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

August 24, 2022

2022 PAVEMENT MANAGEMENT REPORT

Dundas, MN

PREPARED FOR: CITY OF DUNDAS

100 RAILWAY STREET NORTH

DUNDAS, MN 55019

WSB PROJECT NUMBER: 019661-000

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I. Executive Summary

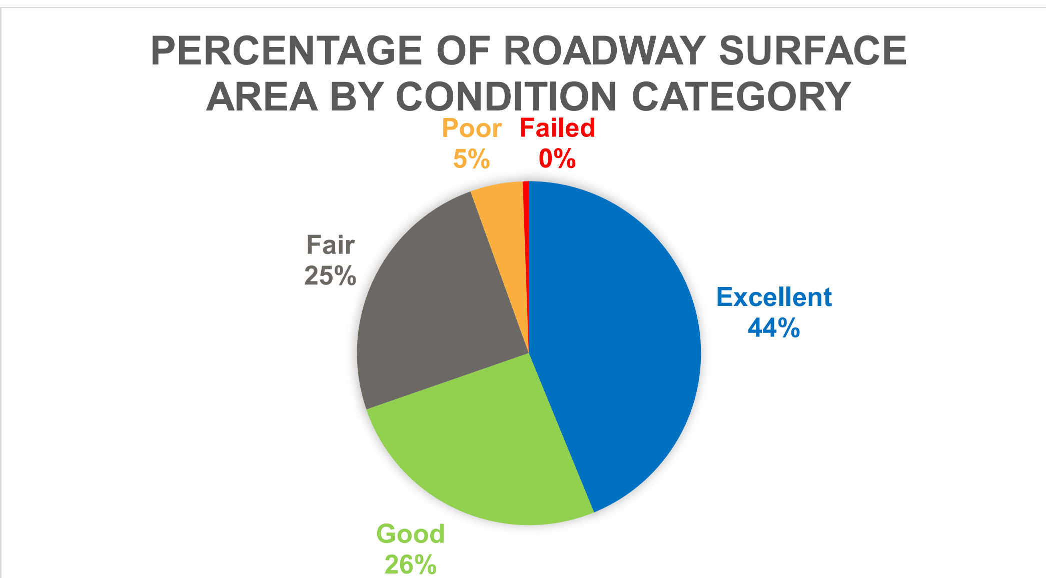
This report summarizes the findings of the pavement inspection of the road segments in Dundas performed by WSB & Associates and completed in July 2022. The report gives an overview of the condition of roads in the city but is not intended to be a final document on public policy or city planning and is subjected to change upon review by City Council. Gravel roads and segments the city did not want included in the analysis are not covered in this document.

A summary of the pavement condition report is listed below:

- 11 miles of City road were evaluated in Dundas.
- The current weighted average Pavement Condition Index (PCI) for bituminous roads in Dundas is 80.9. 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.



The largest category by far is the Excellent category with 44% of road surface qualifying for the top grouping. Additionally, less than 1% of all roads have reached the Failed category; this is a sign Dundas has done well managing its pavement system. The analysis included aims to protect the investment already made in the network by establishing maintenance standards and prioritizing maintenance treatments.

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. Better pavement results in less wear and damage to vehicles that travel the roads. 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 a model. Circumstances unique to a specific City are hard to capture in a scientific analysis and may take precedent over the recommendations provided. WSB can provide Dundas more in-depth pavement analysis as well as help creating a specific capital improvement plan if requested.

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.

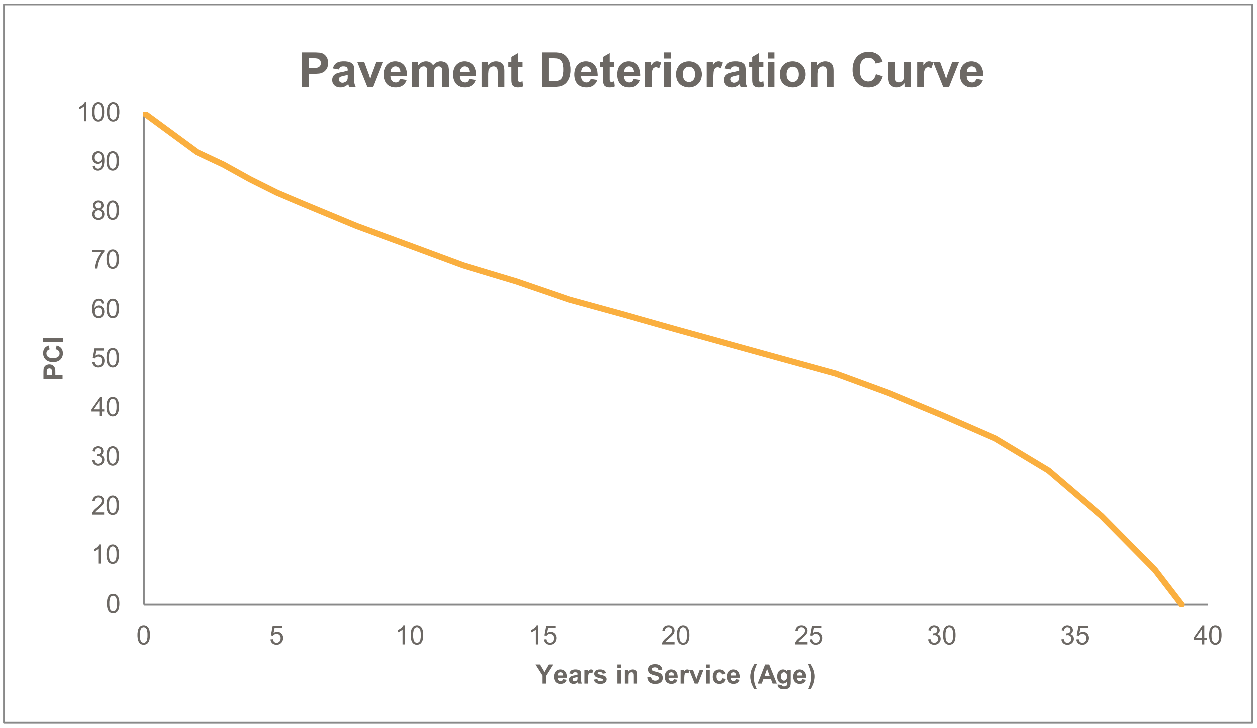


Figure III.1. Typical Pavement Deterioration Curve

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.

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 and few were in the Failed and Poor categories. 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)	4.7	43.8 %
Good Category (75.01 – 85.00)	2.8	25.9 %
Fair Category (58.01 – 75.00)	2.9	24.8 %
Poor Category (40.01 – 58.00)	0.6	4.9 %
Failed Category (0.00 – 40.00	0.1	0.6 %

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

Pavement Rating Examples

PCI Rating = 40: Failed

Bridge St (Segment ID: 35)

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, 1.83%
- Block Cracking, Low Severity, 0.89%
- Edge Cracking, Low Severity, 0.83%
- Edge Cracking, Moderate Severity, 1.54%
- Edge Cracking, High Severity, 0.35%
- Longitudinal/Transverse Cracking, Low Severity, 5.41%
- Longitudinal/Transverse Cracking, Moderate Severity, 2.92%
- Patching, Low Severity, 15.75%
- Potholes, Low Severity, 0.08%
- Weathering, Moderate Severity, 100%

PCI Rating = 48: Poor

Forest Ave (Segment ID: 38)

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, Low Severity, 0.81%
- Alligator Cracking, Moderate Severity, 1.27%
- Block Cracking, Moderate Severity, 0.42%
- Edge Cracking, Moderate Severity, 0.63%
- Longitudinal/Transverse Cracking, Low Severity, 1.06%
- Longitudinal/Transverse Cracking, Moderate Severity, 1.09%
- Potholes, Low Severity, 0.05%
- Potholes, High Severity, 0.02%
- Weathering, Moderate Severity, 100.00%

PCI Rating = 69: Fair

Depot St N (Segment ID: 30)

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:

- Alligator Cracking, Moderate Severity, 0.79%
- Edge Cracking, Low Severity, 0.81%
- Edge Cracking, Moderate Severity, 0.18%
- Longitudinal/Transverse Cracking, Low Severity, 1.79%
- Longitudinal/Transverse Cracking, Moderate Severity, 0.94%
- Weathering, Moderate Severity, 100.00%

PCI Rating = 81: Good

Stoneridge (Segment ID: 92)

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, 1.61%
- Longitudinal/Transverse Cracking, Moderate Severity, 0.81%
- Weathering, Moderate Severity, 100.00%

PCI Rating = 93: Excellent

Hester St (Segment ID: 80)

If a pavement section is categorized as Excellent, it will have been recently resurfaced or constructed. Distresses can be present but they 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, 1.12%
- Weathering, Low Severity, 100.00%

IV. Recommended Maintenance Action

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. Dundas 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. WSB recommends using the recommended strategies listed in table III.1. However, this general recommendation is not perfect for every situation and should serve only as a general guide. A detailed explanation of each recommended maintenance activity is included below.

Corrective Maintenance

Corrective maintenance is used to fix a road segment that is not performing as expected. This may be the result of improper construction or unforeseen conditions. 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, and chip sealing followed by fog sealing. A brief description and recommendations for these applications are included below. 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 Dundas 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 by 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.

Reconstruction

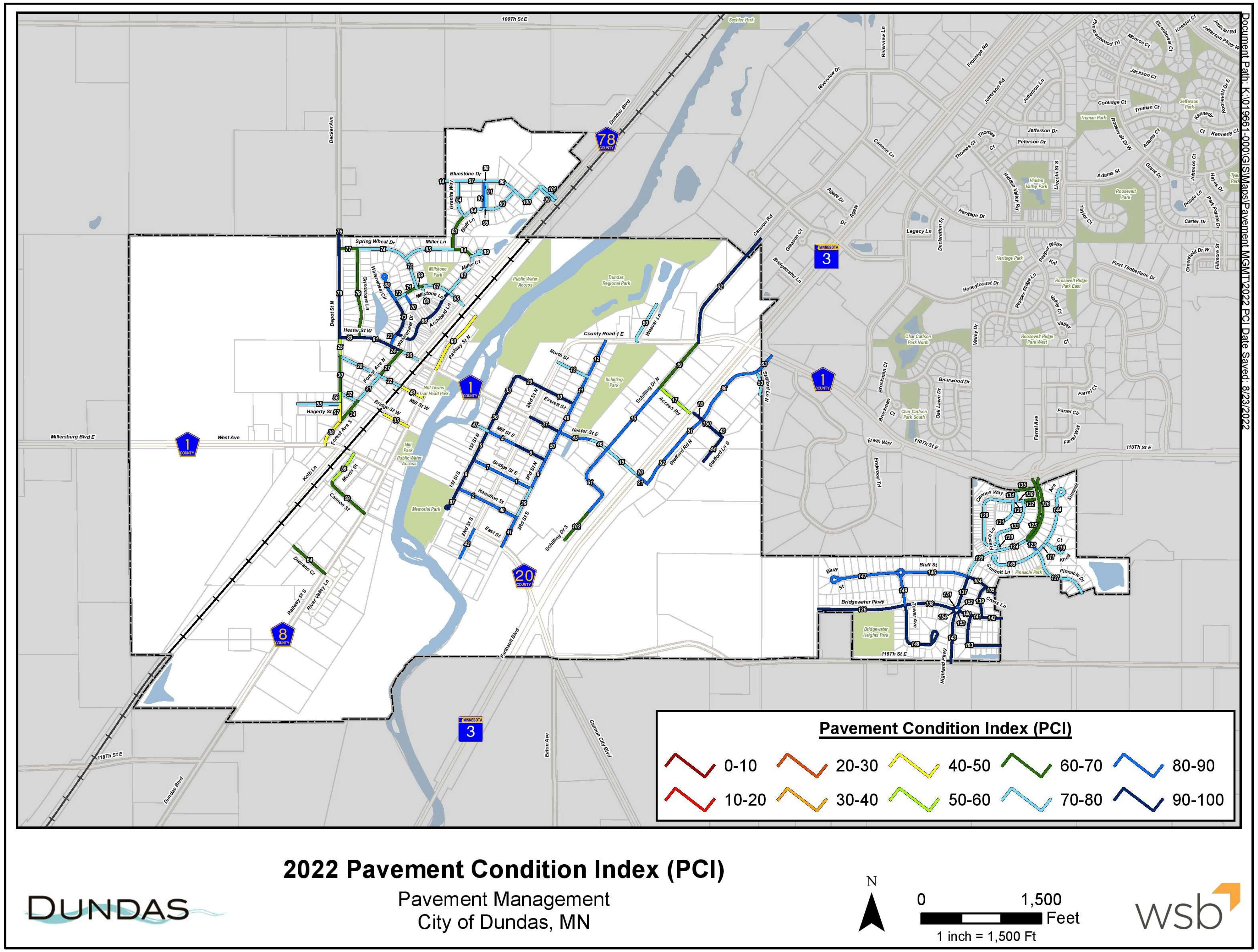
Reconstruction includes the complete replacement of the road's driving surface and pavement structure. The pavement along with its base layers are then replaced with new material. Asphalt mix type, ride specification, lift thicknesses, and compaction requirements must be in accordance to the specified 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.

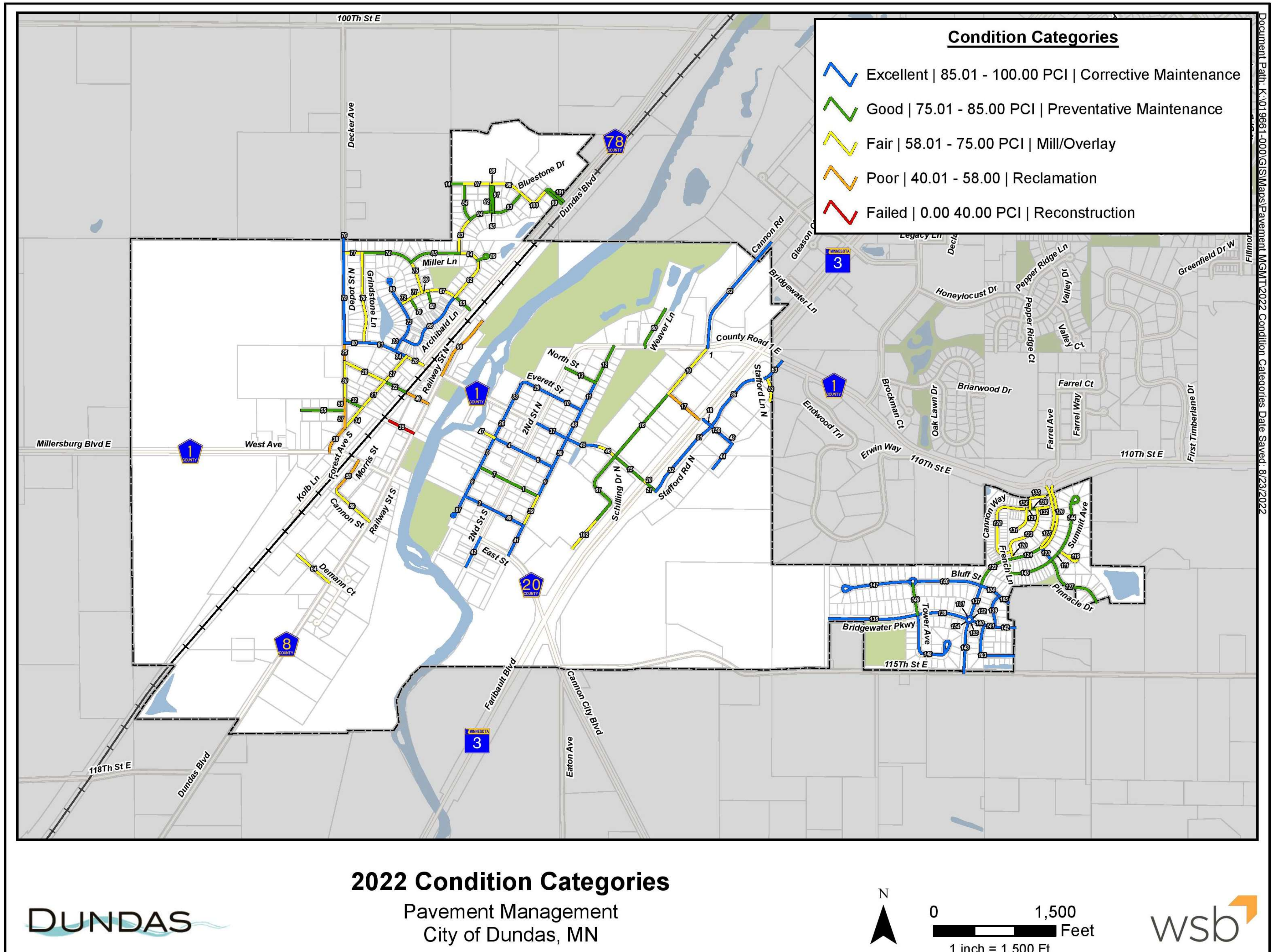
Pavement Forensics

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 Dundas if requested.

Appendices

Appendix A: PCI and Condition Category Maps




Condition Categories
Excellent | 85.01 - 100.00 PCI | Corrective Maintenance
Good | 75.01 - 85.00 PCI | Preventative Maintenance
Fair | 58.01 - 75.00 PCI | Mill/Overlay
Poor | 40.01 - 58.00 | Reclamation
Failed | 0.00 40.00 PCI | Reconstruction
2022 Condition Categories
Pavement Management
City of Dundas, MN
DUNDAS
N
0
1,500
Feet
1 inch = 1,500 Ft
100Th St E
Millersburg Blvd E
West Ave
110Th St E
115Th St E
118Th St E
Dundas Blvd
Cannon City Blvd
Faribault Blvd
Eaton Ave
Decker Ave
Bridgewater Pkwy

Appendix B: PCI Values by Segment

Branch ID	Section ID	Length (ft)	Area (ft^2)	2022 PCI	Recommended Maintenance
1ST ST N	5	404	10,493	100	Corrective Maintenance
1ST ST N	33	342	9,565	100	Corrective Maintenance
1ST ST N	36	395	10,267	100	Corrective Maintenance
1ST ST S	8	404	10,500	100	Corrective Maintenance
1ST ST S	87	387	17,048	100	Corrective Maintenance
2ND ST S	42	390	9,363	88	Corrective Maintenance
3RD ST N	9	405	10,534	87	Corrective Maintenance
3RD ST N	11	382	10,686	89	Corrective Maintenance
3RD ST N	12	497	13,922	83	Preventative Maintenance
3RD ST N	48	393	10,993	87	Corrective Maintenance
3RD ST N	50	394	10,247	89	Corrective Maintenance
3RD ST S	39	403	10,484	74	Mill/Overlay
3RD ST S	41	403	11,281	89	Corrective Maintenance
ACCESS RD	17	483	16,432	50	Reclamation
ARCHIBALD	66	970	27,157	95	Corrective Maintenance
BLUESTONE	14	165	4,620	77	Preventative Maintenance
BLUESTONE	96	389	10,903	75	Mill/Overlay
BLUESTONE	97	322	9,013	75	Mill/Overlay
BLUESTONE	98	31	931	75	Mill/Overlay
BLUESTONE	100	407	11,391	75	Mill/Overlay
BLUFF LN	83	459	12,845	68	Mill/Overlay
BLUFF LN	93	445	12,467	79	Preventative Maintenance
BLUFF LN	94	271	7,587	77	Preventative Maintenance
BLUFF LN	95	34	964	78	Preventative Maintenance
BLUFF ST	104	257	6,675	100	Corrective Maintenance
BLUFF ST	105	141	3,662	100	Corrective Maintenance

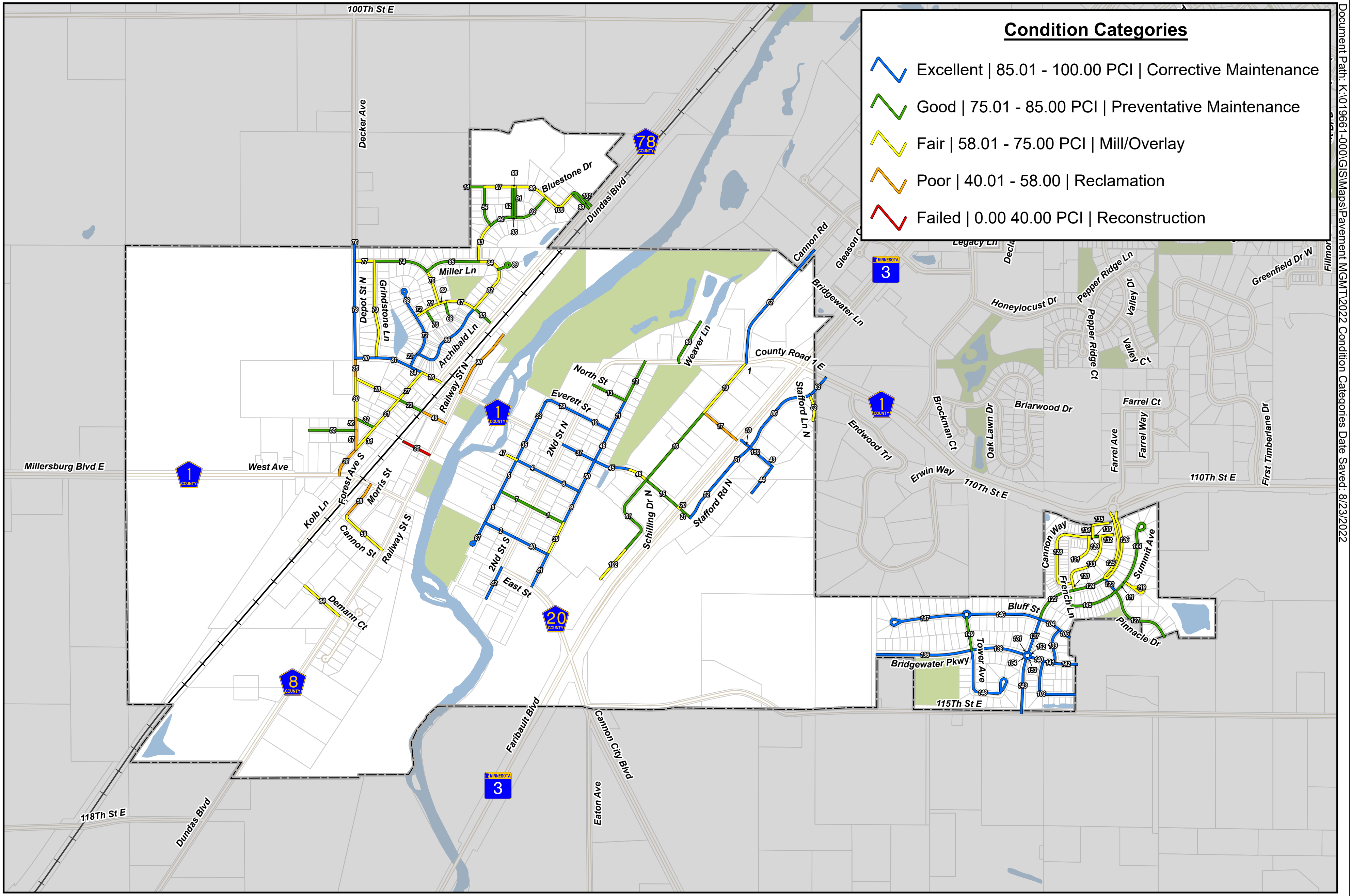
Branch ID	Section ID	Length (ft)	Area (ft^2)	2022 PCI	Recommended Maintenance
BLUFF ST	146	933	26,128	87	Corrective Maintenance
BLUFF ST	147	1,126	31,534	89	Corrective Maintenance
BRIDGE ST	1	403	10,482	80	Preventative Maintenance
BRIDGE ST	7	402	10,460	85	Preventative Maintenance
BRIDGE ST	32	237	6,649	77	Preventative Maintenance
BRIDGE ST	35	328	9,192	40	Reconstruction
BRIDGEWATE	136	1,090	30,528	95	Corrective Maintenance
BRIDGEWATE	138	611	17,108	95	Corrective Maintenance
BRIDGEWATE	140	154	4,313	100	Corrective Maintenance
BRIDGEWATE	141	137	3,832	100	Corrective Maintenance
BRIDGEWATE	142	248	6,936	100	Corrective Maintenance
CANNON RD	62	1,559	37,426	94	Corrective Maintenance
CANNON ST	59	567	14,733	65	Mill/Overlay
CANNON WAY	128	1,052	21,046	73	Mill/Overlay
CANNON WAY	129	44	882	74	Mill/Overlay
CANNON WAY	130	81	1,629	76	Preventative Maintenance
CANNON WAY	132	143	2,864	69	Mill/Overlay
CEDAR LN	139	418	11,710	100	Corrective Maintenance
CROSS CIRC	103	777	20,193	100	Corrective Maintenance
DEMANN CT	64	514	14,390	62	Mill/Overlay
DEPOT ST N	25	231	6,477	53	Reclamation
DEPOT ST N	30	462	12,936	69	Mill/Overlay
DEPOT ST N	76	186	7,429	90	Corrective Maintenance
DEPOT ST N	78	1,111	44,449	93	Corrective Maintenance
DEPOT ST S	56	136	3,811	50	Reclamation
DEPOT ST S	57	217	6,067	46	Reclamation
EVERETT ST	10	407	11,399	100	Corrective Maintenance
EVERETT ST	29	428	11,994	100	Corrective Maintenance

Branch ID	Section ID	Length (ft)	Area (ft^2)	2022 PCI	Recommended Maintenance
FOREST AVE	27	409	11,455	62	Mill/Overlay
FOREST AVE	31	427	11,953	70	Mill/Overlay
FOREST AVE	34	326	9,139	61	Mill/Overlay
FOREST AVE	38	361	10,110	48	Reclamation
FRENCH LN	120	88	2,627	71	Mill/Overlay
FRENCH LN	133	715	14,305	73	Mill/Overlay
FRENCH LN	134	130	2,610	71	Mill/Overlay
GLEASON RD	18	132	7,929	90	Corrective Maintenance
GLEASON RD	43	215	7,513	90	Corrective Maintenance
GLEASON RD	150	120	6,006	91	Corrective Maintenance
GOOSEBERRY	131	299	5,977	74	Mill/Overlay
GRANITE WA	54	461	12,912	77	Preventative Maintenance
GRINDSTONE	79	1,115	31,224	66	Mill/Overlay
HAGERTY ST	55	531	14,869	77	Preventative Maintenance
HAMILTON S	2	404	10,499	87	Corrective Maintenance
HAMILTON S	40	405	10,519	87	Corrective Maintenance
HESTER ST	15	483	19,323	78	Preventative Maintenance
HESTER ST	24	150	4,188	91	Corrective Maintenance
HESTER ST	26	234	6,541	75	Mill/Overlay
HESTER ST	37	402	16,088	90	Corrective Maintenance
HESTER ST	45	421	16,841	87	Corrective Maintenance
HESTER ST	46	227	9,084	72	Mill/Overlay
HESTER ST	80	242	6,783	93	Corrective Maintenance
HESTER ST	81	408	11,432	93	Corrective Maintenance
HIGHLAND P	122	556	20,026	79	Preventative Maintenance
HIGHLAND P	124	374	13,462	76	Preventative Maintenance
HIGHLAND P	125	803	16,069	68	Mill/Overlay
HIGHLAND P	126	841	16,814	69	Mill/Overlay

Branch ID	Section ID	Length (ft)	Area (ft^2)	2022 PCI	Recommended Maintenance
HIGHLAND P	137	401	14,442	91	Corrective Maintenance
HIGHLAND P	143	623	17,449	100	Corrective Maintenance
HIGHLAND P	151	60	842	95	Corrective Maintenance
HIGHLAND P	152	61	853	87	Corrective Maintenance
HIGHLAND P	153	57	804	94	Corrective Maintenance
HIGHLAND P	154	58	808	94	Corrective Maintenance
KNOLL CT	119	434	11,272	74	Mill/Overlay
MILL ST E	4	403	10,467	86	Corrective Maintenance
MILL ST E	6	403	10,468	91	Corrective Maintenance
MILL ST E	47	118	3,065	70	Mill/Overlay
MILL ST W	22	277	7,744	77	Preventative Maintenance
MILL ST W	28	552	15,470	73	Mill/Overlay
MILL ST W	49	275	7,687	48	Reclamation
MILL TOWNS	99	246	4,432	77	Preventative Maintenance
MILL TOWNS	101	270	4,852	77	Preventative Maintenance
MILLER CT	89	247	14,796	79	Preventative Maintenance
MILLER LN	82	553	15,479	71	Mill/Overlay
MILLER LN	84	262	7,345	68	Mill/Overlay
MILLER LN	85	627	17,556	77	Preventative Maintenance
MILLSTONE	65	235	6,589	79	Preventative Maintenance
MILLSTONE	67	355	9,945	70	Mill/Overlay
MILLSTONE	69	74	2,083	65	Mill/Overlay
MILLSTONE	71	166	4,636	69	Mill/Overlay
MILLSTONE	72	138	3,859	70	Mill/Overlay
MORRIS ST	58	452	11,744	52	Reclamation
NORTH ST	13	409	11,443	78	Preventative Maintenance
PARKER CT	68	137	2,197	77	Preventative Maintenance
PINNACLE D	123	195	5,469	87	Corrective Maintenance

Branch ID	Section ID	Length (ft)	Area (ft²)	2022 PCI	Recommended Maintenance
PINNACLE D	127	836	23,411	79	Preventative Maintenance
RAILWAY ST	90	829	18,248	48	Reclamation
SCHILLING	16	1,018	34,625	81	Preventative Maintenance
SCHILLING	19	748	25,434	68	Mill/Overlay
SCHILLING	61	1,038	35,289	81	Preventative Maintenance
SCHILLING	102	435	14,776	64	Mill/Overlay
SCHULLER C	70	132	2,105	81	Preventative Maintenance
SPRING WHE	74	637	17,844	77	Preventative Maintenance
SPRING WHE	75	396	11,098	71	Mill/Overlay
SPRING WHE	77	229	6,408	69	Mill/Overlay
STAFFORD L	44	379	13,275	90	Corrective Maintenance
STAFFORD L	53	300	7,208	73	Mill/Overlay
STAFFORD R	20	49	1,967	72	Mill/Overlay
STAFFORD R	21	132	5,276	80	Preventative Maintenance
STAFFORD R	51	407	9,771	86	Corrective Maintenance
STAFFORD R	52	657	15,770	88	Corrective Maintenance
STAFFORD R	63	270	6,479	89	Corrective Maintenance
STAFFORD R	86	965	23,150	87	Corrective Maintenance
STONERIDGE	91	350	7,007	77	Preventative Maintenance
STONERIDGE	92	348	6,955	81	Preventative Maintenance
SUMMIT AVE	111	152	4,254	79	Preventative Maintenance
SUMMIT AVE	144	900	25,194	76	Preventative Maintenance
SUMMIT LN	145	751	15,019	79	Preventative Maintenance
TOWER AVE	148	1,138	31,870	95	Corrective Maintenance
TOWER AVE	149	377	10,544	81	Preventative Maintenance
VERMILLION	135	179	3,582	69	Mill/Overlay
WATERWHEEL	23	177	4,943	86	Corrective Maintenance
WATERWHEEL	73	469	13,121	90	Corrective Maintenance

Branch ID	Section ID	Length (ft)	Area (ft^2)	2022 PCI	Recommended Maintenance
WATERWHEEL	88	456	12,763	89	Corrective Maintenance
WEAVER LN	60	534	14,942	76	Preventative Maintenance



2022 Condition Categories

Pavement Management
City of Dundas, MN

DUNDAS

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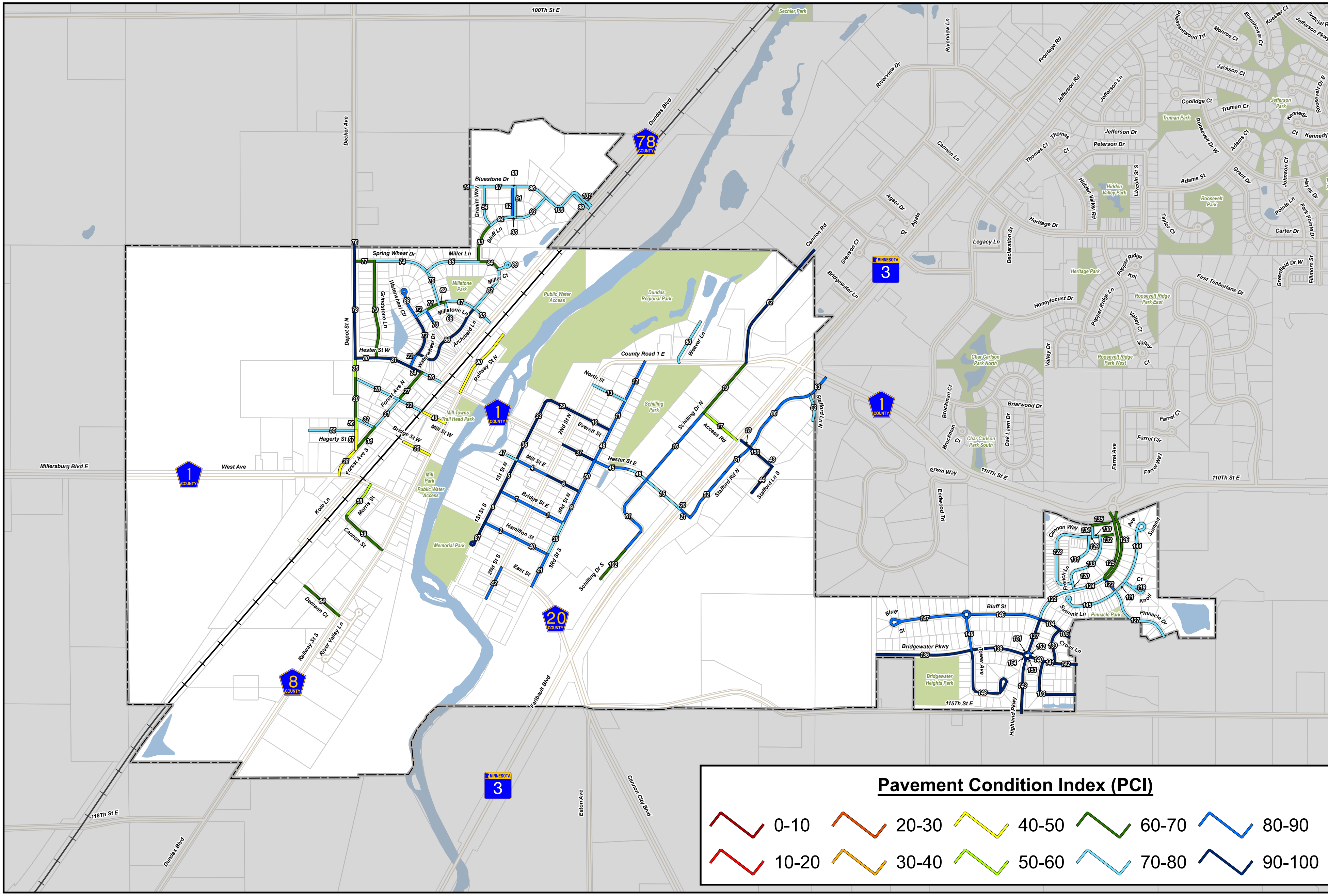

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2022 Pavement Condition Index (PCI)

Pavement Management
City of Dundas, MN

N

0 1,500
Feet
1 inch = 1,500 Ft

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