

Meeting Date: 06/21/2022

By: Bruce Westby, Engineering/Public Works

Title:

Consider Recommendation to City Council to Temporarily Increase Funding for Pavement Management Program

Purpose/Background:

Purpose:

The purpose of this case is to consider making a recommendation to City Council to temporarily increase Pavement Management Program funding to address the immediate street reconstruction bubble needs.

Background:

Pavement Management Program Background

The City maintains over 186 miles of bituminous paved City streets and is in the seventh year of its current Pavement Management Program (PMP). The primary goal of the PMP is to perform the proper pavement management (maintenance/rehabilitation) operation at the proper time to maximize the life of the pavement as cost-effectively as possible.

When streets are constructed or reconstructed using today's design standards, and when pavement management operations are proactively performed on those streets on a regular basis afterwards, at least 60-years of useful life is anticipated from new and reconstructed bituminous pavement sections.

Current bituminous pavement management operations include;

- Cracksealing – Protects existing pavement by preventing stormwater runoff from seeping through cracks in the pavement and joints between the pavement and concrete curb and gutter and utility castings, minimizing future damage due to wet subgrade soils, especially during freeze-thaw cycles. The City annually crackseals about 25 miles of bituminous pavement on its public street system.
- Overlays – Protects existing pavement similar to cracksealing, while also increasing the structural or load carrying capacity of the pavement. The City typically overlays up to 4 miles of pavement on its public street system annually.
- Reconstructs – Pavement reconstruction projects remove and replace severely damaged pavement with new pavement sections. Reconstruction projects may also include removal and replacement of damaged concrete curb and gutter on urban sections, or re-grading ditches and re-shouldering on rural sections. The City annually reclaims/reconstructs up to 2 miles of pavement on its public street system.

The City of Ramsey's current proactive pavement management schedule for improved public streets is generally as follows;

- Cracksealing - 3 years following construction, overlays or reconstruction, then every 7 years after.
- Overlays - 20 years after construction, overlays or reconstruction.
- Reconstructs - 60 years after construction or reconstruction.

The pavement management schedule for each street segment is adjusted based on actual pavement conditions. City staff annually reviews and rates the pavement condition of all public streets using the Pavement and Surface Evaluation Rating (PASER) system. PASER ratings range from 1 to 10, with 1 being a failed pavement section in total disrepair, and 10 being a new pavement section.

Figure 1 shows 2021 PASER ratings for all City streets.

Staff typically recommends reconstructing pavement sections with PASER ratings between 1 and 4. Overlays are typically recommended for pavement sections with PASER ratings of 5 and 6. Cracksealing is typically recommended for pavement sections with PASER ratings between 7 and 10.

By proactively performing these pavement management operations on a scheduled basis, the useful life of the pavement is maximized as cost-effectively as possible. If proactive maintenance operations are not applied, pavement sections will generally require reconstruction every 30 years, which adds considerable cost to a pavement management program.

Street Reconstruction Bubble

Between 1975 and 1985 approximately 40-percent of all City streets were constructed. At the time these streets were constructed their anticipated useful design life was 40-years, after which reconstruction would be required. These streets have all now either reached, or are nearing, the end of their useful lives. This means approximately 40-percent of City streets need to be reconstructed now or in the immediate future. And while it has generally been known for a decade or more that this “street reconstruction bubble” was approaching, it has become even more apparent this year that current Pavement Management Program funding levels need to be increased to acceptably maintain the condition of City streets.

Pavement Management Program Funding Needs

Staff has received a steady increase in calls in recent years from businesses and residents complaining about the poor condition of City streets and asking when the City plans to patch, overlay or reconstruct the streets serving their businesses and homes. Based on the increasing number of complaints received each year, on the fact that 40-percent of public streets are generally at the age that they need to be reconstructed, and considering that Public Works Staff struggles to adequately maintain the pavement on City streets, Staff is seeking a recommendation from the Public Works Committee to the City Council on how many more streets to reconstruct and/or overlay each year, over and above the amount of Pavement Management Program (PMP) projects identified in the 2022 – 2031 CIP.

Figure 2 shows all public streets proposed to be reconstructed between 2022 and 2031 as identified within the current 10-year CIP, which totals 25.38 miles. The figure also shows streets that currently qualify for reconstruction since they have PASER ratings of 4 or less, but are not yet identified in the CIP. These streets total 18.50 miles. Of these streets less than one mile are non-residential streets, and less than one-quarter mile are Municipal State Aid System routes, qualifying for use of MSA funds.

Figure 3 shows all public streets proposed to receive mill and overlay improvements between 2022 and 2031 as identified within the CIP, which totals 34.84 miles.

Figures 4 through 7 shows which City streets have PASER ratings of 5, 6, 7 and 8, which are the PASER ratings typically targeted for identifying future PMP projects within the 10-year CIP. PASER ratings for bituminous pavements decrease over time which allows Staff to determine specific street segments for future PMP projects within the 10-year CIP.

Expanding the PMP program to account for the increased immediate needs due to the current street reconstruction bubble the City is facing will require a significant increase in annual PMP funding. Currently, approximately \$2,750,000 of American Rescue Plan Act (ARPA) funds are available for additional street reconstruction and/or overlay projects in 2023. In the future, such funding may not be readily available so Staff is seeking direction from the Public Works Committee on how much additional funding should be allocated annually for PMP projects, if any.

Traditional funding sources for PMP projects include the general levy, bonds, special assessments, Municipal State Aid (MSA) funds, and/or franchise fees. Finance Director Diana Lund will be in attendance to address questions Committee members might have on these funding sources including availability, reliability, interest rates, fund balances, etc.

Timeframe:

Staff anticipates up to 60 minutes will be needed to present and discuss this case.

Observations/Alternatives:**Observations:**“Light” Street Reconstruction Projects

An option the Committee may wish to consider would be to temporarily complete more PMP projects as “light” street reconstruction projects. This would involve reconstructing streets by reclaiming the existing bituminous pavement plus an inch or two of underlying aggregate base, leaving all or most of the reclaim pavement on site as a thicker aggregate base section, then paving a single 2-inch lift of bituminous pavement over the compacted reclaim material. This would generally provide a pavement section similar or slightly better than the pavement sections constructed up to the early 2000’s, which generally met a 5-ton pavement design strength, compared to today’s pavement sections constructed with 4-inches of aggregate base and 3½-inches of bituminous pavement that generally meet a 7-ton design strength.

Light street reconstruction projects are estimated to cost about 75-percent of a standard street reconstruction project utilizing pavement reclamation, which involves reclaiming the existing pavement plus an inch or two of underlying aggregate base, hauling about half the reclaim material off site, then paving two lifts of bituminous pavement totaling 3½-inches on top of the remaining compacted reclaim material. This design generally meets a 7-ton pavement design strength.

Utilizing light street reconstruction projects would allow the City to reconstruct about 25-percent more streets at the same cost as a standard street reconstruction project. However, the anticipated design life of these streets would be between 25 and 40 years instead of 60 years with a standard pavement reclamation project. In addition, pavement design strength would be reduced which may cause issues during spring load restrictions requiring increased enforcement actions by Ramsey PD and other Staff.

Staff would support this option if the Committee feels the benefit of completing 25-percent more street reconstruction projects annually will outweigh the costs and other potential local impacts due to achieving a design life that is two-thirds or less than that of a standard street reconstruction project, and due to a lesser pavement design strength.

Advancing Street Reconstructions to Overlay Improvements

Staff also explored whether streets identified as street reconstruction projects in the later years of the 10-year CIP, which may have PASER ratings of 5, 6 or higher, may be suitable for pavement overlay improvements in earlier years to extend the life of the pavement enough to allow it to be reconstructed after the “street reconstruction bubble” passes to smooth out the next street reconstruction bubble.

Attached are four figures showing streets with PASER ratings between 5 and 8, all of which could potentially be identified within the 10-year CIP as street reconstruction projects closer to the end of the 10-year period based on projected pavement decay curves.

Staff reviewed the 2022 – 2031 CIP to identify streets with PASER ratings between 5 and 8 that might meet this qualification. Staff only found one street segment that might meet these criteria and provide enough benefit to outweigh the additional cost due to overlaying a pavement section that is past the point of achieving 15 or more years of pavement life following the overlay improvements. Staff therefore does not believe there is enough value associated with this option to pursue it further.

Alternatives:

Alternative #1 – Motion recommending City Council approval to temporarily increase Pavement Management Program funding to address immediate street reconstruction bubble needs in an annual amount of \$ _____.

Alternative #2 – Motion of other.

Funding Source:

To be determined based on discussions.

Recommendation:

Staff recommends temporarily increasing annual PMP funding to mitigate immediate street reconstruction bubble needs and minimize annual maintenance costs in as few years as practical.

It is important to consider that the longer the bubble continues, the greater the impacts related to street maintenance including equipment and material costs, professional services, and potentially staffing. On the flip side, the higher the annual PMP funding, the greater the impacts related to engineering costs including engineering staff and potentially professional services. These costs must therefore be considered as well. More information on these costs will be provided during the meeting.

Action:

Motion recommending City Council approval to temporarily increase Pavement Management Program funding to address immediate street reconstruction bubble needs in an annual amount of \$ _____.

Attachments

[Figure 1 2021 PASER Map](#)

[Figure 2 Street Recon Needs](#)

[Figure 3 2022-31 Overlay Projects](#)

[Figure 4 PASER5](#)

[Figure 5 PASER6](#)

[Figure 6 PASER7](#)

[Figure 7 PASER8](#)

[Asphalt Method Patching and Costs](#)

Form Review

Inbox	Reviewed By	Date
Grant Riemer	Grant Riemer	06/16/2022 03:26 PM
Brian Hagen	Brian Hagen	06/16/2022 04:03 PM
Form Started By: Bruce Westby		Started On: 06/07/2022 09:17 AM
Final Approval Date: 06/16/2022		

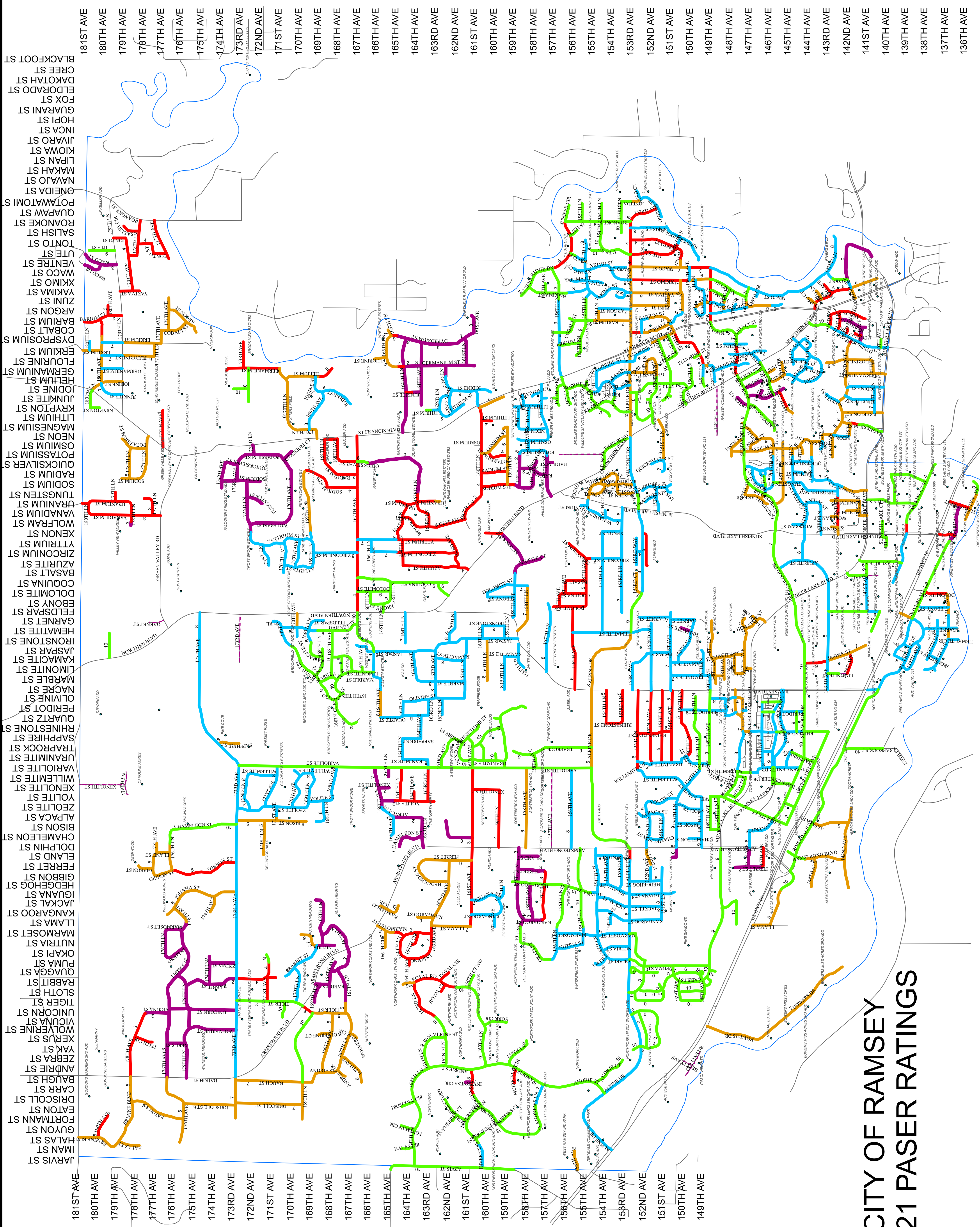


CITY STREETS

Mileage Summary	Length
9 - 10	45.77 mi.
7 - 8	58.76 mi.
5 - 6	33.57 mi.
3 - 4	26.86 mi.
0 - 2	16.72 mi.
Dirt	2.59 mi.
Total	184.03 mi.

Legend

- subdivisions_pts
- Paser 9 - 10
- Paser 7 - 8
- Paser 5 - 6
- Paser 3 - 4
- Paser 0 - 2
- Dirt Streets
- MRCC_Centerlines
- MuniBndry



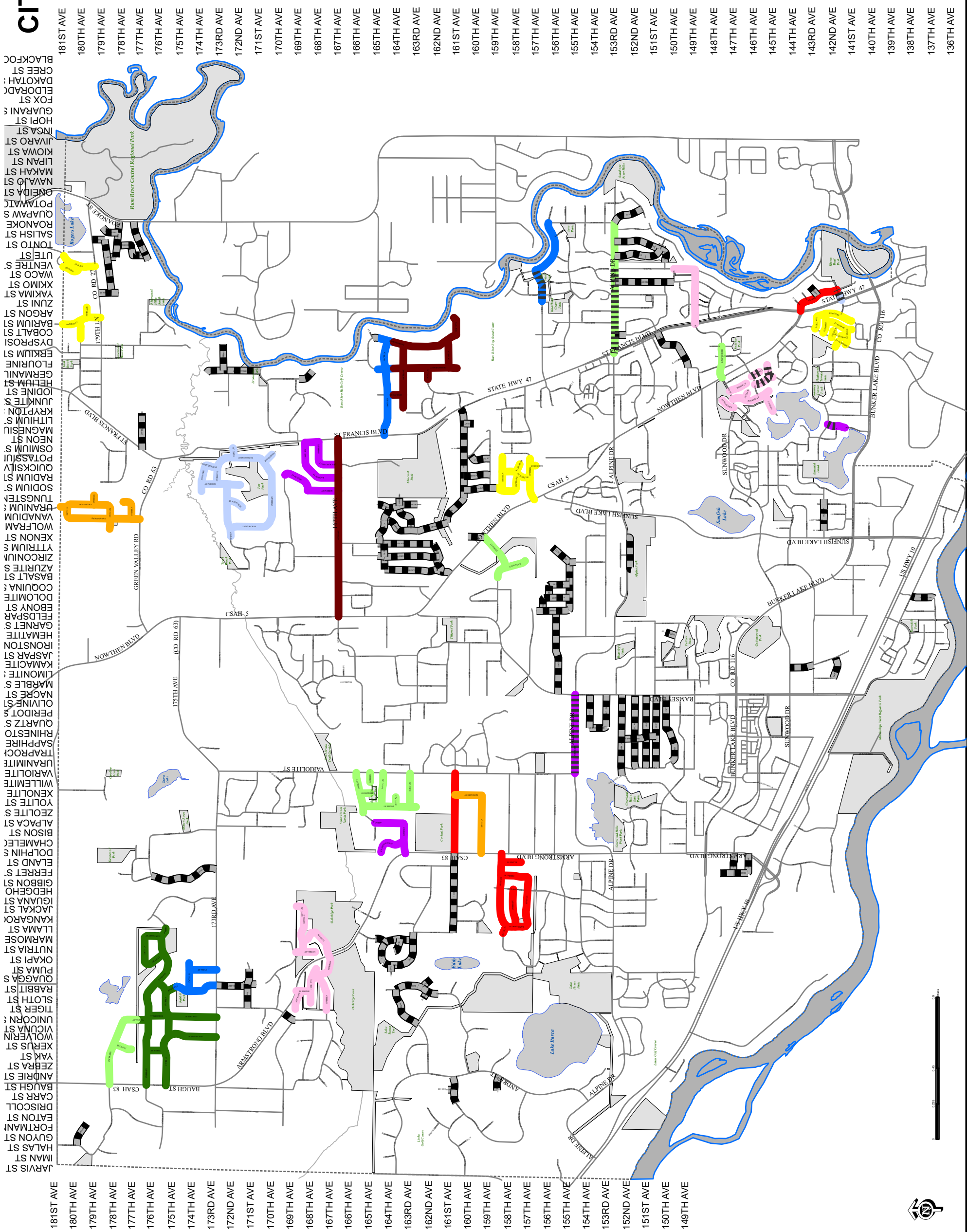
**CITY OF RAMSEY
2021 PASER RATINGS**

CITY OF RAMSEY

Pavement Management Program Street Reconstruction Needs

LEGEND

- 2021 PASER 4 OR LESS**
- CURRENT RECON NEED
- 2022 - 31 CIP, PROJECT YEAR**
- 2031, RC
- 2030, RC
- 2029, RC
- 2028, RC
- 2027, RC
- 2026, RC
- 2025, RC
- 2024, RC
- 2023, RC
- 2022, RC
- CIP Recon Paser > 4
- Road_Centerlines
- MuniBndry
- Parks
- Rivers
- Lakes_Ponds
- Creeks



181ST AVE
180TH AVE
179TH AVE
178TH AVE
177TH AVE
176TH AVE
175TH AVE
174TH AVE
173RD AVE
172ND AVE
171ST AVE
170TH AVE
169TH AVE
168TH AVE
167TH AVE
166TH AVE
165TH AVE
164TH AVE
163RD AVE
162ND AVE
161ST AVE
160TH AVE
159TH AVE
158TH AVE
157TH AVE
156TH AVE
155TH AVE
154TH AVE
153RD AVE
152ND AVE
151ST AVE
150TH AVE
149TH AVE

JARVIS ST
IMAN ST
HALAS ST
GUYON ST
FORTMAN
EATON ST
DRISCOLL
CARR ST
BAUGH ST
ANDRIE ST
ZERRA ST
YAK ST
XERUS ST
VICUNA ST
UNICORN
TIGER ST
SLOTH ST
RABBIT ST
QUAGGA ST
PUMA ST
OKAPI ST
NUTRIA ST
MARMOSE
LLAMA ST
KANGAROO
JACKAL ST
IGUANA ST
HEDGEHOG
GIBBON ST
FERRRET ST
ELAND ST
DOLPHIN
CHAMELEON
BISON ST
ALPACA ST
ZEOLITE ST
YOLITE ST
XENOLITE
WILLEMITE
VAROLITE
URANMITE
TRAPROCH
SAPPHIRE
RHINESTO
QUARTZ ST
PERIDOT
OLIVINE ST
MARE ST
MARBLE ST
LIMONITE
KAMACITE
JASPAR ST
IRONSTON
HEMATITE
FELDSPAR
EBONY ST
DOLomite
COQUINA
BASALT ST
AZURITE ST
ZIRCONIUM
YTRIUM
XENON ST
WOLFRAM
VANADIUM
URANIUM
TUNGSTEN
SODIUM ST
QUICKSILVER
POTASSIUM
OSMIUM
NEON ST
MAGNESIUM
LITHIUM
KRYPTON
JUNKITE
IODINE ST
HELIUM ST
GERMANIUM
FLUORINE
ERKLIUM ST
DYSPROSIUM
COBALT ST
BARIUM ST
ARGON ST
ZUNI ST
YAKIMA ST
XKIMO ST
WACO ST
VENTRE ST
UTEST
TONTON ST
SALISH ST
ROANOKE
QUAPAW ST
POTAWATTI
OMIDA ST
NAVAHO ST
MAKASH ST
LIPAN ST
KIOWA ST
JIVARO ST
INCA ST
HOP ST
GUARANI
FOX ST
ELDORADO
DAKOTA
CREE ST
BLACKFOOT



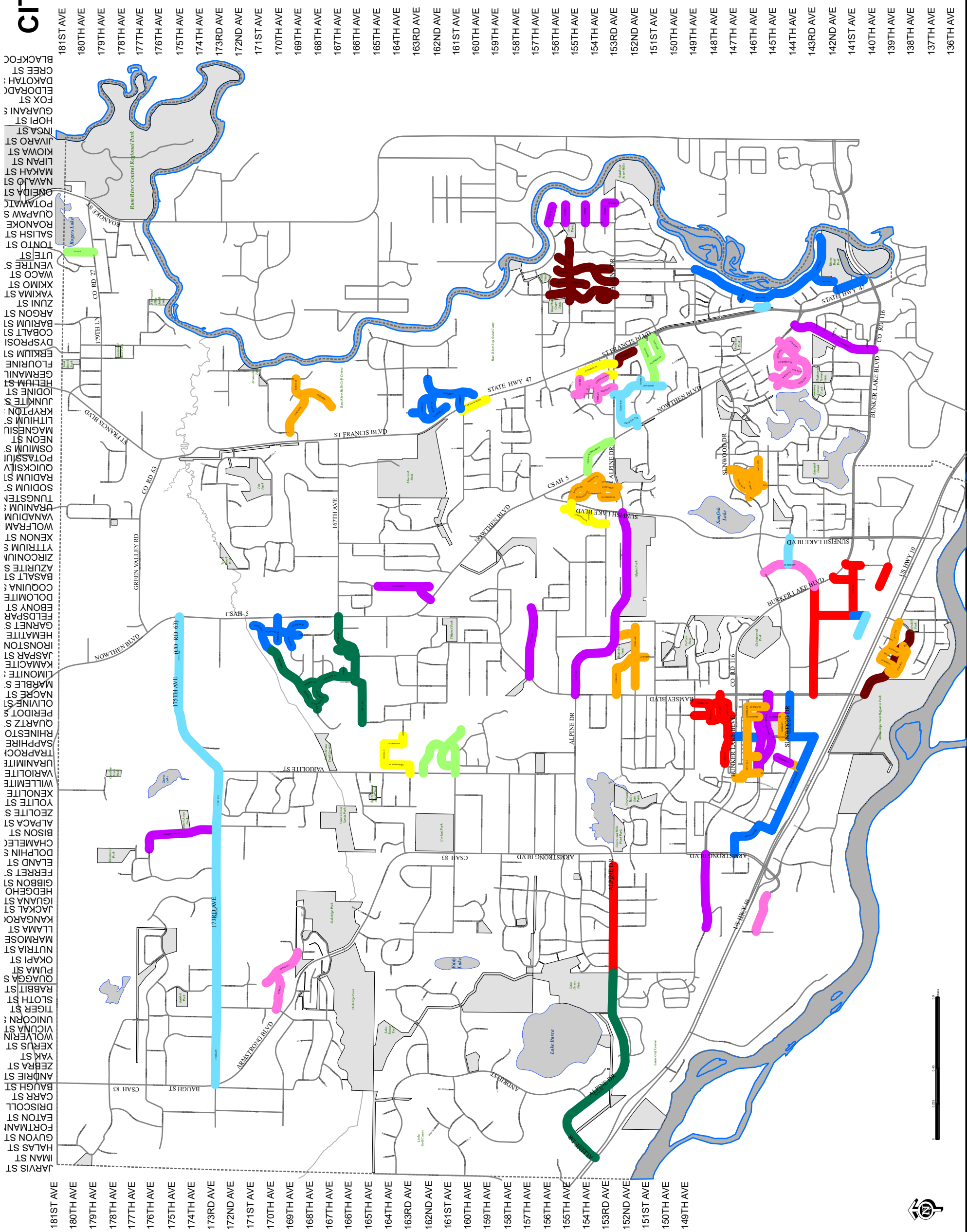
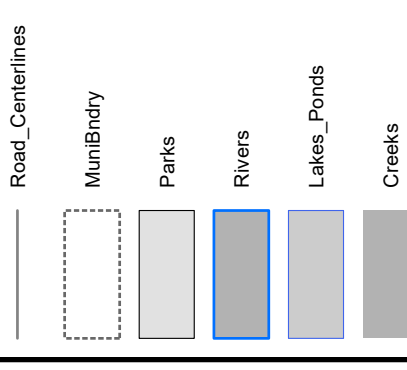
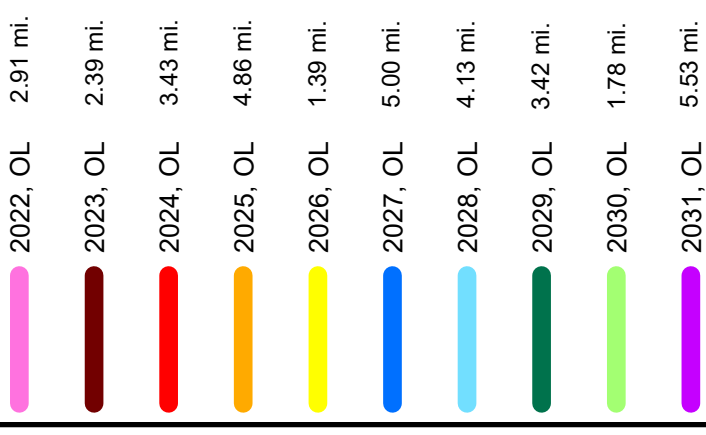
CITY OF RAMSEY

Pavement Management Program Overlay Improvements

LEGEND

2022 - 31 CIP, PROJECT YEAR

<all other values>



0 0.25 0.5 1 Miles

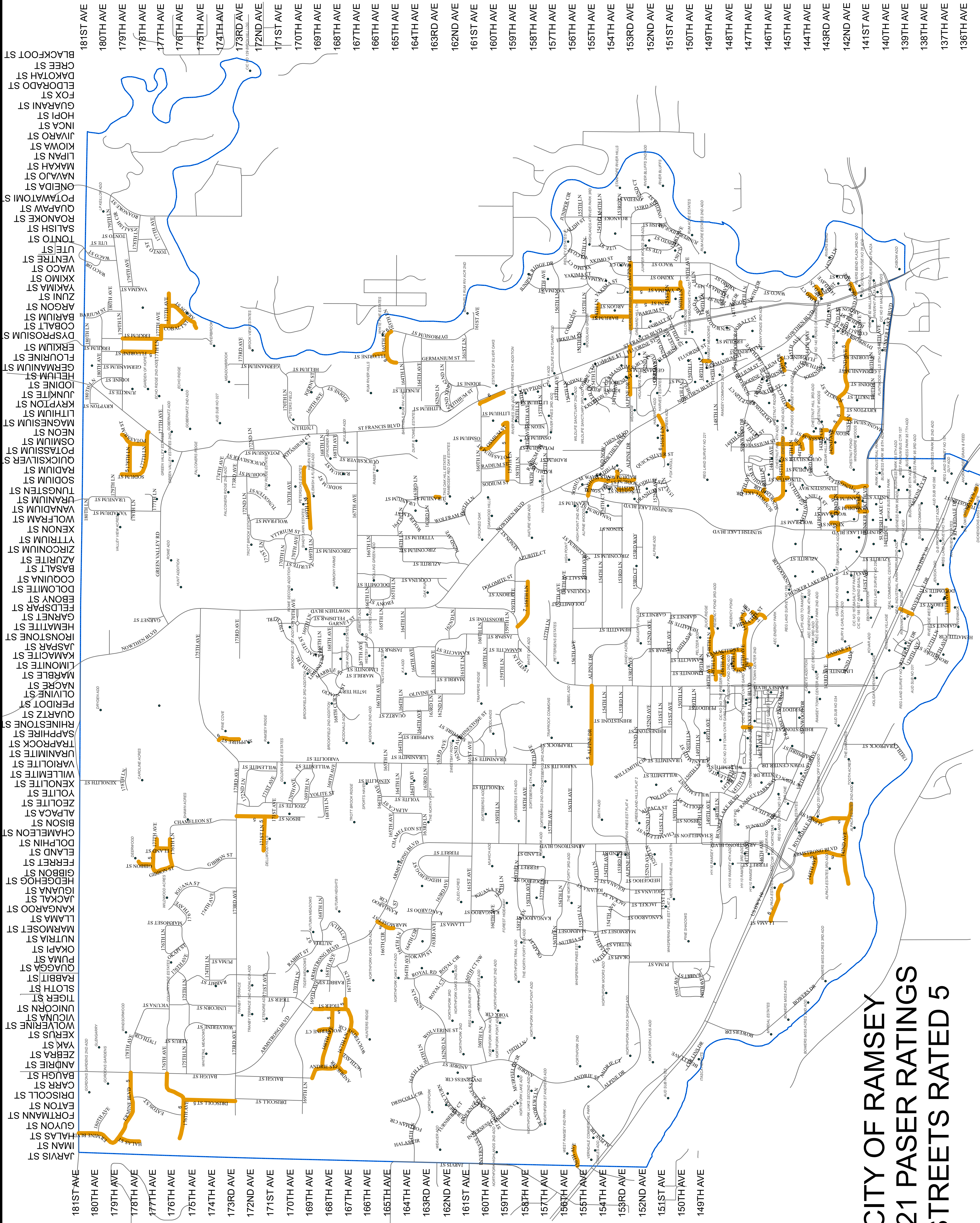


CITY STREETS

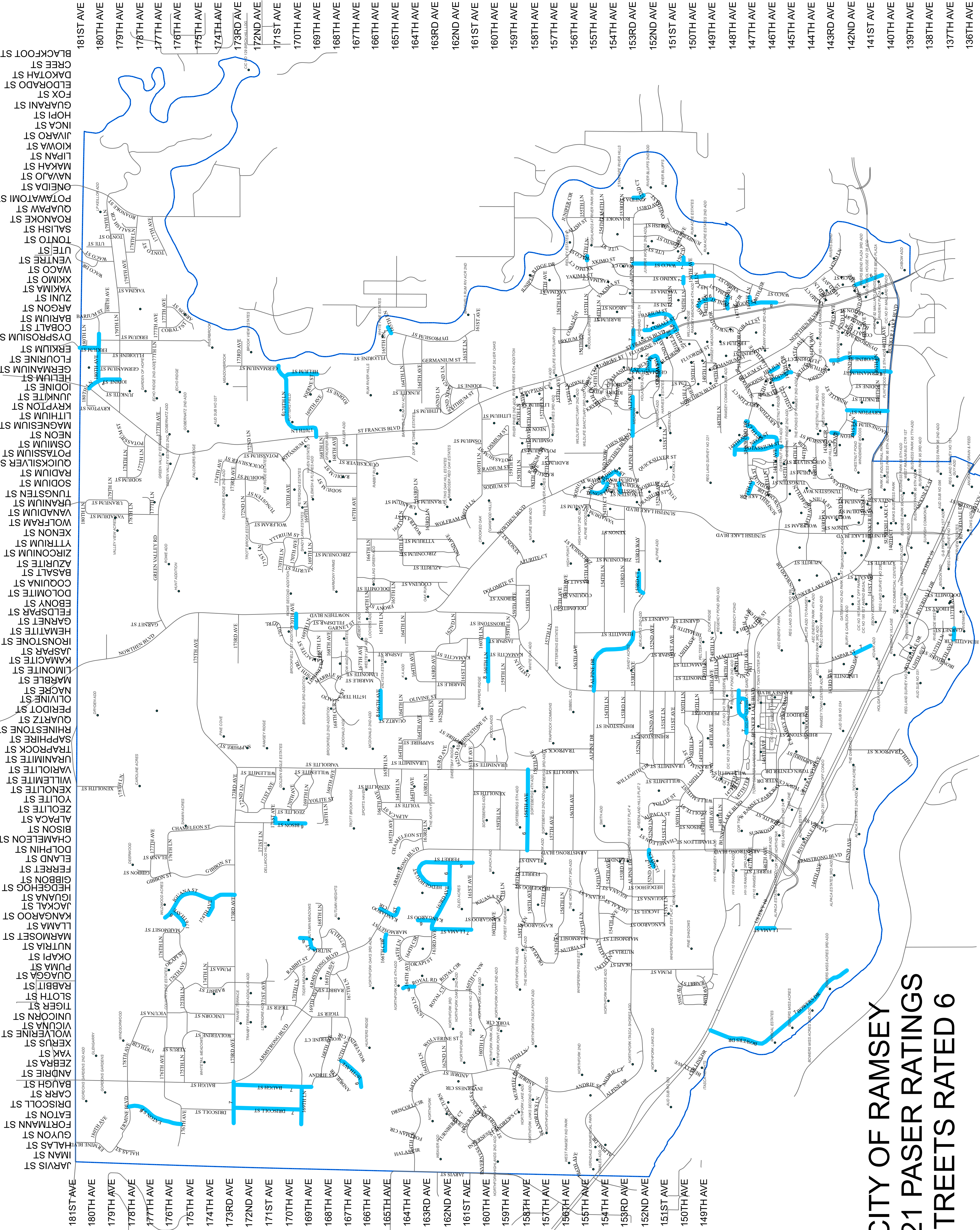
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Dirt	2.59 mi.
Total	184.03 mi.

Legend

- Paser 5
- subdivisions_pts
- MRCC_Centerlines
- subdivisions
- MuniBndry



**CITY OF RAMSEY
2021 PASER RATINGS
STREETS RATED 5**



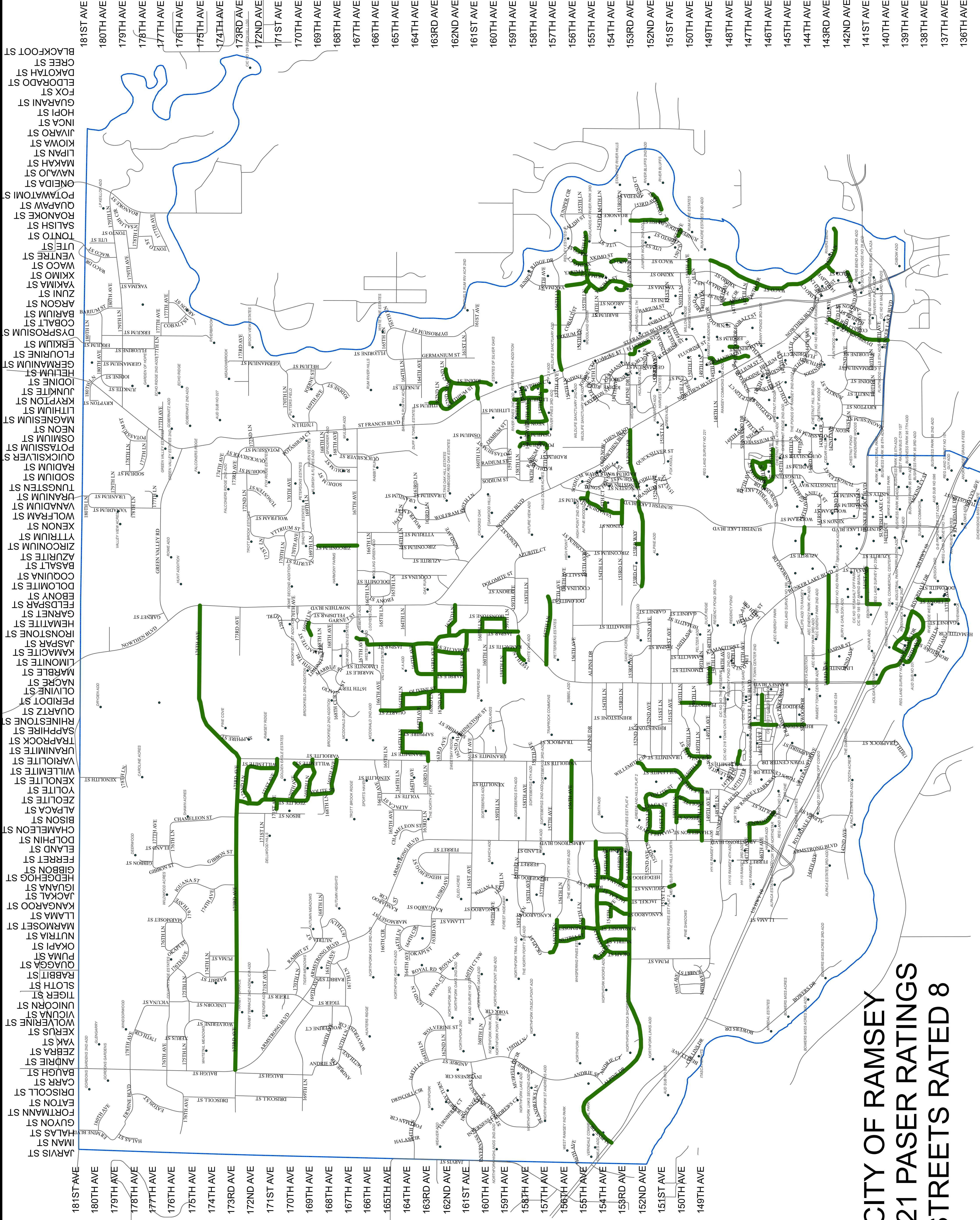
CITY STREETS

Mileage Summary	Length
9 - 10	45.77 mi.
7 - 8	58.76 mi.
5 - 6	33.57 mi.
3 - 4	26.86 mi.
0 - 2	16.72 mi.
Dirt	2.59 mi.
Total	184.03 mi.

Legend

- Paser 6
- subdivisions_pts
- MRCC_Centerlines
- MuniBndry

**CITY OF RAMSEY
2021 PASER RATINGS
STREETS RATED 6**



CITY STREETS

Mileage Summary	Length
9 - 10	45.77 mi.
7 - 8	58.76 mi.
5 - 6	33.57 mi.
3 - 4	26.86 mi.
0 - 2	16.72 mi.
Dirt	2.59 mi.
Total	184.03 mi.

Legend

- Paser 8
- Paser 7
- Paser 6
- Paser 5
- subdivisions_pts
- MRCC_Centerlines
- MuniBdry

CITY OF RAMSEY 2021 PASER RATINGS STREETS RATED 8

Temporary Patching (Pothole Filling) 161st Ave

Equipment Used	Location	Cost / 8 hrs
1-Ton Truck	\$20.57	\$164.56
Asphalt Tamper	\$10.37	\$82.96
Trailer	\$12.81	\$102.48
Labor Full Time	\$124.20	\$993.60
Seasonal	\$15.00	\$120.00
Asphalt Per Ton		\$275.40
4 Tons@68.85/Ton		
Total/hr		
	Total/8 hrs	\$1739.00 or \$434.75/ton

Permanent Patching (Mill/Overlay) Xkimo St N. of Alpine

Equipment Used in Removal	Location	Cost/8hrs
Tandem Axle Truck	\$65.75	\$524.00
24 Ton Trailer	\$16.99	\$135.92
Skid Steers	\$62.32	\$498.56
Edge Mill	\$15.48	\$123.84
Broom	\$7.37	\$58.96
Labor Full Time	\$124.20	\$993.60
Seasonal	\$15.00	\$120.00
Asphalt Per Ton		\$2,454.88
	Total Equipment Cost	

Equipment Used in Repair	Location	Cost / 24 hrs
1-Ton Truck	\$20.57	\$493.68
Asphalt Roller	\$15.32	\$367.68
Trailer	\$12.81	\$307.44
Labor Full Time	\$124.20	\$2,980.80
Seasonal	\$15.00	\$360.00
Asphalt Per Ton		\$1,927.80
28 Tons@\$68.85/Ton		
Total/hr		
	Total/24 hrs	\$6,437.40
	Total Project Cost	\$8892.28 or \$317.58/ton

Spray patching-Contractor Various Locations \$403.88/ Ton