Texture/Friction Measurements and Analysis at Runway 13-31 of James Armstrong Richardson International Airport in Winnipeg

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Texture ClassificationUniversity OF MANITOBA								
The two levels of texture that predominantly affect friction are micro-texture and macro-texture								
Texture Classification	Relative Wavelengths, λ	Characteristics						
Micro-texture (I-texture)	$\lambda < 0.5 \text{ mm}$	by fine sand or surface roughness of large aggregate						
Macro-texture (A-texture)	$0.5 \text{ mm} \le \lambda < 50 \text{ mm}$	Spaces and depths between aggregate particles						
Megatexture	$50 \text{ mm} \le \lambda < 500 \text{ mm}$	Construction or pavement distress						
Unevenness (Roughness)	$0.5 \text{ m} \le \lambda < 50 \text{ m}$	Construction or pavement distress						
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Specifications	UNIVERSITY OF MANITOBA			
Laser	Line laser			
Sample interval (mm)	<0.05			
Vertical accuracy (mm)	<0.05			
Wavelength bands	Microtexture, Macrotexture			
Texture map dimensions	3D			
Macrotexture indices	SMTD , Skewness, Kurtosis, S _a			
Microtexture index	NPSE			
Method of measurement	Stationary			
Standard/specification	Research device			
Attributes	Indices from 3D texture heights			











































Statistical Analysis								
Regression model				$+\beta_1 \times SN$	$ATD + \beta_2$			
Coefficient	Estimate	Std e	rror	t-Statistic	t-Critical	p-Value		
α	73.773	5.053	35	14.598	2.0452	1.284×10 ⁻¹⁴		
β_1	14.081	3.545	52	3.9719	2.0452	4.531×10 ⁻⁴		
β_2	-1.8107	0.232	27	7.7819	2.0452	1.176×10 ⁻⁸		
Regression model				$FN = 73.77 + 14.08SMTD - 1.81 S_{ku}$				
Number of observations			31					
Root mean squared error			8.85					
R^2			0.73					
F-Statistic			37.9					
F-Critical			3.3277					
p-Value (<	0.05)		31.	07×10 ⁻⁸				









