MEMORANDUM

TO: VICTOR CARDENAS, CITY MANAGER

FROM: JEFFREY HERCZEG, DIRECTOR OF PUBLIC WO

SUBJECT: 2023 ROAD REPORT REFRESH

DATE: FEBRUARY 29, 2024

Mayor and Council –

Please see an update to the report previously provided to the Roads Committee in 2021.

- Victor

In February 2021, the **Roads Committee** submitted the **Roads Committee Discoveries** document to the City Council for review, consideration, and acceptance. The Road Report created a baseline for staff and the City Council to evaluate the status and needs of all road and related projects. The committee recommended a biannual refresh of the report to coincide with the PASER rating evaluations and a renewal of the report every 5 years to capture and include improvements and modified plans. Thereby creating a perpetual "living document" to provide direction to staff and transparency to residents, at the discretion of City Council.

Below is the schedule from the **2021 Roads Committee Discoveries**:

<u>Road Report Schedule</u>

2020 – Draft Submitted to Roads Committee - **complete**
2021 – Presentation to City Council - **complete**
2023 – Refresh
2025 – Refresh
2026 – Renew

The 2023 Refresh Executive summary is attached herein for consideration by City Council.

I. 2023 ROAD REPORT EXECUTIVE SUMMARY

This ***2023 Road Report Review*** is supplemental to the ***2020-2024 Road Report*** compiled by consulting engineer OHM Advisors with data up to 2020. The initial report was submitted with the ***2021 Roads Committee Discoveries (RCD)*** and accepted by the ***City Council in 2022.*** The data and recommendations in this report are based upon the road survey conducted by OHM in the fall of 2022. All public streets in the City were ranked "10" (excellent condition) through "1" (failed condition) based upon the PASER (Pavement And Surface Evaluation Rating) criteria formulated by the Wisconsin Transportation Information Center, which is widely used by municipalities and agencies throughout Michigan as is mandated by the State government (every two years 100% of the road network must be rated). PASER is performed biennially on even years in Novi. However, per the Roads Committee Discovery schedule and to reflect current conditions accurately for this review, the ***2023 road construction*** data is also included in this report.

Based on PASER ratings, visual inspections and assessment of the defects and potential pavement defects, staff uses road reports to generate a plan to maintain the city roads over the next 3-6 year period. While the PASER system is useful for a high-level overview of a road network, road projects must be analyzed individually for the appropriate project type to be selected. The road report is typically updated every three years (per the RCD schedule). This report parallels a state required **Transportation Asset Management Plan** (TAMP), which is also updated every three years (completed 2022), but includes assets such as traffic signals, bridges, and culverts.

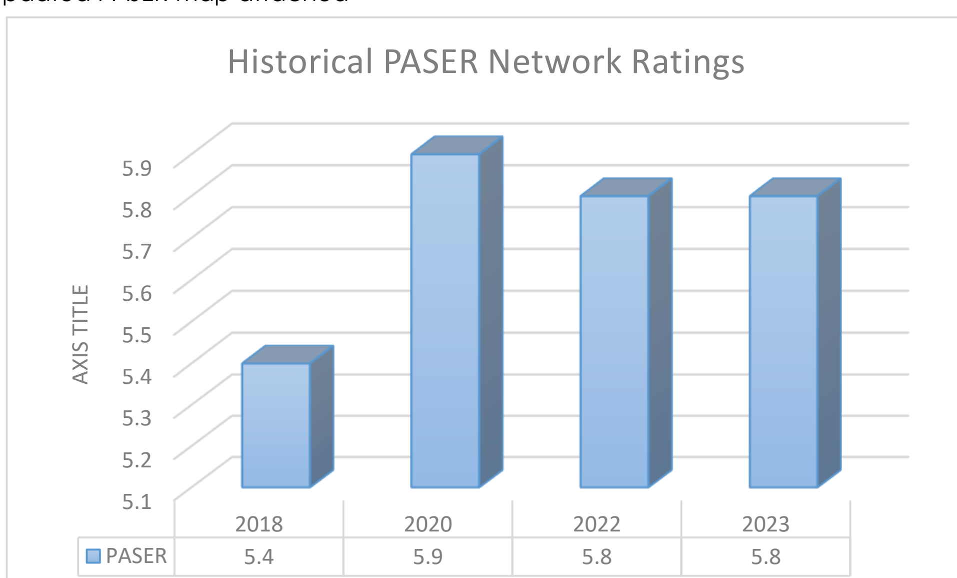
Within the City limits of Novi, approximately 193 centerline miles of roadway are owned and maintained by the City. Of these 193 miles, approximately 132 (280 lane miles*) miles are asphalt or seal coated roadways, concrete roads make up approximately 62 (124 lane miles) miles and the remaining 2.4 (5 lane miles) miles are gravel roads.

*lane miles = centerline miles times total number of lanes

Historical average PASER network rankings from previous road reports:

*2023 is projected data based on 2023 road construction and assumed deterioration

*updated PASER map attached



Below tables show side by side comparison expressed in percentages and miles:

Table – I 2018

Category	Rating					Total (centerline miles)
	Excellent (9-10)	Very Good (8)	Good (6-7)	Fair (4-5)	Poor (1-3)	
Major	6.5	1.7	5.2	23.9	7.0	44.3
Local	7.6	14.4	45.7	65.0	14.1	146.8
Total Mileage	14.1	16.0	50.9	88.9	21.1	191.1
% of network	7%	8%	27%	47%	11%	100%

Table – II 2020

Category	Rating					Total (centerline miles)
	Excellent (9-10)	Very Good (8)	Good (6-7)	Fair (4-5)	Poor (1-3)	
Major	6.3	3.9	7.6	23.8	3.3	44.9
Local	16.7	12.5	54.7	53.2	10.9	148.0
Total Mileage	23.0	16.4	62.4	76.9	14.1	192.9
% of network	12%	9%	32%	40%	7%	100%

Table – III 2023

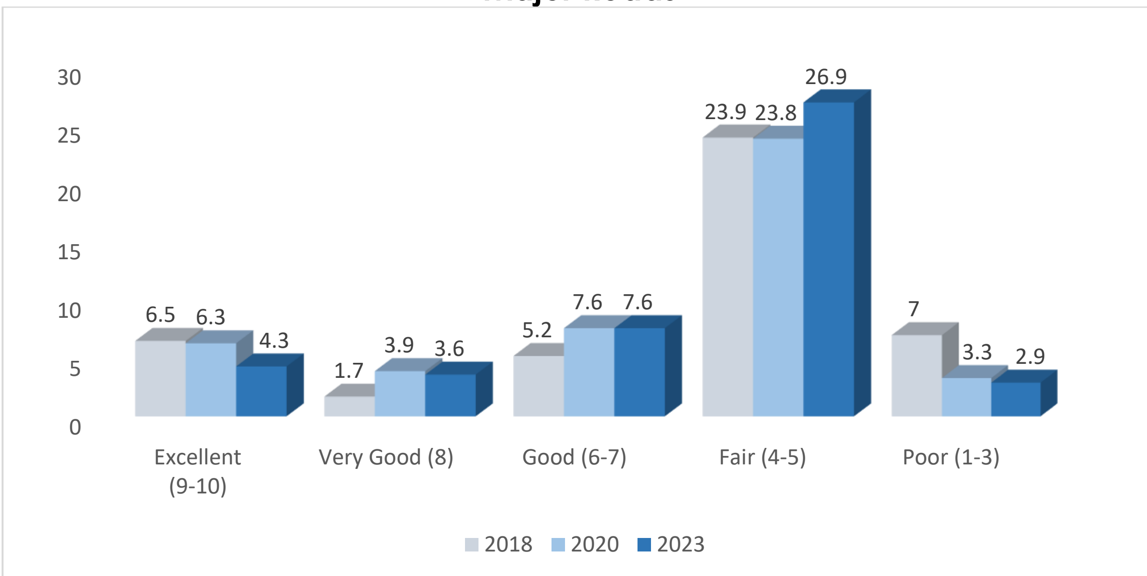
Category	Rating					Total (centerline miles)
	Excellent (9-10)	Very Good (8)	Good (6-7)	Fair (4-5)	Poor (1-3)	
Major	4.3	3.6	7.6	26.9	2.9	45.3
Local	18.5	10.5	46.0	57.8	15.0	147.8
Total Mileage	22.7	14.1	53.6	84.8	17.9	193.1
% of network	12%	7%	28%	44%	9%	100%

*table from 2022

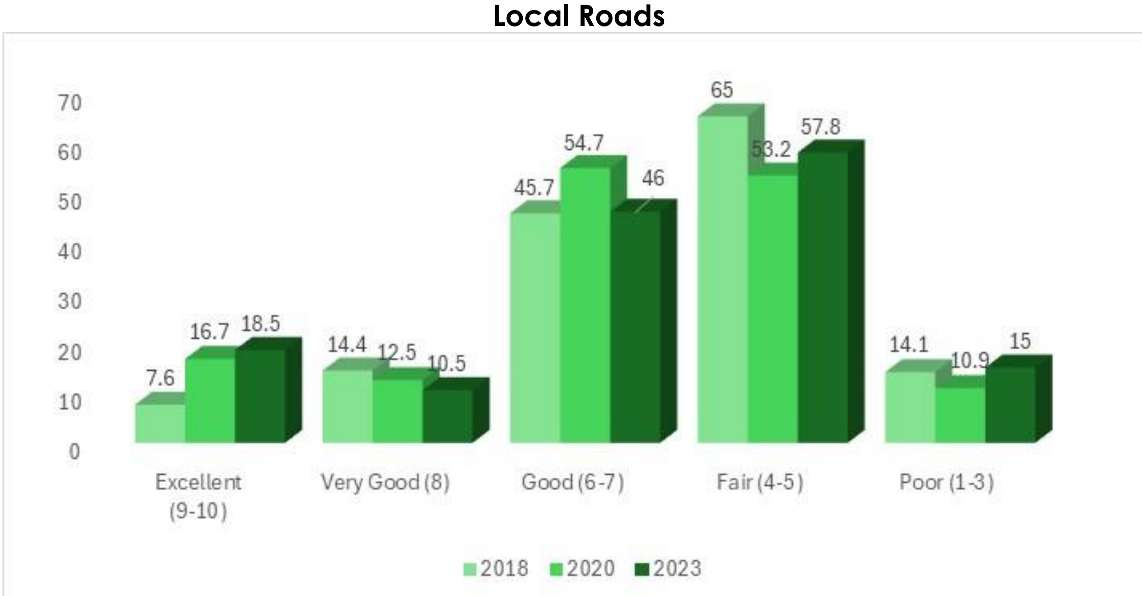
As evidenced by the percentages listed above, the city is currently maintaining approximately 47% of its road network at a "good" quality or above. This is an improvement of 5% from 2018, but a decrease of 6% from 2020. The continued goal of an asset management program ***is not*** to have all City roads in "excellent" and "good" condition, but rather a successful program focused on allocating the available funds in such a way to create a consistent attainable budget from year to year. There is no

"defectless road network" and function (does the road operate?) should always prevail over aesthetic in terms of investment.

Major Roads



Local Roads



As shown in Table III, a portion of the City's road network (9% - which is 2% more than 2020, but 2% less than 2018) has already degraded to a point where there is no option but to reconstruct those roads. Once a road has fallen into this category there is no lasting cost-effective repair for these roads other than to be completely reconstructed. Temporary fixes can be done to make the road traversable, however they will not perform and will continue to be difficult to maintain until reconstructed. The total mileage of concrete in this portion is approximately 1 mile (at an estimated cost of $2 million). The remaining 13 miles are asphalt (at a cost of $25 million). The city has made significant progress on the "poor" category specifically since the introduction of the Municipal Road tax levy (1.5 mills subject to Headlee rollback). The **Neighborhood Road Program (NRP)** has invested ~$41M since 2014 in local road rehabilitation and reconstruction below:

<u>Table - VI</u>

Year	NRP+CPR Costs	Program	Notes
2012	$1,181,611.00	NRP	Additional road millage passed
2013	$1,632,271.00	NRP	Collection of millage begins on winter tax
2014	$1,429,864.00	NRP	Projects planned in CIP with millage collection
2015	$4,010,101.00	NRP	Project implemented with millage funds
2016	$2,128,387.00	NRP	
2017	$3,236,738.00	NRP+CPR	Initiate Concrete Panel Repair Program (CPR)
2018	$3,563,860.94	NRP+CPR	
2019	$3,423,724.00	NRP+CPR	
2020	$4,998,525.00	NRP+CPR	Includes Cranbrooke Phase 1
2021	$7,961,140.00	NRP	CPM deferred to NRP (COVID, 30% unit price increase) Includes Cranbrooke Phase 2
2022	$3,922463.00	NRP	CPM deferred to NRP (continued inflation and higher unit costs)
2023	$4,025,633.00	NRP+CPM	CPM initiated ~$1M
	$41,514,318.00		
2024	$5,500,000.00	NRP+CPM	Recommend increase in NRP, CPM to include chip seal roads only
2025	$5,000,000.00	NRP+CPM	Recommend increase in NRP
2026	$5,050,000.00	NRP+CPM	

NRP: Neighborhood Road Program, CPR : Concrete Panel Repair, CPM: Capital Preventative Maintenance

Just above the roads that are currently considered "failing", almost 40% of the City's road network is in the "fair" range with much of the mileage being asphalt. The total centerline mileage of asphalt pavement in the "fair" range is approximately 54.5 miles (with an estimated cost of almost $130 million if left untouched until reconstruction is needed). The concrete roads in the "fair" range are 24 miles long (approximately $48 million dollars). Table II data creates a reasonable curve weighted towards "fair" indicating investment should be concentrated on moving the 40% of "fair" to "very good and good".

Roads typically remain in "fair" range for 3-8 years, depending on surface type, drainage, and routine maintenance. It is important to note that no two roads will deteriorate at the same rate. Asphalt roads tend to age more quickly than concrete, but even two asphalt roads with the same cross section will degrade at different speeds. Traffic, drainage, and underlying soil conditions are only some of the factors that impact this. Because of this, a road that may have been a great candidate for a low cost, life extending treatment one year may fall out of that category the next.

The 2020 road report provided an analysis of funding levels, and the anticipated impact those different funding levels would have on the average PASER rating. The anticipated rating was based upon an assumption that a mix of fixes would be used, from routine capital preventative maintenance, to rehabilitation, and finally reconstruction. Since 2018 the City has been spending ~$3M on maintenance activities performed in-house by DPW or by contracted services (excluding winter maintenance). In addition to the maintenance spending, another $6M to $8M per year since 2018 has been spent on heavy rehabilitation and reconstruction, with the ***funds primarily being weighted towards reconstruction***. The level of funding is consistent with the City's steady increase in PASER average network rating from 2018 (5.4) to 2020 (5.8).

Table – V History of Capital Outlay/Operating Expense Projects

Fund	2018/19	2019/20	2020/2021	2021/2022	2022/23
202 Majors Recon	2,180,675.83	1,577,284.99	372,739.15	341,638.30	1,555,915.16
202 Majors Maintenance	1,512,219.13	1,321,016.97	1,325,751.84	1,431,444.16	1,582,608.70
203 Locals Recon	3,953,906.14	5,241,331.41	8,475,042.66	7,328,412.15	6,151,907.32
203 Locals Maintenance	1,631,317.03	1,183,134.49	1,276,486.69	1,397,659.26	1,823,377.89
Totals (Majors & Locals)	**9,278,118.13**	**9,322,767.86**	**11,450,020.34**	**10,499,153.87**	**11,113,809.07**

However, the focus of the 2020 report highlighted the need for a **~$1M** annual program of **Capital Preventative Maintenance (CPM)** in tandem with an **increase of $1.5-$2M** in funding for annual rehabilitation and reconstruction projects. Due to COVID and inflation over the past 4 years, the funds budgeted for the preventative maintenance were instead used to complete the streets already committed in the annual Neighborhood Road Program due to increased costs (Table VI). The CPM was finally initiated in the 2023 construction season, three years after the intended recommendation of an additional **~$1M/year**.

Further complicating the network needs are funding the major road projects. These are some of the lowest rated roads (approximately 66% of majors are rated fair or poor), the most expensive to recon/rehab, and are tied to federal dollars with specific fiscal years of obligation (see below). The estimates for federal aid projects are done 3-5 years in advance and almost always change in scope during design to leverage the funding. This means that projects cost more by the time they are constructed.

<u>Table – V Major Road Projects Federal Funding</u>

Project	Year	Limits	Federal Share	Novi Share
Taft Rd/RAB	2022	South City limits to 10 Mile Rd	$ 3M	$ 900K
Wixom Road	2023	790' S of Grand River Ave to Ten Mile	$1.5M	$ 2.9M
Meadowbrook Road*	2024	10 Mile Rd to 11 Mile Rd	$ 900K	$ 900K
9 Mile Road*	2024	Meadowbrook to Haggerty	$ 1M	$ 2.2M
13 Mile Rd**	2025	M-5 to Haggerty Rd	$ 500K	$ 500K
West Park Dr**	2025	12 Mile Rd to West Rd	$ 600K	$ 600K
West Park Dr**	2025	West Rd to Pontiac Trail	$1.2M	$ 600K
		Total	**$8.7M**	**$8.6M**

*estimated costs, bid this year
**not yet designed estimates subject to change

Overall, it is important to note the amount spent per year and the corresponding change in ratings is based upon an ideal mix of fixes from preventive maintenance to rehabilitations to reconstructions. For example, if the City were to spend solely $8 million annually on reconstructions with no money spent on maintenance, the average condition of the roads would decrease. **Due to the cost of reconstructions, it is critical to perform maintenance periodically on the roads prior to the asset degrading to the point that a more costly fix is required.**

While the continued upward trajectory of the overall network rating is not sustainable with the current funding analyzed herein, the current average condition rating of **5.8 is maintainable.** Even with no additional funding, the current major road projects in the queue and a combination of fixes in NRP/CPM would result in little change of the average network rating. Maintaining a level between **2018 (5.4)** and current rating of **5.8** (2023) is still performing above or on par with regional comparable community's road networks.

The City of Farmington Hills is the only comparable community staff is aware of, that has an average PASER rating significantly higher than Novi's (approaching a **7**). This is a direct result of their current level of investment, which exceeds **$24M annually (with 2 active road millages totaling 4.75 mills, 2 mills sunset in 2025)**. This equates to an almost 2:1 funding allotment compared to Novi when accounting for the difference in lane miles.

The City of Troy has been in a steady decline in ratings of almost a full point over the last 8 to 10 years (fell from **5.6** in 2014 to **5.0** in 2023). Their annual budget is approximately $6.5 million ($3M to majors, $3.5M to locals split between concrete panel replacement and HMA overlays).

The City of Southfield has seen a steady increase in their rating over the last decade due to the implementation and expenditure of their **2014 Road Bond (approximately $100M)** above and beyond their normal expenditures, which has now been depleted. Based on their current TAMP and CIP, they have previously been budgeting $8-$10M annually, which will leave a significant funding gap. Maintaining their current rating of **6.0** (majors 6.2, locals 5.9) without additional funding of $4-6 million is not likely.

Recommendation

The ***Roads Committee or other TBD Committee*** should reconvene as directed by the City Council. The ***Committee*** will review the information presented in this report (and previous reports) and provide a recommendation for consideration by the City Council in 2024.

Glossary

Definition of terms repeated throughout this report:

Maintenance, or **Capital Preventative Maintenance (CPM):** encompasses a wide variety of work including crack sealing, surface sealers, micro-surfacing, minor patching, etc.

Reconstruction: entails complete removal and replacement of the existing pavement surface and aggregate base.

Rehabilitation encompasses crush and shapes, mill and fills and other similar fixes, where the existing base is typically left along with some of the existing pavement, and this is then added onto with new pavement for an increased cross section of greater strength.

Neighborhood Road Program (NRP): program focusing on reconstruction and rehabilitation of local residential streets

Roads Committee Discoveries (RCD): 2021 report submitted to City Council on condition, etc.

Road Report: data driven report used for asset management and TAMC requirements

Transportation Asset Management Plan: required by Public Act 325 for agencies with road networks over 100 miles

Centerline Miles: a way to describe the length of a road measured along the center, regardless of lanes (for example, Meadowbrook Road from 9 Mile to 10 Mile is 1 centerline mile)

Lane Miles: a way to describe the length of a road accounting for varying road widths (for example, Meadowbrook Road from 9 Mile to 10 Mile is 2 lane miles)