



Municipality of
Middlesex Centre

2024 Road Needs Study





Agenda

1. Background Information
2. Network Condition
3. Budget Analysis



STANTEC MOMENT

HSSE: Safety

After a Tick Bite



Image source: <https://www.healthline.com/health/tick-bites>

Remove the tick **immediately** using pointed tweezers or a “tick key”; pull gently & steadily

Seal the tick in a container and place in a freezer

Wash the wound site and your hands with soap and water; cleanse the bite with an antiseptic wipe

Take a photo of the bite site; watch for an expanding rash / lesion, or unexplained fever / aches / fatigue

Follow the incident reporting procedures for your local health unit or work place.

Introduction

Background Information

Background Information

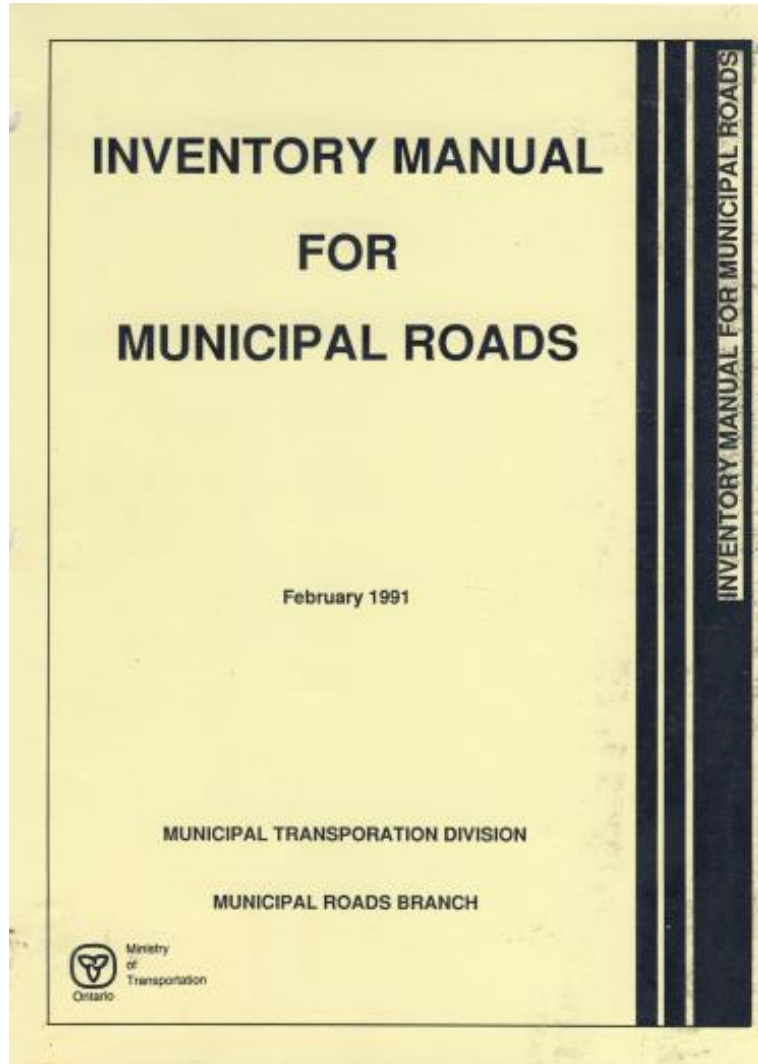
Field Collection was completed according to the Inventory Manual for Municipal Roads, 1991

Only the hard surfaces (HCB, LCB) roads were rated, gravel surfaced roads were excluded from data collection as there were no changes to the gravel road network from the last RNS.

Results of the Field Collection were uploaded into Stantec's RoadMatrix pavement management software for analysis.



Inventory Manual



Data Collection was completed using the Inventory Manual for Municipal Roads.

Inventory Manual

- RNS initiated by MTO in the 1970's to provide equitable funding subsidy to municipalities, many municipalities discontinued the practice when conditional funding stopped
- Concepts and Principle are sound
- Provides an updated summary of road condition ratings
- Provides current and future physical and financial needs of the road system.
- Data collection is visual, measurements were completed for surface and platform widths.

Field Collection

The following attributes were collected as part of the field investigation:

- Structural Adequacy
- Ride Quality
- Drainage

An Overall Pavement Condition Index (PCI) was calculated for each section using the structural adequacy and ride quality for analysis in RoadMatrix.

Time of Need

A time of need is assigned to each category listed below for each section to help in the decision-making process:

- Structural Adequacy
- Drainage
- Geometrics
- Surface Width
- Capacity (Number for Vehicles that can be serviced comfortably)

The TON is a prediction of time until reconstruction is required, the categories are as follow:

- NOW
- 1-to-5 Year
- 6-to-10 Year
- Adequate

Examples of TON – Structural Adequacy



Now



1 to 5



6 to 10



Adequate

Ride Ratings

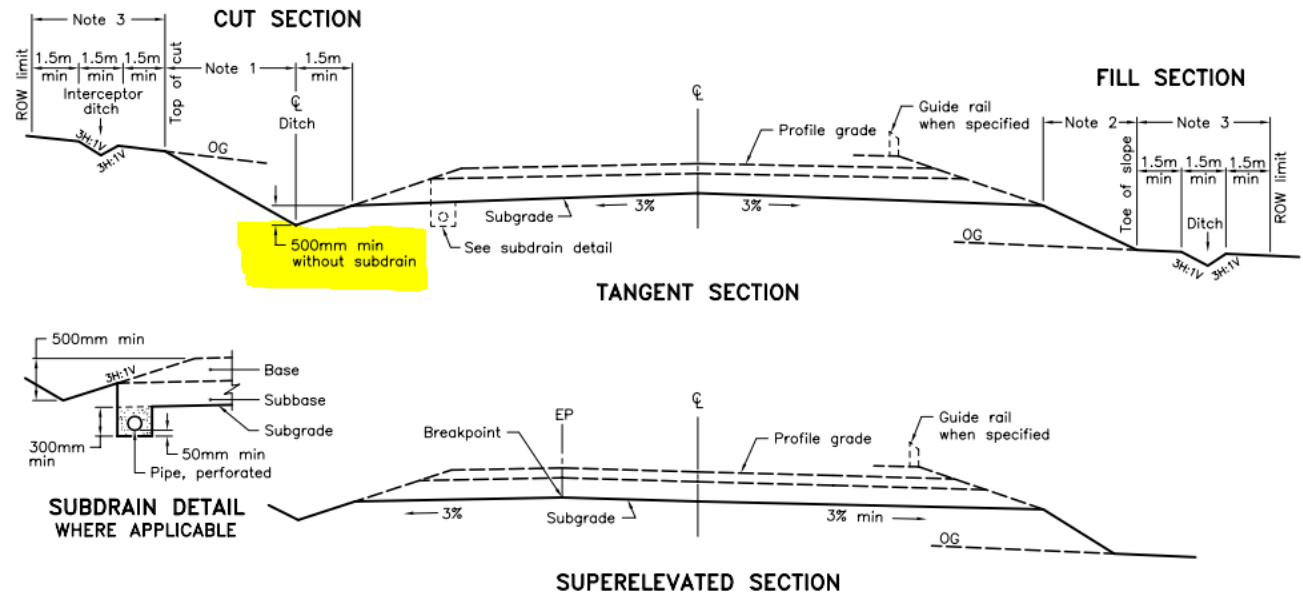
POINT RATING

- (1 0) - If the section affords a fully adequate standard of service, with no annoyance or discomfort.
- (09 to 07) - If it is possible to maintain the lesser of the Minimum Tolerable Average Operating Speed (Item 91) the legal Speed Limit (Item 51) with only a noticeable amount of annoyance to the driver due to sway, vibration or steering effort, but with no noticeable feeling of hazard.
- (06 to 04) - If maintaining even the lesser of the Minimum Tolerable Average Operating Speed (Item 91) or the legal Speed Limit (Item 51) results in either a "tug-of-war" with a too-steep or uneven crown, or a feeling that the car is taking undue punishment.
- (03 to 01) - If the surface irregularities are so severe that a driver will tend to reduce speed considerably, possibly even steering an irregular course, or if the crown is so steep as to be hazardous in winter.

Drainage Ratings

Point Ratings

- (1 5) If the cross-section and drainage are fully adequate.
- (1 4) to (1 2) If the height of grade line, cross-section elements and/or culvert and/or ditch capacity is somewhat below the standard that would be provided if the road were re-built, and the maintenance effort is somewhat higher than normal.
- (1 1) to (0 8) If excessive maintenance is required to provide adequate service, or if poor drainage conditions sometimes impede safe traffic movements.
- (0 7) to (0 1) If there are times when the road becomes impassable because of flooding or if there is an excessive maintenance effort required to prevent this.



Network Condition

Road Needs Results

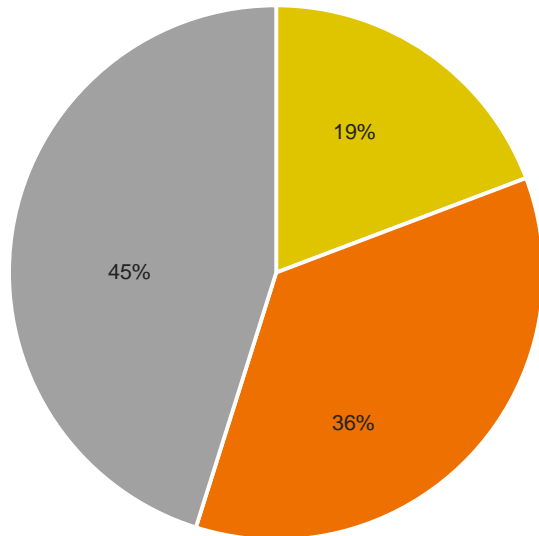
The goal of the RNS was to help provide the following information to help develop appropriate rehabilitation programs:

- Network Breakdown
- Network Condition
- Network Rehabilitation Requirements
- Rehabilitation Timing
- Rehabilitation Costs



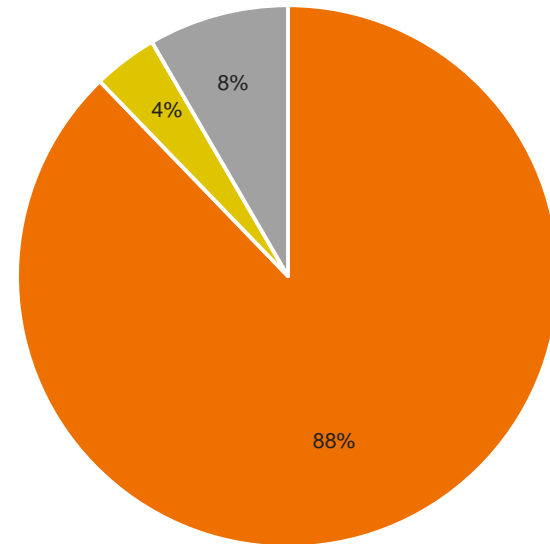
Network Breakdown

Network by Pavement Type



■ High Class Bituminous ■ Low Class Bituminous ■ Gravel

Network by Roadside Environment



■ Rural ■ Semi-Urban ■ Urban

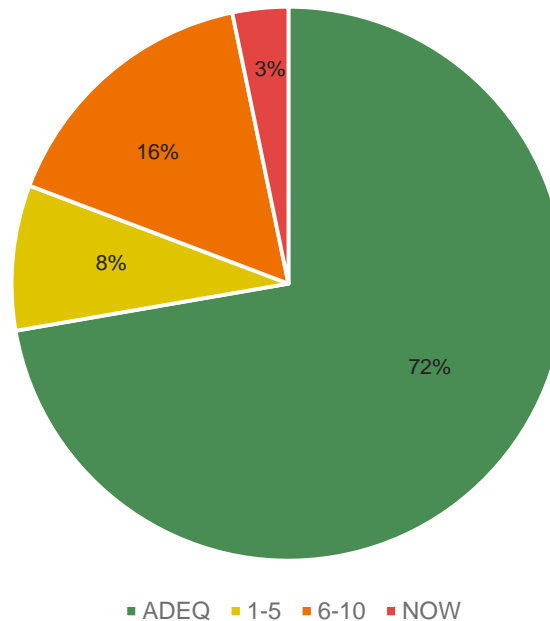
Pavement Type	CL-KM	% CL-KM
High Class Bituminous	116.0	19.2%
Low Class Bituminous	214.7	35.6%
Gravel	272.1	45.2%
Total	116.0	100%

Roadside Environment	CL-KM	% CL-KM
Rural	529.2	88%
Semi – Urban	23.2	4%
Urban	50.5	8%
Total	602.9	100%

Network Condition

The structural adequacy of the pavement is a good indicator of network condition.

Network by Structural Adequacy



Overall PCI of the network was 72.8

Network Critical Deficiencies

Critical Deficiencies were aggregated for the various deficiency types:

- **Surface Type Deficiency** – Gravel Roads that should be upgraded to Surface Treated and Surface Treated to Hot Mix Asphalt, based on AADT
- **Surface Width Deficiency** – Pavement Width Deficiency based on width of the pavement and the classification of the section, higher traffic results in higher minimum surface width
- **Structural Adequacy Deficiency** – Pavement condition in the now need category resulting in reconstruction of the section
- **Geometric Deficiency** – Inadequate vertical or horizontal curves or stopping sight distances
- **Drainage Deficiency** – Drainage issues resulting in temporary flooding of the pavement section

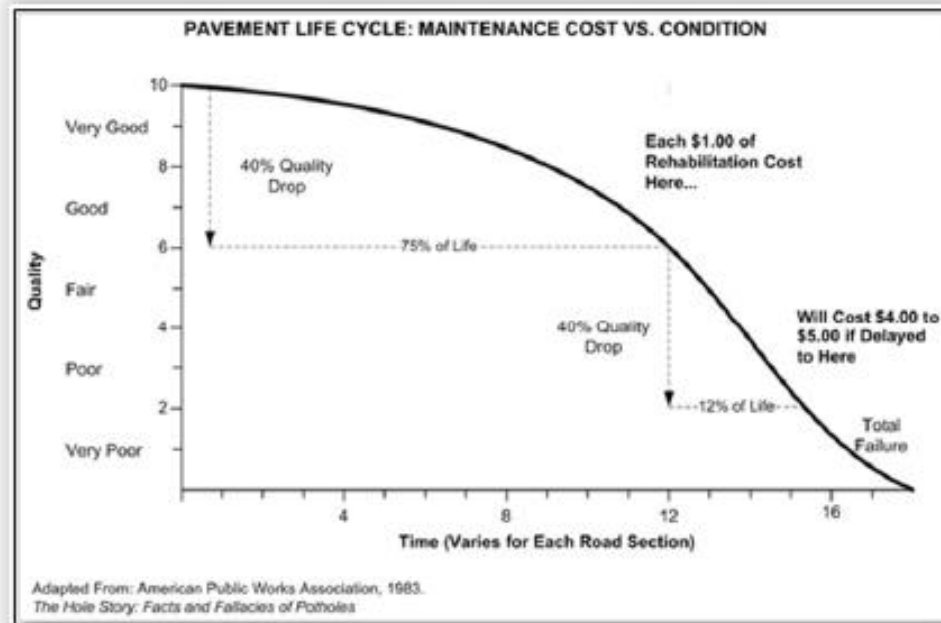
Network Critical Deficiencies

Deficiency	Total Cost (\$)
Multiple Deficiencies	\$ 2,789,888
Surface Type Deficiencies – Now Need	\$ 9,694,538
Surface Type Deficiencies – 1-5 Yr Need	\$ 3,157,032
Surface Type Deficiencies – 6-10 Yr Need	\$ 1,508,789
Surface Width Deficiencies	\$ 6,944,495
Structural Adequacy Deficiencies	\$ 2,090,943
Geometric Deficiencies	\$ 2,628,400
Drainage Deficiencies	\$ 266,684
Total	\$ 29,080,769

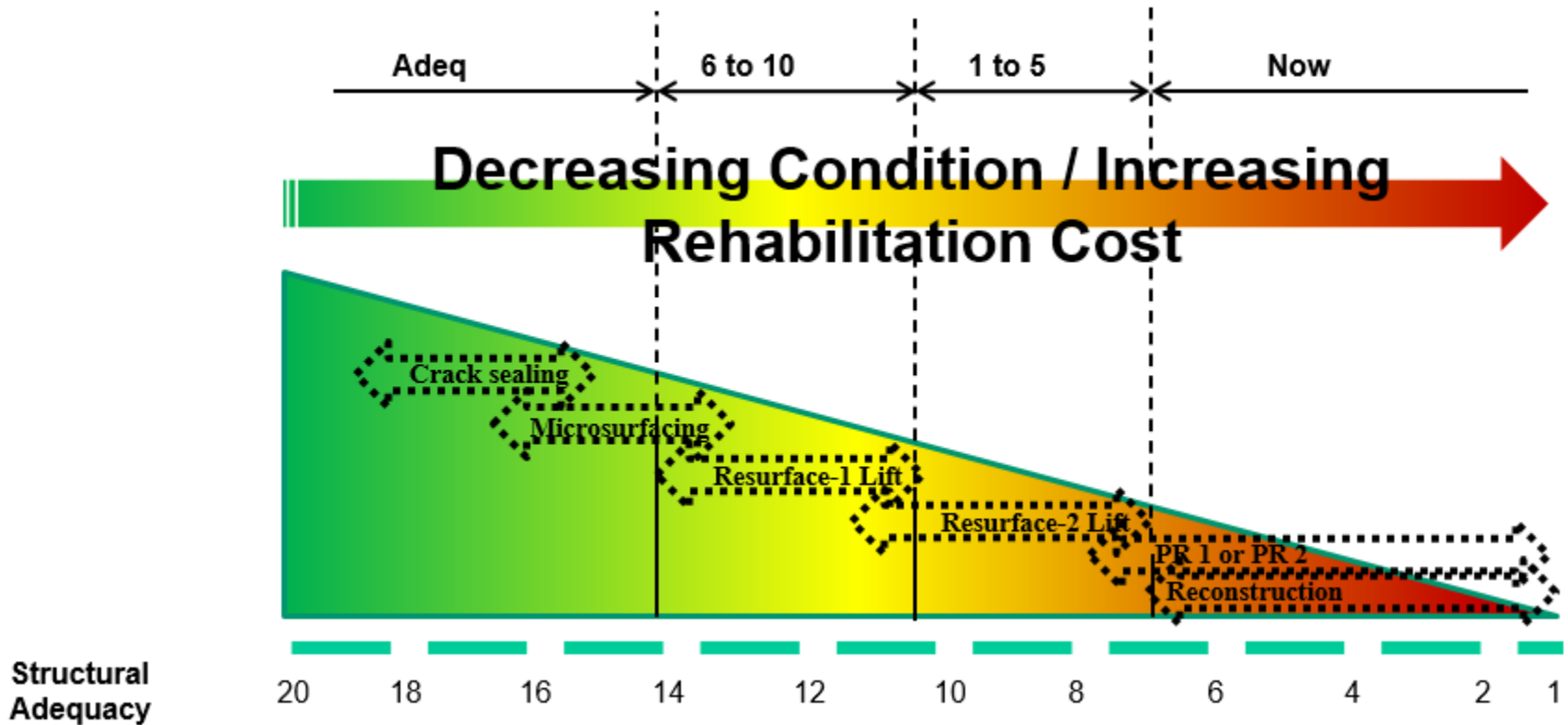
Budget Analysis

Rehabilitation Timing

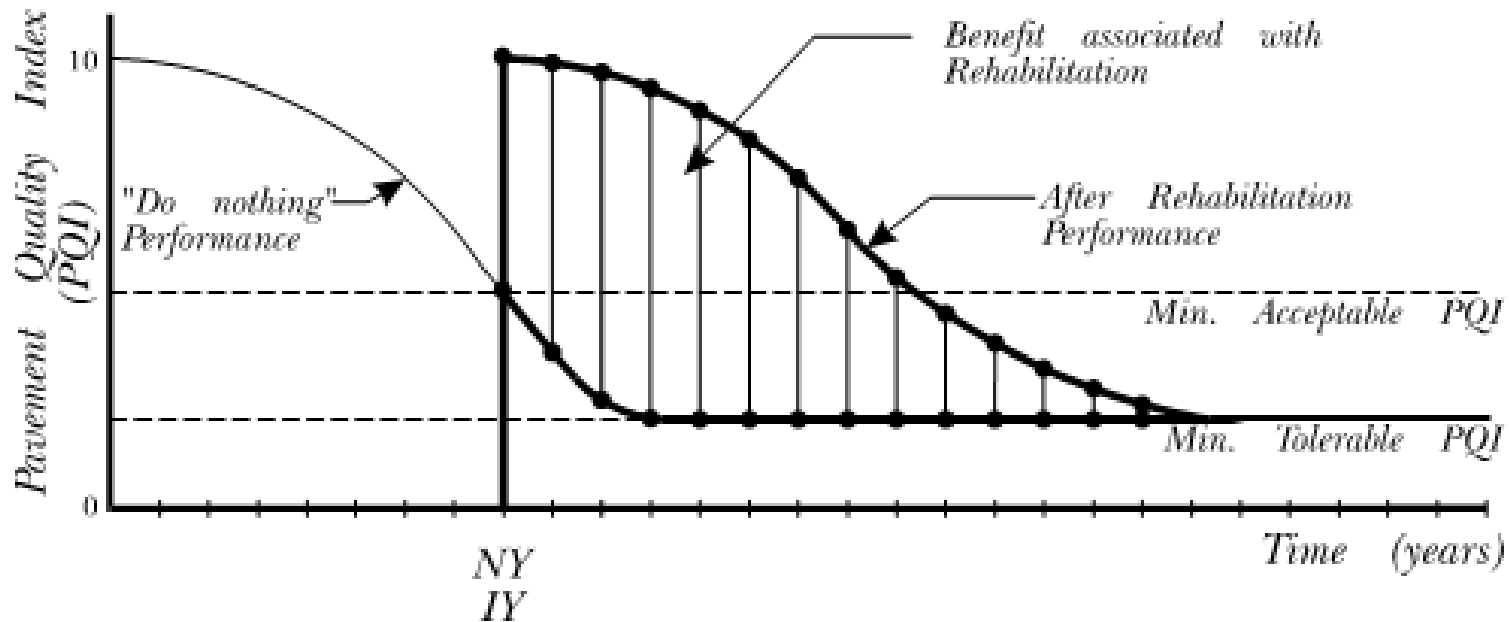
- Prioritization should not be based on repairing the roads in the worst condition
- Modern pavement management philosophy is to keep the good roads in good condition, maintaining the good roads is a better return on investment.



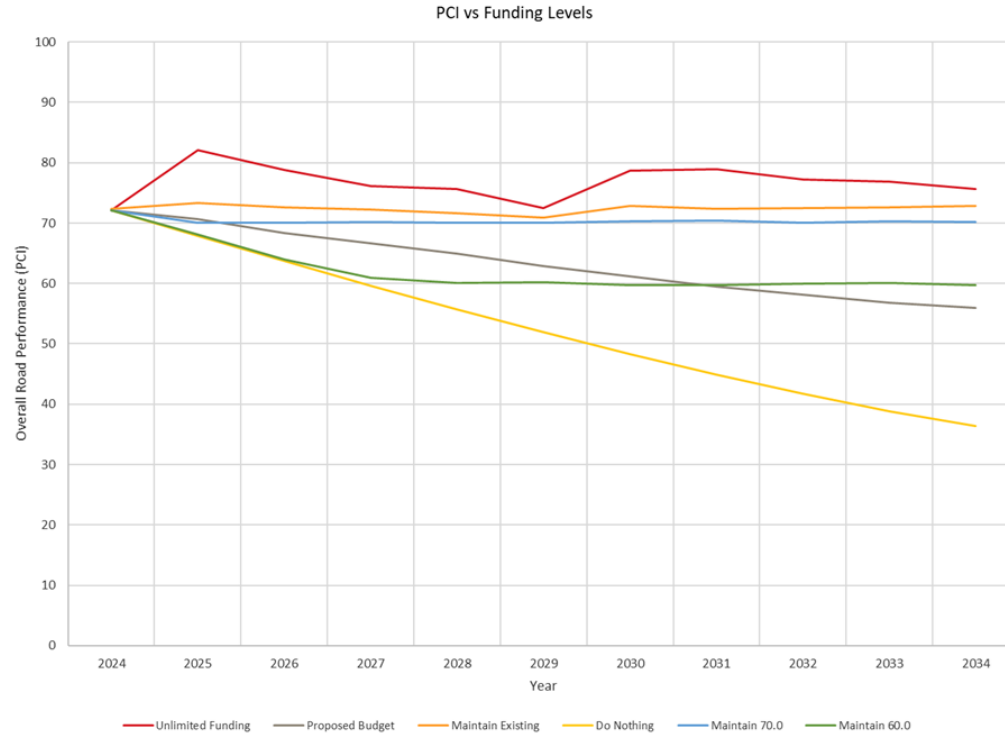
Rehabilitation Timing



Rehabilitation Timing



Budget Analysis Results



Budget Scenario	Total 10-Year Funding	Overall Score (/100) (2024)	Overall Score (/100) (2034)
Do Nothing	\$0	72.3	36.4
Total Maintain PCI = 72.3 (Existing)	\$27.6M	72.3	72.4
Total Maintain PCI = 70.0 (Target)	\$25.2M	72.3	70.0
Total Maintain PCI = 60.0 (Alternative Target)	\$18.7M	72.3	60.0
Unlimited Funding	\$30.2M	72.3	75.7
2024 Current Funding Level	\$17.3M	72.3	55.5

Questions?