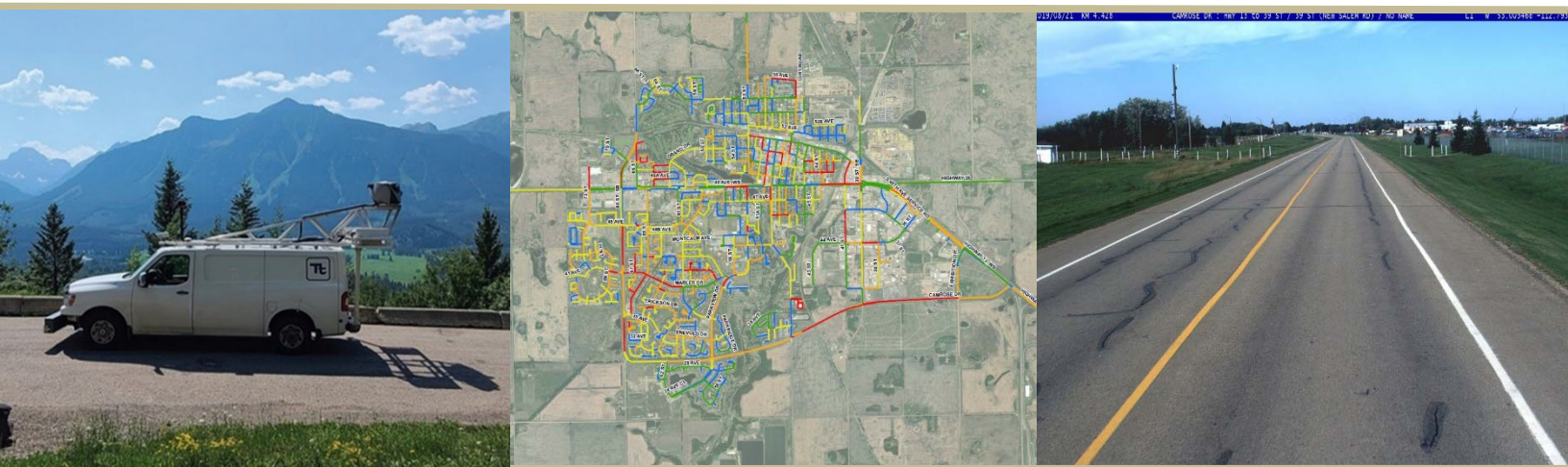


2024 Pavement Condition Assessment Report



PRESENTED TO
City of Camrose

NOVEMBER 5, 2024
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APPENDICES

Appendix A Tetra Tech's Limitations on the Use of this Document

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LIMITATIONS OF REPORT

This report and its contents are intended for the sole use of City of Camrose and their agents. Tetra Tech Canada Inc. (Tetra Tech) does not accept any responsibility for the accuracy of any of the data, the analysis, or the recommendations contained or referenced in the report when the report is used or relied upon by any Party other than City of Camrose, or for any Project other than the recommendations at the subject site. Any such unauthorized use of this report is at the sole risk of the user. Use of this document is subject to the Limitations on the Use of this Document attached in Appendix A or Contractual Terms and Conditions executed by both parties.

1.0 INTRODUCTION

Tetra Tech Canada Inc. (Tetra Tech) was engaged by the City of Camrose (the City) to perform a comprehensive inspection of its paved road network and update the City's Pavement Management System (PMS). Tetra Tech previously assisted the City in 2015 and 2019 with pavement condition assessments of the entire road network. The goal of this project is to provide an updated evaluation of the asphalt roadways as of 2024. The findings will be used to assess the aging of the network, determine appropriate treatments for each road section, compare roadway condition ratings, and support future capital planning, including treatment cost estimates.

This report outlines the methodology used to collect and analyze pavement data, compares the current condition of the road network to its 2019 state, and identifies the funding scenarios necessary to maintain or enhance the paved road network.

All data and results have been integrated into an ESRI-based project Geographic Information System (GIS) and are being transmitted to the City via a portable data storage device for upload to the City's GIS system.

1.1 Document Review

- The most recent GIS shapefile of the road centerline network, including:
- Road name, classification and surface type.
- A list of completed Projects (2019-2023).
- A list of 2024 Paving Projects (committed projects).
- Updated treatment unit costs and City budgets information.

1.2 Project Definition

The City manages a roadway network of approximately 156 centerline kilometers of paved roads according to GIS data. A detailed breakdown of the network by roadway category is shown in Table 1. About 1.0 kilometer of road from the GIS data was excluded from the table, as it either had a gravel surface or did not exist at the time of the field survey.

Table 1: Road Network lengths based on Road Classification

Road Classification		GIS Centerline (km)	% Network
Arterial	ART	39.6	56% Major Roads
Collector	COL	45.9	
Ramp	RAMP	1.1	
Local	LOC	69.4	44% Local Roads
Road Network		156.0	100%

2.2 Pavement Surface Condition Assessment

The Pavement condition assessment was conducted with the one of Tetra Tech’s Pavement Surface Profiler (PSP-7000) vehicles. The PSP was employed to automatically capture data on pavement surface distress, the International Roughness Index (IRI), and digital images of the roadways, as well as three-dimensional Light Detection and Ranging (LiDAR) data.

Tetra Tech collected data on pavement condition for a total of 160 lane-km within the City's paved road network at the end of June 2024, as outlined in Table 2. The survey was primarily conducted in the outside lane of the northbound or eastbound lanes for each road segment, covering at least one lane in one direction for all roads. For divided roads, represented by a single line in the project GIS, assessments were performed in both directions.



Table 2: Extent of Paved Road Data Collection

Road Class	Paved Roads	
	GIS Centerline-km	Survey Lane-km
Arterial	39.6	39.8 ^{Note 1}
Collector	45.9	48.1
Local	69.3 ^{Note 2}	71.0
Ramp	1.1	1.1
Network	155.9	160.0
Note 1: Most multi-lane arterial roads already have two GIS lines, meaning data has been collected in both directions. This is why the total centerline kilometers align with the surveyed lane kilometers.		
Note 2: Only 200 m of cul-de-sac local road was not collected.		

2.2.1 Pavement Surface Distress

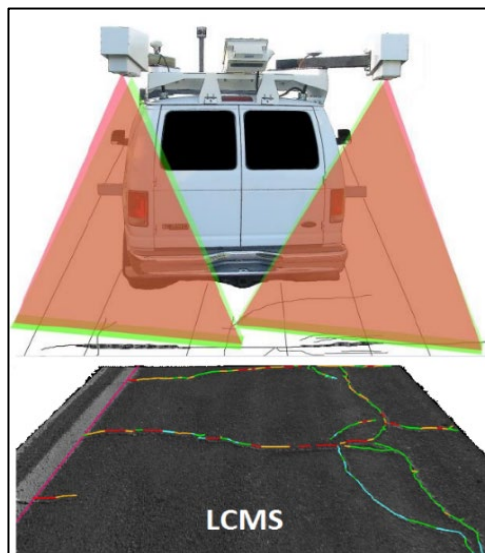
Tetra Tech utilized a 3D Laser Crack Measurement System (LCMS) for automated surface condition assessments. This LCMS generates detailed 3D elevation maps of the pavement surface, facilitating the automatic detection and classification of surface distresses. The system identifies and categorizes cracks based on variations in pavement surface elevation and differences in surface color. The elevation data is automatically processed to generate measurements of severity and extent for cracks and various other forms of roadway distress.

Distress data was collected on all paved roads following the ASTM D6433 methodology. This method involves rating individual distresses according to their severity and extent. Surface distresses were reported across the width of the surveyed lane, with data provided at intervals of up to 30 meters.

The recorded distresses for this project encompassed:

- Alligator Cracking (including longitudinal fatigue cracking).
- Longitudinal Cracking (excluding fatigue cracking).
- Transverse Cracking.
- Weathering.
- Raveling.
- Potholes.
- Rutting area.

While the LCMS doesn't directly detect or report patches, it does capture and report associated elements such as joints, cracks, and other distresses linked with patches.



Representation of the LCMS

2.2.2 Front-Facing Right-of-Way (ROW) Imagery

Digital images were collected for all PSP surveys using an integrated Digital Imaging System. This system provides a forward looking, right-of-way (ROW) full roadway view. The imaging system provides a fully referenced record of the roadway corridor at the time of survey for the identification, inventory, and referencing of all infrastructure and appurtenances located within the driven ROW. Images are organized in folders for each roadway and delivered at a nominal spacing of 5 m. The direct linking of the ROW images into the project GIS was used as a data quality assurance tool. It provides users the ability to “virtually drive down the street” while sitting at their desk and was used in the validation of the condition data and analysis results (Figure 2).



Figure 2: Example of PSP-7000 Digital Image Log

2.2.3 Pavement Roughness Survey

The PSP-7000 vehicle's roughness measurement capabilities are provided by an inertial profiling system, which is an FHWA Class II profiler and is ASTM E950, AASHTO M328-10 and AASHTO PP70-10 compliant. The heart of this system is Tetra Tech's Road Profiler with a high precision laser sensor array and two wheelpath accelerometers.

Roughness data was collected and processed to provide IRI using a high precision laser sensor array and two wheelpath accelerometers. Data collection and processing for this project was conducted in conformance with the “Best Practice Guidelines”, as described in the Transportation Association of Canada document “Standardization of IRI Data Collection and Reporting in Canada.”

The IRI data was provided for all segments where the data collection platform was able to record valid roughness data. The system requires survey speeds greater than 25 km/h for valid IRI measurements. The data was provided at intervals of up to 30 meters.



3.0 INCORPORATION OF CITY’S DATA AND ROAD INVENTORY

The City's 2019 pavement condition data, along with the timing of resurfacing projects completed over the past five years (2019 to 2023), and road inventory data (road width and curb presence), were integrated into the City's existing PMS database.

Table 3 summarizes the resurfacing projects since 2019, indicating that the annual paving length varied from 3.3 km to 5.5 km, with an average of 4.1 km per year.

Table 3: Annual Paving Projects Lengths since 2019

Paving Year	Paving Length (km)
2023	4.8
2022	3.4
2021	3.3
2020	3.8
2019	5.5
Average	4.1

Additionally, the City has provided a list of paving projects scheduled for completion by September 2024, totaling 5.7 km, following the pavement condition assessment (refer to Figure 3). Tetra Tech has considered these as “committed” projects for 2024, with the pavement conditions updated to reflect the new pavement for these projects.



Figure 3: City 2024 Paving Projects After Data Collection (Committed Projects)

4.0 PAVEMENT CONDITION INDICES

A pavement condition index is a value which expresses the overall condition of a pavement by considering various factors such as surface distresses, structural defects, and ride quality. The selection of an appropriate pavement condition index depends on the objectives of whatever system is used to manage a particular pavement network. The following indices were used for this project:

- Pavement Condition Index (PCI) according to ASTM D6433-20 to report the overall pavement condition at the network level and historical condition comparison.
- Pavement damaged surface area indices to be used for performance modelling, and treatment selection.
- Pavement Roughness (IRI) to quantify riding comfort and used to report current pavement condition and historical condition comparison.
- Pavement surface ruts (Rut); excessive rutting can pose a safety concern in wet weather on higher traffic speed roadways.

4.1 Pavement Condition Index (PCI)

The PCI is determined using the methodology outlined in the American Society for Testing and Materials standard ASTM D6433-20. This index, commonly used in North America, is useful for comparing the overall condition of one agency's network to that of others. It reflects the condition of the pavement surface based on the severity and extent of visible surface distresses. The PCI is a numerical rating that ranges from 100 to 0, with 100 representing the best possible condition and 0 representing the worst. Pavement conditions are categorized into five groups, from "Good" to "Very Poor," as detailed in Table 4.

Table 4: PCI Ranges for Condition Description

Condition Rating	PCI	Description
Good	86-100	Pavements in this category are either new or nearly new, likely to be smooth and devoid of significant surface distresses and patches. They are well-maintained, exhibit good condition, and may be recently rehabilitated, making them fit for the future.
Satisfactory	71-85	Pavements in this category are not as smooth as those in the "Good" category. They may show some signs of surface deterioration, such as low severity cracking, but they are generally acceptable for current use. This rating suggests that the pavement is approaching the mid-stage of its expected service life.
Fair	56-70	Pavements in this category may exhibit surface defects such as low and moderate cracking and patching. However, overall, the pavement condition is still considered acceptable.
Poor	41-55	Pavements in this category have deteriorated to an extent that they may impact the typical functionality of the pavement section. High severity distresses such as potholes, deep cracks, and distress including raveling, cracking, and rutting may be present in the paved road. These pavements are at risk of affecting service, approaching the end of their service life, with a condition below standard.
Very Poor	0-40	Pavements in this category are in an advanced state of deterioration and pose significant risks to user safety. Urgent action is typically required to implement rehabilitation or reconstruction measures. They may feature large potholes, high severity cracking, and distress covering most of the surface. Such pavements are unfit for sustained service, near or beyond their expected service life.

4.2 Pavement Damaged Surface Area Indices

The individual pavement surface distresses are an important element of pavement management. They are of particular use in the treatment selection process. Tetra Tech uses the individual pavement surface distress indices as defined by the World Bank's Highway Development and Management Road Deterioration and Works Effects (HDM - RDWE) models.

The pavement cracking is classified into two categories: structural cracking and non-structural cracking. Each of these two categories of cracking are divided into a low and a high severity. The structural and age-related cracks are included in the fatigue crack index which is defined as the percent of the pavement surface area with load and age-related fatigue cracks including: alligator cracking and wheelpath longitudinal cracking. It is modelled as:

- AFCL (%): Narrow Fatigue Cracking Area;
- AFCW (%): Wide Fatigue Cracking Area; and
- AFCA (%): All Fatigue Cracking Area (AFCL + AFCW).

The non-structural cracks are included in a thermal crack index which is defined as the percent of pavement surface area with cracks that are induced by low temperature as well as other non-structural cracking. The index includes transverse cracking and non-wheelpath longitudinal cracking such as joint cracking. It is defined as:

- TCL (%): Narrow Thermal and Other Cracking Area;
- TCW (%): Wide Thermal and Other Cracking Area; and
- TCA (%): All Thermal and Other Cracking Area (TCL + TCW).

The ACA Index is defined as total area of cracking including all fatigue cracks and thermal cracks:

- $ACA (\%) = AFCA + TCA$.

These Cracking Indices are usually easily understood by the general public and City council because they represent what is visible on the road irrespective of the cause of the cracking. The fatigue cracking is very important and has the largest impact on maintenance and rehabilitation costs. It is often caused by traffic loading and indicates where pavements may need strengthening, deeper patching repairs, or even replacement. Thermal and most other cracks are less of a concern; however, when unsealed they can allow moisture to enter the road bed and ultimately lead to loss of strength.

Raveling is the dislodging of coarse aggregate particles. Raveling may be caused by insufficient asphalt binder, poor mixture quality, insufficient compaction, segregation, or stripping. Weathering is the wearing away of the asphalt binder and fine aggregate matrix primarily through oxidization of the bitumen due to age and environment. Since 2009, ASTM has treated these two distresses separately because the mechanism causing these distresses is different. They have, therefore, been recorded separately in this report:

- WRL (%): Low severity Weathering Area;
- WRH (%): Moderate to High severity Weathering Area; and
- RVH (%): Moderate to High severity Raveling Area.

4.3 Pavement Rutting

The pavement surface ruts can pose safety concerns where they are deep enough to affect the handling characteristics of a vehicle at higher speeds and can affect the ability of an agency to effectively clear snow and ice in the winter. The rut depth is measured in millimetres and the average of the inner and outer wheelpath rut depths have been used for the condition report and pavement performance modelling.

4.4 Pavement Roughness

Pavement roughness measures surface irregularities that impact ride quality and vehicle dynamics, expressed as the International Roughness Index (IRI). Calculated from a longitudinal profile, IRI is reported in millimeters per meter (mm/m) or meters per kilometer (m/km). Introduced in 1986, IRI is widely used to evaluate and manage road systems. It correlates with vehicle operating costs such as fuel consumption and tire wear. Even on lower-speed municipal networks, IRI provides a consistent measure of overall pavement health and helps compare conditions over time.

Drivers' perception of road roughness can vary based on their travel speed, with smoother roads (lower IRI values) preferred for higher speeds. Therefore, for this study, Tetra Tech assumed average travel speeds of 50 km/h for Arterial roads and 40 km/h for Collector/Local roads. Table 5 illustrates the IRI ranges used to describe pavement conditions for different road classifications within the City.

Table 5: IRI Ranges for Condition Description

Rating	IRI (mm/m) ¹		Colour Code
	Arterial	Collector / Local	
Good	< 2.28	< 2.86	
Satisfactory	2.28– 3.59	2.86 – 4.49	
Fair	3.59 -4.54	4.49 -5.69	
Poor	4.54 – 6.25	5.69 – 8.08	
Very Poor	> 6.25	> 8.08	

¹: The IRI condition range is based on (Yu, Chou, & Yau, 2006), normal travel speed of 50 km/h for ART and 40 km/h for COL/LOC

5.0 POPULATE DATABASE AND PAVEMENT CURRENT CONDITON

Pavement analysis segments are longer sections (typically block to block) used for reporting current pavement conditions and planning rehabilitation projects. Tetra Tech started with the City's PMS 2019 segmentation and added new segments as necessary. Some existing segments were also subdivided due to recent paving projects that impacted parts of the original segments. Tetra Tech then assigned new unique IDs (Analysis_ID) to all analysis segments.

The pavement condition indices from unit samples (30 m intervals), roadside inventory data, and other historical information were aggregated and summarized into these analysis segments using dynamic data transfer.

5.1 2024 Paved Road Condition

The pavement condition assessment was conducted in June 2024, prior to the commencement of the City's 2024 paving projects (a total of 5.7 km). To provide a more accurate reflection of the 2024 road conditions, we have assumed that the paving projects were completed, and their condition has been reset to reflect a new pavement surface (i.e., no distress, no rut and an assumed IRI of 1.1 mm/m).

As outlined in Section 4.0, the pavement condition status is reported using percentage of cracking, RUT, PCI, and IRI. The current status is based on the average values within each pavement management segment and weighted by centreline length. Table 6 provides a breakdown of the average pavement condition in 2024 for each roadway classification. Detailed tabular data of the 2024 pavement condition indices are presented in Appendix B.

Table 6: Average 2024 Pavement Condition for Road Classifications

Road Class	Length (km)	Fatigue Crack (AFCA %)	Thermal Crack (TCA %)	PCI	RUT (mm)	IRI (mm/m)
Arterial	39.6	7.7	19.3	66	4.3	2.19
Collector	45.9	7.6	21.5	65	2.5	3.73
Local	69.3	6.4	17.0	67	2.5	5.08
Ramp	1.1	8.1	24.3	53	4.1	4.87
Network	155.9	7.1	19.0	66	3.0	3.92

Arterial roads had the lowest IRI (indicating smoother surfaces) compared to other road classifications in 2024. However, the average rut depth for arterial roads is higher than for other road types, likely due to heavier traffic loading. As shown in Table 6, the average PCI for arterial roads was 66 in 2024, which is lower than that for local roads.

Rut distress significantly affects the ASTM calculation of PCI. For local roads, surveys are typically conducted along the center of the road, adjusting as needed to avoid oncoming traffic and parked vehicles, and rut measurements can be influenced by the pavement crown. Therefore, Tetra Tech excluded rut measurements from the PCI calculation for local roads, as was done in 2019.

For arterial roads, rut distress has a substantial impact on the lower average PCI compared to the other road classes. Sensitivity analysis indicates that if rut distress were omitted from PCI calculations for arterial roads, the average PCI would increase to 74 (compared to the current 66). In other words, the surface condition of arterial roads, when evaluated without considering rut, is better than that of other road classifications.

Figure 4 illustrates the distribution of PCI values across the entire network and within each roadway classification. The graph highlights that in 2024, 31% of the City's pavements were in poor or very poor condition with a PCI less than 55, compared to 30% in 2019.

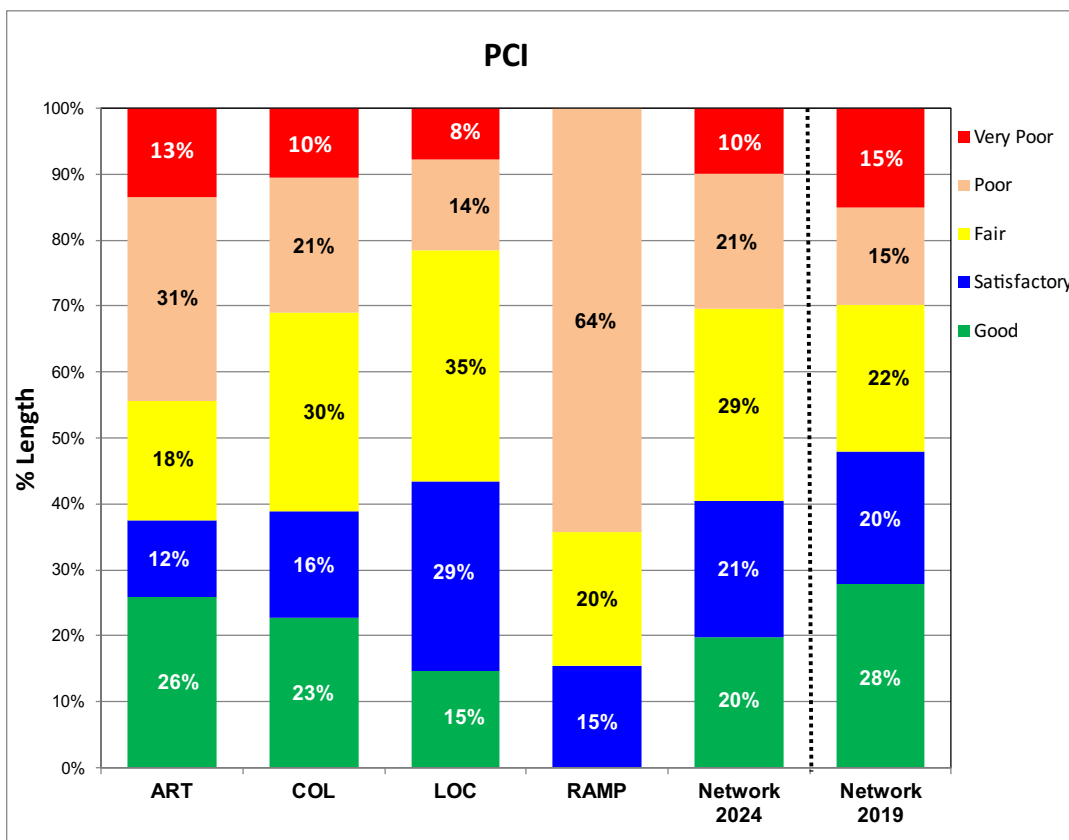


Figure 4: 2024 Pavement Condition Distribution in Terms of PCI

A map displaying the 2024 PCI is presented in Appendix C.

The distribution of IRI values for the network and for each roadway classification is illustrated in Figure 5. The figure shows that 17% of the network, based on IRI, was in poor or very poor condition in 2024, compared to 15% in 2019. A map displaying the 2024 IRI is presented in Appendix C.

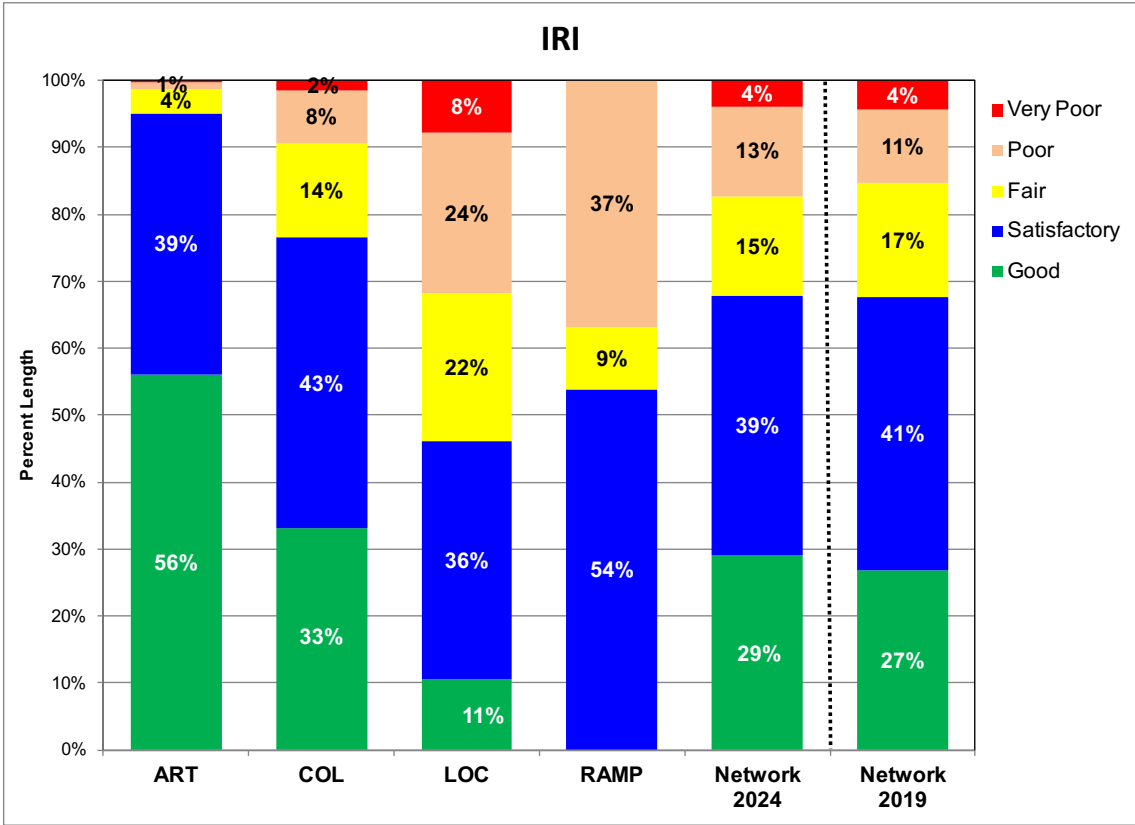


Figure 5: 2024 Pavement Condition Distribution in Terms of IRI

5.2 Historical Pavement Condition Comparison

Table 7 presents a comparison between 2019 and 2024 pavement condition for all road classifications based on crack percentage (including crack sealing), PCI and IRI.

Table 7: Historical Pavement Condition Comparison

Road Classification	Compared Length (km)	% Crack and Creak Seal		PCI		IRI (mm/m)	
		2019	2024	2019	2024	2019	2024
Arterial	38.5	11	27	65	66	2.44	2.18
Collector	45.9	14	29	70	65	3.66	3.73
Local	68.5	18	23	67	67	5.03	5.00
Network	152.9	15	26	67	66	3.94	3.88

As shown in Table 7, the percentage of cracks and crack sealing detected in 2024 has nearly doubled compared to 2019. Two main factors were identified during the data review for this increase. First, the City has expanded its crack sealing projects in recent years (see Figure 6). Crack sealing is classified as low-severity longitudinal cracking, leading to an increase in crack detection. Second, Tetra Tech's LCMS software library has improved, enabling more accurate and higher-quality crack seal detection compared to 2019.



Figure 6: Example of Roads with Increased Crack Sealing in 2024 Compared to 2019

For arterial roads, the average PCI slightly increased from 65 in 2019 to 66 in 2024, despite nearly 31% of arterial roads being paved since 2019. Tetra Tech investigated why there wasn't a significant improvement in arterial road conditions and found that rutting is a key factor affecting PCI, even on new pavements. For example, some arterial roads paved between 2019 and 2021 now show fair to poor PCI ratings (instead of the expected good condition) due to the recurrence of low- to moderate-severity rutting after paving. Figure 7 illustrates an example of an arterial road (48 Avenue) with rutting issues both before and after paving.



Figure 7: Example of Arterial Road (48 Avenue) with Rut Issue Before and After paving

For collector roads, it is clear that pavement conditions have deteriorated since 2019, as indicated by the trends in both PCI and IRI.

However, for local roads, the pavement condition appears unchanged since 2019, with a PCI of 67 in both years. One reason is that several local road segments show a higher PCI in 2024 than in 2019, despite no repairs being made. This affects approximately 10 km of local roads. Upon further investigation, it was found that joint crack seals recorded as longitudinal cracks in 2019 (often located in the PSP wheel path) had disappeared in 2024, as shown in Figure 8, which resulted in an increase in PCI. Therefore, if we assume that the pavement condition for these 10 km of local roads did not actually improve, it can be concluded that the overall condition of local roads has deteriorated, similar to that of collector roads.



Figure 8: Example of Local Roads Showing PCI Improvement as Crack Seal Fades

In summary, the paving condition has slightly deteriorated since 2019 according to the PCI. However, the PCI is sensitive to the amount of crack sealing performed by the City, which may not be seen as unsatisfactory by users. For drivers, road roughness is the most important factor, and the average IRI for major roads (arterial and collector) has improved on average due to recent arterial paving.

6.0 ANALYSIS METHODOLOGY

6.1 Pavement Performance Modelling

Tetra Tech has utilized the Highway Development and Management (HDM) modeling framework from the World Bank to predict the propagation of pavement distresses such as cracking, rutting, and roughness. Figure 9 illustrates the progression of these models from required inputs through to predicted condition. The model has been developed and updated by a worldwide team of experts over the past 20 years.

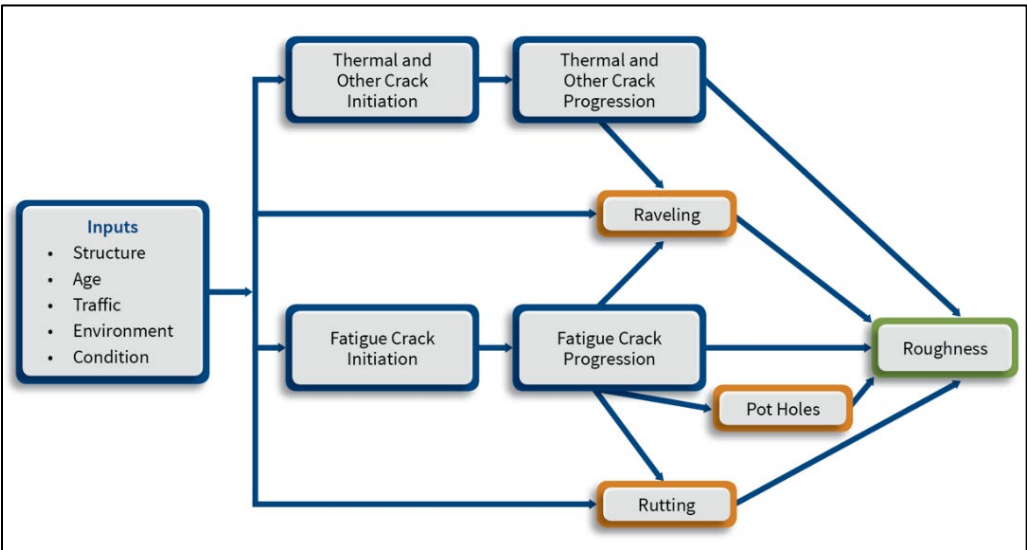


Figure 9: Predicting Pavement Performance

Additionally, the PCI prediction models for various road classes were developed based on assumptions regarding Intervention Timing (when PCI reaches 55) and estimated service life (when PCI reaches 25), as described in Table 8.

Table 8: Intervention Timing and Estimated Service Life for Different Road Classes

Road Class	Average Paving Intervals (Year)	Estimated Service Life (Year)
Arterial	16	26
Others (Collector/Local)	25	41

6.2 Rehabilitation and Maintenance Strategies

The maintenance and rehabilitation treatments were initially defined in the 2015 PMS, with unit costs updated in 2019 and again in 2024. Table 9 presents the latest treatments and their corresponding unit costs. Typically, crack sealing and shallow patching are classified as maintenance treatments, while the remaining treatments are considered rehabilitation. For this study, Deep Patch Repair is treated as ancillary patching in conjunction with Overlay or Mill and Fill (50 mm), and its quantity is estimated based on the percentage of wide-severity cracking.

Table 9: Treatments and Unit Costs used in the Analysis

Treatment	Unit Cost
Crack Sealing	\$5/L-m
Shallow Patch	\$16/m ²
Deep Patch Repair (Ancillary Patching)	Local Road (100 mm) \$130/m ² Collector/Ramp (125 mm) \$140/m ² Arterial (150 mm) \$150/m ²
Overlay 50 mm (OL50)	\$29/m ² + Ancillary Patching Cost Max: \$48/m ²
Mill and Fill 50 mm (MF50)	\$31/m ² + Ancillary Patching Cost Max: \$50/m ²
Full-Depth Mill & Inlay (FDM)	Local Road (Mill and Fill 75 mm) \$50/m ² Collector/Ramp (Mill and Fill 125 mm) \$65/m ² Arterial (Mill and Fill 150 mm) \$75/m ²
Reconstruction (RCON)	Local Road (90mm Asphalt, 300 mm Granular) \$75/m ² Collector/Ramp (125mm Asphalt, 400 mm Granular) \$100/m ² Arterial (150 mm Asphalt, 450 mm Granular) \$120/m ²

6.2.1 Treatment Triggers

Treatment triggers determine when a treatment can be applied to a particular analysis segment, often influenced by physical or other restrictions. For example, overlays are unsuitable for sections with curbs and gutters, and should not be considered if the pavement is excessively distressed. Table 10 outlines the most current treatment triggers for 2024.

Table 10: Maintenance and Rehabilitation Triggers

Treatment	Trigger Criteria										
Crack Sealing	PCI < 85 And Low Severity Crack > 3%										
Patching	PCI < 85 And Wide Cracking > 3%										
Overlay (50 mm)	PCI ≤ 60 And (8% ≤ AFCA < 25%) OR (40% ≤ ACA < 70%) Or RVH > 10% or RUT > 10 mm for Arterial And IRI > IRI trigger: <table> <tr> <td>2.1 mm/m</td><td>Arterial</td></tr> <tr> <td>2.3 mm/m</td><td>Collector/Ramp</td></tr> <tr> <td>2.6 mm/m</td><td>Local Roads</td></tr> </table>	2.1 mm/m	Arterial	2.3 mm/m	Collector/Ramp	2.6 mm/m	Local Roads				
2.1 mm/m	Arterial										
2.3 mm/m	Collector/Ramp										
2.6 mm/m	Local Roads										
Mill and Fill (50 mm)	And <table> <tr> <td>Age > 10</td><td>Arterial</td></tr> <tr> <td>Age > 14</td><td>Collector/Ramp</td></tr> <tr> <td>Age > 20</td><td>Local Roads</td></tr> </table> And <table> <tr> <td>Overlay (50 mm):</td><td>If No Curb Exist</td></tr> <tr> <td>Mill and Fill (50 mm)</td><td>If Curb Exist</td></tr> </table>	Age > 10	Arterial	Age > 14	Collector/Ramp	Age > 20	Local Roads	Overlay (50 mm):	If No Curb Exist	Mill and Fill (50 mm)	If Curb Exist
Age > 10	Arterial										
Age > 14	Collector/Ramp										
Age > 20	Local Roads										
Overlay (50 mm):	If No Curb Exist										
Mill and Fill (50 mm)	If Curb Exist										
Full-Depth Mill & Inlay	(25% ≤ AFCA < 40%) OR (ACA > 70%) And AFCW < 20.0 AND RUT < 10 mm										
Reconstruction	AFCA ≥ 40% OR AFCW ≥ 20% OR (AFCA ≥ 25.0 AND RUT > 10.0 mm)										

Prior to 2019, treatments were mainly based on the percentage of cracking for this study. In 2024, due to significant crack sealing (i.e. percent cracking) throughout the road network, additional parameters such as pavement roughness and age were introduced. This narrowed down the treatment options to those that are both practical and feasible. For instance, if notable crack sealing is found on a segment but the pavement is still smooth, it may be too early for rehabilitation. Instead, rehabilitation will be initiated once the segment's roughness exceeds the IRI threshold.

6.2.2 Treatment Resets

With the selection and application of any given rehabilitation treatment, the condition of a road will improve. For example, with the treatment of a 50 mm overlay, ruts would be filled, cracking would be overlaid, roughness would decrease, and strength would increase. Therefore, to predict performance over time and account for and compare possible interventions, the performance models must adjust the measured and forecasted distress data to reflect the application of the treatment. These changes to the value of the analysis variables as a result of the application of a treatment are called resets. Some heavy rehabilitation treatments, such as reconstruction, might reset virtually all the analysis variables.

6.3 Generate Feasible Rehabilitation Strategies and Optimization

The objective of pavement management is to provide and preserve the network of pavements as economically as possible (lowest life-cycle cost). Tetra Tech used Deighton's Total Infrastructure Management System (dTIMS), which is programmed by Tetra Tech engineers to perform Life-Cycle Cost Analyses (LCCA).

The dTIMS software uses decision trees to create multiple feasible alternative strategies for each pavement segment. A strategy is defined as a collection of successive treatments applied consecutively over a defined life-cycle (usually 20 years). The process results in a database of up to hundreds of feasible strategies for each pavement segment in the network. Each strategy has one predicted performance for each of the present status reporting condition indices. Each strategy also has a predicted remaining service life in each year of the analysis period, its own set of life-cycle costs (by treatment application year), and its own set of measured benefits as defined by the agency (Figure 10).

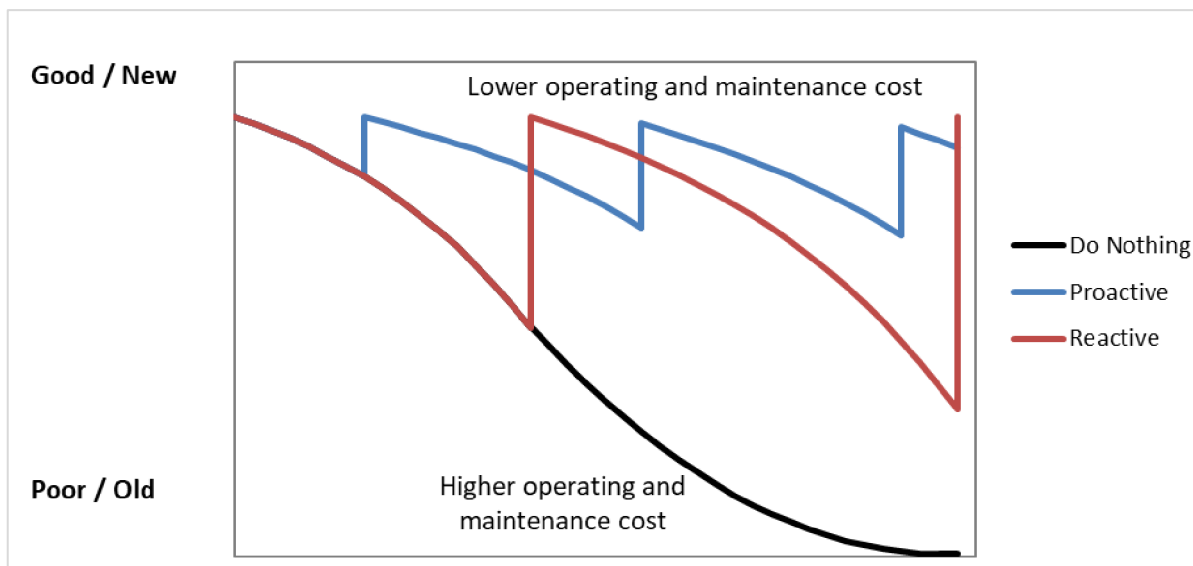


Figure 10: Example of Feasible Strategies for Each Pavement Segment

Applying an agency defined real discount rate (4%) provides a present value cost for each strategy and a present value measure of the total value of the benefits of each strategy.

Using this array of feasible strategies and given a trial budget for each roadway class or the whole network, Tetra Tech's optimization routine can select strategies from the database that meet the client specified optimization criteria (typically maximize cost-benefit).

6.3.1 Method to Measure Benefit

One method to derive the benefit is to multiply the area under the pavement performance curve and the length of the pavement segment. The area under the curve was calculated by summing the present value of the difference between the condition index (such as PCI) resulting from a strategy and the condition index for the do-nothing strategy (base case strategy) for each year in the analysis period. A strategy is a collection of treatments over time that addresses the deficiency of the road segment. Figure 11 shows an example of calculating the benefit for a strategy with one overlay, early in the 20-year analysis period.



Figure 11: Example of calculating the benefit for an Overlay Strategy

Up to this step, all things being equal, a local road with the same amount of distress would rank equally with a collector road. The collector road would have more traffic and should be a clear priority since there are insufficient funds to address all roads in the network at once. Therefore, a user priority factor was also considered based on road classification, as described in Table 11.

In summary, the benefit was defined combining both condition and traffic, as shown in the following formula:

Benefit = Present Value of Area under Pavement Performance Curve × User Priority Factor

Table 11: User Priority Factor for each Roadway Classification

Road Class	User Priority Factor
Arterial	6
Ramp	4
Collector	3
Local	1

6.4 Budget Scenarios

The City is expected to allocate an annual capital budget of \$2.0 million for road rehabilitation. To support the City in its decision-making process, various funding levels were modeled over the next 20 years for the road network, as shown in Table 12.

Table 12: Capital Budget Scenarios for Pavement Rehabilitation

Budget Scenario	Average Annual Capital Budget
1	Unconstrained Budget
2 (City Budget)	\$2.0 M
3	\$2.4 M
4	\$2.8 M
5	\$3.2 M

These funding scenarios are expressed in current dollars. It is a best practice to forecast LCCs and benefits of a project **without inflation** (i.e., base year dollars). Inflation is very hard to predict, particularly more than a few years into the future. More importantly, if inflation is added to the benefits and costs projected for future years, it will only have to be removed again before these benefits and costs can be compared in the form of dollars of any given base year.

It is noted that routine maintenance (crack seal and patching) costs are part of a separate operations budget and therefore do not use the available capital budgets.

7.0 ANALYSIS RESULTS

7.1 Needs Assessment (Unconstrained Budget Analysis)

An unconstrained budget, also known as a needs-based budget, represents the funding needed in a theoretical scenario where each road segment receives rehabilitation in the first year it meets the trigger for treatment. While not intended as a practical scenario, it helps estimate the maximum potential workload.

Figure 12 shows the rehabilitation costs under this scenario. In the first year, the City would require approximately \$22.5 million to rehabilitate the entire paved road network, with \$15.2 million designated for major roads (arterial/collector/ramp) and \$7.3 million for local roads.

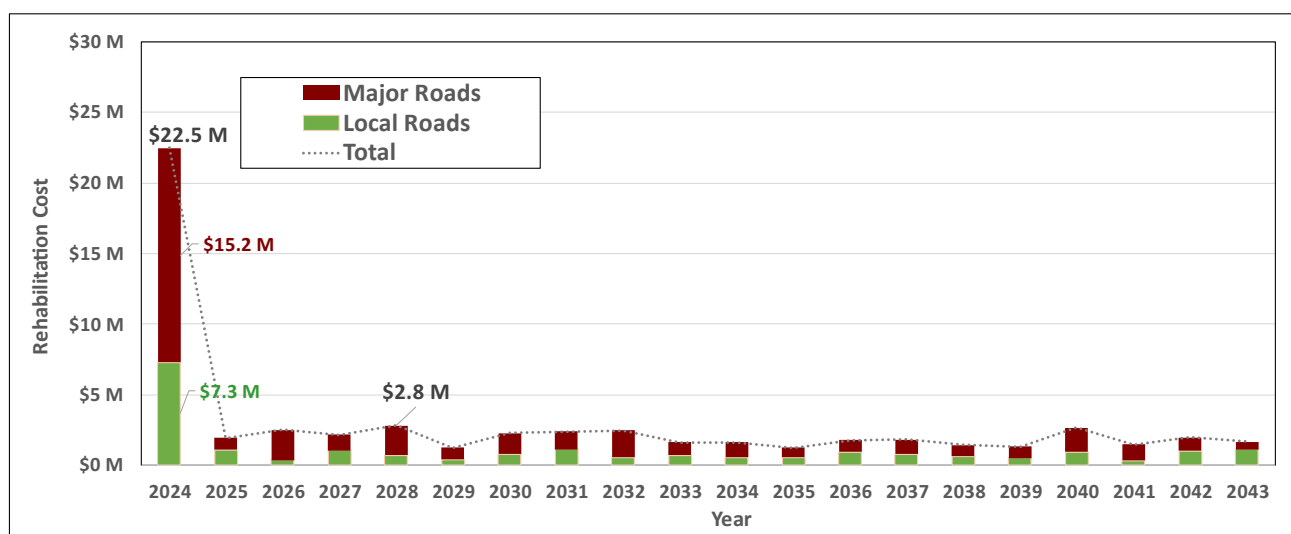


Figure 12: Rehabilitation Needs based on Unconstrained Budget Scenario

In total, the City would need \$59.2 million (or approximately \$3.0 million per year) for pavement rehabilitation over a 20-year period to address all triggered needs as quickly as possible.

7.2 Constrained Budget Analysis

A road is said to be in backlog where there was not enough money to construct the most cost-effective rehabilitation. In other words, the road segments in poor to very poor condition, are defined as “backlog roads”. In order to evaluate the consequence of various budget scenarios, the backlog cost is used. The Backlog Cost is the cost that would need to be applied in a single year to eliminate the backlog. If the Backlog Cost is growing over time, the network is getting worse (i.e. more expensive to repair).

Figure 13 illustrates how various funding levels affect the backlog cost. It shows that, under the City’s current budget of \$2 million per year, the backlog cost is projected to rise from \$22.5 million in 2024 to \$41.3 million by 2044. To keep the current backlog cost around \$22 million over the next 20 years, an average funding level of approximately \$2.8 million per year would be necessary. With a higher budget, such as \$3.2 million per year, the backlog cost will decrease over time.

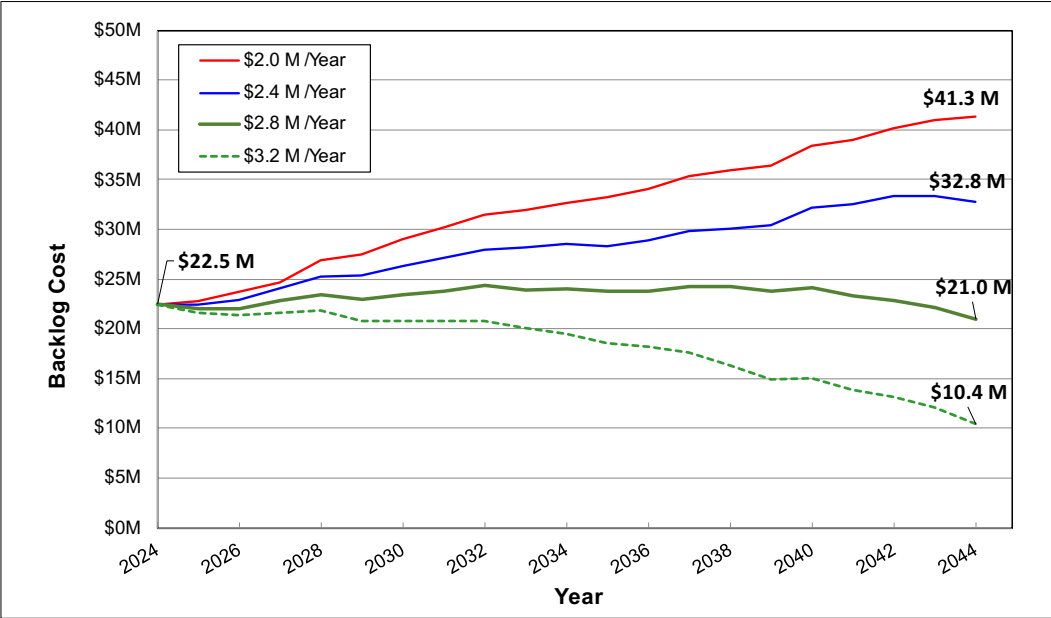


Figure 13: Future Backlog Projection based on Various Budget Scenarios

Figure 14 displays the average PCI value of the road network under various budget scenarios over a 20-year period. With the current budget of \$2 million per year, the average condition of the roads continues to decline. In contrast, budgets exceeding \$2.8 million per year, such as \$3.2 million, enable the average condition to improve over the long term.

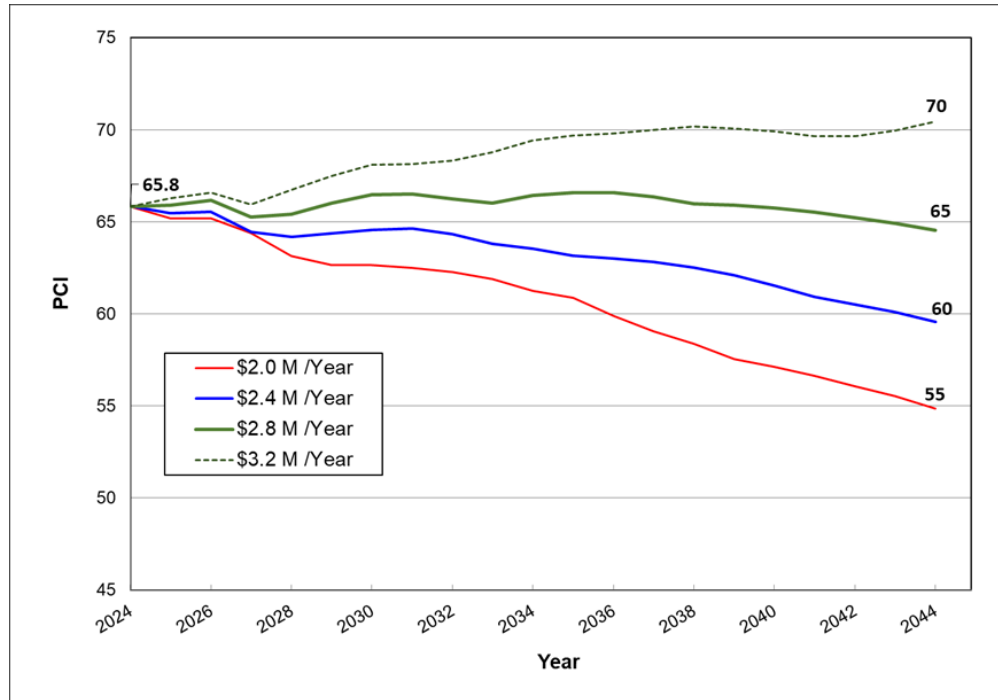


Figure 14: Predicted PCI for Different Budget Scenarios

7.3 Multi-Year Rehabilitation Program

A 10-year paving plan is provided based upon the \$2.0 million annual budget for the paved road network. A map and spreadsheet of the 10-year paving plan is provided in Appendix C.

This program includes only the rehabilitation treatments (not routine maintenance) chosen by the analysis. The rehabilitation program should be confirmed by completing project-level assessments and designs.

8.0 CONCLUSIONS AND RECOMMENDATIONS

A comparison of pavement conditions from 2019 to 2024 across all road classifications was conducted, focusing on percentage cracking, PCI, and IRI. The results indicate a slight deterioration in overall pavement condition since 2019, particularly in terms of PCI and cracking. While road roughness has not necessarily increased in 2024, the amount of cracking related to crack sealing activities and early rutting observed on recently paved arterial roads have significantly influenced this assessment.

Life-cycle cost analysis was conducted for each paved road segment. The purpose was to forecast the overall condition of the network with alternative budget scenarios, determine the long-term funding required to sustain the pavement condition and backlog cost, and to develop a rehabilitation program.

According to the needs-based scenario (unconstrained budget), the City would need approximately \$22.5 million in the first year for road network rehabilitation. This amount includes \$15.2 million for Arterial/Collector/Ramp roads and \$7.3 million for local roads, to promptly address all triggered needs.

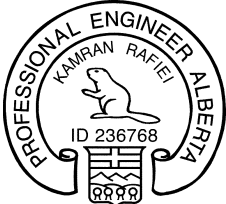
The constrained budgets analyzed included annual capital budgets of \$2.0 million (the City's current budget), \$2.4 million, \$2.8 million, and \$3.2 million for road network rehabilitation. The findings suggest that a minimum funding level of \$2.8 million per year is essential to keep the current backlog cost over the next 20 years. It is important to note that these funding scenarios are presented in current dollars and do not account for annual inflation.

The pavement rehabilitation plan is developed at a network-level. At the time of implementation, project-level assessments and designs should be completed. The City should consider updating the plan with new data in three to four years for major roads and five to six years for local roads. This will provide an opportunity to update deterioration model calibration and include new or rehabilitated pavements in the plan. This timeframe is consistent with other municipalities in western Canada.

9.0 CLOSURE

We trust this report meets your present requirements. If you have any questions or comments, please contact the undersigned.

Respectfully submitted,
Tetra Tech Canada Inc.



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PERMIT TO PRACTICE TETRA TECH CANADA INC.

RM SIGNATURE: _____

RM APEGA ID #: 158489

DATE: November 5, 2024

PERMIT NUMBER: P013774

The Association of Professional Engineers and
Geoscientists of Alberta (APEGA)

REFERENCES

- J. B. Odoki. (2003). *HDM4- Analytical Framework and Model Descriptions*. World Bank Publications.
- Yu, J., Chou, E., & Yau, J.-T. (2006). Development of Speed-Related Ride Quality Thresholds Using International Roughness Index. *Transportation Research Record, No. 1974*, 47-53.

APPENDIX A

TETRA TECH'S LIMITATIONS ON THE USE OF THIS DOCUMENT

LIMITATIONS ON USE OF THIS DOCUMENT

DESIGN REPORT

1.1 USE OF DOCUMENT AND OWNERSHIP

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If any error or omission is detected by the Client or an Authorized Party, the error or omission must be immediately brought to the attention of TETRA TECH.

1.4 DISCLOSURE OF INFORMATION BY CLIENT

The Client acknowledges that it has fully cooperated with TETRA TECH with respect to the provision of all available information on the past, present, and proposed conditions on the site, including historical information respecting the use of the site. The Client further acknowledges that in order for TETRA TECH to properly provide the services contracted for in the Contract, TETRA TECH has relied upon the Client with respect to both the full disclosure and accuracy of any such information.

1.5 INFORMATION PROVIDED TO TETRA TECH BY OTHERS

During the performance of the work and the preparation of this Professional Document, TETRA TECH may have relied on information provided by third parties other than the Client.

While TETRA TECH endeavours to verify the accuracy of such information, TETRA TECH accepts no responsibility for the accuracy or the reliability of such information even where inaccurate or unreliable information impacts any recommendations, design or other deliverables and causes the Client or an Authorized Party loss or damage.

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This Professional Document is based solely on the conditions presented and the data available to TETRA TECH at the time the data were collected in the field or gathered from available databases.

The Client, and any Authorized Party, acknowledges that the Professional Document is based on limited data and that the conclusions, opinions, and recommendations contained in the Professional Document are the result of the application of professional judgment to such limited data.

The Professional Document is not applicable to any other sites, nor should it be relied upon for types of development other than those to which it refers. Any variation from the site conditions present, or variation in assumed conditions which might form the basis of design or recommendations as outlined in this report, at or on the development proposed as of the date of the Professional Document requires a supplementary exploration, investigation, and assessment.

TETRA TECH is neither qualified to, nor is it making, any recommendations with respect to the purchase, sale, investment or development of the property, the decisions on which are the sole responsibility of the Client.

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Unless so stipulated in the Design Report, TETRA TECH was not retained to explore, address or consider, and has not explored, addressed or considered any environmental or regulatory issues associated with the project specific design.

1.8 CALCULATIONS AND DESIGNS

TETRA TECH may have undertaken design calculations and prepared project specific designs in accordance with terms of reference that were previously set out in consultation with, and agreement of, TETRA TECH's client. These designs have been prepared to a standard that is consistent with current industry practice. Notwithstanding, if any error or omission is detected by TETRA TECH's Client or any party that is authorized to use the Design Report, the error or omission should be immediately drawn to the attention of TETRA TECH.

1.9 GEOTECHNICAL CONDITIONS

A Geotechnical Report is commonly the basis upon which the specific project design has been completed. It is incumbent upon TETRA TECH's Client, and any other authorized party, to be knowledgeable of

the level of risk that has been incorporated into the project design, in consideration of the level of the geotechnical information that was reasonably acquired to facilitate completion of the design.

If a Geotechnical Report was prepared for the project by TETRA TECH, it may be included in the Design Report as appropriate. The Geotechnical Report contains Limitations that should be read in conjunction with these Limitations for the Design Report.

1.10 APPLICABLE CODES, STANDARDS, GUIDELINES & BEST PRACTICE

This report has been prepared based on the applicable codes, standards, guidelines or best practice as identified in the report. Some mandated codes, standards and guidelines (such as ASTM, AASHTO Bridge Design/Construction Codes, Canadian Highway Bridge Design Code, National/Provincial Building Codes) are routinely updated and corrections made. TETRA TECH cannot predict nor be held liable for any such future changes, amendments, errors or omissions in these documents that may have a bearing on the assessment, design or analyses included in this report.

APPENDIX B

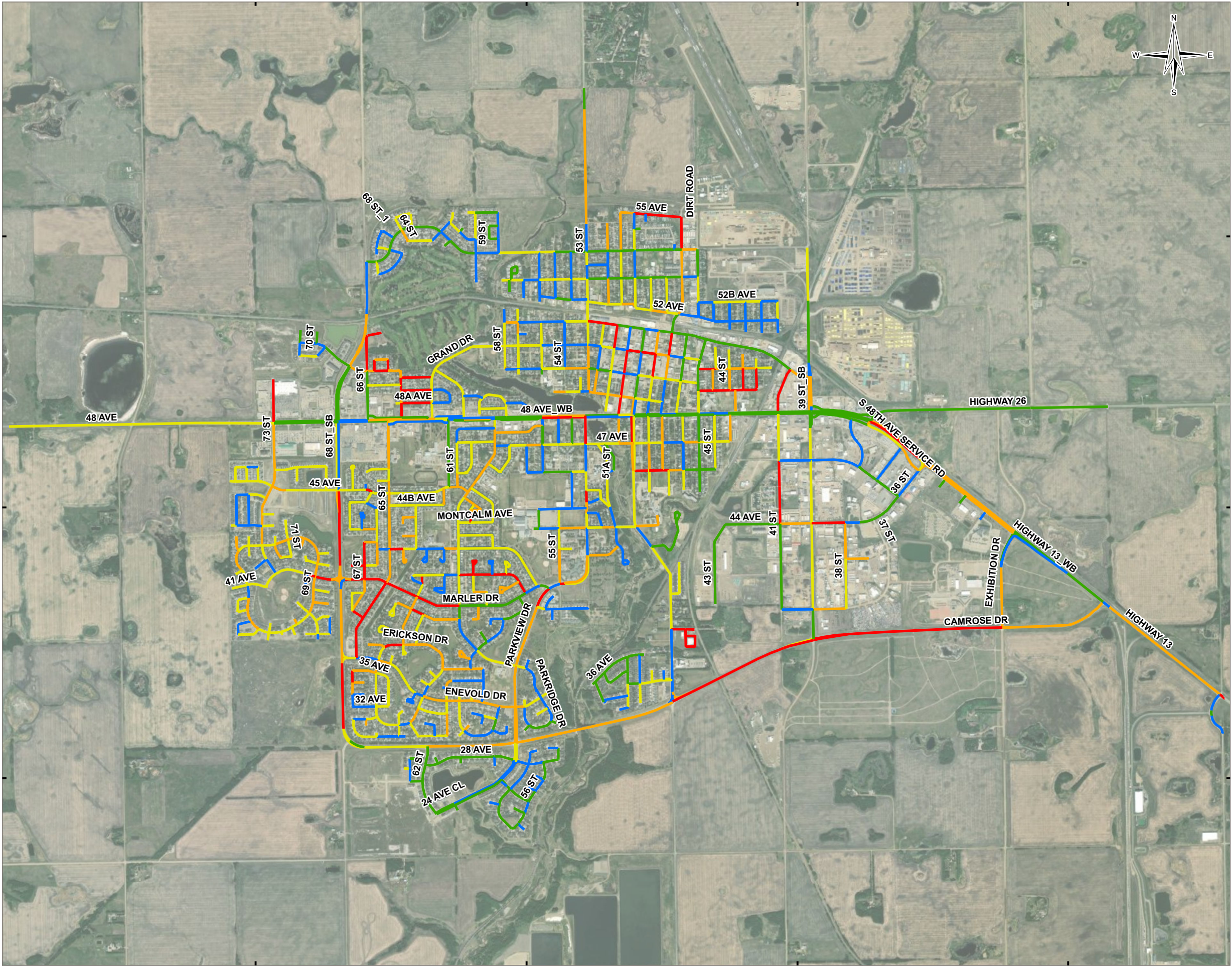
2024 PAVEMENT CONDITION

Figure B1 – 2024 Roadway Pavement Condition (PCI)

Figure B2 – 2024 Roadway Pavement Roughness (IRI)

2024 Pavement Condition Indices Spreadsheet

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LEGEND

PCI

- < 40
- 40 - 55
- 55 - 70
- 70 - 85
- 85 - 100



NOTES

Base data source:
Imagery from City of Camrose, 2017.

STATUS
ISSUED FOR USE

CITY OF CAMROSE PAVEMENT CONDITION ASSESSMENT

2024 PCI for Paved Roadways

PROJECTION 3TM 114	DATUM NAD83	CLIENT CITY OF Camrose
Scale: 1:28,000 0.4 0.2 0 0.4 Kilometres		
FILE NO. ASMT03136_01_PCI_Figure_B1_IFU.mxd		
OFFICE TL-VANC	DWN AV	CKD KR
DATE November 4, 2024	APVD KR	REV 0
PROJECT NO. TRN.ASMT03136-01		
Figure B1		



Analysis_ID	RoadName	From	To	From_Description	To_Description	Length (m)	Width (m)	Class	Surface Year	2024 Committed Project	AFCA (%)	TCA (%)	ACA (%)	PCI	RUT (mm)	IRI (mm/m)
Ana-1910-020	PARKRIDGE DR	149	331	500 PARKRIDGE CL	400 PARKRIDGE CL	182	10.6	Local			0.3	2.6	2.9	94	1.5	4.16
Ana-1910-030	PARKRIDGE DR	331	434	400 PARKRIDGE CL	300 PARKRIDGE CL	103	11.1	Local			2.3	8.3	10.6	84	1.6	5.37
Ana-1910-040	PARKRIDGE DR	434	528	300 PARKRIDGE CL	200 PARKRIDGE CL / PARKRIDGE DR_1	94	11	Local			2.9	7.6	10.5	78	1.8	4.75
Ana-1910-050	PARKRIDGE DR	528	782	200 PARKRIDGE CL / PARKRIDGE DR_1	100 PARKRIDGE CL	254	11.5	Collector			2.4	9.9	12.3	80	2.1	5.74
Ana-1910-060	PARKRIDGE DR	782	856	100 PARKRIDGE CL	PARKVIEW DR	74	11.5	Collector			7.0	16.7	23.7	65	2.2	9.24
Ana-1920-010	PARKRIDGE DR_1	0	68	ENEVOLD DR / PARKVIEW DR	600 PARKRIDGE CL / PARKRIDGE DR	68	11	Collector			12.7	27.9	40.6	41	4	7.25
Ana-1920-020	PARKRIDGE DR_1	68	206	600 PARKRIDGE CL / PARKRIDGE DR	200 PARKRIDGE CL / PARKRIDGE DR	138	10.6	Collector			7.3	16.1	23.4	63	3.2	7.42
Ana-1930-010	PARKVIEW DR	0	263	CAMROSE DR	PARKRIDGE DR_1	263	9.4	Arterial			7.7	36.5	44.2	54	2.8	2.21
Ana-1930-020	PARKVIEW DR	264	566	ENEVOLD DR / PARKRIDGE DR_1	PARKRIDGE DR	302	15.3	Arterial			9.1	51.5	60.6	45	2.4	1.73
Ana-1930-030	PARKVIEW DR	566	1031	PARKRIDGE DR	39 AVE	465	15.9	Arterial			13.2	43.3	56.5	48	2.8	2.11
Ana-1930-040	PARKVIEW DR	1031	1194	39 AVE	MARLER DR	163	16.3	Arterial	2018		15.3	26.1	41.4	35	3.6	3.00
Ana-1930-050	PARKVIEW DR	1194	1281	MARLER DR	55 ST	87	16.9	Arterial	2018		1.8	13.4	15.2	76	2.2	2.19
Ana-1930-060	PARKVIEW DR	1281	1318	55 ST	53 ST	37	11.5	Arterial	2018		17.0	14.1	31.1	32	1.8	2.10
Ana-1940-010	PARKVIEW DR_SB	0	264	CAMROSE DR / VALLEYVIEW DR_SB	ENEVOLD DR	264	9	Arterial			14.1	34.6	48.7	53	3.6	2.09
Ana-1950-010	R SERVICE RD GRAND PARK CRES 48A	0	217	48 AVE_WB	GRAND PARK CRES	217	8.9	Local	2018		3.4	16.9	20.3	76	2.1	2.68
Ana-1960-010	RAVINE RESIDENCE RD	0	547	50 ST	South End	547	6.3	Local			0.1	3.1	3.2	95	1.5	3.70
Ana-1970-010	S 48TH AVE SERVICE RD	0	449	65 ST	COMP RD	449	9.2	Local	2019		5.1	13.5	18.6	78	1.3	2.88
Ana-1970-020	S 48TH AVE SERVICE RD	450	724	48 AVE	48 AVE	274	8.9	Local	2019		0.3	2.7	3.0	93	2.5	3.30
Ana-1970-030	S 48TH AVE SERVICE RD	725	1020	48 AVE	48 AVE	295	8.5	Local	2022		0.0	14.3	14.3	86	2.1	2.87
Ana-1970-040	S 48TH AVE SERVICE RD	1021	1326	39 ST	38 ST	305	9.3	Local	2021		0.1	0.4	0.5	99	1.7	1.53
Ana-1970-050	S 48TH AVE SERVICE RD	1326	1456	38 ST	Correction Line Rd	130	9.4	Local	2021		2.2	7.3	9.5	92	1.7	2.83
Ana-1970-060	S 48TH AVE SERVICE RD	1456	1756	Correction Line Rd	37 ST	300	10.2	Local			7.0	35.8	42.8	67	1.5	3.57
Ana-1970-070	S 48TH AVE SERVICE RD	1756	1973	37 ST	36 ST / 36 ST NB/48 AVE EB RAMP	217	10.4	Local			9.5	34.8	44.3	50	2.7	4.37
Ana-1980-010	SOUTH CAMPUS RD	0	236	50 ST	UNNAMED	236	7.5	Local			5.6	10.3	15.9	45	5.9	7.07
Ana-1990-010	VALLEYVIEW DR	0	150	62 ST	59 ST	150	8.2	Collector			0.0	0.6	0.6	100	2.4	2.72
Ana-1990-020	VALLEYVIEW DR	150	543	59 ST	25 AVE_WB	393	7.7	Collector			0.7	2.4	3.1	93	2.1	2.92
Ana-1990-030	VALLEYVIEW DR	543	725	25 AVE_WB	28 AVE	182	8.2	Collector			2.8	4.5	7.3	80	2.8	4.76
Ana-1990-040	VALLEYVIEW DR	725	861	28 AVE	CAMROSE DR	136	9.6	Collector			4.9	7.9	12.8	60	4.2	5.84
Ana-2000-010	VALLEYVIEW DR_SB	0	154	62 ST	24 AVE CL_1	154	8.2	Collector			0.5	2.3	2.8	93	1.9	3.73
Ana-2000-020	VALLEYVIEW DR_SB	154	716	24 AVE CL_1	28 AVE	562	8.2	Collector			1.1	3.5	4.6	84	3.4	3.29
Ana-2000-030	VALLEYVIEW DR_SB	716	848	28 AVE	CAMROSE DR / PARKVIEW DR_SB	132	8	Collector			6.6	9.8	16.4	59	5	6.81
Ana-2010-010	WT BUILDING RD	0	333	Northwest End	WT BUILDING RD ACCESS	333	8	Local			16.6	23.5	40.1	34	3.9	6.62
Ana-2020-010	WT BUILDING RD ACCESS	0	103	50 ST	WT BUILDING RD	103	8.6	Local			15.8	24.8	40.6	28	4.7	4.56
Ana-2020-020	WT BUILDING RD ACCESS	103	169	WT BUILDING RD	East End	66	8.7	Local			19.1	17.8	36.9	27	7.3	5.68

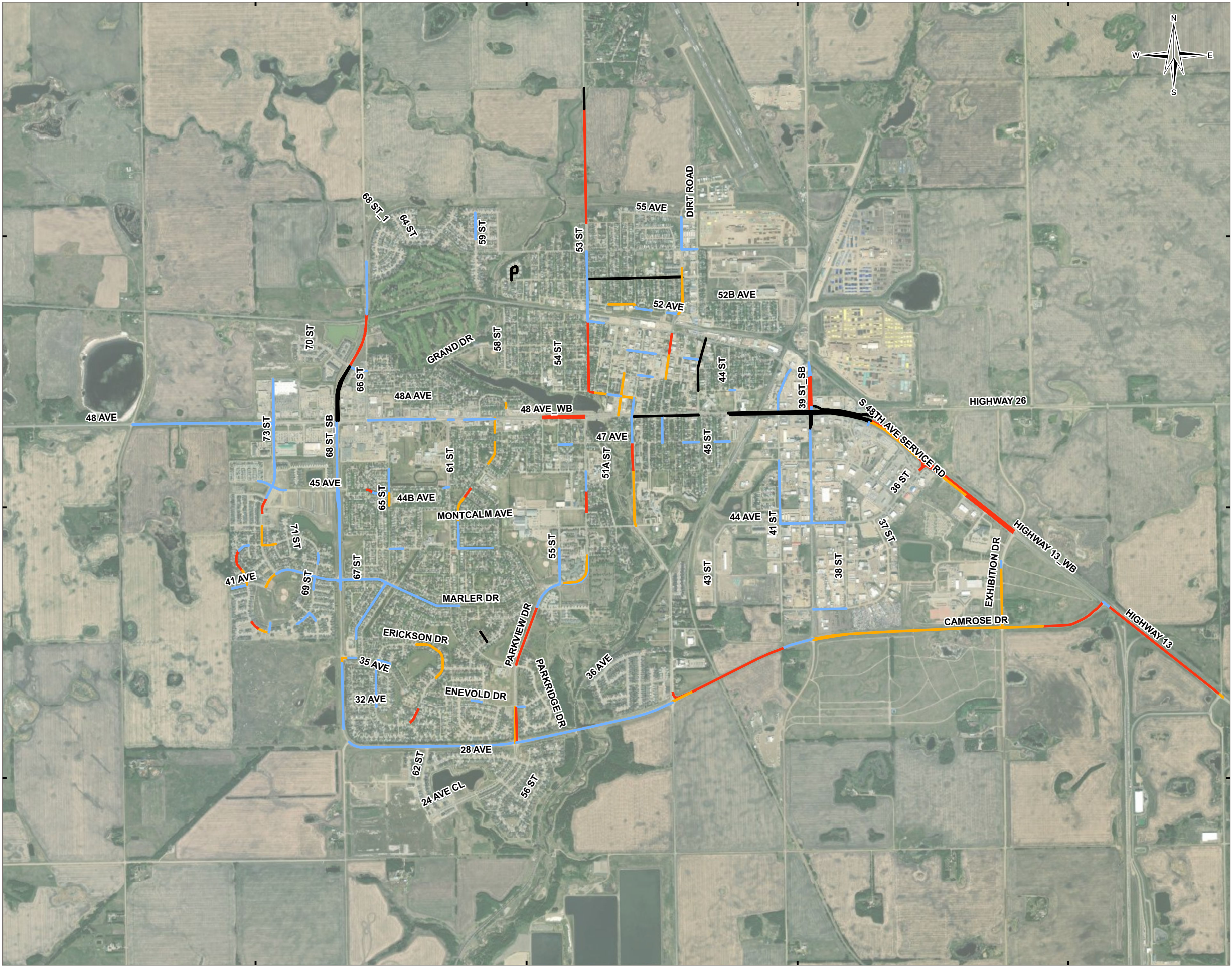
APPENDIX C

REHABILITATION PROGRAM

Figure C1 – 10-Year Paving Plan (\$2.0 million per year)

Rehabilitation Program Spreadsheet (\$2 million per year)

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LEGEND

Treatment Year

- 2024
- 2025-2026
- 2027-2029
- 2030-2034



NOTES
Base data source:
Imagery from City of Camrose, 2017.

STATUS
ISSUED FOR USE

CITY OF CAMROSE PAVEMENT CONDITION ASSESSMENT

**10-Year Paving Plan with
a \$2 Million Annual Budget**

PROJECTION 3TM 114		DATUM NAD83		CLIENT  CITY OF Camrose	
Scale: 1:28,000 0.40.200.4  Kilometres				 TETRA TECH	
FILE NO. ASMT03136_01_10yr_PavingPI_Figure_C1_IFU.mxd					
OFFICE TL-VANC		DWN AV	CKD KR	APVD KR	REV 0
DATE November 4, 2024		PROJECT NO. TRN.ASMT03136-01			Figure C1

Analysis_ID	RoadName	From	To	From_Description	To_Description	Length (m)	Width (m)	Class	Curb Exist	Treatment	Treatment Year	Treatment Cost	2024 Committed Project (Y/N)
Ana-0370-020	38 AVE CL	306	397	UNNAMED	58 ST	91	13.7	Local	Y	MF50	2024	-	Y
Ana-0420-050	39 ST	1564	1674	39 ST_SB	North End	110	10.6	Arterial	N	MF50	2024	-	Y
Ana-0430-010	39 ST_SB	0	106	39 ST	North End	106	10	Arterial	N	MF50	2024	-	Y
Ana-0670-050	46 ST	735	791	49 AVE	49 AVE	56	12.9	Collector	Y	MF50	2024	-	Y
Ana-0670-060	46 ST	791	895	49 AVE	50 AVE	104	13	Collector	Y	MF50	2024	-	Y
Ana-0670-070	46 ST	895	962	50 AVE	50 AVE	67	11.8	Collector	Y	MF50	2024	-	Y
Ana-0670-080	46 ST	962	1130	50 AVE	North End	168	12.6	Collector	Y	MF50	2024	-	Y
Ana-0710-170	48 AVE	4614	4724	50 ST	49 ST	110	10.2	Arterial	Y	MF50	2024	-	Y
Ana-0710-180	48 AVE	4724	4823	49 ST	48 ST	99	11.2	Arterial	Y	MF50	2024	-	Y
Ana-0710-190	48 AVE	4823	4976	48 ST	47 ST	153	9	Arterial	Y	MF50	2024	-	Y
Ana-0710-200	48 AVE	4976	5094	47 ST	46 ST	118	11.3	Arterial	Y	MF50	2024	-	Y
Ana-0710-230	48 AVE	5326	5681	44 ST	41 ST	355	8.8	Arterial	Y	MF50	2024	-	Y
Ana-0710-240	48 AVE	5681	6364	41 ST	Correction Line Rd	683	9.2	Arterial	Y	MF50	2024	-	Y
Ana-0760-155	48 AVE_WB	3356	3725		41 ST	369	9	Arterial	Y	MF50	2024	-	Y
Ana-0760-170	48 AVE_WB	3725	3972	41 ST	39 ST	247	12.9	Arterial	Y	MF50	2024	-	Y
Ana-0760-180	48 AVE_WB	3972	4420	39 ST	HIGHWAY 26	448	8.9	Arterial	N	MF50	2024	-	Y
Ana-1010-090	53 AVE	1054	1209	53 ST	52 ST	155	10.6	Local	Y	MF50	2024	-	Y
Ana-1010-100	53 AVE	1209	1307	52 ST	51 ST	98	10.5	Local	Y	MF50	2024	-	Y
Ana-1010-110	53 AVE	1307	1408	51 ST	50 ST	101	10.4	Local	Y	MF50	2024	-	Y
Ana-1010-120	53 AVE	1408	1525	50 ST	49 ST	117	10.8	Local	Y	MF50	2024	-	Y
Ana-1010-130	53 AVE	1525	1640	49 ST	48 ST	115	11.7	Local	Y	MF50	2024	-	Y
Ana-1010-140	53 AVE	1640	1756	48 ST	47 ST	116	10.9	Local	Y	MF50	2024	-	Y
Ana-1020-190	53 ST	3450	3606		HWY 833	156	14.6	Arterial	N	MF50	2024	-	Y
Ana-1180-030	58 ST CL	225	436	53 AVE	Southwest End	211	10	Local	Y	MF50	2024	-	Y
Ana-1430-090	68 ST	2380	2795	48 AVE_WB	50 AVE	415	13.6	Arterial	Y	MF50	2024	-	Y
Ana-1470-040	68 ST_SB	791	1213	48 AVE_WB	50 AVE	422	12.9	Arterial	Y	MF50	2024	-	Y
Ana-1900-030	N 48 AVE SERVICE RD	448	921	39 ST	HIGHWAY 26	473	10.2	Local	Y	MF50	2024	-	Y
Ana-0430-020	39 ST_SB	107	369	48 AVE_WB	51 AVE	262	10.1	Arterial	Y	MF50	2025	\$90,844	
Ana-0710-290	48 AVE	7262	7452	48 AVE_2	48 AVE_3	190	12.1	Arterial	Y	MF50	2025	\$75,573	
Ana-0710-300	48 AVE	7452	7711	48 AVE_3	EXHIBITION DR / HIGHWAY 13	259	14	Arterial	Y	MF50	2025	\$123,599	
Ana-0760-190	48 AVE_WB	4420	5760	HIGHWAY 26	HIGHWAY 13_WB / RGE RD 201	1340	14.8	Arterial	Y	MF50	2025	\$637,460	
Ana-0780-070	48A AVE	729	769	53 ST	52A ST	40	13	Arterial	Y	MF50	2025	\$17,472	
Ana-1020-060	53 ST	723	811	45 AVE	45A AVE	88	14.3	Arterial	Y	MF50	2025	\$39,010	
Ana-1020-110	53 ST	1539	1711	49 AVE	50 AVE	172	14.1	Arterial	Y	MF50	2025	\$77,364	
Ana-1020-120	53 ST	1711	1883	50 AVE	51 AVE	172	14.2	Arterial	Y	MF50	2025	\$77,913	
Ana-1780-050	HIGHWAY 13	895	1934	CAMROSE DR WB/HIGHWAY 13 SB RAMP	DRIED MEAT LAKE ROAD	1039	16.3	Arterial	N	OL50	2025	\$522,838	
Ana-1930-010	PARKVIEW DR	0	263	CAMROSE DR	PARKRIDGE DR_1	263	9.4	Arterial	Y	MF50	2025	\$78,863	
Ana-1930-030	PARKVIEW DR	566	1031	PARKRIDGE DR	39 AVE	465	15.9	Arterial	Y	MF50	2025	\$248,428	
Ana-0310-010	36 ST NB/48 AVE EB RAMP	0	146	36 ST / S 48TH AVE SERVICE RD	48 AVE	146	5.6	Ramp	Y	MF50	2026	\$27,779	
Ana-0420-070	39 ST	1713	1936	N 48 AVE SERVICE RD		223	9.7	Arterial	Y	MF50	2026	\$89,441	
Ana-0630-130	45 AVE	1020	1070	66 ST CL	66 ST	50	11.3	Collector	Y	MF50	2026	\$21,334	
Ana-0710-130	48 AVE	3940	4059	56 ST	55 ST	119	10.2	Arterial	Y	MF50	2026	\$48,926	
Ana-0710-140	48 AVE	4059	4158	55 ST	54 ST	99	10.6	Arterial	Y	MF50	2026	\$43,391	
Ana-0710-150	48 AVE	4158	4257	54 ST	53 ST	99	10.6	Arterial	Y	MF50	2026	\$37,386	
Ana-0720-010	48 AVE EB/36 ST SB RAMP	0	72	36 ST	North End	72	6.3	Ramp	N	OL50	2026	\$13,754	
Ana-0760-090	48 AVE_WB	1985	2302	56 ST	53 ST	317	12.1	Arterial	Y	MF50	2026	\$129,666	
Ana-0770-070	48 ST	1027	1199	50 AVE	51 AVE	172	14.3	Collector	Y	MF50	2026	\$85,314	
Ana-0860-010	50 ST_SB	0	203	South End	47 AVE	203	8.3	Collector	Y	MF50	2026	\$55,256	

Analysis_ID	RoadName	From	To	From_Description	To_Description	Length (m)	Width (m)	Class	Curb Exist	Treatment	Treatment Year	Treatment Cost	2024 Committed Project (Y/N)
Ana-1020-040	53 ST	644	680	44A AVE	45 AVE	36	15	Arterial	Y	MF50	2026	\$19,379	
Ana-1020-050	53 ST	680	723	45 AVE	45 AVE	43	13.6	Arterial	Y	MF50	2026	\$18,129	
Ana-1020-100	53 ST	1362	1539	48 AVE_WB	49 AVE	177	14.1	Arterial	Y	MF50	2026	\$81,769	
Ana-1020-180	53 ST	2603	3450	55 AVE		847	14.6	Arterial	N	OL50	2026	\$380,433	
Ana-1430-100	68 ST	2795	3208	50 AVE		413	17.5	Arterial	Y	MF50	2026	\$246,206	
Ana-1560-050	73 ST	467	592	44A AVE CL	44B AVE	125	14.5	Collector	Y	MF50	2026	\$58,584	
Ana-1590-020	75 ST	83	162	37A AVE	38A AVE	79	10	Collector	Y	MF50	2026	\$25,534	
Ana-1590-070	75 ST	549	715	42 AVE	43 AVE	166	10.6	Collector	Y	MF50	2026	\$56,874	
Ana-1610-060	CAMROSE DR	2605	3350	CAMROSE DR WB/50 ST NB RAMP	CAMROSE DR_WB	745	8.5	Arterial	Y	MF50	2026	\$212,422	
Ana-1610-110	CAMROSE DR	5283	5781	CAMROSE DR WB/HIGHWAY 13 SB RAMP	HIGHWAY 13	498	14.7	Arterial	N	OL50	2026	\$232,832	
Ana-1620-010	CAMROSE DR WB/50 ST NB RAMP	0	189	West End	UNNAMED	189	5.9	Ramp	Y	MF50	2026	\$38,678	
Ana-1690-060	ELLIOTT DR	687	814	62A ST	32 AVE	127	11.2	Collector	Y	MF50	2026	\$45,975	
Ana-1890-090	MOUNT PLEASANT DR	1497	1548	MONTROSE AVE_1	45 AVE	51	10.5	Collector	Y	MF50	2026	\$18,068	
Ana-1890-100	MOUNT PLEASANT DR	1548	1586	45 AVE	MONTCALM AVE	38	10.6	Collector	Y	MF50	2026	\$13,686	
Ana-0710-250	48 AVE	6364	6876	Correction Line Rd	36 ST	512	11.5	Arterial	Y	FDM	2027	\$441,600	
Ana-0710-270	48 AVE	6975	7070	36 ST NB/48 AVE EB RAMP	48 AVE_1	95	11.8	Arterial	Y	FDM	2027	\$84,075	
Ana-0780-080	48A AVE	769	869	52A ST	52 ST	100	13.1	Arterial	Y	FDM	2027	\$98,250	
Ana-0920-030	51 ST	393	531	48 AVE_WB	48A AVE	138	14.4	Arterial	Y	FDM	2027	\$149,040	
Ana-1170-060	58 ST	548	587	48A AVE	48B AVE	39	8.6	Local	Y	MF50	2027	\$11,023	
Ana-1590-060	75 ST	437	549	41 AVE	42 AVE	112	11.1	Collector	Y	MF50	2027	\$41,038	
Ana-1610-080	CAMROSE DR	3582	3847	39 ST (NEW SALEM ROAD)	CAMROSE DR_WB	265	13.8	Arterial	N	FDM	2027	\$274,275	
Ana-1610-100	CAMROSE DR	4980	5283	EXHIBITION DR / GRAVEL PIT RD	CAMROSE DR WB/HIGHWAY 13 SB RAMP	303	14.7	Arterial	N	FDM	2027	\$334,058	
Ana-1630-030	CAMROSE DR_WB	351	615	39 ST / 39 ST (NEW SALEM ROAD)	CAMROSE DR	264	9.8	Arterial	Y	RECON	2027	\$310,464	
Ana-1720-040	ERICKSON DR	347	666	62 ST	36 AVE	319	11	Collector	Y	MF50	2027	\$117,587	
Ana-1780-060	HIGHWAY 13	1934	1966	DRIED MEAT LAKE ROAD	Southeast End	32	19.1	Arterial	N	FDM	2027	\$45,840	
Ana-1890-140	MOUNT PLEASANT DR	2049	2081	47A AVE	47A AVE	32	11.7	Collector	Y	MF50	2027	\$12,359	
Ana-1940-010	PARKVIEW DR_SB	0	264	CAMROSE DR / VALLEYVIEW DR_SB	ENEVOLD DR	264	9	Arterial	Y	MF50	2027	\$80,708	
Ana-0690-080	47 ST	1426	1491	53 AVE	UNNAMED	65	15.1	Collector	Y	MF50	2028	\$33,113	
Ana-0710-260	48 AVE	6876	6975	36 ST	36 ST NB/48 AVE EB RAMP	99	11.8	Arterial	Y	FDM	2028	\$87,615	
Ana-1610-090	CAMROSE DR	3847	4980	CAMROSE DR_WB	EXHIBITION DR / GRAVEL PIT RD	1133	13.8	Arterial	N	RECON	2028	\$1,876,248	
Ana-0540-030	43 AVE	183	284	73 ST	72 ST	101	10.5	Collector	Y	MF50	2029	\$36,595	
Ana-0690-070	47 ST	1145	1426	48 ST / 52 AVE	53 AVE	281	15.5	Collector	Y	MF50	2029	\$152,737	
Ana-0710-280	48 AVE	7070	7262	48 AVE_1	48 AVE_2	192	12.1	Arterial	Y	FDM	2029	\$174,240	
Ana-0770-060	48 ST	854	1027	49 AVE	50 AVE	173	14.2	Collector	Y	MF50	2029	\$84,771	
Ana-0780-100	48A AVE	968	1073	51 ST	50 ST	105	12.9	Collector	Y	MF50	2029	\$46,740	
Ana-0840-060	50 ST	4116	4525	SOUTH CAMPUS RD	46 AVE	409	15.2	Collector	Y	MF50	2029	\$214,526	
Ana-0920-040	51 ST	531	704	48A AVE	49 AVE	173	13.7	Collector	Y	MF50	2029	\$100,355	
Ana-0950-050	52 AVE	512	610	52 ST	51 ST	98	13	Collector	Y	MF50	2029	\$43,963	
Ana-0950-060	52 AVE	610	738	51 ST	East End	128	13.2	Collector	Y	MF50	2029	\$65,398	
Ana-1030-010	53 ST_SB	0	322	UNNAMED	North End	322	9.7	Arterial	Y	MF50	2029	\$119,621	
Ana-1360-040	65 ST	885	976	44B AVE	45 AVE	91	11.7	Collector	Y	MF50	2029	\$38,231	
Ana-1430-030	68 ST	587	625	68 ST NB/ENEVOLD DR EB RAMP	ENEVOLD DR	38	9.8	Arterial	Y	MF50	2029	\$11,544	
Ana-1560-030	73 ST	237	381	43 AVE	44 AVE / 44 AVE CL	144	13.7	Collector	Y	MF50	2029	\$68,076	
Ana-1590-010	75 ST	0	83	38 AVE / MARLER DR	37A AVE	83	10.2	Collector	Y	MF50	2029	\$29,214	
Ana-1610-050	CAMROSE DR	2443	2605	50 ST	CAMROSE DR WB/50 ST NB RAMP	162	11.9	Arterial	Y	MF50	2029	\$59,762	

Analysis_ID	RoadName	From	To	From_Description	To_Description	Length (m)	Width (m)	Class	Curb Exist	Treatment	Treatment Year	Treatment Cost	2024 Committed Project (Y/N)
Ana-1700-010	ENEVOLD DR	0	46	68 ST	68 ST NB/ENEVOLD DR EB RAMP / ENEVOLD DR WB/68 ST NB RAMP	46	16.1	Collector	Y	MF50	2029	\$25,556	
Ana-1720-050	ERICKSON DR	666	746	36 AVE	35 AVE	80	10.8	Collector	Y	MF50	2029	\$29,814	
Ana-1730-010	EXHIBITION DR	0	446	CAMROSE DR	EXHIBITION DR/HIGHWAY 13 RAMP	446	13.7	Arterial	N	FDM	2029	\$458,265	
Ana-1810-030	MARLER DR	133	259	41 AVE	73 ST	126	14.3	Collector	Y	MF50	2029	\$62,176	
Ana-1890-080	MOUNT PLEASANT DR	1300	1497	MONTCALM AVE	MONTROSE AVE_1	197	10.8	Collector	Y	MF50	2029	\$73,418	
Ana-1890-120	MOUNT PLEASANT DR	1805	1980	MONTCLARE AVE	47 AVE	175	10.9	Collector	Y	MF50	2029	\$65,823	
Ana-1890-150	MOUNT PLEASANT DR	2081	2159	47A AVE	48 AVE_WB	78	14.4	Collector	Y	MF50	2029	\$38,759	
Ana-0540-010	43 AVE	0	85	75 ST	74 ST	85	10.9	Collector	Y	MF50	2030	\$32,726	
Ana-0570-150	44 AVE	2075	2321	39 ST	38 ST	246	12.9	Collector	N	OL50	2030	\$152,323	
Ana-0630-060	45 AVE	368	431	UNNAMED	UNNAMED	63	11.7	Collector	Y	MF50	2030	\$27,128	
Ana-0630-140	45 AVE	1070	1199	66 ST	65 ST	129	10.7	Collector	Y	MF50	2030	\$48,755	
Ana-0680-070	47 AVE	751	850	55 ST	54 ST	99	10.6	Collector	Y	MF50	2030	\$37,067	
Ana-0780-090	48A AVE	869	968	52 ST	51 ST	99	13	Arterial	Y	FDM	2030	\$96,525	
Ana-0800-170	49 AVE	2143	2184	44 ST	43 ST	41	10	Local	Y	FDM	2030	\$20,500	
Ana-0910-050	51 AVE	741	861	53 ST	52A ST	120	14.6	Collector	Y	MF50	2030	\$72,259	
Ana-0950-070	52 AVE	740	864	50 ST	49 ST	124	13.1	Collector	Y	MF50	2030	\$57,377	
Ana-1020-130	53 ST	1883	2046	51 AVE	52 AVE	163	13.8	Arterial	Y	MF50	2030	\$84,493	
Ana-1020-160	53 ST	2299	2399	53A AVE	54 AVE	100	13.9	Arterial	Y	MF50	2030	\$51,261	
Ana-1060-200	54 AVE	2529	2645	47 ST	46 ST	116	12.3	Collector	Y	MF50	2030	\$50,398	
Ana-1210-060	60 ST	574	772	54A AVE	55 AVE / 55 AVE CL	198	12.5	Collector	Y	MF50	2030	\$88,156	
Ana-1360-050	65 ST	976	1067	45 AVE	45A AVE	91	11.8	Collector	Y	MF50	2030	\$38,247	
Ana-1360-060	65 ST	1067	1155	45A AVE	46 AVE	88	12.1	Collector	Y	MF50	2030	\$37,611	
Ana-1430-020	68 ST	102	587	68 ST_SB	68 ST NB/ENEVOLD DR EB RAMP	485	9.8	Arterial	Y	MF50	2030	\$193,169	
Ana-1430-050	68 ST	1133	1203	MARLER DR EB/68 ST SB RAMP	MARLER DR	70	10.1	Arterial	Y	MF50	2030	\$21,917	
Ana-1610-020	CAMROSE DR	124	591	CAMROSE DR_WB	62 ST	467	8.5	Arterial	Y	MF50	2030	\$123,055	
Ana-1610-040	CAMROSE DR	1248	2442	PARKVIEW DR / VALLEYVIEW DR	50 ST	1194	11	Arterial	Y	MF50	2030	\$497,843	
Ana-1700-020	ENEVOLD DR	46	105	68 ST NB/ENEVOLD DR EB RAMP / ENEVOLD DR WB/68 ST NB RAMP	66A ST	59	16.1	Collector	Y	MF50	2030	\$33,552	
Ana-1730-020	EXHIBITION DR	446	492	EXHIBITION DR/HIGHWAY 13 RAMP	UNNAMED	46	13.7	Arterial	N	OL50	2030	\$21,980	
Ana-1810-040	MARLER DR	259	502	73 ST	69A ST CL	243	14.7	Collector	Y	MF50	2030	\$126,174	
Ana-1820-010	MARLER DR EB/68 ST SB RAMP	0	98	68 ST NB/MARLER DR EB RAMP	MARLER DR	98	5.1	Ramp	Y	MF50	2030	\$20,761	
Ana-1890-070	MOUNT PLEASANT DR	1205	1300	44 AVE	MONTCALM AVE	95	10.7	Collector	Y	MF50	2030	\$35,905	
Ana-1920-010	PARKRIDGE DR_1	0	68	ENEVOLD DR / PARKVIEW DR	600 PARKRIDGE CL / PARKRIDGE DR	68	11	Collector	Y	MF50	2030	\$30,850	
Ana-0480-010	41 AVE	0	117	West End	75 ST	117	15.3	Collector	Y	MF50	2031	\$64,773	
Ana-0540-130	43 AVE	1197	1448	MOUNT PLEASANT DR	59 ST	251	10.5	Collector	Y	MF50	2031	\$100,318	
Ana-0570-140	44 AVE	1841	2075	41 ST	39 ST	234	12.5	Collector	N	OL50	2031	\$118,309	
Ana-0630-040	45 AVE	211	324	73A ST	73 ST	113	12.3	Collector	Y	MF50	2031	\$50,292	
Ana-0680-180	47 AVE	1904	2015	45 ST	44 ST	111	11.3	Collector	Y	MF50	2031	\$48,137	
Ana-0690-100	47 ST	1629	1868	54 AVE	55 AVE	239	14.4	Collector	Y	RECON	2031	\$344,160	
Ana-0710-080	48 AVE	3360	3558	GRAND PARK CRES	S 48TH AVE SERVICE RD	198	7.2	Arterial	Y	MF50	2031	\$44,194	
Ana-0760-030	48 AVE_WB	696	1192	66 ST	R SERVICE RD GRAND PARK CRES 48A	496	8.6	Arterial	Y	MF50	2031	\$164,723	
Ana-0800-110	49 AVE	1465	1569	50 ST	49 ST	104	12.8	Collector	Y	MF50	2031	\$53,590	
Ana-0830-050	50 AVE	423	560	68 ST_SB	66 ST	137	12.2	Collector	Y	MF50	2031	\$64,668	
Ana-0830-170	50 AVE	1818	1923	50 ST	49 ST	105	14.2	Collector	Y	MF50	2031	\$74,550	
Ana-1020-070	53 ST	811	950	45A AVE	46 AVE	139	14.7	Arterial	Y	MF50	2031	\$63,342	
Ana-1120-020	55 ST	86	343	PARKVIEW DR	43 AVE	257	11.8	Collector	Y	MF50	2031	\$116,384	
Ana-1490-030	69 ST	142	217	38 AVE	38 AVE / 69A ST CL	75	10	Collector	Y	MF50	2031	\$27,138	
Ana-1490-060	69 ST	396	493	40 AVE CL	MARLER DR	97	11.7	Collector	Y	MF50	2031	\$47,108	

Analysis_ID	RoadName	From	To	From_Description	To_Description	Length (m)	Width (m)	Class	Curb Exist	Treatment	Treatment Year	Treatment Cost	2024 Committed Project (Y/N)
Ana-1610-030	CAMROSE DR	591	1248	62 ST	PARKVIEW DR / VALLEYVIEW DR	657	8.7	Arterial	Y	MF50	2031	\$224,031	
Ana-1690-010	ELLIOTT DR	0	96	ENEVOLD DR / ERICKSON DR	35 AVE	96	11.2	Collector	Y	MF50	2031	\$41,600	
Ana-1690-020	ELLIOTT DR	96	344	35 AVE	32 AVE	248	11	Collector	Y	MF50	2031	\$105,548	
Ana-1810-020	MARLER DR	60	132	38 AVE / 75 ST	North End	72	13.8	Collector	Y	MF50	2031	\$35,952	
Ana-1810-050	MARLER DR	502	559	69A ST CL	69 ST	57	14.4	Collector	Y	MF50	2031	\$34,327	
Ana-1810-080	MARLER DR	749	927	68 ST	67 ST	178	15.5	Collector	Y	MF50	2031	\$137,950	
Ana-1890-060	MOUNT PLEASANT DR	1108	1205	43 AVE	44 AVE	97	10.7	Collector	Y	MF50	2031	\$37,555	
Ana-0360-040	38 AVE	223	346	70 ST	69 ST / 69A ST CL	123	10.1	Collector	Y	MF50	2032	\$46,084	
Ana-0420-060	39 ST	1675	1713	48 AVE_WB	N 48 AVE SERVICE RD	38	9.7	Arterial	Y	MF50	2032	\$13,986	
Ana-0490-040	41 ST	1077	1268	UNNAMED	47 AVE	191	12.5	Collector	N	FDM	2032	\$155,188	
Ana-0710-020	48 AVE	914	1956	RGE RD 204 / RGE RD 205	73 ST	1042	11.2	Arterial	N	OL50	2032	\$441,028	
Ana-0770-030	48 ST	391	590	47 AVE	48 AVE	199	10.7	Collector	Y	MF50	2032	\$100,136	
Ana-0830-160	50 AVE	1713	1818	51 ST	50 ST	105	13.4	Collector	Y	MF50	2032	\$70,350	
Ana-0860-020	50 ST_SB	203	402	47 AVE	48 AVE	199	7.6	Collector	Y	FDM	2032	\$98,306	
Ana-1020-140	53 ST	2046	2196	52 AVE	53 AVE	150	14.1	Arterial	Y	MF50	2032	\$92,450	
Ana-1380-010	66 ST	0	172	66A ST	38 AVE / 65 ST	172	10.4	Collector	Y	MF50	2032	\$84,715	
Ana-1430-070	68 ST	1308	1865	68 ST SB/MARLER DR WB RAMP	45 AVE	557	9.4	Arterial	Y	MF50	2032	\$261,790	
Ana-1630-020	CAMROSE DR_WB	118	351	CAMROSE DR	39 ST / 39 ST (NEW SALEM ROAD)	233	9.8	Arterial	Y	MF50	2032	\$89,961	
Ana-1700-040	ENEVOLD DR	271	362	ELLIOTT DR / ERICKSON DR	64 ST CL	91	14	Collector	Y	MF50	2032	\$52,326	
Ana-1780-040	HIGHWAY 13	833	895	CAMROSE DR	CAMROSE DR WB/HIGHWAY 13 SB RAMP	62	16.3	Arterial	N	OL50	2032	\$37,794	
Ana-1810-090	MARLER DR	927	1092	67 ST	65 ST	165	14.4	Collector	Y	FDM	2032	\$154,440	
Ana-1810-110	MARLER DR	1344	1670	63 ST	MOUNT PLEASANT DR	326	14.2	Collector	Y	FDM	2032	\$300,898	
Ana-0420-030	39 ST	854	1320	44 AVE	47 AVE	466	10	Arterial	N	OL50	2033	\$182,732	
Ana-0420-040	39 ST	1320	1563	47 AVE	North End	243	11	Arterial	N	OL50	2033	\$105,939	
Ana-0420-075	39 ST	1936	2036		North End	100	6.2	Arterial	N	OL50	2033	\$26,914	
Ana-0430-030	39 ST_SB	369	465	51 AVE	39 ST	96	5.8	Arterial	Y	MF50	2033	\$17,261	
Ana-0490-030	41 ST	916	1077	UNNAMED	UNNAMED	161	12.5	Collector	N	RECON	2033	\$201,250	
Ana-0500-160	42 AVE	1679	1925	39 ST	37 ST / 38 ST	246	11.2	Collector	N	FDM	2033	\$179,088	
Ana-0540-080	43 AVE	688	789	65 ST	64 ST CL	101	11	Collector	Y	RECON	2033	\$111,100	
Ana-0630-050	45 AVE	324	368	73 ST	UNNAMED	44	12.3	Collector	Y	FDM	2033	\$35,178	
Ana-0710-090	48 AVE	3558	3588	S 48TH AVE SERVICE RD	MOUNT PLEASANT DR	30	7.2	Arterial	Y	MF50	2033	\$6,696	
Ana-0830-200	50 AVE	2133	2254	47 ST	46 ST	121	13.9	Collector	Y	MF50	2033	\$76,976	
Ana-0860-030	50 ST_SB	403	527	48 AVE_WB	48A AVE	124	10.4	Collector	Y	MF50	2033	\$63,530	
Ana-1020-010	53 ST	0	330	PARKVIEW DR	43 AVE	330	8.7	Arterial	Y	MF50	2033	\$136,390	
Ana-1470-020	68 ST_SB	108	277	South End	45 AVE	169	6.5	Arterial	Y	MF50	2033	\$46,195	
Ana-1470-030	68 ST_SB	277	791	45 AVE	48 AVE_WB	514	10.5	Arterial	Y	MF50	2033	\$226,960	
Ana-1490-080	69 ST	590	664	42 AVE	42A AVE	74	10.9	Collector	Y	FDM	2033	\$52,429	
Ana-1660-010	Correction Line Rd	0	27	S 48TH AVE SERVICE RD	48 AVE	27		Local		MF50	2033	\$0	
Ana-1810-060	MARLER DR	559	706	69 ST	MARLER DR EB/68 ST SB RAMP	147	14.7	Collector	Y	MF50	2033	\$103,432	
Ana-1810-100	MARLER DR	1092	1344	65 ST	63 ST	252	14	Collector	Y	FDM	2033	\$229,320	
Ana-1930-040	PARKVIEW DR	1031	1194	39 AVE	MARLER DR	163	16.3	Arterial	Y	FDM	2033	\$199,268	
Ana-0490-020	41 ST	802	916	44 AVE	UNNAMED	114	12.5	Collector	N	FDM	2034	\$92,625	
Ana-0490-060	41 ST	1614	1949	48 AVE_WB	51 AVE	335	10	Collector	Y	MF50	2034	\$165,656	
Ana-0630-160	45 AVE	1609	1648	62 ST	COMP RD	39	10.7	Collector	Y	MF50	2034	\$16,308	
Ana-0680-160	47 AVE	1671	1788	47 ST	46 ST	117	10.6	Collector	Y	MF50	2034	\$62,010	
Ana-0710-060	48 AVE	3245	3288	COMP RD	S 48TH AVE SERVICE RD	43	7.5	Arterial	Y	MF50	2034	\$9,998	
Ana-0950-090	52 AVE	980	1064	48 ST	47 ST / 48 ST	84	14.4	Collector	Y	MF50	2034	\$60,480	
Ana-1020-150	53 ST	2196	2299	53 AVE	53A AVE	103	14.1	Arterial	Y	MF50	2034	\$61,412	

Analysis_ID	RoadName	From	To	From_Description	To_Description	Length (m)	Width (m)	Class	Curb Exist	Treatment	Treatment Year	Treatment Cost	2024 Committed Project (Y/N)
Ana-1360-010	65 ST	0	309	38 AVE / 66 ST	MARLER DR	309	10.5	Collector	Y	FDM	2034	\$210,893	
Ana-1430-060	68 ST	1203	1308	MARLER DR	68 ST SB/MARLER DR WB RAMP	105	9.4	Arterial	Y	MF50	2034	\$45,728	
Ana-1430-110	68 ST	3208	3594		54 AVE	386	13.4	Arterial	Y	MF50	2034	\$160,344	
Ana-1560-060	73 ST	592	692	44B AVE	45 AVE	100	12.7	Collector	Y	FDM	2034	\$82,550	
Ana-1560-070	73 ST	692	814	45 AVE	46 AVE	122	10.4	Collector	Y	FDM	2034	\$82,472	
Ana-1560-080	73 ST	814	1171	46 AVE	48 AVE_WB	357	15.2	Collector	Y	FDM	2034	\$352,716	
Ana-1560-090	73 ST	1171	1483	48 AVE_WB	North End	312	13.8	Collector	Y	RECON	2034	\$430,560	
Ana-1610-010	CAMROSE DR	0	124	68 ST_SB / RGE RD 204	CAMROSE DR_WB	124	4.5	Arterial	Y	MF50	2034	\$17,744	
Ana-1700-100	ENEVOLD DR	1077	1151	58 ST CL	57 ST	74	13.7	Collector	Y	RECON	2034	\$101,380	
Ana-1930-050	PARKVIEW DR	1194	1281	MARLER DR	55 ST	87	16.9	Arterial	Y	MF50	2034	\$46,756	