

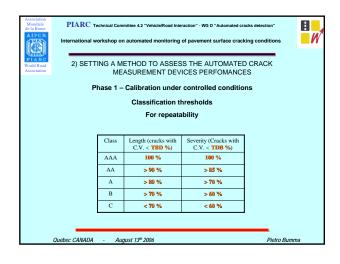
2) SETTING A METHOD TO ASSESS THE AUTOMATED CRACK MEASUREMENT DEVICES PERFOMANCES Phase 1 – Calibration under controlled conditions Artificially fissured tracks Sampling unit Crack Number of tracks 1 Number of tracks 170 Number of tracks 150 (1 cell) Number of transversal crack 20 (5 cells) Track length 300m (2 directions = 600m) Available cells 300	IPCR	PIARC Technical Committee 4.2 "Vehicle/Roa International workshop on automated monitor		
Sampling unit Crack Number of tracks 1 Number of longitudinal cracks 170 Number of longitudinal cracks 150 (1 cell) Number of transversal crack 20 (5 cells) Track length 300m (2 directions = 600m)	TARC rid Road sociation	MEASUREMENT I	DEVICES PERFOMANCES	RACK
Number of tracks 1 Number of cracks per tracks 170 Number of longitudinal cracks 150 (1 cell) Number of transversal crack 20 (5 cells) Track length 300m (2 directions = 600m)		Artificially fi	ssured tracks	
Number of cracks per tracks 170 Number of longitudinal cracks 150 (1 cell) Number of transversal crack 20 (5 cells) Track length 300m (2 directions = 600m)		Sampling unit	Crack	
Number of longitudinal cracks 150 (1 cell) Number of transversal crack 20 (5 cells) Track length 300m (2 directions = 600m)		Number of tracks	1	
Number of transversal crack 20 (5 cells) Track length 300m (2 directions = 600m)		Number of cracks per tracks	170	
Track length 300m (2 directions = 600m)		Number of longitudinal cracks	150 (1 cell)	
		Number of transversal crack	20 (5 cells)	
Available cells 300		Track length	300m (2 directions = 600m)	
		Available cells	300	
Used cells 250		Used cells	250	
Number of repetitions 5		Number of repetitions	5	

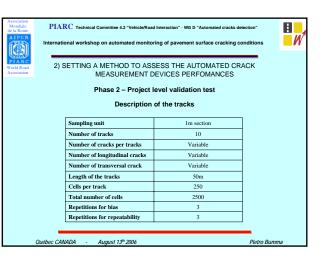
Association Mondiale de la Route AlPOR FLANC World Road Association	International 2) SET	worksho TING A	ponau MET MEAS	HOD T	monitori O ASS ENT DE	ng of pav ESS TH EVICES	HE AUT	utomated crack rface crackin DMATED DMANCE condition	ng conditions CRACK S	W
				Data	and da	ta anal	ysis			
	1	Track	Rep	Loc	ation	Band	Length	Severity	1	
		#	#	Start	Finish	#	(m)	(mm)]	
		SAW	1	0+000	0+010	1]	
		SAW	1	0+000	0+010	2				
		SAW	1	0+000	0+010	4				
		SAW	1	0+000	0+010	5				
		SAW	1	0+010	0+020	9				
a	Nuébec CANADA	ı.	Augus	t 13 th 200	6				Pietro Bumma	

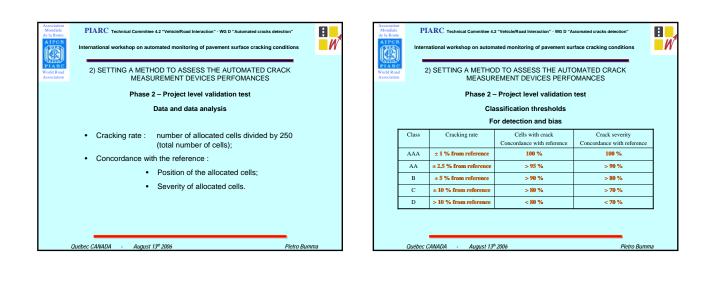
ie la Route	PI	ARC Tec	hnical Commit	ee 4.2 "Vehicl	e/Road Interac	tion" - WG D "/	Automated cracks det	ection"	
ALPCR (CO)	Interr	ernational workshop on automated monitoring of pavement surface cracking conditions							
PTARC Vorld Road	2	2) SETTIN					OMATED CR/ OMANCES	ACK	
		Ph	ase 1 – C	alibratio	n under c	ontrolled	conditions		
		E	cample of	results	: portion	of detecte	d cracks		
			•						
Rej	petition	Band #1 (n=27)	Band #2 (n=29)	Band #3 (n=29)	Band #4 (n=30)	Band #5 (n=33)	Transversal (n=20)	All (n=168)	
-	1	100 %	97 %	87 %	97 %	72 %	100 %	91 %	
	1 2	100 % 96 %	97 % 100 %	87 % 93 %	97 % 90 %	72 % 72 %	100 % 100 %	91 % 91 %	_
	-								_
	2	96 %	100 %	93 %	90 %	72 %	100 %	91 %	
	2	96 % 93 %	100 %	93 % 93 %	90 % 100 %	72 % 70 %	100 % 100 %	91 % 92 %	

Associ		2) SE	ITING	A METHOI MEASURI			E AUTOM		ACK
				e 1 – Calibr Example o					
				Lvample	n results .	. crack i	engui (m)		
	Direction	Start	Band	Reference	Mean of 5 reps.	Std. Dev.	C.V.	Bias	Relative Bia
	South	0	1	5	5.04	0.18	0.036	0.04	0.8 %
	South	20	1	5	4.71	0.12	0.024	-0.30	-5.9 %
	South	30	1	5	4.66	0.10	0.020	-0.34	- 6.8 %
	South	50	1	3	2.87	0.08	0.027	-0.13	- 4.4 %
	South	70	1	8	7.85	0.13	0.016	-0.15	- 1.8 %
	South	110	1	3	2.85	0.14	0.047	-0.15	- 4.9 %
	South	140	1	5	3.16	2.20	0.440	-1.84	- 36.9 %

Inte	ernationa	l worksh	op on automa	ted monitori	ng of pave	ment surface	cracking co	nditions	Intern	ational wo	rkshop on automa	ted monitoring of paveme	ent surface cracking conditions	
d n	2) SE	TING	A METHOI MEASURI					ACK	aad 2) SETTI		TO ASSESS THE A	AUTOMATED CRACK ERFOMANCES	
		Phase	1 – Calibr	ation und	ler cont	rolled con	ditions			Ph	ase 1 – Calibr	ation under contro	led conditions	
		Е	xample of	results : d	crack se	verity (mr	n)				Clas	sification threshol	ds	
											Fo	r detection and bia	6	
Direction	Start	Band	Reference	Mean of 5 reps.	Std. Dev.	C.V.	Bias	Relative Bias						
North	0	1	3	5.9	1.20	0.400	2.9	96.7 %		Class	Correctly detected cracks	Length (cracks with relative bias < 7.5 %)	Severity (Cracks with relative bias < 20 %)	
North	20	1	3	5.5	1.18	0.393	2.5	83.3 %		AAA	100 %	100 %	100 %	
North	40	1	2	4.8	1.95	0.975	2.8	140.0 %		AA	> 90 %	> 90 %	> 85 %	
North	70	1	8	7.6	2.66	0.333	- 0.4	- 5.0 %		A	> 80 %	> 80 %	> 70 %	
North	130	1	5	5.3	1.16	0.130	- 0.1	- 1.5 %		В	> 70 %	> 70 %	> 60 %	
										с	< 70 %	< 70 %	< 60 %	







oad tion			D TO ASSESS THE AUT	
		Phase 2	- Project level validation	test
		Cli	assification thresholds	
			For repeatability	
	Class	Cracking rate	Crack presence (cells concordance)	Crack severity (cells concordance)
	AAA	C.V. < TBD	C.V. < TBD	C.V. < TBD
	AA	C.V. < TBD	C.V. < TBD	C.V. < TBD
ľ	В	C.V. < TBD	C.V. < TBD	C.V. < TBD
- 1	С	C.V. < TBD	C.V. < TBD	C.V. < TBD
	D	C.V. < TBD	C.V. < TBD	C.V. < TBD

