Town of Hoosick 2023 Road Asset Management Plan

April 18, 2024

Prepared for:

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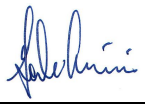
Approved by  Digitally signed by Cimini, Gabe Date: 2024.04.18 15:40:42 -04'00'

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Gabe Cimini

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Executive Summary

The Town of Hoosick (Town) administers a paved roadway network of approximately 38.3 centerline-miles (CL-MI) or 76.6 lane-miles (LN-MI). A summary of the Town's paved road network by functional class is provided below in Table ES.1.

Table ES.1: 2023 Town of Hoosick Paved Road Inventory

Functional Class	No. Sections	CL-MI	LN-MI
Rural Local	68	36.4	72.8
Rural Minor Collector	1	1.9	3.8
2023 Paved Network	**69**	**38.3**	**76.6**

The Capital Region Transportation Council retained Stantec Consulting Services Inc. (Stantec) on behalf of the Town of Hoosick in 2023 to conduct a condition assessment of the Town's paved road infrastructure, and to update the asset management plan. Funding for this plan was provided by the Capital Region Transportation Council with assistance from the Town of Hoosick.

The data collected during the recent field survey(s) was converted into three performance indicators:

- Riding Comfort Index (RCI),
- Pavement Condition Index (PCI), and
- Pavement Quality Index (PQI).

Stantec's RoadMatrix™ pavement management system (PMS) was used to run analysis and generate results.

The results of the 2023 Present Status Analysis, weighted by Lane-Length (LL), are presented in Table ES.2 below.

Table ES.2: 2023 Present Status Analysis Results[1]

Functional Class	Min PQI	No. Sections	LN-MI	RCI	PCI	PQI
Rural Local	60	68	72.8	43	46	38
Rural Minor Collector	60	1	3.8	56	39	34
2023 Paved Network	**-**	**69**	**76.6**	**43**	**45**	**38**

[1] Sections without performance data are excluded.

The present status results indicate a road network lane-length weighted PQI of 38, which is indicative of a network in poor condition. On average, both functional classes are currently performing below their respective PQI trigger (Min PQI) levels.

It is important to understand both the current condition of the road network, and the needs of the network in the years to come. The needs analysis assumes that no maintenance or rehabilitation is performed. The results of the road network Needs Analysis for the 2023 to 2033 period are provided below in Table ES.3.

Table ES.3: Needs Analysis Results 2023 – 2033*

Functional Class	Present PQI	Min PQI	Present Needs (2023)		6-Year Needs (2023-2028)		10-Year Needs (2023-2033)	
			LN-MI	%	LN-MI	%	LN-MI	%
Rural Local	38	50	49.0	67	69.7	96	71.9	99
Rural Collector Minor	34	50	3.8	100	3.8	100	3.8	100
2023 Paved Network	**38**	**-**	**52.9**	**69**	**74.5**	**96**	**75.8**	**99**

*Sections without performance data are excluded.

The needs analysis shows that approximately 69% (52.9 lane-mi) of the road network is currently deficient and in need of rehabilitation. This is based on the minimum acceptable PQI levels. If no work is undertaken after a 6-year or 11-year period, a significant amount of funds will be required throughout the network to restore pavement condition.

To assess the impacts of various investments over the next ten years, several analysis scenarios were prepared. The results are provided below in Table ES.4. The table includes the total cost for each analysis scenario, the network average PQI, and the average deficiency in 2024 and 2033. Note that while the data collection was completed in 2023, the budget scenarios (i.e., funding) do not start until 2024.

Table ES.4: Budget Analysis Results 2024 – 2033 – Paved Road Network

Analysis Scenario	Total Cost Over 10 years	LL-PQI[1]		LL-Def.[2]	
		2024	2033	2024	2033
Budget-Based Scenarios[3]					
Do Nothing	$ 0.0	33	16	92	100
CHIPS DB5148.4 Budget + General Repairs DB5110.4 Budget + Improvements DB5112.2 Budget[4]	$ 1.17 M	38	34	82	67
Combined Budget (no treatment constraints)[5]	$ 2.64 M	48	53	60	36
$400,000 Annual Budget	$ 3.05 M	49	58	58	29
$500,000 Annual Budget	$ 4.96 M	50	70	57	13

Analysis Scenario	Total Cost Over 10 years	LL-PQI[1]		LL-Def.[2]	
		2024	2033	2024	2033
Performance-Based Scenarios[6]					
Achieve/Maintain PQI = 40[7]	$ 1.67 M	40	42	70	53
Achieve/Maintain PQI = 45[7]	$ 2.30 M	40	47	69	46
Achieve/Maintain PQI = 50[7]	$ 2.89 M	40	53	70	38
Achieve/Maintain PQI = 55[7]	$ 3.36 M	40	57	70	32
Achieve/Maintain PQI = 60[7]	$ 3.78 M	40	60	70	27
Unlimited Funding (Needs Analysis)	$ 5.51 M	87	75	8	0

[1] LL-PQI1 = Lane-length-weighted PQI.
[2] LL-Def. = Lane-length-weighted Deficiency.

[3] Budget-based scenarios include scenarios with assigned budgets, where the PMS determines the impact of that funding level on the overall network in terms of PQI and deficiency.
[4] Treatment constraints include $88,348 funding under the CHIPS DB5148.4 budget (i.e., chip seal and double chip seal treatments), $73,942 funding under the General Repairs DB5110.4 budget (i.e., general repairs), and $149,675 funding under Improvements DB5112.2 (i.e., reclaim and pave, paving). Due to treatment constraints, the PMS could not find suitable candidates for all treatment categories.
[5] Sum of the CHIPS DB5148.4, General Repairs DB5110.4, and Improvements DB5112.2 budgets (i.e., $311,965), but with no constraints by treatment category.

[6] Performance-based scenarios include scenarios with performance targets, where the PMS determines the cost of meeting those performance targets.

[7] The Achieve/Maintain scenarios start with a PQI target of 40 in 2024, and then gradually increase to the noted target by 2029 and then maintain that level of service between 2029 and 2033 (e.g., Achieve/Maintain PQI = 60 starts with PQI = 40 in 2024, then increases 4 points per year from 2025 to 2029 (44 in 2025, 48 in 2026, 52 in 2027, 56 in 2028, and 60 in 2029), then maintains PQI 60 for the 2029-2033. In some cases, the target PQI is exceeded due to larger projects being completed, which bring up the overall network average.

Note that some of the rehabilitation project costs exceed the available annual budget funding, therefore these sections are not selected in the budget constraint scenarios. Examples of these include longer pavement sections that require heavier treatments (i.e., Beechwood from Bayer Rd to VT State Line, which is a reclaim and pave candidate with an estimated cost of over $500,000). The network pavement condition is poor, and additional funding, invested wisely, will provide the most benefit for the overall network. Further analysis of the various funding scenarios is subsequently presented.

Moving forward, it is recommended that the Town validate the various assumed attributes, such as traffic data, percent commercial traffic, layer thickness information, etc.

It is recommended that the Town conduct a condition assessment every three to five years. It is also recommended for the Town to revisit the trigger values, maintenance and rehabilitation treatment unit costs, and decision trees.

Abbreviations*

*Some abbreviations listed in this section may or may not appear in the report

AADT	Average Annual Daily Traffic
AC	Asphalt Concrete
ADV	Adjusted Distress Value
ART	Arterial
BGB	Bituminous over Granular Base
BSC	Bituminous over Soil Cement
CE	Cost Effectiveness
Town	Town of Hoosick
CL-Def.	Centerline-Weighted Deficiency
CL-MI	Centerline Miles
CL-PQI	Centerline-Weighted PQI
CO	New Construction/Reconstruction
COL	Collector
COM	Composite
CON	Concrete
DMI	Distance Measurement Instrument
DTN	Design Traffic Number
DV	Deduct Value
DVM	Deduct Value Model
EGT	Equivalent Granular Thickness
ESAL	Equivalent Single Axle Load
FDR	Full Depth Reclamation
FWD	Falling Weight Deflectometer
GM	General Maintenance
GPR	Ground Penetrating Radar
GPS	Global Positioning System
HIR	Hot-in-Place Recycling
IMU	Inertial Measurement Unit
IRI	International Roughness Index
LAN	Lanes
LL-Def.	Lane-Length-Weighted Deficiency
LL-MI	Lane-Length Miles
LL-PQI	Lane-Length-Weighted PQI
LN-MI	Lane Miles
LOC	Local
M&R	Maintenance and Rehabilitation
MTD	Maximum Tolerable Deflection

NED	Number of Equivalent Distresses
OL	Overlay
PCI	Pavement Condition Index
PM	Preventative Maintenance
PMA	Polymer Modified Asphalt
PMS	Pavement Management System
PQI	Pavement Quality Index
RC	Reconstruction
RCI	Riding Comfort Index
RE	Rehabilitation
SAI	Structural Adequacy Index
SAF	Seasonal Adjustment Factor
TDV	Total Distress Value
UNP	Unpaved/gravel

1.0 PROJECT OVERVIEW

1.1 BACKGROUND

The Town of Hoosick (Town) is a town in Rensselaer County, New York. As one of the most forward thinking and innovative communities in New York, the Town of Hoosick is addressing its pavement asset management challenges through the development of an Asset Management Plan that will benefit its members well into the future.

The Town administers a paved roadway network of approximately 38.3 centerline-miles (CL-MI) or 76.6 lane-miles (LN-MI). A summary of the Town's paved road network by functional class is provided below in Table 1.1.

Table 1.1: 2023 Town of Hoosick Paved Road Inventory

Functional Class	No. Sections	CL-MI	LN-MI
Rural Local	68	36.4	72.8
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The Capital Region Transportation Council retained Stantec Consulting Services Inc. (Stantec) on behalf of the Town of Hoosick in 2023 to conduct a condition assessment of the Town's paved road infrastructure, and to update the asset management plan. Funding for this plan was provided by the Capital Region Transportation Council with assistance from the Town of Hoosick. Stantec's RoadMatrix™ pavement management system (PMS) was used to run the analysis and generate results.

A key component of an effective pavement management system is to regularly assess the condition of the road network, which can then be used to determine the performance of the network over time. A robust Pavement Management System (PMS) provides the ability to achieve the following:

- Estimate the current and future condition of the pavement network and determine the preservation, maintenance and rehabilitation requirements;
- Identify feasible alternatives for each pavement section and based on this information, assemble rehabilitation programs for various funding and performance scenarios; and,
- Estimate the impact the various programs can have on the condition of the road network.

1.2 PROJECT SCOPE AND OBJECTIVES

The 2023 project scope included:

- Gather and review background information
- Conduct field assessment of paved roads
- Conduct analysis using Stantec's RoadMatrix™ Pavement Management System
- Produce a report outlining the current pavement condition and ten-year Maintenance and Rehabilitation (M&R) Repair Plan

To achieve project objectives, the latest field assessment technology was adopted and Stantec's RoadMatrix™ PMS was used for the analysis.

The data collected during the recent field survey(s) was used to identify the Present Status of the road network in terms of three performance indicators:

- Riding Comfort Index (RCI)
- Pavement Condition Index (PCI)
- Pavement Quality Index (PQI)

The Present Status results, along with predictive model algorithms and budget constraints, were used to assess future needs and compare the effect of various funding scenarios on pavement performance.

1.3 REPORT ORGANIZATION

- An introduction and overview of the project scope and objectives is provided in Section 1.0;
- An overview of the RoadMatrix™ pavement management system setup is included in Section 2.0;
- The data collection efforts are summarized in Section 3.0;
- The RoadMatrix™ analysis results are presented in Section 4.0; and
- Conclusions and recommendations are provided in Section 5.0.

2.0 PMS SETUP & DATA LOADING

2.1 OVERVIEW

Stantec's RoadMatrix™ PMS is designed for municipal agencies to meet their road planning and decision-making needs. RoadMatrix™ uses current software development technology and leverages Stantec's 40-plus years of pavement data collection, pavement engineering, and pavement management experience.

2.2 ROADMATRIX™ UPDATES

In preparation for the pavement management analysis, the RoadMatrix™ database was populated based on information provided in the GIS road centerline shapefile of the Town's roadways, provided by the Capital Region Transportation Council.

- Section attributes, including location, geometric, traffic and structure data, are summarized in Appendix A
- Models used to produce the present status (i.e., current condition) results are provided in Appendix B.1
- Models used to deteriorate pavement over time (i.e., deterioration curves) are described in Appendix B.2.
- Maintenance and analysis triggers, treatments, and treatment selection logic (i.e., decision trees), as well as budget scenarios are detailed in Appendix B.3.

3.0 DATA COLLECTION

3.1 2023 FIELD SURVEY SCOPE

The 2023 field survey consisted of the following:

- Surface distress and roughness survey for 45.8 survey-mi of paved roads, from May 20 to 21, 2023.

3.2 ROADS DATA COLLECTION METHODOLOGY

A Stantec RT3000 unit equipped with accelerometers, laser sensors, cameras, and inertial global position system (IGPS) was used to conduct the 2023 field survey for surface distress and roughness on paved roads. The following subsections summarize the data collection methodologies.

3.2.1 Roughness Data Collection

The roughness of each section was measured using the RT3000 unit, a specially equipped van with accelerometers and laser sensors mounted to the customized front bumper. This technology was used to measure the longitudinal profile of the pavement surface in each wheel path of the survey travel lane. The profile data was then used to calculate an International Roughness Index (IRI) reported at 100-foot intervals/stations.

Roughness data was collected using a profiling system certified according to ASTM E950 as a Class I profilometer. The collection of the longitudinal profile for roughness data is fully automated. The specialized profile measurement system, mounted on the front bumper of the RT3000 survey vehicle, employs two sensing devices:

1. A laser height sensor that measures the distance between the vehicle and the pavement surface, while the vehicle is traveling at up to posted speed; and
2. An accelerometer that measures the vertical acceleration of the vehicle as it bounces in response to the pavement surface profile.

These two measurements are used during post-processing, to eliminate the effects of vertical vehicle motion, and thereby define the vertical profile of the pavement surface. The RT3000 is also equipped with a distance measurement instrument (DMI) to provide a reference measurement of the vehicle as it traverses the road. This measurement provides stationing references for the profile data.

Roughness data is then computed from the above data and expressed in terms of the standard IRI in units of feet/mile. IRI measurements obtained from the RT3000 system have been correlated with those

obtained from other valid profilometers, as well as IRI-calculated values from rod and level, and dipstick surveys.

IRI is measured in each wheel track separately. The data is further computed into a Riding Comfort Index (RCI) for each road section.

3.2.2 Surface Distress Data Collection

Pavement condition is evaluated based on the type, severity, and extent of pavement defects or distresses. Each surface distress is evaluated on the basis of two components:

- Severity: defined as 'How bad is the defect?' and is expressed in terms of the width or degree of wear associated with a particular pavement condition. An example of a severity measurement includes the average width of a crack.
- Extent: or 'How much is there?' is expressed in terms of the quantity of the surface that a particular defect/distress covers. Examples of measures used for extent would include the number and length of transverse cracks, length of longitudinal cracking, or the pavement area affected by alligator cracking.

The data collection used for this assignment uses sub-systems for the distress data collection:

Laser Crack Measurement System (LCMS) – This technology represents one of the most advanced pavement data collection technologies available on the market to date. This technology is capable of 3D crack mapping, 4,000-point transverse profile measurement for rutting, and automated crack detection.

For this project, pavement distresses on asphalt (flexible) pavements were evaluated using the ASTM D6433 distress rating protocol. The distresses analyzed are detailed in Table 3.1 below.

Table 3.1: ASTM D6433 Pavement Distresses

Category	Distress Type	Abbreviation	Unit	Severity[1]
Cracking	Alligator Cracking	ALC	ft^2	L/M/H
	Block Cracking	BKC	ft^2	L/M/H
	Edge Cracking	EGC	ft	L/M/H
	Reflection Cracking	RFC	ft	L/M/H
	Longitudinal Cracking	LGC	ft	L/M/H
	Transverse Cracking	TVC	ft	L/M/H
	Slippage Cracking	SLC	ft^2	L/M/H
Surface Defects	Potholes	POT	count	L/M/H
	Raveling	RAV	ft^2	L/M/H
	Weathering	WTH	ft^2	L/M/H
	Bleeding	BLD	ft^2	L/M/H
	Patching	PAT	ft^2	L/M/H
	Polished Aggregate	PAG	ft^2	N/A
Surface Deformation	Bumps & Sags	BAS	ft	L/M/H
	Corrugation	COR	ft^2	L/M/H
	Depression	DEP	ft^2	L/M/H
	Shoving	SHV	ft^2	L/M/H
	Rutting	RUT	ft^2	L/M/H
	Swell	SLL	ft^2	L/M/H
	Railroad Crossing	RRC	ft^2	L/M/H
	Lane/Shoulder Drop Off	LDO	ft	L/M/H

[1] L/M/H: Low/Medium/High

The survey was generally conducted in the outer-most lane of each road segment, with the direction of travel referenced in the observed data, through lane codes: “P” lanes indicate the direction defined in the network definition was followed during the survey; “M” lanes indicate the survey was conducted in the opposite direction of the network definition limits. Road sections with four or more traffic lanes, and divided road sections were tested in both directions of travel. The RT3000 unit was operated at speeds of 15 mi/h or more, to ensure that reliable profile data was being collected.

3.2.3 GPS Data

The on-board IGPS system integrates a real-time differential correction method to improve accuracies of the GPS data (+/- 1-metre horizontal). Stantec subscribes to both the Omnistar and Landstar satellite networks to complete these GPS data corrections.

The RT3000 is equipped with an integrated IGPS system that provides locational data at all times, even in situations where the 'urban canyon' or tree coverage reduces the number of satellites available. The inertial system fills in the GPS gaps caused by satellite outages, by utilizing a support data system on the vehicle, ensuring that a 100% stream of geo-referenced location data is recorded.

GPS data is loaded to RoadMatrix™ at 100 ft intervals for Roughness and Distress data.

3.2.4 Right of Way (ROW) High Resolution Images

High-resolution digital images were collected during the pavement condition survey, allowing Stantec to gather additional imagery for distress rating QA/QC, as well as value added deliverables to the Town of Hoosick. Stantec's RT3000 collects the digital imagery using multiple camera configurations.

Our 360º camera system was deployed on this assignment. It is composed of six five-megapixel cameras mounted on a singular lever activated support, for the collection of individual or panoramic imagery. The resulting image database contains industry standard JPEGs with geo-referenced information.

Each image is tagged with a GPS coordinate and Location Referencing System (LRS) data.

3.3 UNTESTED SECTIONS

There were ten (10) untested road sections as indicated in Table 3.2. Nine roads were excluded since they were identified as gravel sections in the field, and one section did not exist.

Table 3.2: Untested Road Sections

Street Name	From Street	To Street	Length (ft)	Comments
BAERTSCHI RD	DEAD END	BABCOCK LAKE RD	4275.8	Gravel
CIPPERLY RD	CR 100 BREESE HOLLOW RD	CIPPERLY RD EXT	3539.3	Gravel
BRENENSTUHL RD	SPICER RD	DEAD END	3009.6	Gravel
LWR PINE VALLEY	PITTSTOWN T/L	PINE VALLEY RD	3902.9	Gravel
HOOSICK JCT RD	DEAD END	RAILROAD CROSSING	4804.8	Gravel
COBBLE HILL RD	NY 67	WASHINGTON COUNTY LINE	10112.1	Gravel
COTTRELL RD	STEWART RD	CARETAKERS RD	9345.6	Gravel
JAY DR	MARC DR	ALBANY ST	684.2	Does not Exist
CUTOFF RD	BREESE HOLLOW RD	NY 7	2006.4	Gravel
BEECHWOOD RD	BEECHWOOD RD	END	844.8	Gravel

4.0 ANALYSIS RESULTS

The present (2023) condition of the Town's paved road network, the expected needs over the next ten years, and the predicted performance and budgetary needs over the next ten years for various analysis scenarios are presented in this section.

4.1 ANALYSIS SUBSETS

The following subset and associated definitions were used in the present status analysis:

2023 Paved Network:

- Pavement type is asphalt
- Functional class includes Rural Local and Rural Minor Collector
- Roads without performance data from the 2023 survey are excluded

4.2 PRESENT STATUS RESULTS

A summary of the present status results for 2023 is shown in Table 4.1. A PQI condition map is provided in Appendix C. The minimum acceptable PQI level (Min PQI) or PQI trigger level is a desirable level of service defined for each functional class. The acceptable PQI values were setup based on other comparable municipalities.

Table 4.1: 2023 Present Status Analysis Results[1]

Functional Class	Min PQI	No. Sections	LN-MI	RCI	PCI	PQI
Rural Local	50	68	72.8	43	46	38
Rural Minor Collector	50	1	3.8	56	39	34
2023 Paved Network	**-**	**69**	**76.6**	**43**	**45**	**38**

[1] Sections without performance data are excluded.

The following observations can be made based on the information presented in Table 4.1.

- The present status results indicate a road network lane-length weighted PQI of 38, which is indicative of a network in poor condition.
- On average, both functional classes are currently performing below their respective PQI trigger (Min PQI) levels.
- The average network rideability, based on RCI, is 43.
- The average PCI for the network is 45. This indicates the roads are exhibiting a significant amount of surface distresses.

4.2.1 Present Status Results of Paved Town Road Network

4.2.1.1 Riding Comfort Index (RCI)

A chart showing the distribution of RCI values, weighted by lane- miles, is shown below in Figure 4.1.

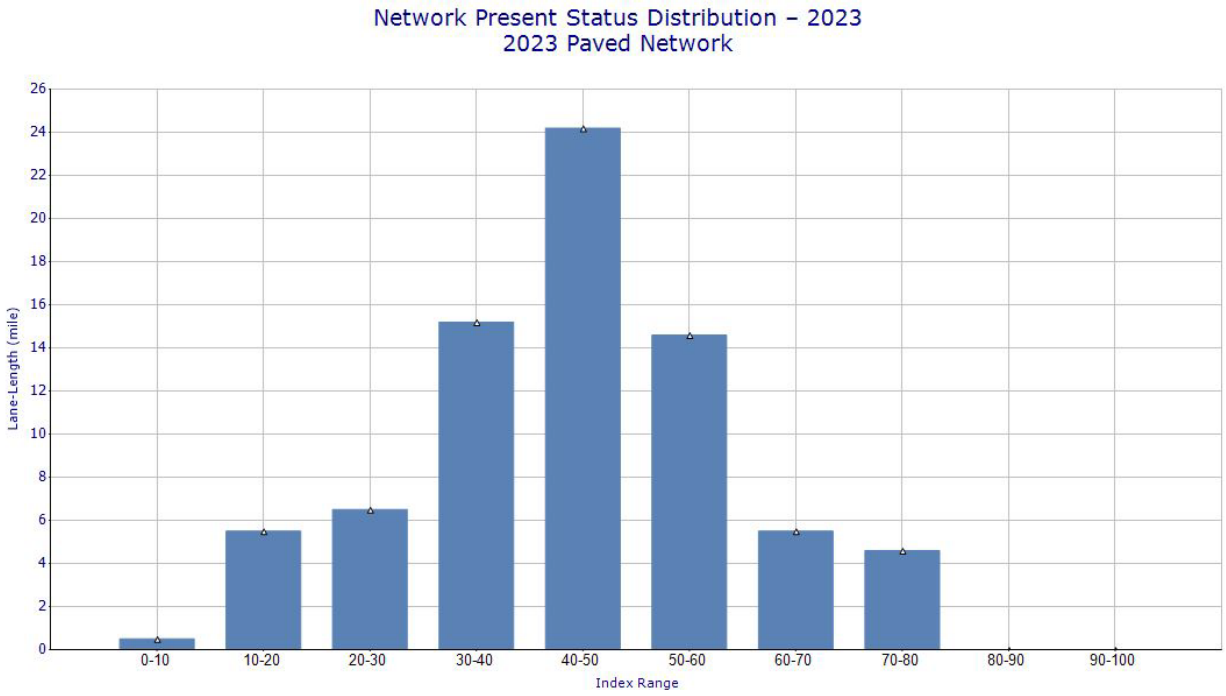


Figure 4.1: RCI Distribution of 2023 Paved Road Network

The network distribution among poor, marginal, and acceptable RCI values is presented in Table 4.2. The majority (51%) of the roads exhibit marginal ride quality.

Table 4.2: RCI Distribution of 2023 Paved Network

RCI Range	Ride Quality	Length (LN-MI)	Network Percentage
RCI < 40	Poor	27.7	36%
40 ≤ RCI < 60	Marginal	38.8	51%
RCI ≥ 60	Acceptable	10.1	13%

A summary of the RCI distribution by functional class is provided below in Table 4.3. Nearly one half (48%) of Rural Local roads have marginal ride quality. Only 14% of the network is providing acceptable ride quality.

Table 4.3: RCI Distribution of 2023 Paved Network by Functional Class

Functional Class	RCI Average	RCI Range	Ride Quality	Length (LN-MI)	Functional Class Percentage
Rural Local	43	RCI < 40	Poor	27.7	38%
		40 ≤ RCI < 60	Marginal	34.9	48%
		RCI ≥ 60	Acceptable	10.1	14%
Rural Minor Collector	56	RCI < 40	Poor	0	0%
		40 ≤ RCI < 60	Marginal	3.8	100%
		RCI ≥ 60	Acceptable	0	0%

4.2.1.2 Pavement Condition Index (PCI)

A chart showing the distribution of PCI values, weighted by lane- miles, is shown in Figure 4.2.

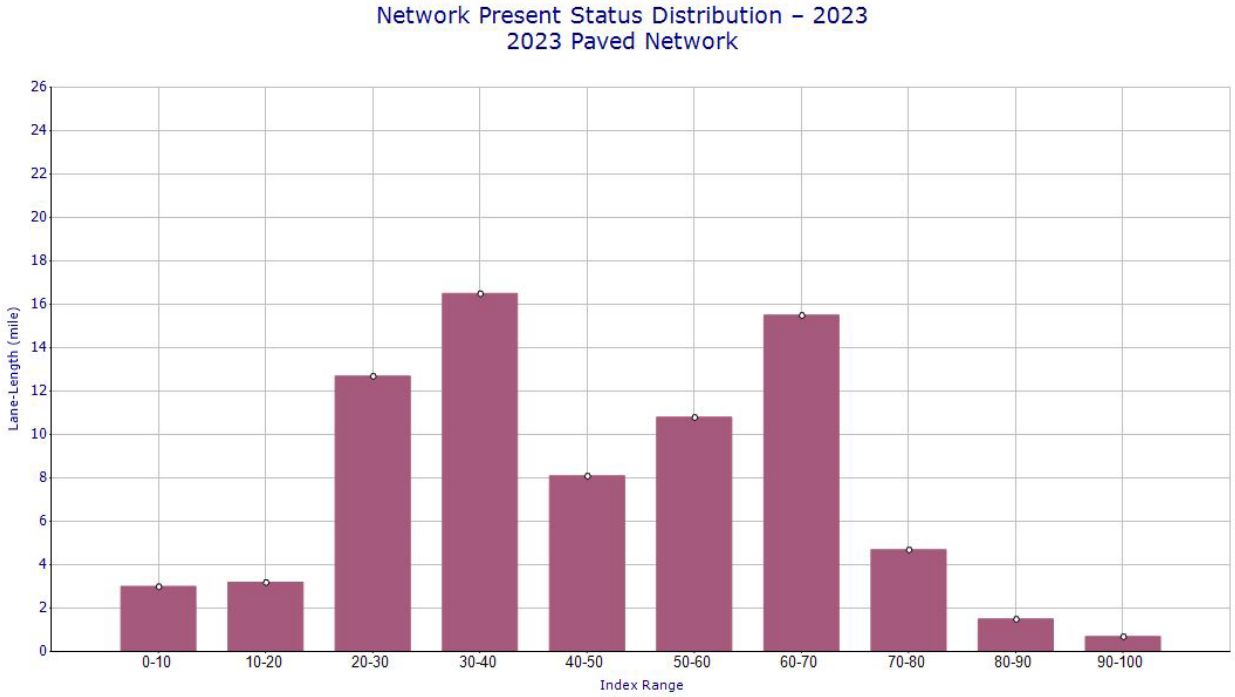


Figure 4.2: PCI Distribution of 2023 Paved Network

The network distribution among PCI values is presented in Table 4.4. Most roads show poor to fair pavement condition, with only 29% of the network in the good or very good range.

Table 4.4: PCI Distribution of 2023 Paved Network

PCI Range	Pavement Condition	Length (LN-MI)	Network Percentage
PCI < 20	Very Poor	6.2	8%
20 ≤ PCI < 40	Poor	29.2	38%
40 ≤ PCI < 60	Fair	18.9	25%
60 ≤ PCI < 80	Good	20.2	26%
PCI ≥ 80	Very Good	2.2	3%

A summary of the PCI distribution by functional class is provided below in Table 4.5.

Table 4.5: PCI Distribution of 2023 Paved Network by Functional Class

Functional Class	PCI Average	PCI Range	Pavement Condition	Length (LN-MI)	Functional Class Percentage
Rural Local	46	PCI < 20	Very Poor	6.2	8%
		20 ≤ PCI < 40	Poor	25.3	35%
		40 ≤ PCI < 60	Fair	18.9	26%
		60 ≤ PCI < 80	Good	20.2	28%
		PCI ≥ 80	Very Good	2.2	3%
Rural Minor Collector	39	PCI < 20	Very Poor	0.0	0%
		20 ≤ PCI < 40	Poor	3.8	100%
		40 ≤ PCI < 60	Fair	0.0	0%
		60 ≤ PCI < 80	Good	0.0	0%
		PCI ≥ 80	Very Good	0.0	0%

Approximately 43% of sections in the Rural Local functional class are in the poor or very poor range, with significant surface distress. Approximately 26% of the Rural Local network is in fair condition, and 28% is in good condition. The Rural Minor Collector section in is poor condition.

4.2.1.3 Pavement Quality Index (PQI)

The distribution of PQI values, weighted by lane-miles, is presented in Figure 4.3.

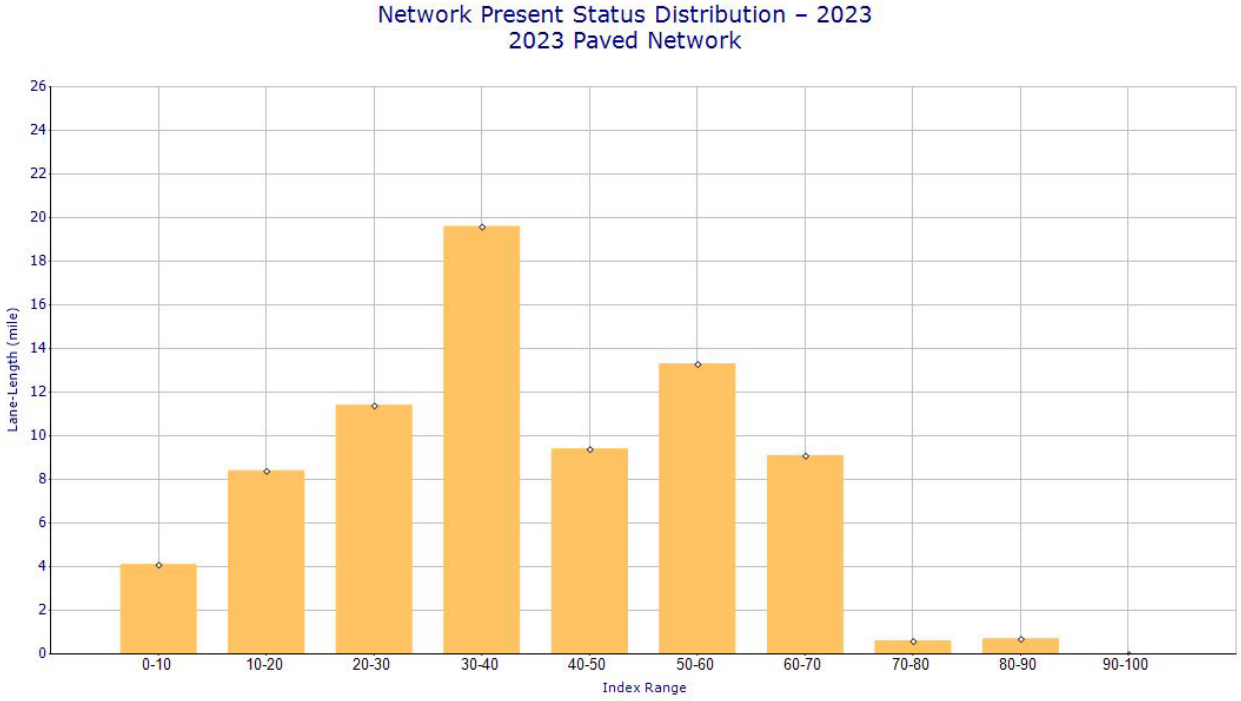


Figure 4.3: PQI Distribution of 2023 Paved Network

The network distribution between PQI ranges are shown in Table 4.6. The majority of the network is performing in the poor (41% of the network) to very poor (16% of the network) range.

Table 4.6: PQI Distribution of 2023 Paved Network

PQI Range	Pavement Condition	Length (LN-MI)	Network Percentage
PQI < 20	Very Poor	12.5	16%
20 ≤ PQI < 40	Poor	31.0	41%
40 ≤ PQI < 60	Fair	22.7	30%
60 ≤ PQI < 80	Good	9.7	13%
PQI ≥ 80	Very Good	0.7	1%

A summary of the PQI distribution by functional class is provided below in Table 4.7.

Table 4.7: PQI Distribution of 2023 Paved Road Network by Functional Class

Functional Class	PQI Average	PQI Range	Pavement Condition	Length (LN-MI)	Functional Class Percentage
Rural Local	38	PQI < 20	Very Poor	12.5	17%
		20 ≤ PQI < 40	Poor	27.2	37%
		40 ≤ PQI < 60	Fair	22.7	31%
		60 ≤ PQI < 80	Good	9.7	13%
		PQI ≥ 80	Very Good	0.7	1%
Rural Minor Collector	34	PQI < 20	Very Poor	0.0	0%
		20 ≤ PQI < 40	Poor	3.8	100%
		40 ≤ PQI < 60	Fair	0.0	0%
		60 ≤ PQI < 80	Good	0.0	0%
		PQI ≥ 80	Very Good	0.0	0%

Approximately 54% of the Rural Local network is in poor to very poor condition and approximately 31% is in fair condition. The Rural Minor Collector section is in the poor range.

4.3 NEEDS ANALYSIS RESULTS

The needs analysis results for each roadway functional class are summarized in Table 4.8. Sections are considered in "need" when their PQI falls below the minimum acceptable PQI (min PQI) or PQI trigger values.

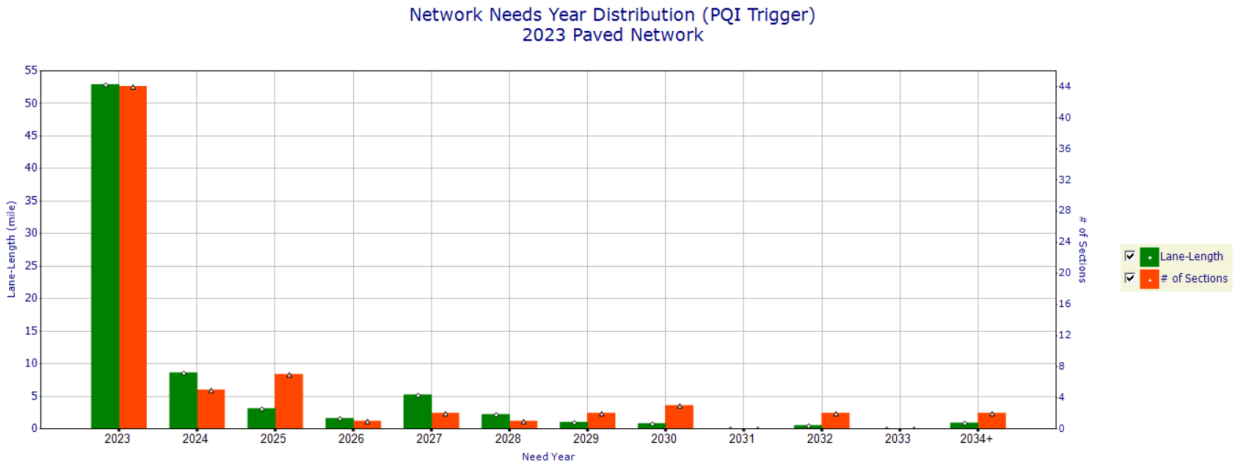
Table 4.8: Needs Analysis Results 2023 – 2033

Functional Class	Present PQI	Min PQI	Present Needs (2023)		6-Year Needs (2023-2028		10-Year Needs (2023-2033)	
			LN-MI	%	LN-MI	%	LN-MI	%
Rural Local	38	50	49.0	67	69.7	96	71.9	99
Rural Collector Minor	34	50	3.8	100	3.8	100	3.8	100
2023 Paved Network	**38**	**-**	**52.9**	**69**	**74.5**	**96**	**75.8**	**99**

*Sections without performance data are excluded.

The needs analysis assumes that no maintenance or rehabilitation is performed. In 2023, the Paved Network has a deficiency of 69% which represents a high volume of roads that are currently in poor condition. The percentage need will increase to 96% over a 6-year period and further increase to 99% over an 11-year period. This indicates that significant investment will be required to improve the network.

The network needs year distribution for the paved road network is presented in Figure 4.4.



Need Year	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034+	Total
Sections	44	5	7	1	2	1	2	3	0	2	0	2	69
LL (mile)	52.88	8.64	3.08	1.61	5.17	2.16	0.97	0.76	0	0.48	0	0.86	76.63
LL %	69	11.3	4	2.1	6.7	2.8	1.3	1	0	0.6	0	1.1	100
Area (yd^2)	255068.22	41903.78	16500.78	8518.22	25847.11	10771.22	3426.22	3584.22	0	2385.67	0	4503.67	372509.11
Area %	68.5	11.2	4.4	2.3	6.9	2.9	0.9	1	0	0.6	0	1.2	100

Figure 4.4: Need Year Distribution for 2023 Paved Network

4.4 MAINTENANCE & REHABILITATION (M&R) ANALYSIS

4.4.1 Analysis Selection and Setup

The following analysis parameters were employed to generate the M&R results presented herein.

First year of Program	2023	**Inflation Rate (%)**	3
Length of Program	11	**Discount Rate (%)**	0
Minimum exclusion years for multiple alternatives			2
Include Super Sections			No

Section Analysis Based On	Always Analyze
Section Strategies	Multiple Tree Implementations
Network Subset	2023 Paved Network
Active Decision Tree Set	Default Tree

The first year of the analysis is 2023. However, budgets were entered for 10 years, starting in 2024 through 2033.

4.5 BUDGET ANALYSIS RESULTS

A summary of the budget analysis results is presented below in Table 4.9. The data presented includes the total cost for each budget scenario over the analysis period, as well as the network average PQI and deficiency percentages in 2024 and 2033. Note that while the data collection was completed in 2023, the budget scenarios (i.e., funding) do not start until 2024.

Table 4.9: Budget Analysis Results 2024 – 2033 – 2023 Paved Network

Analysis Scenario	Total Cost Over 10 years	LL-PQI[1]		LL-Def.[2]	
		2024	2033	2024	2033
Budged-Based Scenarios[3]					
Do Nothing	$ 0.0	33	16	92	100
CHIPS DB5148.4 Budget + General Repairs DB5110.4 Budget + Improvements DB5112.2 Budget[4]	$ 1.17 M	38	34	82	67
Combined Budget (no treatment constraints)[5]	$ 2.64 M	48	53	60	36
$400,000 Annual Budget	$ 3.05 M	49	58	58	29
$500,000 Annual Budget	$ 4.96 M	50	70	57	13
Performance-Based Scenarios[6]					
Achieve/Maintain PQI = 40[7]	$ 1.67 M	40	42	70	53
Achieve/Maintain PQI = 45[7]	$ 2.30 M	40	47	69	46
Achieve/Maintain PQI = 50[7]	$ 2.89 M	40	53	70	38
Achieve/Maintain PQI = 55[7]	$ 3.36 M	40	57	70	32
Achieve/Maintain PQI = 60[7]	$ 3.78 M	40	60	70	27
Unlimited Funding (Needs Analysis)	$ 5.51 M	87	75	8	0

[1] LL-PQI1 = Lane-length-weighted PQI.
[2] LL-Def. = Lane-length-weighted Deficiency.

[3] Budget-based scenarios include scenarios with assigned budgets, where the PMS determines the impact of that funding level on the overall network in terms of PQI and deficiency.
[4] Treatment constraints include $88,348 funding under the CHIPS DB5148.4 budget (i.e., chip seal and double chip seal treatments), $73,942 funding under the General Repairs DB5110.4 budget (i.e., general repairs), and $149,675 funding under Improvements DB5112.2 (i.e., reclaim and pave, paving). Due to treatment constraints, the PMS could not find suitable candidates for all treatment categories.
[5] Sum of the CHIPS DB5148.4, General Repairs DB5110.4, and Improvements DB5112.2 budgets (i.e., $311,965), but with no constraints by treatment category.

[6] Performance-based scenarios include scenarios with performance targets, where the PMS determines the cost of meeting those performance targets.

[7] The Achieve/Maintain scenarios start with a PQI target of 40 in 2024, and then gradually increase to the noted target by 2029 and then maintain that level of service between 2029 and 2033 (e.g., Achieve/Maintain PQI = 60 starts with PQI = 40 in 2024, then increases 4 points per year from 2025 to 2029 (44 in 2025, 48 in 2026, 52 in 2027, 56 in 2028, and 60 in 2029), then maintains PQI 60 for the 2029-2033. In some cases, the target PQI is exceeded due to larger projects being completed, which bring up the overall network average.

Based on the budget analysis the following observations can be made:

- The 'Do nothing' scenario assumes that no work is completed, so the roads deteriorate faster. The network average PQI for the road network decreases from 33 in 2024 to 16 in 2033, and the percent deficiency increases from 92% in 2024 to 100% in 2033. 'Do nothing' is the worst-case scenario.
- The 'CHIPS DB5148.4 Budget + General Repairs DB5110.4 Budget + Improvements DB5112.2 Budget' scenario has an estimated total cost of $1.17 million. Note that, due to treatment constraints, the PMS was unable to find suitable candidates for all treatment categories. Therefore, the total available funding is not spent. The network average PQI is projected to decrease to 34 in 2033, corresponding to a 67% deficiency.
- The 'Combined Budget (no treatment constraints)' scenario has an estimated total cost of $2.64 million. The network average PQI is projected to increase from 48 to 53 in 2033, and the % deficiency will decrease from 60% to 36% by the end of 2033. This suggests that the available funding for roads can be used to address the backlog, but that the Town may need to revisit their project selection process (i.e., funding by treatment category).
- The '$400,000 Annual Budget' scenario has an estimated total cost of $3.05 million. The network average PQI is projected to increase to 58 in 2033, corresponding to a 29% deficiency.
- The '$500,000 Annual Budget' scenario has an estimated total cost of $4.96 million. The network average PQI is projected to increase to 70 in 2033, with a 13% deficiency.
- The 'Achieve/Maintain PQI = 40' scenario has an estimated total cost of $1.67 million. The network average PQI is projected to increase to 42 in 2033, with a 53% deficiency.
- The 'Achieve/Maintain PQI = 45' scenario has an estimated total cost of $1.71 million. The network average PQI is projected to increase to 47 in 2033, with a 46% deficiency.
- The 'Achieve/Maintain PQI = 50' scenario has an estimated total cost of $2.12 million. The network average PQI is projected to increase to 53 in 2033, with a 38% deficiency.
- The 'Achieve/Maintain PQI = 55' scenario has an estimated total cost of $3.36 million. The network average PQI is projected to increase to 57 in 2033, with a 32% deficiency.
- The 'Achieve/Maintain PQI = 60' scenario has an estimated total cost of $3.47 million. The network average PQI is projected to increase to 60 in 2033, with a 27% deficiency.
- The 'Unlimited Funding (Needs Analysis)' scenario has the highest estimated total cost over 10 years at $5.5 million. The network average PQI will increase to 75 in 2033. The percent deficiency decreases to 0% in 2033. The 'Need-Driven' is the best-case scenario.

Note that some of the rehabilitation project costs exceed the available annual budget funding, therefore these sections are not selected in the budget constraint scenarios. Examples of these include longer pavement sections that require heavier treatments (i.e., Beechwood from Bayer Rd to VT State Line, which is a reclaim and pave candidate with an estimated cost of over $500,000). The network pavement condition is poor, and additional funding, invested wisely, will provide the most benefit for the overall network. Further analysis of the various funding scenarios are subsequently presented.

4.5.1 Annual Budget Network Performance Results

The results of both the network average PQI and network precent deficiency, for different budget scenarios are illustrated in Figure 4.5 through Figure 4.8, respectively.

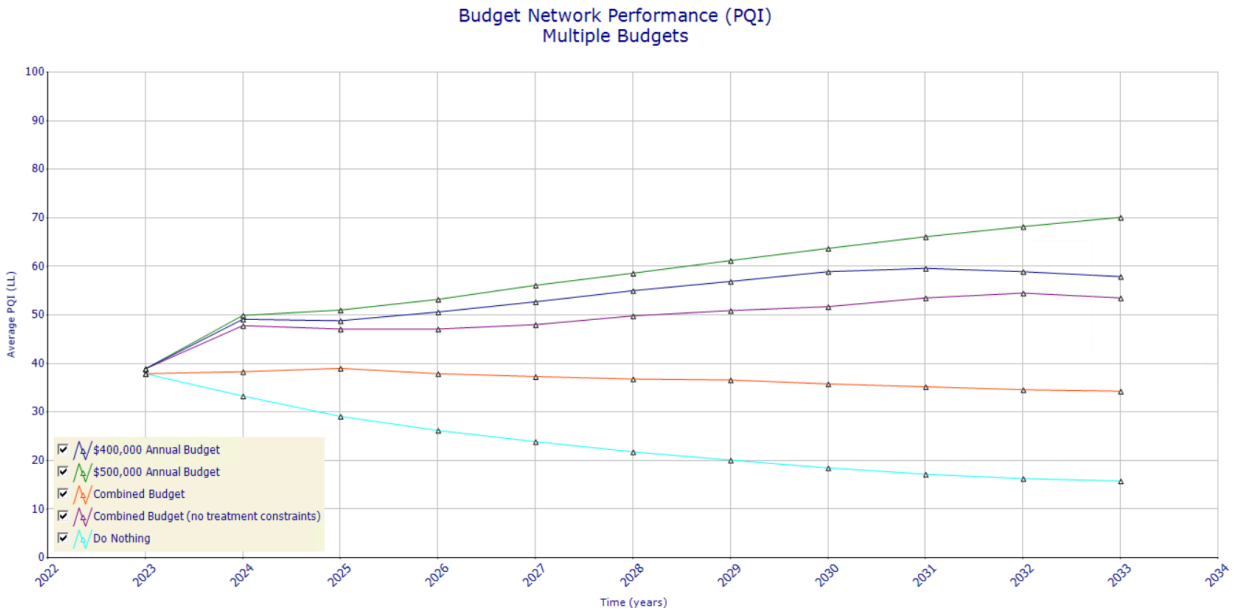


Figure 4.5: Funding Impact on Network Lane-Length Weighted PQI for Budget-Based Scenarios

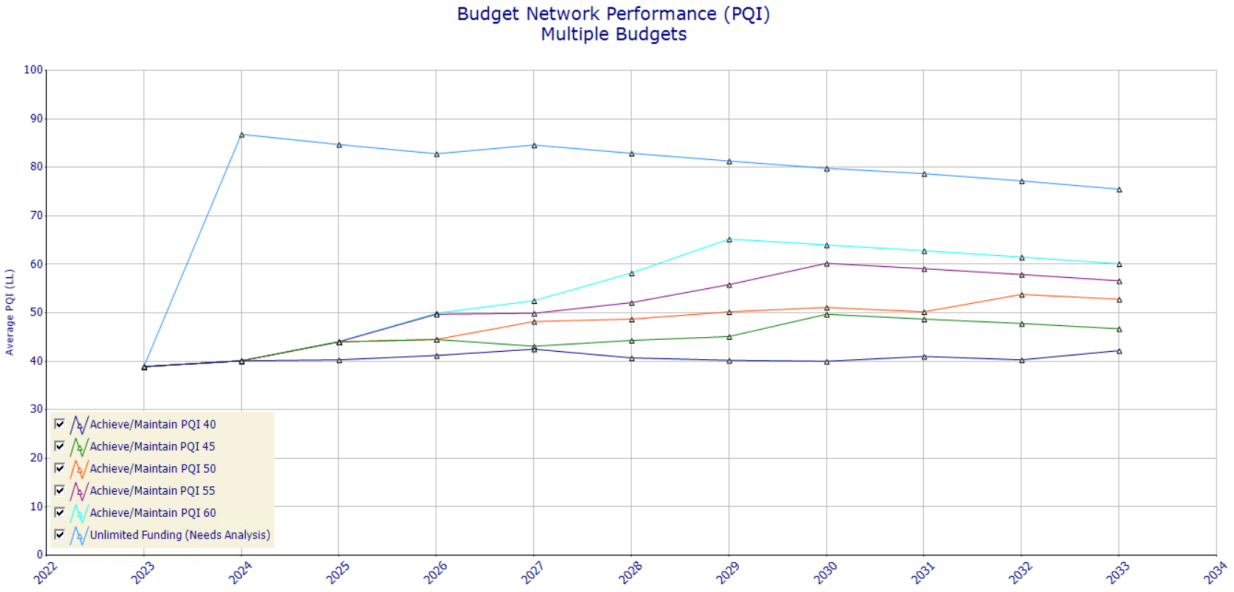


Figure 4.6: Funding Impact on Network Lane-Length Weighted PQI for Performance-Based Scenarios

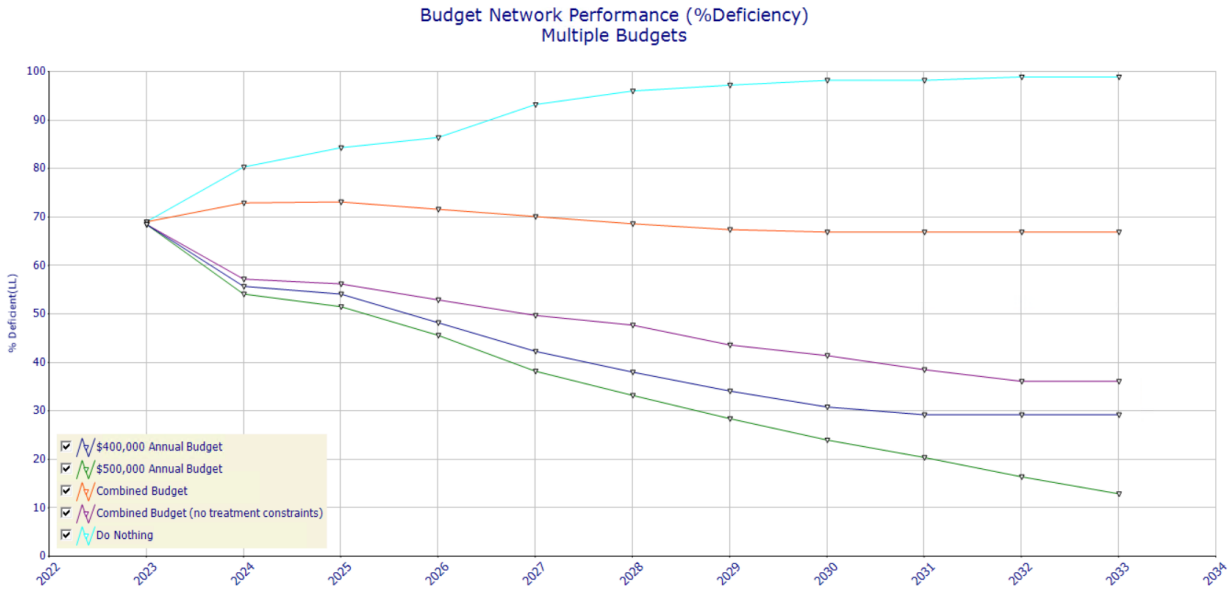


Figure 4.7: Funding Impact on Network Lane-Length Weighted Percent Deficiency for Budget-Based Scenarios

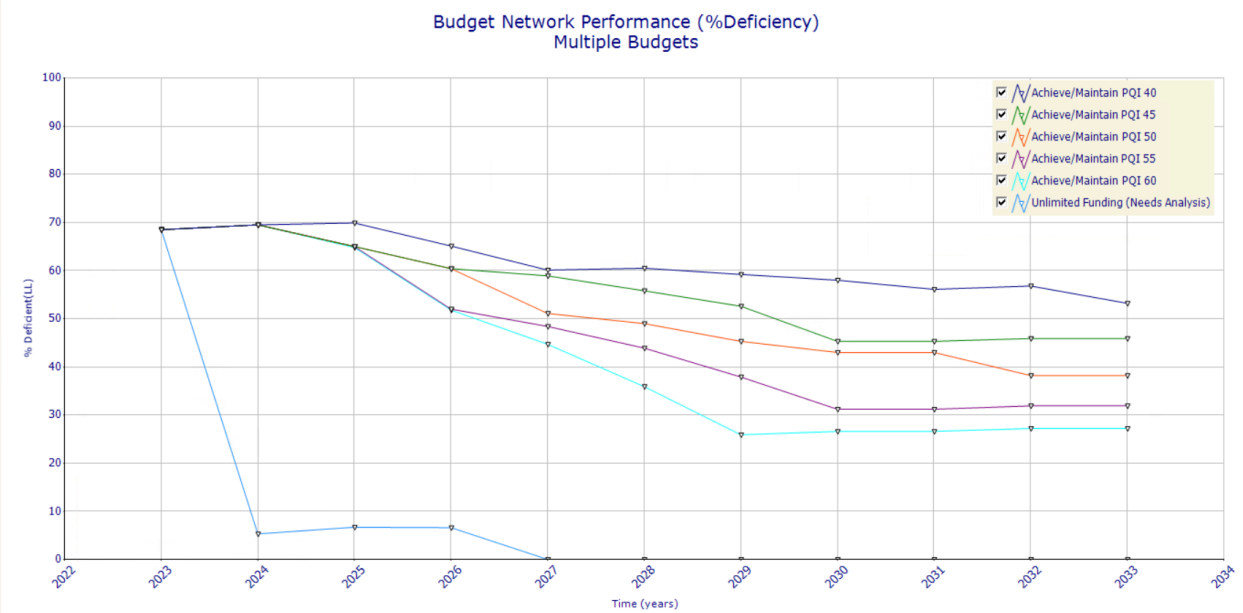


Figure 4.8: Funding Impact on Network Lane-Length Weighted Percent Deficiency for Performance-Based Scenarios

4.5.2 Budget Recommended Rehabilitations

The recommended 10-year work programs for various analysis scenarios are provided in Appendix C.

The distributions of the M&R treatments for each analysis scenario, in terms of the lane length and total cost, are illustrated in Figure 4.9 through Figure 4.18.

Reclaim & Pave is the most commonly recommended treatment by lane-length and cost, in most scenarios. Given that more than half of the network is in poor to very poor condition, these roads will need to be addressed to improve the overall network. General repairs may help to alleviate some road deficiencies, but generally provide limited relief (i.e., the cracks reappear within a relatively short period). Pavement or asset management includes doing the right treatment at the right time. The most cost-effective way to manage a road network is to keep it in good condition. However, given the state of the Town's road network, this will require a significant increase in funding to address the backlog (poor to very poor roads) as well as funding for preventive maintenance strategies (i.e., crack sealing, surface treatments like chip sealing) to maintain the roads in good condition.

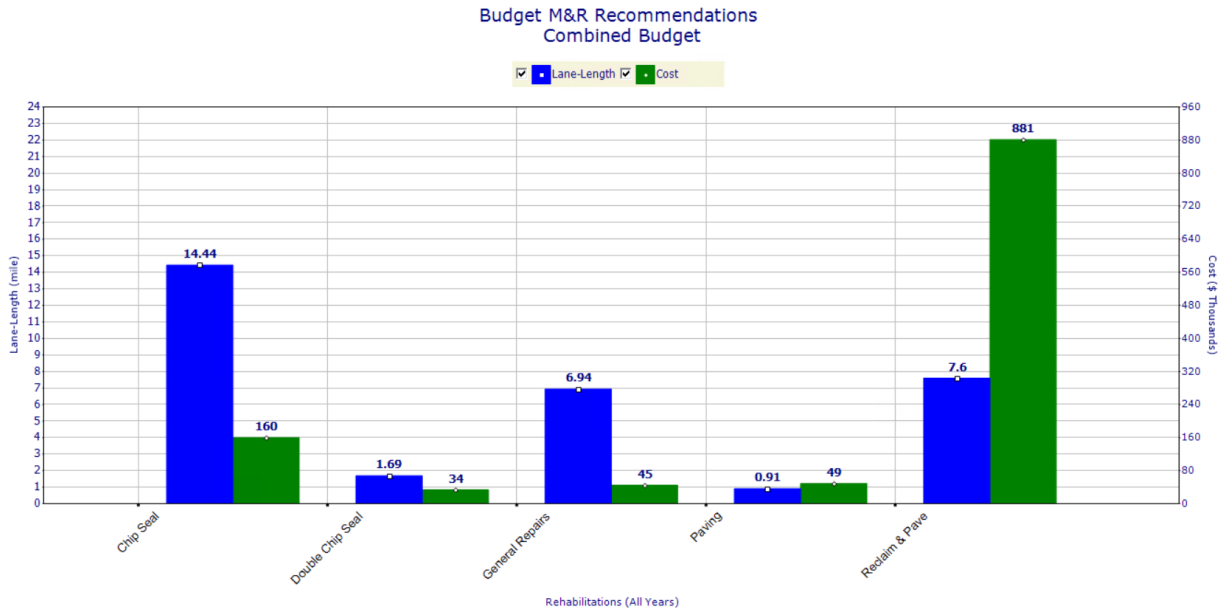


Figure 4.9: CHIPS DB5148.4 Budget + General Repairs DB5110.4 Budget + Improvements DB5112.2 Combined Budget Recommended Rehabilitations by Treatment

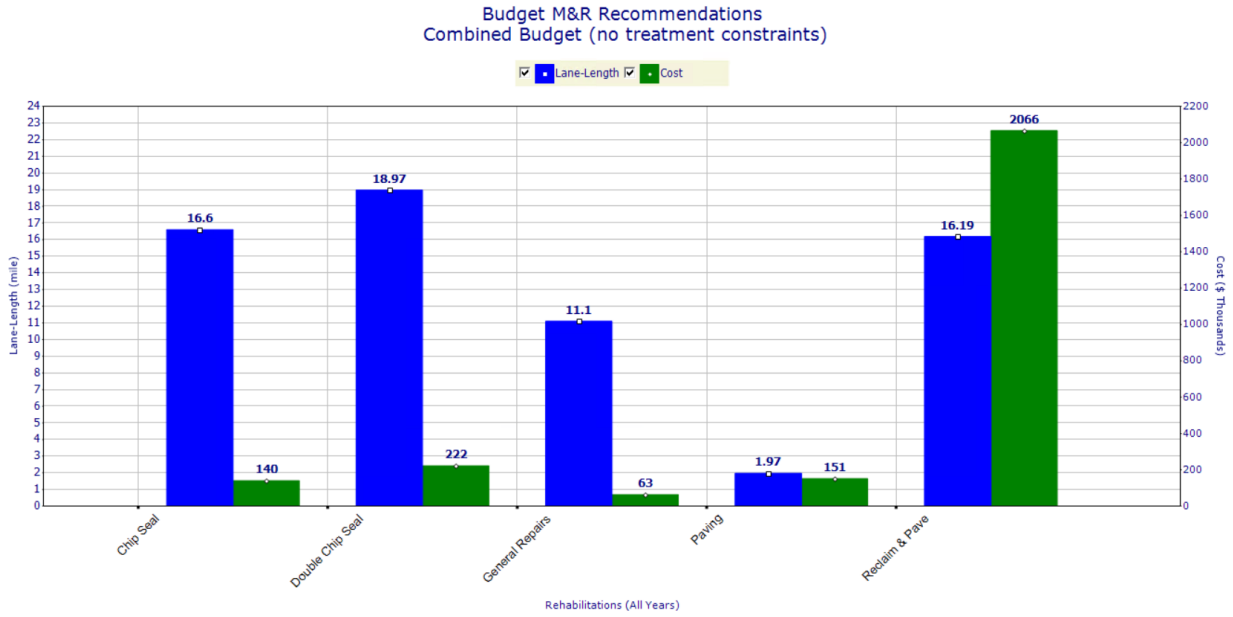


Figure 4.10: CHIPS DB5148.4 Budget + General Repairs DB5110.4 Budget + Improvements DB5112.2 Combined Budget (no treatment constraints) Recommended Rehabilitations by Treatment

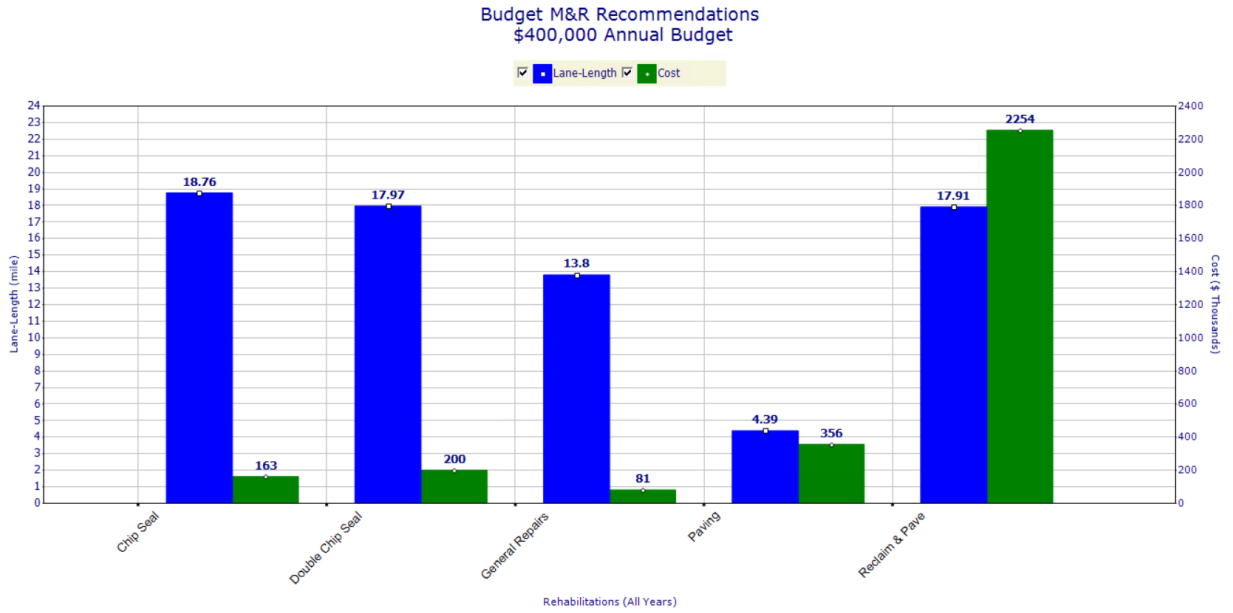


Figure 4.11: ($400,000 Annual Budget) Recommended Rehabilitations by Treatment

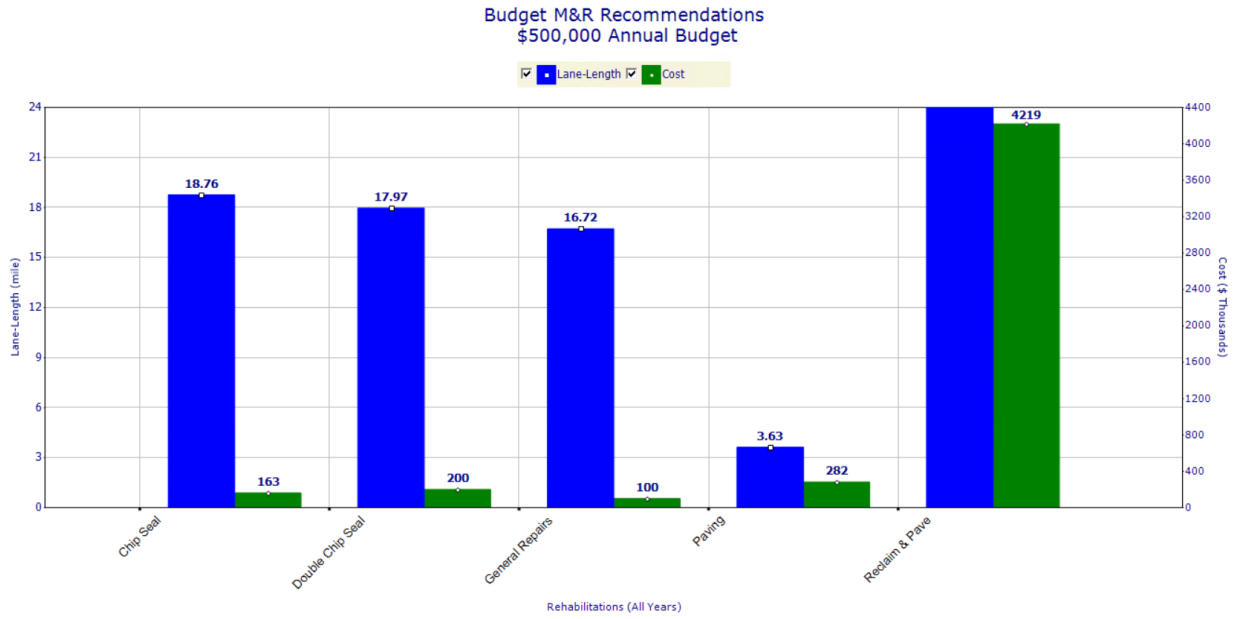


Figure 4.12: ($500,000 Annual Budget) Recommended Rehabilitations by Treatment

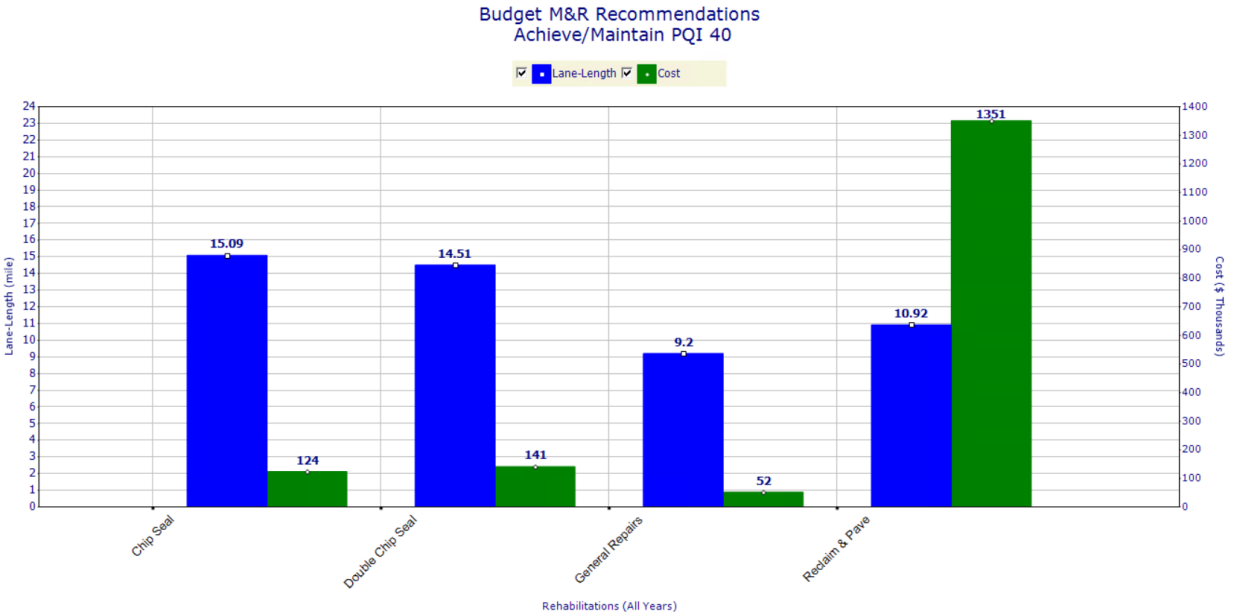


Figure 4.13: Achieve/Maintain PQI = 40 Recommended Rehabilitations by Treatment

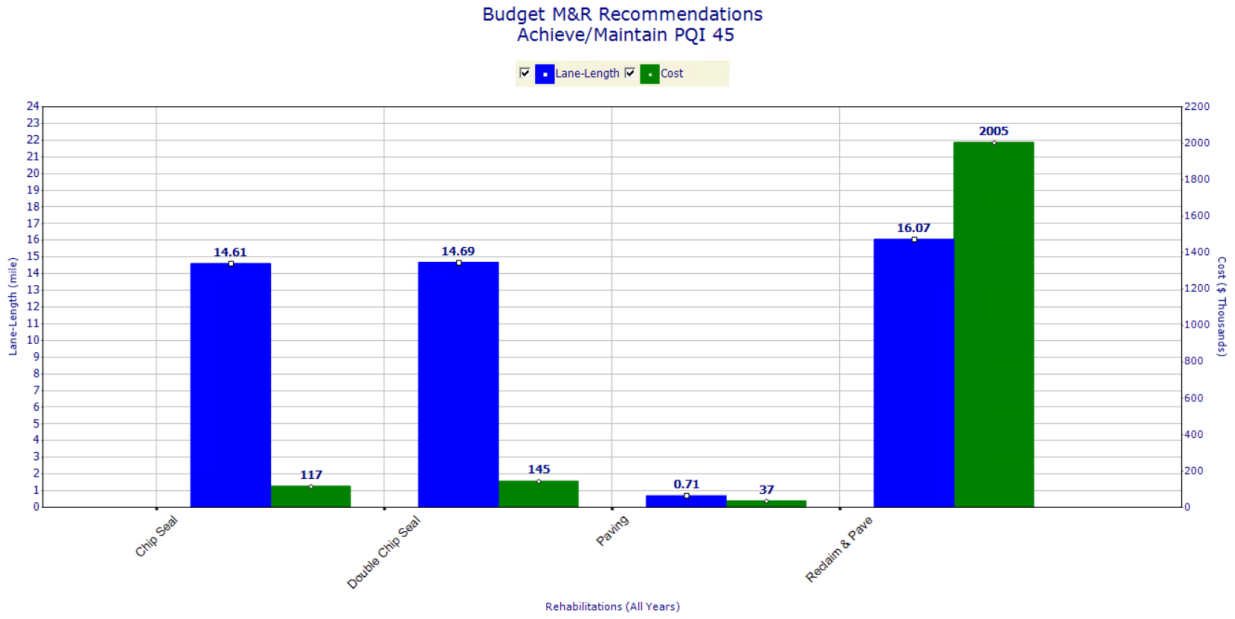


Figure 4.14: Achieve/Maintain PQI = 45 Recommended Rehabilitations by Treatment

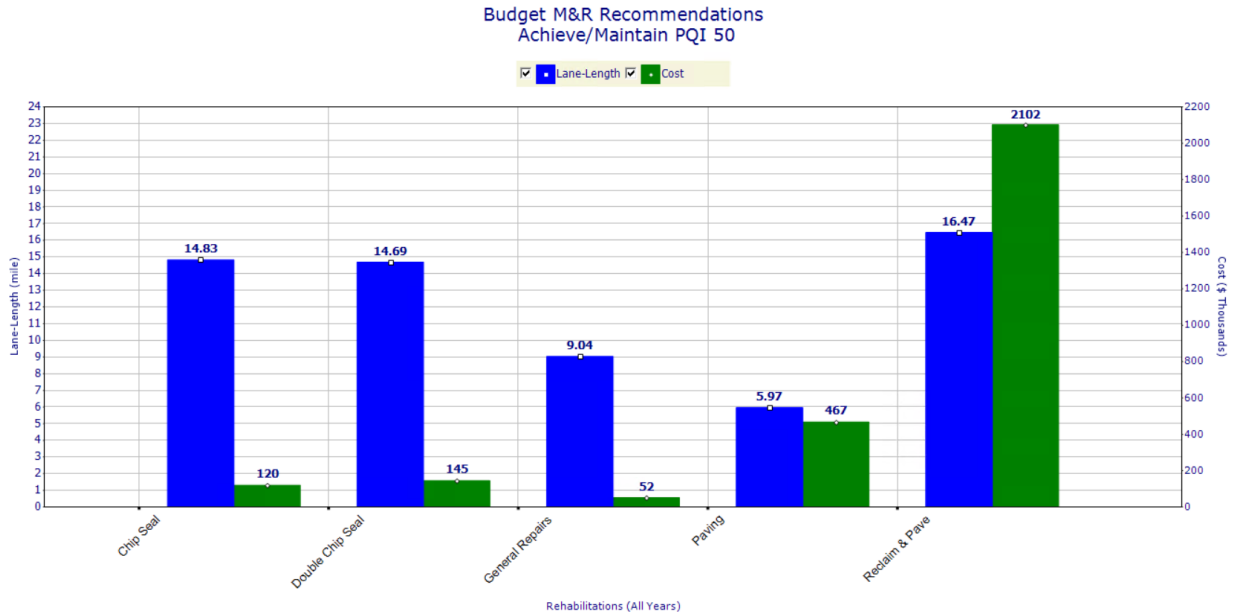


Figure 4.15: Achieve/Maintain PQI = 50 Recommended Rehabilitations by Treatment

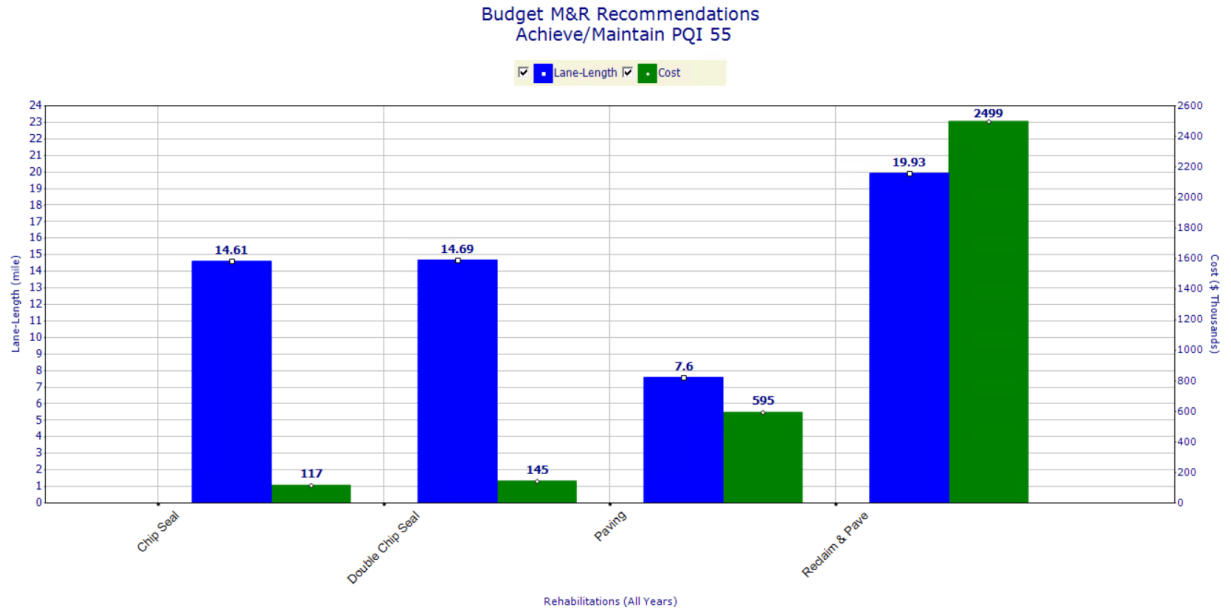


Figure 4.16: Achieve/Maintain PQI = 55 Recommended Rehabilitations by Treatment

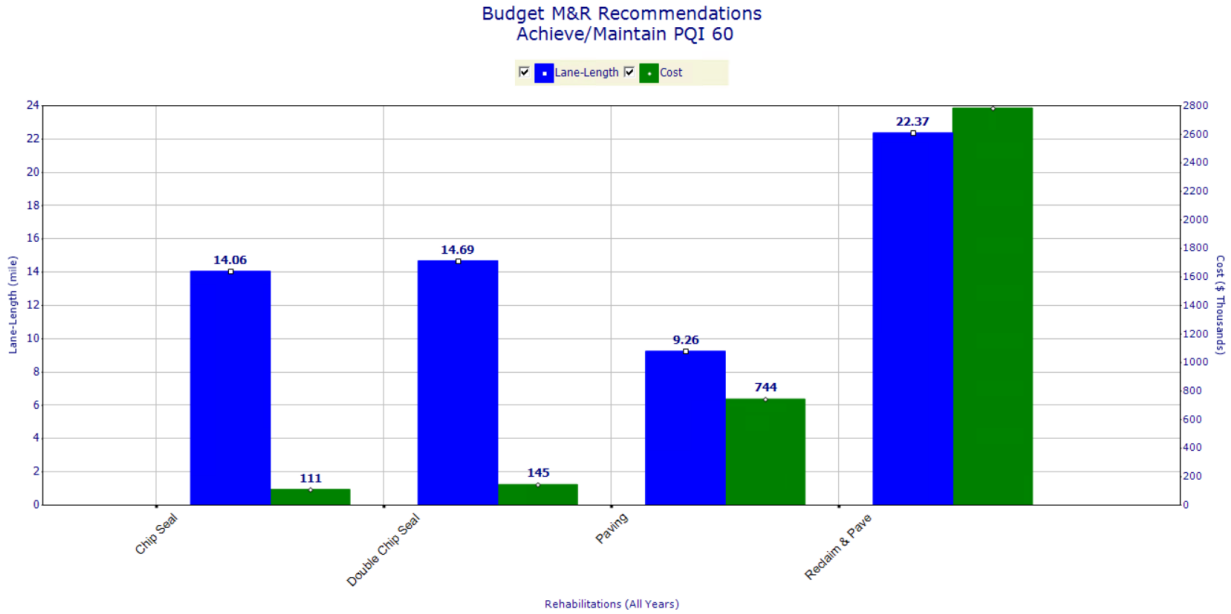


Figure 4.17: Achieve/Maintain PQI = 60 Recommended Rehabilitations by Treatment

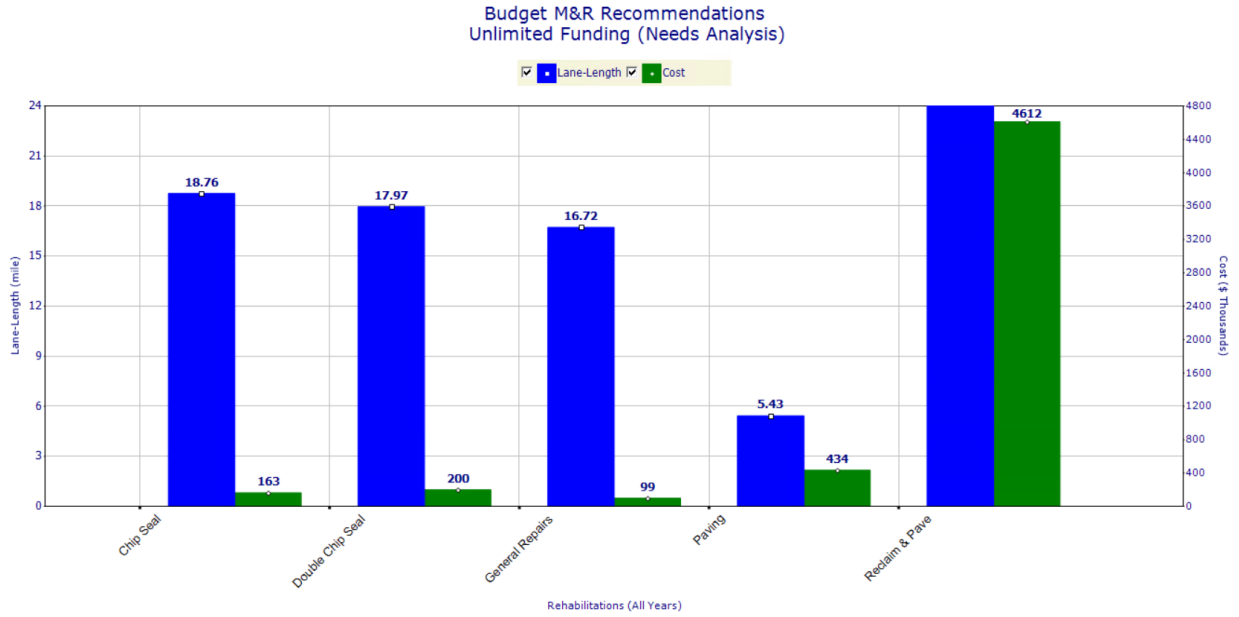


Figure 4.18: Unlimited Funding (Needs Analysis) Recommended Rehabilitations by Treatment

5.0 CONCLUSIONS AND RECOMMENDATIONS

Approximately 45 miles of paved roads were surveyed as part of the 2023 Town of Hoosick pavement condition assessment project. The condition data was uploaded to a RoadMatrix™ PMS, and analysis was completed to calculate the present status and network needs, and to generate work program recommendations.

Present Status

- Currently an overall poor level of service is being provided with more than half of the network (57%) with PQI scores less than 40.
- The majority (51%) of roads exhibit marginal ride characteristics, 36% exhibit poor ride quality, and 13% exhibit acceptable ride quality.
- Most roads (38%) exhibit surface distress within the poor range. Only 29% of the network is exhibiting surface distress conditions in the good or very good range.

Needs Analysis

- The needs analysis shows that approximately 69% (52.9 lane-mi) of the network is currently deficient and in need of rehabilitation. This is based on the minimum acceptable PQI levels. Significant funding increases are required in order to improve the network condition.

Budget Analysis

- Current funding levels do not address the backlog of work required to improve the overall condition of the network
- Given that more than half of the network is in poor to very poor condition, these roads will need to be addressed to improve the overall network. General repairs may help to alleviate some road deficiencies, but generally provide limited relief. The most cost-effective way to manage a road network is to keep it in good condition. However, given the state of the Town's road network, this will require a significant increase in funding to address the backlog (poor to very poor roads) as well as funding for preventive maintenance strategies (i.e., crack sealing, surface treatments like chip sealing) to maintain the roads in good condition

5.2 RECOMMENDATIONS

It is emphasized that results from any PMS are a network level analysis, which are useful for long-term planning. Network level work recommendations should be carefully reviewed to verify that the Maintenance and Rehabilitation (M&R) recommendations remain applicable. In addition, the validity of the RoadMatrix™ output is highly dependent on the reliability of the input data.

Moving forward, it is recommended that the Town consider the following:

- The minimum acceptable PQI values are based on other comparable municipalities. The Town may wish to revisit these trigger values as they become more familiar with the findings.
- Maintenance and rehabilitation treatment unit costs were developed based on recent projects completed by the Town. It is recommended that these unit costs be reviewed as future project costs become available to ensure that the costs are reasonable.
- Timing and the treatment types are recommended based on the default decision trees. It is recommended that treatments be validated before implementation. Decision trees can be refined over time to reflect the Town's maintenance and rehabilitation practices.
- It is recommended that projects that are completed be tracked to confirm location, treatment type, and completion date. This information can be used to refine future analyses.

APPENDIX A
Section Attribute Updates

APPENDIX A SECTION ATTRIBUTE UPDATES

The following summarizes the section attributes added to the RoadMatrix™ database.

A.1 SECTION ATTRIBUTES

The Capital Region Transportation Council provided a shapefile sourced from New York State Department of Transportation (NYSDOT)'s Roadway Inventory System (RIS) database. The section attributes within the shapefile were loaded to the RoadMatrix™ PMS database based on the section number used during the field survey. Any missing data were assigned default values, as noted below.

The following data was added to the database:

Data Type	Attributes (Sources)
Location Data	• Section No. (Field survey ID) • Street (NYSDOT's RIS database) • From (NYSDOT's RIS database) • To (NYSDOT's RIS database)
Geometric Data	• Length (NYSDOT's RIS database) • Width (NYSDOT's RIS database and supplemented with Width Verification task) • No. Lanes (Field Survey)
Traffic Data	• Functional Class (NYSDOT's RIS database FC_Descrip) • Average Annual Daily Traffic - AADT (NYSDOT's RIS database TownHoosickAADTReplica: AADT) • AADT Date (assumed 1/1/2020) • % Commercial (assumed 1%) • % Growth (assumed 1%)
Structural Data	• Pavement Type (NYSDOT's RIS database and confirmed from field survey) • Subgrade Strength (assumed to be "strong")

APPENDIX B
Analysis Models

APPENDIX B ANALYSIS MODELS

B.1 PAVEMENT PRESENT CONDITION MODEL

B.1.1 Traffic Analysis

The Traffic Analysis predicts traffic loading conditions on the pavement network, based on vehicle characteristics and traffic volume. The sectional traffic parameters, including the Average Annual Daily Traffic (AADT), Equivalent Single Axle Load (ESAL), Design Traffic number (DTN), and Maximum Tolerable Deflection (MTD) are calculated during the Traffic Analysis.

The Traffic Analysis is also used to determine the sectional traffic classes (low, medium, or high) based on ESAL limits by functional classes and pavement type.

B.1.2 Structure Analysis

The Structure Analysis calculates values related to the structural composition of the various layers of the pavement structure. Structural parameter attributes, such as the Equivalent Granular Thickness (EGT) and the Asphalt Cement thickness (AC thickness) are calculated during the Structure Analysis.

The Structure Analysis is also used to determine the sectional thickness classes (thin, medium, or thick) based on the EGT limits by functional class and pavement type.

B.1.3 Roughness – Riding Comfort Index (RCI) Model

One of the primary operating characteristics of a road, from the user's perspective, is the Riding Comfort Index (RCI). The RCI represents the traveling public's opinion of the pavement's smoothness and, hence, the quality of service it provides. Rating panels composed of local drivers/citizens were used at the onset of the initial implementation of pavement management systems to calibrate the public's perspective of ride quality against the roughness measurements obtained from a profiler. The RT3000 unit was used to determine the longitudinal profile of the pavement surface, reported as an IRI value.

The RCI Analysis is used to calculate the sectional RCI from detailed field collected measurements (IRI). The following model is used to convert IRI measurements to RCI values:

$$RCI = 10 * (32 - 4.971 * Ln(1 * IRI))$$

where, IRI is the International Roughness Index from the longitudinal profile of the average of the left and right wheel paths summarized at 100-foot intervals, at a minimum of 15 mi/h.

The RCI value for each section ranges from zero (0) to 100, where 100 is indicative of an extremely smooth pavement and an index of zero is indicative of an extremely rough pavement.

B.1.4 Surface Distress – Pavement Condition Index (PCI) Model

The Pavement Condition Index (PCI) is a measure of physical pavement cracking, deformations, and surface defects collectively referred to as distresses. This provides an excellent indicator of material deficiency, rate of deterioration, structural adequacy, environment, and soil type problems. The PCI is, therefore, a key indicator of pavement performance. The PCI of a pavement is assessed by identifying and rating the type, severity, and extent of surface distresses.

The RT3000 surface distress survey provided a rating of the severity and extent for twenty surface distresses for each 100-foot interval in each section of the network. These distress ratings were then transformed into values ranging from zero (0) to 100, for each of the distress types, and weighted for an overall PCI.

The PCI Analysis is used to calculate the sectional PCI from detailed field collected measurements (a set of distress types) and is based on the ASTM PCI rating system.

A PCI index of 100 indicates a surface at the best possible condition and an index of zero (0) indicates a surface at the worst possible condition.

B.1.5 Overall Pavement Condition – Pavement Quality Index (PQI) Model

During the Pavement Quality Index (PQI) Analysis, the following tasks were performed.

- Calculate PQI based on prescribed models;
- Predict future pavement performance based on pavement deterioration models (see Section 4.2);
- Determine the need year based on prescribed thresholds;
- Estimate construction year; and
- Estimate remaining service life (RSL).

B.1.6 PQI Model

The PQI provides an indication of the overall pavement condition. PQI is calculated as a function of the sectional RCI, PCI, and SAI values (where available).

There is one PQI model utilized in the Town's RoadMatrix™ system:

PQI = f(PCI, RCI, SAI)

There is no Structural Adequacy Index (SAI) data currently available in the database.

As is the case with RCI and PCI, the PQI varies between zero (0) and 100, where zero represents the worst condition of pavement and 100 represents the best condition of pavement.

B.1.7 Need Year

The Need Year is determined from the current condition of the section, the appropriate PQI deterioration curve, and the established PQI minimum acceptable level (trigger level). The year in which the section will reach the PQI minimum acceptable level is termed the Need Year.

B.1.8 Construction Year

If the Construction Year is unknown, the system provides a construction year estimate by evaluating the current condition of the section and working backwards up the appropriate PQI deterioration curve. The years between the current condition of the section in the base year of the analysis and the amount of time required to return back to a PQI of 100 (i.e., newly constructed) is used to estimate the Construction Year. The accuracy of the back calculated construction year depends on the goodness of fit of the deterioration curve, however, does not take into account the actual work history records.

B.1.9 Remaining Service Life (RSL)

The Remaining Service Life (RSL) is calculated based on the current condition of the section, the appropriate PQI deterioration curve, and the PQI terminal value. The difference in years between the current condition (PQI) and when the section will reach its PQI terminal value is estimated to be the RSL.

B.2 PAVEMENT DETERIORATION MODELS

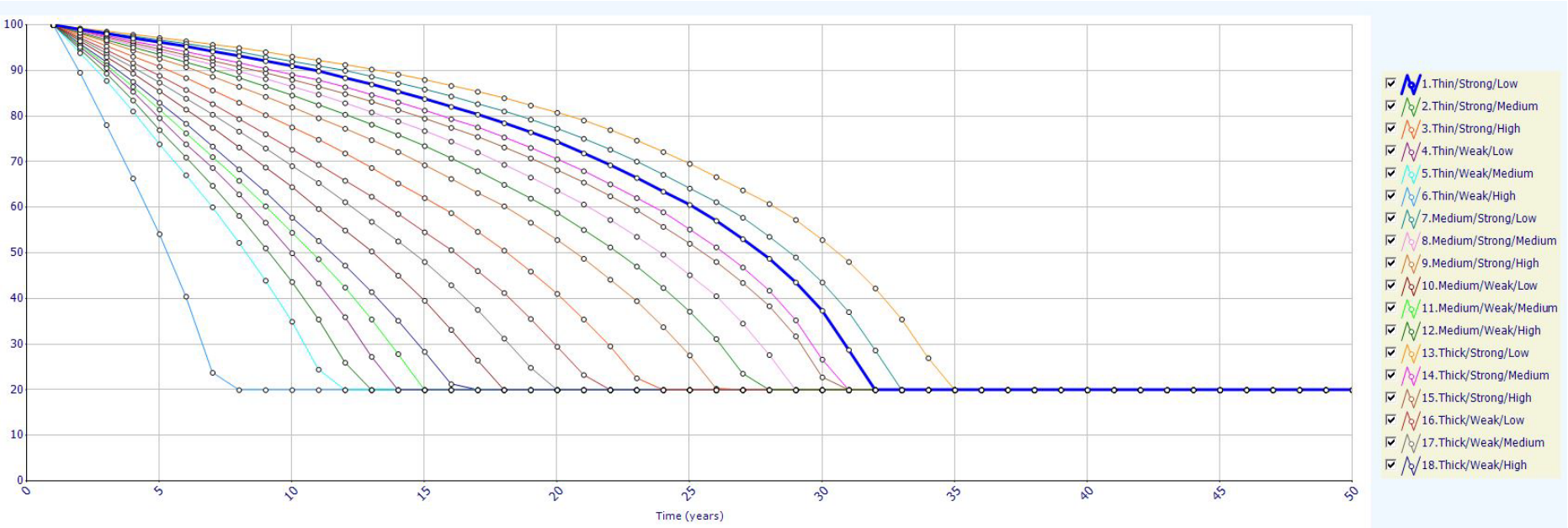
B.2.1 Deterioration Curves

The PQI/RCI/PCI values of a pavement typically decrease over time. To estimate future rehabilitation requirements of a pavement network, it is necessary to model the deterioration of PQI/RCI/PCI values. While the rate of deterioration depends on multiple factors, it can be demonstrated that the principal factors are: traffic loading conditions, the properties and thickness of the pavement structure layers, and the strength of the underlying subgrade. The factors used to model pavement performance within the RoadMatrix™ are:

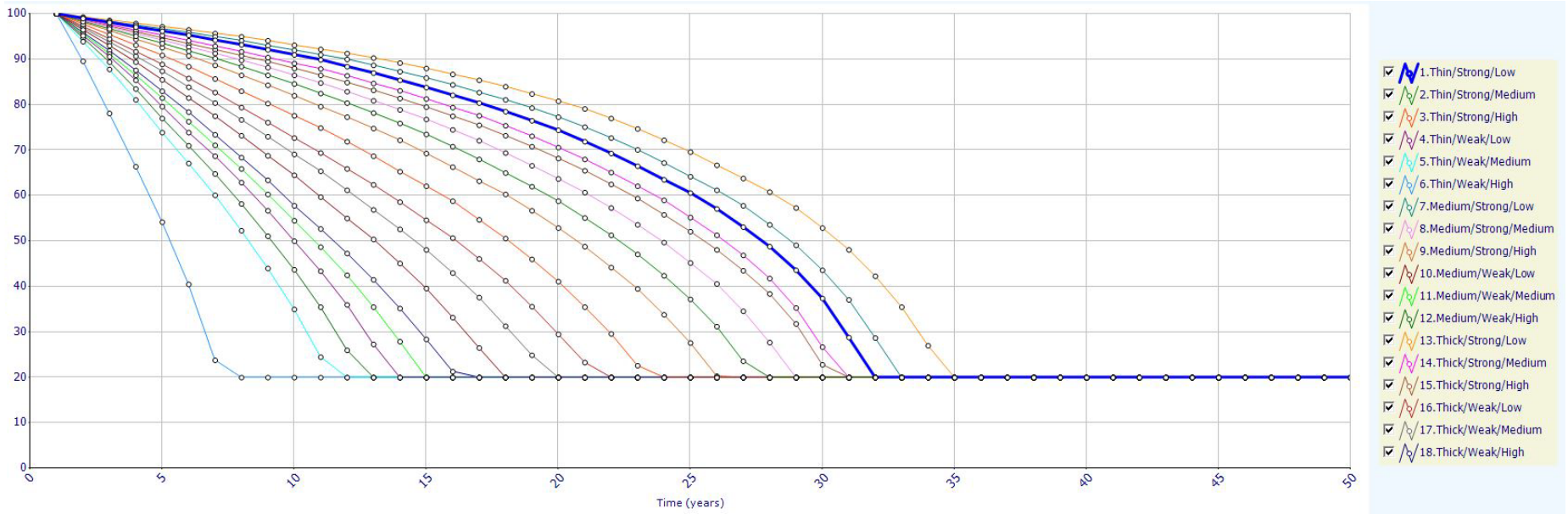
- Thickness: Equivalent Granular Thickness (EGT) – three levels (thin, medium, thick)
- Traffic: Equivalent Single Axle Loads (ESALs) – three levels (low, medium, high)
- Subgrade: Subgrade Strength – two levels (weak/fair, strong)

A Deterioration Curve is defined for each thickness/subgrade/traffic class. Only one deterioration curve is used for the Town's paved road network. The curve Thin Thickness/Low Traffic/Strong Subgrade applies to all 69 pavement sections, approximately 76.6 LN-MI in total.

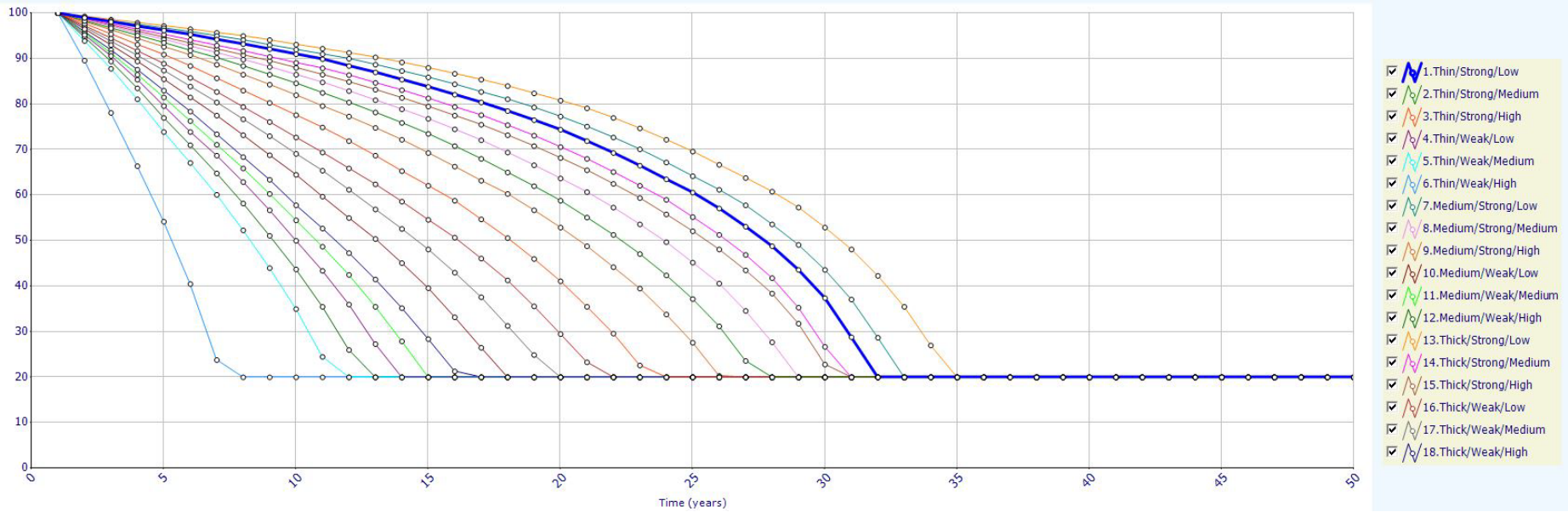
The Asphalt pavement PQI/RCI/PCI Deterioration Curves are illustrated in the following graphs.



PQI Deterioration Curves for Asphalt (Set 01)



RCI Deterioration Curves for Asphalt (Set 11)



PCI Deterioration Curves for Asphalt (Set 21)

B.2.2 Sectional Curves

The Sectional Curves define sets of section site-specific performance prediction values. The Town does not currently have any Sectional Curves implemented.

B.2.3 Trigger and Model Settings

RoadMatrix™ allows for each combination of pavement type and functional class to define trigger values for the following parameters.

- Minimum acceptable PQI (Min PQI) – used to determine the need year when the section PQI is less than or equal to the trigger; also used for determining deficiencies.
- Minimum acceptable life (Min Life) – used to discard a treatment recommendation if the after-rehab life span is less than the trigger.
- PQI terminal value (PQI Term) – used to calculate section's remaining service life (RSL). A section will be unserviceable when it reaches the PQI terminal value.
- Traffic Limit – used to determine sectional traffic class (low, medium, high).
- EGT Limit – used to determine sectional structure class (thin, medium, thick).
- Subgrade Limit – used to determine sectional subgrade class (weak/fair, strong).
- RCI/PCI/SAI/PQI curve set settings – used to select the standard deterioration curve set for a given pavement type and functional class combination.

The model and trigger settings for the Asphalt pavement type is provided below.

Functional Class	Min PQI	Min Life	PQI Term	Traffic Limit (AADT)		EGT Limit (mm)		Subgrade Limit	
				1	2	1	2	1	2
Rural Local	50	1	20	500	1,000	400	600	1	2
Rural Minor Collector	50	1	20	2,500	5,000	400	600	1	2

The current traffic limits, EGT limits, and curve sets are determined based on functional class, since traffic volumes and what would be considered low/medium/high traffic, tend to vary between functional classes.

B.3 MAINTENANCE AND REHABILITATION ANALYSIS

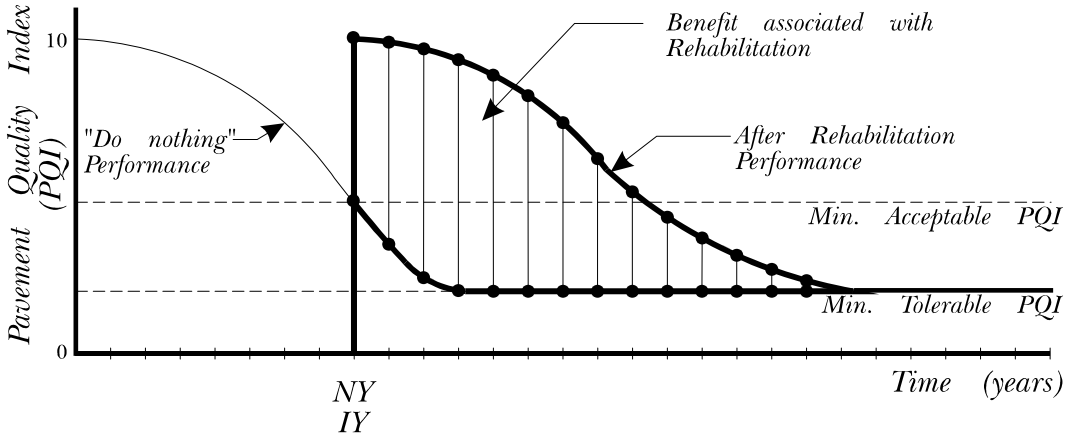
B.3.1 Needs Assessment Analysis

The Needs Assessment Analysis is used to determine the optimal rehabilitation strategy for each section in the need year, based on the PQI trigger value and according to its decision tree. The need year is determined by the appropriate deterioration curves, and the PQI trigger level, while the treatment is selected based on the selected decision tree.

B.3.2 Recommended Treatments Analysis

The Recommended Treatment Analysis determines the optimal rehabilitation strategies and implementation years for each section, according to the selected analysis method and its decision tree.

The optimal rehabilitation strategy is determined using life cycle economic analysis techniques, which involves an assessment of both the effectiveness of each strategy (area between the after-rehabilitation performance curve and the do-nothing performance curve) and an estimate of the capital cost to implement the strategy (refer to the figure below). The ratio of effectiveness to cost produces a cost-effectiveness (CE) number (or more accurately a net benefit/cost number), which allows rehabilitation strategies to be compared to each other on a relative basis.



The economic analysis procedure analyzes each potential rehabilitation strategy (including committed/overridden strategies) for each section in the current network subset. Each strategy is, in turn, analyzed for each possible implementation year since, due to budgetary or performance constraints, it may not be possible to implement a strategy in the implementation year determined from the decision tree.

It should be noted that the "implementation" need year distribution varies from the traditional PQI trigger need year distribution, since the selected treatment for any road segment can potentially occur before or after the actual need year. The PQI need year is based on the appropriate performance curve and minimum acceptable PQI level, while the implementation year is based on the analysis methods and the triggers set up through the decision trees.

B.3.3 Maintenance and Rehabilitation (M&R)

The rehabilitation setup defines treatment strategies (i.e., maintenance or rehabilitation activities), unit cost of an activity, and the key performance (or condition) index benefit levels (increase/reset values) as a result of implementing the treatment strategy. A summary of the Town's current treatments list with unit cost information is provided below.

Code	Treatment – Full Description	Category*	Unit Cost ($/m^2)	Base Year
0	Do Nothing		0	0
1	Paving	CO	1.72	2023
2	Chip Seal	PM	0.23	2023
3	Double Chip Seal	PM	0.41	2023
4	Reclaim & Pave	CO	2.62	2023
5	General Repairs	PM	0.10	2023

B.3.4 Section Analysis and Implementation Methods

There are two Analysis Methods available in RoadMatrix™:

1. PQI Trigger Level – A minimum acceptable PQI is defined for each functional class and pavement type combination. A pavement section will become a candidate for M&R, **ONLY** when its PQI falls below the minimum acceptable PQI.
2. Always Analyze – RoadMatrix™ will **ALWAYS** analyze a section for M&R (regardless of its PQI). The section becomes a candidate for M&R only if it meets prescribed criteria defined in the decision trees. This analysis mode is suited for pavement preservation practices, whereby any criteria can be defined to trigger a maintenance activity that can extend the life of a pavement section, BEFORE the section reaches its lowest acceptable PQI value (PQI Trigger).

There are three Section Implementation Methods available in RoadMatrix™:

1. Single Implementation (Simple) – Within the analysis (or programming) period, RoadMatrix™ will determine when the **EARLIEST** intervention will be required (e.g., could be the "need year"). Once the timing has been established, RoadMatrix™ will evaluate the decision tree and select a feasible

treatment strategy for that timing. No further M&R recommendations are made during the programming period once the **EARLIEST** intervention has been established.

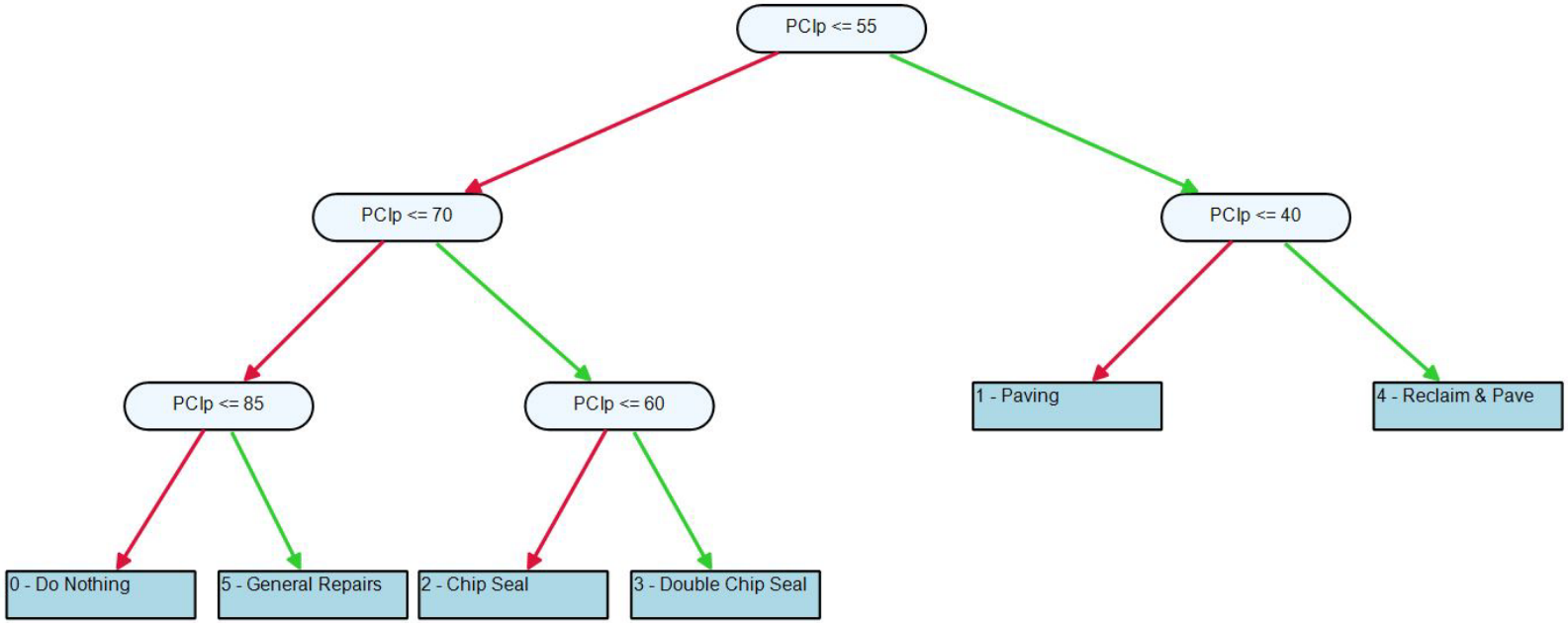
2. Repeat Implementation (Advanced) – Within the analysis (or programming) period, RoadMatrix™ will determine when the **FIRST** intervention will be required (e.g., could be the "need year"). Once timing has been established, RoadMatrix™ will evaluate the decision tree and select a feasible treatment strategy for that timing. Once the first intervention has been established, RoadMatrix™ will continue to determine the timing of the next intervention and subsequent interventions for the duration of the programming period. For each required intervention, the **SAME** treatment strategy as the first intervention will be "repeated" as the recommendation.
3. Multiple Tree Implementation (Complex) – For each year in the analysis (or programming) period, RoadMatrix™ will evaluate the decision tree to recommend a treatment strategy and timing based on the decision tree criteria. The recommendation for any given year can include a feasible treatment or "do nothing".

"Always Analyze" and "Multiple Tree Implementations" were selected as the Section Analysis Method and Section Implementation Method, respectively.

B.3.5 Decision Trees

RoadMatrix™ uses a decision tree approach to determine feasible maintenance and rehabilitation strategies for each section requiring some work during the programming period. The decision trees are completely user-defined to ensure that the decision process accurately models the decision process employed by the Agency. RoadMatrix™ allows for building decision trees for each combination of pavement type and functional class.

A set of default decision trees for Asphalt pavement were used as part of this assignment.



Functional Class: Rural Local and Rural Minor Collector

B.3.6 Budget Analysis

In a perfect world, pavement sections would be rehabilitated whenever required. In other words, the optimal rehabilitation strategy determined by the Economic Analysis would be implemented in the need year. In the real world however, budgetary constraints and coordination issues determine the implementation of rehabilitation strategies. To accommodate this real-world requirement, RoadMatrix™ offers various budget and performance-based analysis options to prioritize the implementation of rehabilitation strategies in the most cost-effective manner through user-defined scenarios.

There are several analysis types available within RoadMatrix™:

1. Budget Limits – used to define specific budget limits for a given subset.
2. Weighted Deficiency – used to define a network performance target based on deficiency (percentage less than PQI minimum acceptable level) weighted by the area, lane-length, length, vehicle-area, vehicle-lane-length, or vehicle-length of the sections.
3. Weighted PQI – used to define network performance target based on PQI (average PQI from all sections) weighted by the area, lane-length, length, vehicle-area, vehicle-lane-length, or vehicle-length of the sections.
4. Need-Driven (based on PQI Trigger) Rehabilitation Cost – used to determine the rehabilitation costs associated with the network needs and decision tree selections. Depending on the analysis mode used, this scenario will report needs based on either PQI trigger or cost-effective rehabilitation selections.
5. Super-Budget – used to combine the results of two or more budget scenarios where the child budgets are run on different subsets.
6. Super-Budget (Dynamic) – used to combine the results of two or more budget scenario where its child budget's subsets are fixed during the analysis (e.g., treatment constrained scenario).

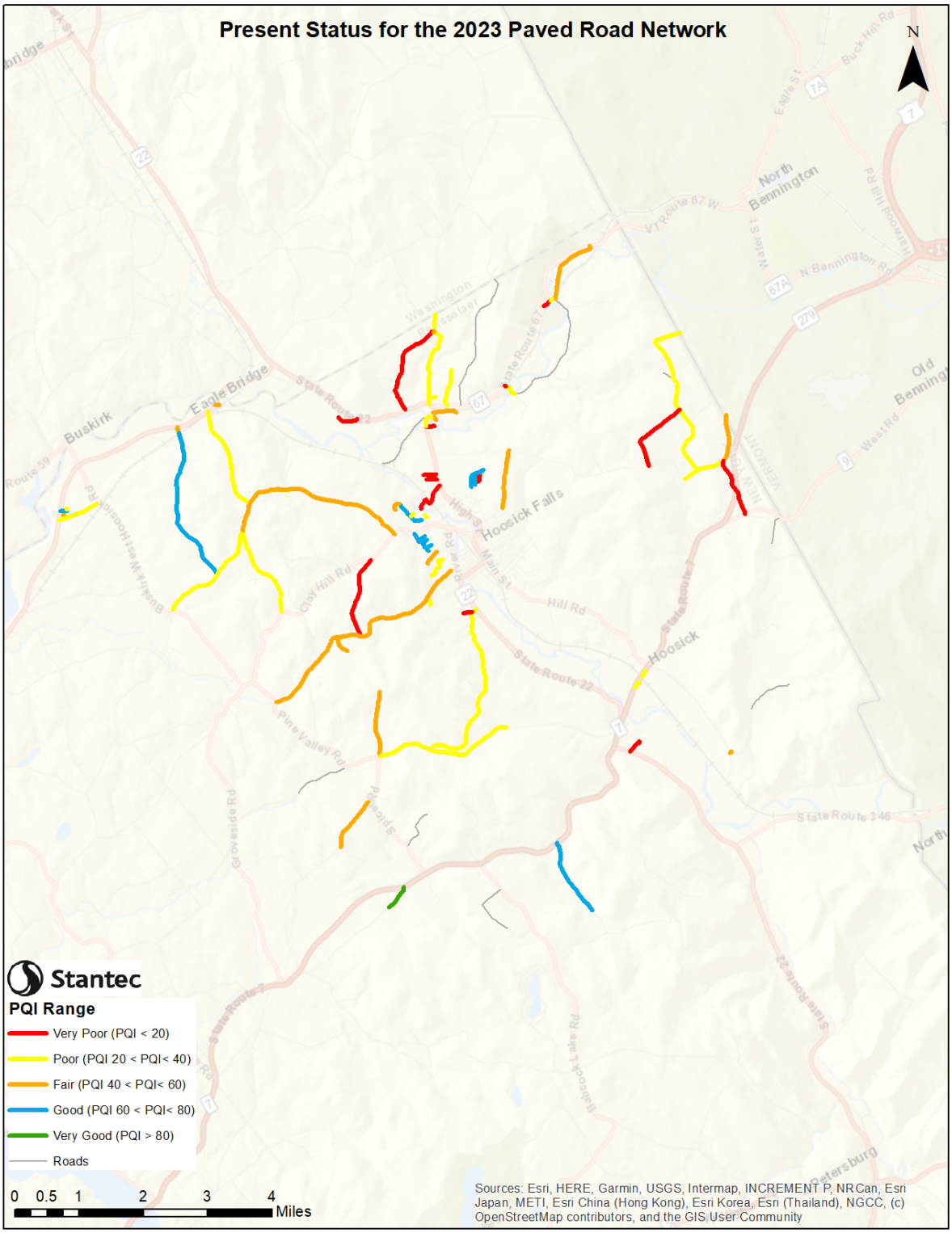
The following budgets have been defined for this assignment.

- 'Do Nothing' Scenario, which identifies the level of service provided by the Town, should no investment be made in the pavement maintenance and rehabilitation.
- Budget-based scenarios, which identify the predicted levels of service provided by the Town should these annual funds be available for pavement maintenance and rehabilitation, specifically:
  - Budget Limits –$400,000 budget
  - Budget Limits –$500,000 budget
  - CHIPS DB5148.4 Budget + General Repairs DB5110.4 Budget + Improvements DB5112.2 Combined Budget (super budget)
  - CHIPS DB5148.4 Budget + General Repairs DB5110.4 Budget + Improvements DB5112.2 Combined Budget (no treatment constraints)
- 'Need-Driven' scenario, which identifies the funding level needed to bring the network to the level of service identified within the pavement management system, according to the practice identified in the decision trees, and/or the minimum acceptable levels. The 'Need-Driven' scenario is named 'Unlimited Funding (Needs Analysis)' in the database.

APPENDIX C
2023 Present Status Results Map

APPENDIX C 2023 PRESENT STATUS RESULTS MAP

C.1 2023 PRESENT STATUS MAP FOR THE 2023 PAVED ROAD NETWORK



APPENDIX D
10-Year Network Rehabilitation Recommendations

D.1 CHIPS DB5148.4 BUDGET + GENERAL REPAIRS DB5110.4 BUDGET + IMPROVEMENTS DB5112.2 SUPER BUDGET

Table D.1: Budget Recommended Rehabilitations - Combined Budget
2023 Paved Network, 2023 to 2033, Min. Exclusion: 2 yrs, Inflation Rate: 3 %, Discount Rate: 0 %, Include Committed Projects: No, Tolerance: Based on child budgets

Section #	Street	Limits	Lane-Length (ft)	Implementation Year	Treatment	Cost ($)	Cost Effectiveness
110	WINDY HILL RD	PITTSTOWN T/L - SPICER RD	7921	2024	Double Chip Seal	30,106	5.7
160	LESTER LA	DEAD END - BOVIE HILL RD	1360	2024	Reclaim & Pave	18,350	1.9
210	DOLAN AVE	DEAD END - HOOSICK FALLS V/L	3877	2024	Reclaim & Pave	52,318	1.9
220	SCOTT ST	DEAD END - HOOSICK FALLS V/L	2218	2024	Chip Seal	4,203	9.1
240	MANTON ST	HOOSICK FALLS V/L - DUNDEE AVE	1162	2024	Chip Seal	2,336	10.8
280	MECHANICS ST EX	HOOSICK FALLS VL - SUNRISE DR	4398	2024	Chip Seal	6,632	12.8
290	SUNRISE DR	MECHANIC ST - BEGIN LOOP	1154	2024	Chip Seal	2,734	8.0
320	KOKLEY AVE	HOOSICK TL - DEAD END	429	2024	Reclaim & Pave	8,687	1.3
360	DAUN LA	NY 67 - TAX PARCEL BOUNDARY	602	2024	Chip Seal	756	15.4
380	BECK RD	RAILROAD TRACKS - NY 67	953	2024	Chip Seal	2,031	4.5
400	LEE RD	YOUNGS RD - KIM CT	1056	2024	Chip Seal	2,251	9.2
470	MAHAR RD	NY 22 - FRAZIER LA	1144	2024	Reclaim & Pave	15,431	1.9
490	FACTORY HILL	NY 22 - DEAD END	845	2024	Paving	10,477	2.1
510	BABY LA	NY 22 - DEAD END	3458	2024	Paving	30,629	2.9
550	WHITE CREEK RD EXT	WHITE CREEK RD - ANDREWS RD	176	2024	Double Chip Seal	966	3.7
590	COTTRELL RD	NY 67 - RR CROSSING	317	2024	Reclaim & Pave	7,694	1.3
620	COTTRELL RD	CARETAKERS RD - RR ABOVE	850	2024	Double Chip Seal	3,229	4.1
720	FAIRBANKS RD	HOOSICK FALLS V/L - JOHNSON HILL RD	8518	2024	Chip Seal	18,162	8.9
750	OREBED RD	BAYER RD - VERMONT STATE LINE	6856	2024	Chip Seal	13,805	7.7
80	BREESE HOLLOW RD SPUR	PETERSBURGH JUNCTION RD - BREESE HOLLOW RD	383	2024	Chip Seal	999	6.7
180	T C LA	CUL-DE-SAC - WILSON HILL RD	2705	2025	Chip Seal	6,797	7.7
30	FOX HOLLOW RD	GRAFTON T/L - NY 7	11405	2025	Chip Seal	23,654	9.7
300	SUNRISE DR	BEGIN LOOP - END LOOP	524	2025	Chip Seal	1,317	7.7
370	BECK RD	EDDY RD - RAILROAD TRACKS	22915	2025	Chip Seal	50,323	4.6
390	YOUNGS RD	NY 67 - CR 103	6125	2025	Reclaim & Pave	102,146	1.5
480	FACTORY HILL	NY 22 - NY 22	2006	2025	Reclaim & Pave	39,039	1.3
670	CARETAKERS RD	BRIDGE - COTTRELL RD	492	2025	Paving	7,637	0.3
310	PIKE ST	MECHANIC ST - DEAD END	634	2026	Reclaim & Pave	14,512	1.1
420	KIM CT	BEGIN LOOP - END LOOP	485	2026	Reclaim & Pave	12,485	1.0
560	BRADY LA	WHITE CREEK RD - DEAD END	931	2026	Reclaim & Pave	21,329	1.1
60	TILLEY LA	NY 7 - DEAD END	1247	2026	Reclaim & Pave	28,561	1.1
600	COTTRELL RD	RR CROSSING - STEWART RD	1901	2026	Reclaim & Pave	48,976	1.2

D.1 CHIPS DB5148.4 BUDGET + GENERAL REPAIRS DB5110.4 BUDGET + IMPROVEMENTS DB5112.2 SUPER BUDGET

Table D.1: Budget Recommended Rehabilitations - Combined Budget
2023 Paved Network, 2023 to 2033, Min. Exclusion: 2 yrs, Inflation Rate: 3 %, Discount Rate: 0 %, Include Committed Projects: No, Tolerance: Based on child budgets

Section #	Street	Limits	Lane-Length (ft)	Implementation Year	Treatment	Cost ($)	Cost Effectiveness
680	ALBANY ST	HOOSICK FALLS V/L - JAY RD	3593	2026	Chip Seal	5,748	12.3
70	DEPOT RD	NY 7 - DEAD END	942	2026	Reclaim & Pave	21,569	1.1
200	BRUD WAY RD	DEAD END - WILSON HILL RD	1162	2027	Reclaim & Pave	30,827	0.9
450	PINE ST	DEAD END - NY 22	1478	2027	Reclaim & Pave	34,876	1.0
520	OLD ROUTE 22	NY 22 - DEAD END	3062	2027	Reclaim & Pave	72,243	1.0
660	CARETAKERS RD	RRXING - BRIDGE	318	2027	Reclaim & Pave	7,971	0.2
690	SARATOGA ST	VILLAGE LINE - ALBANY ST	1546	2027	Chip Seal	2,548	12.0
230	QUARRY ST	MANTON ST - DEAD END	1973	2028	Chip Seal	4,464	8.8
260	SEWARD ST	QUARRY ST - HOOSICK FALLS V/L	898	2028	Chip Seal	2,032	8.8
440	SEWER PLANT RD	DEAD END - NY 22	5376	2028	Reclaim & Pave	130,628	1.0
50	SHINGLE HOLLOW	BEGIN LOOP - END LOOP	528	2028	Reclaim & Pave	16,031	0.8
10	TORY HILL RD	PITTSTOWN T/L - NY 7	3696	2029	General Repairs	4,214	4.3
460	WALNUT ST	DEAD END - NY 22	1850	2029	Reclaim & Pave	52,088	0.8
640	CARETAKERS RD	NY 67 - 0.04 MILES	422	2029	Reclaim & Pave	11,231	0.2
650	CARETAKERS RD	0.04 MILES - RRXING	844	2029	Reclaim & Pave	22,434	0.2
700	MARC DR	SARATOGA ST - ALBANY ST	1901	2029	Reclaim & Pave	53,518	0.8
40	SHINGLE HOLLOW	NY 22 - BEGIN LOOP	1790	2030	Reclaim & Pave	57,672	0.7
410	KIM CT	NY 67 - BEGIN LOOP	1165	2030	Chip Seal	3,148	7.5
250	DUNDEE AVE	MANTON ST - CR 104	1373	2031	Chip Seal	3,395	8.5
750	OREBED RD	BAYER RD - VERMONT STATE LINE	6856	2031	General Repairs	7,832	4.4
270	HAMPTON ST EXT	QUARRY ST - HOOSICK FALLS TL	855	2032	Chip Seal	2,314	7.7
220	SCOTT ST	DEAD END - HOOSICK FALLS V/L	2218	2033	General Repairs	2,529	4.5
370	BECK RD	EDDY RD - RAILROAD TRACKS	22915	2033	General Repairs	29,404	2.2
380	BECK RD	RAILROAD TRACKS - NY 67	953	2033	General Repairs	1,223	2.1

D.2 COMBINED BUDGET (NO TREATMENT CONSTRAINTS)

Table D.2: Budget Recommended Rehabilitations - Combined Budget (no treatment constraints)
2023 Paved Network, 2023 to 2033, Min. Exclusion: 2 yrs, Inflation Rate: 3 %, Discount Rate: 0 %, Include Committed Projects: Yes, Tolerance: 0%

Section #	Street	Limits	Lane-Length (ft)	Implementation Year	Treatment	Cost ($)	Cost Effectiveness
590	COTTRELL RD	NY 67 - RR CROSSING	317	2023	Chip Seal	-	
600	COTTRELL RD	RR CROSSING - STEWART RD	1901	2023	Chip Seal	-	
620	COTTRELL RD	CARETAKERS RD - RR ABOVE	850	2023	Chip Seal	-	
630	COTTRELL RD	RR ABOVE - NY 67	9288	2023	Chip Seal	-	
110	WINDY HILL RD	PITTSTOWN T/L - SPICER RD	7921	2024	Double Chip Seal	30,106	5.67
170	WILSON HILL RD	PINE VALLEY RD - HOOSICK FALLS V/L	34742	2024	Double Chip Seal	12,000	42.10
190	FOG HILL RD	WILSON HILL RD - CLAY HILL RD	12038	2024	Double Chip Seal	14,400	0.55
220	SCOTT ST	DEAD END - HOOSICK FALLS V/L	2218	2024	Chip Seal	4,203	9.15
240	MANTON ST	HOOSICK FALLS V/L - DUNDEE AVE	1162	2024	Chip Seal	2,336	10.81
290	SUNRISE DR	MECHANIC ST - BEGIN LOOP	1154	2024	Chip Seal	2,734	7.96
340	TATE RD	NEW RD - CLAY HILL RD	27773	2024	Double Chip Seal	93,827	6.16
360	DAUN LA	NY 67 - TAX PARCEL BOUNDARY	602	2024	Chip Seal	756	15.41
370	BECK RD	EDDY RD - RAILROAD TRACKS	22915	2024	Chip Seal	48,858	5.42
380	BECK RD	RAILROAD TRACKS - NY 67	953	2024	Chip Seal	2,031	4.50
400	LEE RD	YOUNGS RD - KIM CT	1056	2024	Chip Seal	2,251	9.21
490	FACTORY HILL	NY 22 - DEAD END	845	2024	Paving	10,477	2.05
510	BABY LA	NY 22 - DEAD END	3458	2024	Paving	30,629	2.86
550	WHITE CREEK RD EXT	WHITE CREEK RD - ANDREWS RD	176	2024	Double Chip Seal	966	3.71
720	FAIRBANKS RD	HOOSICK FALLS V/L - JOHNSON HILL RD	8518	2024	Chip Seal	18,162	8.91
740	BAYER RD	MAPLETOWN RD - FARMERS INN RD	6111	2024	Double Chip Seal	23,226	0.60
750	OREBED RD	BAYER RD - VERMONT STATE LINE	6856	2024	Chip Seal	13,805	7.74
770	FARMERS INN RD	NY 7 - BAYER RD	8560	2024	Chip Seal	-	
80	BREESE HOLLOW RD SPUR	PETERSBURGH JUNCTION RD - BREESE HOLLOW RD	383	2024	Chip Seal	999	6.66
160	LESTER LA	DEAD END - BOVIE HILL RD	1360	2025	Reclaim & Pave	18,901	1.82
280	MECHANICS ST EX	HOOSICK FALLS VL - SUNRISE DR	4398	2025	Chip Seal	6,632	12.76
320	KOKLEY AVE	HOOSICK TL - DEAD END	429	2025	Reclaim & Pave	8,947	1.21
40	SHINGLE HOLLOW	NY 22 - BEGIN LOOP	1790	2025	Reclaim & Pave	49,749	0.91
420	KIM CT	BEGIN LOOP - END LOOP	485	2025	Reclaim & Pave	12,122	1.03
450	PINE ST	DEAD END - NY 22	1478	2025	Reclaim & Pave	32,874	1.14
460	WALNUT ST	DEAD END - NY 22	1850	2025	Reclaim & Pave	46,280	1.01
470	MAHAR RD	NY 22 - FRAZIER LA	1144	2025	Reclaim & Pave	15,894	1.82
50	SHINGLE HOLLOW	BEGIN LOOP - END LOOP	528	2025	Reclaim & Pave	14,671	0.91

D.2 COMBINED BUDGET (NO TREATMENT CONSTRAINTS)

Table D.2: Budget Recommended Rehabilitations - Combined Budget (no treatment constraints)
2023 Paved Network, 2023 to 2033, Min. Exclusion: 2 yrs, Inflation Rate: 3 %, Discount Rate: 0 %, Include Committed Projects: Yes, Tolerance: 0%

Section #	Street	Limits	Lane-Length (ft)	Implementation Year	Treatment	Cost ($)	Cost Effectiveness
560	BRADY LA	WHITE CREEK RD - DEAD END	931	2025	Reclaim & Pave	20,708	1.14
640	CARETAKERS RD	NY 67 - 0.04 MILES	422	2025	Reclaim & Pave	9,979	0.18
650	CARETAKERS RD	0.04 MILES - RRXING	844	2025	Reclaim & Pave	19,932	0.18
660	CARETAKERS RD	RRXING - BRIDGE	318	2025	Reclaim & Pave	7,513	0.18
700	MARC DR	SARATOGA ST - ALBANY ST	1901	2025	Reclaim & Pave	47,550	1.01
300	SUNRISE DR	BEGIN LOOP - END LOOP	524	2026	Chip Seal	1,317	7.68
310	PIKE ST	MECHANIC ST - DEAD END	634	2026	Reclaim & Pave	14,512	1.11
70	DEPOT RD	NY 7 - DEAD END	942	2026	Reclaim & Pave	21,569	1.09
730	BURGESS RD	MAPLETOWN RD - BEECHWOOD RD	11157	2026	Reclaim & Pave	271,510	1.02
200	BRUD WAY RD	DEAD END - WILSON HILL RD	1162	2027	Reclaim & Pave	30,827	0.93
440	SEWER PLANT RD	DEAD END - NY 22	5376	2027	Reclaim & Pave	126,823	1.04
480	FACTORY HILL	NY 22 - NY 22	2006	2027	Reclaim & Pave	41,416	1.20
520	OLD ROUTE 22	NY 22 - DEAD END	3062	2027	Reclaim & Pave	72,243	1.04
590	COTTRELL RD	NY 67 - RR CROSSING	317	2027	Reclaim & Pave	8,407	1.22
60	TILLEY LA	NY 7 - DEAD END	1247	2027	Reclaim & Pave	29,418	1.05
690	SARATOGA ST	VILLAGE LINE - ALBANY ST	1546	2027	Chip Seal	2,548	11.99
180	T C LA	CUL-DE-SAC - WILSON HILL RD	2705	2028	Chip Seal	7,211	5.77
210	DOLAN AVE	DEAD END - HOOSICK FALLS V/L	3877	2028	Reclaim & Pave	58,884	1.62
390	YOUNGS RD	NY 67 - CR 103	6125	2028	Reclaim & Pave	111,618	1.34
600	COTTRELL RD	RR CROSSING - STEWART RD	1901	2028	Chip Seal	4,561	10.20
670	CARETAKERS RD	BRIDGE - COTTRELL RD	492	2028	Reclaim & Pave	12,711	0.17
680	ALBANY ST	HOOSICK FALLS V/L - JAY RD	3593	2028	Chip Seal	5,748	12.26
740	BAYER RD	MAPLETOWN RD - FARMERS INN RD	6111	2028	Paving	109,665	1.45
10	TORY HILL RD	PITTSTOWN T/L - NY 7	3696	2029	General Repairs	4,214	4.31
170	WILSON HILL RD	PINE VALLEY RD - HOOSICK FALLS V/L	34742	2029	General Repairs	35,208	4.83
230	QUARRY ST	MANTON ST - DEAD END	1973	2029	Chip Seal	4,464	8.76
260	SEWARD ST	QUARRY ST - HOOSICK FALLS V/L	898	2029	Chip Seal	2,032	8.76
30	FOX HOLLOW RD	GRAFTON T/L - NY 7	11405	2029	Double Chip Seal	47,459	5.31
570	ST CROIX DR	NY 67 - DEAD END	5489	2029	Reclaim & Pave	154,553	0.88
410	KIM CT	NY 67 - BEGIN LOOP	1165	2030	Chip Seal	3,148	7.54
630	COTTRELL RD	RR ABOVE - NY 67	9288	2030	General Repairs	10,907	3.18
770	FARMERS INN RD	NY 7 - BAYER RD	8560	2030	Reclaim & Pave	234,459	0.95

D.2 COMBINED BUDGET (NO TREATMENT CONSTRAINTS)

Table D.2: Budget Recommended Rehabilitations - Combined Budget (no treatment constraints)
2023 Paved Network, 2023 to 2033, Min. Exclusion: 2 yrs, Inflation Rate: 3 %, Discount Rate: 0 %, Include Committed Projects: Yes, Tolerance: 0%

Section #	Street	Limits	Lane-Length (ft)	Implementation Year	Treatment	Cost ($)	Cost Effectiveness
190	FOG HILL RD	WILSON HILL RD - CLAY HILL RD	12038	2031	Reclaim & Pave	279,684	1.08
250	DUNDEE AVE	MANTON ST - CR 104	1373	2031	Chip Seal	3,395	8.48
620	COTTRELL RD	CARETAKERS RD - RR ABOVE	850	2031	General Repairs	1,028	3.14
750	OREBED RD	BAYER RD - VERMONT STATE LINE	6856	2031	General Repairs	7,832	4.42
120	FORDS RD	PINE VALLEY RD - DEAD END	9505	2032	Reclaim & Pave	292,450	0.80
270	HAMPTON ST EXT	QUARRY ST - HOOSICK FALLS TL	855	2032	Chip Seal	2,314	7.73
220	SCOTT ST	DEAD END - HOOSICK FALLS V/L	2218	2033	General Repairs	2,529	4.54
380	BECK RD	RAILROAD TRACKS - NY 67	953	2033	General Repairs	1,223	2.14

D.3 $400,000 ANNUAL BUDGET

Table D.3: Budget Recommended Rehabilitations - $400,000 Annual Budget
2023 Paved Network, 2023 to 2033, Min. Exclusion: 2 yrs, Inflation Rate: 3 %, Discount Rate: 0 %, Include Committed Projects: Yes, Tolerance: 0%

Section #	Street	Limits	Lane-Length (ft)	Implementation Year	Treatment	Cost ($)	Cost Effectiveness
590	COTTRELL RD	NY 67 - RR CROSSING	317	2023	Chip Seal	-	
600	COTTRELL RD	RR CROSSING - STEWART RD	1901	2023	Chip Seal	-	
620	COTTRELL RD	CARETAKERS RD - RR ABOVE	850	2023	Chip Seal	-	
630	COTTRELL RD	RR ABOVE - NY 67	9288	2023	Chip Seal	-	
110	WINDY HILL RD	PITTSTOWN T/L - SPICER RD	7921	2024	Double Chip Seal	30,106	5.67
160	LESTER LA	DEAD END - BOVIE HILL RD	1360	2024	Reclaim & Pave	18,350	1.90
170	WILSON HILL RD	PINE VALLEY RD - HOOSICK FALLS V/L	34742	2024	Double Chip Seal	12,000	42.10
190	FOG HILL RD	WILSON HILL RD - CLAY HILL RD	12038	2024	Double Chip Seal	14,400	0.55
210	DOLAN AVE	DEAD END - HOOSICK FALLS V/L	3877	2024	Reclaim & Pave	52,318	1.91
220	SCOTT ST	DEAD END - HOOSICK FALLS V/L	2218	2024	Chip Seal	4,203	9.15
240	MANTON ST	HOOSICK FALLS V/L - DUNDEE AVE	1162	2024	Chip Seal	2,336	10.81
290	SUNRISE DR	MECHANIC ST - BEGIN LOOP	1154	2024	Chip Seal	2,734	7.96
300	SUNRISE DR	BEGIN LOOP - END LOOP	524	2024	Chip Seal	1,317	7.68
340	TATE RD	NEW RD - CLAY HILL RD	27773	2024	Double Chip Seal	93,827	6.16
360	DAUN LA	NY 67 - TAX PARCEL BOUNDARY	602	2024	Chip Seal	756	15.41
370	BECK RD	EDDY RD - RAILROAD TRACKS	22915	2024	Chip Seal	48,858	5.42
380	BECK RD	RAILROAD TRACKS - NY 67	953	2024	Chip Seal	2,031	4.50
400	LEE RD	YOUNGS RD - KIM CT	1056	2024	Chip Seal	2,251	9.21
470	MAHAR RD	NY 22 - FRAZIER LA	1144	2024	Reclaim & Pave	15,431	1.90
490	FACTORY HILL	NY 22 - DEAD END	845	2024	Paving	10,477	2.05
510	BABY LA	NY 22 - DEAD END	3458	2024	Paving	30,629	2.86
550	WHITE CREEK RD EXT	WHITE CREEK RD - ANDREWS RD	176	2024	Double Chip Seal	966	3.71
720	FAIRBANKS RD	HOOSICK FALLS V/L - JOHNSON HILL RD	8518	2024	Chip Seal	18,162	8.91
740	BAYER RD	MAPLETOWN RD - FARMERS INN RD	6111	2024	Double Chip Seal	23,226	0.60
750	OREBED RD	BAYER RD - VERMONT STATE LINE	6856	2024	Chip Seal	13,805	7.74
770	FARMERS INN RD	NY 7 - BAYER RD	8560	2024	Chip Seal	-	
80	BREESE HOLLOW RD SPUR	PETERSBURGH JUNCTION RD - BREESE HOLLOW RD	383	2024	Chip Seal	999	6.66
30	FOX HOLLOW RD	GRAFTON T/L - NY 7	11405	2025	Chip Seal	23,654	9.72
320	KOKLEY AVE	HOOSICK TL - DEAD END	429	2025	Reclaim & Pave	8,947	1.21
540	WHITE CREEK RD	NY 22 - WASHINGTON COUNTY LINE	14256	2025	Reclaim & Pave	356,628	1.98
670	CARETAKERS RD	BRIDGE - COTTRELL RD	492	2025	Paving	7,637	0.28
120	FORDS RD	PINE VALLEY RD - DEAD END	9505	2026	Paving	160,789	1.53

D.3 $400,000 ANNUAL BUDGET

Table D.3: Budget Recommended Rehabilitations - $400,000 Annual Budget
2023 Paved Network, 2023 to 2033, Min. Exclusion: 2 yrs, Inflation Rate: 3 %, Discount Rate: 0 %, Include Committed Projects: Yes, Tolerance: 0%

Section #	Street	Limits	Lane-Length (ft)	Implementation Year	Treatment	Cost ($)	Cost Effectiveness
180	T C LA	CUL-DE-SAC - WILSON HILL RD	2705	2026	Chip Seal	6,797	7.68
280	MECHANICS ST EX	HOOSICK FALLS VL - SUNRISE DR	4398	2026	Chip Seal	6,632	12.76
310	PIKE ST	MECHANIC ST - DEAD END	634	2026	Reclaim & Pave	14,512	1.11
390	YOUNGS RD	NY 67 - CR 103	6125	2026	Reclaim & Pave	105,210	1.46
480	FACTORY HILL	NY 22 - NY 22	2006	2026	Reclaim & Pave	40,210	1.25
590	COTTRELL RD	NY 67 - RR CROSSING	317	2026	Paving	5,358	1.90
60	TILLEY LA	NY 7 - DEAD END	1247	2026	Reclaim & Pave	28,561	1.09
660	CARETAKERS RD	RRXING - BRIDGE	318	2026	Reclaim & Pave	7,739	0.17
70	DEPOT RD	NY 7 - DEAD END	942	2026	Reclaim & Pave	21,569	1.09
200	BRUD WAY RD	DEAD END - WILSON HILL RD	1162	2027	Reclaim & Pave	30,827	0.93
420	KIM CT	BEGIN LOOP - END LOOP	485	2027	Reclaim & Pave	12,860	0.94
450	PINE ST	DEAD END - NY 22	1478	2027	Reclaim & Pave	34,876	1.04
460	WALNUT ST	DEAD END - NY 22	1850	2027	Reclaim & Pave	49,098	0.92
520	OLD ROUTE 22	NY 22 - DEAD END	3062	2027	Reclaim & Pave	72,243	1.04
560	BRADY LA	WHITE CREEK RD - DEAD END	931	2027	Reclaim & Pave	21,969	1.04
640	CARETAKERS RD	NY 67 - 0.04 MILES	422	2027	Reclaim & Pave	10,586	0.17
740	BAYER RD	MAPLETOWN RD - FARMERS INN RD	6111	2027	Double Chip Seal	25,380	5.05
770	FARMERS INN RD	NY 7 - BAYER RD	8560	2027	Paving	140,858	1.59
190	FOG HILL RD	WILSON HILL RD - CLAY HILL RD	12038	2028	Reclaim & Pave	255,950	1.23
440	SEWER PLANT RD	DEAD END - NY 22	5376	2028	Reclaim & Pave	130,628	1.00
600	COTTRELL RD	RR CROSSING - STEWART RD	1901	2028	Chip Seal	4,561	10.20
680	ALBANY ST	HOOSICK FALLS V/L - JAY RD	3593	2028	Chip Seal	5,748	12.26
690	SARATOGA ST	VILLAGE LINE - ALBANY ST	1546	2028	Chip Seal	2,548	11.99
260	SEWARD ST	QUARRY ST - HOOSICK FALLS V/L	898	2029	Chip Seal	2,032	8.76
430	NEW RD	CLAY HILL RD - TATE RD	13728	2029	Reclaim & Pave	343,575	0.97
700	MARC DR	SARATOGA ST - ALBANY ST	1901	2029	Reclaim & Pave	53,518	0.85
10	TORY HILL RD	PITTSTOWN T/L - NY 7	3696	2030	General Repairs	4,214	4.31
230	QUARRY ST	MANTON ST - DEAD END	1973	2030	Chip Seal	4,464	8.76
40	SHINGLE HOLLOW	NY 22 - BEGIN LOOP	1790	2030	Reclaim & Pave	57,672	0.73
410	KIM CT	NY 67 - BEGIN LOOP	1165	2030	Chip Seal	3,148	7.54
50	SHINGLE HOLLOW	BEGIN LOOP - END LOOP	528	2030	Reclaim & Pave	17,007	0.73
730	BURGESS RD	MAPLETOWN RD - BEECHWOOD RD	11157	2030	Reclaim & Pave	305,587	0.86

D.3 $400,000 ANNUAL BUDGET

Table D.3: Budget Recommended Rehabilitations - $400,000 Annual Budget
2023 Paved Network, 2023 to 2033, Min. Exclusion: 2 yrs, Inflation Rate: 3 %, Discount Rate: 0 %, Include Committed Projects: Yes, Tolerance: 0%

Section #	Street	Limits	Lane-Length (ft)	Implementation Year	Treatment	Cost ($)	Cost Effectiveness
170	WILSON HILL RD	PINE VALLEY RD - HOOSICK FALLS V/L	34742	2031	General Repairs	35,208	4.83
250	DUNDEE AVE	MANTON ST - CR 104	1373	2031	Chip Seal	3,395	8.48
570	ST CROIX DR	NY 67 - DEAD END	5489	2031	Reclaim & Pave	163,965	0.80
620	COTTRELL RD	CARETAKERS RD - RR ABOVE	850	2031	General Repairs	1,028	3.14
630	COTTRELL RD	RR ABOVE - NY 67	9288	2031	General Repairs	10,907	3.18
650	CARETAKERS RD	0.04 MILES - RRXING	844	2031	Reclaim & Pave	23,800	0.14
750	OREBED RD	BAYER RD - VERMONT STATE LINE	6856	2031	General Repairs	7,832	4.42
270	HAMPTON ST EXT	QUARRY ST - HOOSICK FALLS TL	855	2032	Chip Seal	2,314	7.73
540	WHITE CREEK RD	NY 22 - WASHINGTON COUNTY LINE	14256	2032	General Repairs	17,760	8.84
220	SCOTT ST	DEAD END - HOOSICK FALLS V/L	2218	2033	General Repairs	2,529	4.54
380	BECK RD	RAILROAD TRACKS - NY 67	953	2033	General Repairs	1,223	2.14

D.4 $500,000 ANNUAL BUDGET

Table D.4: Budget Recommended Rehabilitations - $500,000 Annual Budget
2023 Paved Network, 2023 to 2033, Min. Exclusion: 2 yrs, Inflation Rate: 3 %, Discount Rate: 0 %, Include Committed Projects: Yes, Tolerance: 0%

Section #	Street	Limits	Lane-Length (ft)	Implementation Year	Treatment	Cost ($)	Cost Effectiveness
590	COTTRELL RD	NY 67 - RR CROSSING	317	2023	Chip Seal	-	
600	COTTRELL RD	RR CROSSING - STEWART RD	1901	2023	Chip Seal	-	
620	COTTRELL RD	CARETAKERS RD - RR ABOVE	850	2023	Chip Seal	-	
630	COTTRELL RD	RR ABOVE - NY 67	9288	2023	Chip Seal	-	
110	WINDY HILL RD	PITTSTOWN T/L - SPICER RD	7921	2024	Double Chip Seal	30,106	5.67
160	LESTER LA	DEAD END - BOVIE HILL RD	1360	2024	Reclaim & Pave	18,350	1.90
170	WILSON HILL RD	PINE VALLEY RD - HOOSICK FALLS V/L	34742	2024	Double Chip Seal	12,000	42.10
190	FOG HILL RD	WILSON HILL RD - CLAY HILL RD	12038	2024	Double Chip Seal	14,400	0.55
210	DOLAN AVE	DEAD END - HOOSICK FALLS V/L	3877	2024	Reclaim & Pave	52,318	1.91
220	SCOTT ST	DEAD END - HOOSICK FALLS V/L	2218	2024	Chip Seal	4,203	9.15
290	SUNRISE DR	MECHANIC ST - BEGIN LOOP	1154	2024	Chip Seal	2,734	7.96
320	KOKLEY AVE	HOOSICK TL - DEAD END	429	2024	Reclaim & Pave	8,687	1.27
340	TATE RD	NEW RD - CLAY HILL RD	27773	2024	Double Chip Seal	93,827	6.16
360	DAUN LA	NY 67 - TAX PARCEL BOUNDARY	602	2024	Chip Seal	756	15.41
370	BECK RD	EDDY RD - RAILROAD TRACKS	22915	2024	Chip Seal	48,858	5.42
380	BECK RD	RAILROAD TRACKS - NY 67	953	2024	Chip Seal	2,031	4.50
400	LEE RD	YOUNGS RD - KIM CT	1056	2024	Chip Seal	2,251	9.21
470	MAHAR RD	NY 22 - FRAZIER LA	1144	2024	Reclaim & Pave	15,431	1.90
490	FACTORY HILL	NY 22 - DEAD END	845	2024	Paving	10,477	2.05
510	BABY LA	NY 22 - DEAD END	3458	2024	Paving	30,629	2.86
550	WHITE CREEK RD EXT	WHITE CREEK RD - ANDREWS RD	176	2024	Double Chip Seal	966	3.71
570	ST CROIX DR	NY 67 - DEAD END	5489	2024	Paving	87,522	1.60
660	CARETAKERS RD	RRXING - BRIDGE	318	2024	Reclaim & Pave	7,294	0.19
720	FAIRBANKS RD	HOOSICK FALLS V/L - JOHNSON HILL RD	8518	2024	Chip Seal	18,162	8.91
740	BAYER RD	MAPLETOWN RD - FARMERS INN RD	6111	2024	Double Chip Seal	23,226	0.60
750	OREBED RD	BAYER RD - VERMONT STATE LINE	6856	2024	Chip Seal	13,805	7.74
770	FARMERS INN RD	NY 7 - BAYER RD	8560	2024	Chip Seal	-	
80	BREESE HOLLOW RD SPUR	PETERSBURGH JUNCTION RD - BREESE HOLLOW RD	383	2024	Chip Seal	999	6.66
240	MANTON ST	HOOSICK FALLS V/L - DUNDEE AVE	1162	2025	Chip Seal	2,336	10.81
30	FOX HOLLOW RD	GRAFTON T/L - NY 7	11405	2025	Chip Seal	23,654	9.72
310	PIKE ST	MECHANIC ST - DEAD END	634	2025	Reclaim & Pave	14,090	1.16
350	EAGLE BRIDGE RD	TATE RD - NY67	15404	2025	Reclaim & Pave	385,341	2.36

D.4 $500,000 ANNUAL BUDGET

Table D.4: Budget Recommended Rehabilitations - $500,000 Annual Budget
2023 Paved Network, 2023 to 2033, Min. Exclusion: 2 yrs, Inflation Rate: 3 %, Discount Rate: 0 %, Include Committed Projects: Yes, Tolerance: 0%

Section #	Street	Limits	Lane-Length (ft)	Implementation Year	Treatment	Cost ($)	Cost Effectiveness
480	FACTORY HILL	NY 22 - NY 22	2006	2025	Reclaim & Pave	39,039	1.31
60	TILLEY LA	NY 7 - DEAD END	1247	2025	Reclaim & Pave	27,729	1.14
670	CARETAKERS RD	BRIDGE - COTTRELL RD	492	2025	Paving	7,637	0.28
180	T C LA	CUL-DE-SAC - WILSON HILL RD	2705	2026	Chip Seal	6,797	7.68
280	MECHANICS ST EX	HOOSICK FALLS VL - SUNRISE DR	4398	2026	Chip Seal	6,632	12.76
300	SUNRISE DR	BEGIN LOOP - END LOOP	524	2026	Chip Seal	1,317	7.68
390	YOUNGS RD	NY 67 - CR 103	6125	2026	Reclaim & Pave	105,210	1.46
540	WHITE CREEK RD	NY 22 - WASHINGTON COUNTY LINE	14256	2026	Reclaim & Pave	367,327	1.90
590	COTTRELL RD	NY 67 - RR CROSSING	317	2026	Paving	5,358	1.90
680	ALBANY ST	HOOSICK FALLS V/L - JAY RD	3593	2026	Chip Seal	5,748	12.26
190	FOG HILL RD	WILSON HILL RD - CLAY HILL RD	12038	2027	Reclaim & Pave	248,495	1.26
450	PINE ST	DEAD END - NY 22	1478	2027	Reclaim & Pave	34,876	1.04
560	BRADY LA	WHITE CREEK RD - DEAD END	931	2027	Reclaim & Pave	21,969	1.04
600	COTTRELL RD	RR CROSSING - STEWART RD	1901	2027	Chip Seal	4,561	10.20
70	DEPOT RD	NY 7 - DEAD END	942	2027	Reclaim & Pave	22,217	1.04
740	BAYER RD	MAPLETOWN RD - FARMERS INN RD	6111	2027	Double Chip Seal	25,380	5.05
770	FARMERS INN RD	NY 7 - BAYER RD	8560	2027	Paving	140,858	1.59
140	PINE VALLEY RD	FORDS RD - CR 103	20276	2028	Reclaim & Pave	492,668	1.02
260	SEWARD ST	QUARRY ST - HOOSICK FALLS V/L	898	2028	Chip Seal	2,032	8.76
690	SARATOGA ST	VILLAGE LINE - ALBANY ST	1546	2028	Chip Seal	2,548	11.99
200	BRUD WAY RD	DEAD END - WILSON HILL RD	1162	2029	Reclaim & Pave	32,704	0.85
230	QUARRY ST	MANTON ST - DEAD END	1973	2029	Chip Seal	4,464	8.76
420	KIM CT	BEGIN LOOP - END LOOP	485	2029	Reclaim & Pave	13,643	0.87
430	NEW RD	CLAY HILL RD - TATE RD	13728	2029	Reclaim & Pave	343,575	0.97
50	SHINGLE HOLLOW	BEGIN LOOP - END LOOP	528	2029	Reclaim & Pave	16,512	0.76
520	OLD ROUTE 22	NY 22 - DEAD END	3062	2029	Reclaim & Pave	76,643	0.95
640	CARETAKERS RD	NY 67 - 0.04 MILES	422	2029	Reclaim & Pave	11,231	0.15
10	TORY HILL RD	PITTSTOWN T/L - NY 7	3696	2030	General Repairs	4,214	4.31
120	FORDS RD	PINE VALLEY RD - DEAD END	9505	2030	Reclaim & Pave	275,662	0.87
410	KIM CT	NY 67 - BEGIN LOOP	1165	2030	Chip Seal	3,148	7.54
440	SEWER PLANT RD	DEAD END - NY 22	5376	2030	Reclaim & Pave	138,583	0.91
460	WALNUT ST	DEAD END - NY 22	1850	2030	Reclaim & Pave	53,651	0.81

D.4 $500,000 ANNUAL BUDGET

Table D.4: Budget Recommended Rehabilitations - $500,000 Annual Budget
2023 Paved Network, 2023 to 2033, Min. Exclusion: 2 yrs, Inflation Rate: 3 %, Discount Rate: 0 %, Include Committed Projects: Yes, Tolerance: 0%

Section #	Street	Limits	Lane-Length (ft)	Implementation Year	Treatment	Cost ($)	Cost Effectiveness
650	CARETAKERS RD	0.04 MILES - RRXING	844	2030	Reclaim & Pave	23,107	0.15
170	WILSON HILL RD	PINE VALLEY RD - HOOSICK FALLS V/L	34742	2031	General Repairs	35,208	4.83
250	DUNDEE AVE	MANTON ST - CR 104	1373	2031	Chip Seal	3,395	8.48
40	SHINGLE HOLLOW	NY 22 - BEGIN LOOP	1790	2031	Reclaim & Pave	59,402	0.69
620	COTTRELL RD	CARETAKERS RD - RR ABOVE	850	2031	General Repairs	1,028	3.14
630	COTTRELL RD	RR ABOVE - NY 67	9288	2031	General Repairs	10,907	3.18
700	MARC DR	SARATOGA ST - ALBANY ST	1901	2031	Reclaim & Pave	56,777	0.77
730	BURGESS RD	MAPLETOWN RD - BEECHWOOD RD	11157	2031	Reclaim & Pave	314,755	0.82
750	OREBED RD	BAYER RD - VERMONT STATE LINE	6856	2031	General Repairs	7,832	4.42
270	HAMPTON ST EXT	QUARRY ST - HOOSICK FALLS TL	855	2032	Chip Seal	2,314	7.73
330	EDDY RD	BUSKIRK WEST HOOSICK RD - NEW RD	16157	2032	Reclaim & Pave	497,088	0.75
220	SCOTT ST	DEAD END - HOOSICK FALLS V/L	2218	2033	General Repairs	2,529	4.54
350	EAGLE BRIDGE RD	TATE RD - NY67	15404	2033	General Repairs	19,190	10.74
380	BECK RD	RAILROAD TRACKS - NY 67	953	2033	General Repairs	1,223	2.14
530	TELFORD RD	NY 22 - ANDREWS RD	14032	2033	Reclaim & Pave	444,661	0.70
540	WHITE CREEK RD	NY 22 - WASHINGTON COUNTY LINE	14256	2033	General Repairs	18,293	8.66

D.5 ACHIEVE/MAINTAIN PQI = 40

Table D.5: Budget Recommended Rehabilitations - Achieve/Maintain PQI = 40
2023 Paved Network, 2023 to 2033, Min. Exclusion: 2 yrs, Inflation Rate: 3 %, Discount Rate: 0 %, Include Committed Projects: Yes, Tolerance: 0%

Section #	Street	Limits	Lane-Length (ft)	Implementation Year	Treatment	Cost ($)	Cost Effectiveness
590	COTTRELL RD	NY 67 - RR CROSSING	317	2023	Chip Seal	-	
600	COTTRELL RD	RR CROSSING - STEWART RD	1901	2023	Chip Seal	-	
620	COTTRELL RD	CARETAKERS RD - RR ABOVE	850	2023	Chip Seal	-	
630	COTTRELL RD	RR ABOVE - NY 67	9288	2023	Chip Seal	-	
170	WILSON HILL RD	PINE VALLEY RD - HOOSICK FALLS V/L	34742	2024	Double Chip Seal	12,000	42.10
190	FOG HILL RD	WILSON HILL RD - CLAY HILL RD	12038	2024	Double Chip Seal	14,400	0.55
400	LEE RD	YOUNGS RD - KIM CT	1056	2024	Chip Seal	2,251	9.21
740	BAYER RD	MAPLETOWN RD - FARMERS INN RD	6111	2024	Double Chip Seal	23,226	0.60
770	FARMERS INN RD	NY 7 - BAYER RD	8560	2024	Chip Seal	-	
220	SCOTT ST	DEAD END - HOOSICK FALLS V/L	2218	2025	Double Chip Seal	7,717	5.81
290	SUNRISE DR	MECHANIC ST - BEGIN LOOP	1154	2025	Chip Seal	2,816	7.53
30	FOX HOLLOW RD	GRAFTON T/L - NY 7	11405	2025	Chip Seal	23,654	9.72
370	BECK RD	EDDY RD - RAILROAD TRACKS	22915	2025	Chip Seal	50,323	4.58
720	FAIRBANKS RD	HOOSICK FALLS V/L - JOHNSON HILL RD	8518	2025	Double Chip Seal	33,346	5.56
750	OREBED RD	BAYER RD - VERMONT STATE LINE	6856	2025	Double Chip Seal	25,347	5.56
80	BREESE HOLLOW RD SPUR	PETERSBURGH JUNCTION RD - BREESE HOLLOW RD	383	2025	Chip Seal	1,028	6.61
180	T C LA	CUL-DE-SAC - WILSON HILL RD	2705	2026	Chip Seal	6,797	7.68
240	MANTON ST	HOOSICK FALLS V/L - DUNDEE AVE	1162	2026	Chip Seal	2,336	10.81
280	MECHANICS ST EX	HOOSICK FALLS VL - SUNRISE DR	4398	2026	Chip Seal	6,632	12.76
300	SUNRISE DR	BEGIN LOOP - END LOOP	524	2026	Chip Seal	1,317	7.68
350	EAGLE BRIDGE RD	TATE RD - NY67	15404	2026	Reclaim & Pave	396,901	2.25
360	DAUN LA	NY 67 - TAX PARCEL BOUNDARY	602	2026	Chip Seal	756	15.41
540	WHITE CREEK RD	NY 22 - WASHINGTON COUNTY LINE	14256	2027	Reclaim & Pave	378,347	1.81
740	BAYER RD	MAPLETOWN RD - FARMERS INN RD	6111	2027	Double Chip Seal	25,380	5.05
510	BABY LA	NY 22 - DEAD END	3458	2029	Reclaim & Pave	54,087	1.60
600	COTTRELL RD	RR CROSSING - STEWART RD	1901	2029	Chip Seal	4,698	9.70
680	ALBANY ST	HOOSICK FALLS V/L - JAY RD	3593	2029	Chip Seal	5,921	11.74
690	SARATOGA ST	VILLAGE LINE - ALBANY ST	1546	2029	Chip Seal	2,548	11.99
210	DOLAN AVE	DEAD END - HOOSICK FALLS V/L	3877	2030	Reclaim & Pave	62,470	1.48
230	QUARRY ST	MANTON ST - DEAD END	1973	2030	Chip Seal	4,464	8.76
260	SEWARD ST	QUARRY ST - HOOSICK FALLS V/L	898	2030	Chip Seal	2,032	8.76
470	MAHAR RD	NY 22 - FRAZIER LA	1144	2030	Reclaim & Pave	18,425	1.46

D.5 ACHIEVE/MAINTAIN PQI = 40

Table D.5: Budget Recommended Rehabilitations - Achieve/Maintain PQI = 40
2023 Paved Network, 2023 to 2033, Min. Exclusion: 2 yrs, Inflation Rate: 3 %, Discount Rate: 0 %, Include Committed Projects: Yes, Tolerance: 0%

Section #	Street	Limits	Lane-Length (ft)	Implementation Year	Treatment	Cost ($)	Cost Effectiveness
10	TORY HILL RD	PITTSTOWN T/L - NY 7	3696	2031	General Repairs	4,214	4.31
160	LESTER LA	DEAD END - BOVIE HILL RD	1360	2031	Reclaim & Pave	22,569	1.39
170	WILSON HILL RD	PINE VALLEY RD - HOOSICK FALLS V/L	34742	2031	General Repairs	35,208	4.83
390	YOUNGS RD	NY 67 - CR 103	6125	2031	Reclaim & Pave	121,968	1.16
190	FOG HILL RD	WILSON HILL RD - CLAY HILL RD	12038	2033	Reclaim & Pave	296,716	0.99
250	DUNDEE AVE	MANTON ST - CR 104	1373	2033	Chip Seal	3,395	8.48
410	KIM CT	NY 67 - BEGIN LOOP	1165	2033	Chip Seal	3,242	7.08
620	COTTRELL RD	CARETAKERS RD - RR ABOVE	850	2033	General Repairs	1,028	3.14
630	COTTRELL RD	RR ABOVE - NY 67	9288	2033	General Repairs	11,234	2.96

D.6 ACHIEVE/MAINTAIN PQI = 45

Table D.6: Budget Recommended Rehabilitations - Achieve/Maintain PQI = 45
2023 Paved Network, 2023 to 2033, Min. Exclusion: 2 yrs, Inflation Rate: 3 %, Discount Rate: 0 %, Include Committed Projects: Yes, Tolerance: 0%

Section #	Street	Limits	Lane-Length (ft)	Implementation Year	Treatment	Cost ($)	Cost Effectiveness
590	COTTRELL RD	NY 67 - RR CROSSING	317	2023	Chip Seal	-	
600	COTTRELL RD	RR CROSSING - STEWART RD	1901	2023	Chip Seal	-	
620	COTTRELL RD	CARETAKERS RD - RR ABOVE	850	2023	Chip Seal	-	
630	COTTRELL RD	RR ABOVE - NY 67	9288	2023	Chip Seal	-	
170	WILSON HILL RD	PINE VALLEY RD - HOOSICK FALLS V/L	34742	2024	Double Chip Seal	12,000	42.10
190	FOG HILL RD	WILSON HILL RD - CLAY HILL RD	12038	2024	Double Chip Seal	14,400	0.55
400	LEE RD	YOUNGS RD - KIM CT	1056	2024	Chip Seal	2,251	9.21
740	BAYER RD	MAPLETOWN RD - FARMERS INN RD	6111	2024	Double Chip Seal	23,226	0.60
770	FARMERS INN RD	NY 7 - BAYER RD	8560	2024	Chip Seal	-	
220	SCOTT ST	DEAD END - HOOSICK FALLS V/L	2218	2025	Double Chip Seal	7,717	5.81
290	SUNRISE DR	MECHANIC ST - BEGIN LOOP	1154	2025	Chip Seal	2,816	7.53
30	FOX HOLLOW RD	GRAFTON T/L - NY 7	11405	2025	Chip Seal	23,654	9.72
350	EAGLE BRIDGE RD	TATE RD - NY67	15404	2025	Reclaim & Pave	385,341	2.36
370	BECK RD	EDDY RD - RAILROAD TRACKS	22915	2025	Chip Seal	50,323	4.58
380	BECK RD	RAILROAD TRACKS - NY 67	953	2025	Double Chip Seal	3,730	2.98
510	BABY LA	NY 22 - DEAD END	3458	2025	Paving	31,548	2.82
720	FAIRBANKS RD	HOOSICK FALLS V/L - JOHNSON HILL RD	8518	2025	Double Chip Seal	33,346	5.56
750	OREBED RD	BAYER RD - VERMONT STATE LINE	6856	2025	Double Chip Seal	25,347	5.56
80	BREESE HOLLOW RD SPUR	PETERSBURGH JUNCTION RD - BREESE HOLLOW RD	383	2025	Chip Seal	1,028	6.61
180	T C LA	CUL-DE-SAC - WILSON HILL RD	2705	2026	Chip Seal	6,797	7.68
240	MANTON ST	HOOSICK FALLS V/L - DUNDEE AVE	1162	2026	Chip Seal	2,336	10.81
280	MECHANICS ST EX	HOOSICK FALLS VL - SUNRISE DR	4398	2026	Chip Seal	6,632	12.76
300	SUNRISE DR	BEGIN LOOP - END LOOP	524	2026	Chip Seal	1,317	7.68
360	DAUN LA	NY 67 - TAX PARCEL BOUNDARY	602	2026	Chip Seal	756	15.41
540	WHITE CREEK RD	NY 22 - WASHINGTON COUNTY LINE	14256	2026	Reclaim & Pave	367,327	1.90
590	COTTRELL RD	NY 67 - RR CROSSING	317	2026	Paving	5,358	1.90
740	BAYER RD	MAPLETOWN RD - FARMERS INN RD	6111	2027	Double Chip Seal	25,380	5.05
160	LESTER LA	DEAD END - BOVIE HILL RD	1360	2028	Reclaim & Pave	20,654	1.60
210	DOLAN AVE	DEAD END - HOOSICK FALLS V/L	3877	2028	Reclaim & Pave	58,884	1.62
390	YOUNGS RD	NY 67 - CR 103	6125	2028	Reclaim & Pave	111,618	1.34
470	MAHAR RD	NY 22 - FRAZIER LA	1144	2028	Reclaim & Pave	17,367	1.60
600	COTTRELL RD	RR CROSSING - STEWART RD	1901	2028	Chip Seal	4,561	10.20

D.6 ACHIEVE/MAINTAIN PQI = 45

Table D.6: Budget Recommended Rehabilitations - Achieve/Maintain PQI = 45
2023 Paved Network, 2023 to 2033, Min. Exclusion: 2 yrs, Inflation Rate: 3 %, Discount Rate: 0 %, Include Committed Projects: Yes, Tolerance: 0%

Section #	Street	Limits	Lane-Length (ft)	Implementation Year	Treatment	Cost ($)	Cost Effectiveness
680	ALBANY ST	HOOSICK FALLS V/L - JAY RD	3593	2028	Chip Seal	5,748	12.26
190	FOG HILL RD	WILSON HILL RD - CLAY HILL RD	12038	2029	Reclaim & Pave	263,629	1.19
490	FACTORY HILL	NY 22 - DEAD END	845	2029	Reclaim & Pave	18,501	1.14
690	SARATOGA ST	VILLAGE LINE - ALBANY ST	1546	2029	Chip Seal	2,548	11.99
230	QUARRY ST	MANTON ST - DEAD END	1973	2030	Chip Seal	4,464	8.76
260	SEWARD ST	QUARRY ST - HOOSICK FALLS V/L	898	2030	Chip Seal	2,032	8.76
340	TATE RD	NEW RD - CLAY HILL RD	27773	2030	Reclaim & Pave	715,930	1.01
480	FACTORY HILL	NY 22 - NY 22	2006	2030	Reclaim & Pave	45,257	1.05

D.7 ACHIEVE/MAINTAIN PQI = 50

Table D.7: Budget Recommended Rehabilitations - Achieve/Maintain PQI = 50
2023 Paved Network, 2023 to 2033, Min. Exclusion: 2 yrs, Inflation Rate: 3 %, Discount Rate: 0 %, Include Committed Projects: Yes, Tolerance: 0%

Section #	Street	Limits	Lane-Length (ft)	Implementation Year	Treatment	Cost ($)	Cost Effectiveness
590	COTTRELL RD	NY 67 - RR CROSSING	317	2023	Chip Seal	-	
600	COTTRELL RD	RR CROSSING - STEWART RD	1901	2023	Chip Seal	-	
620	COTTRELL RD	CARETAKERS RD - RR ABOVE	850	2023	Chip Seal	-	
630	COTTRELL RD	RR ABOVE - NY 67	9288	2023	Chip Seal	-	
170	WILSON HILL RD	PINE VALLEY RD - HOOSICK FALLS V/L	34742	2024	Double Chip Seal	12,000	42.10
190	FOG HILL RD	WILSON HILL RD - CLAY HILL RD	12038	2024	Double Chip Seal	14,400	0.55
400	LEE RD	YOUNGS RD - KIM CT	1056	2024	Chip Seal	2,251	9.21
740	BAYER RD	MAPLETOWN RD - FARMERS INN RD	6111	2024	Double Chip Seal	23,226	0.60
770	FARMERS INN RD	NY 7 - BAYER RD	8560	2024	Chip Seal	-	
220	SCOTT ST	DEAD END - HOOSICK FALLS V/L	2218	2025	Double Chip Seal	7,717	5.81
290	SUNRISE DR	MECHANIC ST - BEGIN LOOP	1154	2025	Chip Seal	2,816	7.53
30	FOX HOLLOW RD	GRAFTON T/L - NY 7	11405	2025	Chip Seal	23,654	9.72
350	EAGLE BRIDGE RD	TATE RD - NY67	15404	2025	Reclaim & Pave	385,341	2.36
370	BECK RD	EDDY RD - RAILROAD TRACKS	22915	2025	Chip Seal	50,323	4.58
380	BECK RD	RAILROAD TRACKS - NY 67	953	2025	Double Chip Seal	3,730	2.98
510	BABY LA	NY 22 - DEAD END	3458	2025	Paving	31,548	2.82
720	FAIRBANKS RD	HOOSICK FALLS V/L - JOHNSON HILL RD	8518	2025	Double Chip Seal	33,346	5.56
750	OREBED RD	BAYER RD - VERMONT STATE LINE	6856	2025	Double Chip Seal	25,347	5.56
80	BREESE HOLLOW RD SPUR	PETERSBURGH JUNCTION RD - BREESE HOLLOW RD	383	2025	Chip Seal	1,028	6.61
180	T C LA	CUL-DE-SAC - WILSON HILL RD	2705	2026	Chip Seal	6,797	7.68
240	MANTON ST	HOOSICK FALLS V/L - DUNDEE AVE	1162	2026	Chip Seal	2,336	10.81
280	MECHANICS ST EX	HOOSICK FALLS VL - SUNRISE DR	4398	2026	Chip Seal	6,632	12.76
300	SUNRISE DR	BEGIN LOOP - END LOOP	524	2026	Chip Seal	1,317	7.68
360	DAUN LA	NY 67 - TAX PARCEL BOUNDARY	602	2026	Chip Seal	756	15.41
540	WHITE CREEK RD	NY 22 - WASHINGTON COUNTY LINE	14256	2026	Reclaim & Pave	367,327	1.90
590	COTTRELL RD	NY 67 - RR CROSSING	317	2026	Paving	5,358	1.90
210	DOLAN AVE	DEAD END - HOOSICK FALLS V/L	3877	2027	Reclaim & Pave	57,169	1.69
340	TATE RD	NEW RD - CLAY HILL RD	27773	2027	Paving	430,117	1.68
740	BAYER RD	MAPLETOWN RD - FARMERS INN RD	6111	2027	Double Chip Seal	25,380	5.05
160	LESTER LA	DEAD END - BOVIE HILL RD	1360	2028	Reclaim & Pave	20,654	1.60
390	YOUNGS RD	NY 67 - CR 103	6125	2028	Reclaim & Pave	111,618	1.34
470	MAHAR RD	NY 22 - FRAZIER LA	1144	2028	Reclaim & Pave	17,367	1.60

D.7 ACHIEVE/MAINTAIN PQI = 50

Table D.7: Budget Recommended Rehabilitations - Achieve/Maintain PQI = 50
2023 Paved Network, 2023 to 2033, Min. Exclusion: 2 yrs, Inflation Rate: 3 %, Discount Rate: 0 %, Include Committed Projects: Yes, Tolerance: 0%

Section #	Street	Limits	Lane-Length (ft)	Implementation Year	Treatment	Cost ($)	Cost Effectiveness
600	COTTRELL RD	RR CROSSING - STEWART RD	1901	2028	Chip Seal	4,561	10.20
680	ALBANY ST	HOOSICK FALLS V/L - JAY RD	3593	2028	Chip Seal	5,748	12.26
190	FOG HILL RD	WILSON HILL RD - CLAY HILL RD	12038	2029	Reclaim & Pave	263,629	1.19
480	FACTORY HILL	NY 22 - NY 22	2006	2029	Reclaim & Pave	43,939	1.10
490	FACTORY HILL	NY 22 - DEAD END	845	2029	Reclaim & Pave	18,501	1.14
690	SARATOGA ST	VILLAGE LINE - ALBANY ST	1546	2029	Chip Seal	2,548	11.99
230	QUARRY ST	MANTON ST - DEAD END	1973	2030	Chip Seal	4,464	8.76
260	SEWARD ST	QUARRY ST - HOOSICK FALLS V/L	898	2030	Chip Seal	2,032	8.76
320	KOKLEY AVE	HOOSICK TL - DEAD END	429	2030	Reclaim & Pave	10,372	0.97
770	FARMERS INN RD	NY 7 - BAYER RD	8560	2030	Reclaim & Pave	234,459	0.95
10	TORY HILL RD	PITTSTOWN T/L - NY 7	3696	2032	General Repairs	4,340	4.02
140	PINE VALLEY RD	FORDS RD - CR 103	20276	2032	Reclaim & Pave	554,502	0.84
170	WILSON HILL RD	PINE VALLEY RD - HOOSICK FALLS V/L	34742	2032	General Repairs	36,265	4.47
310	PIKE ST	MECHANIC ST - DEAD END	634	2032	Reclaim & Pave	17,328	0.85
410	KIM CT	NY 67 - BEGIN LOOP	1165	2032	Chip Seal	3,148	7.54
630	COTTRELL RD	RR ABOVE - NY 67	9288	2032	General Repairs	10,907	3.18

D.8 ACHIEVE/MAINTAIN PQI = 55

Table D.8: Budget Recommended Rehabilitations - Achieve/Maintain PQI = 55
2023 Paved Network, 2023 to 2033, Min. Exclusion: 2 yrs, Inflation Rate: 3 %, Discount Rate: 0 %, Include Committed Projects: Yes, Tolerance: 0%

Section #	Street	Limits	Lane-Length (ft)	Implementation Year	Treatment	Cost ($)	Cost Effectiveness
590	COTTRELL RD	NY 67 - RR CROSSING	317	2023	Chip Seal	-	
600	COTTRELL RD	RR CROSSING - STEWART RD	1901	2023	Chip Seal	-	
620	COTTRELL RD	CARETAKERS RD - RR ABOVE	850	2023	Chip Seal	-	
630	COTTRELL RD	RR ABOVE - NY 67	9288	2023	Chip Seal	-	
170	WILSON HILL RD	PINE VALLEY RD - HOOSICK FALLS V/L	34742	2024	Double Chip Seal	12,000	42.10
190	FOG HILL RD	WILSON HILL RD - CLAY HILL RD	12038	2024	Double Chip Seal	14,400	0.55
400	LEE RD	YOUNGS RD - KIM CT	1056	2024	Chip Seal	2,251	9.21
740	BAYER RD	MAPLETOWN RD - FARMERS INN RD	6111	2024	Double Chip Seal	23,226	0.60
770	FARMERS INN RD	NY 7 - BAYER RD	8560	2024	Chip Seal	-	
220	SCOTT ST	DEAD END - HOOSICK FALLS V/L	2218	2025	Double Chip Seal	7,717	5.81
290	SUNRISE DR	MECHANIC ST - BEGIN LOOP	1154	2025	Chip Seal	2,816	7.53
30	FOX HOLLOW RD	GRAFTON T/L - NY 7	11405	2025	Chip Seal	23,654	9.72
350	EAGLE BRIDGE RD	TATE RD - NY67	15404	2025	Reclaim & Pave	385,341	2.36
370	BECK RD	EDDY RD - RAILROAD TRACKS	22915	2025	Chip Seal	50,323	4.58
380	BECK RD	RAILROAD TRACKS - NY 67	953	2025	Double Chip Seal	3,730	2.98
510	BABY LA	NY 22 - DEAD END	3458	2025	Paving	31,548	2.82
720	FAIRBANKS RD	HOOSICK FALLS V/L - JOHNSON HILL RD	8518	2025	Double Chip Seal	33,346	5.56
750	OREBED RD	BAYER RD - VERMONT STATE LINE	6856	2025	Double Chip Seal	25,347	5.56
80	BREESE HOLLOW RD SPUR	PETERSBURGH JUNCTION RD - BREESE HOLLOW RD	383	2025	Chip Seal	1,028	6.61
160	LESTER LA	DEAD END - BOVIE HILL RD	1360	2026	Reclaim & Pave	19,468	1.74
180	T C LA	CUL-DE-SAC - WILSON HILL RD	2705	2026	Chip Seal	6,797	7.68
210	DOLAN AVE	DEAD END - HOOSICK FALLS V/L	3877	2026	Reclaim & Pave	55,504	1.77
240	MANTON ST	HOOSICK FALLS V/L - DUNDEE AVE	1162	2026	Chip Seal	2,336	10.81
280	MECHANICS ST EX	HOOSICK FALLS VL - SUNRISE DR	4398	2026	Chip Seal	6,632	12.76
300	SUNRISE DR	BEGIN LOOP - END LOOP	524	2026	Chip Seal	1,317	7.68
340	TATE RD	NEW RD - CLAY HILL RD	27773	2026	Paving	417,589	1.71
360	DAUN LA	NY 67 - TAX PARCEL BOUNDARY	602	2026	Chip Seal	756	15.41
470	MAHAR RD	NY 22 - FRAZIER LA	1144	2026	Reclaim & Pave	16,370	1.74
540	WHITE CREEK RD	NY 22 - WASHINGTON COUNTY LINE	14256	2026	Reclaim & Pave	367,327	1.90
590	COTTRELL RD	NY 67 - RR CROSSING	317	2026	Paving	5,358	1.90
740	BAYER RD	MAPLETOWN RD - FARMERS INN RD	6111	2027	Double Chip Seal	25,380	5.05
770	FARMERS INN RD	NY 7 - BAYER RD	8560	2027	Paving	140,858	1.59

D.8 ACHIEVE/MAINTAIN PQI = 55

Table D.8: Budget Recommended Rehabilitations - Achieve/Maintain PQI = 55
2023 Paved Network, 2023 to 2033, Min. Exclusion: 2 yrs, Inflation Rate: 3 %, Discount Rate: 0 %, Include Committed Projects: Yes, Tolerance: 0%

Section #	Street	Limits	Lane-Length (ft)	Implementation Year	Treatment	Cost ($)	Cost Effectiveness
190	FOG HILL RD	WILSON HILL RD - CLAY HILL RD	12038	2028	Reclaim & Pave	255,950	1.23
390	YOUNGS RD	NY 67 - CR 103	6125	2028	Reclaim & Pave	111,618	1.34
600	COTTRELL RD	RR CROSSING - STEWART RD	1901	2028	Chip Seal	4,561	10.20
680	ALBANY ST	HOOSICK FALLS V/L - JAY RD	3593	2028	Chip Seal	5,748	12.26
140	PINE VALLEY RD	FORDS RD - CR 103	20276	2029	Reclaim & Pave	507,448	0.97
310	PIKE ST	MECHANIC ST - DEAD END	634	2029	Reclaim & Pave	15,858	0.97
320	KOKLEY AVE	HOOSICK TL - DEAD END	429	2029	Reclaim & Pave	10,070	1.02
480	FACTORY HILL	NY 22 - NY 22	2006	2029	Reclaim & Pave	43,939	1.10
490	FACTORY HILL	NY 22 - DEAD END	845	2029	Reclaim & Pave	18,501	1.14
690	SARATOGA ST	VILLAGE LINE - ALBANY ST	1546	2029	Chip Seal	2,548	11.99
150	BOVIE HILL RD	PINE VALLEY RD - NY 22	26822	2030	Reclaim & Pave	691,431	0.92
230	QUARRY ST	MANTON ST - DEAD END	1973	2030	Chip Seal	4,464	8.76
260	SEWARD ST	QUARRY ST - HOOSICK FALLS V/L	898	2030	Chip Seal	2,032	8.76

D.9 ACHIEVE/MAINTAIN PQI = 60

Table D.9: Budget Recommended Rehabilitations - Achieve/Maintain PQI = 60
2023 Paved Network, 2023 to 2033, Min. Exclusion: 2 yrs, Inflation Rate: 3 %, Discount Rate: 0 %, Include Committed Projects: Yes, Tolerance: 0%

Section #	Street	Limits	Lane-Length (ft)	Implementation Year	Treatment	Cost ($)	Cost Effectiveness
590	COTTRELL RD	NY 67 - RR CROSSING	317	2023	Chip Seal	-	
600	COTTRELL RD	RR CROSSING - STEWART RD	1901	2023	Chip Seal	-	
620	COTTRELL RD	CARETAKERS RD - RR ABOVE	850	2023	Chip Seal	-	
630	COTTRELL RD	RR ABOVE - NY 67	9288	2023	Chip Seal	-	
170	WILSON HILL RD	PINE VALLEY RD - HOOSICK FALLS V/L	34742	2024	Double Chip Seal	12,000	42.10
190	FOG HILL RD	WILSON HILL RD - CLAY HILL RD	12038	2024	Double Chip Seal	14,400	0.55
400	LEE RD	YOUNGS RD - KIM CT	1056	2024	Chip Seal	2,251	9.21
740	BAYER RD	MAPLETOWN RD - FARMERS INN RD	6111	2024	Double Chip Seal	23,226	0.60
770	FARMERS INN RD	NY 7 - BAYER RD	8560	2024	Chip Seal	-	
220	SCOTT ST	DEAD END - HOOSICK FALLS V/L	2218	2025	Double Chip Seal	7,717	5.81
290	SUNRISE DR	MECHANIC ST - BEGIN LOOP	1154	2025	Chip Seal	2,816	7.53
30	FOX HOLLOW RD	GRAFTON T/L - NY 7	11405	2025	Chip Seal	23,654	9.72
350	EAGLE BRIDGE RD	TATE RD - NY67	15404	2025	Reclaim & Pave	385,341	2.36
370	BECK RD	EDDY RD - RAILROAD TRACKS	22915	2025	Chip Seal	50,323	4.58
380	BECK RD	RAILROAD TRACKS - NY 67	953	2025	Double Chip Seal	3,730	2.98
490	FACTORY HILL	NY 22 - DEAD END	845	2025	Paving	10,792	2.01
510	BABY LA	NY 22 - DEAD END	3458	2025	Paving	31,548	2.82
720	FAIRBANKS RD	HOOSICK FALLS V/L - JOHNSON HILL RD	8518	2025	Double Chip Seal	33,346	5.56
750	OREBED RD	BAYER RD - VERMONT STATE LINE	6856	2025	Double Chip Seal	25,347	5.56
80	BREESE HOLLOW RD SPUR	PETERSBURGH JUNCTION RD - BREESE HOLLOW RD	383	2025	Chip Seal	1,028	6.61
160	LESTER LA	DEAD END - BOVIE HILL RD	1360	2026	Reclaim & Pave	19,468	1.74
180	T C LA	CUL-DE-SAC - WILSON HILL RD	2705	2026	Chip Seal	6,797	7.68
210	DOLAN AVE	DEAD END - HOOSICK FALLS V/L	3877	2026	Reclaim & Pave	55,504	1.77
240	MANTON ST	HOOSICK FALLS V/L - DUNDEE AVE	1162	2026	Chip Seal	2,336	10.81
280	MECHANICS ST EX	HOOSICK FALLS VL - SUNRISE DR	4398	2026	Chip Seal	6,632	12.76
300	SUNRISE DR	BEGIN LOOP - END LOOP	524	2026	Chip Seal	1,317	7.68
340	TATE RD	NEW RD - CLAY HILL RD	27773	2026	Paving	417,589	1.71
360	DAUN LA	NY 67 - TAX PARCEL BOUNDARY	602	2026	Chip Seal	756	15.41
470	MAHAR RD	NY 22 - FRAZIER LA	1144	2026	Reclaim & Pave	16,370	1.74
540	WHITE CREEK RD	NY 22 - WASHINGTON COUNTY LINE	14256	2026	Reclaim & Pave	367,327	1.90
590	COTTRELL RD	NY 67 - RR CROSSING	317	2026	Paving	5,358	1.90
110	WINDY HILL RD	PITTSTOWN T/L - SPICER RD	7921	2027	Paving	138,010	1.50

D.9 ACHIEVE/MAINTAIN PQI = 60

Table D.9: Budget Recommended Rehabilitations - Achieve/Maintain PQI = 60
2023 Paved Network, 2023 to 2033, Min. Exclusion: 2 yrs, Inflation Rate: 3 %, Discount Rate: 0 %, Include Committed Projects: Yes, Tolerance: 0%

Section #	Street	Limits	Lane-Length (ft)	Implementation Year	Treatment	Cost ($)	Cost Effectiveness
390	YOUNGS RD	NY 67 - CR 103	6125	2027	Reclaim & Pave	108,367	1.39
740	BAYER RD	MAPLETOWN RD - FARMERS INN RD	6111	2027	Double Chip Seal	25,380	5.05
770	FARMERS INN RD	NY 7 - BAYER RD	8560	2027	Paving	140,858	1.59
140	PINE VALLEY RD	FORDS RD - CR 103	20276	2028	Reclaim & Pave	492,668	1.02
190	FOG HILL RD	WILSON HILL RD - CLAY HILL RD	12038	2028	Reclaim & Pave	255,950	1.23
310	PIKE ST	MECHANIC ST - DEAD END	634	2028	Reclaim & Pave	15,396	1.02
320	KOKLEY AVE	HOOSICK TL - DEAD END	429	2028	Reclaim & Pave	9,777	1.07
480	FACTORY HILL	NY 22 - NY 22	2006	2028	Reclaim & Pave	42,659	1.15
600	COTTRELL RD	RR CROSSING - STEWART RD	1901	2028	Chip Seal	4,561	10.20
680	ALBANY ST	HOOSICK FALLS V/L - JAY RD	3593	2028	Chip Seal	5,748	12.26
150	BOVIE HILL RD	PINE VALLEY RD - NY 22	26822	2029	Reclaim & Pave	671,293	0.97
430	NEW RD	CLAY HILL RD - TATE RD	13728	2029	Reclaim & Pave	343,575	0.97
690	SARATOGA ST	VILLAGE LINE - ALBANY ST	1546	2029	Chip Seal	2,548	11.99

D.10 UNLIMITED FUNDING (NEEDS ANALYSIS)

Table D.10: Budget Recommended Rehabilitations - Unlimited Funding (Needs Analysis)
2023 Paved Network, 2023 to 2033, Min. Exclusion: 2 yrs, Inflation Rate: 3 %, Discount Rate: 0 %, Include Committed Projects: Yes, Tolerance: 0%

Section #	Street	Limits	Lane-Length (ft)	Implementation Year	Treatment	Cost ($)	Cost Effectiveness
590	COTTRELL RD	NY 67 - RR CROSSING	317	2023	Chip Seal	-	
600	COTTRELL RD	RR CROSSING - STEWART RD	1901	2023	Chip Seal	-	
620	COTTRELL RD	CARETAKERS RD - RR ABOVE	850	2023	Chip Seal	-	
630	COTTRELL RD	RR ABOVE - NY 67	9288	2023	Chip Seal	-	
110	WINDY HILL RD	PITTSTOWN T/L - SPICER RD	7921	2024	Double Chip Seal	30,106	5.67
120	FORDS RD	PINE VALLEY RD - DEAD END	9505	2024	Paving	151,559	1.56
140	PINE VALLEY RD	FORDS RD - CR 103	20276	2024	Reclaim & Pave	437,729	1.19
150	BOVIE HILL RD	PINE VALLEY RD - NY 22	26822	2024	Reclaim & Pave	579,063	1.19
160	LESTER LA	DEAD END - BOVIE HILL RD	1360	2024	Reclaim & Pave	18,350	1.90
170	WILSON HILL RD	PINE VALLEY RD - HOOSICK FALLS V/L	34742	2024	Double Chip Seal	12,000	42.10
180	T C LA	CUL-DE-SAC - WILSON HILL RD	2705	2024	Chip Seal	6,797	7.68
190	FOG HILL RD	WILSON HILL RD - CLAY HILL RD	12038	2024	Double Chip Seal	14,400	0.55
200	BRUD WAY RD	DEAD END - WILSON HILL RD	1162	2024	Reclaim & Pave	28,211	1.06
210	DOLAN AVE	DEAD END - HOOSICK FALLS V/L	3877	2024	Reclaim & Pave	52,318	1.91
220	SCOTT ST	DEAD END - HOOSICK FALLS V/L	2218	2024	Chip Seal	4,203	9.15
240	MANTON ST	HOOSICK FALLS V/L - DUNDEE AVE	1162	2024	Chip Seal	2,336	10.81
280	MECHANICS ST EX	HOOSICK FALLS VL - SUNRISE DR	4398	2024	Chip Seal	6,632	12.76
290	SUNRISE DR	MECHANIC ST - BEGIN LOOP	1154	2024	Chip Seal	2,734	7.96
30	FOX HOLLOW RD	GRAFTON T/L - NY 7	11405	2024	Chip Seal	23,654	9.72
300	SUNRISE DR	BEGIN LOOP - END LOOP	524	2024	Chip Seal	1,317	7.68
310	PIKE ST	MECHANIC ST - DEAD END	634	2024	Reclaim & Pave	13,679	1.19
320	KOKLEY AVE	HOOSICK TL - DEAD END	429	2024	Reclaim & Pave	8,687	1.27
330	EDDY RD	BUSKIRK WEST HOOSICK RD - NEW RD	16157	2024	Reclaim & Pave	392,406	1.06
340	TATE RD	NEW RD - CLAY HILL RD	27773	2024	Double Chip Seal	93,827	6.16
350	EAGLE BRIDGE RD	TATE RD - NY67	15404	2024	Reclaim & Pave	374,118	2.48
360	DAUN LA	NY 67 - TAX PARCEL BOUNDARY	602	2024	Chip Seal	756	15.41
370	BECK RD	EDDY RD - RAILROAD TRACKS	22915	2024	Chip Seal	48,858	5.42
380	BECK RD	RAILROAD TRACKS - NY 67	953	2024	Chip Seal	2,031	4.50
390	YOUNGS RD	NY 67 - CR 103	6125	2024	Reclaim & Pave	99,171	1.59
40	SHINGLE HOLLOW	NY 22 - BEGIN LOOP	1790	2024	Reclaim & Pave	48,300	0.95
400	LEE RD	YOUNGS RD - KIM CT	1056	2024	Chip Seal	2,251	9.21
420	KIM CT	BEGIN LOOP - END LOOP	485	2024	Reclaim & Pave	11,769	1.06

D.10 UNLIMITED FUNDING (NEEDS ANALYSIS)

Table D.10: Budget Recommended Rehabilitations - Unlimited Funding (Needs Analysis)
2023 Paved Network, 2023 to 2033, Min. Exclusion: 2 yrs, Inflation Rate: 3 %, Discount Rate: 0 %, Include Committed Projects: Yes, Tolerance: 0%

Section #	Street	Limits	Lane-Length (ft)	Implementation Year	Treatment	Cost ($)	Cost Effectiveness
430	NEW RD	CLAY HILL RD - TATE RD	13728	2024	Reclaim & Pave	296,371	1.19
440	SEWER PLANT RD	DEAD END - NY 22	5376	2024	Reclaim & Pave	116,061	1.19
450	PINE ST	DEAD END - NY 22	1478	2024	Reclaim & Pave	31,916	1.19
460	WALNUT ST	DEAD END - NY 22	1850	2024	Reclaim & Pave	44,932	1.05
470	MAHAR RD	NY 22 - FRAZIER LA	1144	2024	Reclaim & Pave	15,431	1.90
480	FACTORY HILL	NY 22 - NY 22	2006	2024	Reclaim & Pave	37,902	1.36
490	FACTORY HILL	NY 22 - DEAD END	845	2024	Paving	10,477	2.05
50	SHINGLE HOLLOW	BEGIN LOOP - END LOOP	528	2024	Reclaim & Pave	14,243	0.95
510	BABY LA	NY 22 - DEAD END	3458	2024	Paving	30,629	2.86
520	OLD ROUTE 22	NY 22 - DEAD END	3062	2024	Reclaim & Pave	66,113	1.19
530	TELFORD RD	NY 22 - ANDREWS RD	14032	2024	Reclaim & Pave	340,795	1.05
540	WHITE CREEK RD	NY 22 - WASHINGTON COUNTY LINE	14256	2024	Reclaim & Pave	346,241	2.08
550	WHITE CREEK RD EXT	WHITE CREEK RD - ANDREWS RD	176	2024	Double Chip Seal	966	3.71
560	BRADY LA	WHITE CREEK RD - DEAD END	931	2024	Reclaim & Pave	20,105	1.19
570	ST CROIX DR	NY 67 - DEAD END	5489	2024	Paving	87,522	1.60
60	TILLEY LA	NY 7 - DEAD END	1247	2024	Reclaim & Pave	26,921	1.19
640	CARETAKERS RD	NY 67 - 0.04 MILES	422	2024	Reclaim & Pave	9,688	0.19
650	CARETAKERS RD	0.04 MILES - RRXING	844	2024	Reclaim & Pave	19,352	0.19
660	CARETAKERS RD	RRXING - BRIDGE	318	2024	Reclaim & Pave	7,294	0.19
70	DEPOT RD	NY 7 - DEAD END	942	2024	Reclaim & Pave	20,331	1.19
700	MARC DR	SARATOGA ST - ALBANY ST	1901	2024	Reclaim & Pave	46,165	1.05
720	FAIRBANKS RD	HOOSICK FALLS V/L - JOHNSON HILL RD	8518	2024	Chip Seal	18,162	8.91
730	BURGESS RD	MAPLETOWN RD - BEECHWOOD RD	11157	2024	Reclaim & Pave	255,924	1.12
740	BAYER RD	MAPLETOWN RD - FARMERS INN RD	6111	2024	Double Chip Seal	23,226	0.60
750	OREBED RD	BAYER RD - VERMONT STATE LINE	6856	2024	Chip Seal	13,805	7.74
770	FARMERS INN RD	NY 7 - BAYER RD	8560	2024	Chip Seal	-	
780	BEECHWOOD RD	BAYER RD - VT STATE LINE	25444	2024	Reclaim & Pave	583,629	1.12
80	BREESE HOLLOW RD SPUR	PETERSBURGH JUNCTION RD - BREESE HOLLOW RD	383	2024	Chip Seal	999	6.66
670	CARETAKERS RD	BRIDGE - COTTRELL RD	492	2025	Paving	7,637	0.28
590	COTTRELL RD	NY 67 - RR CROSSING	317	2026	Paving	5,358	1.90
600	COTTRELL RD	RR CROSSING - STEWART RD	1901	2026	Chip Seal	4,561	10.20
680	ALBANY ST	HOOSICK FALLS V/L - JAY RD	3593	2026	Chip Seal	5,748	12.26

D.10 UNLIMITED FUNDING (NEEDS ANALYSIS)

Table D.10: Budget Recommended Rehabilitations - Unlimited Funding (Needs Analysis)
2023 Paved Network, 2023 to 2033, Min. Exclusion: 2 yrs, Inflation Rate: 3 %, Discount Rate: 0 %, Include Committed Projects: Yes, Tolerance: 0%

Section #	Street	Limits	Lane-Length (ft)	Implementation Year	Treatment	Cost ($)	Cost Effectiveness
190	FOG HILL RD	WILSON HILL RD - CLAY HILL RD	12038	2027	Reclaim & Pave	248,495	1.26
690	SARATOGA ST	VILLAGE LINE - ALBANY ST	1546	2027	Chip Seal	2,548	11.99
740	BAYER RD	MAPLETOWN RD - FARMERS INN RD	6111	2027	Double Chip Seal	25,380	5.05
770	FARMERS INN RD	NY 7 - BAYER RD	8560	2027	Paving	140,858	1.59
230	QUARRY ST	MANTON ST - DEAD END	1973	2028	Chip Seal	4,464	8.76
260	SEWARD ST	QUARRY ST - HOOSICK FALLS V/L	898	2028	Chip Seal	2,032	8.76
10	TORY HILL RD	PITTSTOWN T/L - NY 7	3696	2029	General Repairs	4,214	4.31
170	WILSON HILL RD	PINE VALLEY RD - HOOSICK FALLS V/L	34742	2029	General Repairs	35,208	4.83
410	KIM CT	NY 67 - BEGIN LOOP	1165	2030	Chip Seal	3,148	7.54
630	COTTRELL RD	RR ABOVE - NY 67	9288	2030	General Repairs	10,907	3.18
250	DUNDEE AVE	MANTON ST - CR 104	1373	2031	Chip Seal	3,395	8.48
350	EAGLE BRIDGE RD	TATE RD - NY67	15404	2031	General Repairs	18,631	10.97
620	COTTRELL RD	CARETAKERS RD - RR ABOVE	850	2031	General Repairs	1,028	3.14
750	OREBED RD	BAYER RD - VERMONT STATE LINE	6856	2031	General Repairs	7,832	4.42
270	HAMPTON ST EXT	QUARRY ST - HOOSICK FALLS TL	855	2032	Chip Seal	2,314	7.73
540	WHITE CREEK RD	NY 22 - WASHINGTON COUNTY LINE	14256	2032	General Repairs	17,760	8.52
220	SCOTT ST	DEAD END - HOOSICK FALLS V/L	2218	2033	General Repairs	2,529	4.54
380	BECK RD	RAILROAD TRACKS - NY 67	953	2033	General Repairs	1,223	2.14