



Road Network Plan

TOWNSHIP OF ORO-MEDONTE

December 11, 2019



Agenda

- A. Study Overview
- B. Road Needs Study
- C. Next Steps
- D. Questions





A. Study Overview

Study Components

4

Road Needs Study

- Focus on the physical road condition, need for improvements and prioritization

3

Road Standards

- Review of road policies & standards, and coordination with road classification

2

Road System & Operations

- Focus on the overall road system, traffic volumes, operations and classifications

1

Project Initiation

- background review



Study Deliverables

- 4 Road Needs Study
- 3 Road Standards
- 2 Road System & Operations
- 1 Project Initiation





B. Road Needs Study

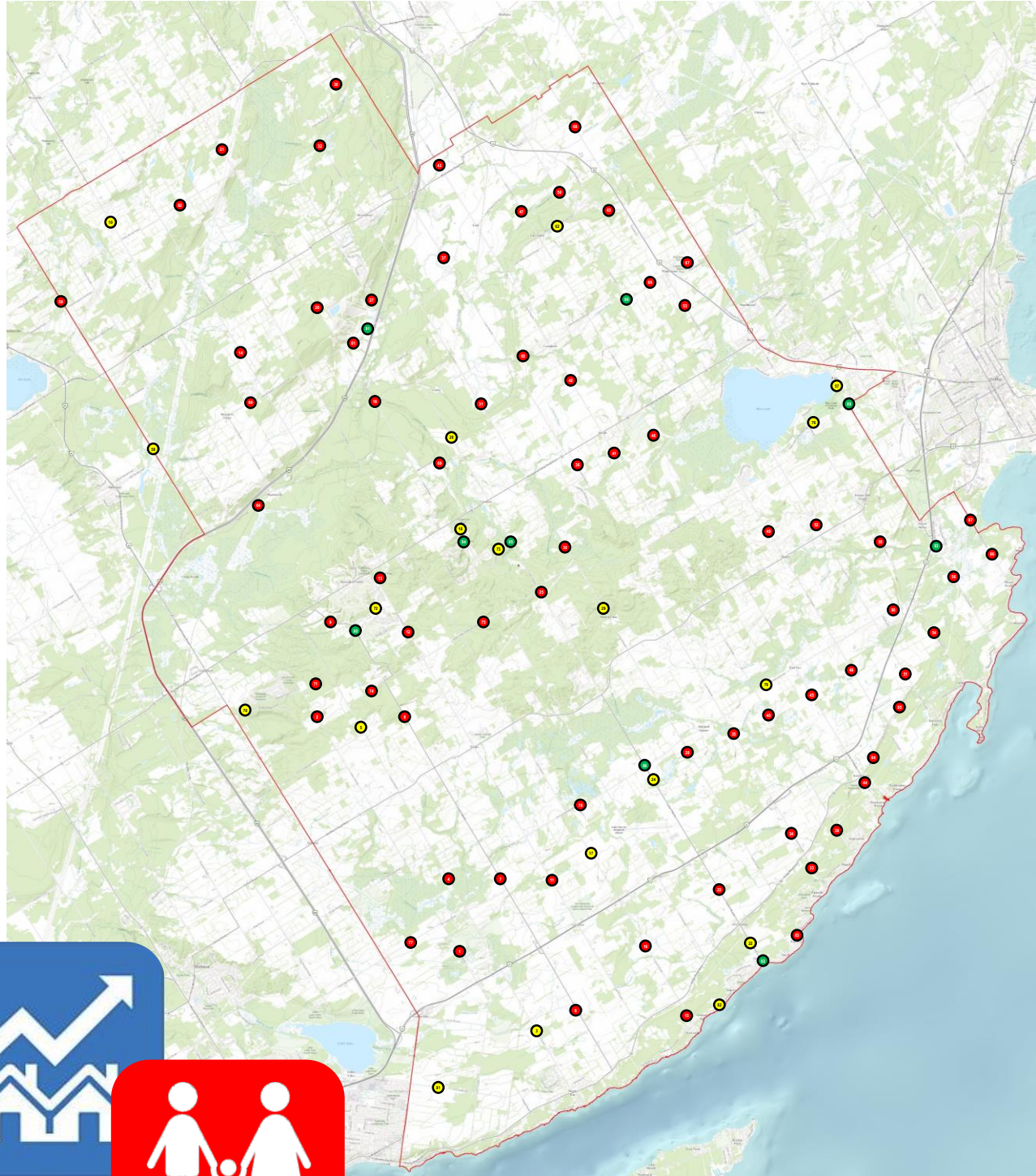
Overall Purpose

- Inventory and assess the overall condition of the Township's road system
- Identify needed road improvements and costs
- Provide the Township with a tool and framework for prioritization and management of capital program over a 10-year program



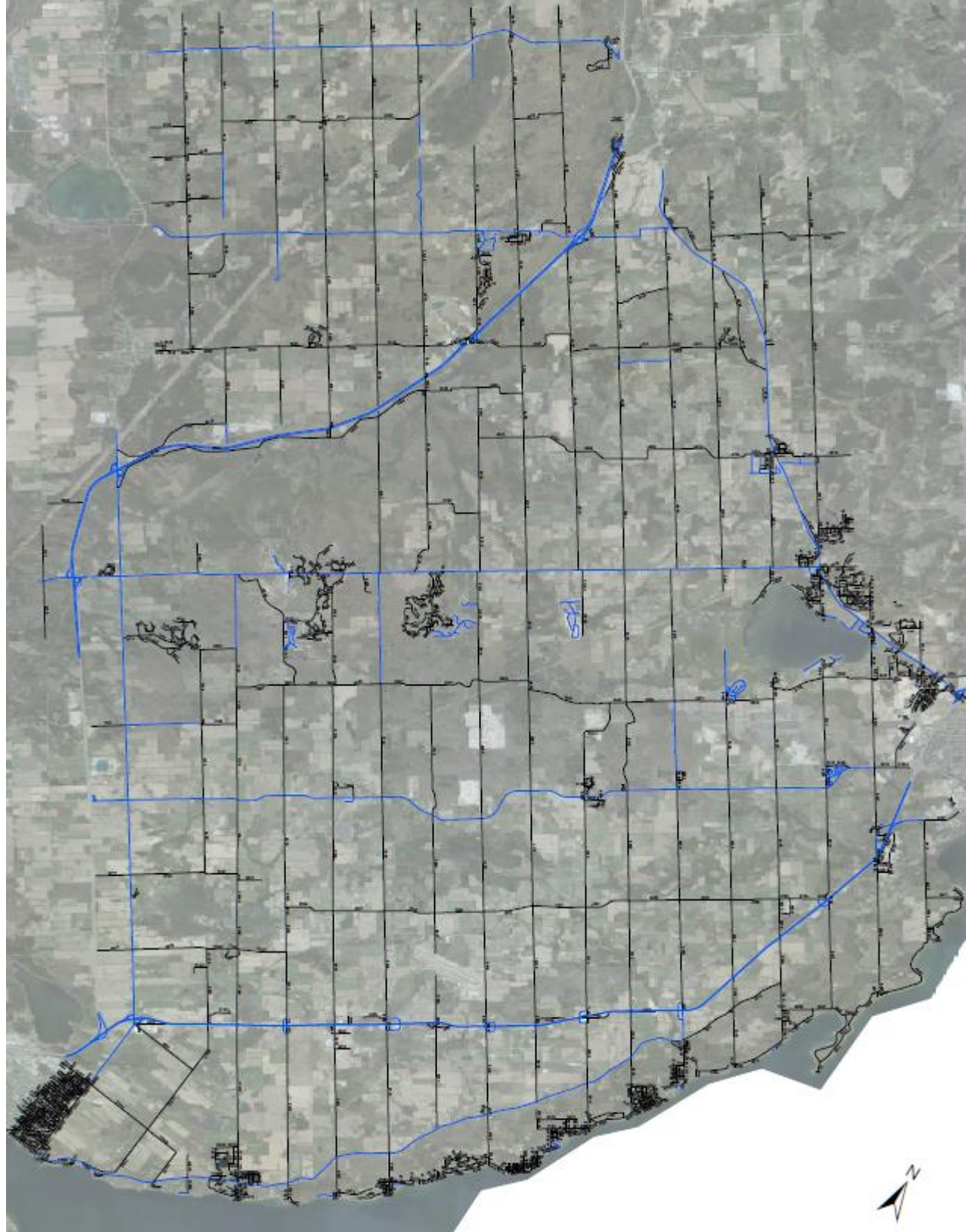
Traffic Volumes

- Existing traffic counts
 - 9 intersection counts
 - 68 24-hour counts
 - 19 72-hour counts with speed
- Estimate volumes for those roads not counted
- Forecast future volumes based on anticipated growth

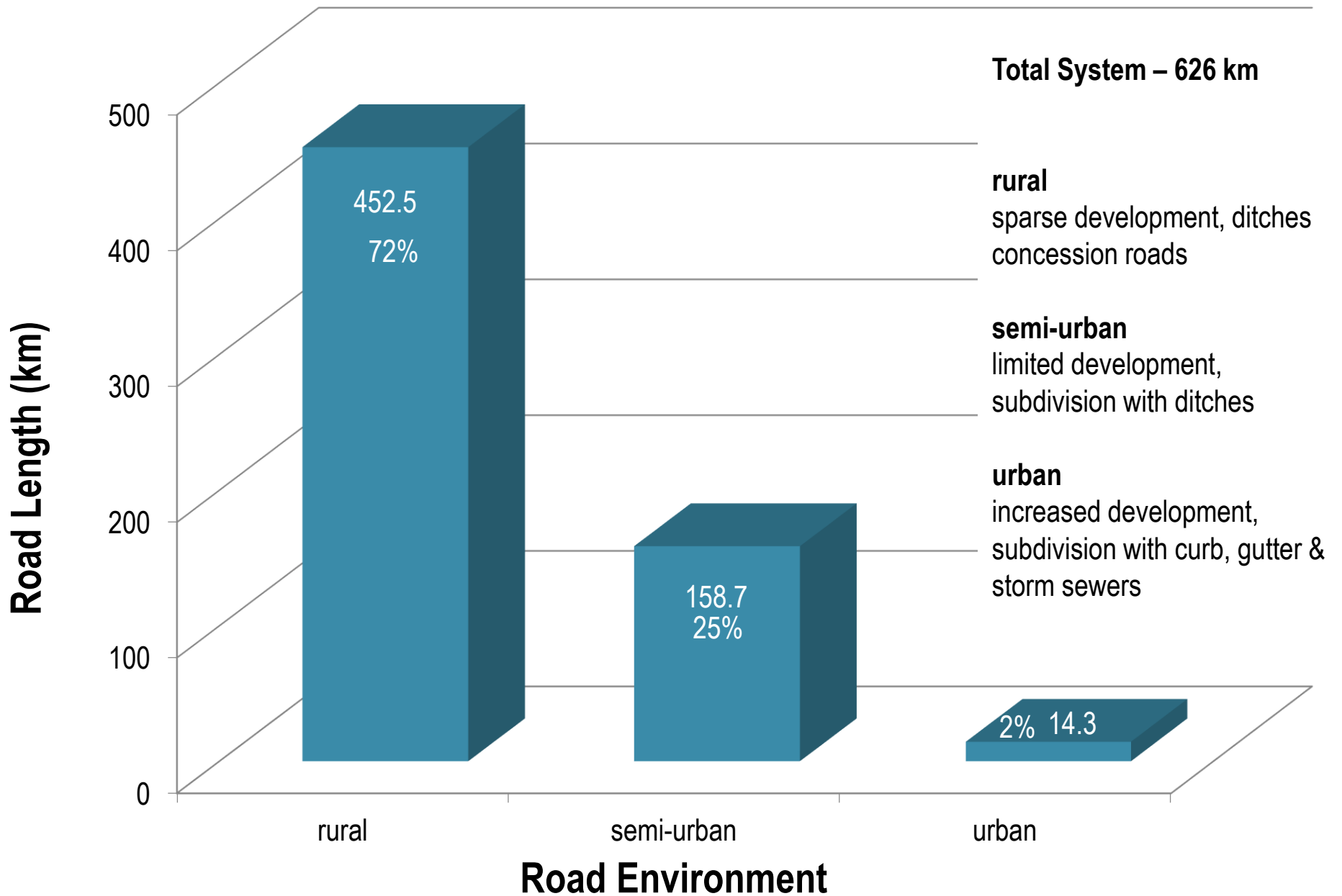


Road Inventory

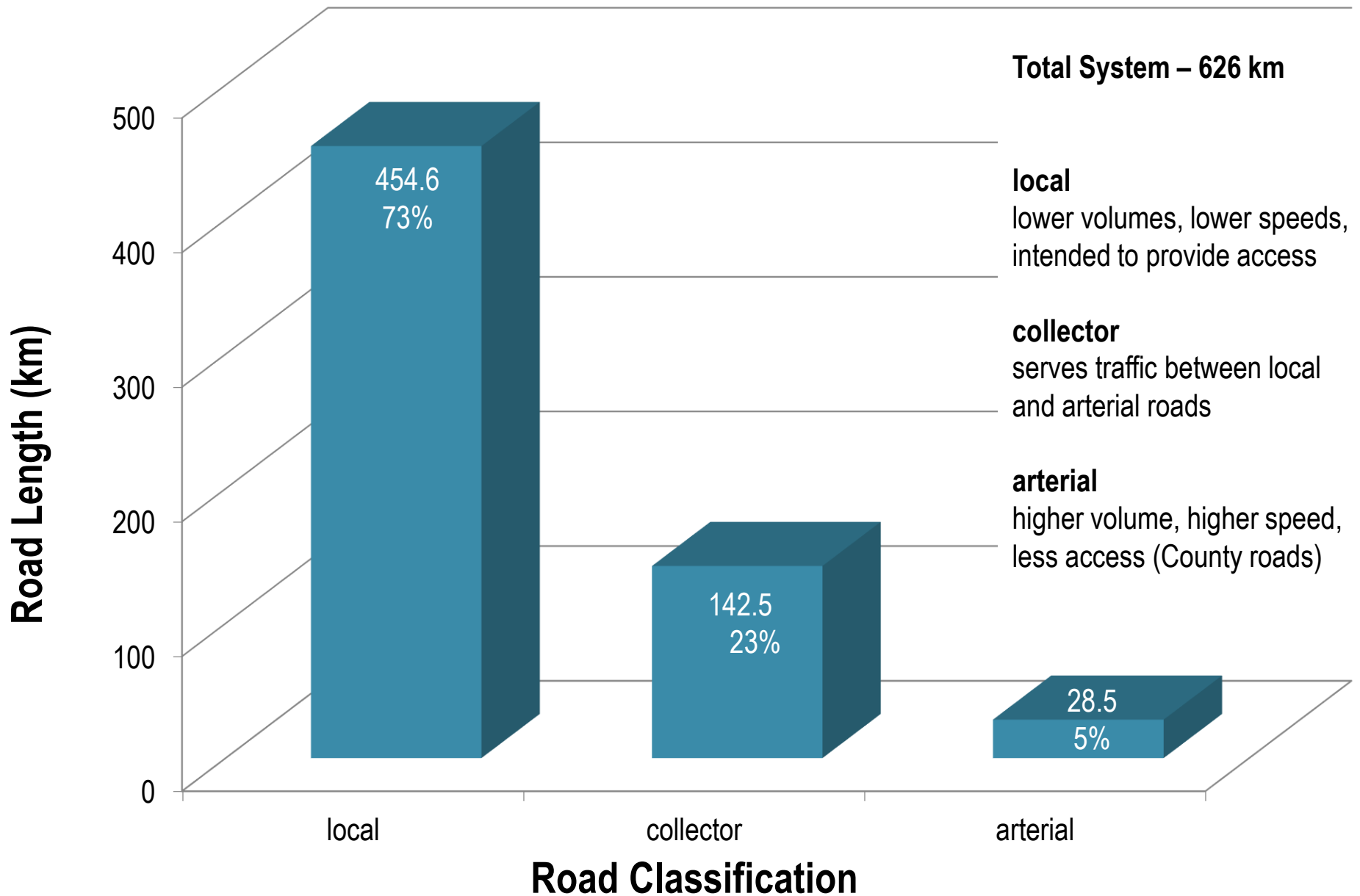
- 1061 total sections
 - 995 Township
 - 66 private
- Based on MTO procedures for
 - asphalt roads
 - surface treated roads
 - gravel roads



Road Environment



Road Classification



Road System Deficiencies



- Identify existing deficiencies for
 - horizontal & vertical geometrics
 - surface condition
 - surface type
 - surface width
 - shoulder width
 - traffic operations
 - drainage

- A deficiency is identified when existing conditions do not correspond to acceptable standards
- What **standards** to use?
 - MTO
 - Township
 - what is considered **tolerable**
- Standards dictated by
 - environment
 - road classification

Proposed Standards



Environment	Road Class		Surface Type	Through Lane	Shoulder Width	Surface Course	Base Course	Asphalt Depth	Granular A Depth	Granular B Depth
				m	m	mm	mm	mm	mm	mm
Rural	local	R1	see note 1	3.5	1.0	40	50	90	150	300
	collector	R2	see note 1	3.5	1.0	40	50	90	150	300
	arterial	R3	asphalt	3.5	1.0	40	50	90	150	300
Semi-Urban	local	S1	see note 2	3.5	1.0	40	50	90	150	300
	collector	S2	see note 2	3.5	1.0	40	50	90	150	300
	arterial	S3	asphalt	3.5	1.0	40	50	90	150	300
Urban	local	U1	asphalt	4.25		40	50	90	150	300
	collector	U2	asphalt	4.5		50	50	100	150	450
	arterial	U3	asphalt	4.5		50	50	100	150	450

1. For **RURAL** road surface type:

0	≤ AADT <	400	gravel
400	≤ AADT <	1000	surface treated
1000	≤ AADT		asphalt

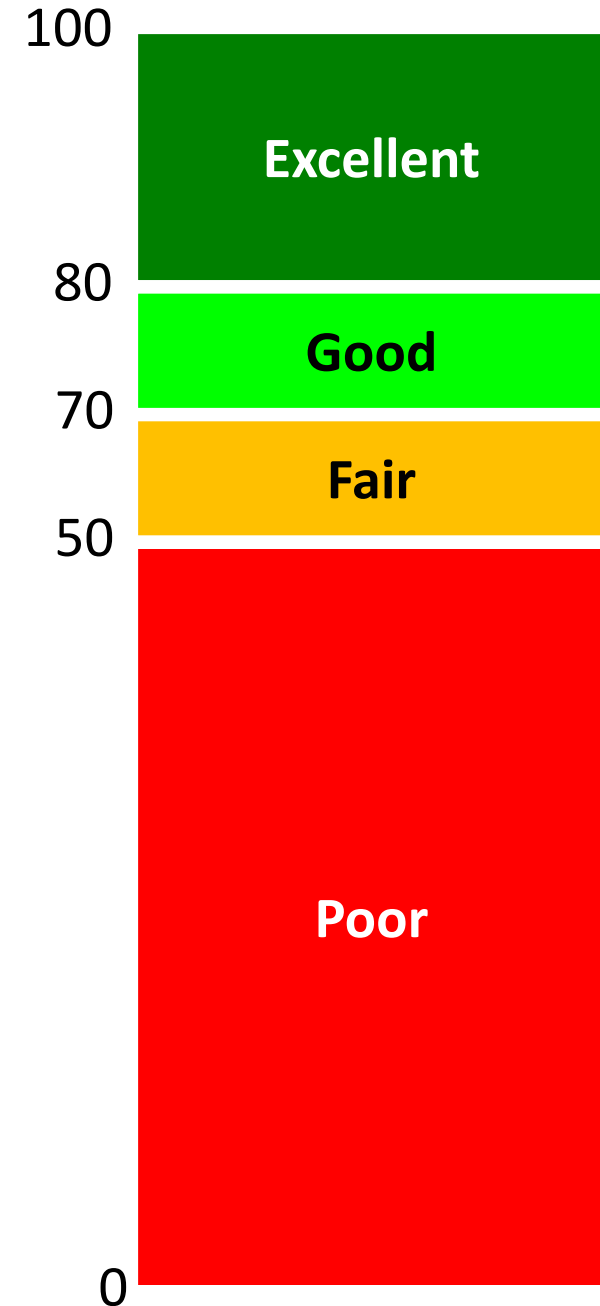
2. For **SEMI-URBAN** road surface type:

0	≤ AADT <	1000	surface treated
1000	≤ AADT		asphalt

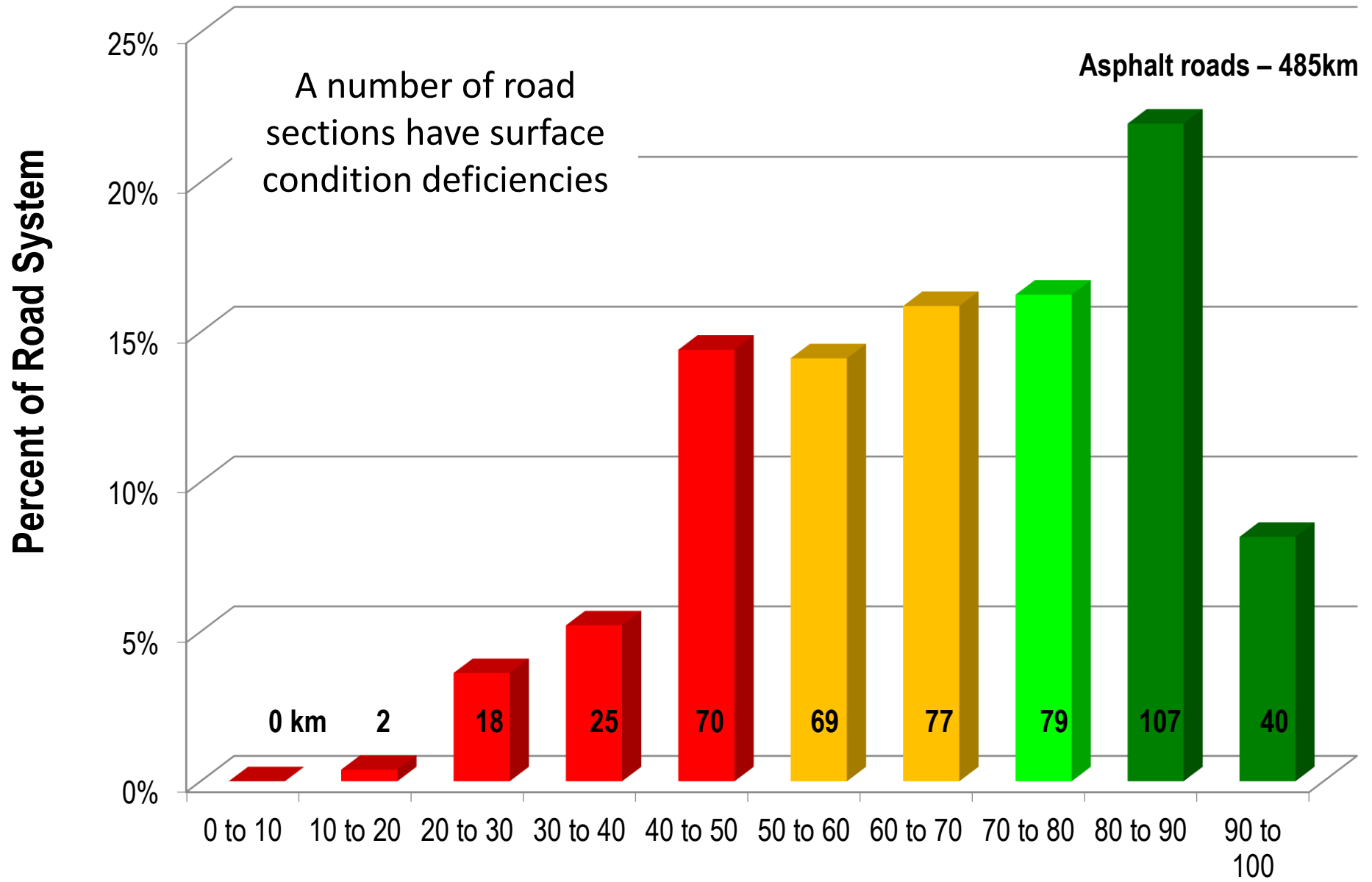
Surface Condition



- Pavement Condition Index (PCI)
 - rating based out of 100
 - considers pavement distresses (both severity and density)
 - considers Ride Condition Rating (score of 10)

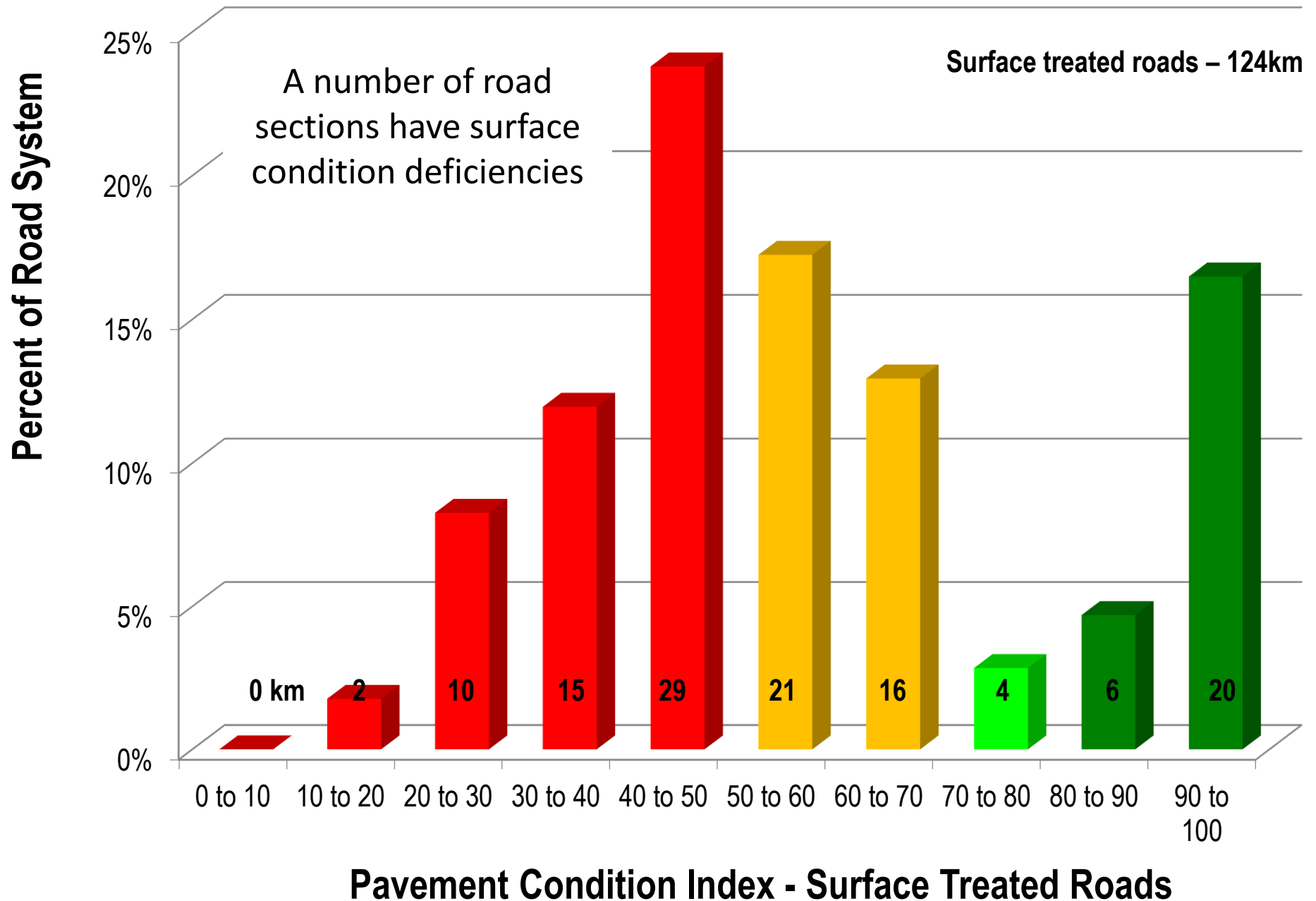


Surface Condition – Asphalt Roads

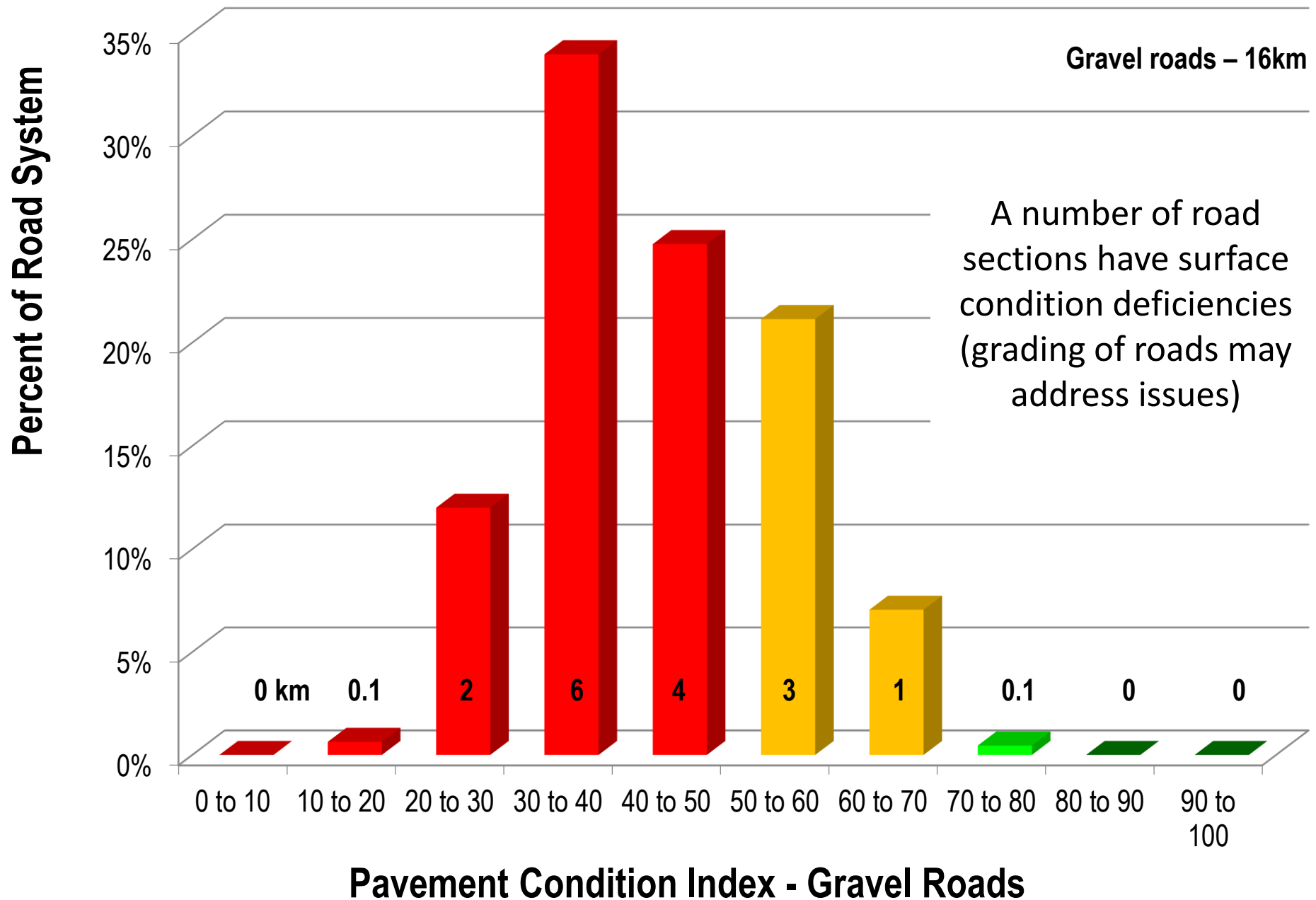


Pavement Condition Index - Asphalt Roads

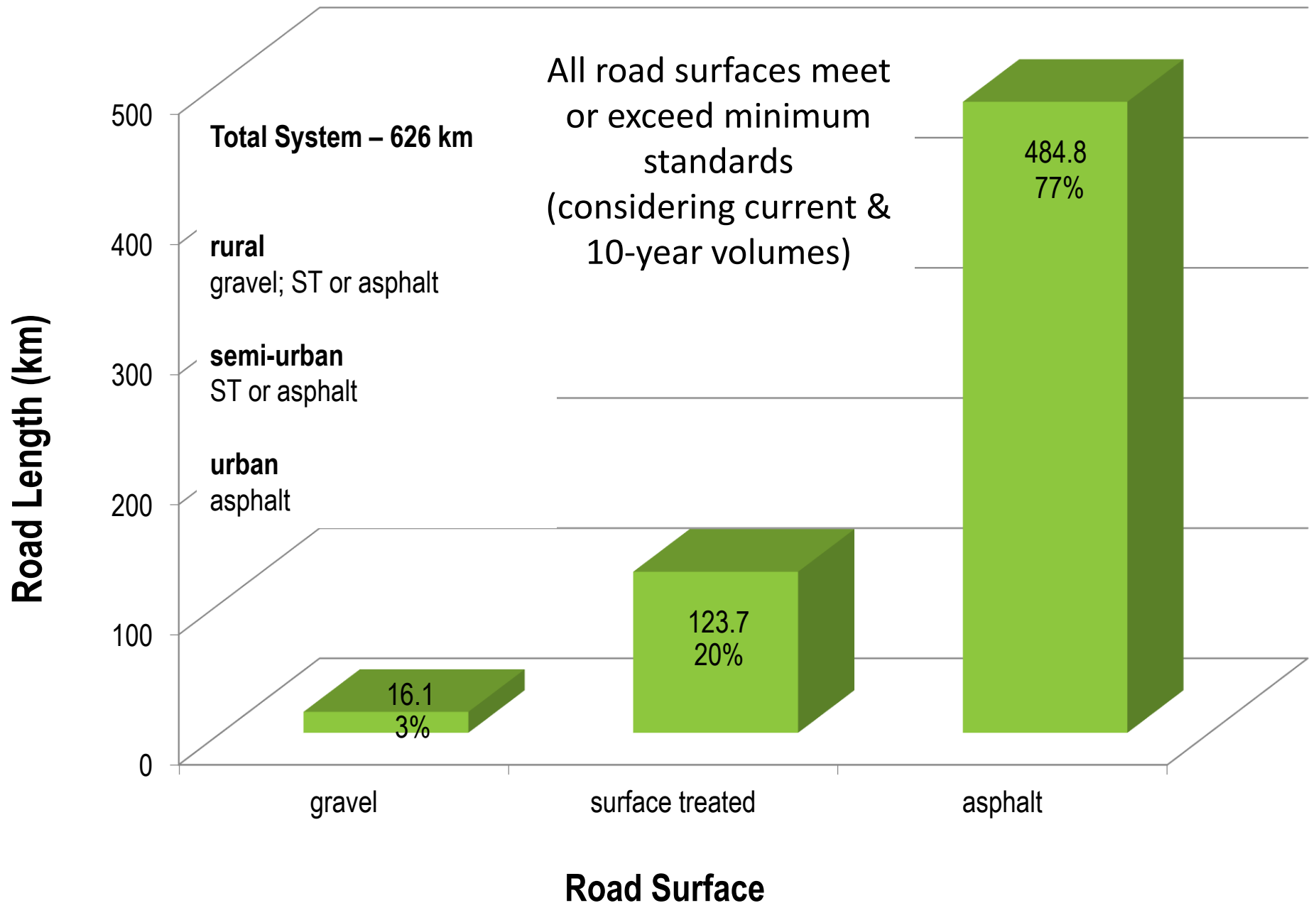
Surface Condition – Surface Treated Roads



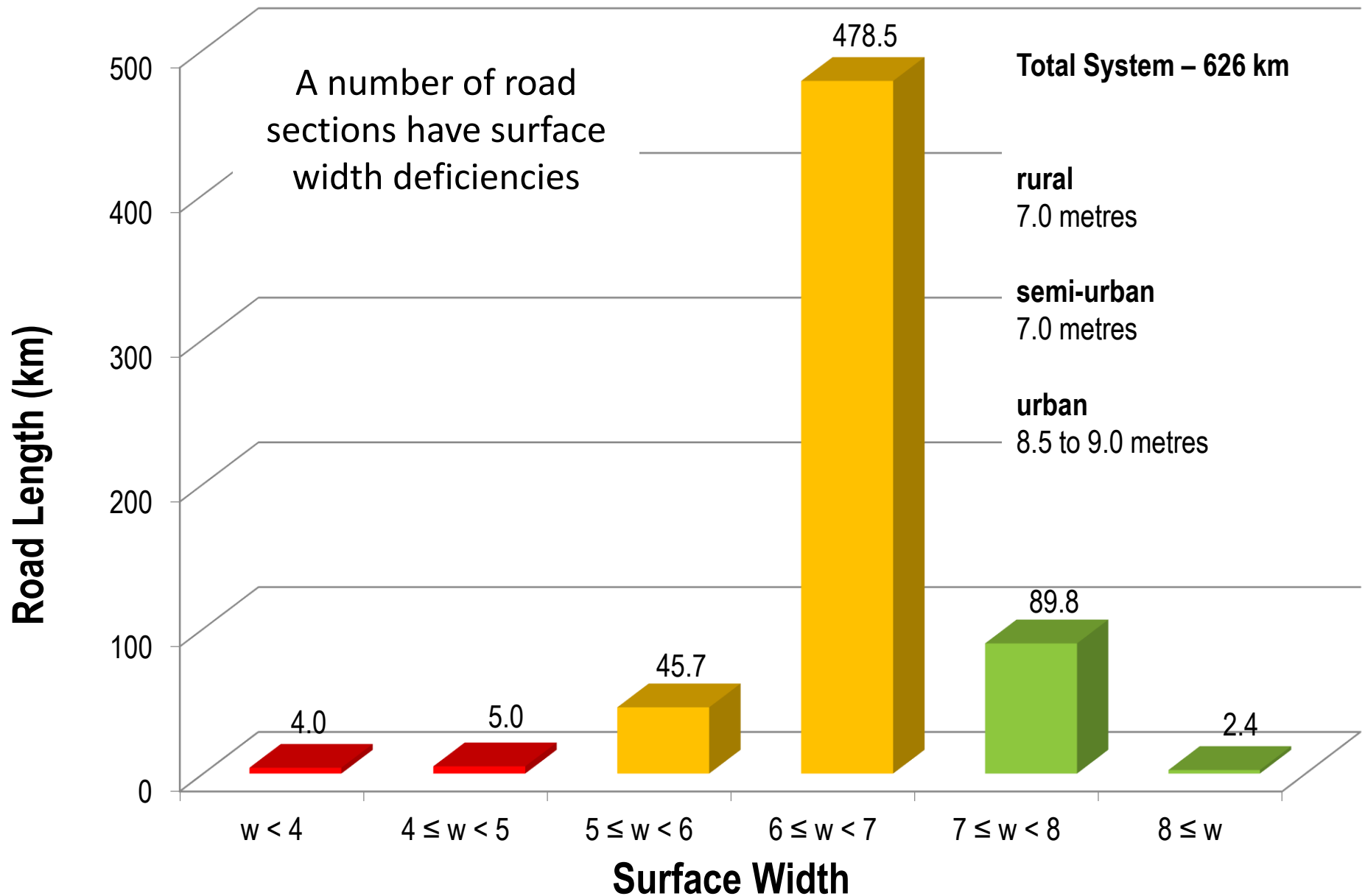
Surface Condition – Gravel Roads



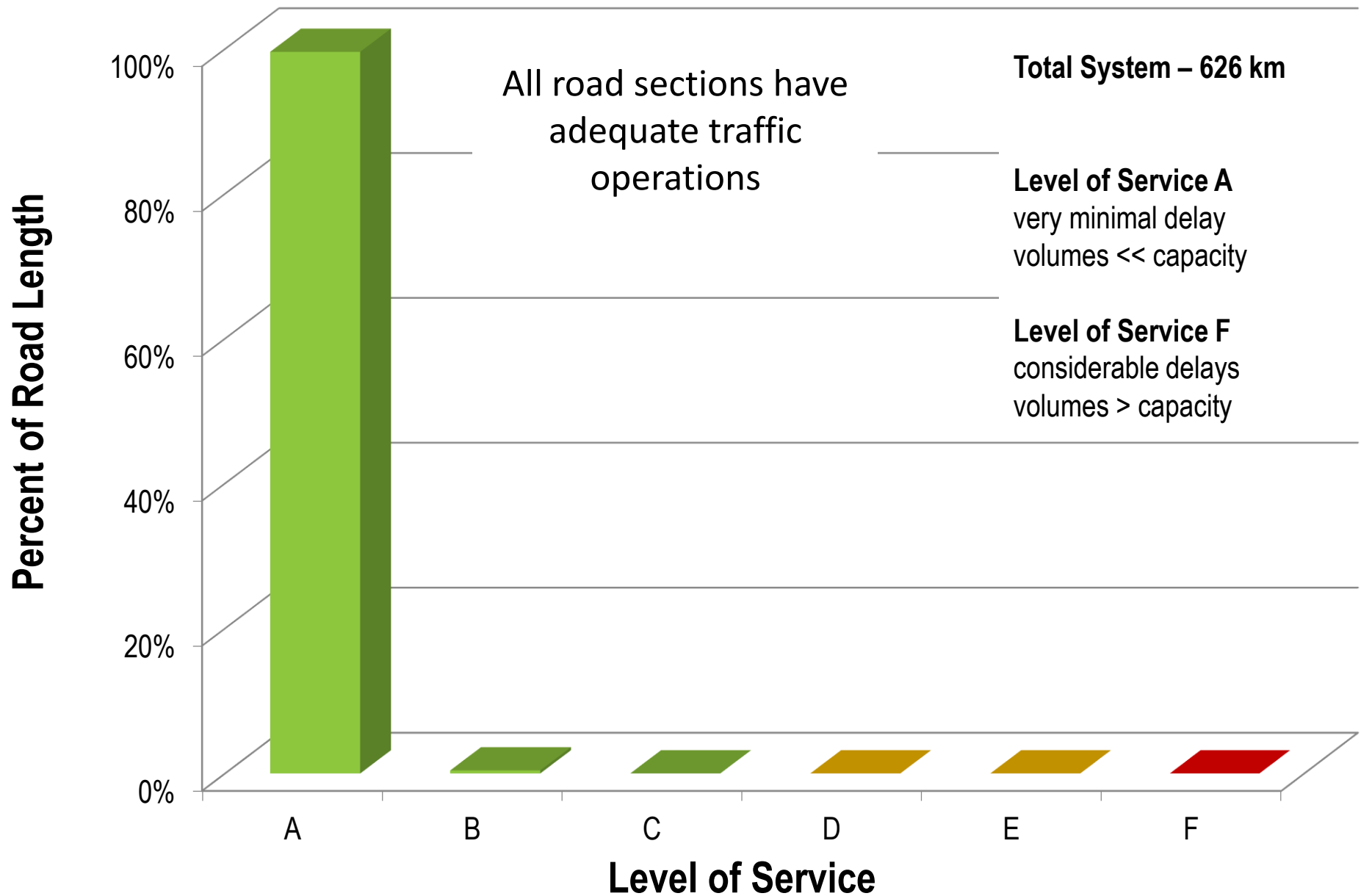
Surface Type



Surface Width



Traffic Operations

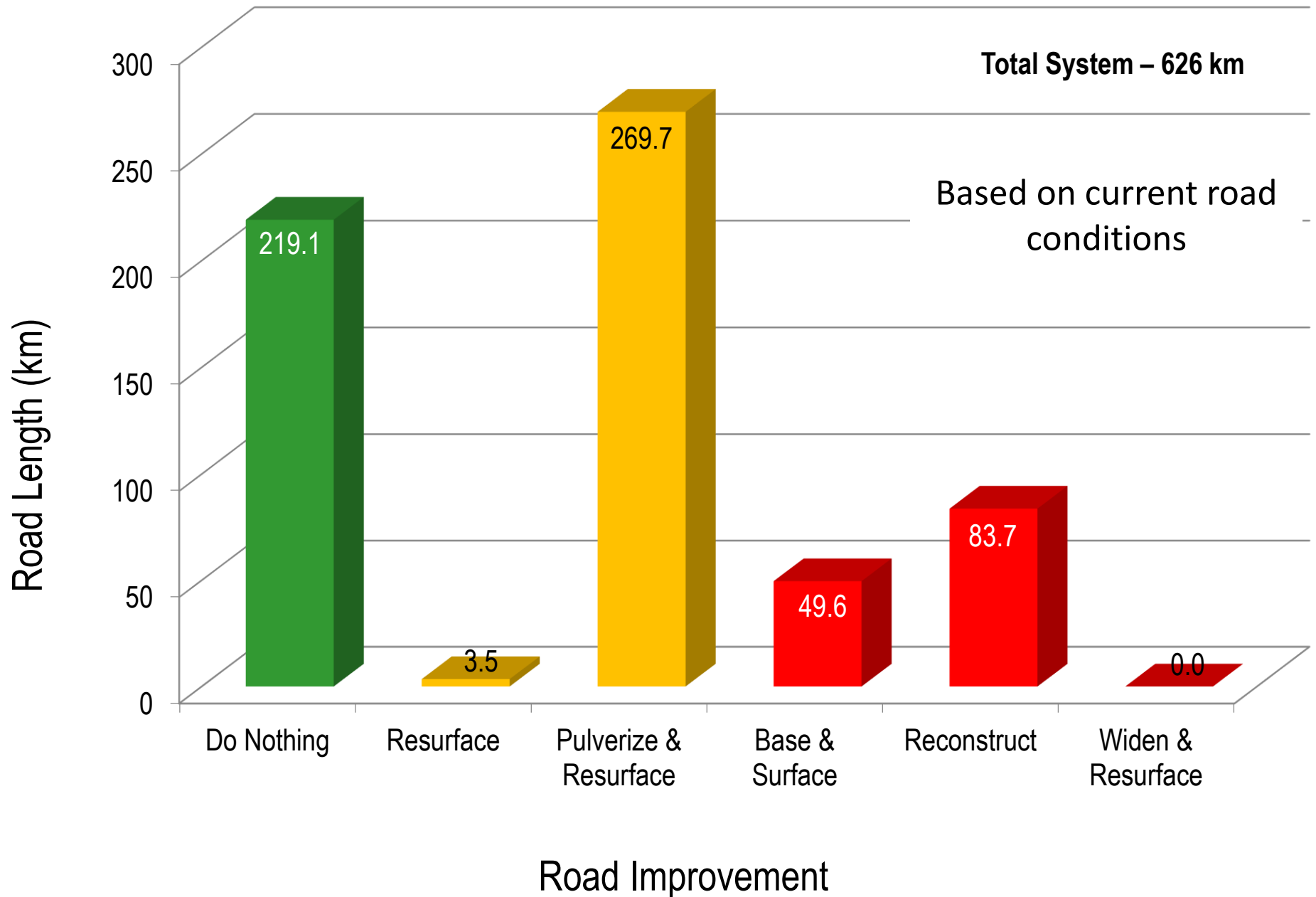


Identify Road Needs, Improvements & Costs



- Extent & severity of deficiencies dictate road needs & road improvement strategy
- Road improvement recommendations must consider
 - low volume rural roads (<50 AADT maintenance only)
 - Township practice
 - available improvement budget
 - absolute need
- Improvement strategies
 - do nothing
 - resurface (urban roads)
 - pulverize & resurface (semi-urban & rural roads)
 - base & surface (25% base repairs)
 - reconstruction
 - widen & resurface

Improvement Strategies



Improvement Cost



- Improvement costs based on
 - improvement strategy
 - applicable road standards
 - MTO costing methodology
 - recent local construction costs

Improvement Summary & Cost



Improvement Type		sections		length		cost
Do Nothing		505	51%	219.1	35%	\$0
Widen & Resurface	WR	0	0%	0.0	0%	\$0
Resurface	R	5	1%	3.5	1%	\$483,000
Pulverize & Resurface	PR	345	35%	269.7	43%	\$47,664,000
Base & Surface	BS	51	5%	49.6	8%	\$10,449,000
Reconstruct	REC	89	9%	83.7	13%	\$45,398,000
Total		995	100%	625.6	100%	\$103,994,000

- 10-year program
 - \$104M over 10 years (in 2019\$\$)
 - \$10.4M per year

Alternative Improvement Approaches



- It is recognized that the Township has limited funds to address road network improvements

- Several years ago, the Township undertook a program to pave most roads. Now, when road improvements are required, is there a need to reinstate the existing asphalt surface?
 - Consider: reinstate existing surface vs reinstate minimum standard

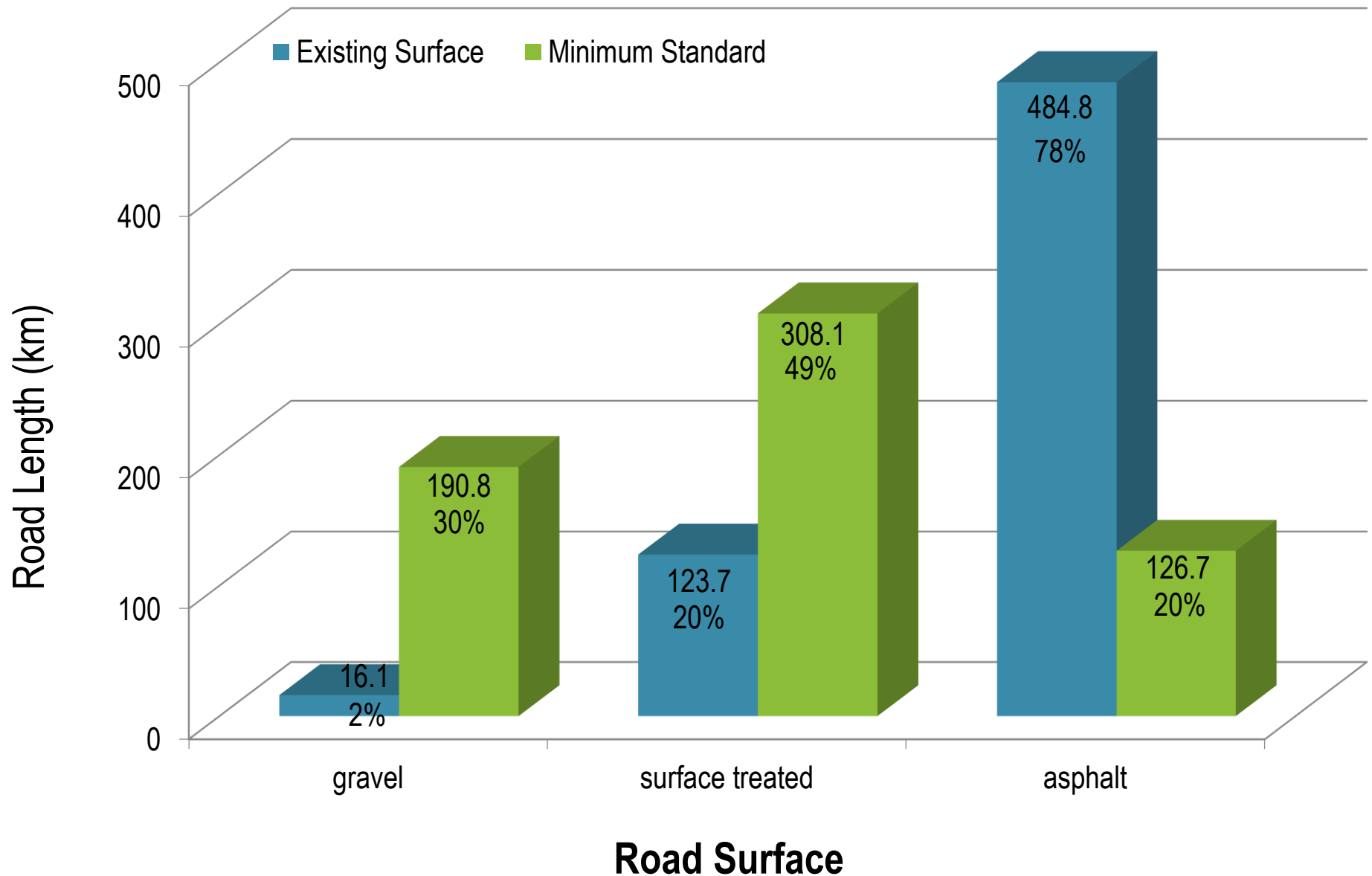
- Can the Township afford to reconstruct roads?
 - Consider: pulverize & pave vs reconstruction

- Combine the above

Alternative Improvement Approaches



Total System – 626km



Alternative Improvement Approaches



Improvement Type	Full Program	Reinstate Minimum Surface Type
Resurface	\$512,000	\$512,000
Pulverize & Resurface	\$48,503,000	\$33,773,000
Base & Surface	\$10,727,000	\$7,947,000
Reconstruct	\$45,936,000	\$40,253,000
Total	\$105,678,000	\$82,485,000

- Reinstate the surface type as dictated by the road environment, road classification and traffic volumes (ie. minimum surface type)
 - urban & arterial roads to be asphalt
 - semi-urban locals and collectors depend on traffic volumes (surface treated or asphalt)
 - rural local or collectors depend on traffic volumes (gravel, surface treated or asphalt)

Alternative Improvement Approaches



Improvement Type	Full Program	Pulverize vs Reconstruct
Resurface	\$512,000	\$558,000
Pulverize & Resurface	\$48,503,000	\$63,175,000
Base & Surface	\$10,727,000	\$10,727,000
Reconstruct	\$45,936,000	\$0
Total	\$105,678,000	\$74,460,000

- Rather than reconstruct roads that are in poor condition, pulverize and resurface them (approximately 1/3rd the cost)
- Maintain the existing surface type (ie. if asphalt, it is reconstructed to asphalt, regardless of standards)

Alternative Improvement Approaches



Improvement Type	Full Program	Minimum Surface Type with Pulverize vs Reconstruct
Resurface	\$512,000	\$558,000
Pulverize & Resurface	\$48,503,000	\$45,332,000
Base & Surface	\$10,727,000	\$7,947,000
Reconstruct	\$45,936,000	\$0
Total	\$105,678,000	\$53,837,000

- Rather than reconstruct roads that are in poor condition, pulverize and resurface them
- Reinststate the surface type as dictated by the road environment, road classification and traffic volumes (ie. minimum surface type)

Alternative Improvement Approaches



Improvement Type	Full Program	Reinstate Minimum Surface Type	Pulverize vs Reconstruct	Minimum Surface Type with Pulverize
Resurface	\$512,000	\$512,000	\$558,000	\$558,000
Pulverize & Resurface	\$48,503,000	\$33,773,000	\$63,175,000	\$45,332,000
Base & Surface	\$10,727,000	\$7,947,000	\$10,727,000	\$7,947,000
Reconstruct	\$45,936,000	\$40,253,000	\$0	\$0
Total	\$105,678,000	\$82,485,000	\$74,460,000	\$53,837,000

- Results
 - \$23M savings with surface type consideration
 - \$31M savings with pulverize vs reconstruction consideration
 - \$52M savings with both considerations

Alternative Improvement Approaches



Improvement Type	Full Program	Reinstate Minimum Surface Type	Pulverize vs Reconstruct	Minimum Surface Type with Pulverize	Current Township Practice
Resurface	\$512,000	\$512,000	\$558,000	\$558,000	\$558,000
Pulverize & Resurface	\$48,503,000	\$33,773,000	\$63,175,000	\$45,332,000	\$56,042,000
Base & Surface	\$10,727,000	\$7,947,000	\$10,727,000	\$7,947,000	\$0
Reconstruct	\$45,936,000	\$40,253,000	\$0	\$0	\$0
Total	\$105,678,000	\$82,485,000	\$74,460,000	\$53,837,000	\$56,600,000

- Further option is to continue with current Township road improvement program
 - urban roads: resurface
 - semi-urban & rural roads: pulverize + 150mm gravel + 75mm asphalt

Prioritize Road Recommendations



- Road improvements prioritized based on:
 - time of need
 - road condition
 - traffic volumes
 - cost of improvement
 - scheduled work
- Objective is to provide the greatest benefit for the improvement \$\$



C. Next Steps

Next Steps



- Draft reports submitted to Township for review
 - Road System & Operations
 - Road Needs Study
- Submit Road Standards report
- Meet with Township staff to review draft reports
- Presentation to Council in January
 - Road System & Operations
 - Road Standards
- Finalize reports based on input from staff and Council



D. Questions