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Roads Committee Discoveries

Introduction

The Novi Roads Committee was formed in December of 2019 at the direction of City Council with the goal of developing a plan to prioritize road projects to maintain safety, improve road conditions and traffic flow, and explore funding opportunities.

The committee members were appointed by Mayor Bob Gatt the committee and is composed of the following members:

- City Council Member/Committee Chair, Laura Marie Casey
- City Council Member, Andrew Mutch
- City Manager, Pete Auger
- Citizen Representative, Brian Bartlett
- Citizen Representative, Alex Dinser
- Director of Public Works, Jeff Herczeg
- Assistant Chief of Police, Erick Zinser
- City Planner, Barb McBeth
- CEO/Finance Director, Carl Johnson
- Community Relations Specialist, Nathan Mueller
- Consulting Engineer OHM Advisors, Tim Juidici
- Consulting Engineer AECOM, Mark Koskinen

The staff and Consulting Engineer committee members provided information and presentations to the committee which were relevant to the committee's goals and objectives. Staff participation was for guidance and facilitation only, in order to maintain unbiased and transparent results.

The committee began meeting bi-monthly in January of 2020 and continued through March of 2020. Meetings were suspended during the first wave of the COVID-19 pandemic and resumed in September of 2020. With the economic conditions brought on by the pandemic, the committee's task turned to developing a set of findings to share with Council and the community, excluding funding recommendations as had initially been intended.

The findings provided in this report focus on, but are not limited to, the time period from 2012 to present day and include projections out through 2026. This timeline corresponds to the previous road condition assessment provided by OHM Advisors in 2012 (Appendix F), the passing of the Road Millage in 2013, and the subsequent influx of additional road funds into the local road program. The committee also looked at long-term planning and megaprojects to address traffic movement and capacity. Furthermore, analysis of safety and accident mitigation and new design and technology opportunities were also presented and reviewed.

The initial committee meetings consisted of roundtable discussions and presentations on **ROADS 101** (Appendix A & B). This information provided a foundation for the committee to build on and a general direction for the group to follow.

Introductory topics included road funding, road jurisdictions, the impact of other franchise utilities, asset management, and the capital improvement planning process (see Roads 101, Appendix A & B). The most significant component to all discussions herein is funding. Below are Novi's three major road fund sources and how they are generated:

- **202–Major Roads**
 - Funded by ACT 51 ~ \$4M/year
- **203–Local Roads**
 - Funded by ACT 51 ~ \$1.5M/year
- **204–Municipal Roads**
 - Funded by Metro Act Revenue approx. \$185,000/year
 - Funded by Trunkline Revenue approx. \$113,000/year
 - Funded by dedicated road millage (1.5 mills), which has generated between \$4.9-\$5.3M/year to supplement 202 and 203 through FY 2018-19

In general, the City has ~\$11M of funds dedicated to roads per year. The City expends between \$2-3M for maintenance, leaving \$7-9M targeted for capital expenditures for road improvements and non-motorized projects.

Maximizing these funds is critical since the cost of road rehabilitation and reconstruction per lane mile in today's dollars is as follows:

Asphalt	Structural Improvement/Rehabilitation	\$300,000 – \$500,000
Asphalt	Reconstruction	\$800,000 – 1,250,000
Concrete	Structural Improvement/Rehabilitation	\$350,000 - \$500,000
Concrete	Reconstruction	\$1,000,000 – \$1,500,000

The City's road network is a mix of jurisdictions between the City, Michigan Department of Transportation (MDOT) and the Road Commission for Oakland County (RCOC), which presents unique circumstances for maintenance, prioritization, and project planning. The even-numbered Mile Roads and east-west borders are RCOC roads (8 Mile shared with Wayne County), and M-5 and I-96/696 are MDOT. For the rest of the city network and road designation, refer to Roadway Jurisdiction Map (Appendix 5)

The discoveries encompass the City road network that is 187 centerline miles of local and major roads. The entirety of road surface is expressed lane miles, which is centerline miles

multiplied by number of lanes per segment (length x width, one mile segment of a 4-lane road = 4 lane miles). The City's total lanes miles are 391.

Novi driver experience and satisfaction are critical, and working with other agencies to initiate, fund, and execute projects in the city has been a priority. Several projects with outside entities are currently underway or are in the planning stages. An expansion of those projects can be found later in this document under **Major Roads Projects and Traffic Improvements**.

Asset management and capital planning are essential for Novi's for budgeting purposes, and the roads program is critical within this process. In accordance with Public Act 325, the City is required to submit a Transportation Asset Management Plan (TAMP) to the Michigan Transportation Asset Management Council (TAMC). A TAMP is required for every local agency with 100 or more miles of roadway under their jurisdiction. While the City is not required to submit the TAMP until October 1, 2022, staff took a proactive approach to complete the report early. The TAMP effort also includes an additional prioritization for the road CIP program from 2020-2024, which is referred to as the **Road Report** for the purposes of this document. The TAMP document, in its own specific format, will be delivered as part of the normal ACT 51 yearly reporting in 2022.

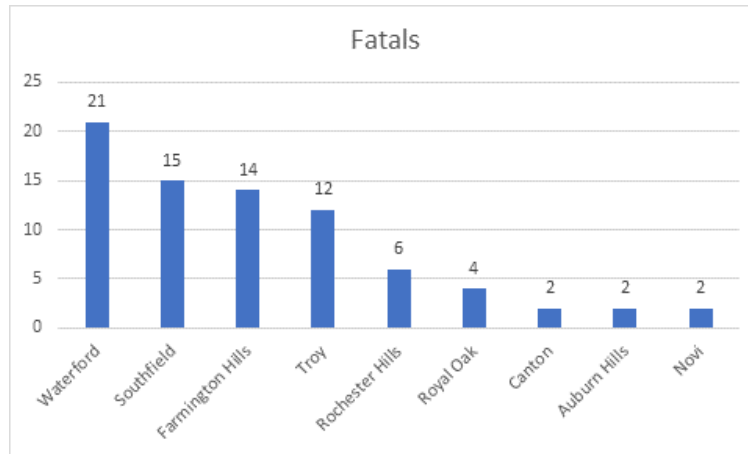
The committee was tasked with the review and endorsement of the **Road Report** (Appendix G). Over the duration of several committee meetings, staff introduced and presented the draft deliverables for feedback and discussion. The findings in the report were assembled from historical data, and updates were made through 2020. The Road Report is detailed more under the following Local Roads section of this document.

Safety

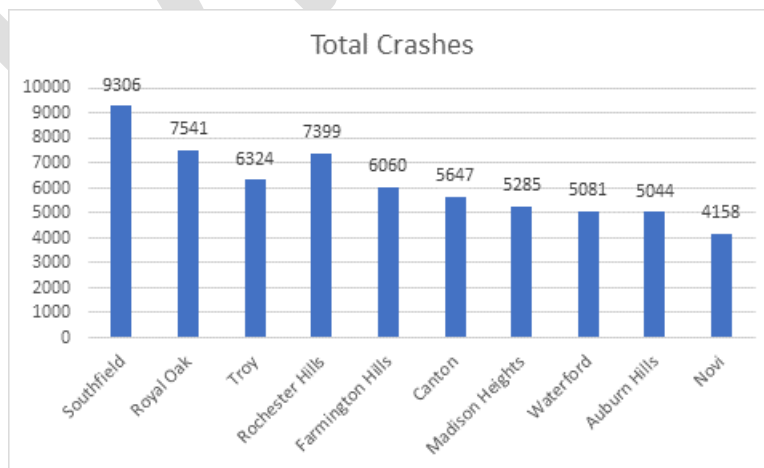
Safety for motorists living in and traveling through Novi is a priority for staff and City Council. Addressing the most dangerous intersections was a City Council goal following the Thoroughfare Master Plan update (2016, Appendix K) which identified opportunities for crash reduction by implementing countermeasures. These countermeasures included: adjusting the traffic signal timing, traffic signal modernization upgrades, and the Novi Police Department utilizing an innovative approach to reduce traffic crashes through a Data-Driven Approach to Crime and Traffic Safety (DDACTS).

The concept behind DDACTS is to analyze three to five years of data to identify where most traffic crashes are happening, both by date and time of day. Based on the data, DDACTS Zones, or "hot spots", are created. These zones become the focus of extra police presence during peak times of crime and crashes. The goal is not necessarily to issue citations, but rather initiate police contacts and have highly visible traffic enforcement. The Novi Police Department has seen significant decreases in traffic crashes in identified DDACTS Zones. The intersection of Beck Road and Grand River saw a 50% decrease in traffic crashes from 2018 to 2020. The intersection of Novi Road and I-96 saw a 34% decrease for the same period.

The Roads Committee reviewed crash results from 2012-2016 through the Top 15 Most Dangerous Intersection memo (Appendix V) and from 2018-2020 from the Public Safety Crash Analysis (Appendix E), and the findings were encouraging in both reports. A three-year analysis of traffic crashes from 2018-2020 show overall crashes are down 35.2% from the three years prior to 2018. Further, the City of Novi experienced only two fatal crashes during the same time frame; however, neither crash was on a public roadway.



The common characteristic in both the consulting traffic engineer's (AECOM) study and the police department's crash analysis are that rear-end crashes are the most common occurrence (40% of all crashes). These types of crashes are usually caused by driver distraction and are rarely severe or deadly. Countermeasures such as new roundabouts, signal modernizations, lighting, and DDACTS have been effective in reducing traffic crashes. Furthermore, weather related crashes during the same time only accounted for 8% of the total crashes reported. This leads to the conclusion that distracted driving is four times more likely to be the cause of a crash versus poor road conditions and confirms advancements in winter maintenance operations have paid off for Novi motorists. A comparison of data from 2018-2020 shows Novi has significantly fewer crashes than comparable jurisdictions.



**Communities with fewer crashes have less land area than Novi.*

All other crash data is included in Appendix E, along with maps of intersection improvements and countermeasures completed/planned for reference (Appendix 3).

Local Roads

Local roads, also referred to as neighborhood roads, is comprised of ~155 centerline miles and makes up around 80% of the total network. These are the subdivision streets and other roads that Novi residents use and live on, and therefore, generally draw the most attention. Since the local roads make up a significant amount of the overall network, the information and recommendations in the Road Report are critical for planning and prioritizing. Constructing the Road Report consisted of the following steps:

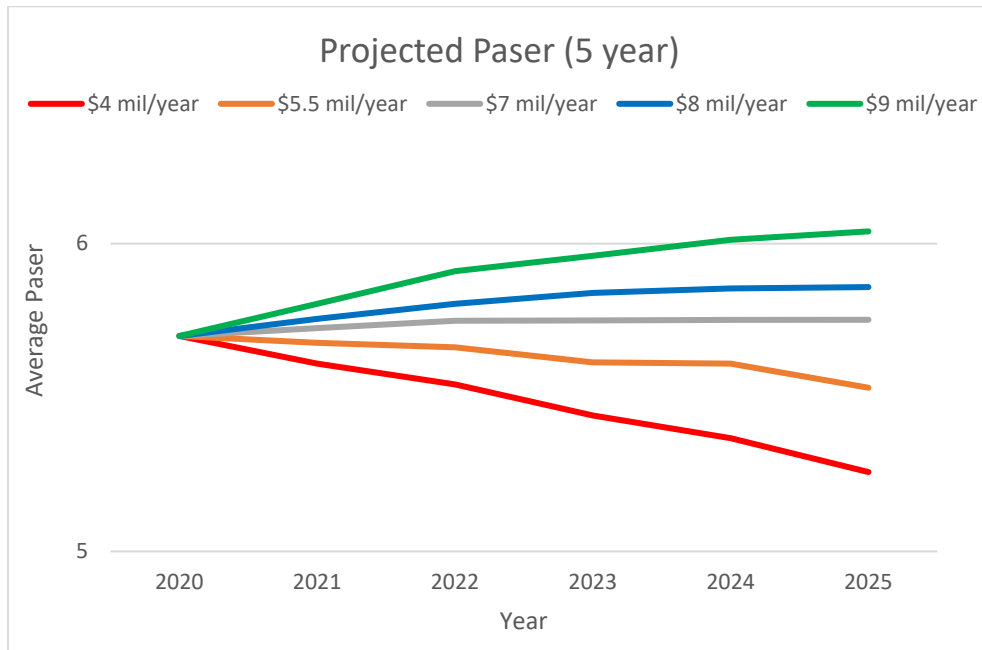
- Survey of the roads (visual, see PASER memo Appendix S)
- Update of completed projects to ensure good data.
- Update of current project costs.
- Budget/forecast data/optimize fixes and funding levels.
- Build 5-Year plan based on need and value to enhance driver/resident experience and satisfaction.

Novi has made significant investment and has improved conditions over the last several years with Neighborhood Road Programs (NRP) including Asphalt and Concrete reconstructions/rehabilitations, and a Concrete Panel Repair program (CPR). Total dollars invested in the NRP from 2014-2020 is ~\$25M. Below is the year over year costs for the local road's programs and the proposed three-year plan for the NRP. At the end of 2023, the total investment in local roads will reach almost \$40M in just over ten years' time.

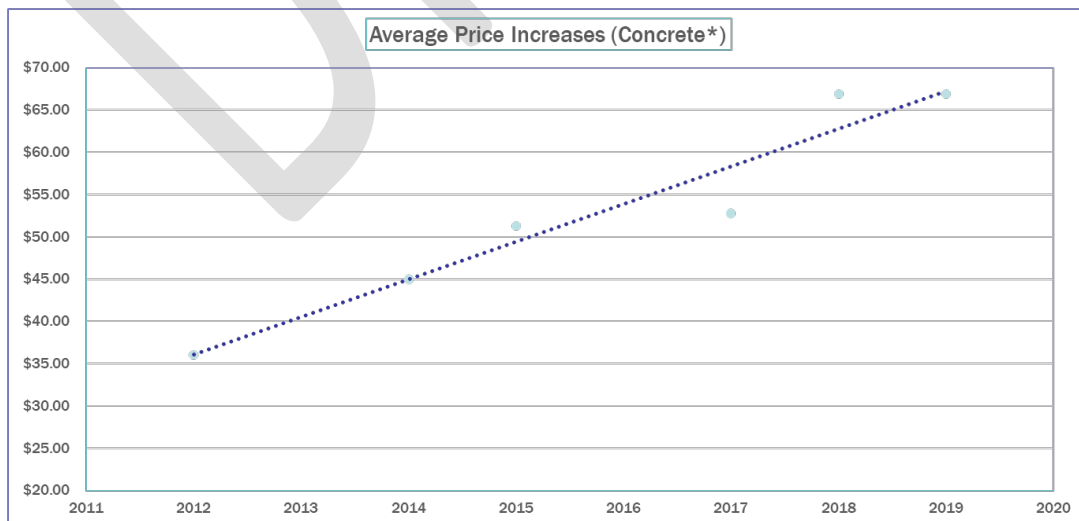
Year	NRP+CPR Costs	Program	Notes
2012	\$1,181,611.00	NRP	Additional road millage passed
2013	\$1,632,271.00	NRP	Collection of millage begins on winter tax
2014	\$1,429,864.00	NRP	Projects planned in CIP with millage collection
2015	\$4,010,101.00	NRP	Project implemented with millage funds
2016	\$2,128,387.00	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
	\$25,605,081.94		Total Investment in Neighborhood Roads
	3 Year Proposed		
2021	\$5,973,069.00	NRP+CPM	Initiate Asphalt Capital Preventative Maintenance (CPM), Cranbrooke Phase 2
2022	\$3,900,000.00	NRP+CPM	
2023	\$3,700,000.00	NRP+CPM	

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

A graph presented in the Road Report using 2018 road data ([local and major](#)) and costs of construction (page 7, [App G](#)) showed projected network PASER ratings related to dollars invested. Based on the most recent PASER evaluation in October 2020, the last 3 years of investment in the above programs has resulted in an overall network PASER rating increase from 5.4 (2018) to 5.8 (2020). The updated graph below projects the next five years [for both local and major roads](#).



Although the current trend is favorable, by maintaining the existing road funding levels (\$7-\$9M), the City will see a flat or slight increase in network road condition moving forward. Construction costs since 2012 have increased ~30% per square yard of material (see below).



*concrete used as base line, but asphalt and aggregate prices have seen parallel increase

While concrete unit prices have since leveled off at an average of \$60/square yard (based on bid tabs from 2020) the reduction is likely related to COVID-19 and a drop in demand. Larger regional and state projects coming forward will likely again push price increases over the next few years. Asphalt unit prices increased from \$80/ton in 2018 to \$120/ton in 2020 and aggregate base material increased proportionately, impacting how far road dollars can be stretched. Unit prices (concrete vs. asphalt) are reviewed annually to determine cost-saving opportunities. For example, Jo Drive, part of the 2020 NRP, was designed as an asphalt reconstruction, but was changed to concrete based on program pricing. However, generally infrastructure is replaced in kind based on service life.

It is estimated an additional \$1.5M - \$2M/year of road funding spent mostly on local roads, with the right mix of fixes, would provide a comparable increase (in rating) to the overall network condition. Considerations (if any) for additional road funding should include a level of service/experience expectation for residents tempered by the economic conditions.

In the short term, the asset management plan is performing adequately. However, based on the Road Report, almost 50% of the City's road network is in the "fair" range (see below) with the majority of the mileage being asphalt.

Category	Rating					Total (centerline miles)
	Excellent (9-10)	Very Good (8)	Good (6-7)	Fair (4-5)	Poor (1-3)	
Major	5.36	1.64	4.24	18.95	2.91	33.09
Local	7.47	11.95	46.65	70.08	18.44	154.60
Total Mileage	12.8	13.6	50.9	89.0	21.3	187.7
% of network	7%	7%	27%	47%	11%	100%

The total mileage of asphalt pavement in "fair" range is approximately 59.5 miles (with an estimated cost of almost \$65 million if left untouched until reconstruction is needed).

It is possible to effectively extend the life of asphalt roads in the "fair" range less expensively through the use of surface sealers, crack filling, and minor patching, referred to as the Asphalt Capital Preventative Maintenance program (CPM). Similar to the way the CPR addressed concrete roads, this program should maintain asphalt roads in the fair/good category, and thereby, extending service life and increasing local network integrity. Therefore, implementing a CPM program is both recommended and supported by the committee.

A NRP and CPM map of work planned and performed is included in Appendixes 1 and 2 for reference.

Major Road Projects and Traffic Improvements

While Major Roads only account for 20% of the system, they are critical for traffic movement into and out of the city. Poor conditions on major roads are usually a greater concern as they carry exponentially more traffic and generally consist of more lane miles, resulting in higher cost to maintain.

The City proactively pursues alternative funding and leverages relationships to complete major projects and stretch road dollars. Since 2014, the City has been successful in obtaining ~\$4M (since 2014) of funding from federal and local road programs to supplement Novi road projects.

Advance constructing projects and partnerships to acquire federal road funds with RCOC has also been beneficial. The City has recently taken advantage of agreements to front funds and to expedite construction with RCOC on projects with obligated (or yet to be assigned) dollars in future fiscal years. These agreements benefit all entities, as well as the residents, since much needed local and regional improvements are being addressed. In 2019, Novi Road and 12 Mile Road intersection (~\$1M) was reconstructed using the advanced construct method, and in 2022, 10 Mile Road from Haggerty to Meadowbrook (~\$5M) will be rehabilitated with a continuous center left-turn lane utilizing the same type of agreement. In 2017, Novi used federal funds in a partnership with RCOC and Lyon Township to rehabilitate Napier Road from 9 Mile to 10 Mile (~\$5M) including a new roundabout.

Additionally, Great Lakes Water Authority (GLWA) is installing a 54" Transmission Main through Novi starting in 2022. Four major road segments are impacted by the route and staff negotiated the complete reconstruction of all four segments in a cost-share agreement with GLWA. By reconstructing the roads now, the City stands to save significant dollars in economies of scale and only pay for half the cost of total road replacement, since GLWA replaces the portions of all roads impacted by their pipe zone.

Traffic congestion and capacity were some of the committee's most deliberated subjects. Issues with congestion ~~are~~ primarily during peak times (rush hour), both impact and are ~~and are~~ impacted by residents, local business ~~employeees~~ and traffic in the surrounding communities. However, Novi's position in the center of the mixing bowl (I-96/696, 275, M-5) creates unique circumstances and challenges (pain points identified in projects below) for traffic flow. Novi's major roads are directly affected by the regional traffic using the mixing bowl and any commuting traffic passing through the city to connect.

The MDOT flex route project scheduled to begin in 2021 will have the most regional impact on capacity. The project includes installation of an Active Traffic Management System (Flex Lane) from Kent Lake Road to the I-275/I-696/M-5 interchange, along with a full reconstruction of all lanes and shoulders and is being proposed to alleviate

congestion, reduce travel time during peak hours, improve safety, and restore pavement condition.

What else is Novi doing to mitigate traffic capacity? The following projects address capacity:

Completed Projects

- Ring Roads – create alternate movement for the Grand River and Novi Road intersection *
 - Southeast - Main Street (early 2000s)
 - Northeast - Crescent to Town Center (2017)
 - Southwest – Bond Street to Flint (2020, Phase 2 connection to Grand River pending)
 - Northwest - Crescent to Grand River (2021)
- Napier and 10 Mile roundabout (2017) – improved traffic flow and safety at this historically dangerous intersection
- Grand River and Beck – Right turn lane extension (2015), Dual left turn lane (2016)

Planned Projects

- 10 Mile Road from Haggerty to Meadowbrook (2022) – continuous turn lane and selective widening *
- Taft and 9 Mile Roundabout (2022)
- Meadowbrook and 11 Mile Road – right turn lane on southbound Meadowbrook

Projects Under Consideration

- Beck Road –regional expansion (Novi, Wixom, Northville Twp.) from 6 Mile Road to Pontiac Trail, pursuing federal funding [4-lane boulevard, potential roundabout at 10 Mile Rd.](#) *
- 12 Mile Road from Beck Road to Cabaret Drive – expand to 4-lane boulevard, RCOE project moving into to ROW acquisition. *
- Ten Mile and Wixom Road, and 10 Mile and Taft Road –analyze cost benefit of roundabouts.
- Crescent Road connection to Lee BeGole/11 Mile – northeast Ring Road addition
- Taft Road/ I-96 Bridge – bridge over I-96 with connection to 12 Mile Road.

**committee identified pain points*

A map and detailed listing of all major road projects discussed by the committee is included in Appendix 3.

Since major road projects are both expansive and expensive, they must be considered in steps and phases to address resident and regional traffic concerns. These projects almost always include right-of-way acquisition, partnerships with other stakeholders, and funding obstacles. Most traffic challenges will not be resolved instantaneously, and the return on investment of multi-million-dollar road projects should be viewed not just locally,

but regionally. Does it make sense for the City to invest in *mega-projects* (>\$10M) that may move traffic within the city at one point but move the issue elsewhere?

Of the committee identified *mega-projects* the Taft Road bridge over I-96 to 12 Mile Road, was being considered for construction simultaneously with the MDOT Flex Route. However, ultimately the cost-benefit analysis of the project (~\$15M) and overall impact on the network was not beneficial. Conversely, Beck Road widening (~\$30M) would have significant benefits to the City and the region, therefore, the City is aggressively pursuing federal match funding to implement the project. Likewise, the RCOC 12 Mile expansion (~\$14M) would considerably improve traffic flow north of I-96 and acknowledged by the committee as a priority.

Consequently, the overall plan included herein has been thoroughly vetted by the committee with the following recommendations for major road projects:

- Verify the impact of the Flex Route project before committing to other projects.
- Continue to pursue Beck Road funding – identified as major point of pain.
 - Strong desire to complete this project with or without federal funds.
- Partner with RCOC to execute 12 Mile expansion.
 - Priority project and pain point for local traffic.
- Cost-benefit analysis on roundabouts during the design phase for 10 Mile Road projects (Taft Road and Wixom Road intersections).
- Continue partnerships with stakeholders and other entities to capitalize on high-value investments in the region.
- Consider the impact of COVID-19 on revenue and the future of commuting traffic in the region.

Design

There is no singular design prescription for road construction, and each project is unique in community context. Projects are prioritized in a consistently changing landscape of revenue/budget/funding sources, development, constructability, and are based on additional factors listed below:

- **Geotechnical surveys**
 - Soil borings and pavement cores to determine existing conditions.
- **Historical knowledge**
 - Past observations of the trend of pavement deterioration.
- **Cost of maintenance**
 - How much does the road cost us to maintain?
- **Economies of scale**
 - Combine large segments to save on mobilization costs and to get better unit prices for volume.
- **Traffic movement and interruptions**
 - How do we impact residents and commuter traffic flow and access?

- **Other capital improvement projects**

- Are there other capital improvements to align with road construction (drains, water/sewer, sidewalks/pathways, RCOC, MDOT, GLWA).

Working as a team made of transportation planners and engineers and consulting engineers, staff takes a holistic approach to design. Projects, when applicable, are designed to make the street network safer and more convenient for drivers, transit users, pedestrians, bicycles, and other non-motorized users - making the community a better place to live.

For example, connections identified in the Non-Motorized Master plan are considered when major road projects are executed. The planned 10 Mile Road enhancements (Haggerty to Meadowbrook) include the construction of a high priority pathway segment on the south side of 10 Mile. The same project will simultaneously replace aging water main infrastructure and two deteriorated culverts under 10 Mile Rd (crossings). ~~during the road construction.~~ This project demonstrates a practical use of the three factors above (historical knowledge, economies of scale, other capital projects).

When planning for road expansion projects, analyzing opportunities to enhance the driver experience and create aesthetic corridors are a priority. One way to achieve this is the implementation of boulevards, which are roads with a median splitting up the lanes of traffic. They are generally safer and more pleasing than a traditional 5 lane design and can usually be accomplished within the same footprint. The expansion projects considered for 12 Mile Road (Beck to Cabaret) and the Beck Road corridor are recommended as boulevard cross-sections, with support of the committee.

Driving in a roundabout is safer when compared to a traditional, signalized intersection. In a roundabout, the cars are traveling at a slower speed, with fewer conflict points, and the accidents, which do occur, are much less severe, typically resulting only in property damage rather than personal injury. Not only are roundabouts safer, but they allow for more traffic to move through an intersection than signalized intersections. Studies have indicated that replacing traffic signals with roundabouts can increase the capacity of a road by 30 to 50 percent. The newer roundabouts in the city have proved successful (Napier and 10 Mile, Crescent NW Ring Road) and the Roads Committee recommends investigation and design for others if applicable.

The Roads Committee discussed several advances in pavement design considered for road projects. There are numerous products that can be added to a pavement cross-section to increase pavement strength and durability, resulting in a longer useful life and a reduced cost for maintenance. Geosynthetic pavement interlayers (Town Center, 11 Mile, Meadowbrook) are used to increase strength, resist crack propagation, and essentially waterproof the pavement. Pavement additives such as fibers and modified binders (used on Cabot/Lewis and Trans-X) can be added to extend the life of pavements. Geosynthetic grids are now used in the NRP to mitigate poor soil conditions and reduce the cost of expensive excavation and/or additional stone base.

Finally, the committee recognizes rapid advancement in driver-less vehicles and electric (EV) or alternate fueled cars, and therefore recommends evaluating future design and infrastructure needs created by these emerging technologies.

Long-Term Planning

Overall, the road network has seen marked improvements in the last decade, with investment made to both improve and add to the infrastructure. While progress has been made, long-term planning is essential as the city continues to develop. Adding more local roads and addressing current and future capacity needs will be challenging. The goals outlined in the Road Report are for programs with the right mix of fixes, driven by maintenance not reconstruction. How do we plan for this **“maintenance vs. repair”** ideal? The committee recommends the following:

Benchmarking

The Road Report creates a baseline for staff and City Council to evaluate status and need of all road and related projects. The committee recommends a biannual refresh of the report to coincide with the PASER rating evaluations, and a renew 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.

Road Report Schedule

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

Partnerships

Fostering relationships and collaborative efforts with other units will be key to future success for the city and the region. Working with MDOT, RCOC and surrounding communities to identify opportunities and execute projects by combining funding strategies should be a priority.

Recent success in obtaining funds from the Federal Aid Commission (FAC), Highway Safety Improvement Program (HSIP) and Local Road Improvement Program (LRIP) have been beneficial. Therefore, continue the practice of securing available funding resources from local, state and federal programs to supplement city investment on roads.

Evaluate City Road Funding

The aforementioned mega-projects will undoubtedly require some source of additional funding and the \$1.5-\$2M gap in recommended funding for local roads (NRP) warrants deliberation.

Options for the NRP could include a low interest bonds of \$10M over the next five years (\$2M/year) in order to accelerate the overall network integrity. The City could pledge a portion of the annual ACT 51 revenue towards the annual debt service and issue road bonds. Act 51 road bonds are limited to 10 years.

However, the City could choose the bond levy process to address the more costly mega-projects. For example, \$100 million borrowing for 30 years with an estimated interest rate of 3% has an estimated annual debt service payment (principal and interest) \$5,102,000 and an estimated annual levy 1.33 (mills) with estimated residential increases below:

Taxable Value of Home	Tax Owed
\$75,000	\$100
\$150,000	\$200
\$250,000	\$330
\$350,000	\$465
\$450,000	\$600

Voter approval is necessary to authorize the City to levy a tax to pay the principal and interest on the bond but not required if the City were to use ACT 51 or other funds to repay the debt.

Finally, the Municipal Road voted tax levy (1.4484 mills) could be increased with a ballot on a future election. Overall millage rate for City is 10.5376, and currently one of the lowest tax rates in the entire State.

Summarization of Findings to Council

The findings provided in this report focus on, but are not limited to, the time period from 2012 to present day and include projections out through 2026.

\$7-9M/year is targeted for capital expenditures for road improvements and non-motorized projects.

The discoveries encompass the City road network that is 187 centerline miles of local and major roads. The entirety of the network totals 391 lane miles, which is centerline miles multiplied by number of lanes per segment.

A Transportation Asset Management Plan (TAMP) is required for every local agency with 100 or more miles of roadway under their jurisdiction.

The committee was tasked with the review and endorsement of the **Road Report**.

Accidents are down 35.2% from the three years prior to 2018. Rear-end crashes are the most common occurrence (40% of all crashes). Weather related accounted for 8% of the total crashes reported. Conclusion, distracted driving is four times more likely to be the cause of a crash versus poor road conditions.

Local roads, also referred to as neighborhood roads, is comprised of ~155 centerline miles and makes up around 80% of the total network.

Novi has made significant investment in local roads from 2014-2020 (~\$25M).

It is estimated an additional \$1.5M - \$2M/year of road funding is required to continue an upward trend in PASER condition.

Current asset management plan is performing adequately. However, 50% of the City's road network is in the "fair" range.

Major Roads account for 20% of the system and are critical for traffic movement into and out of the city.

Traffic congestion and capacity issues ~~are~~ primarily during peak times (rush hour), both en impacts and are impacted by residents ~~are impacted by residents~~, local businesses ~~employees~~ and traffic in the surrounding communities.

The MDOT flex route project scheduled to begin in 2021 will have the most regional impact on capacity.

There is no singular design prescription for road construction, and each project is unique in community context.

Boulevards enhance the driver experience and create aesthetic corridors.

Driving in a roundabout is safer when compared to a traditional, signalized intersection.

Technological advances in pavement design should be/are considered for road projects.

The Roads Committee endorses the Road Report and recommends the following:

- Utilize Road Report as road program benchmarking document.
- Verify the impact of the Flex Route before committing to other projects.
- Continue to pursue [funding](#) for mega-projects (Beck Road, 12 Mile).
- Continue to foster partnerships with other [units/entities](#).
- Evaluate City road funding.
- Consider the impact of COVID-19 on revenue and the future of commuting traffic in the region.

DRAFT

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