



# Manitoba Pavement Preservation



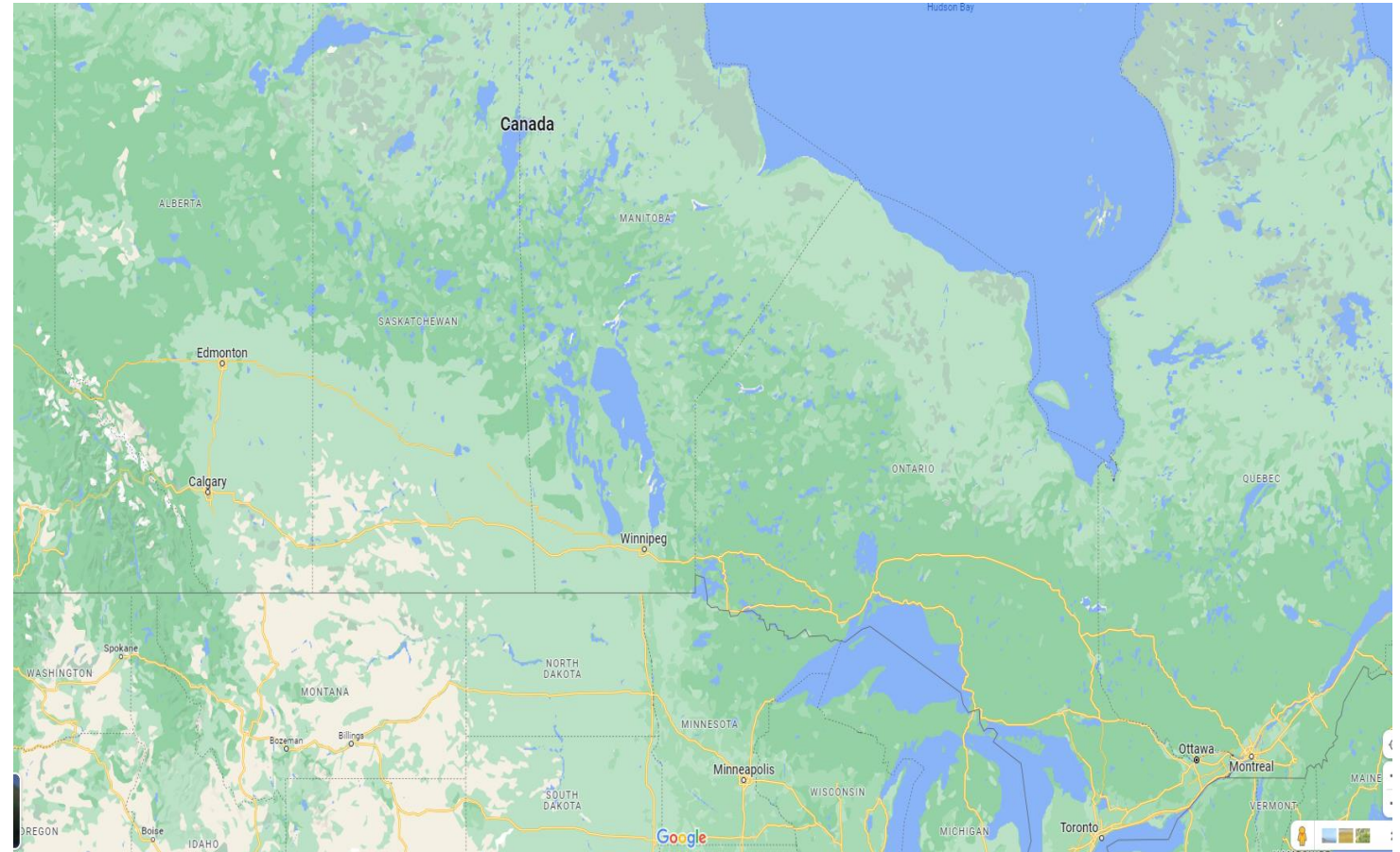


Known for fishing, hunting, outdoors and the cold!

### Representatives

- Ryan Thompson
  - Pavement Management Engineer
- Andre Dupuis
  - Surfacing Program Manager
- Warren Zarichanski
  - Preservation Manager

# Manitoba











## What's new

### Pavement Management System

- ESRI Roads & Highways inventory system
- Fugro ARAN data collection van (internal)
- **Pavement management software Fugro/Trimble Agile Assets**
  - **PQI, deterioration curves**

### Treatment Specifications

- **Revised chip seal spec, close to AASHTO recommendation**
- **Revised micro-surfacing specification**
  - **Trial soft micro**
- Rout and Seal spec now includes filling
- Emulsion price index



# Pavement Quality Index (PQI)

## AC & AST

$$PQI = (0.3 * \text{Roughness Index}) + (0.3 * \text{Linear Index}) + (0.3 * \text{fatigue Index}) + (0.1 * \text{Rutting Index})$$

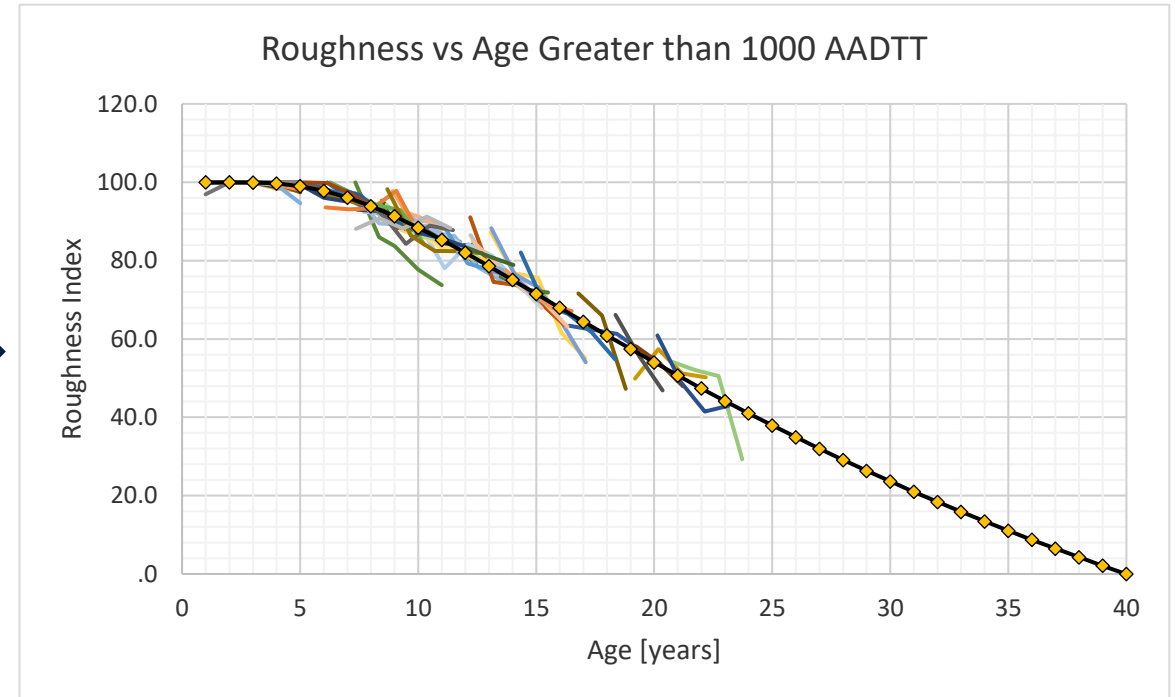
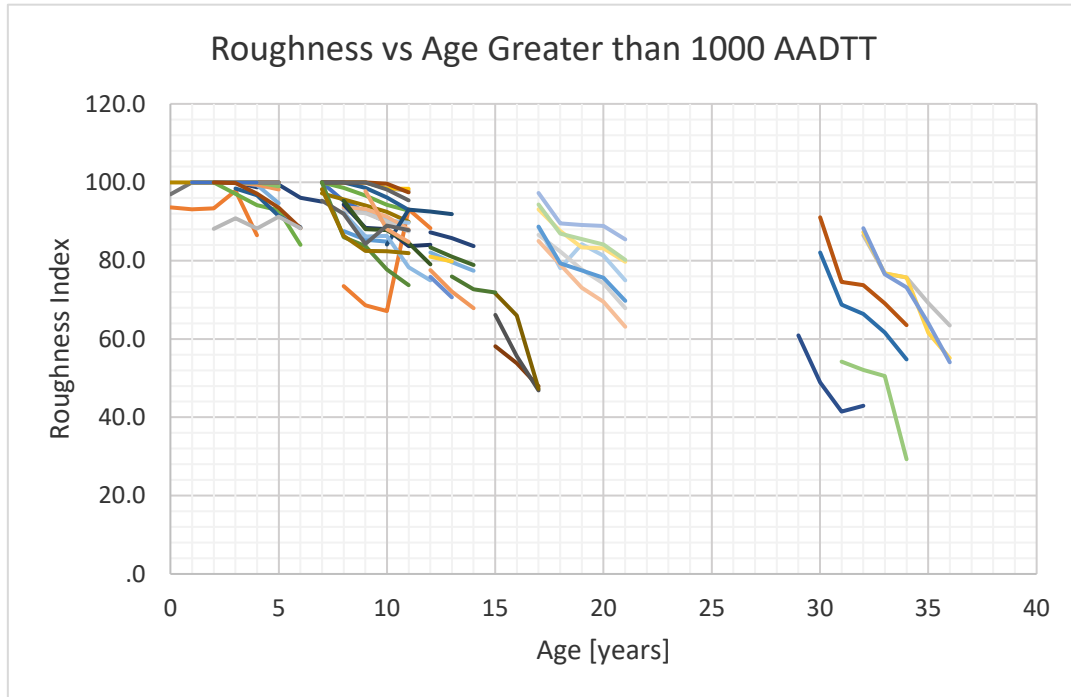
## PCC

$$PQI = (0.5 * \text{Roughness Index}) + (0.3 * \text{Linear Crack}) + (0.2 * \text{Faulting Index})$$

Distress	Initial Value (100)	Terminal Value (0)
Roughness (IRI)	1.0 (63 in/mi)	4.5 (285 in/mi)
AC and AST Linear Crack (m/km)	0	3000 (15,800 ft/mi)
Fatigue Crack (% Area)	0	30
Rutting (mm)	3	20 (0.79in)
PCC Linear Crack (m/km)	0	2000
Faulting (mm)	0	7



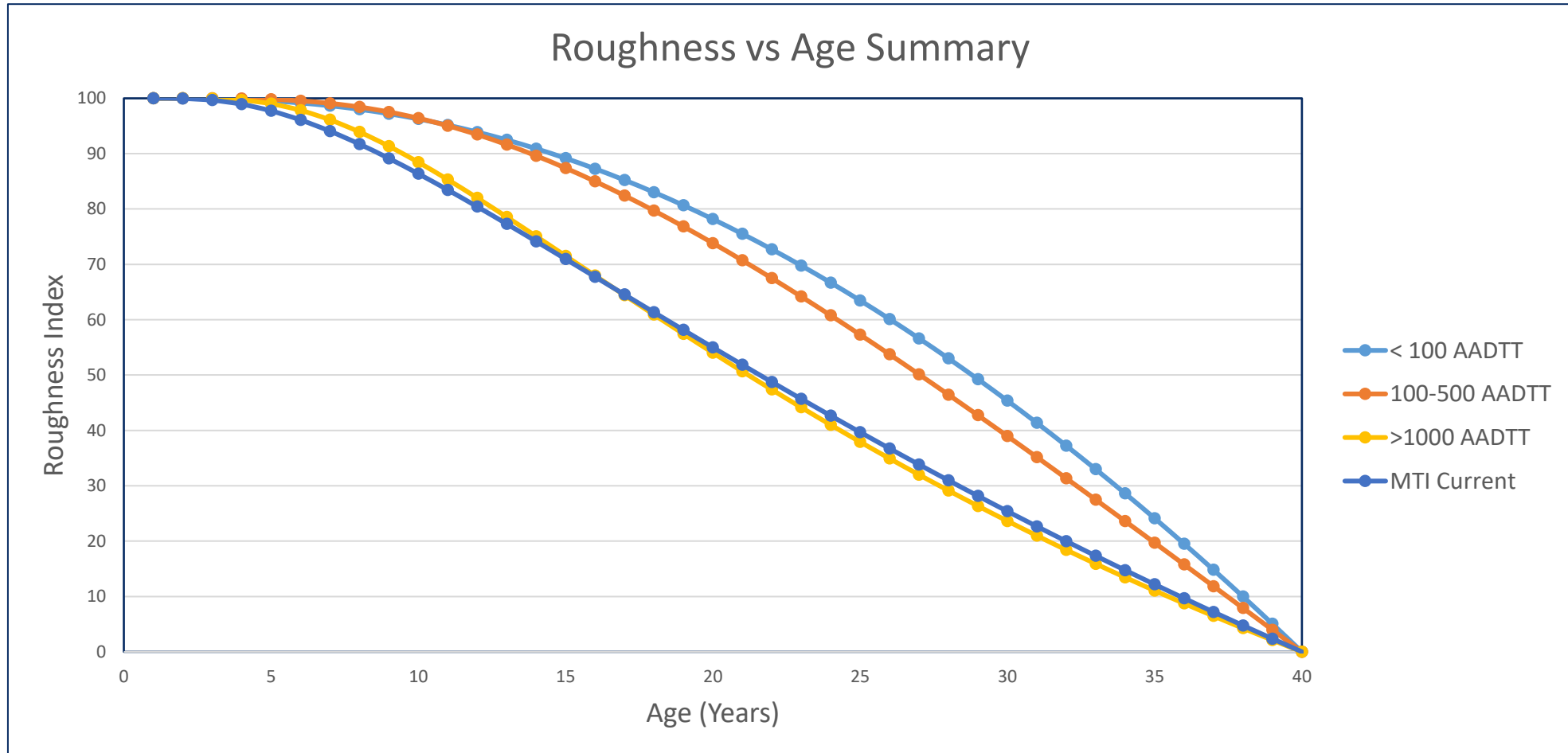
# Roughness Deterioration Curve



- Constraints sigmoidal 40 years
- Shifted age and least squares best fit



# Roughness Deterioration Curves







# Pavement Management Software

- System is working well
- Defining new performance metrics and targets %G,F,P
- Developing pavement management policy



# Chip Seal Specification

- Developed new spec
- <https://www.gov.mb.ca/mti/contracts/pdf/manual/823.pdf>
- Largely based on AASHTO draft spec
- Mostly been good, some aggregate quality issues
- Pay adjustments learning curve





# Chip Seal Aggregate Spec

Previous Type II (single size)

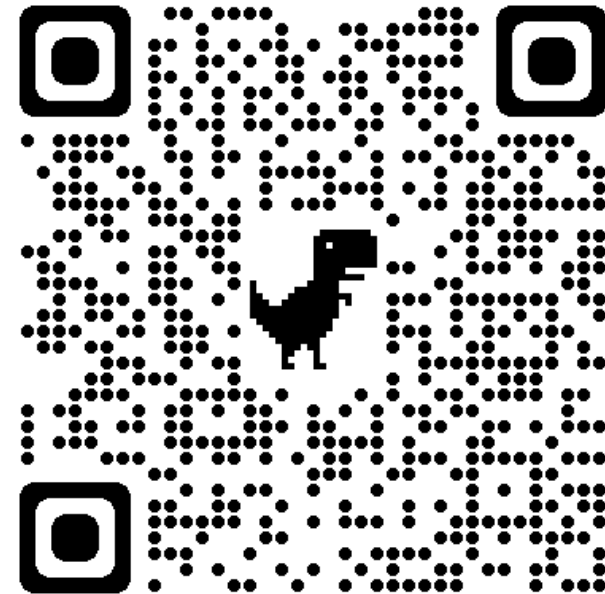
Sieve Size		Type I		Type II	
Metric, mm	Imperial	Lower Limit	Upper Limit	Lower Limit	Upper Limit
12.5	1/2"	100	100	100	100
9.5	3/8"	75	100	90	100
4.75	#4	5	30	0	30
0.600	#30	-	-	0	2
0.425	#40	1	10	-	-
0.075	#200	1	4	0	1



Sieve Size		Percent Passing (%)	
Metric, mm	Imperial	Lower Limit	Upper Limit
12.5	1/2"	100	100
9.5	3/8"	75	100
4.75	#4	0	15
0.075	#200	0	1

## Micro Surfacing

- New spec based off of AASHTO and ISSA
- <https://www.gov.mb.ca/mti/contracts/pdf/manual/827.pdf>
- Historically used micro-surfacing as a rut fill treatment, required high stiffness = high cracking
- Expanding use as a pavement preservation treatment and on lower volume roads a “maintenance” treatment
- Scratch coat and top lift vs historically rut fills and top
  - Significant savings in material. Long term performance?



## Soft Micro Surfacing Trial

- Inspired by MnDOT to try a softer base binder to mitigate cracking
- Base AC soft PG58-28 conventional PG 64-22
- First project this past year
- Hoping for less cracking as it ages





**MTI**

Questions?



**Thank you**