survey	Dry Wet
Start Position		Drainage	Urban Rural
End Position		Route Classification	A B C D E
Sequence No.		Traffic Volume Heavy	L M H VH
Length (m)		Traffic Turn Actions	Low Med High
Average Width (m)		Max Gradient	<6% 6-8% 8-10% >10%

## PAVEMENT INFORMATION

Surfacing Type	Asphalt	Slurry	Cape Seal	Stone	Sand/Grid	Other
Surfacing Texture	Coarse	C - M	Medium	M - F	Fine	Coarse & Fine
Voids to accom. DE	Yes	No				

## SURFACING DISTRESS

Distress Type	Typical degree						Extent					Slight		Warning to Severe	
	0	1	2	3	4	5	1	2	3	4	5	Area (%)	Area (m <sup>2</sup> )	Area (%)	Area (m <sup>2</sup> )
Surfacing Failures	0											•		•	
Surfacing Cracks	0											•		•	
Aggregate Loss	0											•		•	
Dry / Brittle	0											•		•	
Bleeding / Fatty	0											•		•	
Surfacing Deformation	0											•		•	

## STRUCTURAL DISTRESS

Distress Type	Typical degree	Extent	Slight	Warning to Severe
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# Mechanical Surveillance



# Dipstick



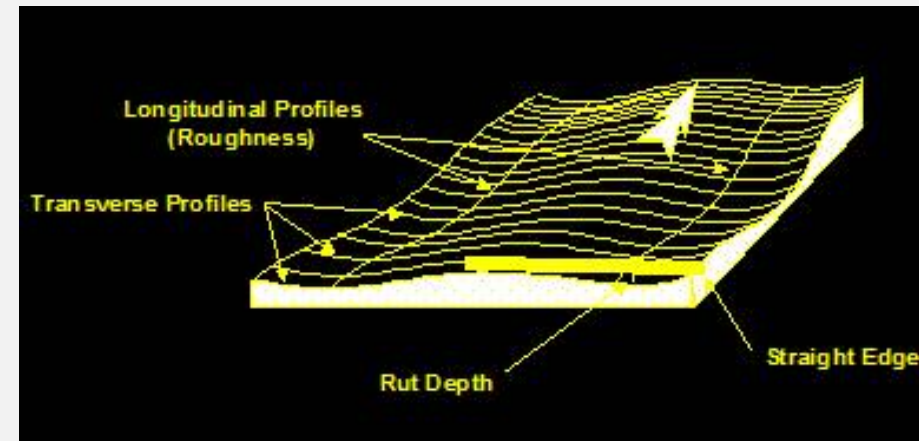
# ARRB Walking Profilometer





# Mechanical surveillance

- Rut depth
- Road roughness
- Macro texture
- Pavement deflection
- Skid resistance



# SCRIM



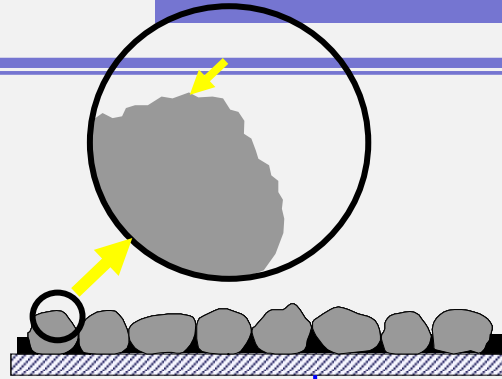


# Grip Tester



## Micro Texture

# Road Roughness



0.5mm

50mm

0.5m

50m

Micro texture

Macro texture

Mega texture

Roughness

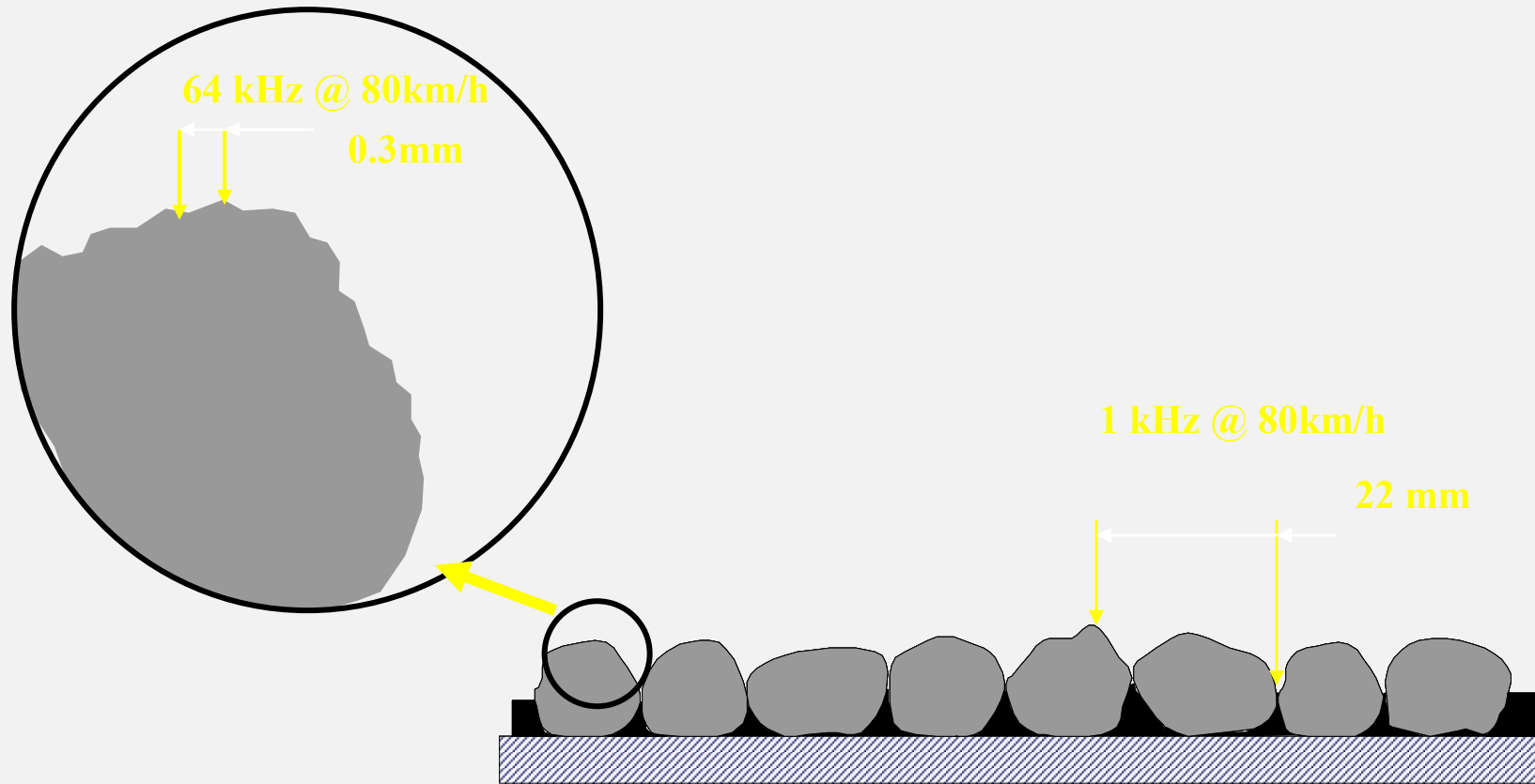
Vertical alignment





# Scales of Road Roughness

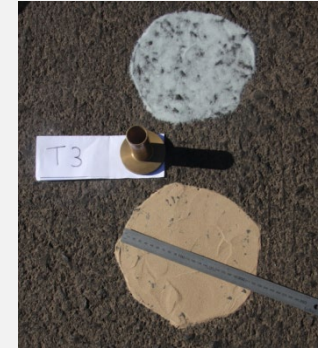
- **IRI (m/km) Range (0-20)**
  - ☐ International Roughness Index
- **QI (Count / km) Range (0-240)**
  - ☐ Quarter Car Index
- **PSI (Estimate) Range (5 – 0.5)**
  - ☐ Present Serviceability Index
- **BI (mm/km) Range (0 – 16000)**
  - ☐ Bump Integrator
- **Other**



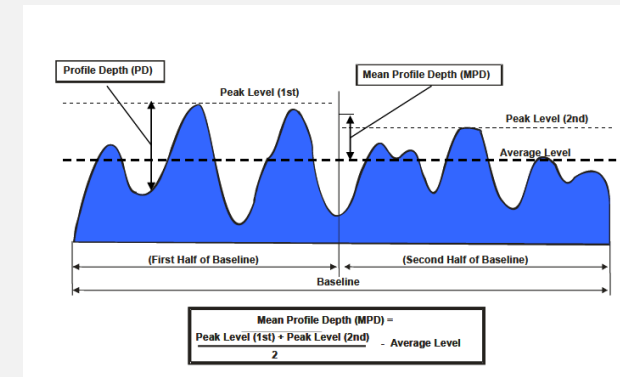


# Macro Texture

- **Macro texture**
  - ❑ Sand Patch (MTD)
  - ❑ High Speed Profiler (MPD)



- **ETD = 0.2 x 0.8 MPD ?**



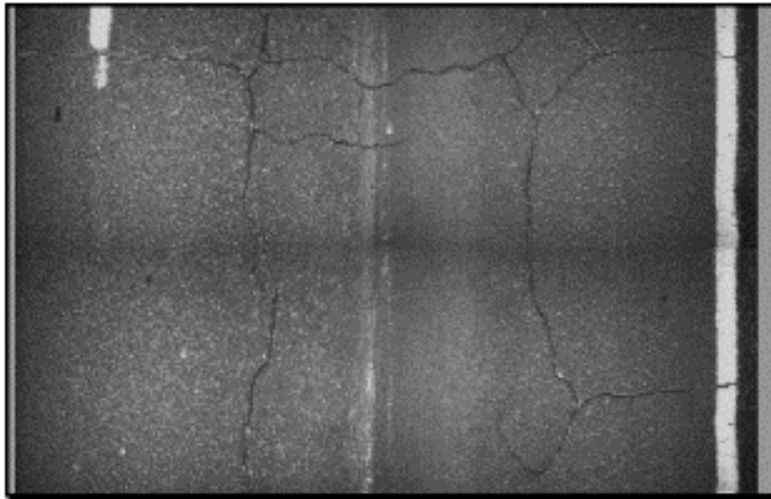
# 2D Laser Solution



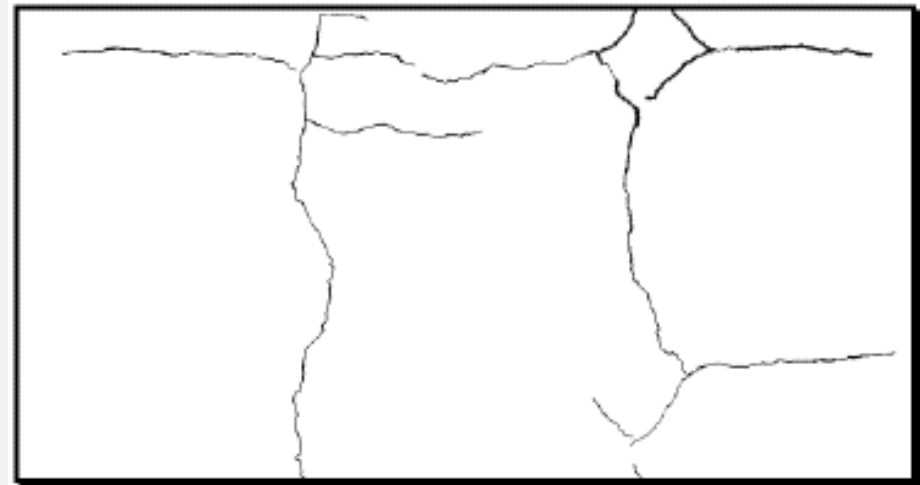


# Automated Distress Surveys – 2D

Need to convert data into information



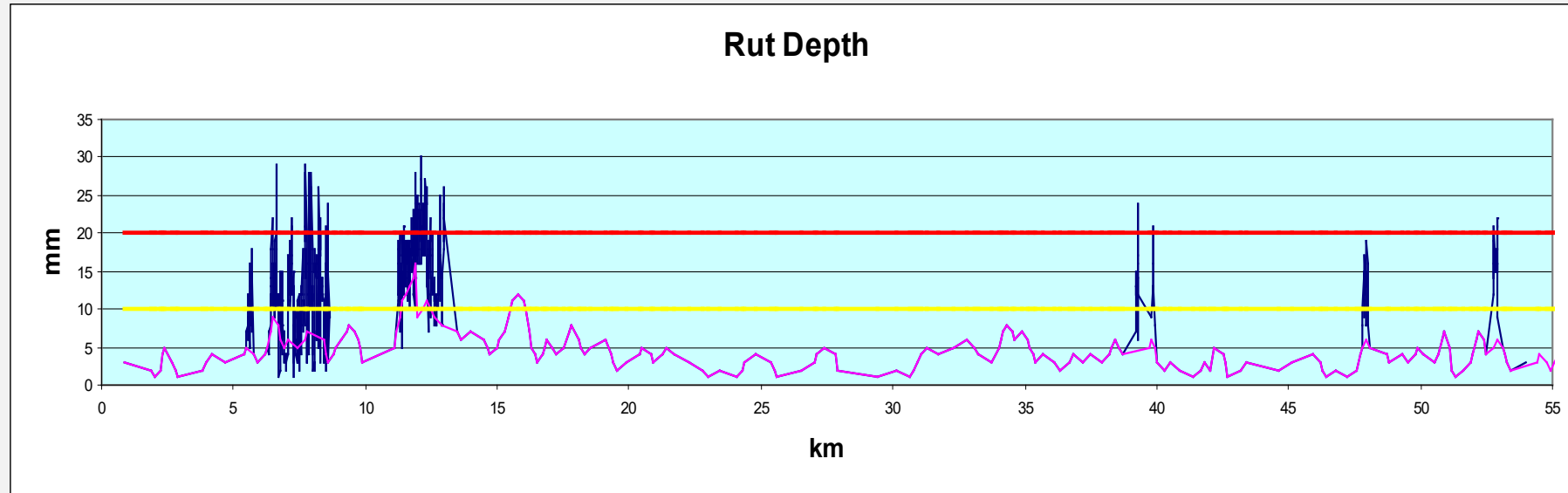
**Digital Image**



**Crack Map**

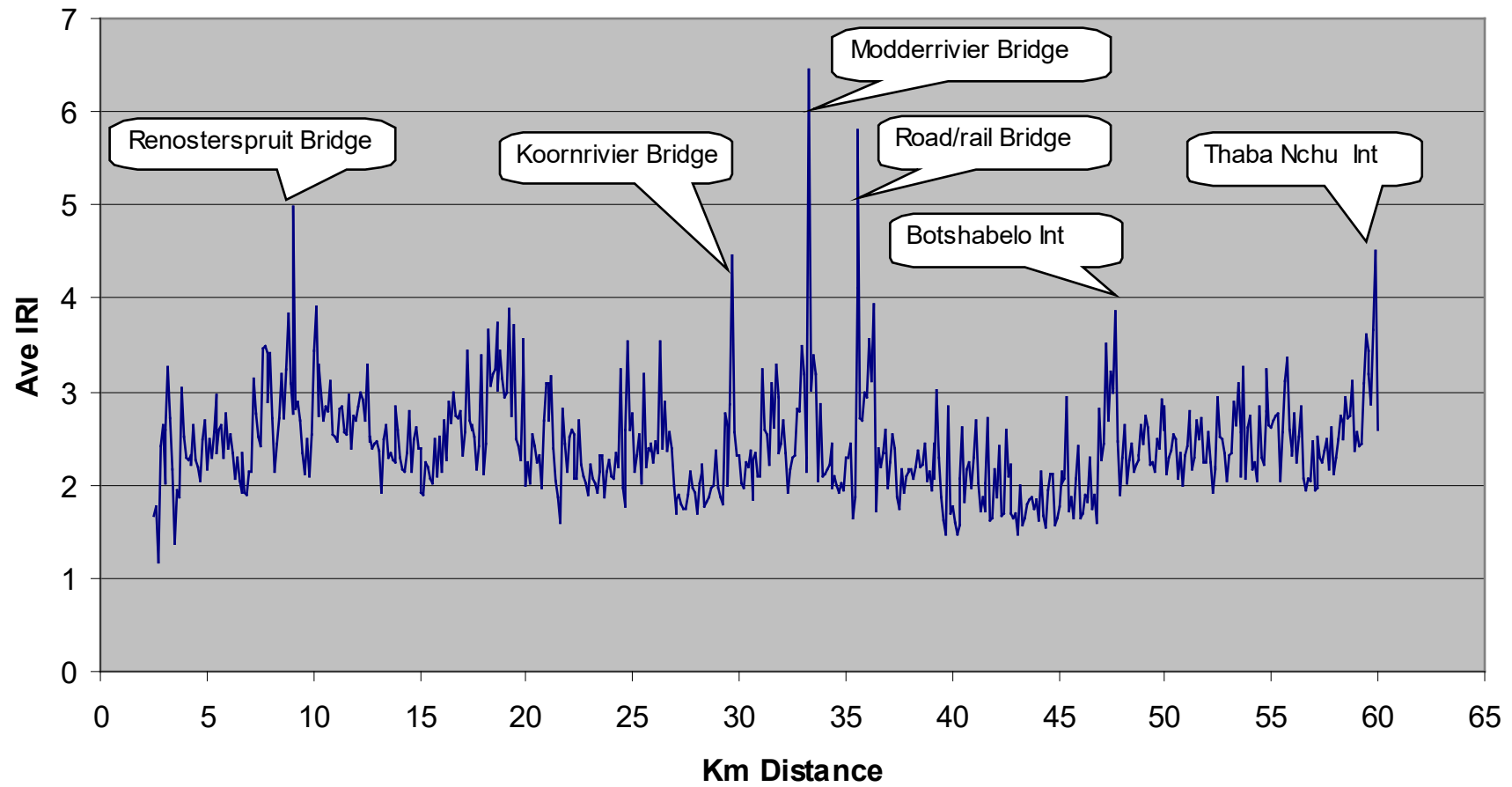
- Pattern recognition
- Location
- Intensity e.g. m/m

# Warning





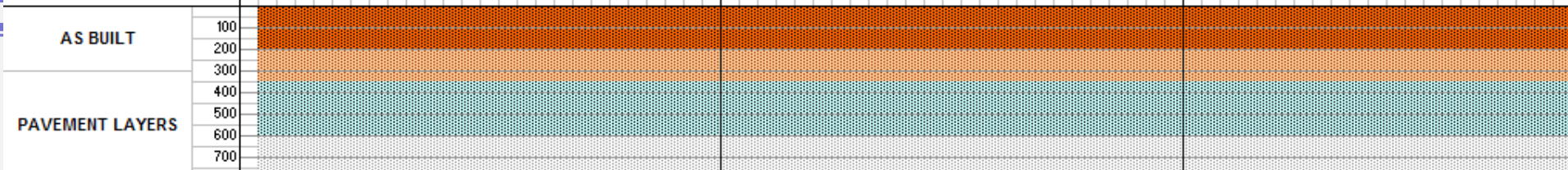
## Road Roughness N8/11



# Pre-treatment requirements

- **Record distress**
- **Mark out needs**
- **Measure quantities**

## RESEAL HISTORY



KILOMETER DISTANCE	1.5	1.6	1.7	1.8	1.9	2.0	2.1	2.2	2.3	2.4	2.5	2.6	2.7	2.8	2.9
Distance Interval (m)	20														

SURFACING	Surfacing Failure	SF													
	Surfacing Cracks	SC													
	Aggregate Loss	AL													
	Binder Condition	BC													
	Bleeding/Flushing	B/F													

STRUCTURAL ASSESSMENT	CRACKS	Block	B												
		Crocodile	C												
		Longitudinal	L												
		Transverse	T												
	Pumping	PU													
	Base Patching	BP													
	Geotextile Patching	GP													
	Potholes/Failures	P/F													
	Edge Breaking	EB													

INSTRUMENT MEASUREMENTS	Max Cell	LHS	Outside												
		Inside													
		RHS	Inside												
		Outside													
	Rvt	LHS													
	RHS														
	Riding Quality														

ADDITIONAL INFORMATION	Side	Cone	LHS												
	Drains	Earth	RHS												
	Kerbing		LHS												
	CUT		LHS												
	FILL		RHS												
	Guard Rails		LHS												









# End