

Everything roads  
Since 1894.

# Maintaining Ontario's Municipal Gravel Roads

2022 TAC Conference and Exhibition  
AM.2A/B Asset Management of Gravel Roads  
October 4, 2022

# Good Roads

# Outline.

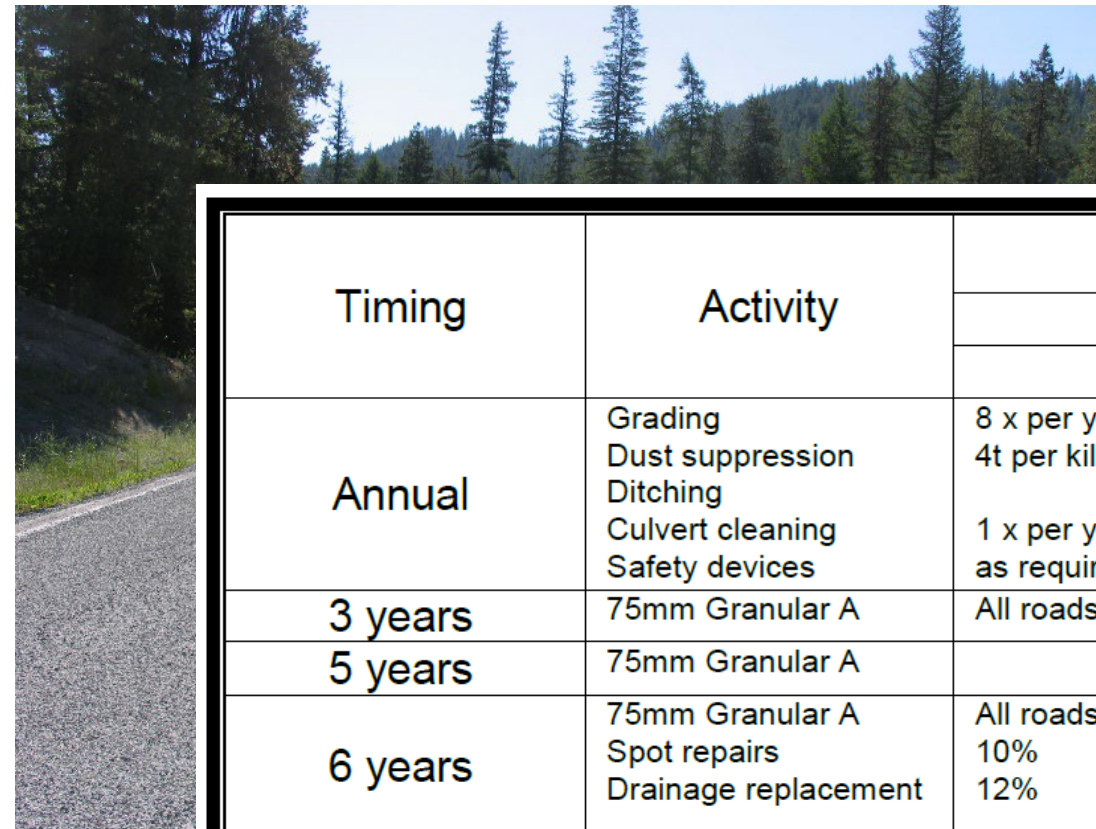
- Background
- 2019 and 2022 Surveys
- Supporting Ontario Municipalities
  - Gravel Liaison Committee
  - Gravel Workshop
  - Gravel Education Course
  - Gravel Research



# Background.

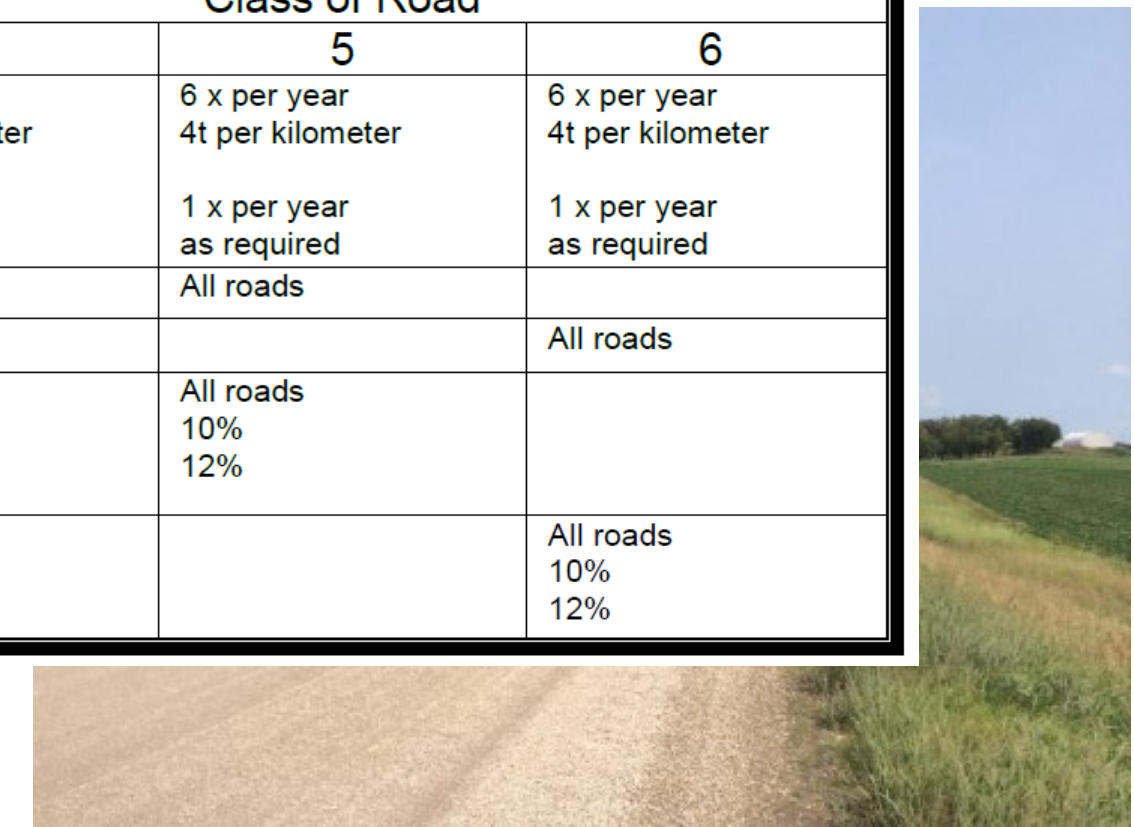
## Gravel Roads

- Type of unpaved road surface made of a mix of stone, sand and fine-sized particles
- Often considered to provide lower quality of service
- Ontario statistics
  - 315 of 444 municipalities
  - ~90,500 ln km
  - \$1,275 - \$3,650/ln km
- 2017 and 2018 GR experiences an increase in questions about best practices



Timing	Activity	Activity Quantity		
		Class of Road		
		4	5	6
Annual	Grading Dust suppression Ditching Culvert cleaning Safety devices	8 x per year 4t per kilometer	6 x per year 4t per kilometer	6 x per year 4t per kilometer
		1 x per year as required	1 x per year as required	1 x per year as required
3 years	75mm Granular A	All roads	All roads	
5 years	75mm Granular A			All roads
6 years	75mm Granular A Spot repairs Drainage replacement	All roads 10% 12%	All roads 10% 12%	
				All roads 10% 12%
10 years	75mm Granular A Spot repairs Drainage replacement			All roads 10% 12%

## Good Roads



# Survey Background.

### Purpose

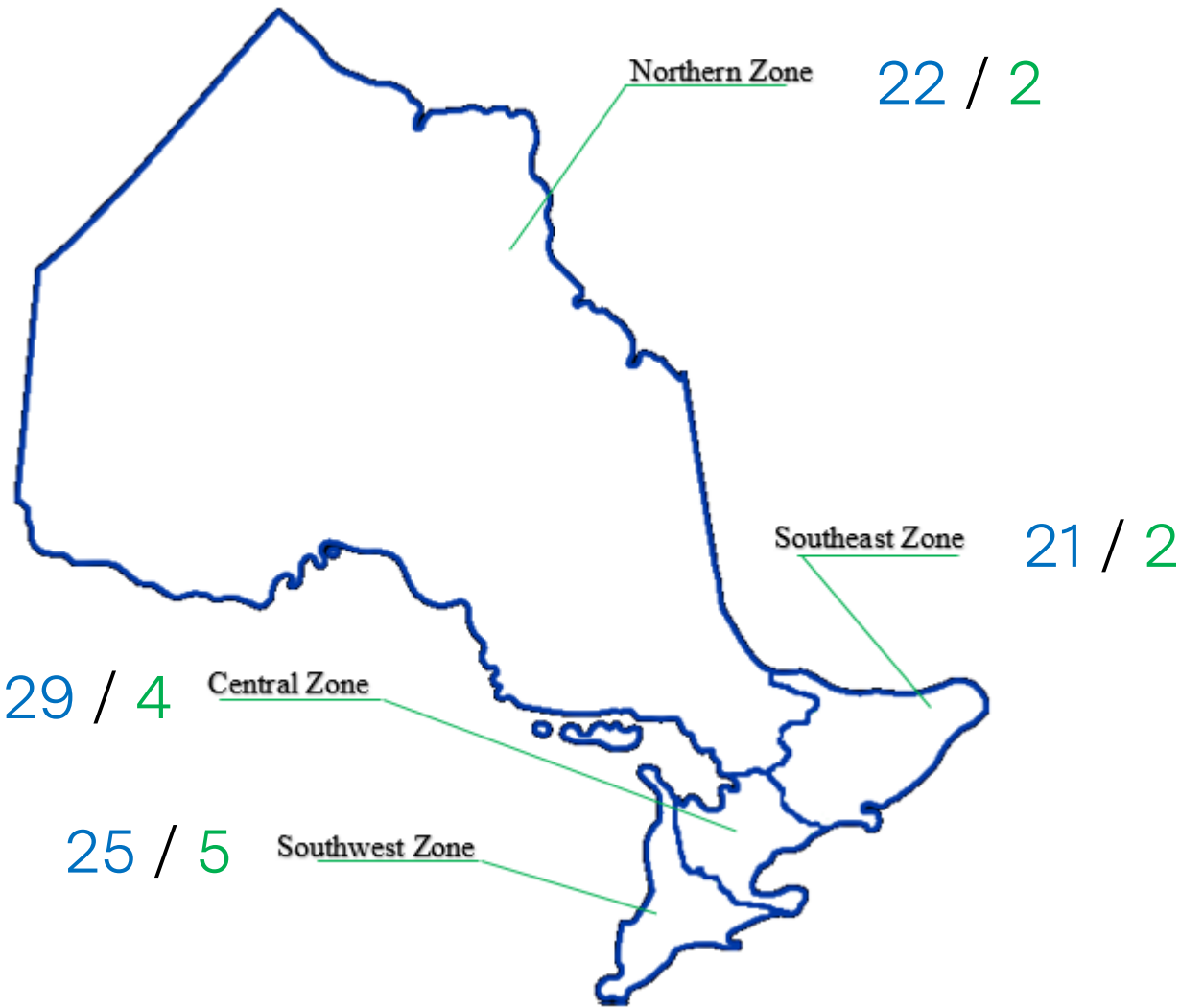
- Identify the state-of-the-practices
- Question areas
  - Asset Management
  - Operations
  - Maintenance

### 2019

- 97 responses (30.8%)
- Active for 15 days

### 2022

- 13 responses (4.1%)
- Active for 16 days

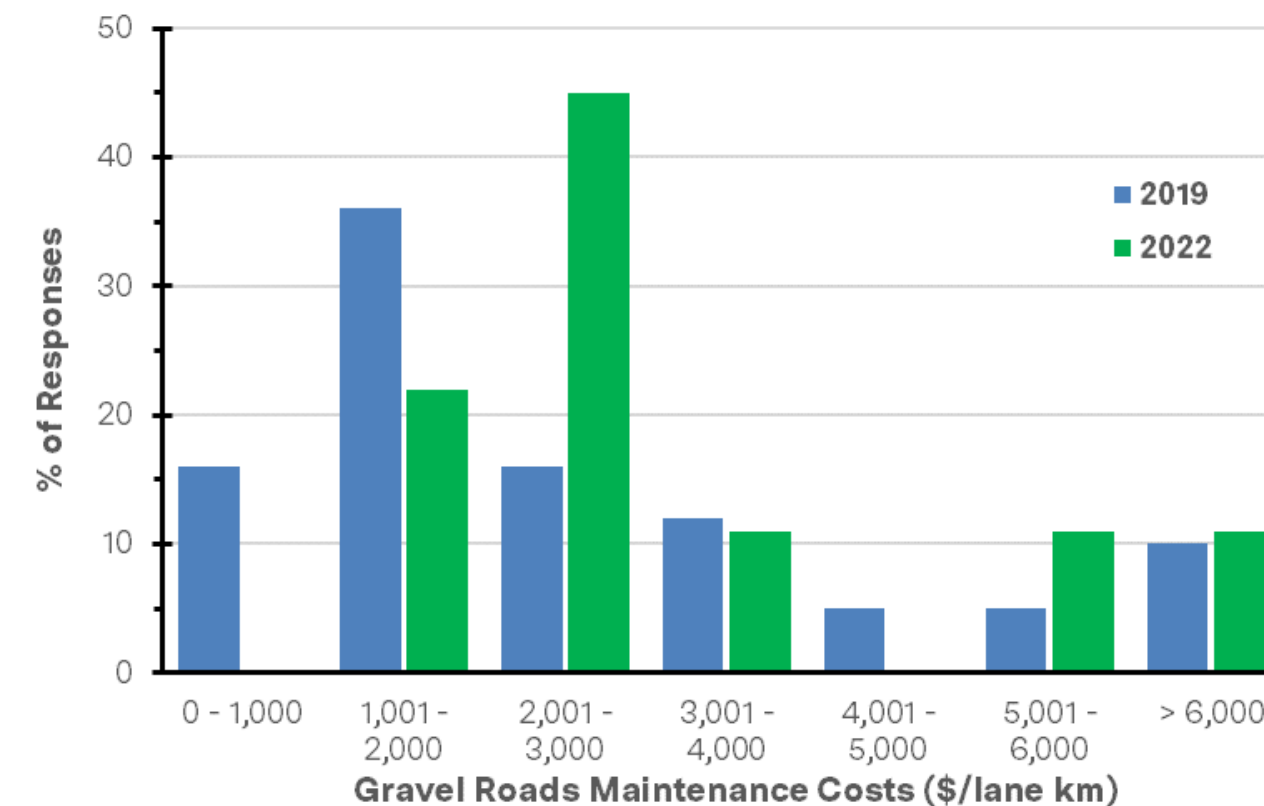
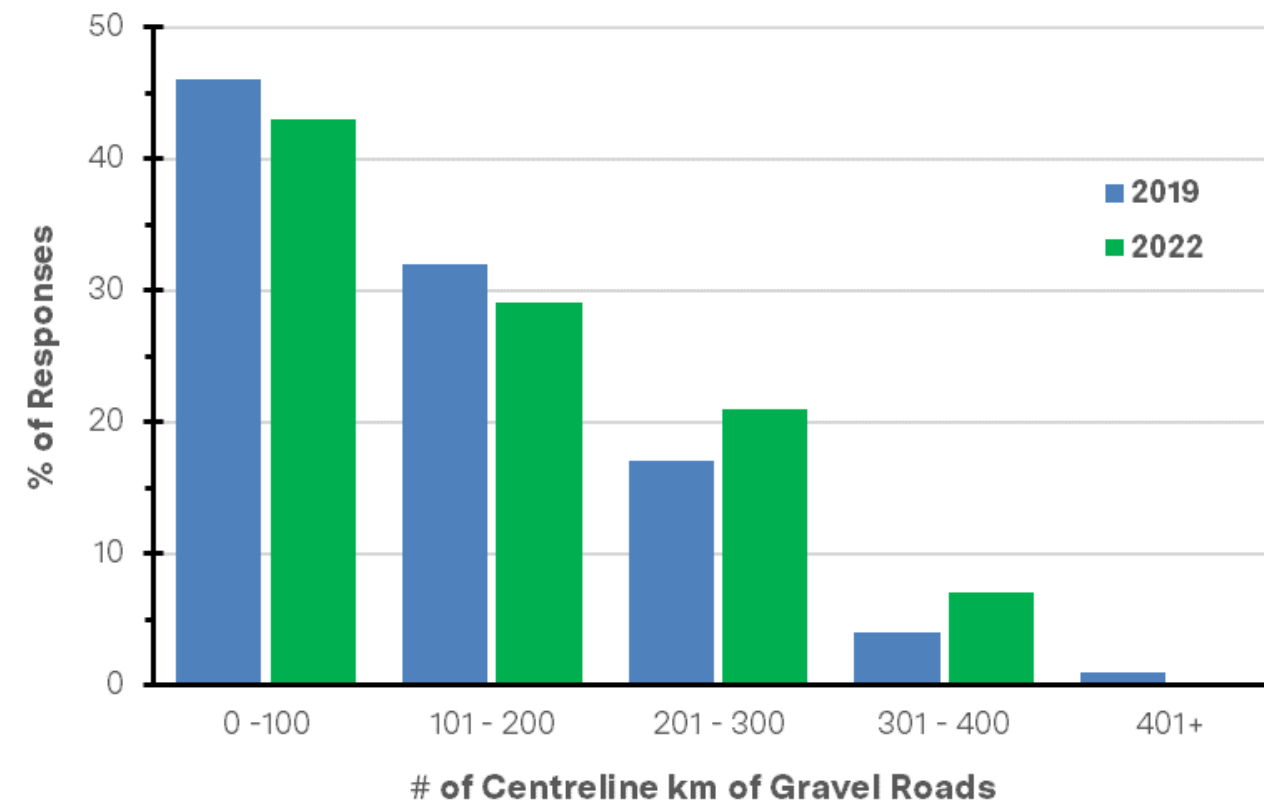


# 2019 and 2022 Survey Results

How many kilometres (centerline) of gravel roads are in your municipality?

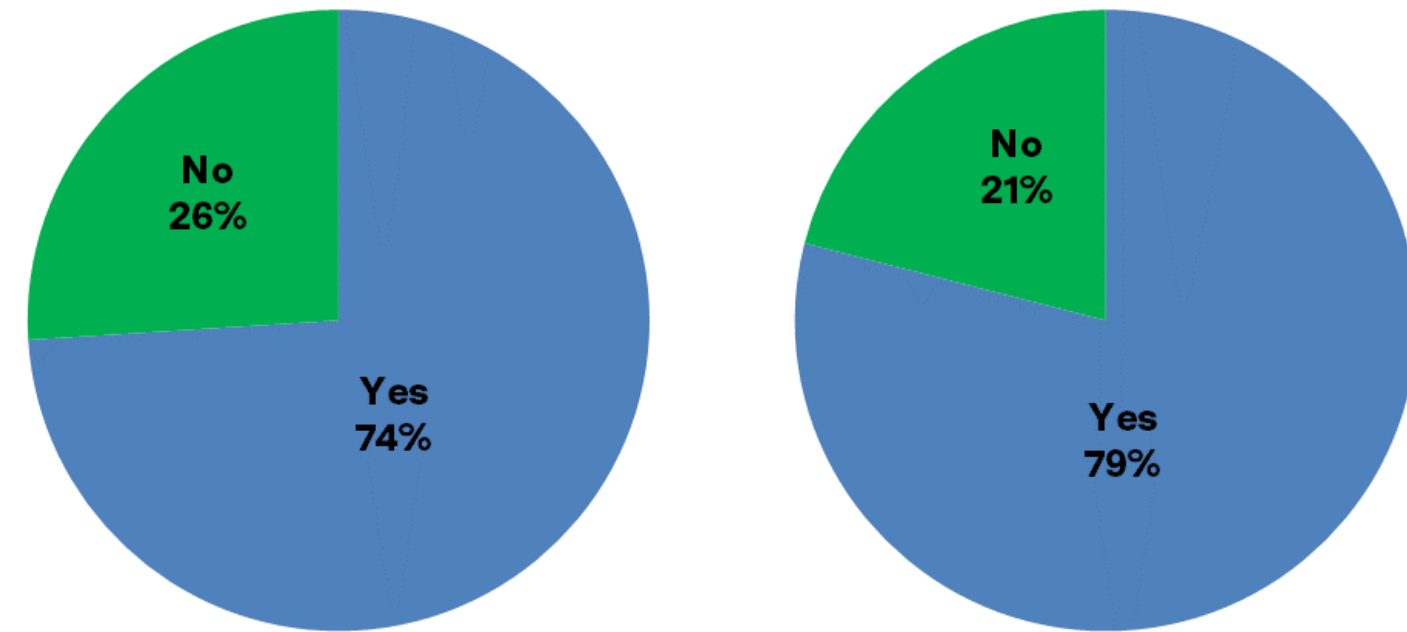
What is your yearly gravel road maintenance cost?

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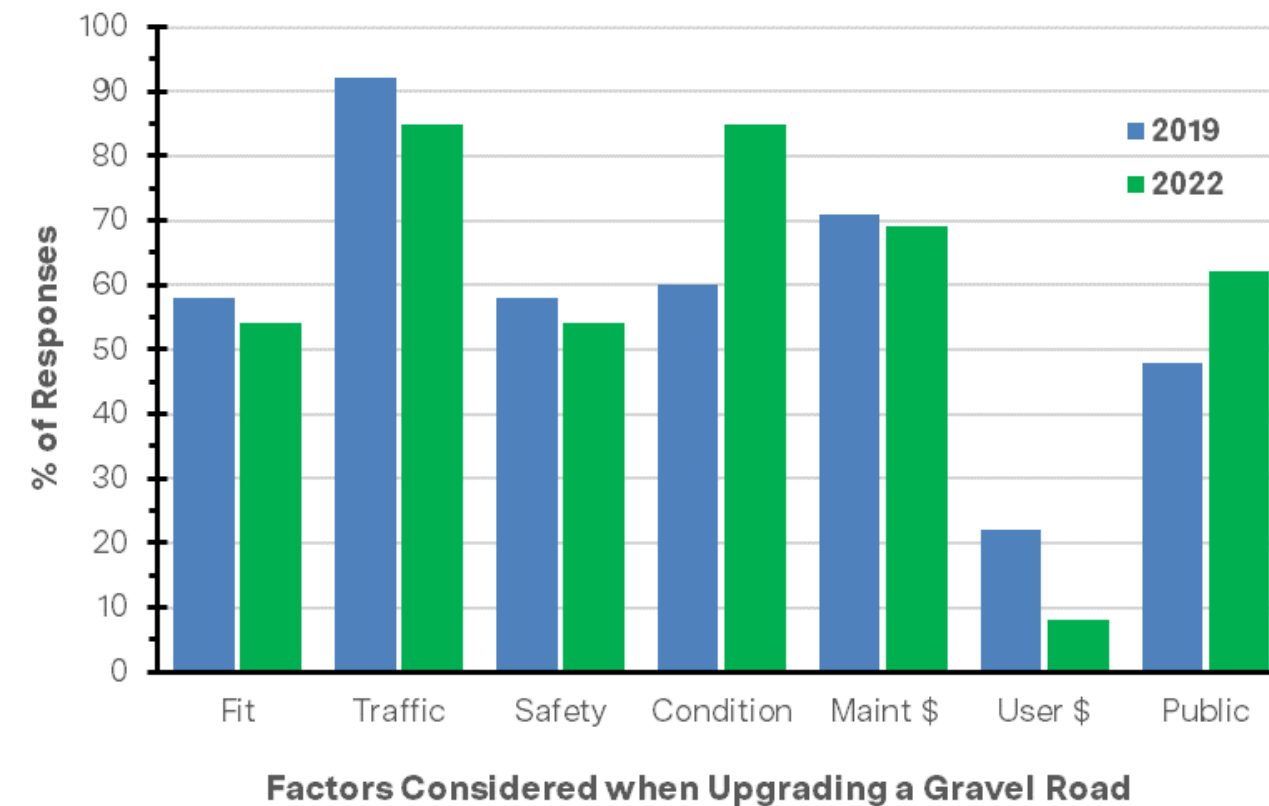


# 2019 and 2022 Survey Results

Does your municipality have an asset management strategy?



What factors do you consider when deciding to upgrade a gravel road?

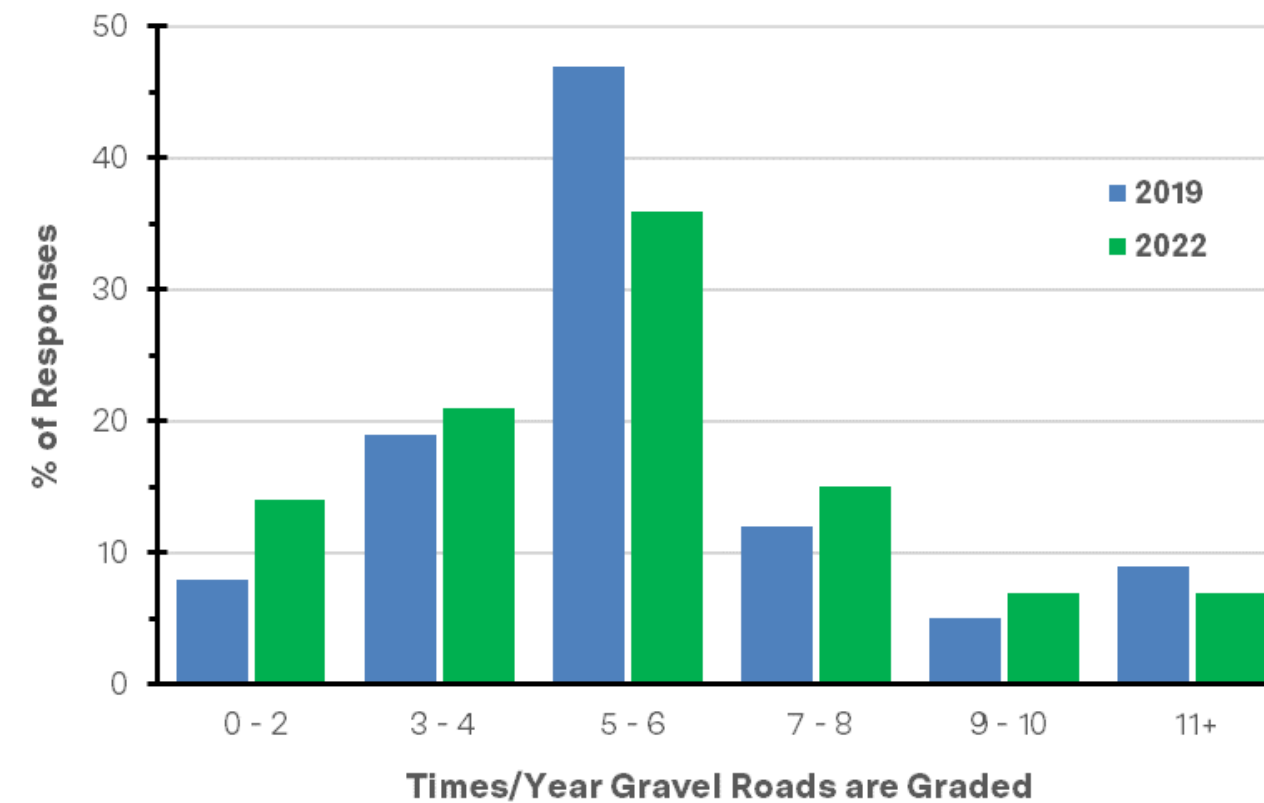
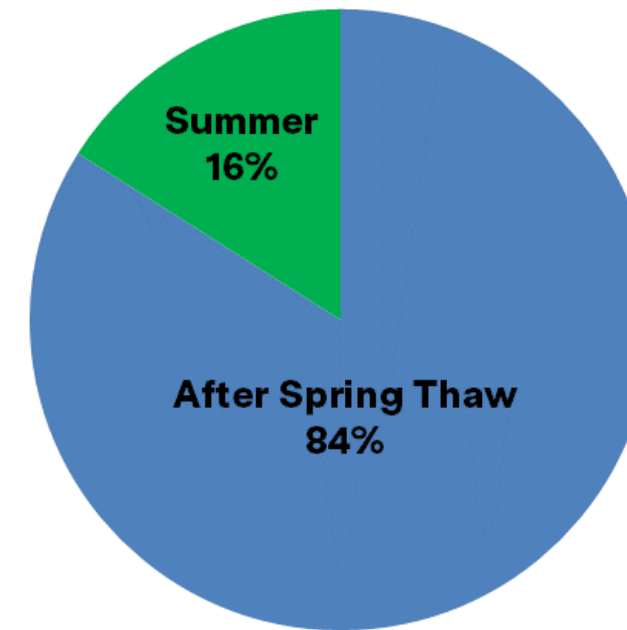


# 2019 and 2022 Survey Results

When do you evaluate the condition of your gravel roads?

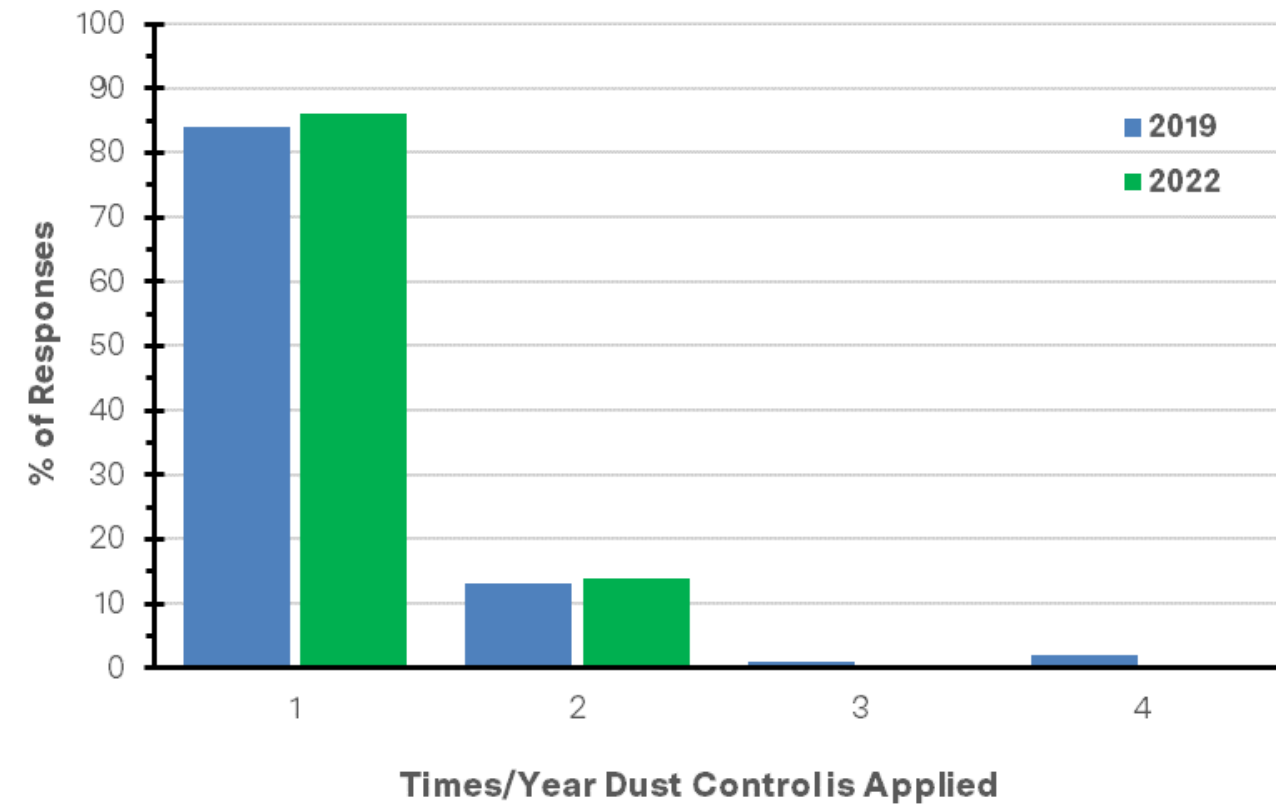
On average how many times are your gravel roads graded?

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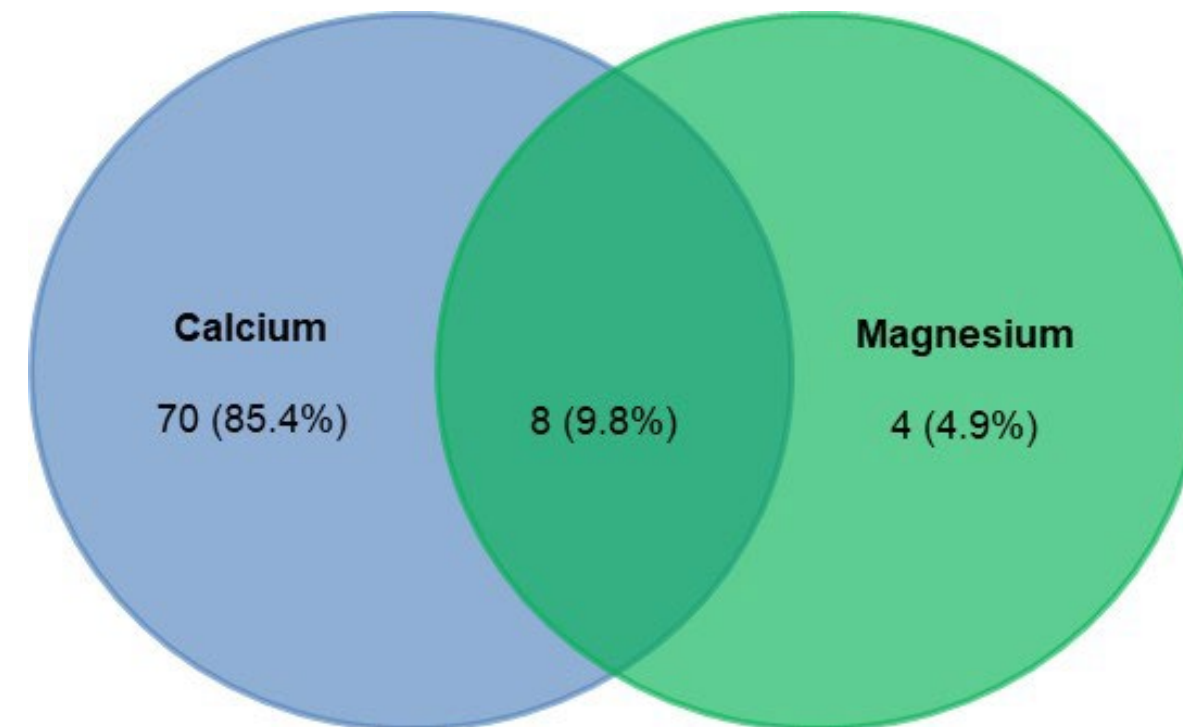


# 2019 and 2022 Survey Results

How many times per year is dust control applied?



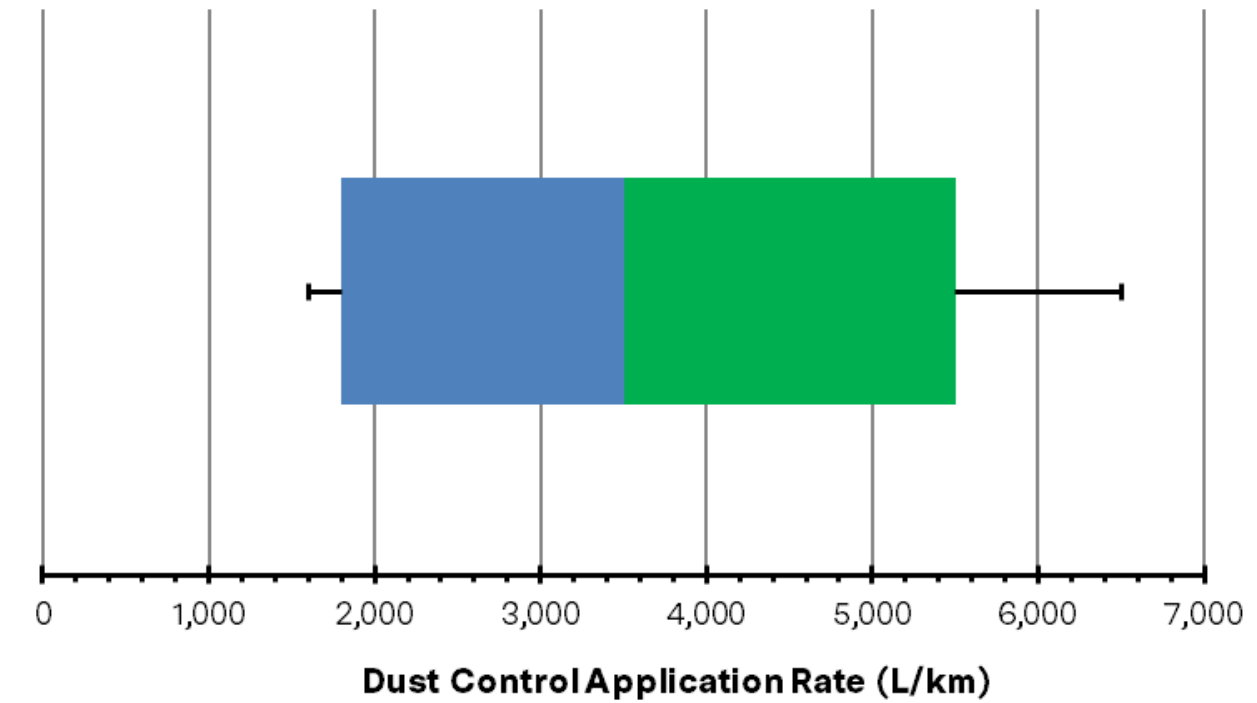
What product do you use?



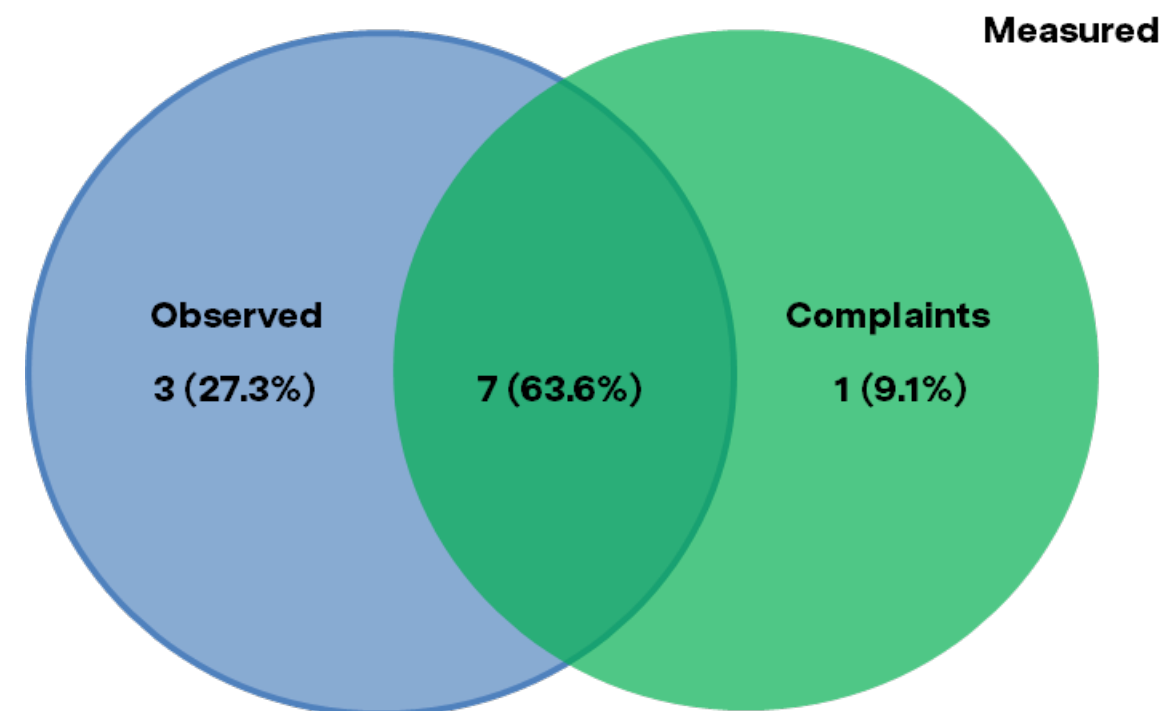


# 2019 and 2022 Survey Results

What is your normal dust control application rate?

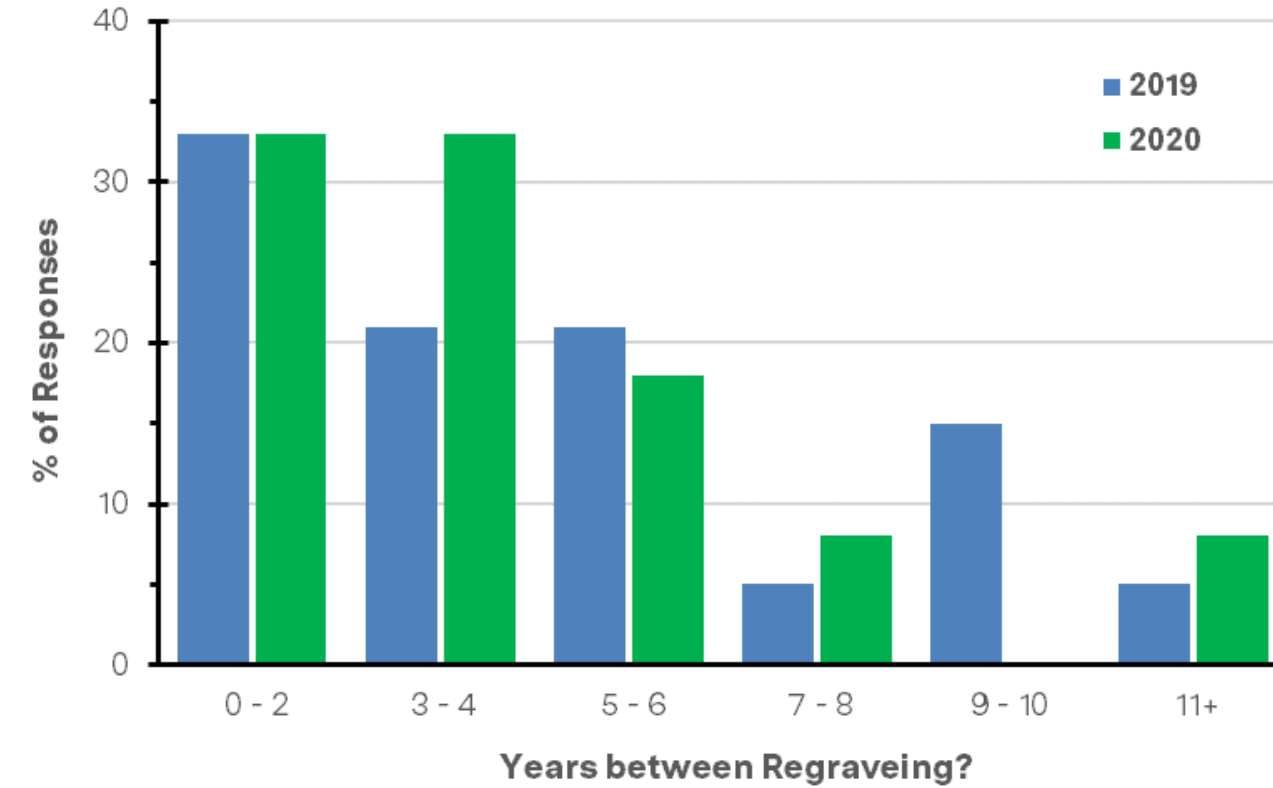


How do you assess the effectiveness of your dust control?

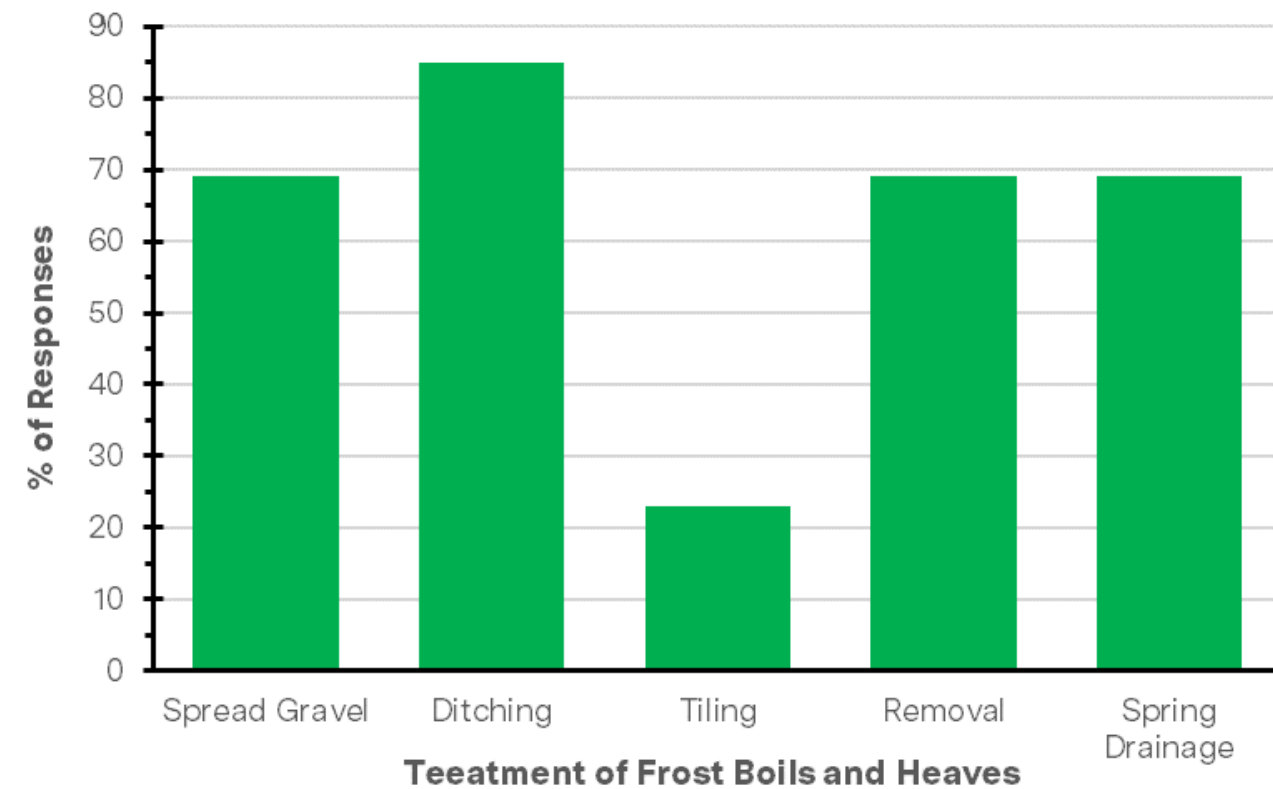


# 2019 and 2022 Survey Results

How many years before regravelling?



How do you address frost boils?



# 2019 and 2022 Survey Results

Is the condition of your gravel roads improving or getting worse?

What are your gravel road management challenges?

What is the public's biggest complaint about your municipalities gravel roads?

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Unchanged  
Declining  
**Improving**

Funding Knowledge  
Frost Heave<sup>Regraveling</sup>  
Farm Equipment<sup>Traffic</sup>  
Potholes<sup>Council</sup>  
Geometrics  
Poor Materials  
Dust Control

Paved  
Potholes  
**Condition**  
Dust  
Speed

# Supporting Ontario Municipalities - Liaison Committee.

## Scope

- Identify and recommend solutions for gravel road related issues

## Committee Mandate

- Facilitate the development of Best Practices
- Provide/develop educational materials and programs
- OPSS and OPSD recommendations

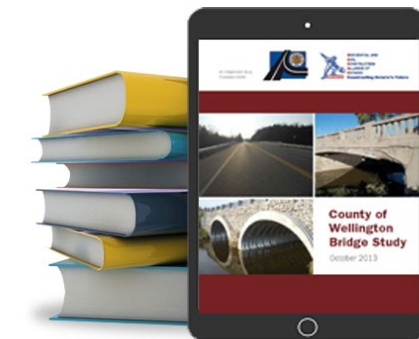
## Participation

- Municipalities, experts/consultants

## Meetings

- Quarterly with a hybrid option

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Timing	Activity	Activity Quantity		
		Class of Road		
		4	5	6
Annual	Grading	8 x per year	6 x per year	6 x per year
	Dust suppression	4t per kilometer	4t per kilometer	4t per kilometer
3 years	Ditching	1 x per year as required	1 x per year as required	1 x per year as required
	Culvert cleaning			
5 years	Safety devices	All roads	All roads	All roads
	75mm Granular A			
6 years	75mm Granular A	All roads	All roads	All roads
	Spot repairs			
10 years	Drainage replacement	10%	10%	10%
	75mm Granular A			
	Spot repairs			12%
	Drainage replacement			12%

# Supporting Ontario Municipalities - Workshop.

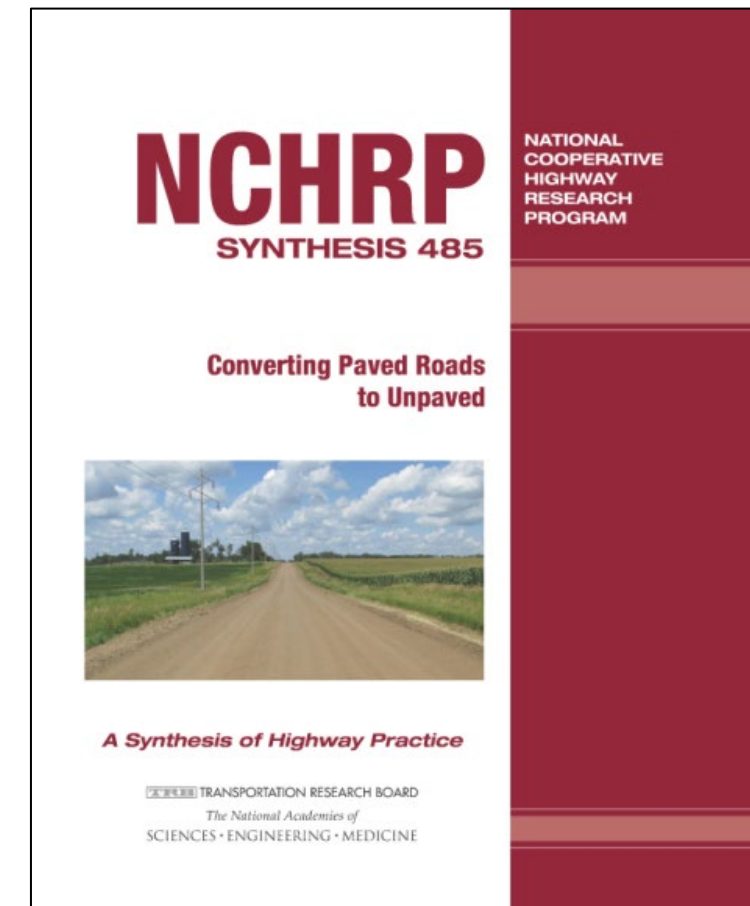
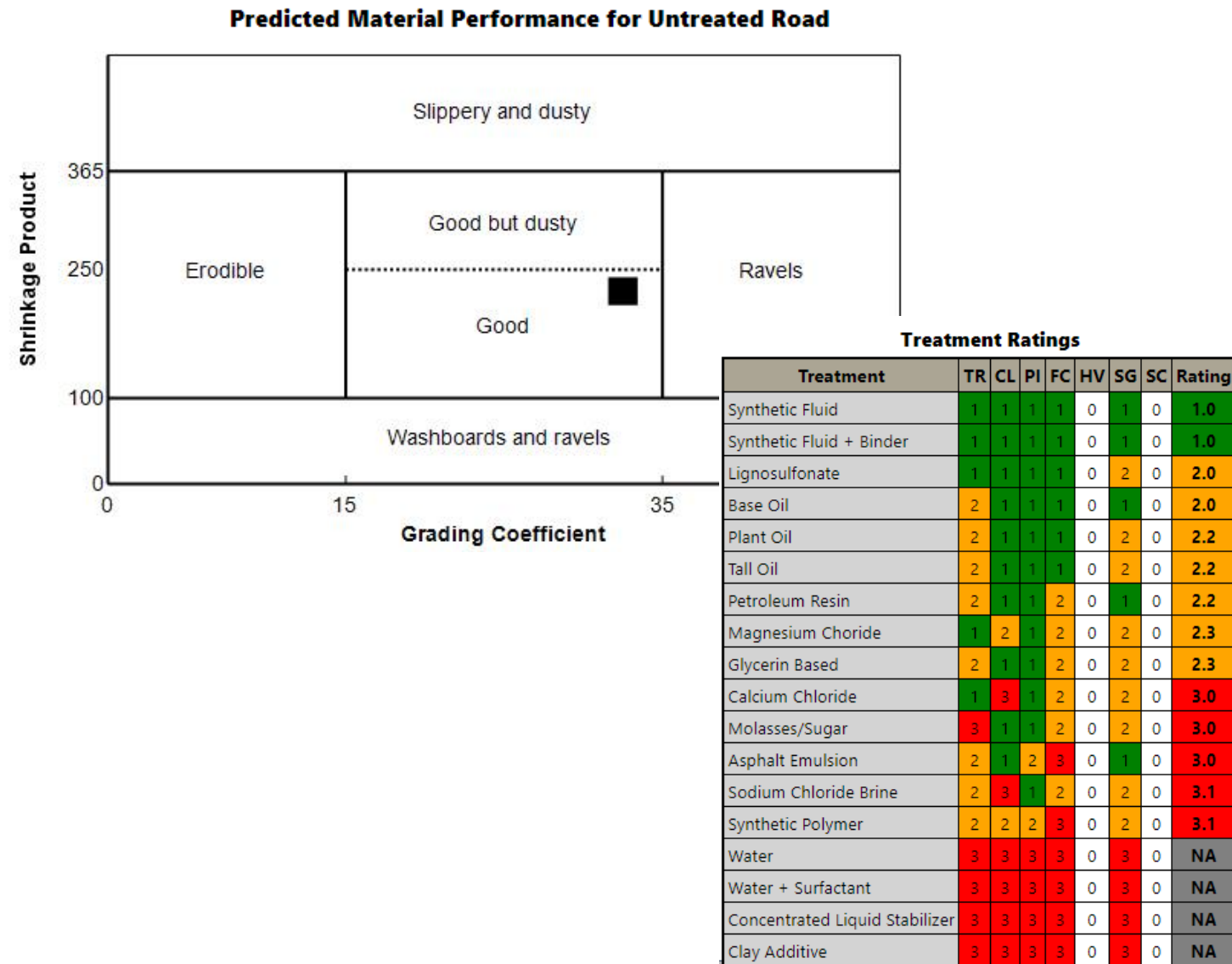
Save the Date

- Thursday, October 20, 2022
- Location: GTAA

Potential Topics

- Gravel performance
- Selection of dust control treatments
- Use of RAP as a primary aggregate replacement
- Converting roads
- Use of geosynthetics
- Maintenance strategies

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# Supporting Ontario Municipalities - Education Course.

## 2023 Development

- In-person and on-demand
- 3 days

## Course Content

- Routine maintenance and rehabilitation
- Drainage
- Surface gravel
- Dust control and stabilization
- Winter maintenance
- Gravel road evaluation techniques
- Converting Roads
- Innovations

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# Supporting Ontario Municipalities - Gravel Research.

## Study Impetus

- Successful use of RAP on gravel roads in the United States
- Need for Canadian validation
- 2019 GR Study, Quantifying RAP: An Ontario Case Study
  - 6.7 million tonnes (2018)

## US Studies

- University of Wyoming (2012)
  - Blend of 50% RAP
- Iowa State University (2019)
  - Blends of 15% to 60% RAP
  - Blends of 50% to 80% RAP



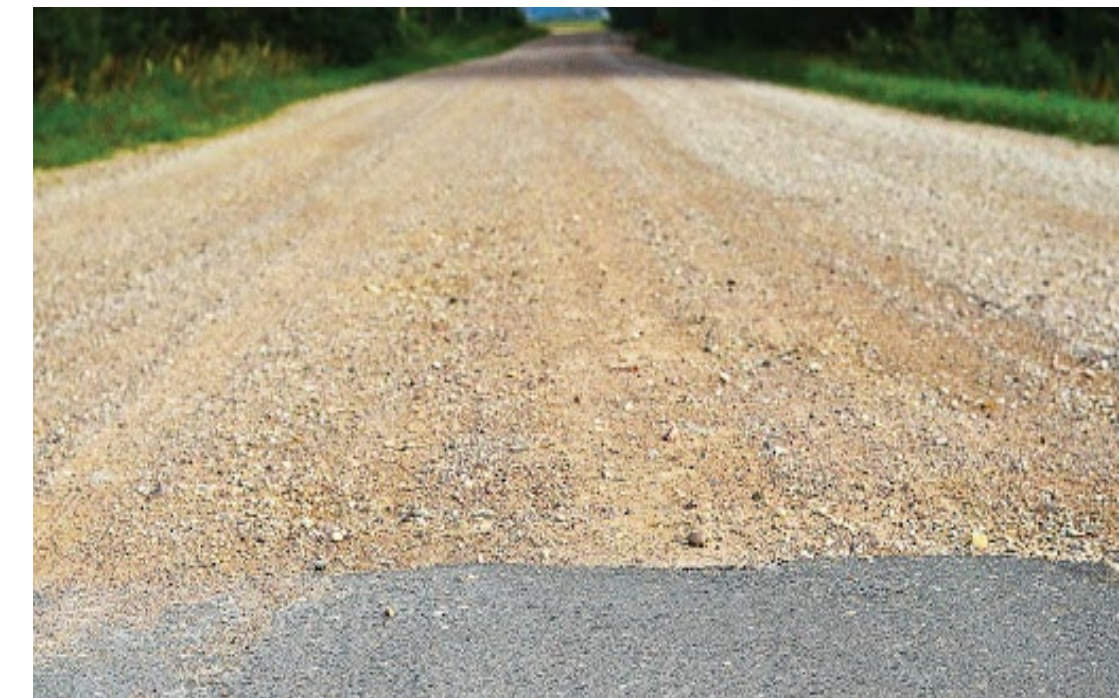
# Supporting Ontario Municipalities - Gravel Institute.

Creation of a Canadian Research Centre for the study of gravel roads.

- Education, outreach, research, and technical assistance
  - Design, materials, construction, maintenance, and asset management
  - Emerging and innovative technologies

US Examples

- PennState Centre for Dirt & Gravel Road Studies
- UC Pavement Research Center
- Iowa State Institute for Transportation
- Wyoming Technology Transfer Centre
- Minnesota Local Road Research Board



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# Thank you.

**James Smith, PhD**

Manager, Technical Programs and Research

Good Roads

(416) 662-1308

[james@goodroads.ca](mailto:james@goodroads.ca)

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