Osseo City Council
AGENDA

WORK SESSION
Monday, April 22, 2024
6:00 p.m., Council Chambers

MAYOR DUANE POPPE COUNCILMEMBERS: JULIANA HULTSTROM, ASHLEE MUELLER, MARK SCHULZ, ALICIA VICKERMAN

1. **Call to Order**
2. **Roll Call** (quorum is 3)
3. **Approval of Agenda** (requires unanimous additions)
4. **Discussion Items**
   - A. **Pavement Management Report - Alyson Fauske, WSB & Associates**
   - B. **Discuss Future Street Project Schedule – Alyson Fauske, WSB & Associates**
5. **Adjournment**

Agenda Item:	Pavement Management Report
Meeting Date:	April 22, 2024
Prepared By:	Alyson Fauske, PE, City Engineer
Attachments:	Pavement Management Report for the City of Osseo

A summary of the Pavement Management Report will be presented by Matt Indihar, Pavement Specialist. Matt will also be available to answer questions that the Council has about pavement management.

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December 30, 2023

2023 PAVEMENT MANAGEMENT REPORT

Osseo, MN

PREPARED FOR: CITY OF OSSEO

415 CENTRAL AVENUE

OSSEO, MN 55369

WSB PROJECT NUMBER: 023151-000

Table of Contents

I. Executive Summary

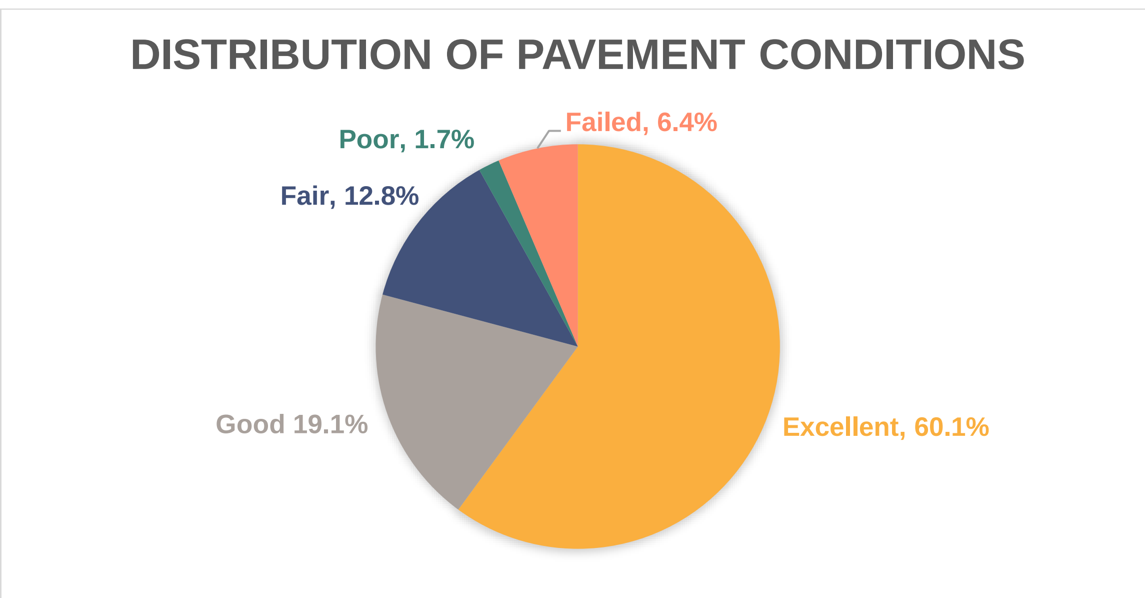
This report summarizes the findings of the pavement inspection of the road segments in Osseo performed by WSB and completed in November 2023. The report gives an overview of the condition of roads in the city but is not intended to be a final document on public policy or city planning and is subjected to change upon review by City Council. Additionally, pavement analysis was performed using the PAVER program to project the future condition of the City's pavement and make maintenance recommendations. Several scenarios were tested to determine the best maintenance strategy. These recommendations and the budgets needed to achieve them are included as part of the provided 5-year Capital Improvements Program (CIP).

A summary of the pavement condition report is listed below:

- 13 miles of City road were evaluated in Osseo. Alleys are not included in this report.
- The current weighted average Pavement Condition Index (PCI) for bituminous roads in Osseo is 83.0. PCI is based on a 0 to 100 scale, with higher PCI values corresponding to better road conditions. This weighted average is calculated from the PCI values generated on each segment of roadway. A road's PCI is based on the quantity and severity of pavement distresses identified in the field. Any type of road maintenance (i.e. patching or crack sealing) done prior to inspections is accounted for in the PCI value.

Each segment of bituminous roadway was sorted into one of five broad categories based on their PCI value. Figure I.1. shows the percentage of bituminous roadways in each condition category in terms of surface area.

Figure I.1. Percent of System in Each Pavement Condition Category.



Most roadways qualified for the Excellent or Good categories. However, 20.9% of the City's roads are in Fair, Poor, or Failed condition. The analysis included aims to protect the investment already made in the network's better sections by establishing maintenance standards and prioritizing maintenance treatments. It also seeks to recommend the most cost-effective ways to improve the segments that need major repairs.

Four different scenarios were tested to show potential impacts to the CIP. Each version of the model examined different budgets or goals that could possibly be implemented over the next five years. A summary of the results is displayed in Table I.1.

Table I.1. 5-Year CIP Scenario Comparison

Scenario	Total 5-Year Budget	2028 Average PCI
1: No Maintenance	$0	70.6
2: Current Budget	$1,865,000	82.9
3: Every Segment PCI > 80	$8,000,000	84.5
4: Maintain Average PCI Over 83	$1,800,000	83.2

The City has shown the ability to manage their pavement maintenance budget well by maintaining a high average PCI and budgeting for cost-effective maintenance treatments. Osseo's proposed budget of $373,000/year appears to be enough to maintain the average pavement condition in the City over the next five years.

II. Introduction

A pavement management program includes a systematic method of conducting a detailed distress survey to evaluate the condition of roads in a network, followed by performing a cost-effective analysis of various maintenance and rehabilitation strategies. This assists decision makers in making the best decision on the use of available resources. The pavement management ideology, if successfully implemented, can result in improvement of the life cycle costs, performance, and service life of roads. The main objectives of a pavement management program are to maintain a high-level network, evaluate the effectiveness of different alternatives, and optimize timing of maintenance and rehabilitation activities. These objectives can be met by routinely conducting inspections and determining the condition of a system of roads. The data is typically managed within a pavement management software which can manage, sort, and store the collected information. Through this software, various models can be generated that allows the user to customize maintenance protocols, run different budget scenarios, and evaluate the outcomes of each scenario.

By conducting a pavement management analysis, the City is showing their willingness to continue looking for ways to improve their network of roads and extend the life of their pavement. On top of that, the benefits of a pavement management program extend beyond helping a City improve the average condition of its pavement. Extending the life of a road reduces the frequency of major reconstruction projects that require lengthy detours and delays to travelers. Safety is improved by giving drivers a surface that allows them to stop quickly and predictably. Achieving the maximum service life of a road is also more sustainable for the environment by reducing the amount of material and fuel that is needed when pavement needs to be completely replaced.

Overall, a pavement management plan should improve the safety for a road network's users and the sustainability of its pavement maintenance while minimizing the costs to taxpayers. This document is designed to act as a guide to help the City manage its pavement. However, it is not the only source of information decision makers should use. It is important to also consult with maintenance staff and review other factors that cannot be accurately included in a model. Circumstances unique to a specific City are hard to capture in a scientific analysis and may take precedent over the recommendations provided.

III. Pavement Condition Report Update

Pavement Lifecycle

Pavement is constructed to meet the demands of traffic and the environment for a certain design period. The Pavement Condition Index (PCI) of the roadway declines as traffic and time slowly take their toll on newly constructed pavement. Figure III.1. shows the typical life expectancy of pavement based on data obtained from the Army Corps of Engineers.

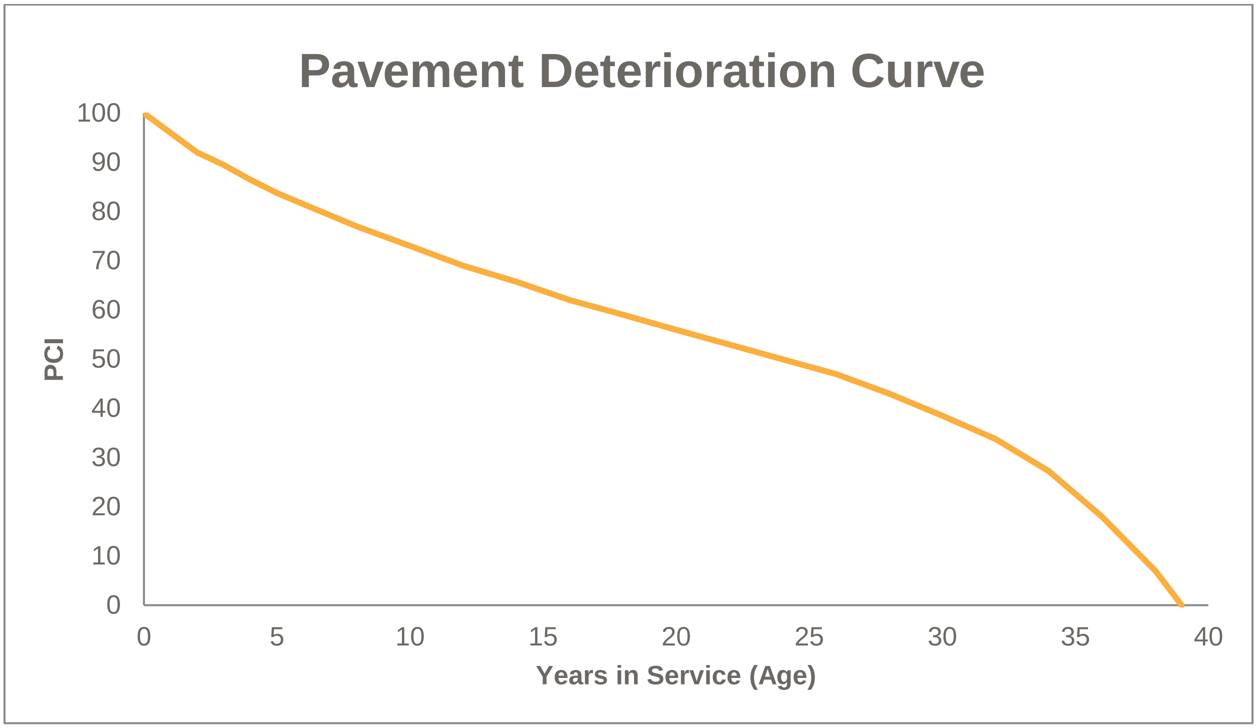


Figure III.1. Typical Pavement Deterioration Curve

This curve exhibits standard behavior when no maintenance is implemented. Each repair or preservation technique applied increases the PCI of a segment and increases its expected life by delaying degradation. The PCI values used in this report are based on a surface inspection of the City's streets. Surface inspections provide a good indication of the pavement and what riders experience when driving the road. However, they do not capture the sub-surface of a pavement structure. Pavement forensics such as pavement coring are required to analyze the entire depth of the road. Some repairs such as patching often improve the PCI of a road but fail to address underlying issues that will continue to cause deterioration. The recommendations in this report seek to keep PCI values high but also maintain the underlying layers of pavement for each segment.

Existing Pavement Conditions

PCI values are used to evaluate pavement condition on a scale from 0 to 100 with 100 being a perfect roadway that exhibits no distress. Table III.1. displays the PCI categories that the engineering staff at WSB use to describe the condition of bituminous roadways along with the maintenance strategy typically implemented on roads in that condition. To be clear, the recommended maintenance strategy is a broad generalization, and a street specific investigation should be conducted prior to repairing any section of pavement. These assumptions are used in pavement scenario modeling.

Table III.1. Pavement Condition Categories Based on PCI Values

Category	Pavement Condition Index (PCI)	Recommended Strategy
Excellent	85.01 – 100.00	Corrective Maintenance
Good	75.01 – 85.00	Preventative Maintenance
Fair	58.01 – 75.00	Mill/Overlay
Poor	40.01 – 58.00	Reclamation
Failed	0.00 – 40.00	Reconstruction

PAVER, an asset management software, was used to record and estimate the condition of each road segment. The software calculates PCI using deduct values that are based on the type, severity, and quantity of the visible pavement distresses on each road. Examples of asphalt pavement distresses include alligator cracking, longitudinal/transverse cracking, and potholes. Distress severity is classified as either low, moderate, or high. Depending on the type of distress, quantity is measured as the number of occurrences, length, or area.

The PCI values generated were based on a visual inspection and the corresponding recommended maintenance strategies should only be used as a guideline. In some cases, pavement forensics such as coring may be needed to supplement visual inspections and provide more information regarding roadway condition.

This report shows updated pavement conditions for all road segments requested by the City. Most bituminous roadways at the time of inspection were in Excellent or Good condition, but many are approaching a critical stage where more sever maintenance will be needed. Table III.2. shows how much of the City's pavement is in each condition category.

Table III.2. City Roads by Condition Category

Pavement Condition Index	Mileage	Percent of System by Area
Excellent Category (85.01 – 100.00)	7.6	60.1 %
Good Category (75.01 – 85.00)	2.4	19.1 %
Fair Category (58.01 – 75.00)	1.5	12.8 %
Poor Category (40.01 – 58.00)	0.2	1.7 %
Failed Category (0.00 – 40.00	1.0	6.4 %

Appendix A includes maps of all the inspected road segments in the City with their PCI condition categories. Appendix B displays the PCI values of every inspected segment.

Pavement Rating Examples

PCI Rating = 24: Failed

9th Avenue (Segment ID: 159)

When a road's PCI rating is 40 or below, the pavement shows high severity distresses at multiple locations or extensive moderate and low severity distresses. The street has deteriorated to the point where the structural integrity has diminished along with the driving surface. Drivers using segments of this condition experience bumpy and rough rides. Typically, streets of this category require reconstruction. Reconstruction involves removing the pavement at full depth, through the surface layers of asphalt and into the gravel base, and constructing the street to its original state. Reconstruction is very costly, so every effort should be made to keep streets from entering this category.

Detailed Distresses on Segment Shown:

- Alligator Cracking, Moderate Severity, 96.04%

PCI Rating = 44: Poor

Broadway S (Segment ID: 66)

Roads in the Poor category are at the point where the number and severity of distresses dramatically worsen. Moderate and high severity distresses become common. Drivers experience many bumps while using these streets. Maintenance tactics such as crack sealing and seal coating are not effective, as the pavement has deteriorated beyond the point of repair. If the damage has not yet reached the base of the road, reclamation is recommended. Reclamation is an in-place recycling method for reconstruction of flexible pavements using the existing pavement section material as the base for a new roadway-wearing surface. While reclamation projects are much cheaper than reconstructions, it is still a costly procedure.

Detailed Distresses on Segment Shown:

- Alligator Cracking, Moderate Severity, 3.57%
- Depression, Low Severity, 0.59%
- Longitudinal/Transverse Cracking, Low Severity, 2.68%
- Pothole, Moderate Severity, 0.12%
- Weathering, Low Severity, 100.00%

PCI Rating = 66: Fair

Broadway (Segment ID: 6)

Segments rated as Fair may have a few moderate and severe distresses but usually only have mild widespread distresses. The road shows wear but it is still structurally sound. Drivers may experience some bumps while using these segments, but the driving surface is mostly smooth. Typically, streets in this category can be rehabilitated with a mill and overlay. This method involves milling off the top part of the pavement and replacing it with a new lift of fresh asphalt. Milling eliminates most of the distresses since they are usually mild and still only on the surface. The overlay provides a new driving surface while utilizing the existing base which is still in adequate condition. This strategy prevents the pavement from deteriorating past the point where repairing it is no longer cost-effective.

Detailed Distresses on Segment Shown:

- Depression, Low Severity, 0.64%
- Longitudinal/Transverse Cracking, Low Severity, 1.54%
- Longitudinal/Transverse Cracking, Moderate Severity, 0.51%
- Patching, Low Severity, 2.56%
- Patching, Moderate Severity, 0.51%
- Pothole, Moderate Severity, 0.03%
- Rutting, Moderate Severity, 1.28%
- Weathering, Low Severity, 100.00%

PCI Rating = 80: Good

6th Avenue NE (Segment ID: 158)

Streets with a rating of Good have experienced enough freeze thaw cycles to show signs of distress. These distresses are usually mild with some moderate distresses also present. Drivers on these segments encounter mostly smooth rides with few bumps. While the distresses may still be relatively minor, they are prime candidates for preventative maintenance techniques. It is recommended that the City use a combination of crack sealing, chip sealing, and fog sealing to restore segments in the Good category. These strategies are relatively cheap and extremely cost-effective ways to extend the life of the pavement.

Detailed Distresses on Segment Shown:

- Longitudinal/Transverse Cracking, Low Severity, 11.18%
- Weathering, Low Severity, 100.00%

PCI Rating = 95: Excellent

3rd Avenue NE (Segment ID: 32)

If a pavement section is categorized as Excellent, it will have been recently resurfaced or reconstructed. Distresses can be present but they are usually mild in severity. Drivers will experience few if any bumps while traveling the segment. In most cases no maintenance is required on Excellent pavement. However, the City should be proactive by crack sealing seams and any early cracks to prevent seepage into the base of the road

Detailed Distresses on Segment Shown:

- Longitudinal/Transverse Cracking, Low Severity, 0.45%
- Weathering, Low Severity, 100.00%

IV. Pavement Management Report

The information provided in this pavement management report is based on a systematic method of inspecting and rating the pavement condition of roads in the City's network, followed by an analysis of various cost-effective maintenance and rehabilitation strategies which can aid in making the best decisions on the use of available resources. It can also be used to provide updated data regarding the current pavement management plan.

Recommended Maintenance Action

Osseo has many options at their disposal for pavement rehabilitation and preventative maintenance including reconstruction, reclamation, mill and overlays, and seal coats that extend the life of a roadway. Each of these treatments should last several years and be cost-effective if correctly implemented at the right time.

Corrective Maintenance

Corrective maintenance is used to fix a road segment that is experiencing early distresses that result from freeze-thaw cycles. This typically involves crack sealing or patching. Corrective maintenance is recommended for roads in Excellent condition because these segments should not need any major maintenance other than minor crack sealing unless the pavement behaves unpredictably.

Preventative Maintenance

Preventative maintenance is defined as treatment to an existing road that will help preserve and protect the pavement, while also slowing future deterioration. This type of maintenance improves the condition of the system without increasing its structural capacity.

Implementing a preventative maintenance strategy is cost-effective and important since maintenance costs increase with pavement age. Preventative maintenance actions can be done at a much lower cost than preservation actions such as mill and overlays. By applying appropriate preventative maintenance before a road deteriorates, the pavement can be kept in good condition at a much lower cost. With proper preventative maintenance techniques, the life of an average paved road increases from 20 years to 60 years.

Preventative maintenance is best performed on newer pavements prior to the appearance of significant and/or severe distresses. There are many preventative maintenance applications that seek to protect pavement from deterioration. These treatments vary in effectiveness and price. Common preventative maintenance techniques include crack sealing, fog sealing, chip sealing, chip sealing followed by fog sealing. Less common techniques include rejuvenating, micro-surfacing, and slurry sealing.. WSB would be happy to provide additional guidance on what types of preventative maintenance would work best for Osseo if needed. Patching can also be considered preventative maintenance, but it is usually implemented on small areas of severe distress. Additionally, patching a road to increase its PCI does not provide long term structural improvement. Patching may be necessary to keep roads in serviceable condition but it should not be considered routine maintenance for every road.

Crack Seal

Crack sealing is done to prevent the intrusion of water and incompressible materials into cracks. When water enters cracks in pavement, it can soften the sub-base and base layers. This leads to the development of more severe distresses and ultimately the formation of potholes. In Minnesota where extensive freeze/thaw cycles exist, the water that enters the pavement structure through cracks can also lead to frost heaving issues. Crack sealing should be completed early in the life of a new pavement or overlay. For the most effective results, it should be performed 2 to 4 years after a new surface is constructed and periodically after that as deemed necessary. This technique will not improve the structural capacity of the pavement, but it will slow down future structural deterioration. In general, crack sealing should be done in coordination with other pavement preservation and rehabilitation treatments to enhance their performance. It may also be conducted as a stand-alone practice to increase pavement life through minimizing water and incompressible ingress and damage. Best practice is to seal cracks prior to fog seals, chip seals, overlays, and any other surface treatment. All moderate to high severity longitudinal, transverse, and block cracks between ¼ inch and ½ inch wide should be sealed. Cracks less than ¼ inch wide may be difficult to seal and should be filled with a surface treatment. Cracks wider than 3/4 inch will require a mastic fill material. To mitigate roughness issues, overbanding or buildup of seal material on the surface of the pavement should be avoided. Finally, alligator cracks should be addressed through base repair or patching methods and should be largely removed prior to crack sealing. Crack sealing is an important first step to mitigating future pavement damage but adding a seal coat layer on top of sealed cracks provides significantly more protection from distresses. WSB recommends the City reference MnDOT Spec 3719, 3723, or 3725 for more information on crack sealing guidelines

Fog Seal

Fog sealing is another type of preventative maintenance in which asphalt emulsion is applied to the roadway to protect the surface from environmental aging, moisture damage, and oxidation. This preventative maintenance technique will not add any strength to the pavement. Fog sealing is typically completed one year after crack sealing. Typically, a fog seal will last 3 to 5 years. It is important to note that while the color of a fog seal may fade as early as a year after its application, a fog seal remains effective for as many as 2 to 4 years. WSB recommends the City reference MnDOT Spec 2355 for more information on fog sealing guidelines.

Chip Seal

Like a fog seal, the chip sealing process involves an application of a uniform layer of emulsified asphalt. However, chip sealing includes immediately applying a layer of cover aggregate across the pavement surface. Pre-sweeping and filling of cracks should be done prior to the chip seal application. Chip sealing creates a waterproof surface membrane to the existing membrane, which helps to slow down the deterioration of the pavement from oxidation as well as to prevent the intrusion of water. Chip sealing is typically completed one year after crack sealing. Normally, a chip seal placed on a newer road will last 5 to 10 years. This assumes the chip seal is protected during placement to allow proper curing time. Other factors that affect the performance of a chip seal include the type of binder that is used, the condition of the underlying road, and external factors such as plow damage. It is the responsibility of the owner to ensure that these external factors do not contribute to premature failure of a chip seal. Field surveys should assist in determining which roads are candidates for a chip seal. WSB recommends the City reference MnDOT Spec 2356 when considering chip sealing.

Chip Seal Followed by Fog Seal

A newer preventative maintenance strategy that has already proven cost-effective for cities includes combining the benefits of a chip seal and a fog seal. Applying a chip seal immediately followed by a fog seal extends the life of a traditional standalone chip seal project with some additional benefits. The fog seal over a chip seal provides for better chip retention resulting in a more durable surface and reducing the complaints from the public of chipped windows and rocks being tracked off the project. The public has been found to have a more positive opinion of the fog sealed chip seal projects because they appear as if the road was just overlaid at a reduced price and far less impact to roadway users.

The construction of this type of fix is the same as for the chip seal section in this report with the addition of a fog seal once the chip seal rock has been compacted. WSB would recommend applying CSS-1H emulsion at a rate of 0.10 gallons per square yard as a starting point. The application rate can depend on the rate of emulsion applied under the chip seal and the rock used so adjust as needed to the project conditions.

The City has reported having problems with standard chip seals in the past. Adding a fog seal on top of a chip seal is a way to reduce many of the issues experienced in the past. Engineers at WSB recently completed a statewide study on chip seals followed by fog seals and found they performed much better, were well-received by the public, and provided the cost-effective solution that seal coats are designed to deliver. For these reasons, chip seal followed by fog seal is recommended as the main preventative maintenance solution for the City.

Overlay/Mill and Overlay

An overlay involves placing a new layer of bituminous material on top of an existing asphalt surface. A mill and overlay requires grinding all or a portion of the in-place asphalt surface and topping the ground surface with a bituminous wearing course. This rehabilitation strategy provides a structural improvement to the roadway. We recommend conducting more investigation such as pavement coring to evaluate the subsurface conditions before implementing an overlay project. Information such as depths of pavement layers, signs of debonding, and distresses that are not visible from the road surface can be obtained through pavement coring. Applying an overlay to a pavement structure with inadequate subsurface conditions will cause the new surface to fail prematurely.

Reclamation

The most common types of reclamation are full-depth reclamations (FDR) and stabilized full-depth reclamations (SFDR). FDR involves pulverizing the full depth of bituminous and a portion of the underlying materials. That material then gets blended together and placed as a sound base for new pavement. Typically, FDR reclaim depth is 12 inches, although it can be as deep as 18 inches. Excess FDR mixture may be removed to allow 6-inch lifts compaction. Additional rock may need to be provided if the mixture is expected to be deficient in crushing or gradation.

The reclaimed mixture can be topped with different types of surface course, depending on the structural requirements and anticipated traffic level. A layer of tack coat needs to be applied prior to surface treatment to provide good bonding between the FDR mixture and surface course. SFDR involves the same process but includes mechanical, chemical, or bituminous stabilization. The typical minimum depth of stabilization is 4 inches, but it can go as deep as 6 inches. Mechanical stabilization involves the addition of new aggregate or recycled materials. Chemical stabilization includes the addition of lime, cement, fly ash, calcium chloride, or other proprietary products. The asphalt additives can be foamed asphalt or asphalt emulsion. These stabilizing agents if combined with additives, can help optimizing the FDR performance.

In the cities like Osseo where many streets lack 12 inches of viable reclaim material (pavement and base) and new pavement elevations are dictated by existing curb and gutter, it is difficult to implement a reclamation project without utilizing a stabilizing agent. When considering a reclamation project, the additional cost of stabilization should be considered to ensure a reclamation is the best choice.

Reconstruction

Reconstruction includes the complete replacement of the road's driving surface and pavement structure. The pavement along with its base layers are then replaced with new material. Asphalt mix type, ride specification, lift thicknesses, and compaction requirements must be in accordance to the specified standard. Selecting the specific appropriate reconstruction plan for a road requires more detailed investigation such as pavement coring. Each road segment requires a specific pavement design that considers existing subgrade materials and traffic loading to create the most effective pavement structure. Subsurface water management is a significant component of a reconstruction project. Thus, addressing roadway drainage is included in roadway reconstruction projects. When performing a reconstruction, it is important to consider the entire pavement structure that includes the base and subbase. A larger initial investment in thicker base and subbase layers along with edge drains provides the pavement with a stronger foundation that reduces damage from moisture under the surface. This produces pavement that is less susceptible to damage and has a longer expected life. WSB can provide specific reconstruction design recommendations if requested.

Pavement Forensics

Engineers need adequate information about the depth and condition of the existing pavement and underlying aggregate base layers before implementing a major maintenance or rehabilitation project. While our model makes many assumptions about when each particular fix listed above should be utilized, the final decision on implementing a reconstruction or reclamation project should come after a pavement forensic study. Pavement forensics studies the pavement structure and condition of the base underneath the visible layer of pavement. Important information results from this analysis. Examining pavement cores can determine the depths of pavement layers, signs of bonding or de-bonding, and distresses that might not be visible from the surface. Soil borings along the roadway can be used to identify aggregate depths and soil classifications to provide a better understanding of the roadway section. This information is crucial when determining what type of rehabilitation is needed and what it will cost. Several factors should be considered when deciding the number of cores to be taken such as the pavement condition and the variability in the pavement depth as cores are being taken. A pavement forensic study should be conducted less than two years before a major maintenance project to ensure the results of the study accurately reflect the road's condition. The findings of pavement forensic studies have been proven to lead to cost savings and more appropriate maintenance strategies. WSB can perform pavement forensics for Osseo if requested.

Concrete Maintenance

While most roads in Osseo are paved with asphalt, Central Avenue is paved with Portland cement concrete. Additionally, most alleys in Osseo are paved with concrete. Osseo's alleys were not included in the scope of this analysis because they are all relatively new and likely aren't due for maintenance. In future studies, the City should consider adding alleys to their pavement management plans. While concrete pavement typically requires a larger initial investment, it can last longer and requires less maintenance. Despite not needing as much maintenance, concrete pavement should not be completely ignored. As with asphalt, timely repairs can greatly increase the life of the pavement. WSB's pavement team found mostly minor distresses on Central Avenue. These primarily included joint spalling and corner spalling. Concrete pavement repairs are typically more localized compared to asphalt; where asphalt pavement typically requires complete resurfacing, concrete pavement's longer design life makes localized spot repairs more practical. Concrete pavement rehabilitation projects (CPR's) usually involve a series of localized repairs such as partial-depth pavement replacement or full-depth pavement replacement at joints, corners, and cracks. Currently, WSB does not believe the condition of Central Avenue warrants a major CPR project. WSB did not include the cost of a CPR in the pavement models described below. We can provide additional guidance on concrete pavement maintenance and repair strategies if needed.

5-Year Capital Improvements Program (CIP)

To develop recommendations for the City regarding their 5-year CIP, a model was created using the PAVER software. PAVER uses construction, inspection, and maintenance records along with a degradation curve to predict how each segment of pavement in the City's system will perform over time. This analysis utilized the Army Corps of Engineer's standard pavement degradation curve. Different scenarios and maintenance budgets can then be tested to see how they would perform and determine the best plan moving forward. Leveraging PAVER's ability to optimize the cost-effectiveness makes sure the City's resources have the biggest impact on the roadway system.

To build an accurate model of in PAVER, unit pricing for the maintenance activities were developed as follows. The unit pricing of chip sealing followed by fog sealing was selected as the representative cost for the preventative maintenance activity since it has shown to be one of the most cost-effective forms of preventative maintenance. The cost of corrective maintenance on roads in Excellent condition was considered too minimal to include.

- Preventative Maintenance - $2.07/square yard
- Mill and Overlay - $31.14/square yard
- Reclamation - $55.98/square yard
- Reconstruction - $247.23/square yard

These cost estimates are based on previous project estimates and bids for similar work in nearby communities. Estimates include other costs that accompany pavement maintenance such as adjusting casings, adjusting valve boxes, and replacing curb and gutter. Contingency and indirect costs are also included to provide accurate cost projections.

In our pavement model, we assumed that all streets in the network meet or exceed the City's standard pavement section of 5 inches of pavement on top of 6 inches of Class 5 Aggregate Base. WSB understands that there is limited as-built data available for most roads in Osseo which makes it difficult to determine if the suggested maintenance project is feasible. Thinner layers of aggregate base or pavement make some of the suggested rehabilitation projects unfeasible or impractical. Inferior sections could also increase the cost of the project. For example, a reclamation project could still be possible with a thinner than normal section but would likely require adding a stabilizing agent that would increase the cost of the project.

Figure IV.1. demonstrates how the cost of restoring pavement increases as pavement deteriorates. This shows the importance of implementing preventative maintenance because it is exponentially cheaper. It also shows the importance of repairing roads before they reach the level where a reconstruction is needed since the cost jumps significantly. Once roads reach this level, the cost no longer increases and urgency to repair the road is driven solely by the need to keep roads serviceable for the traveling public. This data is reflected in the results of each scenario modeled in PAVER.

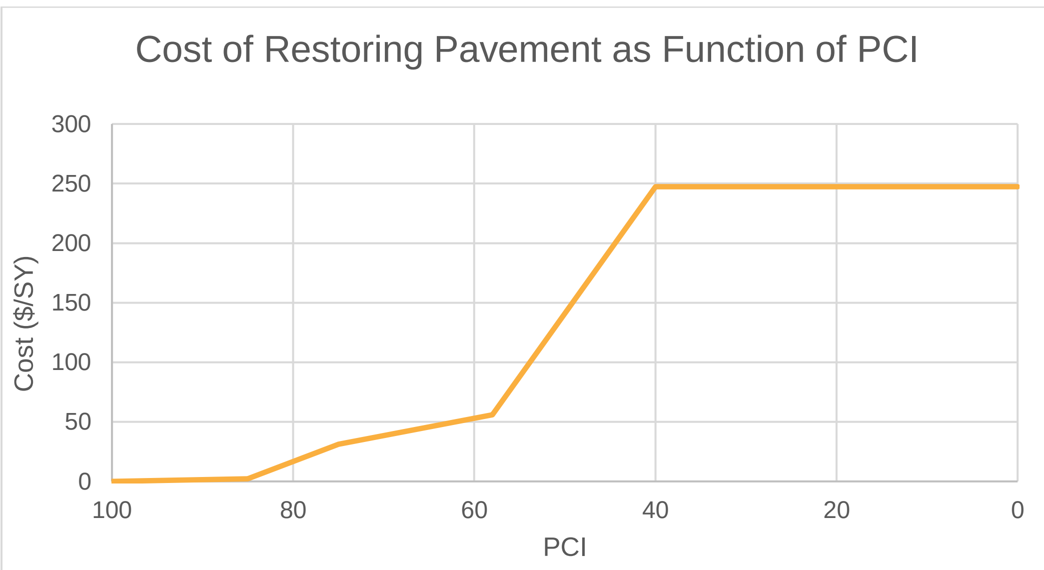


Figure IV.1. Increasing Cost of Restoring Pavement

A main goal of this pavement management report is to determine how much funding is necessary to maintain the City's streets over the next five years and how that budget should be spent. To best determine this, four scenarios were tested and the associated impacts on the overall PCI rating of the City were recorded.

Scenario 1: No Maintenance

The No Maintenance scenario is a good starting point when comparing various funding alternatives because it shows the rate of deterioration that the City must overcome through its maintenance and rehabilitation programs. Given no pavement maintenance funding over the next 5 years, the City pavement condition would deteriorate at a rate of approximately 2-3 PCI points per year, going from a PCI of 83.0 in 2023, to 70.6 in 2028. The goal of the other scenarios tested is to find the best way to offset this natural deterioration rate. The summary of results from Scenario 1 can be found in Table IV.1. and Figure IV.2.

Table IV.1. Summary Results for Scenario 1

Year	2024	2025	2026	2027	2028	Totals
Total Spent ($ thousand)	0.0	0.0	0.0	0.0	0.0	0.0
Average PCI	80.1	77.6	75.1	72.8	70.6	-

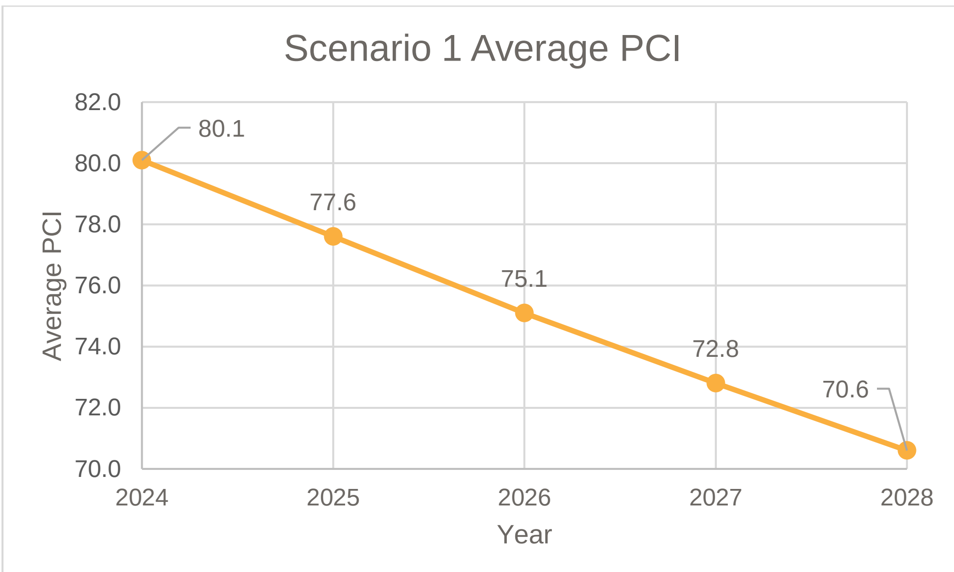


Figure IV.2. Average PCI in Scenario 1

Scenario 2: City's Current Proposed Budget

The second scenario tested the city's current proposed budget. This budget is shown in Table IV.2.

Table IV.2. Anticipated Maintenance Budget

Year	Budget
2024	$373,000
2025	$373,000
2026	$373,000
2027	$373,000
2028	$373,000
Total CIP Budget	**$1,865,000**

If the expected funds are spent in the optimal way, the average PCI is projected to remain relatively steady over the course of five years. It is important to note that the PAVER simulation only seeks to maximize the average PCI given a certain budget. This means that reconstruction and reclamation projects receive last priority since they are the most expensive and least cost-effective way to improve the PCI of a segment. While this approach does keep average PCI values high, it lets some roads degrade beyond an unacceptable condition. To help offset this, roads rated as Poor or worse were designated as being in critical condition. Segments in critical condition are given a higher priority in the model. This helps make scenarios more realistic by ensuring the entire budget does not get allocated to maintaining the best roadways. However, no model is perfect and the decision between implementing more cost-effective maintenance projects on segments in better condition and implementing more costly repairs on roads in unacceptable condition is one City officials will need to make.

The model also does not account for important factors such as keeping heavily trafficked roads in better condition than lesser trafficked routes or public opinion about which roads should be repaired. The judgement of the City is needed to decide when a road has reached the end of its serviceable life and should receive a reconstruction or reclamation. When these additional variables are included, resources need to get spent in less cost-effective ways which means the weighted average PCI will likely perform worse than projected.

The results from Scenario 2 show most of the budget being allocated towards reclamation and reconstruction projects. The city has several roads in Poor condition or worse so PAVER is trying to improve these critical segments. The model also allocated significant funding towards preventative maintenance. While the amount spent on preventative maintenance is much lower, that amount can improve many more segments. Implementing cost-effective preventative maintenance is important when trying to maximize the budget. The total amount spent is less than the budget which shows there is room for a few minor corrective maintenance projects if needed. PAVER cannot exceed the provided budget each year so it spends until it cannot find a small enough project that keeps spending under the budget.

The City's current budget allocates $250,000/year for preventative maintenance and overlays and reserves the rest of the budget for reclamation and reconstruction budgets. In most years of this model, PAVER chose to direct more funding towards major projects instead of using a distribution that more closely matches the City's current practices. In general, spending more on preventative maintenance and overlays is a sustainable way to keep average PCI values high for the least cost. Assuming Osseo's preventative maintenance and overlays are being properly implemented, we would expect the average PCI to perform better than modeled, acknowledging the tradeoff is fewer of the roads in Poor and Failed condition will be able to be restored.

The summary of results from Scenario 2 can be found in Table IV.2. and Figure IV.3.

Table IV.2. Summary Results for Scenario 2

Year	2024	2025	2026	2027	2028	Totals
Spent on PM ($ thousand)	136	66	127	122	23	473
Spent on M/O ($ thousand)	54	0	0	0	0	54
Spent on Reclaim ($ thousand)	151	132	0	141	115	540
Spent on Recon ($ thousand)	0	129	223	0	187	538
Total Spent ($ thousand)	340	327	349	263	325	1,605
Average PCI	82.6	83.2	83.3	83.8	82.9	-

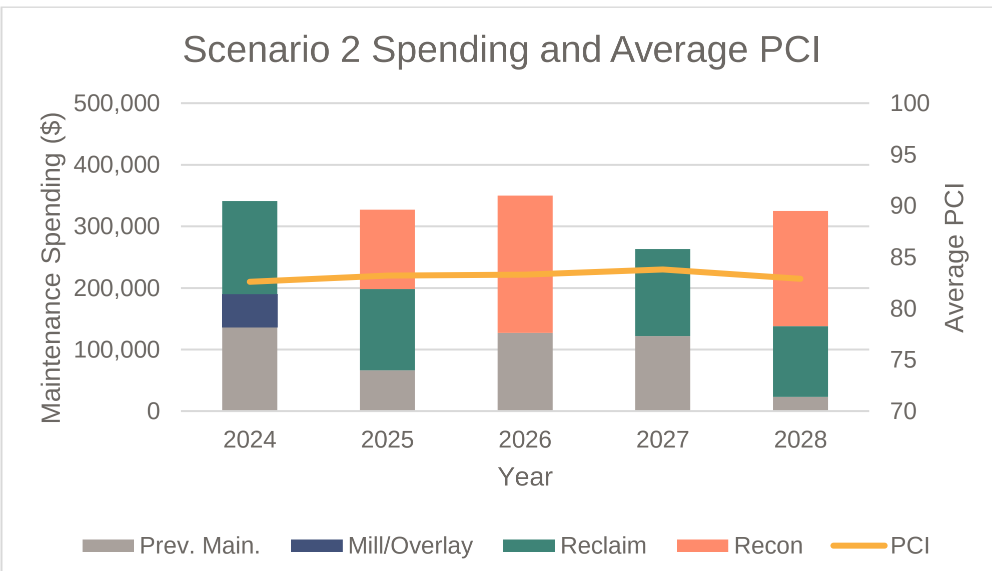


Figure IV.3. PCI vs Maintenance Budget for Scenario 2

Scenario 3: Minimum PCI of 80 on Every Segment

The third scenario was tested with the goal of getting every road in the city to have pavement in good condition by the end of the five-year plan. Under this scenario, the model increases the minimum PCI threshold each year until a target PCI of 80 is achieved at the end of 2028 on all segments. This scenario involves implementing many major rehabilitation projects on the roads currently in bad condition. To achieve this ambitious goal, an annual budget of approximately $1,600,000 is required for each of the next five years. This large increase in spending would allow every segment to be firmly in the Good category and result in an average PCI of 84.5 by the end of the CIP.

The results show how money is initially directed towards the worst roads resulting in many reconstruction projects. Funds then shift towards reclamation projects and the mill & overlay projects as the worst roads get repaired. Even with this aggressive spending, the average PCI does not start to increase until more cost-effective repairs start to get implemented later in the plan. Some elements of this scenario are unrealistic; for example, it is unlikely the City would only implement reconstruction projects for the next 3 to 4 years. Due to this skewed trend, this scenario is much more costly than the others tested, and it is the least cost-effective since all resources are allocated towards improving the worst roads and few are dedicated to preventative maintenance on the better segments. Major rehabilitation projects, like the one Osseo is planning for 2024, are necessary to improve roads that have degraded beyond a functional condition. The goal of a pavement management plan is to reduce the need to implement costly reconstruction and reclamation projects by routinely maintaining roads while they are still in serviceable condition. The summary of results from Scenario 3 can be found in Table IV.3. and Figure IV.4.

Table IV.3. Summary Results for Scenario 3

Year	2024	2025	2026	2027	2028	Totals
Spent on PM ($ thousand)	0	0	0	0	171	171
Spent on M/O ($ thousand)	0	0	0	0	1,441	1,441
Spent on Reclaim ($ thousand)	0	0	0	355	0	355
Spent on Recon ($ thousand)	1,271	1,517	1,799	1,430	0	4,588
Total Spent ($ thousand)	1,271	1,517	1,799	1,785	1,612	7,984
Average PCI	80.8	79.7	79.0	81.0	84.5	-

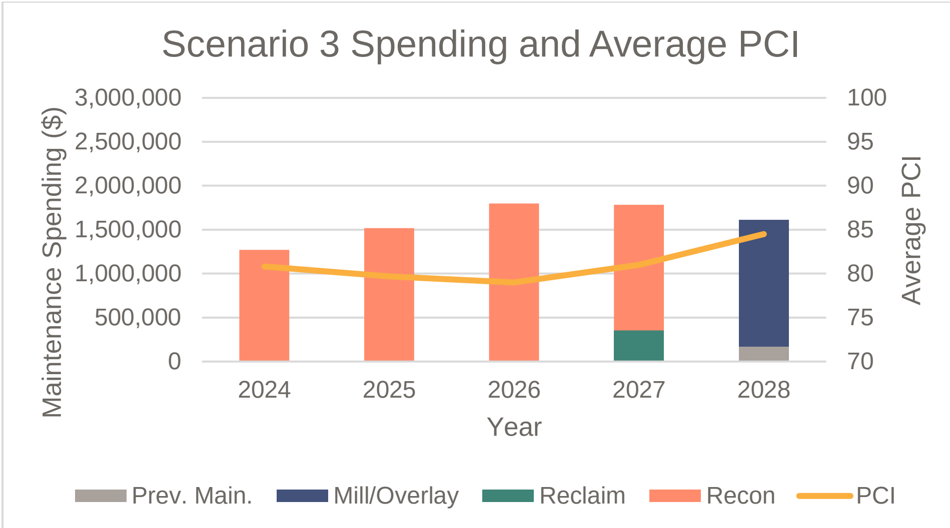


Figure IV.4. PCI vs Maintenance Budget for Scenario 3

Scenario 4: Maintain Average PCI Over 83

The final scenario tested examined what budget would be needed to maintain an average PCI of 83 over the life of the CIP. The City's average PCI value is 83 so this scenario identifies the budget needed to maintain the current average quality of pavement the City's residents are accustomed to. The model showed that an annual budget of approximately $360,000 is needed to ensure an average PCI of 83.0 is achieved each year until 2028. The final PCI value projected in this scenario is 83.2.

This scenario's results are almost identical to the results from Scenario 2. The yearly budgets and the resulting average PCI values are mostly the same. While the average annual budget in this scenario is slightly less, the average PCI is slightly higher because PAVER had more flexibility on when it could use available funds. Both scenarios focus on balancing the need to repair roads in critical condition while also implementing cost-effective preventative maintenance. Again, it is necessary to note that while this model tries to be as realistic as possible, how the City decides to allocate resources to the spectrum of condition categories will ultimately determine PCI performance. The summary of results from Scenario 4 can be found in Table IV.4. and Figure IV.5.

Table IV.4. Summary Results for Scenario 4

Year	2024	2025	2026	2027	2028	Totals
Spent on PM ($ thousand)	136	66	127	122	23	473
Spent on M/O ($ thousand)	54	0	0	0	0	54
Spent on Reclaim ($ thousand)	246	0	0	141	115	503
Spent on Recon ($ thousand)	0	381	223	156	0	761
Total Spent ($ thousand)	436	447	349	420	138	1,791
Average PCI	82.8	83.5	83.4	84.0	83.2	-

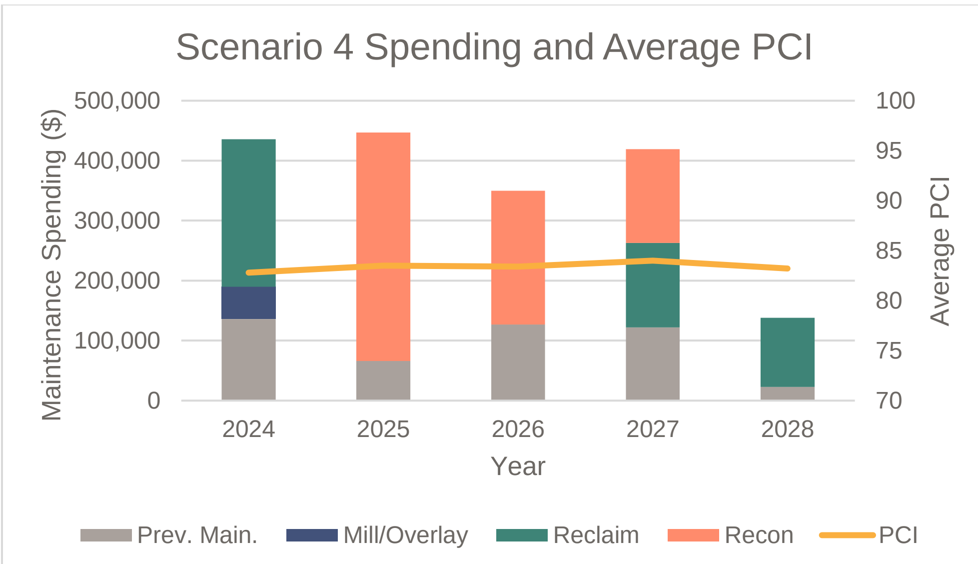


Figure IV.5. PCI vs Maintenance Budget for Scenario 4

Spending and Maintenance Recommendations

Figure IV.6. compares the four scenarios tested in PAVER. The results were used to notice trends and develop recommendations for the City.

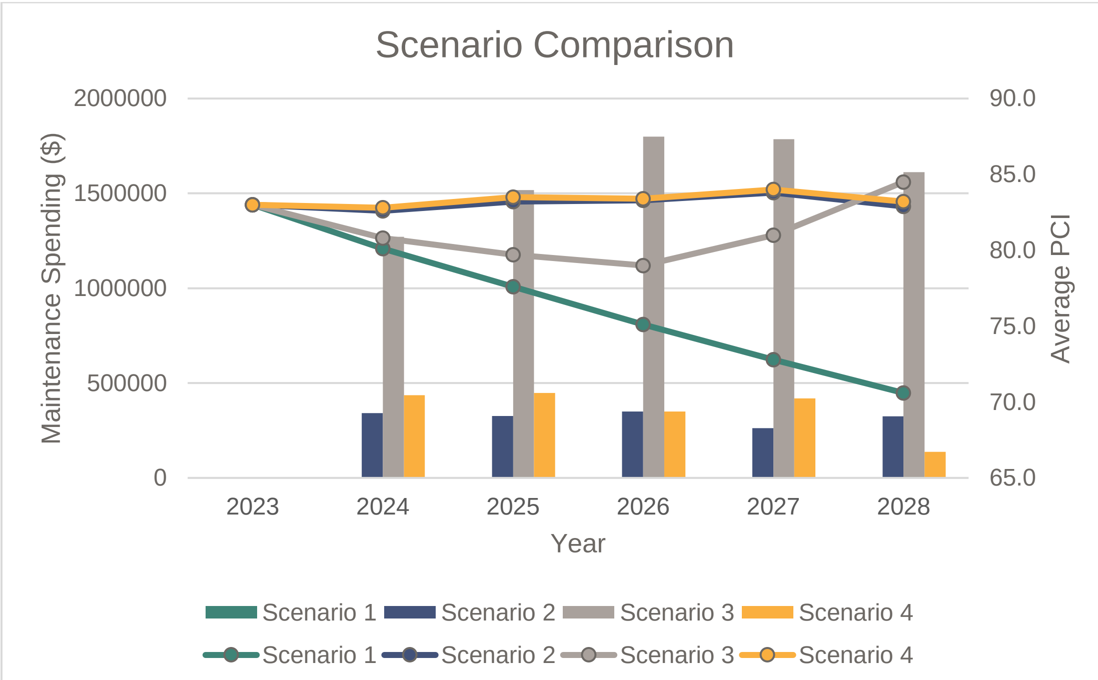


Figure IV.6. Scenario Summary Comparison

Budget Recommendations

After analyzing the results from the pavement scenario modeling, it appears that Osseo's currently planned maintenance budget should be sufficient to maintain the City's average pavement condition. The current average PCI of 83 is slightly above average for similar communities. It is much easier to maintain a good network of pavement than it is to repair a system that has deteriorated into poor condition so WSB recommends funding repairs that can at least maintain the current pavement condition in the City. Both Scenario 2 and Scenario 4 showed that over the next 5 years, spending approximately $360,000 to $373,000 each year should be sufficient to meet this goal. Additionally, the City has already budgeted $2 million for major street improvements in 2024 which includes reconstructing many of the pavement segments that are currently in the worst condition. The City has done a good job of allocating budget for cost-effective projects like preventative maintenance and overlays; continuing that practice will help ensure Osseo is getting maximum value for their spending. It is important to note that the budget recommendations included in this report and based solely on pavement condition. The inclusion of other assets such as utilities will significantly impact project costs and those considerations are outside the scope of this report.

Maintenance Recommendations

While the maintenance repair recommended for a segment typically aligns with its PCI score and the corresponding condition category noted above, there are a few other factors to consider when deciding which roads should receive a specific treatment. Anytime a major rehabilitation project is needed (PCI less than 75), it is wise to do more investigation before moving ahead with a project. Spending resources investigating the pavement and base condition adds value by making sure the most cost-effective solution is applied. This is especially true when deciding between a reclamation or a reconstruction. The cost difference between these alternatives is substantial enough that pavement coring should always be implemented before moving forward with a project that has a PCI score lower than 58.

As mentioned earlier, the actual performance of the roads in the City's system will depend on how cost-effective its maintenance is. There are several strategies that can be used to protect the roads in good condition and to stretch the impact of the City's resources. To maximize the effectiveness of the available funding, we recommend prioritizing preventative maintenance. While it seems counterintuitive to focus on roads in the best condition, their preventative maintenance is relatively cheap and retaining segments with high PCI values is necessary to avoid high maintenance costs in the future. While roads will inevitably need more expensive repairs at some point, delaying those expenses and keeping roads in good condition is a best practice. Figure IV.7. illustrates this point.

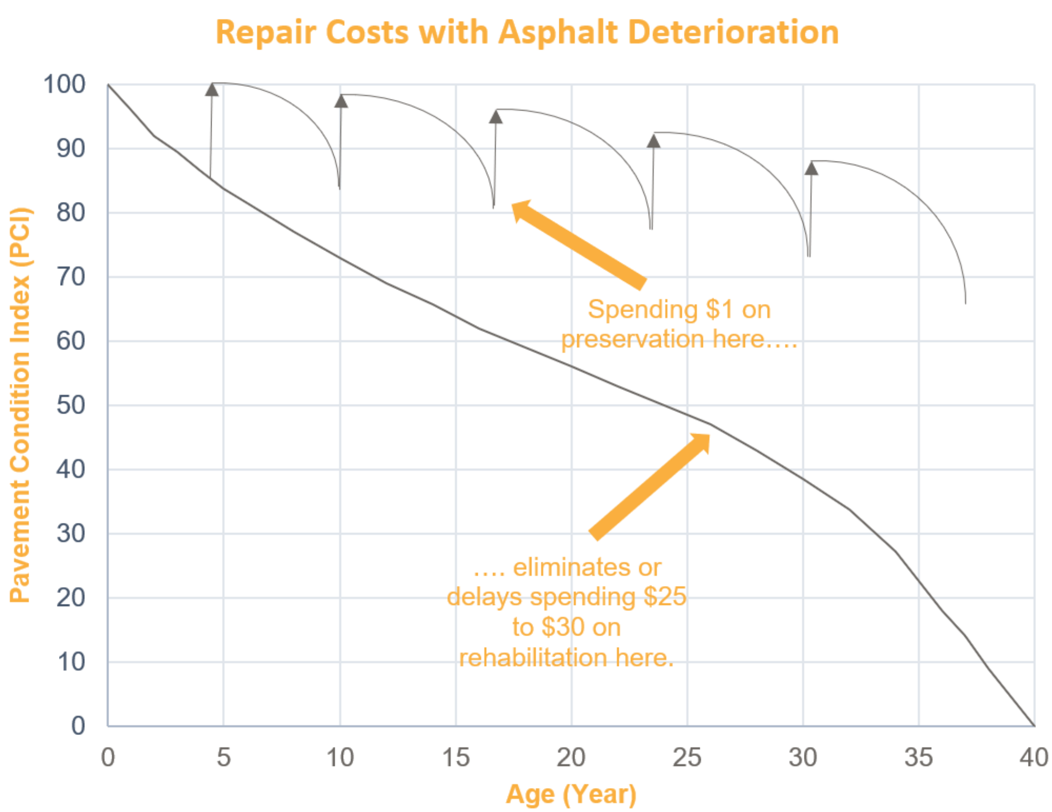


Figure IV.7. Cost-Effectiveness of Preventative Maintenance Example

Similarly, taking advantage of the lower cost of mill and overlay projects compared to other major rehabilitation projects allows the budget to improve more road segments in the city. This same logic applies to not letting a road deteriorate to the point where it will need to be reconstructed. Reconstructions consume many resources which is why most of the PAVER scenarios tested tried to implement reclamation projects before reconstruction would be necessary. When reconstruction is cannot be avoided, we recommend investing in base and subbase layers with adequate thickness. Paying extra to make sure the new road is built on a sturdy and dry foundation will extend the life of the pavement and reduce the amount of resources needed for maintenance. When constructed properly, aggregate bases and subbases should not need to be replaced, even when the pavement fails.

Another important methodology to adopt is to not implement a less expensive repair on a road that requires a more expensive fix. It is tempting to try and apply cheaper fixes when facing expensive cost estimates. However, this will result in wasting precious funds. For example, applying a chip seal as preventative maintenance on a road that is in Fair, Poor, or Bad condition is not effective. Instead of providing years or protection as intended, it will deteriorate quickly and not result in long-term results.

With all these factors in mind, a recommended maintenance schedule was created. This schedule is meant to serve as a guide for typical segments and will not apply to every road in the system. However, it does implement many best practices that cost-effectively keep the pavement in good condition. Table IV.5. shows this recommendation.

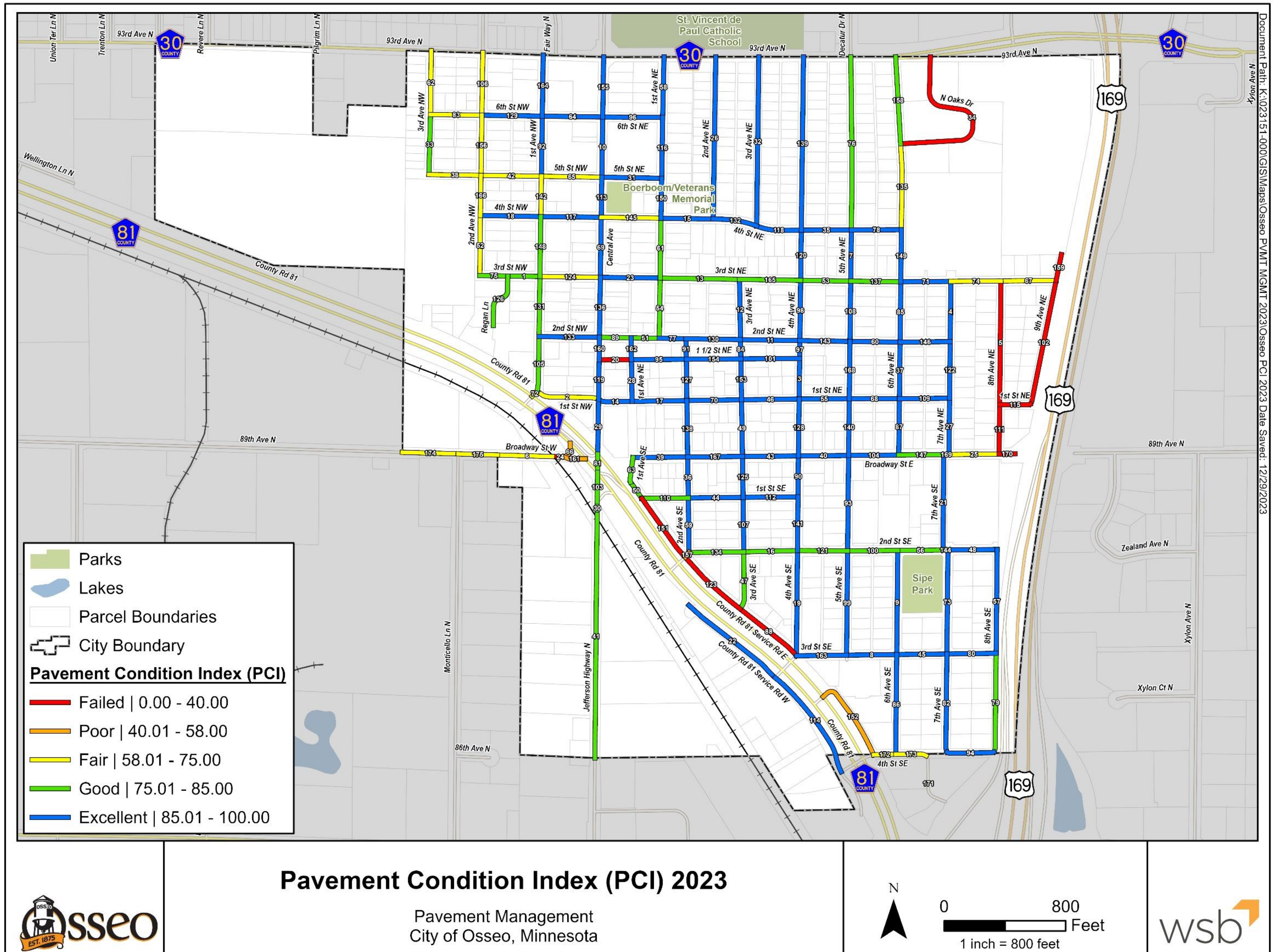
Table IV.5. Recommended Typical Maintenance Schedule

Typical Maintenance Schedule				
Cumulative Pavement Age (Years)	Time Between Maintenance	Maintenance	Predicted PCI	
			Initial	Improved
0	0	New Construction	100	
2	2 Years After New Construction	Initial Crack Seal	92	100
4	2 Years After Crack Seal	Crack Seal	92	100
5	1 Year After Crack Seal	Chip & Fog Seal	96	100
8-11	Every 3 to 6 Years	Crack Seal	85-90	98
12	1 Year After Final Crack Seal	Chip & Fog Seal	85	98
18-22	6-10 Years After Chip & Fog Seal	Mill and Overlay	60	95
20-24	2 Years After Overlay	Initial Crack Seal	86	93
21-25	1 Year After Crack Seal	Chip & Fog Seal	83	95
24-34	Every 3 to 6 Years	Crack Seal & Patch	80	92
27-35	1 Year After Final Crack Seal	Chip & Fog Seal	78	95
33-45	6-10 Years After Chip & Fog Seal	Mill and Overlay	59	90
35-47	2 Years After Overlay	Initial Crack Seal	86	90
36-48	1 Year After Crack Seal	Chip & Fog Seal	84	90
39-56	Every 3 to 6 Years	Crack Seal & Patch	85	90
42-57	1 Year After Final Crack Seal	Chip & Fog Seal	76	88
52-75	10-20 Years After Chip & Fog Seal	Reclamation	50	100

Finally, we recommend keeping a detailed log of all street maintenance implemented in the City. Recording information such as the type of maintenance activity, when it was implemented, how much it cost, the materials used, the age of the road during implementation, and any other testing results on that segment can prove helpful in the future. Maintenance logs can help determine what is working well for a City and what is not. Similarly, if a recommended maintenance strategy is not working well, reviewing details of the activity can help reveal why. This detailed information can also be used to improve the assumptions used by the PAVER model. This will ensure future recommendations will be based on accurate scenarios.

Appendices

Appendix A: PCI Condition Category Maps



Appendix B: PCI Values by Segment

Branch ID	Section ID	Length (ft)	Area (sqft)	Pavement Type	2023 PCI
1 1/2 Stre	20	212	7,649	AC	36
1 1/2 Stre	95	361	13,013	AC	92
1 1/2 Stre	101	387	13,930	AC	94
1 1/2 Stre	154	358	12,896	AC	93
1st Avenue	28	274	9,866	AC	87
1st Avenue	54	396	15,841	AC	84
1st Avenue	58	397	15,876	AC	93
1st Avenue	61	393	15,727	AC	79
1st Avenue	63	164	4,907	AC	85
1st Avenue	72	46	1,841	AC	65
1st Avenue	92	395	15,807	AC	94
1st Avenue	105	360	14,381	AC	85
1st Avenue	116	401	16,023	AC	94
1st Avenue	131	395	15,807	AC	76
1st Avenue	142	265	10,604	AC	70
1st Avenue	148	394	15,741	AC	79
1st Avenue	150	262	10,497	AC	93
1st Avenue	162	144	5,169	AC	86
1st Avenue	164	402	16,070	AC	95
1st Street	2	416	20,806	AC	63
1st Street	14	224	8,051	AC	88
1st Street	17	360	12,975	AC	91
1st Street	44	360	12,959	AC	89
1st Street	46	379	13,645	AC	93
1st Street	55	330	11,876	AC	86
1st Street	68	330	11,876	AC	89
1st Street	70	359	12,941	AC	93
1st Street	109	330	11,878	AC	90
1st Street	110	306	11,014	AC	83
1st Street	112	362	13,015	AC	87
1st Street	115	201	6,040	AC	34
2nd Avenue	26	1,066	42,623	AC	99
2nd Avenue	36	269	9,683	AC	90
2nd Avenue	52	395	15,807	AC	75
2nd Avenue	59	358	12,906	AC	93
2nd Avenue	91	135	4,864	AC	93
2nd Avenue	106	412	16,497	AC	70
2nd Avenue	127	271	9,771	AC	93
2nd Avenue	138	371	13,347	AC	92

Branch ID	Section ID	Length (ft)	Area (sqft)	Pavement Type	2023 PCI
2nd Avenue	156	395	15,807	AC	72
2nd Avenue	157	40	2,227	AC	52
2nd Avenue	166	263	10,538	AC	70
2nd Street	11	391	14,063	AC	96
2nd Street	16	353	14,125	AC	83
2nd Street	48	324	12,949	AC	87
2nd Street	51	186	6,686	AC	76
2nd Street	56	298	11,906	AC	84
2nd Street	60	330	11,868	AC	93
2nd Street	77	175	6,287	AC	88
2nd Street	89	208	7,488	AC	82
2nd Street	100	330	13,198	AC	84
2nd Street	121	330	13,200	AC	84
2nd Street	130	360	12,944	AC	94
2nd Street	133	398	14,313	AC	87
2nd Street	134	361	14,435	AC	81
2nd Street	143	330	11,868	AC	96
2nd Street	144	32	1,294	AC	83
2nd Street	146	330	11,871	AC	93
3rd Avenue	12	396	14,265	AC	93
3rd Avenue	32	1,111	44,455	AC	95
3rd Avenue	33	395	15,808	AC	78
3rd Avenue	47	381	13,728	AC	78
3rd Avenue	49	373	13,413	AC	91
3rd Avenue	62	420	16,787	AC	71
3rd Avenue	84	127	4,558	AC	89
3rd Avenue	107	358	12,895	AC	92
3rd Avenue	125	269	9,675	AC	93
3rd Avenue	153	269	9,678	AC	92
3rd Street	1	211	8,433	AC	82
3rd Street	8	330	13,196	AC	93
3rd Street	13	522	20,882	AC	85
3rd Street	23	393	19,665	AC	89
3rd Street	45	330	13,196	AC	95
3rd Street	53	329	13,178	AC	84
3rd Street	67	363	14,515	AC	70
3rd Street	71	330	13,181	AC	87
3rd Street	74	330	13,181	AC	75
3rd Street	75	185	7,380	AC	82
3rd Street	80	324	12,966	AC	94

Branch ID	Section ID	Length (ft)	Area (sqft)	Pavement Type	2023 PCI
3rd Street	124	398	19,879	AC	72
3rd Street	137	329	13,178	AC	84
3rd Street	163	330	13,197	AC	95
3rd Street	165	402	16,095	AC	83
4th Avenue	3	266	9,580	AC	98
4th Avenue	19	691	24,887	AC	95
4th Avenue	90	269	9,669	AC	95
4th Avenue	97	117	4,227	AC	96
4th Avenue	98	396	15,841	AC	95
4th Avenue	120	329	13,179	AC	94
4th Avenue	128	375	13,486	AC	96
4th Avenue	139	1,139	45,570	AC	92
4th Avenue	141	353	12,717	AC	94
4th Street	15	343	13,739	AC	95
4th Street	18	398	15,903	AC	86
4th Street	35	329	13,173	AC	91
4th Street	78	329	13,173	AC	88
4th Street	94	310	12,385	AC	89
4th Street	117	398	15,904	AC	93
4th Street	118	297	11,898	AC	94
4th Street	132	291	11,646	AC	94
4th Street	145	393	15,715	AC	69
4th Street	172	145	5,215	AC	73
4th Street	173	203	7,298	AC	73
5th Avenue	7	337	13,461	AC	88
5th Avenue	76	1,138	45,511	AC	78
5th Avenue	93	627	22,576	AC	93
5th Avenue	99	685	24,663	AC	94
5th Avenue	108	396	15,842	AC	91
5th Avenue	140	372	13,403	AC	91
5th Avenue	168	377	13,583	AC	91
5th Street	31	394	15,758	AC	92
5th Street	38	343	13,718	AC	72
5th Street	42	398	15,903	AC	73
5th Street	65	398	15,903	AC	71
6th Avenue	9	684	24,630	AC	94
6th Avenue	37	372	13,392	AC	88
6th Avenue	85	396	15,841	AC	92
6th Avenue	86	656	23,603	AC	94
6th Avenue	87	370	13,321	AC	87

Branch ID	Section ID	Length (ft)	Area (sqft)	Pavement Type	2023 PCI
6th Avenue	135	565	22,593	AC	75
6th Avenue	149	343	13,708	AC	89
6th Avenue	158	573	22,906	AC	80
6th Street	64	398	15,903	AC	88
6th Street	83	338	13,506	AC	74
6th Street	96	394	15,769	AC	93
6th Street	129	398	15,904	AC	91
7th Avenue	4	396	14,257	AC	88
7th Avenue	21	627	16,304	AC	95
7th Avenue	27	370	13,321	AC	88
7th Avenue	73	683	27,329	AC	94
7th Avenue	82	647	25,860	AC	88
7th Avenue	122	372	13,392	AC	87
89th Avenu	174	366	14,636	AC	65
89th Avenu	175	259	10,377	AC	72
8th Avenue	5	812	29,247	AC	36
8th Avenue	57	682	20,461	AC	89
8th Avenue	79	650	19,507	AC	79
8th Avenue	111	325	11,717	AC	34
9th Avenue	102	832	24,964	AC	33
9th Avenue	159	174	5,207	AC	24
Broadway S	6	391	15,622	AC	66
Broadway S	24	46	1,821	AC	40
Broadway S	25	330	11,885	AC	72
Broadway S	39	359	12,926	AC	88
Broadway S	40	330	11,884	AC	89
Broadway S	43	368	13,245	AC	92
Broadway S	66	112	3,365	AC	44
Broadway S	104	330	11,885	AC	86
Broadway S	147	296	10,643	AC	85
Broadway S	161	145	2,891	AC	43
Broadway S	167	361	13,004	AC	88
Broadway S	169	34	1,241	AC	72
Broadway S	170	105	2,726	AC	38
Central Av	10	395	15,807	PCC	98
Central Av	29	359	17,953	PCC	92
Central Av	30	84	3,352	AC	79
Central Av	69	395	15,807	PCC	97
Central Av	81	119	7,168	AC	79
Central Av	103	194	7,743	AC	79

Branch ID	Section ID	Length (ft)	Area (sqft)	Pavement Type	2023 PCI
Central Av	113	263	10,538	PCC	99
Central Av	119	260	10,414	PCC	98
Central Av	136	394	15,756	PCC	97
Central Av	155	395	15,786	PCC	96
Central Av	160	149	5,941	PCC	96
County Roa	22	742	26,706	AC	93
County Roa	50	130	3,897	AC	85
County Roa	88	485	17,451	AC	32
County Roa	114	768	27,640	AC	93
County Roa	123	495	17,808	AC	36
County Roa	151	481	12,504	AC	35
County Roa	152	574	20,668	AC	53
Jefferson	41	1,600	63,994	AC	81
North Oaks	34	1,181	23,616	AC	32
Regan Lane	126	372	8,939	AC	78

Agenda Item:	Potential Future Street & Alley Projects
Meeting Date:	April 22, 2024
Prepared By:	Alyson Fauske, PE, City Engineer
Attachments:	Alley Pavement Rating System (April, 2021) Pavement Condition Index (PCI) Map (2023) 2022-2024 Capital Improvement Planning Map (2022, updated 4/2024)

Policy Consideration:
Does the City Council want to identify potential projects for 2025 and/or 2026?

Alleys
In 2021 the condition of the alleys in Osseo were rated to determine their condition and assist the council with prioritizing alley improvement projects as shown on the attached map. The alleys marked with “X” were reconstructed in 2022 along with the alley behind Dean’s Supermarket. Based on the ratings there are nine alleys with a low rating that have not been reconstructed. Using the 2022 Alley Project bid price and adding 4% per year inflation, the estimated budget to reconstruct the remaining alleys is $830,000. Staff time and recording costs to acquire right of way from five properties (four within the commercial area, one in the residential area) would be in addition to this budget.

Streets
In 2023 the streets were evaluated to determine the condition of the pavement surface. The number, type and severity of the surface distresses are used to establish a Pavement Condition Index (PCI). The PCIs are typically the first piece of data used in street improvement project planning. Roads where the PCI is less than 75.00 are considered for a street improvement project and those with a PCI of 75.00 or higher are recommended for pavement maintenance (such as crack filling).

The portion of 89th Avenue/Broadway St W within Osseo has a PCI between 40 and 72 and is within a range that a street improvement project could be considered. A project in this area would ideally be coordinated with the City of Maple Grove as the city limits bisect a portion of the road, as shown below. Additionally, it is recommended that the project include improvements to the railroad crossing and the railroad may ask the city to participate in these costs.

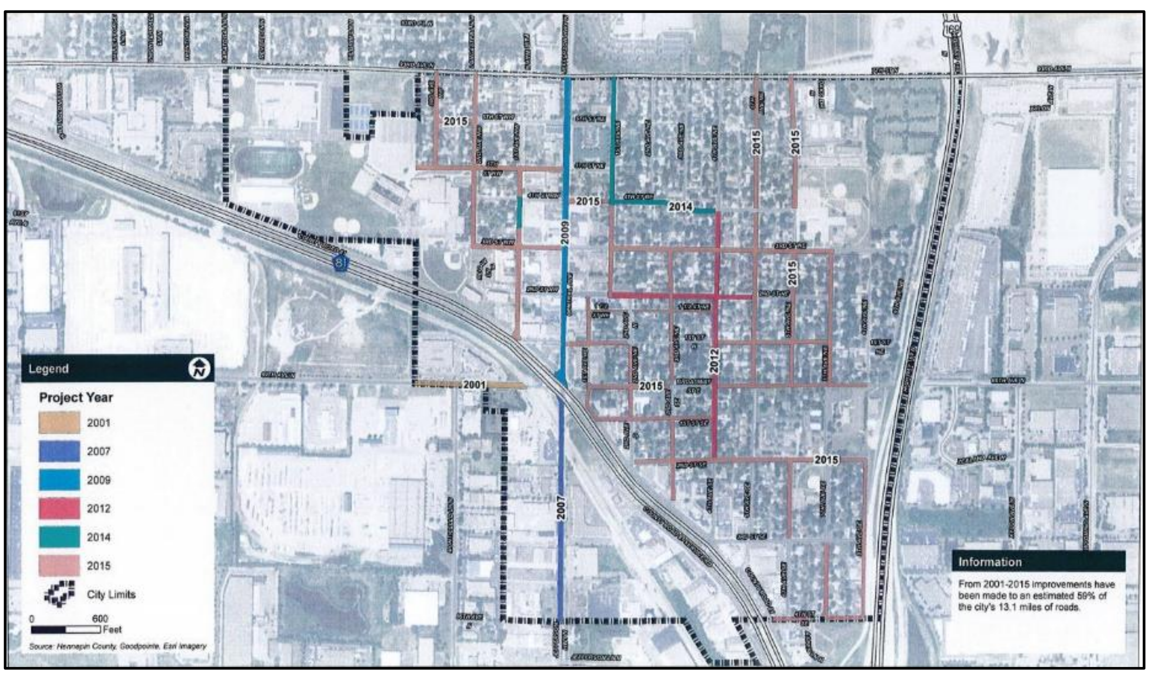
701 XENIA AVENUE S | SUITE 300 | MINNEAPOLIS, MN | 55416 | 763.541.4800 | WSBENG.COM

The PCI for 4th Street SE is 73 is within a range that a street improvement project could be considered. A project in this area would ideally be coordinated with the City of Brooklyn Park as only the northern portion 4th Street SE is within Osseo city limits, as shown below.

Excluding the streets included in the 2024 project and 1st St NW (between 1st Ave NW and Central Ave, which was deleted from the 2024 project) the estimated budget to mill and overlay the remaining streets with a PCI under 75.00 is $680,000. If the City Council wants to consider a street improvement project for these streets in 2025 the next step is to obtain pavement cores to determine if a mill and overlay is appropriate.

Public Works would like a crack fill project in 2024 that would include streets from the 2015 overlay project. The graphic below was provided by city staff and shows the streets that were resurfaced in 2015.

If City Council wants to proceed with a crack fill project this year staff will bring forward a proposal at a future meeting.



Summary
The options presented to City Council for consideration for 2025 and/or 2026 projects are:

<table>
<tr><th>Project Type</th><th>Scope</th><th>Next Step</th></tr>
<tr><td>Alley Improvements</td><td>Reconstruction of nine alleys and right of way (ROW) acquisition from 5 properties.</td><td>May, year prior to construction:
ROW acquisition</td></tr>
<tr><td>Street Improvements</td><td>Mill and overlay of roads with a PCI less than 75* and entirely within Osseo city limits</td><td>Summer, year prior to construction:
Pavement cores</td></tr>
<tr><td>Pavement Maintenance</td><td>Crack seal all roads that were resurfaced in 2015</td><td rowspan="2">May, 2024:
Authorization to prepare and distribute quote package</td></tr>
<tr><td>Pavement Maintenance</td><td>Crack seal roads that were resurfaced in 2015 and the PCI is 75 or higher</td></tr>
</table>

*Pavement cores required to confirm that a mill and overlay is appropriate

Recommendation/Action Requested:
Staff recommends that the City Council discuss this item and direct staff accordingly.

Osseo
EST. 1875

CITY OF OSSEO

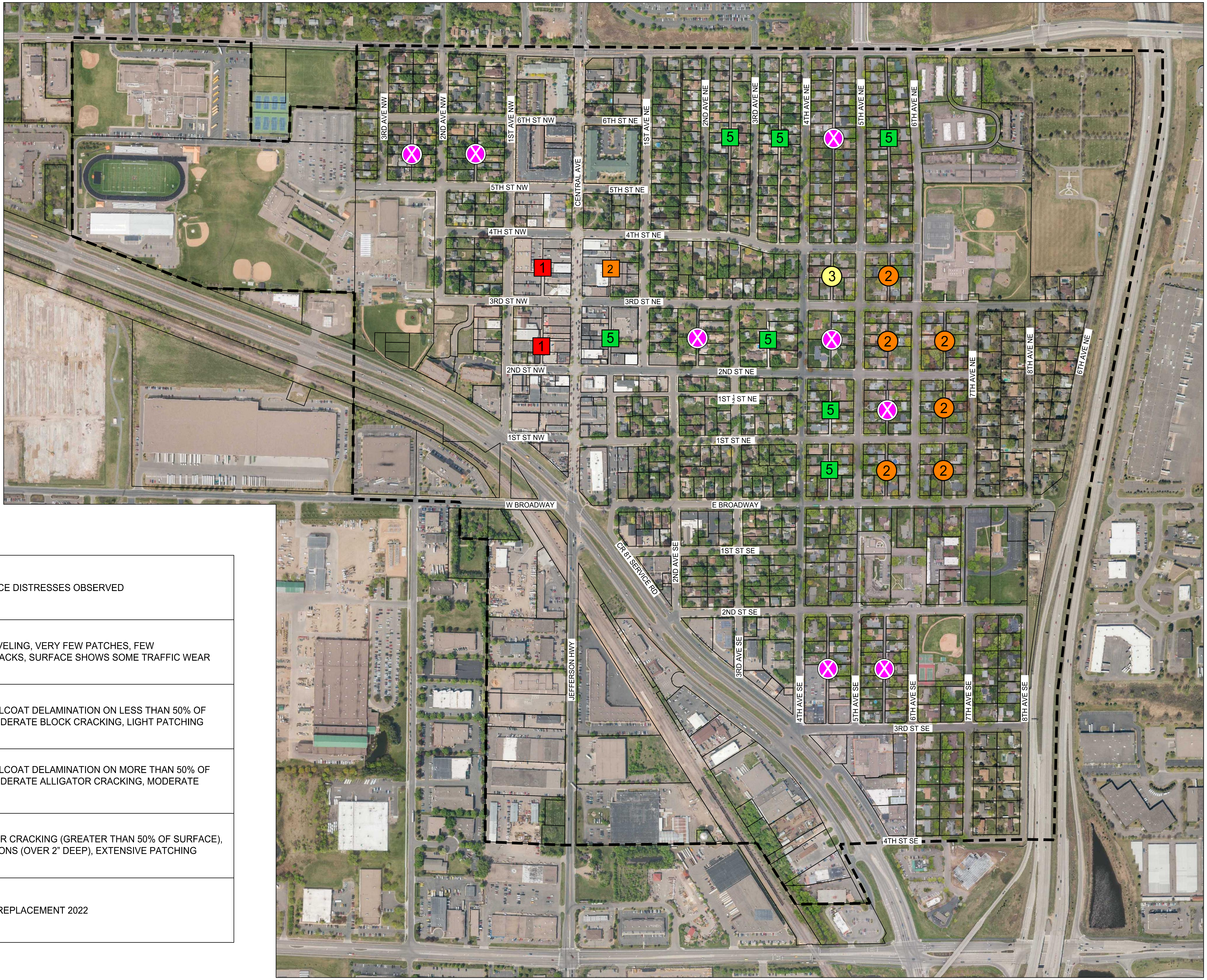
ALLEY PAVEMENT RATING SYSTEM

YEAR: 2021

MONTH: APRIL

N

0 FT 250 500



BITUMINOUS ALLEY	CONCRETE ALLEY	
5	5	VERY FEW SURFACE DISTRESSES OBSERVED
4	4	SLIGHT OR NO RAVELING, VERY FEW PATCHES, FEW LONGITUDINAL CRACKS, SURFACE SHOWS SOME TRAFFIC WEAR
3	3	RAVELING OR SEALCOAT DELAMINATION ON LESS THAN 50% OF THE SURFACE, MODERATE BLOCK CRACKING, LIGHT PATCHING
2	2	RAVELING OR SEALCOAT DELAMINATION ON MORE THAN 50% OF THE SURFACE, MODERATE ALLIGATOR CRACKING, MODERATE PATCHING
1	1	SEVERE ALLIGATOR CRACKING (GREATER THAN 50% OF SURFACE), SEVERE DISTORTIONS (OVER 2" DEEP), EXTENSIVE PATCHING
X		SCHEDULED FOR REPLACEMENT 2022

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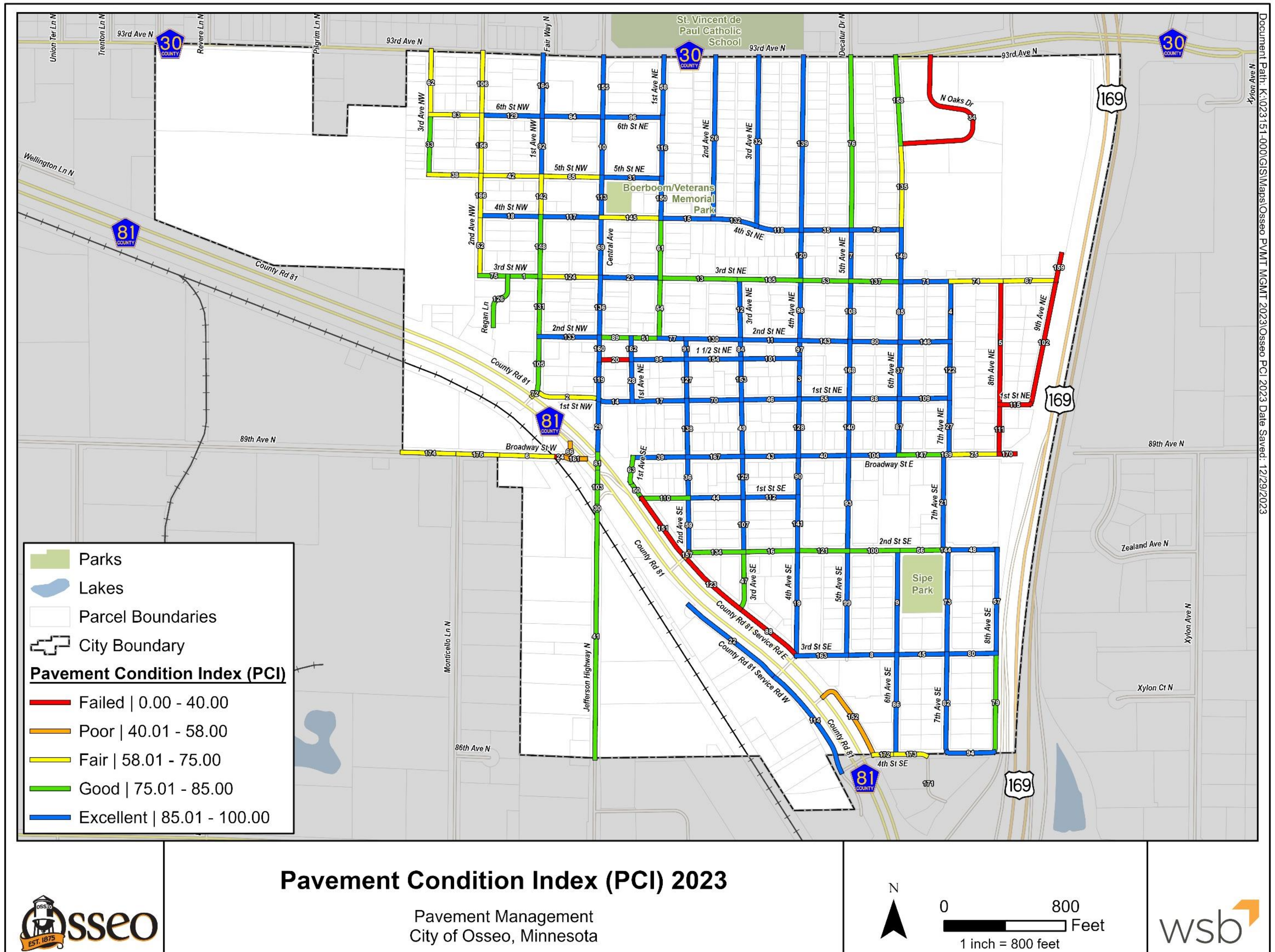
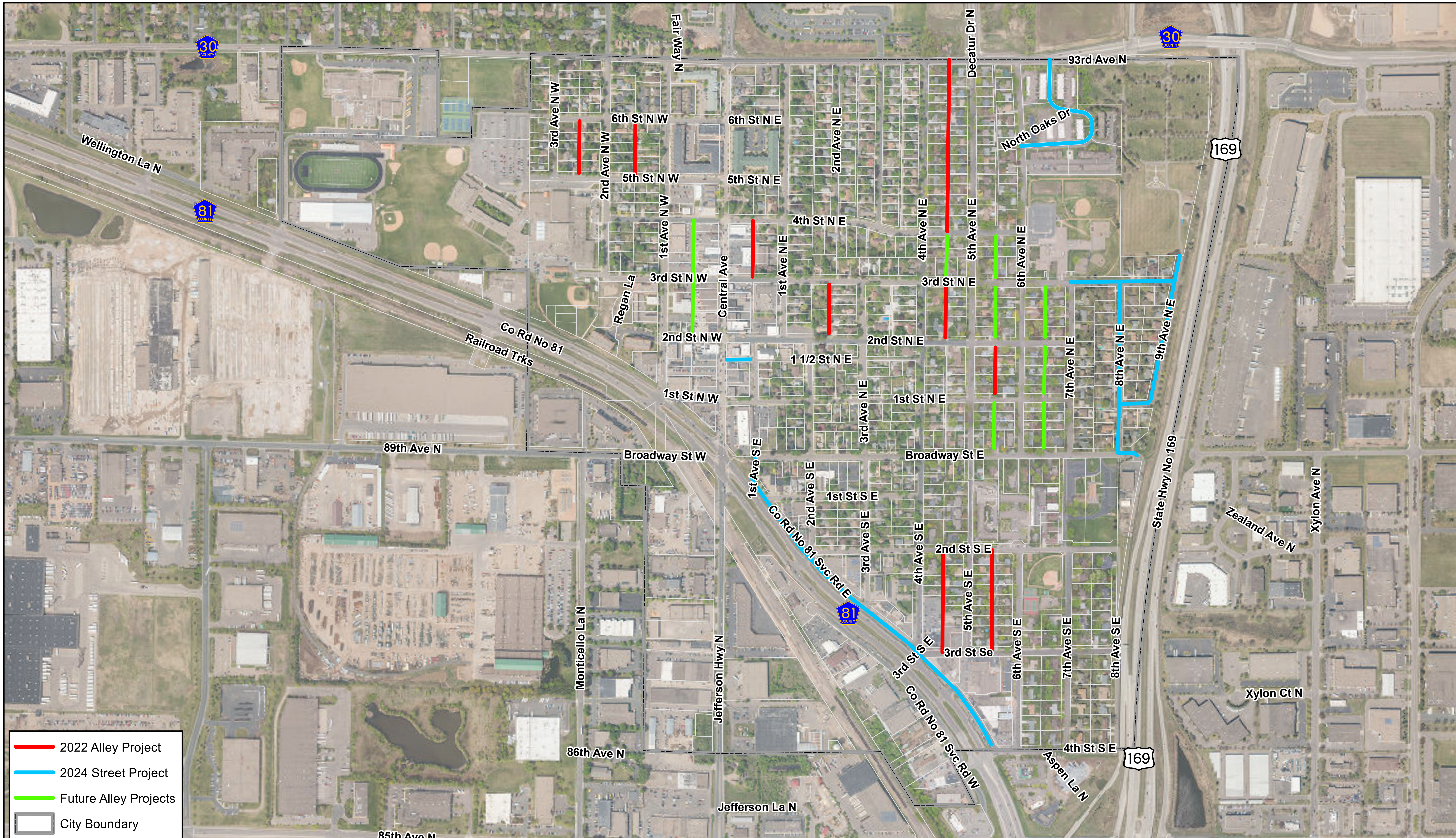
Appendix A: PCI Condition Category Maps





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Osseo EST. 1875

2022-2024 Capital Improvement Planning

Individual Project Area Map

City of Osseo MN

N

0 600 Feet

1 inch = 600 feet

wsb