# CITY COUNCIL AGENDA

CITY OF NOVI
Regular City Council Meeting
**April 08, 2024 | 7:00 PM**
Council Chambers | Novi Civic Center | 45175 Ten Mile Road
(248) 347-0460

**CALL TO ORDER**

**PLEDGE OF ALLEGIANCE**

**ROLL CALL** – Mayor Fischer, Mayor Pro Tem Casey, Council Members Gurumurthy, Heintz, Smith, Staudt, Thomas

**APPROVAL OF AGENDA**

**PUBLIC HEARINGS**

**PRESENTATIONS**

Novi Robotics Demonstration

**REPORTS**

1. Manager/Staff

2. Attorney

**AUDIENCE COMMENT** – In order to hear all citizen comments at a reasonable hour, the City Council requests that speakers respect the three-minute time limit. This is not a question-answer session. However, it is an opportunity to voice your thoughts with City Council. Speakers wishing to display visual materials through the City's audiovisual system must provide the materials to the City Clerk's Office no later than 12:00 P.M. the day of the meeting. The materials cannot be changed before the meeting.

**CONSENT AGENDA REMOVALS AND APPROVALS** – All items listed under Consent Agenda are considered routine by the City Council and will be enacted by one motion. There will be no separate discussion of these items unless a Council Member so requests, in which event the item will be removed from the Consent Agenda and considered at the end of the normal Agenda.

**MATTERS FOR COUNCIL ACTION**

1. Adoption of a resolution authorizing approval of a contract with the Michigan Department of Transportation to agree to the rights and obligations associated with the reconstruction of Fountain Walk Avenue between Novi Road and the westbound I-96 entrance ramp, with the City of Novi's estimated responsibility for construction in the amount of $348,000.

2. Approval to award a contract for annual audit services for a three-year term ending with the June 30, 2026 fiscal year with two one-year renewal options and adoption of associated fees effective April 8, 2024.

3. Consideration to refer the recommendation of the Public Safety Building Needs Committee that the City Council explore construction of a new Police Station and three new Fire Stations to the Consultant Review Committee to formulate a Request for Proposals to secure the services of a professional project management company to evaluate the viability of that recommendations and propose next steps for further City Council consideration.

4. Initial review of Planned Rezoning Overlay (PRO) eligibility of the request of Novi-Ten Associates, for JZ23-09 Novi Ten PRO for a Zoning Map Amendment from Light Industrial (I-1) and Office Service (OS-1) to Low Density Multiple Family (RM-1) and General Business (B-3) with a Planned Rezoning Overlay. The subject site is approximately 34-acres and is located east of Novi Road, south of Ten Mile Road (Section 26). The applicant is proposing to develop a 71-unit multiple-family townhome development on the RM-1 portion, and approximately 35,900 square feet of commercial space on the B-3 portion. Under the PRO Ordinance, this initial review by City Council is an opportunity to review and comment on the eligibility of the proposal and offer feedback.

**CONSENT AGENDA REMOVALS FOR COUNCIL ACTION** – Consent Agenda items which have been removed for discussion and/or action.

**AUDIENCE COMMENT** – In order to hear all citizen comments at a reasonable hour, the City Council requests that speakers respect the three-minute time limit. This is not a question-answer session. However, it is an opportunity to voice your thoughts with City Council. Speakers wishing to display visual materials through the City's audiovisual system must provide the materials to the City Clerk's Office no later than 12:00 P.M. the day of the meeting. The materials cannot be changed before the meeting.

**COMMITTEE REPORTS**

1. Older Adult Needs Committee

2. Public Safety Building Needs Committee

3. Rules Committee

**MAYOR AND COUNCIL ISSUES**

**COMMUNICATIONS**

**CONSENT AGENDA** – Background information for Consent Agenda items is available for review at the City Clerk's Office.

A. Approve Minutes of:
March 18, 2024 - Regular Meeting

B. Approval of employee contract between the City of Novi and Jan Ziozios as the City Assesor of the City of Novi, Michigan.

C. Approval of request for Pyrotechnics Display Permit by Brightmoor Christian Church to be operated by James Herr, on Thursday, April 18th and Friday, April 19th, 2024.

D. Approval of a Resolution to close Meadowbrook Road from 25075 Meadowbrook to Ten Mile and close 10 Mile Road from Meadowbrook to the Civic Center at 45175 Ten Mile Road for the 2024 Memorial Day Parade from 10:00 AM to 12:00 PM on Monday, May 27, 2024.

E. Approval of the adoption of a resolution designating the City of Novi as a Bee City USA affiliate and affirming commitments to conserve native pollinators.

F. Approval of the 2024 Summer Maintenance Agreement between the City of Novi and the Road Commission for Oakland County for street sweeping selected County Roads in Novi; and adoption of resolution authorizing Novi to provide summer maintenance on selected County roads.

G. Approval of the 2024 Suburban Mobility Authority for Regional Transportation (SMART) Municipal Credit Fund Contract and Resolution for the Older Adult Transportation Program in the amount of $62,149.

H. Consideration of approval to purchase and install sound dampening panels for the Lakeshore Park community building from Takeform, through the General Services Administration (GSA) cooperative purchasing contract, in the amount of $69,346.15.

I. Approval of a Storm Drainage Facility Maintenance Easement Agreement and acceptance of a Warranty Deed for additional right-of-way along Garfield Road as part of the Parc Vista Development located on the north side of Eight Mile Road and west of Garfield Road (parcel 50-22-31-402-045).

J. Enter Executive Session immediately following the regular meeting of April 8, 2024 in the Council Annex to discuss pending litigation (*Novi v Malles*, et al) and confidential written communication for legal counsel.

K. Approval of claims and warrants – Warrant 1153

**ADJOURNMENT**

**SCHEDULED MEETINGS** – All Regular Council meetings are held in the Council Chambers unless otherwise noted. For a complete listing of scheduled meetings, please visit the Event Calendar at cityofnovi.org.

***NOTICE: People with disabilities needing accommodations for effective participation in this meeting should contact the City Clerk (248) 347-0456 at least two working days in advance of the meeting. An attempt will be made to make reasonable accommodations.***

# CITY OF NOVI CITY COUNCIL
## APRIL 8, 2024

**SUBJECT:** Adoption of a resolution authorizing approval of a contract with the Michigan Department of Transportation to agree to the rights and obligations associated with the reconstruction of Fountain Walk Avenue between Novi Road and the westbound I-96 entrance ramp, with the City of Novi's estimated responsibility for construction in the amount of $348,000.

**SUBMITTING DEPARTMENT:** Department of Public Works, Engineering Division

| | |
|---|---|
| **EXPENDITURE REQUIRED** | **$ 348,000** |
| **AMOUNT BUDGETED** | **$ 348,000** |
| **APPROPRIATION REQUIRED** | **$ 0** |
| **LINE ITEM NUMBER** | **202-449.20-975.035** |

**BACKGROUND INFORMATION:**

The Michigan Department of Transportation's I-96 Flex Route project is entering its third and final year of construction on I-96 between Kent Lake Rd and I-275. The westbound I-96 pavement and ramps will be reconstructed this year, including the westbound I-96 entrance ramp from southbound Novi Road. The ramp splits off from Fountain Walk Avenue, which is owned and maintained by the City. The portion of Fountain Walk Avenue between Novi Road and the I-96 entrance ramp needs repair, but since it is a City-owned road, it was not included in the MDOT Flex Route construction plans. City staff requested that MDOT add the segment of Fountain Walk to its construction contract, since the entrance ramp will be closed for construction this year.

As outlined in the contract, the City will be responsible for 100% of the estimated construction cost, plus a preliminary engineering fee and an apportioned construction engineering fee, totaling $348,000. The City Attorney reviewed the contract and resolution favorably (Beth Saarela, April 1, 2024). The ramp will be closed for construction from mid-April to mid-September. Motorists will be directed to use West Oaks Dr to access Fountain Walk Ave.

**RECOMMENDED ACTION:** Adoption of a resolution authorizing approval of a contract with the Michigan Department of Transportation to agree to the rights and obligations associated with the reconstruction of Fountain Walk Avenue between Novi Road and the westbound I-96 entrance ramp, with the City of Novi's estimated responsibility for construction in the amount of $348,000.

**CITY OF NOVI**

**COUNTY OF OAKLAND, MICHIGAN**

**RESOLUTION**
**MDOT CONTRACT 24-5131**
**MDOT COST PARTICIPATION AGREEMENT**
**FOUNTAIN WALK AVENUE FROM SOUTHBOUND NOVI ROAD**
**AND WESTBOUND HIGHWAY I-96 ENTRANCE RAMP**

Minutes of a Meeting of the City Council of the City of Novi, County of Oakland, Michigan, held in the City Hall of said City on April 8, 2024, at 7 o'clock P.M. Prevailing Eastern Time.

PRESENT: Councilmembers_____

ABSENT: Councilmembers_____

The following preamble and Resolution were offered by Councilmember _____and supported by Councilmember _____.

**WHEREAS**, the City of Novi requested that the Michigan Department of Transportation (MDOT) include reconstruction of Fountain Walk Avenue between Novi Road and the westbound Highway I-96 entrance ramp in connection with the I-96 Flex Route construction; and

**WHEREAS**, MDOT estimates the requested additional work on Fountain Walk Avenue to be $348,000; and

**WHEREAS**, the additional work on Fountain Walk Avenue shall be charged to the City 100 percent and paid in the manner and at the times set forth in MDOT contract 24-5131; and

**WHEREAS,** MDOT will administer all phases of the additional work on Fountain Walk Avenue; and

**WHEREAS,** the Mayor and the City Clerk are authorized to execute the approved Cost Participation Contracts, on behalf of the City, as expressly authorized, directed, and instructed by the Council.

**NOW THEREFORE, IT IS THEREFORE RESOLVED** that the Mayor and Council of the City of Novi hereby support and authorize participation in MDOT Contract No. 24-5131, by and between the Michigan Department of Transportation and the City of Novi.

And approve MDOT Contract Number 24-5131.

**AYES:**

**NAYS:**

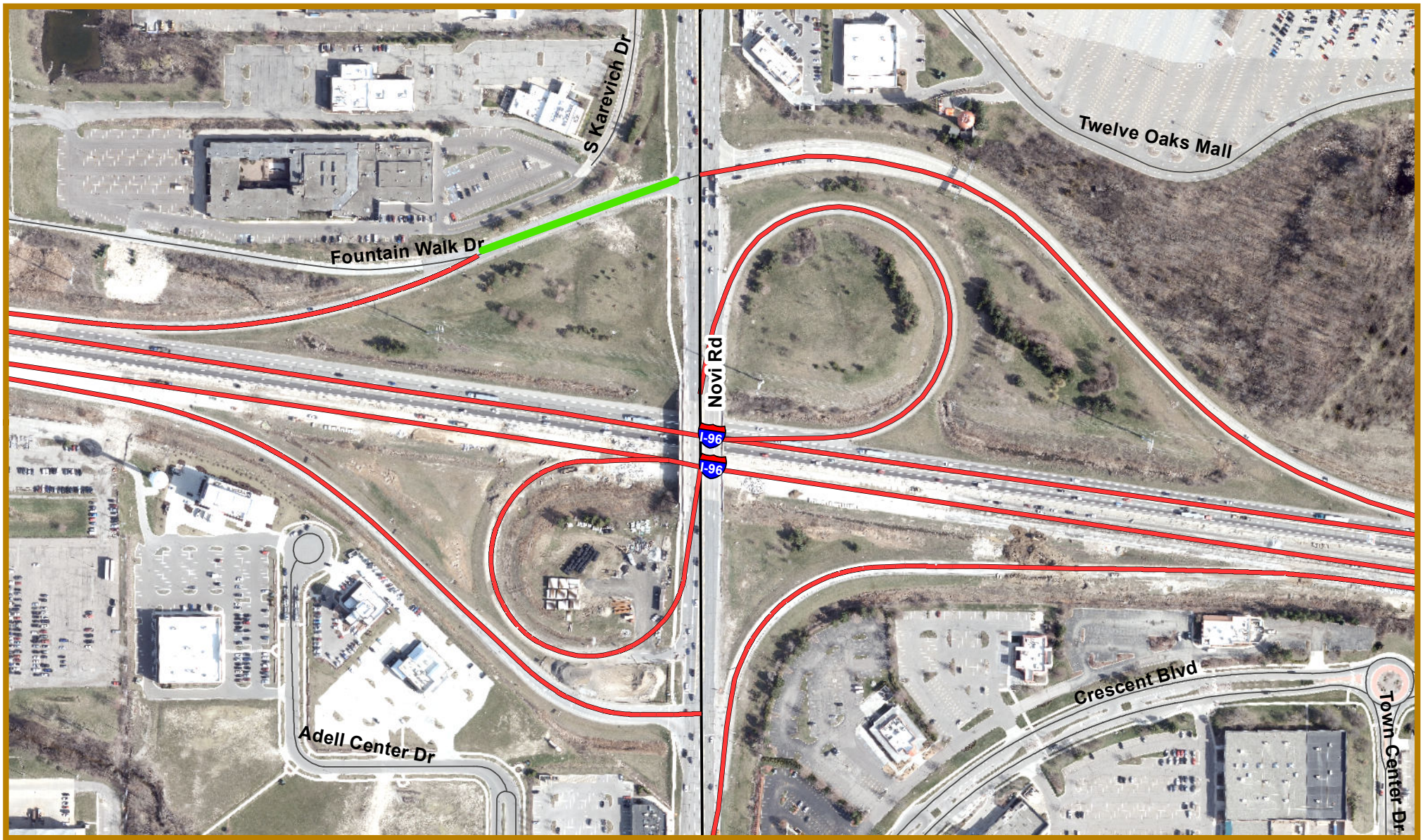
RESOLUTION DECLARED ADOPTED.

_____
Cortney Hanson, City Clerk

**CERTIFICATION**

I hereby certify that the foregoing is a true and complete copy of a resolution adopted by the City Council of the City of Novi, County of Oakland, and State of Michigan, at a regular meeting held this 8th day of April, 2024, and that public notice of said meeting was given pursuant to and in full compliance with Act No. 267, Public Acts of Michigan, 1976, and that the minutes of said meeting have been kept and made available to the public as required by said Act.

_____
Cortney Hanson, City Clerk
City of Novi




Map Author: Rebecca Runkel
Date:4/1/24
Project: Fountain Walk Ramp
Version #: 1.0

**MAP INTERPRETATION NOTICE**

Map information depicted is not intended to replace or substitute for any official or primary source. This map was intended to meet National Map Accuracy Standards and use the most recent, accurate sources available to the people of the City of Novi. Boundary measurements and area calculations are approximate and should not be construed as survey measurements performed by a licensed Michigan Surveyor as defined in Michigan Public Act 132 of 1970 as amended. Please contact the City GIS Manager to confirm source and accuracy information related to this map.

# Fountain Walk Ramp Reconstruction

## Location Map

Road Segment Added to MDOT's Flex Route Project

**City of Novi**
Engineering Division
Department of Public Works
26300 Lee BeGole Drive
Novi, MI 48375
cityofnovi.org

**ELIZABETH KUDLA SAARELA**
esaarela@rsjalaw.com

27555 Executive Drive, Suite 250
Farmington Hills, Michigan 48331
P 248.489.4100 | F 248.489.1726
rsjalaw.com

ROSATI | SCHULTZ
JOPPICH | AMTSBUECHLER

April 1, 2024

Rebecca Runkel, Project Engineer
City of Novi
Field Services Complex
26300 Lee BeGole Drive
Novi, MI 48375

**Re: MDOT Cost Participation Agreement and Resolution- Fountain Walk Avenue**
**Contract No. 24-5131**

Dear Ms. Runkel:

We have received and reviewed the Contract for Special Trunkline Non-Act-51 Added Work prepared by the Michigan Department of Transportation (MDOT) for has requested that the MDOT perform additional work on behalf of the City in connection with the Highway I-96 construction, which includes roadway reconstruction work along Fountain Walk Avenue from southbound Novi Road and westbound Highway I-96 entrance ramp; together with necessary related work, located within the corporate limits of the CITY; and. The total project cost for the added work is is $348,000, plus construction engineering in the amount of $14,000, which costs will be fully paid by the City.

The Agreement is provided for the limited purpose of setting forth how the project costs will be paid by the named parties. MDOT will bid and complete the project as part of its I-96 Project.

Subject to Engineering review and approval of the cost of the project, we see no legal impediment to entering into the Cost Sharing Agreement. It is MDOT standard Cost Participation Agreement and Resolution, and the parties each retain liability for their own actions.

The Resolution provided is for the purpose of City Council approving the Contract and authorizing City signatures.

Please feel free to contact me with any questions or concerns in regard to this matter.

Very truly yours,

ROSATI SCHULTZ JOPPICH
& AMTSBUECHLER PC

Elizabeth Kudla Saarela

EKS
Enclosure
C: Cortney Hanson, Clerk (w/Enclosure)
Megan Mikus, Deputy DPW Director (w/Enclosure)
Ben Croy, City Engineer (w/Enclosure)
Thomas R. Schultz, Esquire (w/Enclosure)

SPECIAL TRUNKLINE
NON-ACT-51
ADDED WORK

DA

| | |
|---|---|
| Control Section | RMBP 63022: CM 63022 |
| Job Number | 124103CON; 124103PE |
| Fed Project # | 1763042 |
| Contract | 24-5131 |

THIS CONTRACT is made by and between the MICHIGAN DEPARTMENT OF TRANSPORTATION, hereinafter referred to as the "DEPARTMENT"; and the CITY OF NOVI, a Michigan municipal corporation, hereinafter referred to as the "CITY"; for the purpose of fixing the rights and obligations of the parties in agreeing to construction improvements in conjunction with the DEPARTMENT'S construction on Highway I-96, within the corporate limits of the CITY.

WITNESSETH:

WHEREAS, the DEPARTMENT is planning highway reconstruction work along Highway I-96 from Highway I-275 to Kent Lake Road; and

WHEREAS, the CITY has requested that the DEPARTMENT perform additional work for and on behalf of the CITY in connection with the Highway I-96 construction, which additional work is hereinafter referred to as the "PROJECT" and is located and described as follows:

Roadway reconstruction work along Fountain Walk Avenue from southbound Novi Road and westbound Highway I-96 entrance ramp; together with necessary related work, located within the corporate limits of the CITY; and

WHEREAS, the DEPARTMENT presently estimates the PROJECT COST as hereinafter defined in Section 1 to be: $348,000; and

WHEREAS, the parties hereto have reached an understanding with each other regarding the performance of the PROJECT work and desire to set forth this understanding in the form of a written Contract.

NOW, THEREFORE, in consideration of the premises and of the mutual undertakings of the parties and in conformity with applicable law, it is agreed:

1. The parties shall undertake and complete the construction of the PROJECT in accordance with this Contract. The term "PROJECT COST", as herein used, is hereby defined as the cost of the construction of the PROJECT including the costs of preliminary engineering (PE), plans and specifications, physical construction necessary for the completion of the

PROJECT as determined by the DEPARTMENT, construction engineering (CE), and any and all other expenses in connection with any of the above.

2. The cost of alteration, reconstruction and relocation, including plans thereof, of certain publicly owned facilities and utilities which may be required for the construction of the PROJECT, shall be included in the PROJECT COST; provided, however, that any part of such cost determined by the DEPARTMENT, prior to the commencement of the work, to constitute a betterment to such facility or utility, shall be borne wholly by the owner thereof.

3. The CITY will approve the design intent of the PROJECT and shall accept full responsibility for the constructed PROJECT functioning as a part of the CITY'S facilities. The CITY is solely responsible for any input which it provides as it relates to the design of the PROJECT functioning as part of the CITY'S facilities.

4. The DEPARTMENT will administer all phases of the PROJECT and will cause to be performed all the PROJECT work.

Any items of PROJECT COST incurred by the DEPARTMENT may be charged to the PROJECT.

5. The PROJECT COST shall be charged to the CITY 100 percent and paid in the manner and at the times hereinafter set forth. Such cost is estimated to be as follows:

PROJECT COST - $348,000

The PE costs will be a lumpsum amount of $14,500 and the CE costs will be apportioned in the same ratio as the actual direct construction costs.

6. The DEPARTMENT shall maintain and keep accurate records and accounts relative to the cost of the PROJECT. The DEPARTMENT may submit progress billings to the CITY on a monthly basis for the CITY'S share of the cost of work performed to date, less all payments previously made by the CITY not including payments made for a working capital deposit. No monthly billings of a lesser amount than $1,000 shall be made unless it is a final or end of fiscal year billing. All billings will be labeled either "Progress Bill Number _____", or "Final Billing". Payment is due within 30 days of receipt of invoice. Upon completion of the PROJECT, payment of all items of PROJECT COST and receipt of all Federal Aid, the DEPARTMENT shall make a final billing and accounting to the CITY.

The CITY will deposit with the DEPARTMENT the following amount which will be used by the DEPARTMENT as working capital and applied toward the end of the project for the contracted work and cost incurred by the DEPARTMENT in connection with the PROJECT:

DEPOSIT - $69,600

The total deposit will be billed to the CITY by the DEPARTMENT and shall be paid by the CITY within 30 days after receipt of invoice.

7. Pursuant to the authority granted by law, the CITY hereby irrevocably pledges a sufficient amount of funds received by it from the Michigan Transportation Fund to meet its obligations as specified herein. If the CITY shall fail to make any of its required payments when due, as specified herein, the DEPARTMENT shall immediately notify the CITY of the fact of such default and the amount thereof, and, if such default is not cured by payment within ten (10) days, the DEPARTMENT is then authorized and directed to withhold from the first of such monies thereafter allocated by law to the CITY from the Michigan Transportation Fund sufficient monies to remove the default, and to credit the CITY with payment thereof, and to notify the CITY in writing of such fact.

8. Upon completion of the PROJECT, the CITY shall accept the facilities constructed as built to specifications within the construction contract documents. It is understood that the CITY shall own the facilities and shall operate and maintain the facilities in accordance with all applicable Federal and State laws and regulations, including, but not limited to, Title II of the Americans with Disabilities Act (ADA), 42 USC 12131 et seq., and its associated regulations and standards, and DEPARTMENT Road and Bridge Standard Plans and the Standard Specifications for Construction at no cost to the DEPARTMENT.

9. Any and all approvals of, reviews of, and recommendations regarding contracts, agreements, permits, plans, specifications, or documents, of any nature, or any inspections of work by the DEPARTMENT pursuant to the terms of this Contract are done to assist the CITY. Such approvals, reviews, inspections and recommendations by the DEPARTMENT shall not relieve the CITY of its ultimate control and shall not be construed as a warranty of their propriety or that the DEPARTMENT is assuming any liability, control or jurisdiction.

The providing of recommendations or advice by the DEPARTMENT does not relieve the CITY of its exclusive jurisdiction of the highway and responsibility under MCL 691.1402 et seq., as amended.

When providing approvals, reviews and recommendations under this Contract, the DEPARTMENT is performing a governmental function, as that term is defined in MCL 691.1401 et seq., as amended, which is incidental to the completion of the PROJECT.

The DEPARTMENT, by executing this Contract, and rendering services pursuant to this Contract, has not and does not assume jurisdiction of the highway, described as the PROJECT for purposes of MCL 691.1402 et seq., as amended. Exclusive jurisdiction of such highway for the purposes of MCL 691.1402 et seq., as amended rests with the CITY.

10. In connection with the performance of PROJECT work under this Contract the parties hereto (hereinafter in Appendix "A" referred to as the "contractor") agree to comply with the State of Michigan provisions for "Prohibition of Discrimination in State Contracts", as set

forth in Appendix A, attached hereto and made a part hereof. The parties further covenant that they will comply with the Civil Rights Acts of 1964, being P.L. 88-352, 78 Stat. 241, as amended, being Title 42 U.S.C. Sections 1971, 1975a-1975d, and 2000a-2000h-6 and the Regulations of the United States Department of Transportation (49 C.F.R. Part 21) issued pursuant to said Act, including Appendix "B", attached hereto and made a part hereof, and will require similar covenants on the part of any contractor or subcontractor employed in the performance of this Contract. The parties will carry out the applicable requirements of the DEPARTMENT'S Disadvantaged Business Enterprise (DBE) program and 49 CFR, Part 26, including, but not limited to, those requirements set forth in Appendix C.

11. This Contract shall become binding on the parties hereto and of full force and effect upon the signing thereof by the duly authorized officials for the CITY and for the DEPARTMENT; upon the adoption of a resolution approving said Contract and authorizing the signatures thereto of the respective officials of the CITY, a certified copy of which resolution shall be attached to this Contract.

IN WITNESS WHEREOF, the parties hereto have caused this contract to be executed as written below.

CITY OF NOVI

By_____
Title:

By _____
Title:

MICHIGAN DEPARTMENT
OF TRANSPORTATION

By_____
*for* Department Director MDOT

**APPENDIX A**
**PROHIBITION OF DISCRIMINATION IN STATE CONTRACTS**

In connection with the performance of work under this contract; the contractor agrees as follows:

1. In accordance with Public Act 453 of 1976 (Elliott-Larsen Civil Rights Act), the contractor shall not discriminate against an employee or applicant for employment with respect to hire, tenure, treatment, terms, conditions, or privileges of employment or a matter directly or indirectly related to employment because of race, color, religion, national origin, age, sex, height, weight, or marital status. A breach of this covenant will be regarded as a material breach of this contract. Further, in accordance with Public Act 220 of 1976 (Persons with Disabilities Civil Rights Act), as amended by Public Act 478 of 1980, the contractor shall not discriminate against any employee or applicant for employment with respect to hire, tenure, terms, conditions, or privileges of employment or a matter directly or indirectly related to employment because of a disability that is unrelated to the individual's ability to perform the duties of a particular job or position. A breach of the above covenants will be regarded as a material breach of this contract.

2. The contractor hereby agrees that any and all subcontracts to this contract, whereby a portion of the work set forth in this contract is to be performed, shall contain a covenant the same as hereinabove set forth in Section 1 of this Appendix.

3. The contractor will take affirmative action to ensure that applicants for employment and employees are treated without regard to their race, color, religion, national origin, age, sex, height, weight, marital status, or any disability that is unrelated to the individual's ability to perform the duties of a particular job or position. Such action shall include, but not be limited to, the following: employment; treatment; upgrading; demotion or transfer; recruitment; advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship.

4. The contractor shall, in all solicitations or advertisements for employees placed by or on behalf of the contractor, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, national origin, age, sex, height, weight, marital status, or disability that is unrelated to the individual's ability to perform the duties of a particular job or position.

5. The contractor or its collective bargaining representative shall send to each labor union or representative of workers with which the contractor has a collective bargaining agreement or other contract or understanding a notice advising such labor union or workers' representative of the contractor's commitments under this Appendix.

6. The contractor shall comply with all relevant published rules, regulations, directives, and orders of the Michigan Civil Rights Commission that may be in effect prior to the taking of bids for any individual state project.

7. The contractor shall furnish and file compliance reports within such time and upon such forms as provided by the Michigan Civil Rights Commission; said forms may also elicit information as to the practices, policies, program, and employment statistics of each subcontractor, as well as the contractor itself, and said contractor shall permit access to the contractor's books, records, and accounts by the Michigan Civil Rights Commission and/or its agent for the purposes of investigation to ascertain compliance under this contract and relevant rules, regulations, and orders of the Michigan Civil Rights Commission.

8. In the event that the Michigan Civil Rights Commission finds, after a hearing held pursuant to its rules, that a contractor has not complied with the contractual obligations under this contract, the Michigan Civil Rights Commission may, as a part of its order based upon such findings, certify said findings to the State Administrative Board of the State of Michigan, which State Administrative Board may order the cancellation of the contract found to have been violated and/or declare the contractor ineligible for future contracts with the state and its political and civil subdivisions, departments, and officers, including the governing boards of institutions of higher education, until the contractor complies with said order of the Michigan Civil Rights Commission. Notice of said declaration of future ineligibility may be given to any or all of the persons with whom the contractor is declared ineligible to contract as a contracting party in future contracts. In any case before the Michigan Civil Rights Commission in which cancellation of an existing contract is a possibility, the contracting agency shall be notified of such possible remedy and shall be given the option by the Michigan Civil Rights Commission to participate in such proceedings.

9. The contractor shall include or incorporate by reference, the provisions of the foregoing paragraphs (1) through (8) in every subcontract or purchase order unless exempted by rules, regulations, or orders of the Michigan Civil Rights Commission; all subcontracts and purchase orders will also state that said provisions will be binding upon each subcontractor or supplier.

**APPENDIX B**
**TITLE VI ASSURANCE**

During the performance of this contract, the contractor, for itself, its assignees, and its successors in interest (hereinafter referred to as the "contractor"), agrees as follows:

1. **Compliance with Regulations**: For all federally assisted programs, the contractor shall comply with the nondiscrimination regulations set forth in 49 CFR Part 21, as may be amended from time to time (hereinafter referred to as the Regulations). Such Regulations are incorporated herein by reference and made a part of this contract.

2. **Nondiscrimination**: The contractor, with regard to the work performed under the contract, shall not discriminate on the grounds of race, color, sex, or national origin in the selection, retention, and treatment of subcontractors, including procurements of materials and leases of equipment. The contractor shall not participate either directly or indirectly in the discrimination prohibited by Section 21.5 of the Regulations, including employment practices, when the contractor covers a program set forth in Appendix B of the Regulations.

3. **Solicitation for Subcontracts, Including Procurements of Materials and Equipment**: All solicitations made by the contractor, either by competitive bidding or by negotiation for subcontract work, including procurement of materials or leases of equipment, must include a notification to each potential subcontractor or supplier of the contractor's obligations under the contract and the Regulations relative to nondiscrimination on the grounds of race, color, or national origin.

4. **Information and Reports**: The contractor shall provide all information and reports required by the Regulations or directives issued pursuant thereto and shall permit access to its books, records, accounts, other sources of information, and facilities as may be determined to be pertinent by the Department or the United States Department of Transportation (USDOT) in order to ascertain compliance with such Regulations or directives. If required information concerning the contractor is in the exclusive possession of another who fails or refuses to furnish the required information, the contractor shall certify to the Department or the USDOT, as appropriate, and shall set forth the efforts that it made to obtain the information.

5. **Sanctions for Noncompliance**: In the event of the contractor's noncompliance with the nondiscrimination provisions of this contract, the Department shall impose such contract sanctions as it or the USDOT may determine to be appropriate, including, but not limited to, the following:

    a. Withholding payments to the contractor until the contractor complies; and/or

    b. Canceling, terminating, or suspending the contract, in whole or in part.

6. **Incorporation of Provisions**: The contractor shall include the provisions of Sections (1) through (6) in every subcontract, including procurement of material and leases of equipment, unless exempt by the Regulations or directives issued pursuant thereto. The contractor shall take such action with respect to any subcontract or procurement as the Department or the USDOT may direct as a means of enforcing such provisions, including sanctions for non-compliance, provided, however, that in the event a contractor becomes involved in or is threatened with litigation from a subcontractor or supplier as a result of such direction, the contractor may request the Department to enter into such litigation to protect the interests of the state. In addition, the contractor may request the United States to enter into such litigation to protect the interests of the United States.

Revised June 2011

**APPENDIX C**

**TO BE INCLUDED IN ALL FINANCIAL ASSISTANCE AGREEMENTS WITH LOCAL AGENCIES**

**Assurance that Recipients and Contractors Must Make (Excerpts from US DOT Regulation 49 CFR 26.13)**

**A. Each financial assistance agreement signed with a DOT operating administration (or a primary recipient) must include the following assurance:**

> **The recipient shall not discriminate on the basis of race, color, national origin, or sex in the award and performance of any US DOT-assisted contract or in the administration of its DBE program or the requirements of 49 CFR Part 26. The recipient shall take all necessary and reasonable steps under 49 CFR Part 26 to ensure nondiscrimination in the award and administration of US DOT-assisted contracts. The recipient's DBE program, as required by 49 CFR Part 26 and as approved by US DOT, is incorporated by reference in this agreement. Implementation of this program is a legal obligation and failure to carry out its terms shall be treated as a violation of this agreement. Upon notification to the recipient of its failure to carry out its approved program, the department may impose sanctions as provided for under Part 26 and may, in appropriate cases, refer the matter for enforcement under 18 U.S.C. 1001 and/or the Program Fraud Civil Remedies Act of 1986 (31 U.S.C. 3801 et seq.).**

**B. Each contract MDOT signs with a contractor (and each subcontract the prime contractor signs with a subcontractor) must include the following assurance:**

> **The contractor, sub recipient or subcontractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The contractor shall carry out applicable requirements of 49 CFR Part 26 in the award and administration of US DOT-assisted contracts. Failure by the contractor to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy as the recipient deems appropriate.**

# CITY OF NOVI CITY COUNCIL
# APRIL 8, 2024

**SUBJECT:** Approval to award a contract for annual audit services for a three-year term ending with the June 30, 2026 fiscal year with two one-year renewal options and adoption of associated fees effective April 8, 2024.

**SUBMITTING DEPARTMENT:** Finance

**BACKGROUND INFORMATION:**

The City of Novi recently issued a request for proposal (RFP) to secure the services of an independent auditing firm to provide professional auditing services in accordance with generally accepted auditing standards. The State of Michigan Uniform Budgeting and Accounting Act, PA 2 of 1968 requires a local unit of government with a population of 4,000 or more to obtain an audit of its financial records, accounts, and procedures on an annual basis.

Six firms submitted proposals and were evaluated by finance staff based on their level of expertise and experience within the municipal sector, as well as their response to the mandatory elements included within the RFP. Based on the evaluations, two firms stood out above all others that submitted bids. The top two firms are well known for being some of the top-rated accounting firms in the state and ones that could provide outstanding service to the City. The two firms being recommended to the Mayor and City Council for consideration are Yeo & Yeo, PC, and our current auditors, Rehmann Robson (both were finalists five years ago when the last RFP was issued for audit services). The fees proposed over the five years requested in the RFP are listed below (the audit fee for the year ended June 30, 2023, was $59,900):

| | 6/30/2024 | 6/30/2025 | 6/30/2026 | 6/30/2027 | 6/30/2028 | Total |
|---|---|---|---|---|---|---|
| **Yeo & Yeo, PC** | $60,000 | $62,500 | $65,000 | $67,500 | $70,000 | **$325,000** |
| **Rehmann Robson** (current auditor) | $65,900 | $69,200 | $72,700 | $76,300 | $80,100 | **$364,200** |

The finance team has favorable experience working with both firms and feels either firm would provide outstanding service to the City.

**RECOMMENDED ACTION**: Approval to award a contract for annual audit services to _____ for a three-year term ending with the June 30, 2026 fiscal year with two one-year renewal options and adoption of associated fees effective April 8, 2024.

Original

PROPOSAL FOR

# City of Novi

Submitted by:
**Nathan C. Baldermann, CPA, CGFM, Principal**
nathan.baldermann@rehmann.com

Statement of Confidentiality The information in this proposal is confidential and proprietary. It has been made available to the above stated company/person solely for their consideration in evaluation of this proposal. In no event shall all or any portion of this proposal be disclosed or disseminated by the above stated company/person without the express written permission of Rehmann. © 2024 Rehmann All Rights Reserved.

Rehmann
EMPOWER YOUR PURPOSE®

March 1, 2024

Finance Department
City of Novi
45175 Ten Mile Rd
Novi, MI 48375

Rehmann Robson LLC ("Rehmann") greatly appreciates the opportunity to submit our proposal to audit the financial statements of City of Novi ("the City") for the years ending June 30, 2024-2028. As a leading professional services firm serving the governmental industry, you can be confident that we are well positioned to serve the City. Our team will leverage industry experience, skills and knowledge of issues impacting the City to provide high-quality services in a timely, efficient manner.

Our mission is to bring energy, focus and integrity to every interaction — relentlessly pursuing expertise to accelerate your goals. This means that you will:

- Have your audits managed and performed by full-time governmental professionals
- Work with a team known for excellence and efficiency in government financial reporting
- Have access to customized training and value-added services
- Benefit from our extensive and unique use of technology
- Understand and appreciate our approach of budgeting *better hours* rather than *more hours*

As a result of the large volume of governmental audits our team performs, we are intimately familiar with your industry – Rehmann understands your unique challenges, we know what to expect and we will share best practices. This depth will allow us to serve you from the very beginning with minimal disruption while maintaining a high level of engagement effectiveness and efficiency.

We look forward to hearing from you regarding your decision. In the meantime, please contact us with any questions you may have. This proposal is a firm, irrevocable offer for 90 days to provide independent auditing services at the prices quoted herein. We acknowledge receipt of Addendum #1.

Thank you for considering Rehmann.

Sincerely,

**Rehmann Robson LLC**

Nathan C. Baldermann

Nathan C. Baldermann, CPA, CGFM
Principal

HLB WE ARE AN INDEPENDENT MEMBER OF THE GLOBAL ADVISORY AND ACCOUNTING NETWORK

# WHAT YOU'LL FIND INSIDE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# GENERAL REQUIREMENTS

Rehmann's role as the City's independent external auditor is to deliver assurance services in an efficient manner, without disruption to your staff, while maintaining a high level of quality.

## INDEPENDENCE

Rehmann is independent (as defined under the independence standards in auditing standards generally accepted in the United States of America and the U.S. General Accounting Office's *Government Auditing Standards*) of City of Novi and all of its component units. We are aware of no professional relationships involving the City or any of its agencies or component units within the last five years which would represent potential conflicts of interest; however, we will provide the City with written notice of any pertinent professional relationships entered into during the term of our contract.

## LICENSE TO PRACTICE

Rehmann and each certified public accountant to be assigned to the engagement are properly licensed to practice public accounting in the State of Michigan.

## DEBARMENT, SUSPENSION, INELIGIBILITY AND VOLUNTARY EXCLUSION

Rehmann shall comply with the provisions of 24 CFR Part 24 that neither it nor its principals is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in this contract. Additionally, Rehmann shall not use, directly or indirectly, any of the funds provided by this contract to employ, award contracts to, or otherwise engage the services of, or fund any contractor / subcontractor during any period that the contractor / subcontractor is debarred, suspended or ineligible under the provisions of 24 CFR Part 24.

# FIRM QUALIFICATIONS & EXPERIENCE

Founded in 1941 as a single accounting firm, Rehmann has evolved into a fully integrated financial services and advisory firm that provides accounting and assurance, comprehensive technology, accounting and human resource solutions, specialized consulting and wealth management services. Our goal is to meet the demands of today's governments by offering a greater scope of resources and experience, all while employing a forward-thinking service model that guarantees complete client satisfaction and confidence.

**182.7 MILLION**
Total revenue in 2022

**950+**
Number of associates

**OFFICES**
Located throughout Michigan, Ohio and Florida

## YOUR REHMANN OFFICE

Rehmann is committed to serving the City. Accordingly, your audits will be managed and performed by governmental audit and financial reporting professionals from our Jackson office with technical standards support from Grand Rapids office executives. One principal, one senior manager, one senior and three staff auditors will be assigned to the City's audit. All individuals assigned to your audits will be full-time employees of Rehmann, assuring that you receive the local, personalized service you deserve.

## EXPERIENCE AUDITING FEDERAL AWARDS

The professionals of Rehmann's public sector group are primarily focused on governmental accounting, auditing and consulting, so all members of the City's engagement team will have extensive experience in auditing federal programs. Each year, Rehmann audits organizations administering hundreds of millions of dollars in federal awards; that means the City will consistently receive meaningful comments and advice on

how to enhance your financial management of those programs. Below are single audits performed by Rehmann for the most recent fiscal year:

| TYPE OF ENTITY | NUMBER OF CLIENTS AUDITED | TOTAL FEDERAL EXPENDITURES |
|---|---|---|
| City | 13 | $ 91,489,635 |
| County | 20 | 322,388,679 |
| School | 48 | 211,465,119 |
| Other government | 13 | 53,538,271 |
| Not-for-profit | 22 | 168,372,111 |
| Higher education | 18 | 382,718,652 |
| Tribal government | 2 | 60,137,161 |
| **Grand total** | **136** | **$ 1,290,109,628** |

## EXCELLENCE IN GOVERNMENTAL FINANCIAL REPORTING

Rehmann's experience in assisting clients to receive (and keep receiving) the GFOA Certificate of Achievement for Excellence in Financial Reporting is extensive. Many of our executives volunteer their time as GFOA reviewers. On average, we assist **30 clients annually** in receiving the GFOA Certificate, including cities, counties, school districts and other entities.

For first time submitters, we provide sample financial reports, the checklist used by the GFOA reviewers and spreadsheets for the statistical section. More importantly, we explain the process and identify the additional information that needs to be gathered, where it can be found and what the City will need to prepare. Whether a first-time submitter or long-time certificate recipient, Rehmann will provide a range of assistance with the statistical section, MD&A tables and transmittal letter narratives. We are also available to assist in addressing the prior year GFOA review comments.

## JOINT VENTURE OR CONSORTIUM

We are not proposing as a joint venture or consortium, nor will any portion of the proposed audits be subcontracted to another firm. Thus, Rehmann is both the principal and only auditor.

## PEER REVIEW

The AICPA's peer review program requires that a CPA firm have an independent audit of its quality control documents, systems and procedures every three years. A copy of our most recent peer review report, which included a review of specific government engagements and for which Rehmann received a rating of *pass*, can be found in the Appendix.

## AGENCY / DESK REVIEWS

The firm has no record of substandard work. Rehmann has received no negative comments from the numerous routine field and desk reviews which have taken place on the audits submitted to the various state departments and single audit clearing house over the last several years.

# STAFF QUALIFICATIONS & EXPERIENCE

**One Team. One Focus. Your Success** – Your engagement will be managed by full-time governmental auditors, and your Rehmann team will have the optimal combination of skills and experience to support your success. As a result, these professionals will be able to work with you as peers, sharing knowledge and best practices, and meeting your completion deadline. Another continuing benefit will be ready access to these professionals to answer questions, discuss options and receive timely technical assistance. The Rehmann client service delivery model ensures you will have *direct access* to all members of your Rehmann team.

### Engagement Principal | Nathan Baldermann, CPA, CGFM

Nathan will be integrally involved in planning and overseeing your audits, ensuring we are meeting and exceeding your needs. He will provide access to additional resources available within the firm and through our industry networks.

### Secondary Principal | Daniel Clark, CPA

Daniel will be available as a backup for Nathan or for partner rotation in future periods, if desired.

### Senior Manager | Amanda Wedgwood, CPA

Amanda has significant experience serving governmental entities and will be responsible for overseeing the engagement, completing audit procedures and supervising staff. She will maintain active communication with the City throughout the year.

### Senior auditor

We will assign one of our experienced senior auditors (in-charge) to conduct and supervise the audit procedures. The specific individual assigned will be determined once the exact timing of the engagement is finalized. Whoever is assigned will be involved on a full-time basis for the duration of the audit for each annual audit and we will seek to assign the same in-charge for the entire audit contract term.

### Staff auditors

Our staff accountants have one to five years of experience and will perform many of the audit procedures, as directed by the engagement executives. The final decision of which individual staff we will assign to your audits will be made when we prepare our schedule.

### Client ambassador | William Burke

Throughout the year, you can expect an objective Rehmann advisor to serve as the City's client ambassador. Your client ambassador will ask for feedback on the quality of our service and about your experience as a Rehmann client to ensure we are doing all that we can to exceed your expectations.

Biographical resumes of these executives are included later in this section.

### CERTIFIED GOVERNMENT FINANCIAL MANAGERS

The Certified Government Financial Manager (CGFM) designation is a mark of excellence in government financial management, which signifies the highest level of education, experience and ethical standards in the government environment. Rehmann has 10 professionals with the designation.

## CONTINUING PROFESSIONAL EDUCATION

To maintain our competitive edge and to stay ahead of the curve on technical quality, we place significant emphasis on continuing professional education with appropriate focus on industry specialization and relative responsibility levels. **All professionals designated as CPAs meet or exceed the State and GAO's CPE hour requirements through a variety of external and internal programs.**

For each industry association listed in this proposal, Rehmann professionals attend the majority of the training opportunities they offer, frequently as presenters. Internally each year, Rehmann sponsors multiple in-person and virtual training opportunities, governmental technical updates and updates on auditing standards with an emphasis on engagement planning, risk assessment, and analytical review techniques. Rehmann logs each CPE course that associates attend through our centralized CPE tracking software. Detailed CPE reports are readily available for specific individuals upon request.

## INDUSTRY ASSOCIATIONS

Rehmann is actively involved in industry associations that provide access to professionals with governmental and not-for-profit experience across the country.

More importantly, Rehmann professionals are involved in leading these organizations in the following ways:

- **MSBO**: Member, and regularly provides speakers for training
- **CMHA**: Affiliate member, and regularly provides speakers for training
- **AICPA**: Member of the Government Audit Quality Center (GAQC)
- **MICPA**: Member/past chair of the governmental taskforce, and regularly provide speakers to train other CPAs across the state
- **GFOA**: Multiple special review committee members, and an advisor to the CAAFR Committee
- **MGFOA**: Multiple former board members and current member of the Standards Committee
- **AGA**: Multiple current and former AGA board members

## CONSISTENT STAFFING

It is our policy to assign the same staff to continuing engagements each year, whenever possible. Promotions, new responsibilities and circumstances beyond our control may necessitate the substitution of certain staff accountants with associates of comparable experience over the course of a contract. However, we will not change our engagement executives without prior approval from the City.

# NATHAN C. BALDERMANN, CPA, CGFM

PRINCIPAL | PUBLIC SECTOR
Assurance and Financial Reporting

517.841.4235

nathan.baldermann@rehmann.com

**Ferris State University**
BS, accounting

My career has focused solely on the public sector, and our clients benefit from that by experiencing a streamlined process resulting in a wealth of knowledge and best practices applicable to their entity.

## CURRENT ROLE

Nate is the primary business advisor for a multitude of public sector clients, leading financial statement audit, single audit and consulting engagements. With a concentration on governmental and related not-for-profit entities, one of Nate's strengths is sharing best practices for efficient operations.

Nate serves on Rehmann's government audit quality control subcommittee, ensuring compliance with technical standards and Firm-wide consistency.

## SERVICE AREAS

- Public sector auditing and consulting
- Federal award compliance auditing
- Community mental health compliance, auditing and consulting
- GASB standards implementation

## EXPERIENCE

Nate has worked exclusively in the public sector since he began his career with Rehmann in 1994 as an intern. With deep knowledge in the industry, Nate has assisted governments in various stages and is able to draw upon that experience to provide fresh ideas to his clients.

Nate has worked with counties, cities, local and intermediate school districts, public school academies, community mental health agencies and various other governmental and not-for-profit organizations.

## A CLOSER LOOK

- Highly regarded in the governmental industry, Nate served on the Michigan GFOA's accounting standards committee and previously served on the board of directors.
- Having served on the Special Review Committee for the GFOA's ACFR Program, Nate is well-versed in annual comprehensive financial reports and has assisted numerous clients in receiving the certificate.
- As a thought leader in the industry, Nate has presented on new and changing standards for organizations including the Michigan GFOA, the MICPA and the AGA.

## DANIEL B. CLARK, CPA

PRINCIPAL | PUBLIC SECTOR
Assurance and Financial Reporting

313.202.7384

daniel.clark@rehmann.com

**Bob Jones University**
BS, accounting

At Rehmann, we interact with our clients throughout the entire year to ensure their questions are thoroughly answered, and they are ahead of changing industry standards.

### CURRENT ROLE

Daniel leads annual audit and single audit engagements for a multitude of public sector clients throughout Michigan and Ohio. With a concentration on serving the public sector, Daniel spends a significant amount of time onsite at clients' locations, developing an understanding of their operations.

He serves on Rehmann's government audit quality control subcommittee, ensuring compliance with technical standards and firm-wide consistency.

### SERVICE AREAS

- Public sector auditing and consulting
- Federal award compliance auditing
- GASB standards implementation
- School district auditing and consulting

### EXPERIENCE

Daniel began his career with Rehmann in 2018 after being with another regional accounting firm since 2006. Throughout his career, Daniel has worked exclusively in the public sector. He is licensed as a CPA in both Michigan and Ohio.

Daniel's client base is comprised of counties, cities, townships, local and intermediate school districts, and various other public sector organizations.

### A CLOSER LOOK

- A thought leader in the industry, Daniel is a frequent speaker addressing topics such as upcoming accounting pronouncements, cybersecurity, and fraud.
- Daniel is a member of the AICPA, GFOA, MICPA, OSCPA (scholarship selection committee member, past co-chair of the young CPA northwest Ohio region, political endorsement committee member), and the Institute of Management Accountants.
- Significantly involved in the community, Daniel is active with Toledo Day Nursery (vice president, executive committee board member), Bedford Community Foundation (grants committee co-chair, treasurer, board member), Ann Arbor Symphony Orchestra (treasurer, executive committee, board member), and Wyldewood Baptist Church (treasurer, trustee).

# AMANDA WEDGWOOD, CPA

SENIOR MANAGER | PUBLIC SECTOR
Assurance and Financial Reporting

517.841.4270

amanda.wedgwood@rehmann.com

**Spring Arbor University**
BA, Accounting

With our team's extensive knowledge of the industry and related standards, we are committed to serving the unique needs of each of our clients in a professional and timely manner – creating an experience that is positive and as stress-free as possible.

## CURRENT ROLE

Amanda is responsible for managing day to day fieldwork, assigning tasks and providing training. She communicates with clients throughout the engagement, with a focus on answering their questions in a timely manner and providing a fresh perspective on their operations and procedures. Amanda works primarily with public sector organizations.

## SERVICE AREAS

- Public sector auditing and consulting
- Federal award compliance auditing
- GASB standards implementation
- School district compliance, auditing and consulting

## EXPERIENCE

Amanda has worked with clients in the public sector industry since her career began in 2013, when she joined Rehmann after graduating from college. She has significant experience auditing counties, cities, school districts, authorities and related not-for-profit organizations.

## A CLOSER LOOK

- Keeping up-to-date on the latest industry standards, Amanda is a member of the MSBO, AICPA and MICPA.
- Valuing the relationships that are built with each client, Amanda communicates with them throughout the year to help their audit engagement run as smoothly as possible.
- With continuously evolving GASB pronouncements, Amanda stays ahead of the latest technical standards through training and research and helps clients understand and apply the newest pronouncements.

# WILLIAM BURKE

DIRECTOR OF CLIENT SERVICES AND BUSINESS DEVELOPMENT

517.316.2464

bill.burke@rehmann.com

**Michigan State University**
BA, business administration

I strive to build collaborative partnerships by listening to client and prospect concerns then introducing them to Rehmann client service executives who can provide customized, financially rewarding business solutions and peace of mind.

## CURRENT ROLE

Bill leads Rehmann's client service, practice growth and new business development efforts in its Lansing/Jackson region. In addition to identifying opportunities to provide comprehensive accounting and consulting services to companies, organizations and individuals, Bill initiates meaningful dialogue with clients and advises on courses of action to help them achieve their goals.

In his role as a client ambassador, Bill delivers The Rehmann Experience as an objective liaison between Rehmann and client executives. He conducts client satisfaction assessments, participates in brainstorming sessions for client service improvements and helps develop strategic plans that meet client-defined expectations for performance and service.

## THE REHMANN EXPERIENCE

For more than 80 years, Rehmann has provided forward-thinking solutions to our clients. We are obsessed with client success, making it our duty to anticipate our clients' daily and future needs, while providing them with proactive solutions to meet their goals. Our trustworthy advice, answers and guidance take the stress out of every challenge and change. We're there when you need us. That's The Rehmann Experience.

## SERVICE AREAS

- Business development
- Practice growth
- Product and service development
- Client ambassador
- Entrepreneurship
- Networking

# SIMILAR ENGAGEMENTS

**25+** Counties

**60+** School Districts

**20+** Colleges & Universities

**50+** Cities, Villages & Townships

**275+** Not for Profit

**110+** Other Governmental Entities

Rehmann serves a variety of other public sector entities including libraries, tribal governments, road commissions, transit authorities, public authorities, community mental health and affiliated providers, housing projects, medical care facilities and others.

## CLIENT REFERENCES

We invite you to contact our clients directly and ask about our people, capabilities and service. Below are several engagements that are similar to the City's engagement.

### City of Battle Creek

Financial audit and single audit led by Nathan Baldermann
Total staff hours: 780
Annual federal award expenditures: $ 13.1 million
Date gained: June 1999
Contact: Aaron B. Kuhn, Revenue Services Director | 269.966.3336 | abkuhn@battlecreekmi.gov

### City of Jackson

Financial audit and single audit led by Nathan Baldermann
Total staff hours: 570
Annual federal award expenditures: $ 9.9 million
Date gained: January 1973
Contact: Heather Ehnis, Finance Director | 517.768.6384 | hehnis@cityofjackson.org

### City of Ann Arbor

Financial audit and single audit led by Daniel Clark
Total staff hours: 540
Annual federal award expenditures: $ 9.6 million
Date gained: May 2022
Contact: Tami Cook, Accounting Services Manager | 734.794.6500 | tcook@a2gov.org

### City of Royal Oak

Financial audit and single audit led by Nathan Baldermann
Total staff hours: 440
Annual federal award expenditures: $ 18.2 million
Date gained: May 1998
Contact: Tony DeCamp, Assistant Finance Director / Controller | 248.246.3033 | TonyD@romi.gov

### City of Oak Park

Financial audit and ACEE led by Daniel Clark
Total staff hours: 370
Annual federal award expenditures: $ 1.6 million
Date gained: November 1998
Contact: Erik Tungate, City Manager | 248.691.7410 | etungate@ci.oak-park.mi.us

**A complete list of governmental audit clients is included in the Appendix.**

# SPECIFIC AUDIT APPROACH

Rehmann is committed to delivering high-quality assurance services in a timely, efficient manner.

## DELIVERABLES

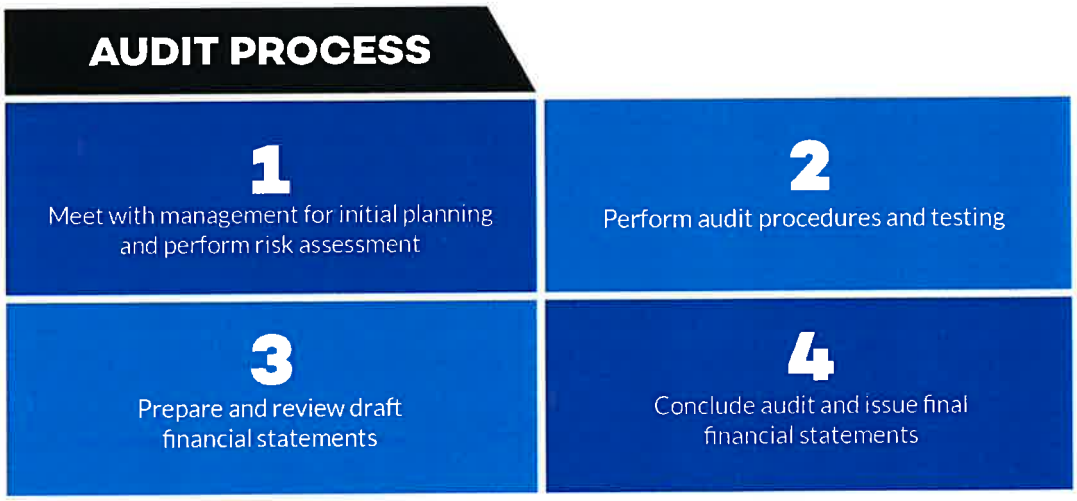
- Financial audit and single audit, if required, for the years ending June 30, 2024-2028
- Preparation of a management letter of comments and recommendations
- Exit conference with management
- Presentations to the finance (or audit) committee and/or city council
- Due diligence reviews of various official statements for periodic debt issuances, if requested
- Availability for ongoing technical assistance throughout the year

The format and presentation of the financial statements will conform to applicable standards set forth by:

- Governmental Accounting Standards Board (GASB)
- American Institute of Certified Public Accountants (AICPA)
- Government Finance Officers Association (GFOA)
- U.S. Office of Management and Budget
- Michigan Department of Treasury

## APPROACH

We will complete our work in four inter-related phases. An overview of our audit approach is provided below; a detailed explanation of the audit process and Rehmann's approach is included in the Appendix.




### Phase 1: Planning and risk assessment

Your Rehmann team will hold a planning meeting with the City prior to the start of the engagement to schedule our audit procedures, arrange for downloads of information, document internal controls over financial reporting and compliance, and review other materials. We will also begin preparing the format of the financial statements in Microsoft Excel.

Once the City has a reasonably-adjusted trial balance available, our team will analytically review the draft financial statements and document our assessment of audit risk by areas. We will use this information to tailor our standard audit programs to correlate with our risk assessment of the City's accounting and financial processing environment.

### Phase 2: Audit procedures and testing

Working from the reasonably-adjusted trial balance, we will begin year-end audit procedures (also referred to as audit "fieldwork"). These procedures may include on-site fieldwork, remote audit procedures, or a mix of both. Our lead schedules and audit workpapers will be created based on the City's draft financial statements. Each audit area will be tested through a combination of analytical, substantive and sampling procedures, consistent with the tailored audit programs developed in Phase 1.

As these procedures are completed, our team will review the workpapers, quality control documents, and checklists as part of our formal system of quality control. All comments and issues generated by these reviews will be resolved in the field.

### Phase 3: Prepare and review draft financial statements

Financial statement preparation continues through the entire audit process; once the financial statements and related notes have been compiled, they will also be processed through our formal quality control process.

In addition, we will summarize our recommendations and observations in writing and schedule an exit meeting with the City's management team to discuss our findings, including internal control and program compliance observations and recommendations.

### Phase 4: Conclude audit and issue final financial statements

After management has reviewed the draft financial statements and any audit findings or recommendations, we will perform conclusion and issuance procedures. Once complete, we will provide final versions of the financial statements and reports.

## SCHEDULE

Our anticipated schedule of audit milestone dates is intended to comply with your filing date. An initial estimate of such dates is as follows:

| DESCRIPTION | DATE(S) |
|---|---|
| Planning phase | June/July |
| Primary audit procedures (fieldwork) | September 15-30 |
| Draft reports | On or before October 15 |
| Final reports | Prior to first November board meeting (prior to October 31 will be our target) |

## QUALITY CONTROL

In order to ensure that all engagements meet our high-quality standards, we have implemented a firm-wide system of quality control. The significant components of this system, as they relate to your audit, are as follows:

- All workpapers and audit programs are reviewed by the associates' immediate supervisors, and ultimately, the engagement principal.
- Draft financial statements and other reports are given a detailed review by an associate not connected with their preparation.
- Finally, the financial statements and other reports are reviewed for format, presentation and compliance with all applicable professional guidance and technical pronouncements by the engagement principal and a top-level executive independent of the engagement team.

Through this quality control process, we are able to assure our clients that their financial reports have been subjected to the most stringent review of technical compliance and reporting excellence available.

## SIGNIFICANT EXECUTIVE INVOLVEMENT

You can expect substantial involvement from your engagement executives. When our most experienced people are investing a significant amount of time in an engagement, we will conduct the audit with optimal efficiency. In addition, we've experienced frequent executive interaction with our clients strengthens our relationship, gives us a deeper understanding of your needs, and fully leverages the knowledge and experience of your Rehmann team.

## EFFECTIVE USE OF TECHNOLOGY

Rehmann enhances our client experience using technology. Whether the City desires fieldwork to be completed onsite or offsite, rest assured that Rehmann has the capability to seamlessly meet your needs. Our enhanced audit technology includes:

- Data extraction, automation, and advanced data analysis tools to provide management with valuable insights
- Advanced analytics, artificial intelligence, and machine learning software to provide greater accuracy and efficiency
- Work from anywhere, anytime tools — a highly secure Virtual Private Network (VPN) enables Rehmann associates to access network data remotely, in a completely protected way
- Convenience for clients — Rehmann's cloud-based document exchange platform allows for secure, paperless document transfer from clients to their engagement team accessible anytime, anywhere. This platform also incorporates a digital document workflow to track status of requests and the audit.
- Ability to work with your IT department to obtain the audit documentation from your systems remotely, if desired
- Collaboration tools for communication — associates use secure tools for video conferencing and phone calls

# ANTICIPATED POTENTIAL AUDIT PROBLEMS

## POTENTIAL AUDIT PROBLEMS

There are no anticipated audit problems of which we are aware, based on our understanding of current facts and circumstances, and our understanding of pending or potential changes in generally accepted accounting principles and auditing standards. If any problems are encountered during the engagement, we will be proactive in bringing such matters to the attention of the City and finding a mutually acceptable solution. We encourage clients to share feedback with us regularly as it is our goal to exceed your expectations.

## RESOLUTION OF TECHNICAL ISSUES

If a technical issue requires additional consultation, the City's engagement principal will identify the appropriate experience needed for resolution. Rehmann's flexible, internal communication system enables principals to leverage the individual knowledge found throughout the firm. Through various mediums, our professionals have ready-access to subject matter experts with relevant industry or practice area experience.

If an extreme technical matter arises that requires a more formal consultation, the firm looks to our established executive committees, which provide direction on emerging accounting, audit and tax issues. The committees are flexible, allowing for immediate availability, and the individuals who serve on these committees are considered the firm's definitive experts. In situations of dispute resolutions, any member of the engagement team who disagrees with the final resolution may document their disagreement in the workpapers.

**Rehmann provides its clients with *direct access* to in-house industry and technical expertise, which allows for fast resolution of unanticipated audit problems or technical issues.**

# REPORT FORMAT

As your current auditors, we will continue to use the format in the previously issued ACFR. Visit https://treas-secure.state.mi.us/DocumentSearch to see the report.

## NEXT STEPS

Thank you for the opportunity to propose services to the City. We are confident Rehmann will meet and exceed your expectations. Please contact us with any questions you may have.

**Nathan Baldermann, CPA, CGFM | 517.787.6503 | nathan.baldermann@rehmann.com**

# APPENDIX

Peer review report
Government client list
Detailed audit approach
Detailed single audit approach

# PEER REVIEW REPORT



EideBailly

CPAs & BUSINESS ADVISORS

**Report on Firm's System of Quality Control**

August 30, 2023

To the Principals of Rehmann Robson LLC
and the National Peer Review Committee

We have reviewed the system of quality control for the accounting and auditing practice of Rehmann Robson LLC (the firm) applicable to engagements not subject to PCAOB permanent inspection in effect for the year ended March 31, 2023. Our peer review was conducted in accordance with the Standards for Performing and Reporting on Peer Reviews established by the Peer Review Board of the American Institute of Certified Public Accountants (Standards).

A summary of the nature, objectives, scope, limitations of, and the procedures performed in a system review as described in the Standards may be found at www.aicpa.org/prsummary. The summary also includes an explanation of how engagements identified as not performed or reported on in conformity with applicable professional standards, if any, are evaluated by a peer reviewer to determine a peer review rating.

**Firm's Responsibility**

The firm is responsible for designing and complying with a system of quality control to provide the firm with reasonable assurance of performing and reporting in conformity with the requirements of applicable professional standards in all material respects. The firm is also responsible for evaluating actions to promptly remediate engagements deemed as not performed or reported on in conformity with the requirements of applicable professional standards, when appropriate, and for remediating weaknesses in its system of quality control, if any.

**Peer Reviewer's Responsibility**

Our responsibility is to express an opinion on the design of and compliance with the firm's system of quality control based on our review.

**Required Selections and Considerations**

Engagements selected for review included engagements performed under *Government Auditing Standards*, including compliance audits under the Single Audit Act, audits of employee benefit plans, an audit performed under FDICIA, and an examination of a service organization (SOC 2 engagement).

As a part of our peer review, we considered reviews by regulatory entities as communicated by the Firm, if applicable, in determining the nature and extent of our procedures.

**Opinion**

In our opinion, the system of quality control for the accounting and auditing practice of Rehmann Robson LLC applicable to engagements not subject to PCAOB permanent inspection in effect for the year ended March 31, 2023, has been suitably designed and complied with to provide the Firm with reasonable assurance of performing and reporting in conformity with applicable professional standards in all material respects. Firms can receive a rating of *pass*, *pass with deficiency(ies)* or *fail*. Rehmann Robson LLC has received a peer review rating of *pass*.

Eide Bailly LLP

Eide Bailly LLP

# GOVERNMENT CLIENT LIST

Following is a list of Rehmann's public sector clients. Outsourcing clients are indicated with an asterisk (*).

## CITIES

City of Ann Arbor
City of Battle Creek
City of Benton Harbor
City of Charlevoix
City of Cheboygan*
City of Chelsea*
City of Clawson*
City of Delphos, OH
City of East Lansing
City of Escanaba
City of Flint
City of Frankenmuth
City of Fremont Michigan
City of Gaylord
City of Grand Blanc
City of Holland
City of Inkster
City of Jackson
City of Lapeer
City of Mackinac Island*
City of Novi
City of Oak Park
City of Pontiac
City of Riverview
City of Royal Oak
City of Sebastian, FL
City of Sturgis*
City of Tecumseh
City of Three Rivers
City of Wyoming
City of Ypsilanti*

## COUNTIES

Bay County Building
Berrien County
Calhoun County
Clinton County
County of Jackson
County of Saginaw
Dow Event Center
Eaton County
Indian River County, FL
Ingham County
Ionia County
Isabella County
Kalamazoo County
Kalkaska County
Kent County
Leelanau County
Lenawee County*
Mecosta County
Midland County
Monroe County
Muskegon County
Newaygo County
Wayne County
Washtenaw County
Wexford County

## VILLAGES AND TOWNSHIPS

Armada Township
Benton Charter Township*
Berlin Charter Township
Blair Township
Concord Township
East Bay Township
Frenchtown Charter Township*
Glen Arbor Township
Green Lake Township*
Harrison Charter Township
Little Traverse Township
Macon Township
Penn Township
Pittsfield Charter Township
Saginaw Charter Township
Superior Township*
Sylvania Township*
Town of Orchid, FL
Village of Augusta
Village of Blissfield
Village of Brooklyn
Village of Chesaning*
Village of Dundee
Village of Kalkaska
Village of Mackinaw City*

## LIBRARIES

Note: standalone library clients are listed. We audit additional libraries through various municipalities.

Chippewa River District Library
Kent District Library*
Portage District Library
Shiawassee District Library

## TRIBAL GOVERNMENT

Bay Mills Indian Community
FireKeepers Casino*
Grand Traverse Band LLC
Grand Traverse Band Economic Development Corp.
Grand Traverse Resort & Spa LLC
Nottawaseppi Huron Band*

## SCHOOL DISTRICTS

Adrian Public Schools
Airport Community Schools
Allen Park Public Schools
Anchor Bay School District
Bangor Township Schools
Bedford Public Schools
Big Jackson Public School
Big Rapids Public Schools
Black River Public School
Dearborn Heights School District No. 7
Detroit Public Schools*
Detroit Public Schools Community District*
Dexter Community Schools
Dundee Community Schools
East Jackson Community Schools
Escanaba Public Schools
Flint Cultural Center Academy*
Freeland Schools
Fruitport Community Schools
Gibraltar School District
Grand Traverse Academy*
Hesperia Community Schools
Honey Creek Community School*
Houghton Lake Community Schools
Huron School District
Ida Public Schools
Ionia Public Schools
Jackson County ISD
JKL Bahweting School
Kent Intermediate School District*
Knapp Charter Academy
Lakeview Community Schools
Lincoln Consolidated Schools*
Linden Community Schools
Mackinac Island School
Madison District Public Schools*
Manchester Community Schools
Marshall Public Schools
Marquette Area Public Schools
Milan Area Schools
Mona Shores Public Schools
Monroe County ISD
Napoleon School District
Northwest School District
Pennfield Schools
Pinckney Community Schools
Plainwell Community Schools
Portage Public Schools
Potterville Public Schools*
Redford Union Schools
Sault Ste Marie Area Public Schools
Southgate Community Schools
South Lake Community Schools
Springport Public Schools
St. Ignace Public Schools
Summerfield Schools
Vandercook Lake Public Schools
Vanguard Charter Academy
Vassar Public Schools*
Western School District

## COLLEGES & UNIVERSITIES

Baker College
Bay College
Bay Mills Community College
Cleary University
Eastern Michigan University*
Ferris State University*
Glen Oaks Community College
Lansing Community College
Macomb Community College
Michigan State University*
Mid Michigan College
Montcalm Community College
Mott Community College
North Central Michigan College

Gogebic Community College
Grand Valley State University*
Jackson College
Kirtland Community College
Lake Michigan College
Northern Michigan University
St. Clair County Community College
University of Michigan*
West Shore Community College

## ROAD COMMISSIONS

Branch County Road Commission
Clinton County Road Commission
Hillsdale County Road Commission
Leelanau County Road Commission
Luce County Road Commission*
Marquette County Road Commission
Missaukee County Road Commission
St. Joseph County Road Commission

## TRANSIT

Note: standalone transit clients are listed. We audit additional transit authorities through various municipalities.

Bay Area Transportation Authority
Clinton Area Transit Authority
Regional Transit Authority of Southeast Michigan*
Toledo Area Regional Transit Authority*

## MEDICAL CARE FACILITIES

Bay County Medical Care Facility

## COMMUNITY MENTAL HEALTH (CMH)

Allegan County CMH
AuSable Valley CMH*
CMH of Clinton, Eaton and Ingham Counties*
Community Living Services*
Detroit Wayne Integrated Health Network*
Genesee Health System*
HealthWest CMH*
Integrated Services of Kalamazoo*
Lifeways*
Macomb County CMH*
Monroe CMH*
Network 180*
North Country Mental Health*
Northeast Michigan CMH Authority*
Northern Michigan Regional Entity*
Oakland Community Health Network*
Pines Behavioral Health Services*
Region 10*
Riverwood Center (Berrien CMH)*
Saginaw County CMH*
Sanilac CMH
Shiawassee County CMH*
St. Clair County CMH*
CMH Services of St. Joseph County
Summit Pointe*
Tuscola CMH*
Van Buren CMH*
Washtenaw Community Health Organization*
Woodlands Behavioral Healthcare Network*

## OTHER

Battle Creek Promise Zone Authority
City of Grand Rapids Pension Systems
Cloverland Electric Coop
Downtown Development Authority (Jackson)
East Lansing - Meridian Water & Sewer Authority
Grand Rapids-Kent County Convention/Arena Auth.
Grand Traverse Metro Emergency Services Auth.
Great Lakes Commission
Great Lakes Water Authority
Harbor-Petoskey Area Airport Authority
Health Department of Northwest Michigan*
Indian River Mosquito Control District*
Ingham County Land Bank Fast Track Authority
Jackson Narcotics Enforcement Team (JNET)
Kent County Dispatch Authority
Lansing Economic Development Corporation
LAWNET
Lenawee Conservation District
Mackinac Island Department of Public Works*
MBS International Airport
Menominee Delta Schoolcraft Community Action
Michigan Department of Treasury
Monroe County Agency
Resources Global Professionals
Saginaw County 9-1-1 Authority
Traverse City Downtown Development Authority*
Tri-County Regional Planning Commission
Ypsilanti Community Utilities Authority

# DETAILED AUDIT APPROACH

Each audit engagement is unique and requires different procedures to meet specific circumstances. However, the following broad approach is followed for most of our audits. While certain steps may occur in different order than presented below, a typical audit consists of the following procedures:

## PHASE 1: PLANNING AND RISK ASSESSMENT

Certain audit procedures and inquiries are completed prior to the commencement of audit fieldwork. This ensures that we have a complete understanding of the entity, agreement on the extent of procedures to be performed, and an anticipated timeline.

| PROCEDURE | DESCRIPTION |
|---|---|
| Planning meeting | The audit team will meet with the client's key contacts and dates will be set for all audit milestones:<br><br>• Preliminary fieldwork, as requested<br>• Availability of reasonably adjusted trial balance<br>• Primary fieldwork<br>• Interim audit status meetings, if necessary<br>• Exit conference<br>• Final reports<br>• Presentations, as requested<br><br>By agreeing to these dates up front, we are able to schedule the right people to have availability at the right time. During this meeting, both the client and the auditors will clarify expectations for:<br><br>• Requested downloads and Rehmann's document exchange platform<br>• Client-provided workpapers (content, format, timing, etc.)<br>• Communication methods (phone vs. email, etc.) and direction (all requests through the primary contact vs. inquiring directly of the employee responsible) |
| Draft preliminary financial statements | Using the prior year trial balance and issued financial statements, we will gain an understanding of account groupings for financial statement presentation. This will simplify the process of compiling the financial statements by only requiring newly created general ledger accounts to be grouped. It will also ensure that the audited financial statements are being prepared consistently. We refer to this as "coding the trial balance" which will then link directly to the financial statements, management's discussion and analysis tables, and leadsheets. If journal entries need to be posted after the auditors have received the trial balance, they can be posted in our Excel file and will flow through automatically to the related files. |

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|---|---|
| Engagement letter | The engagement letter will serve as the contract between the auditors and the client and will be sent each year. This letter contains information on the scope of the audit and the related fees. We ask that the client return a signed copy of the letter to us prior to the commencement of primary audit fieldwork. |
| Discussion with audit committee | Each year before the start of the audit, one of the audit executives assigned to your engagement will conduct a short meeting or phone call with the chair of your audit committee (or its equivalent in your entity). We will discuss timing and the planned scope of the audit. Your audit committee chair will have the opportunity to ask questions and provide us with any additional information he/she deems relevant. |
| Communication with prior auditors | Auditing standards require that we make certain inquiries of your predecessor auditors. We will provide management with a letter to send to the predecessor audit firm authorizing them to answer our questions and allow us access to their prior year workpapers. We will have the client send a copy of this letter to us so we know when to initiate communication. If we determine that the appropriate standards were followed in performing that audit, we may not consider it necessary to test opening balances. |
| Communication with other auditors | If the client has any funds or component units audited by other CPA firms, we will need to make certain inquiries of these firms regarding their understanding of our reliance on their separately-issued report(s) and the auditing standards they plan to follow. This process requires minimal assistance from the client and is deemed to remain in effect unless the audit firm changes. |

## PHASE 2: PRIMARY FIELDWORK AND TESTING

In order to design our auditing procedures according to your unique operating environment, we will use various methods to gain an understanding of processes and internal controls. We will use the results of these inquiries and tests to assess risk and to further tailor our audit programs. This process is more extensive in the first year as a base understanding is gained by the audit team. In future years, the process will consist primarily of updating our understanding for any procedural or personnel changes that may have occurred. Our standard planning/risk assessment procedures may include the following tests:

| PROCEDURE | DESCRIPTION |
|---|---|
| Document financial systems | We will obtain any existing accounting policies and/or procedures manuals to gain an understanding of the operating environment. If no such materials are available, we will provide a form of basic questions that will guide you through the process of documenting your actual practices. |

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| Review control activities | A questionnaire will be provided that describes typical control activities by transaction class (i.e., cash, accounts receivable, long-term debt, etc.). We will ask you to answer these questions and provide any additional information that may be helpful to us in understanding the internal control structure.<br><br>Based on the responses to these questions, we will determine the 2-3 "key controls" over each transaction type. |
| Walkthroughs | Once we have an understanding of internal controls and have identified the key controls, we will select a small sample of actual transactions and "walk through" each of the key controls to determine if they have been implemented and documented appropriately. The typical areas for which walk throughs are performed include: cash disbursements, cash receipts, payroll, and general journal entries, though other areas may also be tested at this time. |
| Establish materiality and major funds | Using the reasonably adjusted trial balance and draft financial statements, the audit team will test the appropriateness of major funds. Materiality will then be calculated by opinion unit. Our substantive tests generally require the audit team to test all individually significant items and, depending on the remaining untested balance, may require sampling the remaining population. |
| Review of board minutes | In addition to discussing major activities in the year under audit with management (such as issuance of long-term debt, large capital-related purchases, new programs or services, etc.), we will review minutes from meetings of the Board and any committees. This will allow us to identify significant or unusual events or purchases and revise our planning audit procedures accordingly. |
| Analytical review | Using the current and prior years' trial balances and the final amended budget, we will perform analytical procedures at the financial statement level. In general, we consider an income statement line item to be reasonable and consistent if it is within either 10 percent of the prior year actual or current year budget. Any financial statement line items with fluctuations outside of these parameters will be selected for additional procedures. We will review fluctuations at a greater level of detail (by general ledger account) and have discussions with management to identify and document the reasons for the change.<br><br>Based on our preliminary analytical review, certain income statement accounts may be selected for substantive testing because of their significance and/or ease of testing. Common substantive |

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| | tests over income statement accounts are described later in this appendix. |
| Risk assessment and brainstorming | At various times through the year, Rehmann's audit group will meet to discuss risks that are common to our clients. The audit team will review the notes from these meetings at the beginning of the audit to determine which of these risk factors might be applicable. The team will then use the information provided in the previous steps to identify additional risks and design audit procedures to address such risks. Our audit programs will be tailored to reflect the planned audit procedures. |
| Consideration of fraud | In the form of a questionnaire, we will make certain inquiries of personnel in various departments and positions to obtain their views about the risks of fraud and how they are addressed.<br><br>In addition, each year the audit team will conduct 2-4 procedures that are outside the scope of the typical audit. These tests are generally relatively simple and address various internal control and compliance issues. |
| Review of attorney invoices | We will discuss any pending or anticipated litigation with upper management and review invoices for attorney services. If items are identified that may require accrual and/or disclosure in the financial statements, we may request written responses to certain inquiries from your attorneys. |

## Substantive Audit Procedures

In general, our audit approach is "balance sheet oriented". This means that we will first focus our attention on testing the ending balances of the assets and liabilities of each opinion unit. This approach has two distinct advantages: (1) it places greater emphasis on identifying potential misstatements in accounts that could have a carry-over effect on later periods (unlike income statement accounts that reset each year), and (2) it can reduce risk of material misstatement over the aggregate income statement accounts to a level where a primarily analytical approach can be applied with an acceptable detection risk for potential misstatements. This results in a very efficient audit process, and allows us to provide a high level of assurance in fewer hours. Although, as stated above, certain income statement accounts may still be tested substantively because of their ease of testing and/or significance.

Our auditors approach substantive balance sheet testing at the financial statement level (following our opinion) and not by individual trial balance accounts. Leadsheets are generated directly from the trial balance using grouping codes, and accounts are divided and subtotaled by opinion unit in order to easily determine whether appropriate testing has been completed. Each leadsheet contains both current and prior year balances to allow the auditors to quickly identify trends and expectations and document any significant fluctuations. Balance sheet accounts that have remained unchanged will be brought to the attention of management for inquiry and follow up.

Initially, all individually significant or unusual items are selected for testing and the percent of coverage by opinion unit is calculated and evaluated for adequacy to support our opinion. If, based on our risk assessment, we consider it necessary to obtain additional audit coverage, the remaining untested balance is stratified and sampled following professional standards. With each test performed, the auditors include sufficient documentation to both comply with professional standards and to allow the audit executives to understand the procedures performed and related conclusions reached during their review process.

Our entire audit process is facilitated electronically, using a paperless system. Accordingly, to the extent possible, we request that supporting schedules and documentation be provided to us in their native electronic format.

While not all inclusive, the following listing summarizes many of the standard substantive audit procedures that may be performed, along with the requested documentation:

| AUDIT AREA | SUBSTANTIVE TEST |
|---|---|
| Cash and investments | • Send bank confirmation forms (completed by management) to respective financial institutions, compare confirmed balances to bank statements, and investigate discrepancies.<br>• Consider allowability of investments in accordance with State statute and the client's investment policy.<br>• Agree book balances to a trial balance account (or group of accounts for pooled cash systems).<br>• Test bank reconciliations by tracing deposits in transit and outstanding checks to the subsequent period statement. Trace inter-bank transfers in transit between account reconciliations. Identify outdated or unusual reconciling items.<br>• Consider the appropriateness of accrued interest on certificates of deposit and investments.<br>• Calculate Federal Depository Insurance Coverage (FDIC).<br>• Prepare financial statement disclosures such as those concerning interest rate risk, credit risk, and concentration of credit risk. |
| Receivables | • Obtain subledgers for significant account balances. Select items for detail testing and obtain subsequent receipt noting whether the amount was earned prior to year end and received in the next period.<br>• Consider whether any receivables in funds are collected outside of the period of availability (as it is defined by the client) and should be deferred in the fund financial statements.<br>• Trace grant receivables to financial status reports, subsequent receipts, and/or determine whether the recorded receivable is equal to grant expenditures, less actual cash receipts.<br>• Trace utility receivable balances to detail customer reports. Through the use of statistical sampling, test select customer balances for proper recording. |

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| Inventory | • Compare detailed listings of items, individual cost, and extended cost to the general ledger control accounts.<br>• Inquire about obsolete inventory. |
| Prepaids | • Determine the nature of prepaid items in each general ledger account.<br>• Recalculate prepaid balance using invoices and check vouchers, determining whether the amount was paid prior to year-end. |
| Capital assets | • Obtain rollforwards of capital asset activity. Agree beginning balances to prior year audited amounts and ending balances to general ledger control accounts.<br>• Obtain a detailed listing of additions and agree to the rollforward. Test individually significant items by tracing to approved invoices.<br>• Compare capital outlay expenditures to capital asset additions for reasonableness. If considered necessary, perform a search for unrecorded capital assets to audit completeness.<br>• Agree approved capital items from board minutes to additions listing.<br>• Obtain a detailed listing of disposals and agree to the rollforward. Determine whether any proceeds on the sale of such assets has been reported appropriately in the financial statements.<br>• Obtain depreciation schedules and test the accuracy of calculation based on the selected depreciation method and useful life.<br>• Test the accounting for and disclosure of amounts acquired through capital leases or installment purchase agreements.<br>• Test the allocation of depreciation expense by function.<br>• Inquire about timing of physical inventory observations, the existence of idle assets, and whether remaining useful lives are still appropriate.<br>• Inquire about the existence of intangible assets such as usage or access rights.<br>• Consider whether amounts remain on construction contracts related to construction in progress for disclosure in the notes to the financial statements. |
| Payables | • Obtain a detailed listing of the composition of general ledger control accounts and compare to year-end account balances.<br>• Perform a completeness test by selecting certain subsequent disbursements, reviewing the invoice for information on the accounting period involved, and determining whether the amount is properly included or excluded from year-end accounts payable.<br>• Trace fiduciary liabilities to subsequent disbursements or detailed subledgers of amounts held by individual/entity.<br>• Determine whether any amounts are being held in agency funds which should be accounted for in the respective funds. |

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| Accrued liabilities | • Recalculate accrued salaries and wages payable by gaining an understanding of the timing of service periods and pay dates, obtaining support for the first pay date in the subsequent period, determining the number of service days covered by the pay run and the number of service days during the period under audit, recalculating the accrual.<br>• Recalculate the accrual for the employer's share of FICA taxes payable based on known rate of 7.65%.<br>• Consider the reasonableness of other fringe benefit accruals such as health insurance, retirement, and workers' compensation.<br>• For self-insurance programs, obtain calculations or third-party reports estimating incurred-but-not-reported claims. Rollforward self-insurance claims payable for disclosure in the footnotes. |
| Long-term debt | • Obtain a rollforward of long-term debt activity. Compare the beginning balances to the prior year audit.<br>• Obtain amortization schedules for bonds and notes payable. Consider whether any debt covenants exist and test accordingly.<br>• Trace principal payments to the debt rollforward and the amortization schedules.<br>• Agree the current portion of long-term debt and future minimum payments of principal and interest to the amortization schedules.<br>• Determine whether new debt was approved by the governing body and issued in accordance with State statute.<br>• Determine whether there were premiums and/or discounts associated with the issuance of the debt by obtaining the sources and uses statement. Consider whether any bond issuance costs should be capitalized and amortized over the life of the bonds. Recalculate such balances.<br>• Recalculate accrued interest payable based on the first interest payable of the subsequent period, the length of time covered by this interest payment, and the length of time within the year under audit. |
| Leases and Subscription-Based Information Technology Arrangements | • Obtain copies of all new lease agreements and subscription-based information technology arrangements (SBITAs) entered into during the current year.<br>• Obtain a rollforward of lease and SBITA activity. Compare the beginning balances to the prior year audit.<br>• Obtain amortization schedules for lease and SBITA liabilities, along with support for the discount rate used to calculate these balances.<br>• Trace principal payments to the lease and SBITA rollforwards and the amortization schedules. |

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| | • Agree the current portion of lease and SBITA liabilities and future minimum payments of principal and interest to the amortization schedules. |
| Compensated absences | • Obtain a detailed listing of compensated absences (accrued sick and vacation time) by employee and agree to general ledger control accounts.<br>• Obtain an understanding of compensated absences policies, such as vesting, payment rates, and maximum payouts.<br>• Select a sample of individuals for testing. Trace accrued hours to source files and pay rates to personnel files or union/bargaining unit contracts. Recalculate accrual and determine whether hours are within the maximum amount.<br>• Determine whether FICA taxes are being accrued on the year-end balance.<br>• Rollforward compensated absences liability by obtaining either the accrual for amounts earned or the amounts used/paid for disclosure in the notes to the financial statements.<br>• Consider the appropriateness of the expense allocation for the change in compensated absences of activities.<br>• Inquire about an estimated current portion and consider whether this is being presented appropriately in the financial statements. Compare current portion to actual uses/payments for reasonableness.<br>• Inquire about the existence of any severance agreements or termination benefits. Obtain supporting documentation and test accordingly. |
| Equity | • Compare beginning equity by fund to the prior year audit, and investigate any differences.<br>• Review fund balance classifications based on the nature of the funds and board resolutions/policies (if applicable).<br>• Review net asset classifications for accuracy. Recalculate net assets invested in capital assets net of related debt. |

These substantive procedures will be completed primarily by our staff and senior auditors. Each workpaper will be reviewed by the engagement manager (and where appropriate, the engagement principal) during fieldwork so questions can be resolved in a timely matter.

## PHASE 3: FINANCIAL STATEMENT PREPARATION AND REVIEW

Another key element of the fieldwork process is the preparation of draft financial statements (including footnotes), the management letter, and other applicable reports/correspondence. The following are the primary steps in the preparation of the financial statements:

| PROCEDURE | DESCRIPTION |
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| Downloads | • Obtain a download directly from the client's financial accounting system which includes: complete account number, account name, and account balance. For income statement accounts, the original and amended budgets will be downloaded as well.<br>• Extract the system download into a usable Excel file using Monarch or other data extraction software.<br>• Assign fund and entity-wide financial statement captions to each account based on the level of detail in the financial statements. This effectively maps each account on the client's chart of accounts to the appropriate sections of the financial statements. |
| Linking | • Use Excel PivotTables to summarize the data in the trial balance based on the assigned captions, which allows any account coding changes or journal entries discovered through the audit process to be posted to the auditors' version of the trial balance<br>• Match the captions to the actual financial statements. |
| Footnotes | • Draft notes to financial statements using a current disclosure checklist to ensure completeness.<br>• Obtain supporting documentation for disclosures not directly linked to the trial balance or financial statements, such as: retirement and other postemployment benefit plan funding progress and funded status, related party transactions, subsequent events, etc. |
| Communication with those charged with governance | • Through the audit process, the engagement team will keep a list of potential audit issues and/or internal control or efficiency recommendations.<br>• Near completion of fieldwork, the potential items are reviewed and discussed amongst the audit team.<br>• The method of communication for items deemed to be control and/or compliance deficiencies is determined and a communication with those charged with governance letter (informally known as the "management letter") is drafted. |
| Other reports | • If the client is subject to a single audit, the reports on Single Audit Act compliance will be prepared. |
| Detail check | • After the financial statements and notes are received and a disclosure checklist is completed, the entire report is reviewed by another individual. Controls totals are compared between statements and schedules, numbers are footed and cross-footed, footnotes are agreed to the underlying financial statement amounts (when applicable), and overall presentation is reviewed for proper formatting, spelling, and grammar. |

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| | • The audit opinion (and Yellow Book report and/or single audit report, as applicable) are compared to current professional standards for completeness and accuracy.<br>• Any management letter comments are reviewed for clarity and appropriateness.<br>• The preparer of these documents is then provided feedback from the independent review and follows up on questions/comments accordingly. |
| Technical standards review | • The engagement principal will review the audit team's workpapers and perform a technical standards review of the financial statements and management letter.<br>• Additional technical standards reviews are conducted after fieldwork by a principal not associated with the engagement (i.e., a "cold review" of the statements). |
| Exit conference | • Audit findings or recommendations are explained in detail, and an open dialog is held to ensure that the facts and circumstances are properly understood by all parties.<br>• Any open items are summarized in written format and reviewed with the client.<br>• The timeline for engagement completion and issuance (initially agreed-upon as part of the planning meeting) is reviewed for reasonableness, and updated as needed. |

Any questions or issues that arise through the technical standards review are discussed between the audit team and management. If changes have been made to the initial drafts, management is provided with a final draft for its review and approval. We then provide management with a draft representation letter. This is a document that puts into writing the assertions made by management to the auditors throughout the audit process. We ask that this letter be printed on the client's letterhead and signed by two individuals (generally the equivalents of the CEO and CFO). We consider the signed representation letter to be management's assertion that drafts have been reviewed and our authorization for processing of final reports.

## PHASE 4: CONCLUSION AND ISSUANCE PROCEDURES

Management will be provided with a final PDF of all reports produced in the audit. The client may use this document for distribution to grantor agencies and related parties, upload to the client's website, or to produce additional printed copies.

The audit process concludes with presentation to the governing body (or one of its committees), as requested. We are confident that our audit process will maximize efficiency while still providing the highest level of audit assurance. Our auditing team has a deep understanding of accounting and financial reporting. We will make as many requests ahead of time as possible, coordinate information requests and questions, and strive to keep the audit process as efficient as possible.

# DETAILED SINGLE AUDIT APPROACH

Your single audit will be conducted in accordance with Title 2 U.S. Code of Federal Regulations Part 200, *Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards* (the "Uniform Guidance"). Each audit engagement is unique and requires different procedures to meet the specific circumstances. However, the following broad approach is followed for most of our single audits. These procedures are generally performed concurrently with the financial statement audit and the reports are issued on the same date. However, this work can be performed at a separate time if requested by management. The following procedures describe our general approach in performing a single audit.

## Testing of schedule of expenditures of federal awards and understanding internal controls over federal awards

Our first step in performing a single audit is obtaining a complete schedule of expenditures of federal awards (SEFA) from management. While the auditors may assist in the compiling and formatting the SEFA, the responsibility of identifying federal awards and providing information on the Assistance Listing Number (ALN), grant/pass-through award number, pass-through agency, and current year expenditures is the responsibility of management. We will request that a complete SEFA be provided before commencement of the single audit procedures. The following are the primary steps in testing the SEFA and obtaining and understanding the related procedures and internal controls:

| PROCEDURE | DESCRIPTION |
|---|---|
| Agree to general ledger | • Obtain an understanding of the chart of accounts used to track federal revenue and expenditures and which identifying numbers correspond to each grant award.<br>• Agree federal revenue (by grant and in total) to the SEFA.<br>• Agree federal expenditures to the SEFA.<br>• Inquire of the existence of non-cash awards that may recorded as a government-wide adjustment only. |
| Agree to source documents | • Obtain source documents to substantiate amounts/disclosures in the SEFA, such as grant award agreements, financial status reports, award close-out reports, etc. |
| Obtain understanding of internal controls | • Review with management the overall controls over compliance with each of the applicable compliance requirements of the OMB Compliance Supplement.<br>• Inquire of any program audits or grantor agency monitoring during the year and results of those visits.<br>• Review prior year audits for instances of control deficiencies or noncompliance related to federal awards. |

## Determine major programs and perform controls/compliance testing

A single audit involves detail testing of individual programs (or clusters of programs) which are selected by the auditors using various criterion. Some of the factors are subjective and others have very little flexibility. For example, programs of a certain size must be tested at least every third year. The audit team will select major programs based on the criteria listed in the Uniform Guidance and their risk assessment process.

Programs/clusters selected as major will be communicated to management as soon as they are determined and a detailed request list will be provided. The following procedures describe our controls/compliance testing:

| PROCEDURE | DESCRIPTION |
|---|---|
| Determine major programs | • Determine whether the auditee meets "low-risk" criteria by reviewing single audit reports and Federal Audit Clearinghouse submissions from the past two years. Calculate the required audit coverage (20 percent or 40 percent, depending on whether the entity is "low-risk").<br>• Perform risk assessments and select those programs required to be tested in the current year.<br>• Select additional programs, as necessary, to obtain sufficient audit coverage.<br>• Calculate materiality for each major program/cluster. |
| Gather information | • Extract the general ledger transaction detail for the revenue and expenditure accounts used for each major program (complete general ledger detail already obtained through financial statement audit procedures).<br>• Group general ledger transactions based on transaction type (i.e., payroll, accounts payable, indirect charge, etc.).<br>• Summarize transactions by type and agree expenditures in total to the SEFA.<br>• Review the matrix of compliance requirements as provided in the OMB Compliance Supplement (if available) for selected programs and determine applicable compliance requirements.<br>• Obtain the grant agreement and budget and review along with the summarized general ledger postings to determine whether the compliance requirements indicated on the matrix are all applicable.<br>• Review the detail compliance requirements and suggested audit procedures of the specific grant in the OMB Compliance Supplement.<br>• Determine whether any other authoritative guidance exists, such as pass-through grantor manuals or memos, and review such requirements. |
| Controls/compliance testing (overall procedures) | • Perform tests of controls and compliance for each applicable compliance area. Such procedures are generally a combination of inquiries/observations along with a sample of actual transactions.<br>• Select individually significant items for testing and sample remaining balances to obtain sufficient audit coverage for controls and compliance.<br>• Inquire of the internal controls over each compliance area and the method of documenting such controls. |

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| | • Review source documentation and determine whether the entity demonstrated compliance and documented controls over compliance.<br>• Document understanding of each applicable compliance requirement, related internal controls, testing performed, and audit conclusions. |

General procedures for each of the applicable compliance requirements are as follows, but will vary based on audit risk assessment, materiality, provisions of the grant agreement, and other factors:

| PROCEDURE | DESCRIPTION |
|---|---|
| Allowable costs/cost principles | • Review invoices and purchase orders for accounts payable disbursements. Determine whether disbursements were allowable in accordance with the provisions of the grant agreement and whether the disbursement was made and documented in accordance with the entity's purchasing policies.<br>• Recalculate payroll charges based on approved timesheets and pay rates (for hourly employees).<br>• Determine whether time and effort were documented in accordance with the Uniform Guidance.<br>• Analytically compare fringe benefit charges for Federal programs to entity-wide averages for reasonableness.<br>• Agree indirect charges to approved rates or cost allocation plan. |
| Cash management | • Determine whether cash advances are allowed for the grant or if it is operated strictly on a reimbursement-basis.<br>• Review a sample of actual cash draws and compare to source documentation (such as a general ledger expenditure report).<br>• For reimbursement-based grants, determine whether cash was disbursed (and not just expended) within 3 days of receipt.<br>• Identify whether the cash draw was subjected to a documented independent review and approval. |
| Eligibility | • Determine eligibility requirements under the grant and whether they apply to individuals or groups of individuals.<br>• Obtain an understanding of how eligibility is determined, documented, and independently verified.<br>• Obtain a detailed listing of the individuals/groups receiving benefits under the grant. Select a sample and review source documentation to verify eligibility. |
| Equipment and real property management | • Determine whether the entity has purchased capital items with federal funds in the current or previous years.<br>• Obtain a listing of capital items purchased with federal funds and ensure that each asset is being flagged as "federally-funded" and |

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| | listed along with the grantor agency name and other required information.<br>• Inquire of the most recent physical inventory and reconciliation to the accounting records and review documentation of this process.<br>• Determine whether any disposals during the current year were made in accordance with Federal guidelines.<br>• Inquire about the controls over safekeeping and appropriate use of federally-funded equipment. Determine whether a physical inspection or tour is necessary. |
| Matching, level of effort, and earmarking | • Review management's documentation for compliance with minimum and maximum percentage requirements.<br>• Determine whether matching requirements were met and trace to supporting documentation. |
| Period of performance | • Determine the period of performance of the grant by reviewing the award agreement.<br>• Select a sample of transactions and ensure that each was incurred during the period of performance.<br>• Determine whether grant funds were required to be expended in accordance with certain timelines and whether such requirements were met. |
| Procurement, suspension and debarment | • Review the entity's purchasing and procurement policies. Determine when competitive bidding is required.<br>• Review a sample of transactions and determine whether each was processed in accordance with entity policies and procedures.<br>• Determine the expenditures in which competitive bidding was required. Select a sample of such expenditures and review procurement files for evidence of full and open competition and compliance with entity policies.<br>• Determine whether any vendors/contractors were utilized in the amount of $25,000 or more for which suspension/debarment procedures would apply. Search vendor/contractor name on the Federal Excluded Parties List System (EPLS) and identify whether any are listed as suspended or debarred.<br>• Inquire about the controls over doing business with suspended or debarred parties. Review corroborating evidence, such as: excerpts of contracts, signed certifications regarding suspension/debarment, or other documentation, as applicable to the entity. |
| Program income | • Determine whether the entity generated any income through use of grant funds. If so, ensure that it was accounted for appropriately and reinvested in the program. |

| | |
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| | • Inquire of the controls over ensuring that all program income is appropriately captured as such in the general ledger and therefore identifiable for reinvestment in the grant. |
| Reporting | • Gain an understanding of the required reports (financial, performance, and/or special), and submission frequency.<br>• Select a sample of each type of report (financial, performance, and special) and trace reported amounts and data to the general ledger or other underlying records.<br>• Determine whether selected reports were submitted by the required due date.<br>• Review evidence of independent review and approval of reports prior to submission. |
| Subrecipient monitoring | • Obtain a listing of the grant subrecipients and dollars passed-through to each.<br>• Select a sample of subrecipients and review subaward agreements for appropriate communication of required items.<br>• Review monitoring files for evidence of review. Determine whether any findings were noted and if appropriate follow-up action was taken.<br>• Obtain subrecipient single audit reports (if applicable) and determine whether the amounts reported by the subrecipient reconcile to the entity's records. Review paperwork to support that this review and reconciliation was completed and follow-up action was taken as necessary. |
| Special tests and provisions | • Identify special tests and provisions through review of the OMB Compliance Supplement and the grant agreement.<br>• Design tests to determine compliance with such requirements, obtain information on the population, select a sample of transactions, and review evidence to support compliance. |

## Report preparation and audit finalization

After all the detail testing is completed and related inquiries have been made, the auditors will identify whether any noncompliance or control deficiencies were noted. These instances will be evaluated for magnitude and materiality and an initial determination of method of communication will be made. The following summarizes the remaining procedures performed for the single audit:

| PROCEDURE | DESCRIPTION |
|---|---|
| Review of workpapers and evaluation of potential findings | • As with the financial statement audit, all workpapers will be subjected to an independent review before fieldwork is completed to allow for follow-up on questions.<br>• At the end of audit fieldwork, or shortly thereafter, the workpapers and potential finding listing will be reviewed by the |

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| | engagement partner. The appropriate method of communication for any noncompliance or control deficiencies will be determined. |
| Draft report | • Draft report on Single Audit Act compliance. This may be included in the back of the entity's financial statement audit, or as a free-standing document, based on management's preference.<br>• Prepare required reports in accordance with *Government Auditing Standards* and the Uniform Guidance and ensure that language is consistent with authoritative guidance.<br>• Prepare the schedule of findings and questioned costs.<br>• Draft language for any items noted as control deficiencies and/or noncompliance. Each item will be identified by number, indicate the grant name and ALN, the pass-through agency (if applicable), and the pass-through/grantor award number. In accordance with professional standards, the write-up will include the *criteria* necessary for compliance, the *condition* noted in our testing, the primary reason(s) or *cause* for this condition, the related *effect* on the entity, and the auditors' *recommendation* for future action. In addition, there will be a section on the *view of responsible officials* where the entity can provide its perspective on the situation and planned corrective action.<br>• Enter data into the web-based data collection form for eventual submission to the Federal Audit Clearinghouse. |
| Technical standards review | • Subject single audit report and data collection form to technical standards review by the engagement partner.<br>• Process draft report in PDF format and provide to management. |
| Review report with management | • Either as part of the financial statement audit exit conference, or at a different pre-arranged time, meet with management to discuss the results of the audit.<br>• Discuss and clarify any reported audit findings and obtain initial management feedback. While reading of potential findings in written, draft report format may seem too formalized, we have found that it is best to communicate these items in writing, where they can be reviewed in detail by the engagement partner first. Our auditors are encouraged to avoid verbally concluding on the method of communication of audit findings or recommendations until they can be reviewed in context by the engagement partner. This limits the chance of miscommunication or misunderstanding.<br>• Agree to a timeline for report finalization, including: management feedback on drafts, "view of responsible officials" language for any findings, report issuance, and presentation to the governing body. |
| Finalization | • Encourage management to review the draft reports in detail and agree reporting information to the entity's internal records. |

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| | • Obtain feedback from management on its review of the draft reports in detail.<br>• Discuss management objections to reported finding. Based on the extent of information and/or documentation provided, determine whether it is necessary to reclassify, reword, or remove any findings.<br>• Subject single audit report and data collection form to a second technical standards review by another audit partner.<br>• Provide management with final drafts.<br>• Auditors receive signed representation letter and management authorizes finalization of reports.<br>• Date audit reports to match the representation letter, prepare finals, and email to management for distribution to the Board, grantor/pass-through agencies, or other interested parties.<br>• Initiate submission to the Federal Audit Clearinghouse. The audit principal will electronically certify the information and an email with instructions will be provided for management to perform its certification.<br>• Receive auto-generated notification via email when the Federal Audit Clearinghouse receives and accepts the reporting package and certifications.<br>• Present results of the audit to the governing body. |

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**NOVI MI 48375**

**MI 482 9-03**

**UPS NEXT DAY AIR**

**1**

TRACKING #: 1Z F59 F61 01 9531 8259

BILLING: P/P

Reference #1: Rehmann / Proposal

XOL 24.01.23 NV4S 9.0A 02/2024*

TM

YEO & YEO

CPAS & ADVISORS

# Request for Proposal
# City of Novi

**Yeo & Yeo, CPAs & Advisors**
**Jamie L. Rivette, CPA, CGFM, Principal**
**691 N. Squirrel Road, Suite 100**
**Auburn Hills, MI 48326**
**248.239.0900**

**Acknowledged Addenda: No. 1**

**Authorized to sign proposal and contract: Jamie L. Rivette**

Jamie L Rivette

March 1, 2024

# Let's thrive.

Yeo & Yeo is a business success partner using the power of listening, perspective, and connected purpose to help our clients, communities, and colleagues thrive. We are grateful for the opportunity to be considered for this initiative, providing guidance on your unique path.

The following pages outline our company, our differences, our proposed relationship, and our commitment to you. If you have any questions, concerns, or clarifications, we're here to help. We appreciate your time and attention.

Thank you.

March 1, 2024

Ms. Sabrina Lilla, Deputy Finance Director
City of Novi
45175 Ten Mile Road
Novi, MI 48375

Dear Ms. Lilla:

Thank you for considering Yeo & Yeo for your auditing needs. We are pleased to provide this proposal for your audit work for the fiscal years ending June 30, 2024, through 2028.

Yeo & Yeo is an innovative firm that is among the leading certified public accounting and consulting firms in the country. The following key points highlight our qualifications:

- A commitment to performing quality governmental audit, tax and consulting services. The firm currently provides services for more than 130 governmental audits.
- Members of the firm's Government Services Group are active in several associations, foundations, boards and committees.
- With our award-winning Audit process, our clients recognize greater efficiency, timely turnaround, and overall ease in the audit.
- A clear position of leadership among regional providers of auditing, accounting, business consulting, employee benefits, technology and tax services.
- Members of the firm's Government Services Group are frequent presenters at state and local conferences and trainings.

Yeo & Yeo has the knowledge and experience to furnish the auditing services that you are requesting. We adhere to the highest quality standards and are committed to serving timely and efficiently. This proposal is in effect for 90 days.

We look forward to the opportunity to work with you. Thank you for your consideration.

Sincerely,

Jamie L. Rivette

Jamie L. Rivette, CPA, CGFM
Principal, Yeo & Yeo
Jamie.rivette@yeoandyeo.com

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# Independence

Yeo & Yeo is independent of the City of Novi as defined by generally accepted auditing standards and the U.S. General Accounting Office's *Government Auditing Standards.*

We are not aware of any conflicts of interest related to the City of Novi or any of its agencies or component units for the past five (5) years and have quality control procedures in place to address any items or circumstances that may arise.

# License to Practice in Michigan

Yeo & Yeo is licensed by the State of Michigan, Department of Licensing and Regulations, to practice public accounting in the State of Michigan. All key professional staff assigned are properly licensed to practice in the State of Michigan.

# Debarment, Suspension, Ineligibility, and Voluntary Exclusion

The company or any of its employees is not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in this contract.

## Other Qualifications

- Yeo & Yeo meets the continuing education and external quality control requirements of *Government Auditing Standards.*
- Yeo & Yeo does not have a record of substandard audit work.
- We follow the American Institute of Certified Public Accountants' *Interpretation 501-3, Failure to Follow Standards and/or Procedures or Other Requirements in Governmental Audits.*

# Firm Qualifications and Experience

Yeo & Yeo has grown from a family-owned business to being among the Top 200 certified public accounting and consulting firms in the country. Our team of 31 Principals and Presidents and more than 200 professionals provides comprehensive solutions for individuals, businesses, school districts, units of government, and not-for-profit entities.

Yeo & Yeo is a full-service firm, providing accounting, auditing, business consulting, and tax services for businesses and organizations throughout Michigan since 1923. With the support of Yeo & Yeo Technology, Yeo & Yeo Wealth Management, and Yeo & Yeo Medical Billing & Consulting, we have created a strong network of professionals available to consult and proactively propose solutions for our clients.

The firm has nine offices throughout Michigan that are easily accessible to our clients with multiple locations. With locations in Alma, Ann Arbor, Auburn Hills, Flint, Kalamazoo, Lansing, Midland, Saginaw, and Southgate, the firm is positioned to provide local, hands-on service. The firm's audit team consists of 52 auditors. We utilize a team approach to staffing audit engagements based on the required skill sets of the team, rather than where the office is physically located. Because of this, we may draw on governmental professionals who are based in any of our offices.

At Yeo & Yeo, we listen to your vision, we help you fulfill it, and we walk alongside you easing complexities – never adding to them.

Yeo & Yeo's certified public accountants and advisors provide organizations and businesses with forward-thinking, comprehensive solutions in accounting, audit, tax, and business consulting to improve accountability, reduce risk, enhance profitability, and minimize taxes.

Whatever your chosen path, wherever you'd like to go, Yeo & Yeo is here with you. From everyday needs to long-term goals, let's get there. Together.

## Peer Review.

Yeo & Yeo's most recent external peer review was for the period ended August 31, 2022. The pass report is the highest possible mark. The peer review letter follows:

BROWN EDWARDS

**Report on the Firm's System of Quality Control**

To the Principals of
Yeo & Yeo, P.C., CPAs and
Advisors and the
Peer Review Committee of the
Michigan Association of CPAs

We have reviewed the system of quality control for the accounting and auditing practice of Yeo & Yeo, P.C., CPAs and Advisors (the "firm") in effect for the year ended August 31, 2022. Our peer review was conducted in accordance with the Standards for Performing and Reporting on Peer Reviews established by the Peer Review Board of the American Institute of Certified Public Accountants (Standards).

A summary of the nature, objectives, scope, limitations of, and the procedures performed in a system review as described in the Standards may be found at www.aicpa.org/prsummary. The summary also includes an explanation of how engagements identified as not performed or reported in conformity with applicable professional standards, if any, are evaluated by a peer reviewer to determine a peer review rating.

**Firm's Responsibility**

The firm is responsible for designing and complying with a system of quality control to provide the firm with reasonable assurance of performing and reporting in conformity with the requirements of applicable professional standards in all material respects. The firm is also responsible for evaluating actions to promptly remediate engagements deemed as not performed or reported on in conformity with the requirements of applicable professional standards, when appropriate, and for remediating weaknesses in its system of quality control, if any.

**Peer Reviewer's Responsibility**

Our responsibility is to express an opinion on the design of and compliance with the firm's system of quality control based on our review.

**Required Selections and Considerations**

Engagements selected for review included engagements performed under *Government Auditing Standards*, including compliance audits under the Single Audit Act and audits of employee benefit plans.

As part of our peer review, we considered reviews by regulatory entities as communicated by the firm, if applicable, in determining the nature and extent of our procedures.

**Opinion**

In our opinion, the system of quality control for the accounting and auditing practice of Yeo & Yeo, P.C., CPAs and Advisors in effect for the year ended August 31, 2022, has been suitably designed and complied with to provide the firm with reasonable assurance of performing and reporting in conformity with applicable professional standards in all material respects. Firms can receive a rating of pass, pass with deficiency(ies) or fail. Yeo & Yeo, P.C., CPAs and Advisors has received a peer review rating of pass.

Brown, Edwards & Company, L.L.P.
CERTIFIED PUBLIC ACCOUNTANTS

Glen Allen, Virginia
February 22, 2023

Yeo & Yeo has no issues with any federal or state desk reviews or field reviews of its audits during the past three years. Yeo & Yeo has not had any disciplinary action taken or pending during the past three years with state regulatory bodies or professional organizations.

# Partner, Supervisory and Staff Qualifications and Experience

Your project will be staffed with individuals who collectively possess the necessary skills in financial management, accounting and auditing, technology, internal controls, and compliance with laws and regulations, together with knowledge of governmental regulatory requirements. In order to maintain quality of the staff and audit efficiency over the term of the assignment, the Principal-in-charge will take a participative role in the audit. It has always been Yeo & Yeo's philosophy to keep the same staff on our audit engagements from year to year. This practice increases job efficiency and client satisfaction. We typically do not rotate Principals unless mutually agreed upon with our clients.The following individuals will be assigned to your audit team.

**Jamie L. Rivette**

CPA, CGFM | Principal
Principal In-Charge

**Michael Rolka**

CPA, CGFM | Principal
Concurring Reviewer

**Christina LaVielle**

Manager

**Daniel Beard**

CPA | Manager

# Jamie L. Rivette CPA, CGFM Principal.

### Education
BBA Bachelor Business Administration – Northwood University

### Professional Certifications
Certified Public Accountant (CPA)
Certified Government Financial Manager (CGFM)

### Professional Memberships
American Institute of Certified Public Accountants (AICPA)
Michigan Association of Certified Public Accountants (MICPA)
Michigan Government Finance Officers Association (MGFOA)
Michigan Association of School Boards (MASB)
Michigan Municipal Executives (MME)
Michigan Municipal League (MML)

### Government
GFOA Certificate of Achievement for Excellence in Financial Reporting Program Special Review Committee
Michigan Government Finance Officers Association Accounting & Auditing Standards Committee
Michigan Government Finance Officers Association Past Board Member

### Specialty Areas
Municipalities
Audits under *Government Auditing Standards*
Single Audits under 2 CFR 200

### Experience
Yeo & Yeo (1999 to present)
Principal
Assurance Service Line Leader
Firm Government Team Leader

### Community Service
Hemlock School Board of Education, Treasurer
Junior League Community Advisory Board
Hemlock Middle School – Volunteer Cross Country Coach

### Presentation/Presenter
Fraud and Prevention in Local Governments
MICPA – "Basic Governmental Auditing"
Michigan Township Association – "GASB Update"
MICPA – "Is Your Audit Paperwork up to Snuff?"
MICPA – "Fraud Risks and Why Internal Controls are Important"
MME & MGFOA – "Preparing for a Headache Free Audit"
MICPA – "First Pensions, Now OPEB: What You Need to Know About GASB 74 & 75"
GASB 84 If you Report Fiduciary Funds, Expect Some Changes
The Case for Internal Controls – Reducing Fraud in Government Entities is Easier Than You May Think
MGFOA Spring Conference – "How to Prepare for a Headache Free Audit"
MGFOA Fall Conference – "Enterprise Fund Accounting"
Are Your Security Systems and Employees Prepared to Fight Off Potential Hackers?
Overcoming the Challenges of Remote Auditing During the COVID-19 Crisis
Analytical Procedures Can Help Make Your Audit More Efficient
What Governments Need to Know About GASB 96 Implementation

### Training
Michigan Township Auditors Institute
Michigan Government Finance Officers Association Annual Conference
Government Audit Quality Control Annual Update
Governmental Accounting & Auditing Update
Super Circular – Federal Grants
GASB 68 Implementation
GASB 75 OPEB Implementation: Accounting and Auditing Considerations
State & Local Government Audit Planning Considerations
Michigan Municipal Executives Annual Conference

# Michael L. Rolka CPA, CGFM Principal.

### Education
Bachelor of Professional Accountancy from Saginaw Valley State University (2012) with a major in Accounting and minor in Finance

### Professional Certifications
Certified Public Accountant (CPA)
Certified Government Financial Manager (CGFM)

### Professional Memberships
American Institute of Certified Public Accountants (AICPA)
Michigan Association of Certified Public Accountants (MICPA)
Michigan Government Finance Officers Association (MGFOA)

### Experience
Yeo & Yeo (2012 to present)
- Principal
  - Firm Government Services Team Member
  - Firm Audit Team

### Specialty Areas
Audits of Municipalities
Single Audits under the Uniform Grant Guidance
Audits under *Government Auditing Standards*
Audits of local school districts

### Community Service
Clinton River Watershed Council Finance Committee
MICPA Governmental Accounting and Auditing Expert Panel
MGFOA Standards Committee
MGFOA Board of Director
Special Olympics

### Presentation/Presenter
*Government Fraud Case Studies*
MICPA – *Model Accounting: Compensated Absences*
MICPA – *Creating Impactful Presentations Delivering Government Audit Results*
MICPA – *An Abundance of Relief: Auditing Coronavirus State and Local Fiscal Recovery Funds (CSLFRF)*

### Training
Michigan Government Finance Officers Association Annual Conference
Governmental Accounting & Auditing updates
Uniform Guidance
Michigan Municipal League Conference
MICPA Government & Auditing Conference
School Update

# Christina LaVielle
# Manager.

### Education
Bachelor of Science in Professional Accountancy
from Central Michigan University (2013)

### Professional Memberships
Michigan Government Finance Officers Association

### Specialty Areas
Audits of municipalities
Audits of local school districts
Single audits under Uniform Grant Guidance
Audits under *Government Auditing Standards*

### Experience
Yeo & Yeo (2014 to present)
- Manager
  - Member of Firm Government Service Team
  - Member of Firm Audit Team

### Community Service
Auburn Hills Chamber of Commerce Member
Auburn Hills Chamber of Commerce Golf Committee Member

### Presentation/Presenter
Choosing the Right Auditor for your Government Entity
Beware of These 3 Common Types of Unlawful Expenditures
Common Capital Asset Reporting Issues Encountered by Municipalities

### Training
Michigan Government Finance Officers Association Conference
School updates
Single Audit updates
IDEA Training
Nonprofit training
BS&A training

# Daniel A. Beard CPA Manager.

### Education
Master of Science in Accounting from Eastern Michigan University 2015
Bachelor of Business Administration from Eastern Michigan University 2010

### Professional Certifications
Certified Public Accountant (CPA)

### Professional Memberships
American Institute of Certified Public Accountants (AICPA)
Michigan Association of Certified Public Accountants (MICPA)
Michigan Government Finance Officers Association

### Specialty Areas
Audits of government
Audits of local school districts
Audits of not-for-profit organizations
Audits of for-profit businesses
Audits of fraud
Single Audits
Preparation of not-for-profit tax returns

### Experience
University of Michigan (2010-2016)
- Financial Specialist, Medical School
- Associate Administrator, Various Depts.

Yeo & Yeo (2016 to present)
- Manager
  - Firm Government Services Team
  - Firm Audit Team

### Community Service
Leadership Ann Arbor
Ann Arbor Chamber of Commerce

### Training
Michigan Government Finance Officers Association Conferences
School Updates
Accounting Update
Nonprofit training
MICPA Applying Uniform Guidance in Your Single Audits
990 training

### Presenter
MICPA Governmental Accounting & Auditing Conference - May 2023 – *Model Accounting; Compensated Absences*

# Similar Engagements with Other Government Entities

Yeo & Yeo brings a depth of experience in your industry. This helps us understand the terminology, the challenges, the processes, the trends, and the potential risks. With this foundation, we create a plan based on the exacting needs of your organization. Knowledge and insight meet personalization and possibilities: a perfect combination.

We have worked with the following organizations and encourage you to reach out to them to help better experience the Yeo & Yeo difference.

### City of Troy (first year engagement)

Rob Maleszyk, CFO
Robert.maleszyk@troymi.gov
586.649.8712
500 W. Big Beaver Rd., Troy, MI 48024
Total audit hours: 360
Scope of work: Annual Comprehensive Financial Report & Single Audit
Date: 2023
Engagement Partner: Alan Panter

### City of Farmington Hills

Thomas Skrobola, Finance Director/Treasurer
tskrobola@fhgov.com
248.871.2430
31555 Eleven Mile Rd., Farmington Hills, MI 48336
Total audit hours: 315
Scope of work: Annual Comprehensive Financial Report & Single Audit
Date: 2019 - Current
Engagement Partner: Jamie Rivette

### City of Bay City

Angela Willsie, Chief Accountant
awillsie@baycitymi.org
989.894.8115
301 Washington Avenue, Bay City, MI 48708
Total audit hours: 310
Scope of work: Annual Comprehensive Financial Report & Single Audit
Date: 2017 - Current
Engagement Partner: Jamie Rivette

**City of Saginaw**
Tim Morales, City Manager
citymanager@saginaw-mi.com
989.759.1654
1315 S. Washington Avenue, Saginaw, MI 48601
Total audit hours: 300
Scope of work: Annual Comprehensive Financial Report & Single Audit
Date: 2012 - Current
Engagement Partner: Jamie Rivette

**City of St. Clair Shores**
Renae Warnke, Director of Finance
warnker@scsmi.net
586.447.3310
27600 Jefferson Circle Drive, St. Clair Shores, MI 48081
Total audit hours: 300
Scope of work: Annual Comprehensive Financial Report & Single Audit
Date: 2016 - Current
Engagement Partner: Ali Barnes

**Current Client List:**

Ann Arbor District Library
Arcada Township
Argentine Township
Auburn Hills Public Library
Au Gres, Sims, Whitney Fire & Rescue Authority
August Charter Township

Bacon Memorial District Library
Bay Arenac Behavioral Health
Beecher Metropolitan District
Birch Run Township
Bloomfield Township Public Library
Buena Vista Charter Township
Buena Vista Charter Township-DDA

Caro Transit Authority
Cass County
Cass County Medical Care Facility
Cassopolis Area Utilities Authority
Charter Township of Flushing
Charter Township of Genesee
Charter Township of Independence
Charter Township of Mount Morris
Charter Township of Orion
Charter Township of Plymouth
Charter Township of Union
Chelsea District Library
City of Alma
City of Auburn Hills
City of Au Gres
City of Bangor
City of Bangor DDA
City of Bay City
City of Clawson
City of Dowagiac
City of Farmington Hills
City of Fenton
City of Flat Rock
City of Fraser
City of Grosse Pointe Park
City of Highland Park
City of Hillsdale
City of Howell
City of Mason
City of Midland
City of Portage
City of River Rouge
City of Saginaw
City of Sandusky
City of St. Clair Shores
City of Standish
City of Troy
City of Utica
City of Woodhaven

Clio Area Fire Authority
Community Mental Health for Central Michigan
Crystal Township

Decatur Township
Decatur-Hamilton Joint Fire Dept.
Decatur-Hamilton Quick Response Unit
Douglass Township

Fulton Township

Gogebic Medical Care Facility
Gratiot Area Water Authority
Gratiot County

Hamilton Township
Hayes Township

Isabella County Medical Care Facility

Lenawee County

Meridian Township
Mid-Michigan District Health Department

North Star Township

Pleasant View Shiawassee County Medical Care Facility

Saginaw County Community Mental Health Authority
Saginaw Midland Municipal Water Supply Corp
Saginaw Promise Zone
Saginaw Public Library
Sims-Whitney Utilities Authority
Southeast Macomb Sanitary District
Southeast Macomb Disposal Authority

Thetford Township
Township of Grosse Ile

Village of Martin
Village of New Haven

Wayne Township

# Specific Audit Approach

YeoLean is a reimagined, Lean Six Sigma-based audit process, providing greater efficiency and overall ease in the audit engagement. Our professionals come on-site with a purpose of maximizing our immersion while minimizing your time.

Experience quicker turnaround time, thorough communication, and a structured workflow for maximum efficiency. Our award-winning process is more than applying concepts to improve processes, but rather a cultural change of focusing on audit value and continuous improvement. The audit will be performed in accordance with generally accepted auditing standards and the standards applicable to financial audits contained in *Government Auditing Standards*.

## Pre-Planning (Staff Level: Partner & Manager - Number of hours: 15)

Pre-planning will assist in determining the information to be gathered during the audit process. Pre-planning includes a meeting with management and the audit committee to determine the logistics of the audit.

## Planning (Staff Level: All Levels - Number of hours: 30)

Proper planning assists us in developing an audit plan that focuses on key areas and issues. The planning phase of the audit will include the following to be used in risk assessment:

- Gathering information about the organization and environment
- Reviewing prior year audit results
- Identifying unusual and unexpected financial trends
- Obtaining an understanding of internal controls at both the entity and activity level
- Walking through significant transaction classes
- Consider management override of controls

## Risk Assessment (Staff Level: Partner & Manager - Number of hours: 30)

This phase of the audit will include assessing the risk of material misstatement of the financial statements:

- Identifying significant audit areas
- Identifying significant and fraud risks using information gathered during the planning process
- Discussions with employees, management, and the Board
- Assessing risk by audit assertion (existence/occurrence, rights, and obligations, completeness, valuation, allocation, and cutoff) for account balances
- Utilization of data extraction software

## Audit Plan (Staff Level: All Levels - Number of hours: 165)

The audit plan will be developed to cover the significant audit areas and the risks identified during the risk assessment process. This is the core of the audit and ensures the audit is tailored to your specific needs. This is not a one-size-fits-all audit.

## Single Audit, if required (Staff Level: All Levels - Number of hours: 20)

Evaluation and testing of internal controls and compliance of federal awards will be performed in accordance with the 2 CFR 200 compliance supplement and Government Auditing Standards issued by the Comptroller General of the United States. We provide specific testing and risk assessment for each major program based on the fourteen compliance areas.

## Reporting (Staff Level: Partner, Manager & Senior - Number of hours: 40)

We will prepare the financial statements and disclosures from the trial balance and the information that you provide to us.

The following reports will be provided:

- Opinions on the financial statements in accordance with generally accepted auditing standards.
- Internal control over financial reporting and on compliance and other matters based on an audit of financial statements performed in accordance with *Government Auditing Standards*.
- Compliance with requirements applicable to each major program and on internal control over compliance in accordance with 2 CFR 200, if required.

We will report to those in charge of governance in accordance with professional standards. Management comments will be prepared to provide management with the opportunity to strengthen internal controls and operating efficiency.

The financial statements and communication letter will be reviewed with management before they are finalized to ensure that information has been appropriately interpreted and recommendations are practical.

# Identification of Anticipated Potential Audit Problems

This identifies and describes any anticipated potential audit problems, the firm's approach to resolving these problems/issues and any special assistance that will be requested from the City of Novi.

## Information Not Ready

We will have open communication during the audit to help prevent this but will schedule the audit as planned and we can be flexible with the timing. We will also contact management as soon as any issues arise.

## Additional Charges for Services

Should additional services/assistance be necessary, we will discuss with management and get approval prior to charging for any additional services.

## Uncooperative Employees

We will discuss this issue with the appropriate level of management.

## Surprises

Management will receive draft reports of any comments, recommendations, or findings to make sure facts are correct and corrective action is appropriate.

## Timeline

If our timeline for the presentation is ever in jeopardy, we will communicate this to the appropriate level of management immediately.

## Staffing/Personality Issues

We ask that if you encounter any issues with our staff, whether it be a new staff member, a manager, or a partner, that you contact the appropriate level of management so that we can make a decision that will benefit the City of Novi.

## Report Format

Website for examples/reports of our past financial statements:
**https://treas-secure.state.mi.us/DocumentSearch**

Accountability. Transparency. Possibility.

# Government Industry Experience

## Governmental Audit Quality Center (GAQC) Member

Yeo & Yeo is a member of the AICPA's Governmental Audit Quality Center (GAQC) committed to adhering to the highest standards in performing quality government audits. As a benefit of GAQC membership, our audit professionals have access to the latest notices and advice regarding audit, accounting and regulatory issues. In turn, Yeo & Yeo will keep you informed of important issues and best practices.

## GFOA Certificate of Achievement for Excellence in Financial Reporting Experience

Yeo & Yeo supports the Certificate of Achievement for Excellence in Financial Reporting Program (Annual Comprehensive Financial Report program) with audit team members currently active in the certification review process, including Yeo & Yeo's Government Services Group Leader, Jamie Rivette, who serves on the Special Review Committee. The following clients have earned their Certificate of Achievement for Excellence in Financial Reporting from the Government Finance Officers Association (GFOA).

- Cass County
- City of Alma
- City of Bay City
- City of Farmington Hills
- City of Fenton
- City of Midland
- City of Portage
- City of Saginaw
- City of St. Clair Shores
- City of Troy

## Actively Involved

Our audit professionals and members of Yeo & Yeo's Government Services group are actively involved in industry associations that keeps us on the forefront of industry and regulatory issues and also allows us to share our expertise as frequent presenters and trainers.

- Government Finance Officers Association
  - GFOA Certificate of Achievement for Excellence in Financial Reporting Program Special Review Committee member
- Michigan Certified Public Accountants Government Task Force
- Michigan Municipal League
- Michigan Townships Association
- State of Michigan Advisory Committee for Implementation of Uniform Chart of Accounts
- Michigan Government Finance Officers Association
  - Board of Directors
  - Accounting and Auditing Standards Committee
  - Legislative Committee
  - Membership and Mentoring Committee
  - Technology Resource Committee

# A Proud Family of Companies

Through our family of companies, we work with you to achieve your unique goals. It is focused expertise, designed to bring all you need, exactly how you need it.

## YEO & YEO

CPAS & ADVISORS

Comprehensive solutions in accounting, audit, tax, and business consulting. Helping you thrive with confidence.

## YEO & YEO

TECHNOLOGY

Managed IT solutions to help you stay productive, compliant, and secure. Helping you lean forward.

## YEO & YEO

WEALTH MANAGEMENT

Asset management, estate planning, tax implications, and more. Helping you plan for what's next.

## YEO & YEO

MEDICAL BILLING & CONSULTING

Complete billing and management solutions for visionary practices. Helping you focus on what's important.

## 4 Companies

providing right-sized relationships, knowledge, and focus.

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TECHNOLOGY

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WEALTH MANAGEMENT

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offering unmatched expertise and proven commitment across the state.

**200+ Team Members**
service and industry specialized professionals dedicated to your needs.

**Reach Beyond Michigan**
through our extended network.
BDO ALLIANCE USA
ProNexus

**96%**
of our people say they are proud to work for Yeo & Yeo.

## Giving Back

to our communities and those in need through the Yeo & Yeo Foundation.

239 Organizations
received a donation

$485,343
total awarded donations

$478,472
contributions from Yeo & Yeo employees, leaders, and firm revenue

## Awards

recognizing our level of commitment and success

INSIDE TOP 200 FIRMS
BEST COMPANIES TO WORK FOR
BEST IN WELLNESS
CRAIN'S DETROIT BUSINESS

Honoring All Perspectives. Bringing Our Whole Selves.

# Commitment to Diversity, Equity, and Inclusion

Yeo & Yeo is committed to an inclusive, diverse, and equitable workplace where our people can be their authentic selves and our culture supports our clients and communities.

Yeo & Yeo values diversity, and we put emphasis on hiring and supporting a diverse workforce, as well as giving back to the communities in which we live and work with our time, talents, and treasures.

We make a strong effort to annually educate and encourage students early on to go into accounting and professional services, from speaking at high schools with large minority enrollment to having students tour Yeo & Yeo and providing scholarships. We also work closely with colleges throughout Michigan with an emphasis on finding diverse candidates.

Yeo & Yeo is incredibly proud of our family-friendly culture and our ability to attract and retain women. For years, we have provided our professionals with a healthy work-life balance. We support that even more so now, with many of our professionals working remotely and effectively balancing work and home life. Further, our total workforce is more than 54% female, and the number of women in leadership positions exceeds 50%. The average percentage of female partners for CPA firms across the nation is only 15%.

Yeo & Yeo's culture also focuses on supporting our communities by giving back to organizations such as the Boys & Girls Club, food banks, homeless shelters, READ associations, child abuse and neglect organizations, and many others that serve a large proportion of minority groups.

# Document Portal: Suralink

Suralink is a web-based communication platform that adds transparency and efficiency to your audit. The platform provides a secure file transfer portal, dynamic request list, and real-time workflow updates. Suralink keeps all requests in the same place, making it easier to complete your engagement.

## Delegate, Assign, and Filter Requests

- Delegate requests to specific team members and filter requests by status or owner
- The status of each request is indicated by a color and automatically changes with progress

## Central Dashboard with Real-Time Progress Updates

- Easily view the percentage of progress of requests and engagements
- See the real-time status overview of each request in a quick view bar
- Each request holds files, comments, assignments, and an activity log
- Set preferences to receive notifications of activity relating to your engagement

## Improve Efficiency

- Spend your time getting the job done, not reconciling a messy list of outstanding items
- Download all files in a section, edit a group of requests, communicate with your team, or drag and drop multiple files at the same time—all with just a few clicks

## Protect Your Sensitive Information

- Integrate your current two-factor authentication provider or start using Google at no cost
- Protect sensitive information with inactivity time-out and SSL AES 256-bit encryption

suralink

Nurturing A Relationship Built on Success.

# Educational Content and Resources

Yeo & Yeo keeps you informed about important issues affecting your organization and provides the training and resources you need to achieve excellence.

## eNewsletters

- Up-to-date information
- Delivered to your inbox
- Custom, timely content

## Audit Resource Center

- Tips & Tools
- Easy access on yeoandyeo.com
- Timely Updates

## Client Training & Webinars

- Key topics
- Client empowerment & education
- Forum for compliance

## eAlerts

- Urgent information
- Changes, deadlines & need-to-know information
- Instant notifications

## Blog

- Deep insight
- Timely perspectives
- Fresh analysis from thought leaders

## A Focus on Government Audits.

# The Yeo & Yeo Difference

At Yeo & Yeo, we understand the complexity of state and federal compliance requirements. We also understand the importance of working with a partner you can trust. Our work in governmental audits goes beyond the technical; we want to maximize efficiency in a very human, very Yeo & Yeo way. The following sets us apart.

### Exceptional People.

Expertise. Empathy. Enthusiasm. All of Yeo & Yeo's experts choose their career path through personal experience and interest making them extraordinarily dedicated to their work. Yeo & Yeo is known for its exceptional service, professional staff, and the enjoyable experience you will have while working with them.

### Deep Experience.

Our statewide firm has 52 dedicated governmental auditors that provide services to organizations throughout Michigan. We have the knowledge and insight to recognize opportunities and identify specific areas of your organization that can be strengthened.

### Timely Communication.

Our start to finish scheduling process ensures accurate pre-planning for a smooth transition. Our clients know what to expect when we arrive on site. We make it a priority to provide frequent updates and communication throughout the entire engagement.

### Partner Involvement.

We maintain the same partners on engagements year after year, creating ongoing continuity and deep situational knowledge. Your dedicated partner-in-charge will be onsite and available to you during the audit. A concurring partner will provide a high-level overview for quality control.

### A Passion for Community.

It's our passion to invest time, talent, and resources in the communities where we live, work, and play.

# Proposed Schedule

## Upon Notification of the Award

Contact with Management
Planning Meeting

## Early to Mid September

Field Work (Audit Plan)

## Late October

Exit Conference with Management
Financial Statements
Single Audit Report, if required
Management Letter

## November/December

Presentation

# Client Responsibilities

To be respectful of your time and ours, we schedule our client work well in advance. When engagements have to be rescheduled it causes a domino effect, as we likely have other clients scheduled in the new requested time slot, and our staff are likely scheduled on another client. As a result, we may have to put your engagement at the end of the line, and/or change staff. When our staff members finishing the work are not the same as those who started it, the audit is less efficient and more disruptive to your and our staff. Our quote is contingent on the following:

- All items on the assistance list being completed by the due dates indicated
- The audit being performed during the dates scheduled
- All accounts being adequately reconciled by the beginning of scheduled fieldwork
- Accurate information provided to us that does not require subsequent rework
- Suralink is used to provide the assistance list items to us
- Agreement with due dates for items on Client Assistance List
- Work papers should be in Excel, Word, or PDF format
- Trial balance and budget for each fund as of year-end
- Schedules, reconciliations and supporting documentation for each balance sheet account as of year-end
- Schedules and supporting documents for revenue and expense accounts as determined
- Completion of an "internal control audit organizer"
- Written policies and procedures
- Supporting documents for various walk-throughs, tests of transactions and compliance as specifically requested
- Confirmations as requested
- Copies of notes, leases, and agreements in effect during the year and at year-end
- Required certifications
- Minutes for each board meeting held during the period under the audit and all subsequent minutes to meetings prior to the report date
- Organization chart
- List of all board members, management, and any other known related parties
- Prepare Management Discussion & Analysis
- Schedule of Federal Awards (SEFA), or oversight in preparing of the SEFA (if required)
- Oversight in the preparation of the financial statements,Government-wide conversion entries, and data collection form (if required)
- Additional information for single audit major program testing (if required)

If the above items are not met and the engagement needs to be rescheduled or if additional days need to be scheduled, then an additional price of 20% may apply. Beyond this, the time required for rework and posting client requested entries after we have been given the trial balance will be billed at our standard hourly rates.

# Thank You for Considering Yeo & Yeo

We appreciate the opportunity to present this proposal and are committed to helping you achieve your goals. This is more than just a project for us; it's an opportunity to create an important relationship built on success.

Yeo & Yeo's Government Services was created for this exact purpose, and we look forward to the selection process. Beyond your engagement team, you will have access to our full Government audit team of experts. We would love for you to get to know them. Use the link below or scan the QR code to watch a video introducing our team.

Video link: yeoandyeo.com/government-services-engagement-team

If you have any questions or concerns or need clarifications, do not hesitate to contact me.

**Let's thrive.**

Jamie L. Rivette, CPA, CGFM
Principal, Yeo & Yeo
Jamie.rivette@yeoandyeo.com

YEO & YEO

CPAS & ADVISORS

P.O. BOX 3275
SAGINAW, MI 48605

City of Novi
Attn: Finance Department
45175 Ten Mile Rd.
Novi, MI 48375

**First Class Mail**

**RFP: Professional Auditing Services**

2/22/24
11:40 am

# CITY OF NOVI CITY COUNCIL
# APRIL 8, 2024

**SUBJECT:** Consideration to refer the recommendation of the Public Safety Building Needs Committee that the City Council explore construction of a new Police Station and three new Fire Stations to the Consultant Review Committee to formulate a Request for Proposals to secure the services of a professional project management company to evaluate the viability of that recommendations and propose next steps for further City Council consideration.

**SUBMITTING DEPARTMENT:** City Clerk

**BACKGROUND INFORMATION:**

Over the last several years, City Council has discussed issues pertaining to the inadequacy and need for modernization of the existing public safety buildings, including the Police Station and Fire Stations 1, 2, and 3. Specifically, the City's Police Department's current physical space, built in 1980, is too small and does not adequately serve its increasingly diverse employee census and partnerships with State and Federal agencies. Concerning the City's Fire Stations 1 and 3, again, the facilities do not meet the needs of today's diverse workforce, with inadequate locker rooms, bathrooms, and sleeping areas.

The Public Safety Building Needs Committee was created with the intent of serving as a temporary task force to further explore the issues surrounding the adequacy of current facilities and the possibilities for addressing them through renovation or redevelopment, as well as projected costs and potential funding or financing for the undertaking.

The Committee met on a number of occasions, toured the facilities, and secured a needs study from Redstone Architects for the various buildings. Following receipt of that report, the Committee received a recommended course of action from Public Safety Director Zinser that the City explore further explore building a new police station and new Fire Station 1 at the recently-acquired parcel at Eleven Mile and Lee BeGole

Drive and also explore construction of a new Fire Station 3 at City-owned property on Venture Drive and a new Fire Station 2 at a location to be determined.

The Committee met on March 20, 2024, and recommended that the City Council consider the Public Safety Director's recommendation with regard to the construction of the new buildings and that it also consider securing the assistance of a professional project management company to evaluate the viability of those recommendations and propose next steps using the recommendation as a framework. Based on that, it is the Administration's recommendation that the Council refer the matter to the Consultant Review Committee to formulate a Request for Proposals for such assistance along a path toward some or all of the recommended public safety improvements.

**RECOMMENDED ACTION:** Refer the recommendation of the Public Safety Building Needs Committee that the City Council explore construction of a new Police Station and three new Fire Stations to the Consultant Review Committee to formulate a Request for Proposals to secure the services of a professional project management company to evaluate the viability of those recommendations and propose next steps for further City Council consideration.

# MEMORANDUM

**TO:** VICTOR CARDENAS, CITY MANAGER

**FROM:** ERICK W. ZINSER,
DIRECTOR OF PUBLIC SAFETY/CHIEF OF POLICE

**SUBJECT:** PUBLIC SAFETY BUILDING NEEDS COMMITTEE,
EXECUTIVE SUMMARY

**DATE:** MARCH 19, 2024

---

***Executive Summary***

The Novi Department of Public Safety facilities are aging and falling behind in spatial needs. The police department building was constructed in 1980, forty years ago. It was renovated in 2000 and is regularly updated or retrofitted to meet today's demands. However, it is deficient for an evolving workforce, technological advancements, and outdated HVAC needs.

Fire Station's One and Two were both constructed in 1981. A 2,295 square foot expansion was completed in 1988 at Station One. A renovation was completed on Fire Station Two in the winter of 2009. Since then, these two stations have not been updated.

Fire Station Three was constructed in 1978, and there has been no remodeling since its original construction. None of these three fire stations have adequate facilities to accommodate a diverse workforce. There are limited female facilities in the fire stations, and there are no locker rooms for our female employees. Much like the police department, the fire stations are deficient in an evolving workforce, technological advancements, and outdated HVAC needs. The City of Novi recognizes these outdated facilities and, in 2023, established a Public Safety Needs Facilities Committee to address the aging facilities.

The Public Safety Needs Facilities Committee identified the necessity to replace the Police Department building, Fire Stations One, Two and Three. In 2020, the City of Novi purchased a 1.76-acre parcel of land on Venture Drive north of Nine Mile Road. The intent of this parcel of land was to build a new Fire Station Three on this location.

In 2023 the City of Novi purchased land on the Southwest corner of Eleven Mile and Lee Begole Drive to build a new Public Safety Headquarters that would encompass a Police Department and Fire Station One. The committee is currently deliberating the placement of Fire Station Two regarding rebuilding on the current site or identifying a new location. The committee also recognized two areas of the city that see extended fire department response times due to their proximity to the closest station. Discussions led to the proposal of two additional fire stations in those areas: one in the northwest and one in the southwest corners of the city.

The committee solicited Redstone Architects to conduct a space needs assessment, run time analysis, cost analysis, and provided "block" diagrams to ensure the identified locations could accommodate new facilities.

***Run Time Analysis***

The current locations of the Novi fire stations date back to 1978, and the City's Master Plan at that time. When determining the location for each fire station, there was no run time analysis. To determine the location of a fire station these items were taken into consideration; existing roadways, future development, response distance and three road miles of any point in the city, with the commercial and industrial areas being within two miles of one to two stations.

Other than Station Three, all other stations were built in accordance with the 1978-79 Master Plan. Station Three was originally planned to be located at the intersection of Nine Mile and Meadowbrook Roads. However, it was built on the present site, Roethel Drive and Nine Mile Road, due to land cost and homeowner opposition. It was imperative to build Station Three along the Nine Mile corridor to ensure an efficient response to the surrounding area.

In 2023, Station Three turned out an average response time of 5:24. The current location of Fire Station One is located at 42975 Grand River Avenue adjacent to Main Street. In 2023, Station One turned out an average response time of 4:53. Both response times are well under the Oakland County Medical Control Authorities requirement of six minutes. The location on Venture Drive is .48 miles from Station Three's current location and Station One is .41 miles from the proposed location on Lee Begole Drive.

The run time analysis does show there will be an increase in response times for Stations One and Three if they are relocated to the proposed locations. However, the run time analysis is limited. <u>The analysis can only break down a response time by the minute, not in seconds. Given that both proposed locations are less than half a mile from their current locations, we believe (anecdotally) based on location the increase will be a few seconds, not minutes. We also believe that once the new facilities are in place we will not recognize a significant increase in response times and preconceived concerns will be diminished.</u>

New facilities will increase efficiency and foster reduced response times. Furthermore, we are confident our monthly response time reporting will remain below the Oakland County Medical Control Authorities requirements.

***Recommendation***

With all the information analyzed and price estimates received, it is staff's recommendation to proceed with the following:

1. Proceed with planning and proposal to construct a new Fire Station in conjunction with a new Police Administration Building on Lee BeGole north of 11 Mile Road

2. Proceed with the proposed construction of a new Station # 3 on the City-owned property on Venture Drive, north of 9 Mile Road

3. Identify possible locations/properties near Station # 2 in order to construct a new facility replacing the current building

# REDSTONE ARCHITECTS INC.

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*ESTABLISHED 1937*

## Public Safety Feasibility Study

## Public Safety Building Needs Committee

## Novi,Michigan

## January 02, 2024

## Updated January 29, 2024

Daniel Redstone,FAIA
dredstone@redstonearchitects.com
T: 248.418.0990
F: 248.418.0999
30700 Telegraph Road Suite 1677
Bingham Farms, MI 48025

Public Safety Feasibility Study
Public Safety Building Needs Committee
Novi, Michigan
January 02, 2024
Updated January 29, 2024

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# EXECUTIVE SUMMARY

**CITY OF NOVI PUBLIC SAFETY DEPARTMENT CAPITAL IMPROVEMENT STUDY**

**HISTORY:**

2022: The City of Novi initially engaged Redstone Architects in 2022 to study the possibility of renovating the existing Public Safety Building to accommodate a number of deficiencies identified by the department. The current facility contains about 38,000 square feet. An internal 2021 departmental study identified a number of space and operational deficiencies.

Submitted in December 2022, the study included the development of a Space Needs Assessment for the Police Department that identified current needs and future needs, as well as identifying spaces that the City wanted to maintain in the building for other departments within the city.

The first option included the renovation of the existing Public Safety Building to accommodate the police department's space needs. This option was deemed not to be viable.

Redstone was then asked to look at adding an addition to the north side of the Public Safety Building (option 2). The Initial cost projection to implement the second option (renovation plus an addition) was approximately $7,000,000.

Spring, 2023: In the Spring of 2023 Redstone was asked to develop a Space Needs Assessment for a **new** Public Safety Building ("PSB"), which would also include Fire Station #1. Most of the police needs were identified in the prior renovation study, which was updated. In addition, Redstone was asked to identify the space needs to replace Fire Stations #1, #2 and #3 with new facilities. Redstone worked with the City to identify the needs of the three facilities, and to develop test fits for potential locations for the facilities.

October 2023: Redstone met with the Public Safety Committee and presented its initial findings for the needs of a new Public Safety Building and for Fire Stations #1, #2, and #3. Presented were diagrammatic site plans, which included keeping the existing Lee BeGole Drive because of utilities. ***The Committee asked that Redstone develop a new layout that combines the PSB and Fire Station #1 into one building.***

***In addition, the Committee requested that Redstone provide a Run Time Analysis (RTA) for the entire City to determine potential locations for future fire stations to serve the community in the future.*** Redstone engaged Beckett and Raeder to accomplish this effort. The City provided potential locations for the possible new stations, one of which would serve the southwest corner of Novi and the second to serve the northwest section of Novi. ***The RTA showed that approximately 93% of existing calls and 89% of the responses to future calls for service would be within five (5) minutes***. A copy of the RTA is attached to this report.

**SPACE NEEDS ASSESSMENT for a NEW PUBLIC SAFETY BUILDING:**

Working with members of the police and fire departments, an updated space needs assessment was developed for the new PSB, which resulted in the following summary:

**Public Safety Building Campus**:

- Police and Administrative Operations, including shared spaces: 53,776 sf;
- Fire Station #1 Operations- 18,942 sf. (Four-Bay Station)
- Fleet Maintenance Garage: 6,398 sf.

Station #1 is planned to have four, single-deep bays, and will also include a Captain's suite and a Fire Inspector. No public access to station operations is anticipated.

**Fire Station #2 and #3**: Each station is programmed for three, single-deep bays. Each station is estimated to need approximately 14,500 sf. Included are sleep rooms for five, on-duty personnel. Station 2 is also programmed to include a Lieutenant's office and separate sleep room. Three Sleep Rooms are provided for Superior EMS staff at both proposed stations.

**CONFIRMATION OF SITE CAPACITIES:**

Site information was provided for three potential sites, as follows:

1. **Public Safety Building Site**: a new site on the northwest corner of Lee BeGole Drive and 11 Mile Road. This site is to be combined with the City's existing property on the Northeast corner of the intersection. It is contemplated that Lee BeGole Drive will be relocated as part of this development.
2. **Station #2 Site**. A new facility on the existing property located at 13 Mile Road and Paramount Street, approximately 0.64 acres.
3. **Station #3 Site**. A new facility on a parcel on Venture Drive north of Nine Mile Road. of approximately, 1.76 acres

Redstone then developed block diagrams for each site to confirm that the sites were sufficient to accommodate the new facilities.

**PUBLIC SAFETY BUILDING CAMPUS SITE (including Fire Station 1)**

The Currently owns the property on the Southeast corner of 11 Mile Road and Lee BeGole Road. It has acquired the property on the Northwest corner of that intersection. The intention of the city is to reroute Lee BeGole and to create a roundabout to the east. Redstone was given the combined sites to determine the feasibility of a new, Public Safety Building and Fire Station #1 at this location.

At the October 2023 committee meeting, Redstone presented a concept that showed two buildings, a relocated Fire Station #1, and the Public Safety Building. After combining the two facilities into one building, the new square footage is projected to be about 72,240sf, about

4,500sf less than two separate buildings. Please note that Station #1 is programmed to be a four-bay station.

FEMA maps and other reference material are included. There is a creek running from the northwest to the southeast of the property. This creek is few hundred feet north of 11 Mile, and its eastern portion is considered to be in a flood plain. The buildings need to be located south of the flood plain areas.

The existing utilities in the Lee BeGole ROW/street will need to be relocated as part of the road relocation to allow for this site to be developed properly.

**We were subsequently asked to present two cost options for the PSB/Fire Station 1 scenario. The two options are:**

1. Separate Fire Station #1 from the BSP Building on the Lee Begole site, similar to the site plan presented in October 2023.

   A copy of the site plan showing two separate buildings has been added. At this point in time, site development costs should be similar for either option at the lee BeeGole site.

2. Build a new PSB at Lee BeGole Drive and Station #1 at its current location on Grand River.

The existing Station #1 is a 10,000sf facility that sits on a site that is approximately 45,000 to 50,000sf, or a little over one acre in size.

Based on the current space needs program of almost 19,000sf for a new Station 1, any new station built on the site would, at a minimum, require a two-story facility. A two-story design would require a minimum increase of about 1,000sf for fire stairs and utility shafts.

In addition, the new program calls for four apparatus bays, which will increase required ingress and egress apron widths from the existing three bays and will impact curb cuts on on both Grand River and the south ingress access to the west of Main Street.

We believe this site to be too small for an efficient design for a new fire station.

**STATON 2 SITE**. The site dimensions are 102' x 271', or about 0.64 acres. It was anticipated by the City that the station would be torn down and a new, two-story station could be accommodated on this site.

Our Initial site investigation indicates that only a two- bay station of approximately 13,000 square feet could 'fit' on this site regardless of whether it is a one or two-story building.

A one-story site and building layout is attached for review and discussion. This solution has a number of drawbacks, including minimal setbacks, public parking access through apparatus egress lanes, etc.

A two-story solution would necessitate two means of egress from the second floor, effectively adding a minimum of two, 12' x 30' stairwells, or another 700sf to the building requirements. More importantly, due to the narrowness of the lot, there is no convenient place to locate the stairwells next to the apparatus bay.

In both scenarios public visitors will need to access the site via the apparatus ingress approach.

***Redstone's opinion is that the existing site should not be considered as the site for the new station #2. The city's potential investment of $7,500,000 is too significant to be put on such a small site.*** ***T***his site is too small for an efficient fire station site that incorporates the space needs site and that also provides for fire fighter parking and occasional (and non-conflicting) public access with appropriate parking.

***A new site for Station #2 of approximately two or more acres is strongly recommended***.

**STATION 3 SITE.**

The proposed site for Station #3 is on Venture Drive, north of Nine Mile Road. The dimensions are approximately 308 x 245' or about 1.73 acres.

The requirements identified in the Space Needs Assessment can be accommodated on this site. A conceptual site and floor plan are attached to this study.

***This concept also confirms that approximately two acres or more would be needed for any new sites being considered.***

**PROJECT COSTS**

Based on our recent project cost projections and information obtained at the 2023 Station Design Conference, we have developed a high-level Project Budget for the new facilities.

In addition, O'Brien Construction Company was engaged to provide an initial construction cost estimate for a combined PSB/Fire Station #1 on the Le BeGole site as well as an initial estimate for the Maintenance Building.

Timetable Assumptions:

- Voter Approval in the Spring of 2024.
- Design efforts: through 2024.
- Bidding: late 2024- Early 2025
- Construction: 2025- 2026 (18-24 months)

**PROJECT COST ASSUMPTIONS**:

Project Costs include Construction Costs ( including contractor OH & profit) plus Soft Costs.

Soft costs are an allowance (percentage of construction costs) that include:

- Professional fees
- Furniture, Fixtures and Equipement
- Owner Costs
- Security and Technology

For Public Safety Buildings we recommend a soft cost allowance of 20 to 22%.

Our preliminary project cost projections following the assumptions listed above (for 2024 approval and design with 2025- 2026 construction) use our current and historical data from recent projects and studies, as well as estimates provided by O'Brien Construction for the combinded PSB/Fire Station #1 and maintenance garage:

1. Fire Stations: (Historic Data) 2023 projection: $400/sf + 20% soft costs = $480/sf;
    - *Projected to 2025-2026- 15% = $550/sf*
2. Public Safety Building including Fire Station #1. O'Brien Construction Estimate: $450/sf plus 22% soft costs = $550/sf:
    - *Projected to 2025-2026 +15% = $633/sf*.
3. 2023 Fire Station (Historic Data) new Construction Project Budget- (2024-2025 construction); $550-600/sf.
    - *Projected to 2025-2026 =+ 5% + $625/sf.*
4. Fire Stations: (Current Data) Recently Completed Study: $460 + 20% soft costs = $550/sf;
    - *Assumes Spring 2025 construction start*
5. Maintenance Building. O'Brien Construction Estimate: $250/sf + 20% soft costs= $300/sf.
    - Projected to 2025-2026 + 15% = $345/sf; Use $350/sf

## PROJECT FUNDING RECOMMENDATIONS:

For Bonding or Voter Approval purposes, we recommend using the following Project Budget Estimates, which include hard and soft costs for 2025-2026 construction:

- PSB, including Fire Station 1: $650/sf.
- Fire Stations #2 & #3: $560/sf
- Maintenance Building: $350/sf.
- For new stations in SW & NW Novi: $650/sf. (site and date of construction unknown)

| Building | SNA Projected Sq. Footage | Construction Time Period (18-24 months) | Estimated PROJECT Cost/SF (Hard + Soft Costs) | ESTIMATED COST PER PROJECT |
|---|---|---|---|---|
| New, Combined Public Safety Building and Fire Station #1 | 72,240 | 2025-2026 | $650.00 | $46,956,000 |
| Mtnce. Garage | 6,400 | 2025-2026 | 350.00 | 2,240,000 |
| PSB Site Development | +/- 8.1 acres | 2025-2026 | Included above | |
| Fire Station #2 | 14,500 | 2025-2026 | $560.00 | 8,120,000 |
| Fire Station #3 | 14,500 | 2025-2026 | $560.00 | 8,120,000 |
| New SW Fire Station | 14,500 (assumed) | TBD | $650.00 | 9,425,000 |
| New NW Fire Station | 14,500 (assumed) | TBD | $650.00 | 9,425,000 |
| | | | **SUBTOTAL** | 84,286,000 |
| Owner Budget and Timing Contingency | | 10% | | 8,428,600 |
| **TOTAL PROJECTED PUBLIC SAFETY PROJECT COSTS 2025-2026 CONSTRUCTION (18-24 months),** INCLUDES PROJECTED COSTS TO REPLACE THREE EXISTING STATIONS AND TO ADD TWO NEW STATIONS | | | | **$92,714,600** |
| | | | | |
| **OPTION 1. SEPARATE Public Safety Building and Station #1 AT LEE BEGOLE SITE: (**per October presentation) **Compare to Line one above at $46,956,000** | | | | |
| NEW PSB (two-story at 29,000sf/floor) | 58,000sf | 2025-2026 | $650.00 | $37,700,000 |
| NEW FS #1 | 18,942sf +/- | 2025-2026 | $560.00 | $10,607,520 |
| | | | **Subtotal:** | $48,307,520 |
| | | | **Potential Increase** | **$1,351,520** |
| | | | **Plus: Owner timing and contingency@ 10%** | **$131,500** |
| | | | **Option 1. Total Potential Increase to Project Cost Projection** | **$1,483,000** |
| **OPTION 2. BUILD A PSB BUILDING ON LEE BEGOLE SITE and a NEW STATION #1 AT EXISTING LOCATION & Note: Existing site is small and will require a two-story structure. Compare to Line one above at $46,956,000** | | | | |
| NEW PSB | 58,000sf | 2025-2026 | $650.00 | $37,000,000 |
| NEW FS #1 | 20,000sf +/- | 2025-2026 | $560.00 | $11,200,000 |
| (1,000sf added for 2-story) | | | **Subtotal:** | $48,200,000 |
| | | | **Potential Increase (not including Demo of Station 1)** | **$1,244,444** |
| | | | **Plus: Owner timing and contingency@ 10%** | **$124,400** |
| | | | **Option 2. Total Potential Increase to Project Cost Projection** | **$1,368,400** |

# SECTION B

## RUN TIME ANALYSIS

# City of Novi
# Fire Study

Initial: 11/20/2023

Revised: 12/07/2023

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# Data Used in the Study

- Calls from Jan. 2017 – Nov. 2023
- 28,612 total calls

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Beckett&Raeder

# Variables

- 10mph over speed limit
- Ignore traffic lights and stop signs, but slow down at intersections
- Routes **allowed** outside City limits
- Freeway use **allowed**
- U-turns at intersections **allowed**
- Use of private roads **allowed**

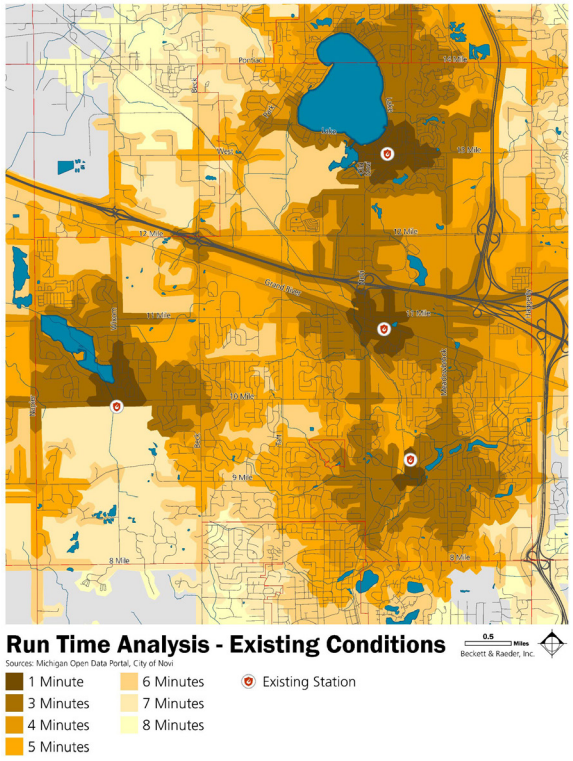
B R i
Beckett&Raeder

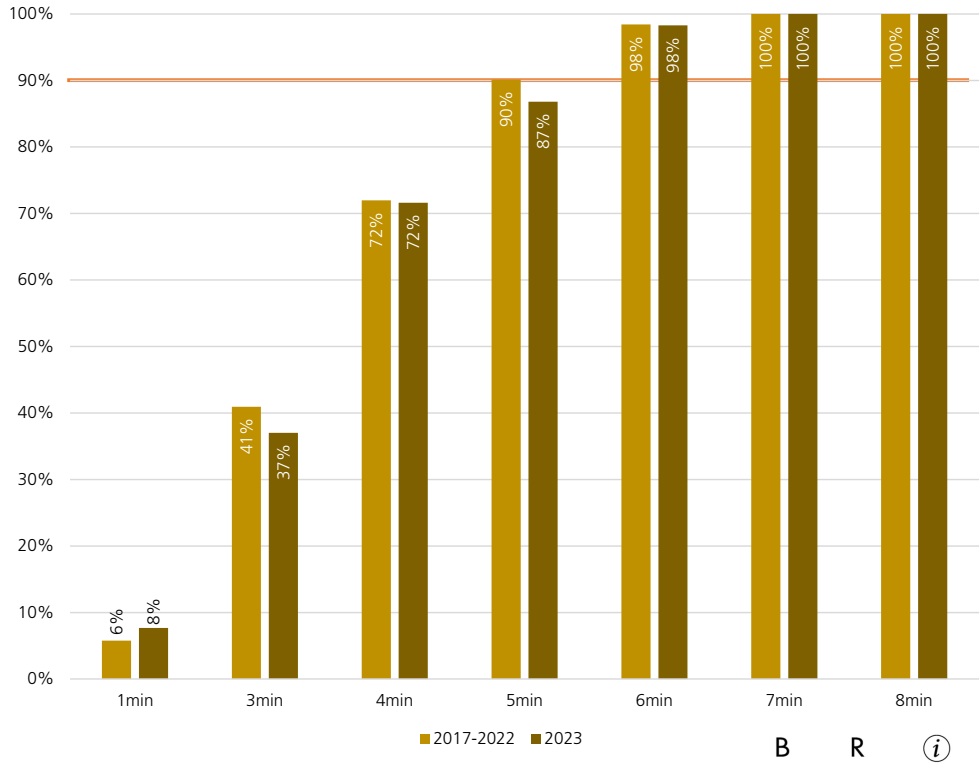
# Variables - Traffic

- Modeled at 1 time: Monday afternoon rush hour
  - Free Flowing: 85% - 100% flow speed
  - Moderate: 65% - 75% flow speed
  - Slow: 45% - 65% flow speed
  - Stop & Go: 0% - 45% flow speed
- ESRI World Traffic Service (HERE.com)
  - GPS, cell phone, user sensor, toll-tag data

Beckett&Raeder

# Existing Conditions

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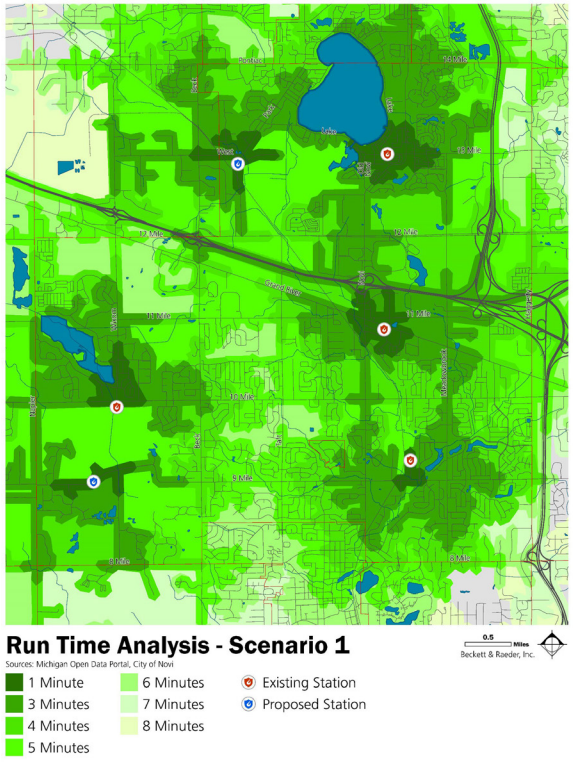
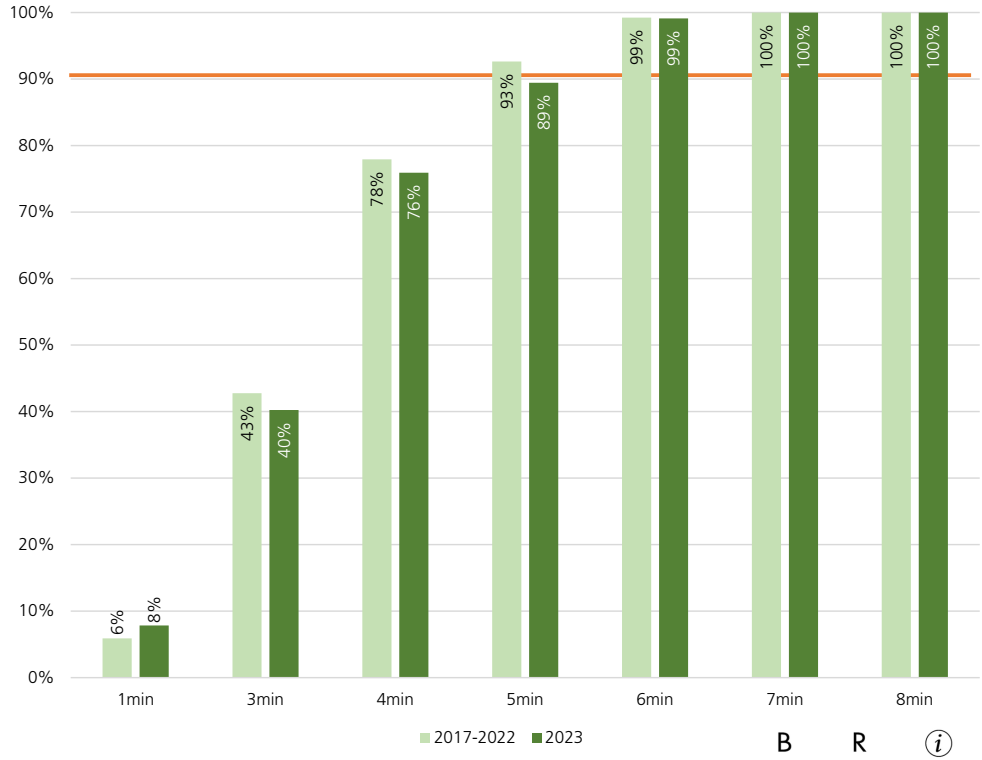
# Scenario 1

- All 4 Existing Stations
- Two Proposed New Stations – Nine Mile & Garfield Road; West Park & West Road

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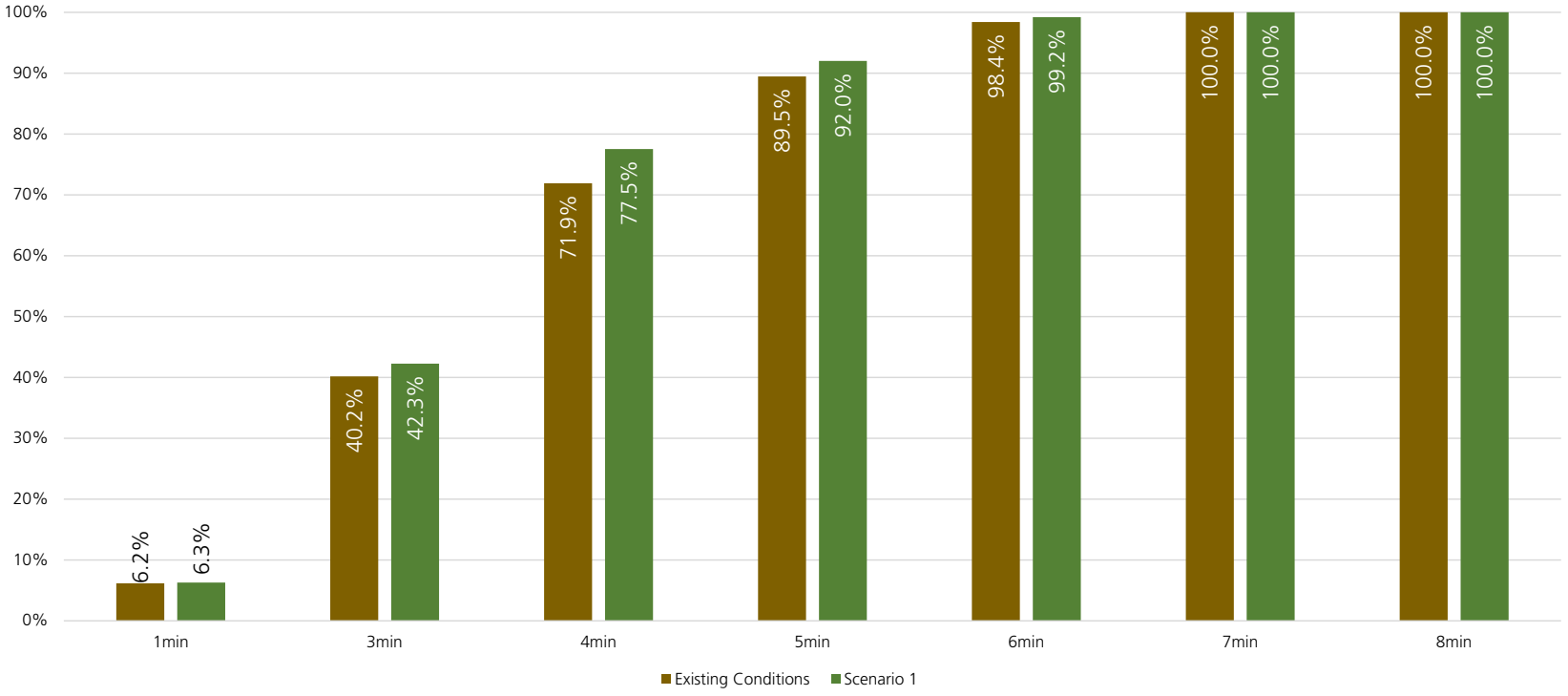
# Comparison

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# SECTION D

## COST PROJECTIONS

Quote: 1334 / Date: 12/7/2023
Project Number: PC-22013

O'Brien Construction Company, Inc
966 Livernois
Troy, MI
48083, US
(248) 334-2470

Prepared By:
Mike Brown
(248) 334-2470
mbrown@obriencc.com

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Project: Novi Police & Fire

**Scope of Work**

**Public Safety Building:** No bonds, permits, tap fees, utility fees, or other municipal fees are included. No communications tower is included in this estimate. All pricing is based on OCC's historical pricing and provided conceptual drawings and is subject to change as the design is further developed.

01-000 - General Requirements

| | Quantity | Unit Cost | Total Cost |
|---|---|---|---|
| 01-302 General Liability | 1 ea | $ 125,000.00 | $ 125,000.00 |
| 01-500 Quality Testing | 1 ea | $ 25,000.00 | $ 25,000.00 |
| 01-600 Temporary Services | 1 ea | $ 95,000.00 | $ 95,000.00 |
| 01-816 Site Layout | 1 ea | $ 25,000.00 | $ 25,000.00 |
| 01-914 Dumpsters | 82 ea | $ 550.00 | $ 45,100.00 |
| | -- | -- | $ 315,100.00 |

03-000 - Concrete

| | Quantity | Unit Cost | Total Cost |
|---|---|---|---|
| 03-300 Concrete Foundations | 2,200 ea | $ 250.00 | $ 550,000.00 |
| 03-310 Concrete Slabs On Grade SD | 38,300 ea | $ 9.50 | $ 363,850.00 |
| 03-310 Concrete Slabs On Grade HD | 10,300 ea | $ 12.50 | $ 128,750.00 |
| 03-310 Concrete Slabs On Deck | 23,700 ea | $ 12.50 | $ 296,250.00 |
| | -- | -- | $ 1,338,850.00 |

04-000 - Masonry

| | Quantity | Unit Cost | Total Cost |
|---|---|---|---|
| 04-544 CMU Walls | 32,400 ea | $ 38.00 | $ 1,231,200.00 |

| | Quantity | Unit Cost | Total Cost |
|---|---|---|---|
| 04-520 Brick Veneer | 23,800 ea | $ 28.00 | $ 666,400.00 |
| | -- | -- | $ 1,897,600.00 |

05-000 - Metals

| | Quantity | Unit Cost | Total Cost |
|---|---|---|---|
| 05-510 Metal Stairs | 3 ea | $ 35,000.00 | $ 105,000.00 |
| 05-200 Structural Steel | 23,700 ea | $ 40.00 | $ 948,000.00 |
| 05-400 Cold Formed Metal Framing | 48,600 ea | $ 35.00 | $ 1,701,000.00 |
| | -- | -- | $ 2,754,000.00 |

06-000 - Carpentry

| | Quantity | Unit Cost | Total Cost |
|---|---|---|---|
| 01-922 Final Clean-Up | 72,300 ea | $ 1.25 | $ 90,375.00 |
| 06-200 Rough Carpentry Material - Misc. Allowance | 72,300 ea | $ 1.50 | $ 108,450.00 |
| 06-204 Rough Carpentry Labor - Misc. Allowance | 72,300 ea | $ 1.50 | $ 108,450.00 |
| 06-450 Finish Carpentry Material | 62,000 ea | $ 2.50 | $ 155,000.00 |
| 06-460 Finish Carpentry Labor | 72,300 ea | $ 4.00 | $ 289,200.00 |
| | -- | -- | $ 751,475.00 |

07-000 - Thermal & Moisture Protection

| | Quantity | Unit Cost | Total Cost |
|---|---|---|---|
| 07-200 Waterproofing | 2 ea | $ 10,500.00 | $ 21,000.00 |
| 07-210 Insulation | 72,300 ea | $ 3.50 | $ 253,050.00 |
| 07-500 Pitched Roofing | 326 ea | $ 1,200.00 | $ 391,200.00 |
| 07-500 Flat Membrane Roofing | 23,700 ea | $ 24.00 | $ 568,800.00 |
| 07-800 Fire Proofing and Fire Safing | 23,700 ea | $ 1.50 | $ 35,550.00 |
| 07-900 Caulking and Sealants | 72,300 ea | $ 1.50 | $ 108,450.00 |
| | -- | -- | $ 1,378,050.00 |

08-000 - Openings

| | Quantity | Unit Cost | Total Cost |
|---|---|---|---|
| 08-200 Doors, Frames, Hardware Allowance | 1 ea | $ 315,000.00 | $ 315,000.00 |
| 08-310 Access Doors and Panels Allowance | 1 ea | $ 5,000.00 | $ 5,000.00 |
| 08-330 Apparatus Bay Doors | 10 ea | $ 25,000.00 | $ 250,000.00 |
| 08-330 Sally Port & Forensic Garage Overhead Doors | 5 ea | $ 7,500.00 | $ 37,500.00 |
| 08-400 Aluminum Storefronts | 850 ea | $ 50.00 | $ 42,500.00 |

| | Quantity | Unit Cost | Total Cost |
|---|---|---|---|
| 08-400 Aluminum Storefronts - Door Slabs & Hardware | 6 ea | $ 6,000.00 | $ 36,000.00 |
| 08-500 Windows Allowance | 1 ea | $ 250,000.00 | $ 250,000.00 |
| 08-116 Detention Equipment Allowance | 1 ea | $ 575,000.00 | $ 575,000.00 |
| | -- | -- | $ 1,511,000.00 |

09-000 - Finishes

| | Quantity | Unit Cost | Total Cost |
|---|---|---|---|
| 09-200 Gypsum Board Assemblies - Partitions & Drywall | 30,000 ea | $ 34.00 | $ 1,020,000.00 |
| 09-200 Gypsum Board Assemblies - Furring & Drywall | 17,900 ea | $ 5.00 | $ 89,500.00 |
| 09-200 Gypsum Board Assemblies - Ceilings | 72,300 ea | $ 4.00 | $ 289,200.00 |
| 09-300 Hard Tile - Floors | 730 ea | $ 18.00 | $ 13,140.00 |
| 09-300 Hard Tile - Walls | 900 ea | $ 22.00 | $ 19,800.00 |
| 09-510 Acoustical Ceiling Tile | 36,400 ea | $ 5.50 | $ 200,200.00 |
| 09-650 Resilient Flooring | 62,000 ea | $ 6.00 | $ 372,000.00 |
| 09-670 Epoxy Flooring | 10,300 ea | $ 9.00 | $ 92,700.00 |
| 09-900 Painting, Staining and Finishing | 72,300 ea | $ 5.00 | $ 361,500.00 |
| | -- | -- | $ 2,458,040.00 |

10-000 - Specialties

| | Quantity | Unit Cost | Total Cost |
|---|---|---|---|
| 10-202 Signage | 1 ea | $ 25,000.00 | $ 25,000.00 |
| 10-210 Toilet Partitions Allowance | 1 ea | $ 6,500.00 | $ 6,500.00 |
| 10-280 Toilet and Bath Accessories | 12 ea | $ 650.00 | $ 7,800.00 |
| 10-440 Fire Protection Specialties | 25 ea | $ 400.00 | $ 10,000.00 |
| 10-510 Lockers and Benches - Allowance | 1 ea | $ 25,000.00 | $ 25,000.00 |
| 10-550 Postal Specialties | 1 ea | $ 2,000.00 | $ 2,000.00 |
| 10-560 Closet and Storage Shelving | 1 ea | $ 3,500.00 | $ 3,500.00 |
| 10-750 Flagpoles | 3 ea | $ 3,000.00 | $ 9,000.00 |
| | -- | -- | $ 88,800.00 |

11-000 - Appliances

| | Quantity | Unit Cost | Total Cost |
|---|---|---|---|
| 11-300 Laundry Equipment | 1 ea | $ 20,000.00 | $ 20,000.00 |
| 11-310 Appliances | 1 ea | $ 25,000.00 | $ 25,000.00 |
| | -- | -- | $ 45,000.00 |

Quote: 1334 / Date: 12/7/2023
Project Number: PC-22013

12-000 - Furnishings

| | Quantity | Unit Cost | Total Cost |
|---|---|---|---|
| 12-210 Window Treatments Allowance | 1 ea | $ 25,000.00 | $ 25,000.00 |
| 12-300 Casework/ Cabinets | 5 ea | $ 4,000.00 | $ 20,000.00 |
| 12-360 Countertops | 5 ea | $ 3,000.00 | $ 15,000.00 |
| | -- | -- | $ 60,000.00 |

14-000 - Elevators

| | Quantity | Unit Cost | Total Cost |
|---|---|---|---|
| 14-240 Elevators and Escalators | 4 ea | $ 38,000.00 | $ 152,000.00 |
| 14-240 Elevators and Escalators - Inspection Allowance | 2 ea | $ 15,000.00 | $ 30,000.00 |
| | -- | -- | $ 182,000.00 |

21-000 - Fire Suppression

| | Quantity | Unit Cost | Total Cost |
|---|---|---|---|
| 21-200 Fire Protection | 72,300 ea | $ 6.00 | $ 433,800.00 |
| | -- | -- | $ 433,800.00 |

22-000 - Plumbing

| | Quantity | Unit Cost | Total Cost |
|---|---|---|---|
| 22-200 Plumbing | 72,300 ea | $ 13.50 | $ 976,050.00 |
| | -- | -- | $ 976,050.00 |

23-000 - HVAC

| | Quantity | Unit Cost | Total Cost |
|---|---|---|---|
| 23-200 HVAC | 72,300 ea | $ 25.00 | $ 1,807,500.00 |
| | -- | -- | $ 1,807,500.00 |

26-000 - Electrical

| | Quantity | Unit Cost | Total Cost |
|---|---|---|---|
| 26-200 Electrical | 72,300 ea | $ 28.00 | $ 2,024,400.00 |
| 26-200 Electrical - Generator Allowance | 1 ea | $ 150,000.00 | $ 150,000.00 |
| | -- | -- | $ 2,174,400.00 |

27-000 - Communications

| | Quantity | Unit Cost | Total Cost |
|---|---|---|---|
| 27-200 Communications | 72,300 ea | $ 4.00 | $ 289,200.00 |

| | Quantity | Unit Cost | Total Cost |
|---|---|---|---|
| | -- | -- | $ 289,200.00 |

28-000 - Security

| | Quantity | Unit Cost | Total Cost |
|---|---|---|---|
| 28-200 Access Control | 72,300 ea | $ 2.00 | $ 144,600.00 |
| 28-400 Video Surveillance | 72,300 ea | $ 2.50 | $ 180,750.00 |
| | -- | -- | $ 325,350.00 |

31-000 - Earthwork & Utilities

| | Quantity | Unit Cost | Total Cost |
|---|---|---|---|
| 31-200 Earthwork | 8.1 ea | $ 200,000.00 | $ 1,620,000.00 |
| 31-200 Earthwork - Bad Soils & Wetland Allowance | 1 ea | $ 500,000.00 | $ 500,000.00 |
| | -- | -- | $ 2,120,000.00 |

32-000 - Exterior Improvements

| | Quantity | Unit Cost | Total Cost |
|---|---|---|---|
| 32-200 Asphalt Paving | 95,000 ea | $ 5.50 | $ 522,500.00 |
| 32-230 Concrete Pavement(Drives and Walks) - Std Duty | 42,300 ea | $ 8.50 | $ 359,550.00 |
| 32-230 Concrete Pavement(Drives and Walks) - Heavy Duty | 30,100 ea | $ 12.50 | $ 376,250.00 |
| 32-300 Fences and Gates | 1,500 ea | $ 50.00 | $ 75,000.00 |
| 32-300 Fences and Gates - Vehicle Gates w/Operators | 2 ea | $ 20,000.00 | $ 40,000.00 |
| 32-800 Irrigation | 1 ea | $ 80,000.00 | $ 80,000.00 |
| 32-930 Landscaping | 1 ea | $ 190,000.00 | $ 190,000.00 |
| | -- | -- | $ 1,643,300.00 |

33-000 - Utilites

| | Quantity | Unit Cost | Total Cost |
|---|---|---|---|
| 33-200 Site Utilities | 8.1 ea | $ 175,000.00 | $ 1,417,500.00 |
| | -- | -- | $ 1,417,500.00 |

90-000 - Contingency & General Conditions

| | Quantity | Unit Cost | Total Cost |
|---|---|---|---|
| 90-125 Design Contingency | 0.1 ea | $ 23,967,015.00 | $ 2,396,701.50 |
| 90-125 Construction Contingency | 0.1 ea | $ 26,363,716.50 | $ 2,636,371.65 |
| 90-700 - General Conditions | 0.06 ea | $ 29,000,088.15 | $ 1,740,005.29 |

O'BRIEN CONSTRUCTION COMPANY, INC.

Quote: 1334 / Date: 12/7/2023
Project Number: PC-22013

| | Quantity | Unit Cost | Total Cost |
|---|---|---|---|
| | -- | -- | $ 6,773,078.44 |

**Notes**

**Summary**

| | |
|---|---|
| Subtotal | $ 30,740,093.44 |
| Fee (6%) | $ 1,844,405.61 |

$ 32,584,499.05

Accepted By

Date

# SECTION E

## SPACE NEEDS ASSESSMENT
## PUBLIC SAFETY BUILDING
## FIRE STATION #1
## FIRE STATION #2 & #3

| Department or Space Type | Current Staff | Future Staff | Req'd Sq. Ft. |
|---|---|---|---|
| 1. Public Areas | 0 | 0 | 6,817 |
| 2. Staff Common Areas | 0 | 0 | 7,391 |
| 3. Police Administration- Including Fire | 9 | 10 | 3,884 |
| 4. Records | 5 | 6 | 1,851 |
| 5. Communications | 15 | 17 | 2,203 |
| 6. Detective Bureau (Plus Task Force members- 16) | 19 | 23 | 5,981 |
| 7. Uniform Operations - Including Cadets | 63 | 75 | 4,954 |
| 8. Holding | 0 | 0 | 6,330 |
| 9. Property | 0 | 0 | 3,610 |
| 10. Training | 1 | 1 | 193 |
| 12. Building Support Areas | 0 | 0 | 3,540 |
| 13. Secure Parking | 0 | 0 | 0 |
| Total | 112 | 132 | |
| Subtotal | | | 46,753 |
| 15% Gross-Up Factor (Common circulation, structure, shafts, etc.) (Use additional 5% Gross-Up Factor for Renovation) | | | 7013 |
| **Total Main Building Area** | | | 53766 |
| 11. Fleet Maintenance Garage | 1 | 2 | 5,563 |
| 15% Gross-Up Factor (Common circulation, structure, shafts, etc.) (Use additional 5% Gross-Up Factor for Renovation) | | | 834 |
| **Total Maintenance Building** | | | **6,398** |

| Space | Description | | Staff Current | Staff Planned | Space Needs Qty | Space Needs Size | Space Needs Reference Pg # | Req'd Net Sq. Ft. | Comments / *Adjacencies |
|---|---|---|---|---|---|---|---|---|---|
| **1. Public Areas** | | | | | | | | | |
| Public Vestibule & Lobby SHARED | Vestibule | | | | 1 | 100 | | 100 | **Locked & Buzz in after hours** |
| | Floor Mat | | | | | | | | |
| | BabyDrop-off | x | | | 1 | 20 | | 20 | |
| | Intercom / Buzzer | x | | | | | | | |
| | After Hrs. 911 Phone | x | | | | | | | |
| | Lobby | | | | 1 | 800 | | 800 | *Lobby open for 24/7 |
| | 2nd floor lobby | | | | 1 | 200 | | 200 | |
| | Waiting Area | x | | | | | | 0 | |
| | Report Writing Counter/ Kiosk | x | | | 1 | 10 | | 10 | |
| | Chairs | 5 | | | 5 | 5 | | 25 | |
| | Display area/ bulletins | x | | | | | | 0 | |
| | Brochure Rack | x | | | | | | 0 | |
| | Drinking Fountain | x | | | | | | 0 | |
| | Overhead Monitors | x | | | | | | 0 | |
| | | Subtotal: | | | | | | 1,155 | |
| Front Desk SHARED | **PD Dispatch Public Counter:** | | | | | | | 0 | *Public Lobby |
| | Linear ft. Public Counter (3) | | | | 1 | 12 | | 12 | *Records |
| | ADA Counter Linear ft. (3) | | | | 1 | 12 | | 12 | |
| | **PD Records Public Counter: Separate** | | | | | | | | |
| | Linear ft. Public Counter (3) | 1 ADA | | | 2 | 40 | | 80 | **Two Windows for Records Counter; Separate from Police Window; like Livonia Lobby** |
| | **FD Public Counter:** | | | | | | | 0 | |
| | Linear ft. Public Counter (3) | | | | 1 | 12 | | 12 | Might be combined with PD Front Desk; depends on layout |
| | | | | | | | | 0 | |
| | | Subtotal: | | | | | | 116 | |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Public Report Writing Room(s) | Report Writing Room (public side) | | | | 1 | 100 | | 100 | Public Side Room only; large enough to watch video arraignments |
| | Locate Room(s) on secure side | | | | 1 | 100 | | 100 | *Front Desk |
| | Built-in Table and Chairs | | | | | | | 0 | |
| | Live Scan in One | | | | 1 | 25 | | 25 | |
| | | Subtotal: | | | | | | 225 | |
| Communicating Stair-**PUBLIC** | Open Stairwell | | | | 1 | 400 | | 400 | **CONNECT PUBLIC LOBBY ON BOTH FLOORS** |
| | | Subtotal: | | | | | | 400 | 200sf /floor |
| Community Room/Training/ EOC 100 if shared with Police and Fire; 75 if used by Public and PD only | Training Room | | | | 1 | 1,800 | 06.02a | 1,800 | *Lobby |
| | Movable room divider | no | | | | | | 0 | *Public Toilets |
| | Coffee Bar | x | | | | | | 0 | *Table/Chair Storage |
| | | | | | | | | 0 | *Mat Storage |
| | Audio/Visual Closet | x | | | | | | 0 | *Shared with public |
| | Seating: | | | | | | | | |
| | w/tables | 130 | | | | | | 0 | |
| | w/o tables | | | | | | | 0 | |
| | Equipment: | | | | | | | | Existing Training Room @ PD ~ 52'x34' |
| | Overhead Projectors | x | | | | | | 0 | |
| | Projector Screens | x | | | | | | 0 | |
| | TV Monitors | x | | | | | | 0 | |
| | Voice/Data Outlets: | | | | | | | | |
| | Perimeter Walls | | | | | | | 0 | |
| | Floor Mounted | | | | | | | 0 | |
| | | Subtotal: | | | | | | 1,800 | |
| Alternate PSAP in Storm Shelter Area | Pre-function Area | | | | 1 | 200 | | 200 | Outside training room |
| | | | | | | | | | |
| | | | | | | | | 0 | |
| | | Subtotal: | | | | | | 200 | |
| Alternate PSAP in Storm Shelter Area | EOC Kitchenette | | | | 1 | 200 | | 200 | *Training Room / Community Room |
| | | | | | | | | | |
| | | | | | | | | 0 | |
| | | Subtotal: | | | | | | 200 | |
| Alternate PSAP in Storm Shelter Area | EOC PSAP Workstation | | | | 1 | 200 | | 200 | *Training Room / Community Room |
| | | | | | | | | | |
| | | | | | | | | 0 | |
| | | Subtotal: | | | | | | 200 | |

| Space | Description | | Staff Current | Staff Planned | Space Needs Qty | Space Needs Size | Space Needs Reference Pg # | Req'd Net Sq. Ft. | Comments / *Adjacencies |
|---|---|---|---|---|---|---|---|---|---|
| | EOC Toilet | | | | 1 | 77 | | 77 | |
| | | | | | | | | 0 | |
| | | Subtotal: | | | | | | 77 | |
| Breakout Rooms/ Conference Rooms | Conference Room | 6-8 | | | 2 | 150 | 5.06 | 300 | *Training / Community Room |
| | | | | | | | | 0 | |
| | | | | | | | | 0 | |
| | | Subtotal: | | | | | | 300 | |
| Public Toilet(s) | Public Unisex Toilet | | | | 4 | 77 | | 308 | |
| | | | | | | | | 0 | |
| | | Subtotal: | | | | | | 308 | |
| Training Supplies Storage | Storage Room | | | | | | | 0 | |
| | Training Supplies | | | | | | | 0 | |
| | | Subtotal: | | | | | | 0 | |
| EMS Storage | Storage Room | | | | 1 | 200 | | 200 | |
| | Tables and Chairs | | | | | | | 0 | |
| | | | | | | | | 0 | |
| | | Subtotal: | | | | | | 200 | |
| Equipment Storage | Storage Room | | | | 1 | 200 | | 200 | *Training Room / Community Room |
| | Stuff | | | | | | | 0 | |
| | | | | | | | | 0 | |
| | | Subtotal: | | | | | | 200 | |
| CERT Storage | EMS Storage Room | | | | 1 | 100 | | 100 | *Training Room / Community Room |
| | | | | | | | | 0 | |
| | | | | | | | | 0 | |
| | | Subtotal: | | | | | | 100 | |
| Wellness Check Room | CERT Storage | | | | 2 | 100 | | 200 | |
| | | | | | | | | 0 | |
| | | | | | | | | 0 | |
| | | Subtotal: | | | | | | 200 | |
| Net Area | | | | | | | | 5,681 | |
| 20% Internal Circulation Factor | | | | | | | | 1136 | |
| Subtotal: Public Areas | | | 0 | 0 | | | | 6,817 | |

| Space | Description | | Staff | | Space Needs | | | Req'd Net Sq. Ft. | Comments / *Adjacencies |
|---|---|---|---|---|---|---|---|---|---|
| | | | Current | Planned | Qty | Size | Reference pg # | | |
| **02. Staff Commons** | | | | | | | | | |
| Staff Vestibule & Lobby | **Vestibule** | | | | 1 | 80 | | 80 | |
| | Floor Mat | x | | | | | | 0 | |
| | Prox. Access Control | | | | | | | 0 | |
| | Mud Room | | | | 1 | 50 | | 50 | |
| | **Staff Lobby** | | | | 1 | 100 | | 100 | |
| | Staff Elevator | X | | | | | | 0 | See Staff Support Areas |
| | Open Stair | X | | | | | | 0 | see below |
| | Display Area | X | | | | | | 0 | On Wall |
| | Mailbox | | | | | | | 0 | |
| | Drinking Fountain | | | | | | | 0 | |
| | | Subtotal: | | | | | | 230 | |
| Communicating Stair-**Police** | Stairwell | | | | 1 | 400 | | 400 | **OPEN STAIR TO CONNECT BOTH FLOORS** |
| | | Subtotal: | | | | | | 400 | 200sf /floor |
| Lunch Room / Hub | Lunch/Hub | | | | 1 | 500 | 7.01b | 500 | **Hub-Zone Configuration with counter top seating** |
| | Kitchenette: | | | | | | | 0 | |
| | Refrigerator | | | | | | | 0 | |
| | Counter w/ sink | | | | | | | 0 | |
| | TV/Monitor | | | | | | | 0 | |
| | Vending Machines | | | | | | | 0 | |
| | Oven/Stove | | | | | | | 0 | |
| | Tables | 4 | | | | | | 0 | |
| | Chairs | 16-20 | | | | | | 0 | |
| | TV | | | | | | | 0 | |
| | Microwave | | | | | | | 0 | |
| | | Subtotal: | | | | | | 500 | |

| Space | Description | | Staff | | Space Needs | | | Req'd Net Sq. Ft. | Comments / *Adjacencies |
|---|---|---|---|---|---|---|---|---|---|
| | | | Current | Planned | Qty | Size | Reference pg # | | |
| Staff Toilets | Unisex- Two per floor | | | | 7 | 77 | | 539 | |
| | | | | | | | | 0 | |
| | | Subtotal: | | | | | | 539 | - One set per floor |
| Wellness Rooms/ Decompression | Quiet Room | | | | 2 | 100 | | 200 | |
| | Chair | | | | | | | 0 | |
| | Sofa | | | | | | | 0 | |
| | Fridge | | | | | | | | |
| | Counter w/ sink | | | | | | | | |
| | | | | | | | | 0 | |
| | | Subtotal: | | | | | | 200 | |
| Exercise Room | Exercise Room | | | | 1 | 1,200 | 7.09a or b | 1,200 | Exposed or 12' Ceiling |
| SHARED | Universal Gym | | | | | | | 0 | Possible open to City Employees??? |
| | Secure Storage | | | | | | | 0 | |
| | Athletic Flooring | | | | | | | 0 | |
| | Exercise Equipment | | | | | | | 0 | |
| | Exercise machines | | | | | | | 0 | |
| | Treadmills | 6 | | | | | | 0 | |
| | Free weights | | | | | | | 0 | |
| | | Subtotal: | | | | | | 1,200 | |
| **Open Locker Area** | Locker Room | | | | | | | 0 | *Shower Room |
| MSP 5-6 10 CADETS | 12x24x72 Lockers | 5 | | | 5 | 5 | | 25 | *Exercise Room |
| VISITING / HOTELING | 24x24x72 Lockers | 20 | | | 20 | 10 | | 200 | **Includes Cadet Lockers** |
| | 36x24x72 Lockers | 3 | | | 0 | 15 | | 0 | |
| | Changing/Shower Rm | 2 | | | 2 | 77 | | 154 | |
| | | | | | | | | | |
| | Separate Gear Bags | | | | | | | 0 | |
| | | Subtotal: | | | | | | 379 | |

| Space | Description | | Staff | | Space Needs | | | Req'd Net Sq. Ft. | Comments / *Adjacencies |
|---|---|---|---|---|---|---|---|---|---|
| | | | Current | Planned | Qty | Size | Reference pg # | | |
| **MEN'S LOCKER ROOM**; | Mens Lockers 36x24x72 Lockers | 90 | | | 90 | 15 | | 1,350 | *Exercise Room |
| | Toilets w/ ADA | 4 | | | 4 | 15 | | 60 | |
| | Urinals | 4 | | | 4 | 15 | | 60 | |
| | Lavatories | 4 | | | 4 | 10 | | 40 | |
| | Showers | 4 | | | 4 | 25 | | 100 | |
| | Battery Chargers | X | | | | | | 0 | |
| | Bunk Room(s) | | | | | | | 0 | |
| | Separate Gear Bags | | | | | | | 0 | |
| | | Subtotal: | | | | | | 1,610 | |
| **WOMEN'S LOCKER ROOM;** | 36x24x72 Lockers | 30 | | | 30 | 15 | | 450 | *Exercise Room |
| | Toilets w/ ADA | 3 | | | 3 | 15 | | 45 | |
| | Lavatories | 3 | | | 3 | 19 | | 57 | |
| | Showers | 3 | | | 3 | 25 | | 75 | |
| | Battery Chargers | | | | | | | 0 | |
| | Bunk Room(s) | | | | | | | 0 | |
| | Separate Gear Bags | | | | | | | 0 | |
| | | Subtotal: | | | | | | 627 | |
| Net Area | | | | | | | | 5,685 | |
| 30% Internal Circulation Factor | | | | | | | | 1706 | |
| Subtotal: Staff Common Areas | | | 0 | 0 | | | | 7,391 | |

| Space | Description | | Staff | | Space Needs | | | Req'd Net Sq. Ft. | Comments / *Adjacencies |
|---|---|---|---|---|---|---|---|---|---|
| | | | Current | Planned | Qty | Size | Reference pg # | | |
| **3. Public Safety Administration BE CENTRAL IN BUILDING** | | **TO** | | | | | | | |
| Public Safety Director/Chief of Police | Private Office | | 1 | 1 | 1 | 500 | 3.01 | 500 | *Executive Secretary |
| | Conf. Table Chairs | 6-8 | | | | | | 0 | |
| | Guest Chairs | 2 | | | | | | 0 | |
| | Sofa | | | | | | | | |
| | Four-Shelf Bookcase | | | | | | | 0 | |
| | Two-Drawer File Cabinet | | | | | | | 0 | |
| | | Subtotal: | | | | | | 500 | |
| Assistant Chief of Police | Private Office | | 1 | 1 | 1 | 225 | 3.02 | 225 | *Executive Secretary |
| | Sm. Conf. Table | 4 | | | | | | 0 | *Admin. Conference Room |
| | Guest Chairs | 2 | | | | | | 0 | |
| | Four-Shelf Bookcase | | | | | | | 0 | |
| | Two-Drawer File Cabinet | | | | | | | 0 | |
| | | Subtotal: | | | | | | 225 | |
| PD COMMANDERS | Private Office | | 2 | 2 | 2 | 180 | 3.03 | 360 | *Executive Secretary |
| | Guest Chairs | 2 | | | | | | 0 | |
| | Four-Shelf Bookcase | | | | | | | 0 | |
| | Two-Drawer File Cabinet | | | | | | | 0 | |
| | | Subtotal: | | | | | | 360 | |
| Administrative Assistant Area | Private Office | | | | | | | | *File Room |
| | Open Office | 1 | 1 | 2 | 2 | 48 | | 96 | included in this space |
| | Guest Chairs | | | | | | | | *Chief of Police |
| | File Cabinet Area 4 x 3 high lateral files | | | | 4 | 6 | | 24 | |
| | Four-shelf bookcase | | | | | | | 0 | *Admin. Conference Room |
| | Two-drawer file | | | | | | | 0 | *Waiting Area/Entry |
| | | Subtotal: | | | | | | 120 | |

| Space | Description | | Staff | | Space Needs | | | Req'd Net Sq. Ft. | Comments / *Adjacencies |
|---|---|---|---|---|---|---|---|---|---|
| | | | Current | Planned | Qty | Size | Reference pg # | | |
| BUDGET ANALYST | Private Office | | 1 | 1 | 1 | 180 | 3.03 | 180 | located in Admin |
| | Guest Chairs | | | | | | | 0 | |
| | Four-Shelf bookcase | | | | | | | 0 | |
| | Two-drawer file | | | | | | | 0 | |
| | Desk w/ credenza | | | | | | | 0 | |
| | | Subtotal: | | | | | | 180 | |
| Fire Chief | Private Office | | 1 | 1 | 1 | 225 | 3.02 | 225 | *Executive Secretary |
| | Sm. Conf. Table | | | | | | | 0 | *Admin. Conference Room |
| | Conf. Table Chairs | | | | | | | 0 | |
| | Guest Chairs | | | | | | | 0 | |
| | Four-Shelf Bookcase | | | | | | | 0 | |
| | Two-Drawer File Cabinet | | | | | | | 0 | |
| | | Subtotal: | | | | | | 225 | |
| Assistant Fire Chief | Private Office | | 1 | 1 | 1 | 180 | 3.03 | 180 | *Executive Secretary |
| | Guest Chairs | 2 | | | | | | 0 | |
| | Four-Shelf Bookcase | | | | | | | 0 | |
| | Two-Drawer File Cabinet | | | | | | | 0 | |
| | | Subtotal: | | | | | | 180 | |
| Fire Marshal | Private Office | | 1 | 1 | 1 | 180 | 3.03 | 180 | |
| | Desk | 1 | | | | | | 0 | *Clerical |
| | Plan Review Table | 1 | | | | | | 0 | *Conference Room |
| | Guest chairs | 2 | | | | | | 0 | |
| | Four-shelf bookcase | | | | | | | 0 | |
| | Two-drawer file cabinet | | | | | | | 0 | |
| | | | | | | | | 0 | |
| | | Subtotal: | | | | | | 180 | |

| Space | Description | | Staff | | Space Needs | | | Req'd Net Sq. Ft. | Comments / *Adjacencies |
|---|---|---|---|---|---|---|---|---|---|
| | | | Current | Planned | Qty | Size | Reference pg # | | |
| Emergency Management Coordinator | Private Office | | 1 | 1 | 1 | 180 | 3.03 | 180 | *Executive Secretary |
| | Guest Chairs | 2 | | | | | | 0 | |
| | Four-Shelf Bookcase | | | | | | | 0 | |
| | Two-Drawer File Cabinet | | | | | | | 0 | |
| | | Subtotal: | | | | | | 180 | |
| File Room (Police and Fire Together) | File Room | | | | 1 | 150 | | 150 | Administrative Ass't Area |
| | File Cabinets | | | | | | | 0 | |
| | Lateral | | | | | | | 0 | |
| | Vertical | | | | | | | 0 | |
| | Worktop | | | | | | | 0 | |
| | | Subtotal: | | | | | | 150 | |

| Space | Description | | Staff | | Space Needs | | | Req'd Net Sq. Ft. | Comments / *Adjacencies |
|---|---|---|---|---|---|---|---|---|---|
| | | | Current | Planned | Qty | Size | Reference pg # | | |
| Work Room | Work Room | | | | 1 | 100 | | 100 | |
| | Open shelving | | | | | | | 0 | In Admin Staff area |
| | Floor Cabinet | | | | | | | 0 | |
| | Wall Cabinet | | | | | | | 0 | |
| | Equipment: | | | | | | | | |
| | Copier/Scanner/Fax | | | | | | | 0 | |
| | | Subtotal: | | | | | | 100 | |
| AdminConference Rm. | Conference Room | | | | 1 | 504 | 5.02a | 504 | *Waiting Area/Entry |
| | Seating for | 12 | | | | | | 0 | *Chief of Police |
| | Wet Bar | | | | | | | | *Executive Secretary |
| | Hi -Tech- White Bd | | | | | | | 0 | *Unisex Toilet |
| | | Subtotal: | | | | | | 504 | |
| Admin. Waiting Area / Entry | Waiting Area | | | | 1 | 50 | | 50 | |
| | Guest chairs | 4 | | | | | | 0 | |
| | Coffee table | 1 | | | | | | 0 | |
| | | Subtotal: | | | | | | 50 | |
| Admin Coat closet | Closet | | | | 1 | 35 | | 35 | |
| | | Subtotal: | | | | | | 35 | |
| Admin Supply Closet | Closet | | | | 1 | 67 | | 67 | for Give aways |
| | | Subtotal: | | | | | | 67 | |
| Unisex Toilet | Visitor Toilet (ADA accessible) | | | | 1 | 56 | | 56 | |
| | Staff Toilet (ADA accessible) | | | | 1 | 56 | | 56 | |
| | | Subtotal: | | | | | | 112 | |
| Net Area | | | | | | | | 2,988 | |
| 30% Internal Circulation Factor | | | | | | | | 896 | |
| Subtotal: Public Safety Administration | | | 9 | 10 | | | | **3,884** | |

| Space | Description | | Staff Current | Staff Planned | Space Needs Qty | Space Needs Size | Space Needs Reference pg # | Req'd Net Sq. Ft. | Comments / *Adjacencies |
|---|---|---|---|---|---|---|---|---|---|
| **4. Records** | | | | | | | | | |
| ADMIN. LT. | Private Office | | | | 1 | 180 | | 180 | *Records Clerk |
| | Desk w/ credenza | | | | | | | 0 | |
| | Guest Chairs | | | | | | | 0 | |
| | File Cabinets | | | | | | | 0 | |
| | Equipment: | | | | | | | 0 | |
| | Computer | | | | | | | 0 | |
| | | Subtotal: | | | | | | 180 | |
| Records Counter | Public Counter | | | | | | | 0 | *Public Lobby |
| | Linear feet | five ft. | | | 0 | 0 | | 0 | *Records Clerks |
| | Position | 2 | | | | | | 0 | **TWO WINDOWS; ONE ADA** |
| | Bullet Resistant | | | | | | | 0 | **SEE PUBLIC AREAS** |
| | Public | | | | | | | 0 | |
| | Equipment: | | | | | | | | |
| | Computers | | | | | | | 0 | |
| | Shared | | | | | | | 0 | |
| | Cash safe | | | | | | | 0 | |
| | | Subtotal: | | | | | | 0 | |
| Records Clerks | workstations | | 5 | 6 | 6 | 64 | | 384 | *Public Lobby |
| | File | | | | | | | 0 | |
| | Equipment: | | | | | | | | |
| | Computer | | | | | | | 0 | |
| | Printer | | | | | | | 0 | |
| | | Subtotal: | | | | | | 384 | |

| Space | Description | | Staff Current | Staff Planned | Space Needs Qty | Space Needs Size | Space Needs Reference pg # | Req'd Net Sq. Ft. | Comments / *Adjacencies |
|---|---|---|---|---|---|---|---|---|---|
| Fingerprinting Room | Area | | | | 1 | 80 | | 80 | |
| | | | | | | | | 0 | |
| | 3 chairs and a machine | | | | | | | | **Close to records** |
| | For ink Prints | | | | | | | 0 | |
| | On secure side of Public Lobby | | | | | | | 0 | |
| | | Subtotal: | | | | | | 80 | |
| System Administrator (IT Officer) | | | | | | | | | **PLEASE CONFIRM OFFICE LOCATION; Comm or Records** |
| | Private Office | | | | 1 | 130 | 03.05 | 130 | |
| | Guest Chairs | | | | | | | 0 | |
| | Two-drawer file cabinet | | | | | | | 0 | |
| | Desk (lockable) w/ credenza | | | | | | | 0 | |
| | Work counter surface (for repairs) | | | | | | | 0 | |
| | Software storage | | | | | | | 0 | |
| | Equipment: | | | | | | | 0 | |
| | Computer | | | | | | | 0 | |
| | | Subtotal: | | | | | | 130 | |
| Work Area | Work Room | | | | 1 | 100 | | 100 | included in Clerks area |
| | Open Space | | | | | | | 0 | |
| | Equipment: | | | | | | | | |
| | Multifunction Printer | | | | | | | 0 | |
| | Special Equipment | | | | | | | 0 | |
| | Shredder | | | | | | | 0 | |
| | | | | | | | | 0 | |
| | | Subtotal: | | | | | | 100 | |
| Office Supply Room | Supply Closet | | | | 1 | 100 | | 100 | included in clerks area |
| | Open Area | | | | | | | 0 | |
| | | Subtotal: | | | | | | 100 | |

| Space | Description | Staff | | Space Needs | | | Req'd Net | Comments / *Adjacencies |
|---|---|---|---|---|---|---|---|---|
| | | Current | Planned | Qty | Size | Reference pg # | Sq. Ft. | |
| Active Files | Open Area | | | 1 | 200 | | 200 | *Records Clerks |
| | Space Saver Storage | | | | | | | two- high density units- 6' wide; |
| | System | | | | | | 0 | currently about 12 4-drawers |
| | File Cabinets | | | | | | 0 | included in clerks area |
| | Fingerprint Cards | | | | | | 0 | |
| | Gun Registration | | | | | | 0 | |
| | Accident Reports | | | | | | 0 | |
| | Warrants & add | | | | | | | |
| | paperwork | | | | | | 0 | |
| | Misc. Files | | | | | | 0 | |
| | Subtotal: | | | | | | 200 | |
| Archives | Archives Room | | | 1 | 250 | | 250 | high density storage |
| (Records Vault) | File Cabinets | | | | | | 0 | |
| | Storage System: | | | | | | 0 | |
| | Manual | | | | | | 0 | |
| | | | | | | | 0 | |
| | Subtotal: | | | | | | 250 | |
| Net Area | | | | | | | 1,424 | |
| 30% Internal Circulation Factor | | | | | | | 427 | |
| Subtotal: Records | | 5 | 6 | | | | 1,851 | |

| Space | Description | | Staff | | Space Needs | | | Net | Comments / *Adjacencies |
|---|---|---|---|---|---|---|---|---|---|
| | | | Current | Planned | Qty | Size | Reference pg # | Sq. Ft. | |
| **5. Communications (Dispatch) Primary** | | | | | | | | | |
| Security Vestibule | Vestibule | | | | 1 | 50 | | 50 | |
| | Interlocking Doors | | | | | | | 0 | |
| | | Subtotal: | | | | | | 50 | |
| Communications Manager | Private Office | x | 1 | 1 | 1 | 225 | 3.02 | 225 | |
| | Workstation | x | | | 0 | 0 | | 0 | |
| | Guest Chairs | | | | | | | 0 | |
| | Conference Table | x | | | | | | | |
| | File cabinet | | | | | | | 0 | |
| | Equipment: | | | | | | | 0 | |
| | Computer | | | | | | | 0 | |
| | | Subtotal: | | | | | | 225 | |
| Toilet Room (Unisex) | Toilet Room with Urinal | | | | 1 | 77 | 7.05b | 77 | *Communications Operations (but not direct into room) |
| | | | | | | | | 0 | |
| | | Subtotal: | | | | | | 77 | |
| Communications Operations | Workstation | | 14 | 16 | 6 | 100 | 4.05a | 600 | |
| | Console | x | | | | | | 0 | Xybex Workstations |
| | Raised Floor | yes | | | | | | 0 | |
| | Common Reference Area | x | | | | | | | *Center Lighting over each workstation so that each station is individually controlled* |
| | Manual Kiosk (1 per 4 stations) | | | | 1 | 10 | | 10 | |
| | Backup Radio | | | | | | | 0 | |
| | Multifunction Printer | x | | | 1 | 10 | | 10 | |
| | File Cabinets | x | | | | | | | |
| | Media / Monitor Wall | x | | | | | | | Back Lot; TV,Fire Responses, Etc |
| | Prisoner Monitoring Screens | x | | | | | | | |
| | | Subtotal: | | | | | | 620 | |

| Space | Description | | Staff Current | Staff Planned | Space Needs Qty | Space Needs Size | Space Needs Reference pg # | Net Sq. Ft. | Comments / *Adjacencies |
|---|---|---|---|---|---|---|---|---|---|
| Communications Break Room / Kitchen | Break Room | | | | 1 | 160 | 7.01d Similar | 160 | *Communications Operations |
| | TV Area | | | | | | | 0 | Possible Galley Kitchen |
| | Kitchenette: | | | | | | | | |
| | Refrigerator | x | | | | | | 0 | |
| | Counter w/ Sink | x | | | | | | 0 | |
| | Range | x | | | | | | 0 | |
| | Stove Top | x | | | | | | 0 | |
| | Microwave | x | | | | | | 0 | |
| | Dining Table | 1 | | | | | | 0 | |
| | Dining Chairs | 4 | | | | | | 0 | |
| | Vending Machine | | | | | | | 0 | |
| | Dishwasher | | | | | | | 0 | |
| | | Subtotal: | | | | | | 160 | |
| Private Locker Area | full length Lockers | 20 | | | 1 | 150 | | 150 | 12"- 18" wide for Coats: Changing in Toilet Rooms |
| | | Subtotal: | | | | | | 150 | |
| Lactation / Quiet Room | Room | | | | 1 | 100 | | 100 | |
| | | Subtotal: | | | | | | 100 | |
| Open Copier Area | Printer | x | | | 1 | 100 | | 100 | |
| | Shredder | x | | | | | | 0 | |
| | Office Supplies | x | | | | | | | supplies in cabinets |
| | Double Length File Cabinets | x | | | | | | | |
| | Mailboxes | 20 | | | | | | 0 | |
| | | Subtotal: | | | | | | 100 | |
| (Server Room) | Server Room | | | | 1 | 150 | | 150 | **- One central Server Room for entire building- Accessible but not a part of Communications Suite** |
| | 911 Communications Server | | | | | | | 0 | |
| | Computer/Keyboard work stand | | | | | | | 0 | They want separate server room 12'x12' for dispatch |
| | | Subtotal: | | | | | | 150 | |
| Net Area | | | | | | | | 1,632 | |
| 35% Internal Circulation Factor | | | | | | | | 571 | |
| Subtotal: Communications (Dispatch) | | | 15 | 17 | | | | 2,203 | |

| Space | Description | | Staff | | Space Needs | | | Net Req'd Sq. Ft. | Comments |
|---|---|---|---|---|---|---|---|---|---|
| | | | Current | Planned | Qty | Size | Reference Pg # | | |
| **6. Detective Bureau** | | | | | | | | | |
| Detective Sergeant | Private Office | | 1 | 1 | 1 | 130 | | 130 | |
| | Guest chairs | | | | | | | 0 | |
| | Two-drawer file cabinet | | | | | | | 0 | |
| | Desk w/ credenza | | | | | | | 0 | |
| | Equipment: | | | | | | | | |
| | Computer | | | | | | | 0 | |
| | | Subtotal: | | | | | | 130 | |
| Detectives | Private Office | | 8 | 12 | 10 | 130 | 3.06 | 1,300 | Lockable desk drawer |
| | File Cabinets | | | | | | | 0 | |
| | | | | | | | | 0 | |
| | | | | | | | | | |
| | | | | | | | | 0 | |
| | | | | | | | | 0 | |
| | | Subtotal: | | | | | | 1,300 | |
| **SGT. Training and Standards** | Private Office | | 1 | 1 | 1 | 130 | | 130 | Reports to Adm. Lt. |
| | Guest Chairs | | | | | | | 0 | |
| | Four-Shelf bookcase | | | | | | | 0 | |
| | Two-drawer file | | | | | | | 0 | |
| | Desk w/ credenza | | | | | | | 0 | |
| | | Subtotal: | | | | | | 130 | |
| School Resource Officers | Workstation | 2 | 2 | 2 | 2 | 130 | | 260 | |
| | Equipment: | | | | | | | | |
| | Computer | | | | | | | 0 | |
| | Printer | | | | | | | 0 | |
| | | Subtotal: | | | | | | 260 | |

| Space | Description | | Staff Current | Staff Planned | Space Needs Qty | Space Needs Size | Space Needs Reference Pg # | Net Req'd Sq. Ft. | Comments |
|---|---|---|---|---|---|---|---|---|---|
| **Detectives Storage Room for DUTY BAGS** | Storage Room | | | | 1 | 16 | | 16 | In the detective suite but not in the office. |
| | 2x2x3deep | 12 | | | | | | 0 | |
| | | Subtotal: | | | | | | 16 | |
| Juvenile Detective **INCLUDED ABOVE** | Room | 1 | | | 0 | 0 | | 0 | included above |
| | Four-drawer file cabinet | | | | | | | 0 | |
| | Equipment: | | | | | | | | |
| | Computer | | | | | | | 0 | |
| | Printer | | | | | | | 0 | |
| | | Subtotal: | | | | | | 0 | |
| Conference Room/ TASK FORCE CASE ROOM | Conference Room | | | | 2 | 250 | 5.02b | 500 | |
| | Coat Closet | | | | | | similar | 0 | |
| | Coffee Station | | | | | | | 0 | |
| | Storage Closet | | | | | | | 0 | |
| | Seating | 10-12 | | | | | | 0 | |
| | Conference Table | | | | | | | 0 | |
| | Credenza | | | | | | | 0 | |
| | Flat Screen | | | | | | | 0 | |
| | White Board | | | | | | | 0 | |
| | Equipment: | | | | | | | | |
| | Projector | | | | | | | 0 | |
| | Projection Screen | | | | | | | 0 | |
| | TV/DVD | | | | | | | 0 | |
| | | Subtotal: | | | | | | 500 | |

| Space | Description | | Staff | | Space Needs | | | Net Req'd | Comments |
|---|---|---|---|---|---|---|---|---|---|
| | | | Current | Planned | Qty | Size | Reference Pg # | Sq. Ft. | |
| Work Area | Work Area | | | | 1 | 80 | | 80 | |
| | Floor Cabinets | | | | | | | 0 | |
| | Wall Cabinets | | | | | | | 0 | |
| | Coffee Station | | | | | | | | |
| | Equipment: | | | | | | | | |
| | C/S/F machine | | | | | | | 0 | |
| | | Subtotal: | | | | | | 80 | |
| Huddle Zone | Open area | | | | 1 | 100 | | 100 | |
| | | | | | | | | 0 | |
| | | | | | | | | 0 | |
| | | Subtotal: | | | | | | 100 | |
| SONIC/DEA(3)/ FBI HOTELING | Workstation | | 5 | 5 | 5 | 24 | | 120 | |
| | Guest Chairs | | | | | | | 0 | |
| | Four-Shelf bookcase | | | | | | | 0 | |
| | Two-drawer file | | | | | | | 0 | |
| | Desk w/ credenza | | | | | | | 0 | |
| | | Subtotal: | | | | | | 120 | |
| Secret Service Supervisor Offices | Private Office | | 2 | 2 | 2 | 130 | 03.06 | 260 | |
| | Guest Chairs | | | | | | | 0 | |
| | Four-Shelf bookcase | | | | | | | 0 | |
| | Two-drawer file | | | | | | | 0 | |
| | Desk w/ credenza | | | | | | | 0 | |
| | | Subtotal: | | | | | | 260 | |
| TASK FORCE WORKSTATIONS | Workstation | | | | 16 | 48 | 04.04B | 768 | |
| | Work table | | | | | | | 0 | |
| | Work counter | | | | | | | 0 | |
| | Coat Closet | | | | | | | 0 | |
| | White Board | | | | | | | 0 | |
| | | Subtotal: | | | | | | 768 | |
| DIGITAL FORENSIC LAB- IT | Crime Lab Room | | | | 1 | 400 | | 400 | Anti-static carpet |
| | Work counter | | | | | | | 0 | |
| | Shelving storage | | | | | | | 0 | |
| | | Subtotal: | | | | | | 400 | |

| Space | Description | | Staff Current | Staff Planned | Space Needs Qty | Space Needs Size | Space Needs Reference Pg # | Net Req'd Sq. Ft. | Comments |
|---|---|---|---|---|---|---|---|---|---|
| **Interview Suite (s) ADDED** | | | | | | | | | |
| Interview Rooms | Interview Room | 1 | | | 1 | 100 | | 100 | Controlled access from public lobby |
| | Interview Table | 1 | | | | | | 0 | |
| | Interview Chairs | 3 | | | | | | 0 | |
| | A/V Recording | x | | | | | | 0 | |
| | Gun Lockers (located outside) | x | | | | | | 0 | |
| | Sound-proof walls and ceiling | x | | | | | | 0 | |
| | | Subtotal: | | | | | | 100 | |
| Soft Interview Room | Interview Room | 1 | | | 1 | 120 | | 120 | *Waiting area |
| | Interview Table | x | | | | | | 0 | |
| | Interview Chairs | 3 | | | | | | 0 | |
| | Seat | | | | | | | 0 | |
| | Sofa | x | | | | | | 0 | |
| | Coffee Table | | | | | | | 0 | |
| | TV | | | | | | | 0 | |
| | A/V Recording | x | | | | | | 0 | |
| | Gun Lockers (located outside) | x | | | | | | 0 | |
| | Sound proof walls and ceiling | x | | | | | | 0 | |
| | | Subtotal: | | | | | | 120 | |
| Waiting Area | Waiting Area | 1 | | | 1 | 80 | | 80 | |
| | chairs | | | | | | | 0 | |
| | Coffee Table | | | | | | | 0 | |
| | | Subtotal: | | | | | | 80 | |
| Visitor Toilet (Unisex) | Toilet (ADA Accessible) | | | | 1 | 66 | | 66 | |
| | | Subtotal: | | | | | | 66 | |
| Net Area | | | | | | | | 4,430 | |
| 35% Internal Circulation Factor- | | | | | | | | 1551 | |
| Subtotal: Detective Bureau | | | 19 | 23 | | | | **5,981** | |

| Space | Description | | Staff Current | Staff Planned | Space Needs Qty | Space Needs Size | Space Needs Reference pg # | Req'd Net Sq. Ft. | Comments / *Adjacencies |
|---|---|---|---|---|---|---|---|---|---|
| **7. UNIFORM OPERATIONS** | | | | | | | | | |
| Patrol Lieutenants A & B Shifts | Private Office | | 2 | 4 | 4 | 180 | 3.07a | 720 | |
| | File Cabinet | | | | | | similar | 0 | |
| | Conference Area | | | | | | | 0 | |
| | Tables | 1 | | | | | | | |
| | Chairs | 2 | | | | | | | |
| | Closed Shelving | | | | | | | | |
| | Equipment: | | | | | | | | |
| | Computer | | | | | | | 0 | |
| | Printer | | | | | | | | |
| | Stand Up Desks | | | | | | | 0 | |
| | | Subtotal: | | | | | | 720 | |
| Patrol Commander | Private Office | | 1 | 1 | 1 | 225 | 3.02 | 225 | *Chief of Police |
| | Sm. Conf. Table | | | | | | | 0 | |
| | Conf. Table Chairs | | | | | | | 0 | |
| | Guest Chairs | | | | | | | 0 | |
| | Four-Shelf Bookcase | | | | | | | 0 | |
| | Two-Drawer File Cabinet | | | | | | | 0 | |
| | Desk w/ credenza | | | | | | | 0 | |
| | | Subtotal: | | | | | | 225 | |
| Patrol Sergeants A & B | Road Patrol Area | | 8 | 8 | 1 | 500 | | 500 | 8 workstations |
| | Workstations | 8 | | | | | | 0 | shared desks |
| | Work Area | | | | | | | 0 | |
| | Shared Conference Table | x | | | | | | | |
| | | | | | | | | | |
| | Bookcase/shelves | x | | | | | | | |
| | File Cabinet | x | | | | | | 0 | |
| | | Subtotal: | | | | | | 500 | |
| Patrol Officers | Road Patrol | | 40 | 50 | | | | | Each to have document storage |
| | | Subtotal: | | | | | | 0 | |
| Police Cadets | Police Cadets | | 12 | 12 | | | | | |
| | | Subtotal: | | | | | | 0 | |
| Duty Gear Bag Storage | Duty Gear Bag | | | | 8 | 6 | | 48 | for patrol sgts - in their office |
| | | Subtotal: | | | | | | 48 | |
| Juvenile Room | Room | | | | 1 | 100 | | 100 | Not Lockable |
| | | | | | | | | 0 | Sight and sound seperated |
| | | | | | | | | | next to report writing |
| | | | | | | | | | |
| | | Subtotal: | | | | | | 100 | |

| Space | Description | | Staff Current | Staff Planned | Space Needs Qty | Space Needs Size | Space Needs Reference pg # | Req'd Net Sq. Ft. | Comments / *Adjacencies |
|---|---|---|---|---|---|---|---|---|---|
| Work Area / Office Supplies | Work Room | | | | 1 | 80 | | 80 | *Shift Lieutenant / Sergeant Offices |
| | Office Supplies | | | | | | | 0 | |
| | Secure Storage Closet | | | | | | | 0 | |
| | Floor Cabinets | | | | | | | 0 | |
| | Wall Cabinets | | | | | | | 0 | |
| | Cofee Bar | | | | | | | | |
| | | | | | | | | 0 | |
| | | Subtotal: | | | | | | 80 | |
| Mailboxes | Mailboxes 8.5x11x 3" | | | | 1 | 80 | | 80 | In each department area-not in any rooms |
| | Boxes | | | | | | | 0 | |
| | Work Counter | | | | | | | 0 | |
| | Location: | | | | | | | | |
| | Central Open area | | | | | | | 0 | |
| | Secure Office area | | | | | | | 0 | |
| | | Subtotal: | | | | | | 80 | |
| Briefing Room | Briefing Room | 10-15 | | | 1 | 500 | 6.04a similar | 500 | |
| | Counter surface w/ cabinets | | | | | | | 0 | |
| | Tables | x | | | | | | 0 | |
| | Chairs | x | | | | | | 0 | |
| | Desk/Lectern | | | | | | | 0 | |
| | Voice/Data/Power: | | | | | | | | |
| | Perimeter Walls | | | | | | | 0 | |
| | Floor Mounted | | | | | | | 0 | |
| | Equipment: | | | | | | | | |
| | A/V Cabinet | | | | | | | 0 | |
| | Full Electronics | | | | | | | 0 | |
| | Monitor | | | | | | | 0 | |
| | Flat screen for CAD session | | | | | | | 0 | |
| | White Board | | | | | | | 0 | |
| | Smart Board | | | | | | | 0 | |
| | | Subtotal: | | | | | | 500 | |

| Space | Description | | Staff | | Space Needs | | | Req'd Net Sq. Ft. | Comments / *Adjacencies |
|---|---|---|---|---|---|---|---|---|---|
| | | | Current | Planned | Qty | Size | Reference pg # | | |
| Equipment Storage | Room | | | | 1 | 80 | | 80 | |
| | Shelving | | | | | | | 0 | |
| | Charging | | | | | | | 0 | |
| | | Subtotal: | | | | | | 80 | |
| SWAT READY ROOM - | Room | | | | 1 | 274 | | 274 | near swat vehicle |
| | Open Lockers behind swipe door | 12 | | | | | | | |
| | Huddle Table | | | | | | | | |
| | Changing Rooms | 4 | | | | | | 0 | |
| | | | | | | | | 0 | |
| | | | | | | | | 0 | |
| | | Subtotal: | | | | | | 274 | |
| Patrol Storage/ Riot Gear | | | | | 1 | 400 | | 400 | shelving: PV, AED, Flares, |
| | | | | | | | | 0 | crowd control |
| | | Subtotal: | | | | | | 400 | |
| Report Writing Room | Report writing room | | | | 6 | 35 | | 210 | *Staff Lobby |
| | Carrels | | | | | | | 0 | *Briefing Room |
| | Computer Teminials | | | | | | | 0 | *Shift Lieutenant / Sgt Offices |
| | Docking Stations | | | | | | | 0 | |
| | Shared Printer | | | | 1 | 24 | | 24 | |
| | Desk | | | | | | | 0 | |
| | Work Surface | | | | 1 | 12 | | 12 | For evidence layout |
| | Bookshelves | | | | | | | 0 | |
| | | Subtotal: | | | | | | 246 | |
| Duty Gear Bags | Storage Room | | | | 9 | 12 | | 108 | Need space for duty gear and riot gear |
| | shelving | 73 | | | | | | 0 | All sworn officers need cubbie |
| | | | | | | | | 0 | |
| | | | | | | | | 0 | |
| | | | | | | | | 0 | |
| | | Subtotal: | | | | | | 108 | |

| Space | Description | | Staff Current | Staff Planned | Space Needs Qty | Space Needs Size | Space Needs Reference pg # | Req'd Net Sq. Ft. | Comments / *Adjacencies |
|---|---|---|---|---|---|---|---|---|---|
| Armory SMALL | Armory | | | | 1 | 150 | | 150 | Rifle rack |
| | Extra weapons (guns and rifles) | | | | | | | 0 | cabinet for hand guns |
| | Professional gun discharge box | | | | | | | 0 | tasers - extra |
| | | Subtotal: | | | | | | 150 | |
| Uniform Storage/ Quartermaster | Storage | | | | 1 | 100 | | 100 | |
| | Open Shleving | | | | | | | 0 | |
| | Returned Uniforms | | | | | | | 0 | |
| | Returned Equipment | | | | | | | 0 | |
| | | Subtotal: | | | | | | 100 | |
| Kennel (two dogs now; four in future) | Kennel | | | | 1 | 100 | | 100 | One dog in dog run at time |
| | Dog Cages | 2 | | | | | | 0 | |
| | training equipment/ suite | | | | | | | | |
| | Air-conditioned space | | | | | | | 0 | |
| | | Subtotal: | | | | | | 100 | |
| K-9 Officer Storage/Dog Run | Kennel | | | | 1 | 100 | | 100 | Outdoor |
| | | | | | | | | 0 | |
| | Air-conditioned space | | | | | | | 0 | |
| | | Subtotal: | | | | | | 100 | |
| Net Area | | | | | | | | 3,811 | |
| 30% Internal Circulation Factor | | | | | | | | 1143 | |
| Subtotal: Road Patrol | | | 63 | 75 | | | | 4,954 | |

| Space | Description | | Staff | | Space Needs | | | Net | Comments / *Adjacencies |
|---|---|---|---|---|---|---|---|---|---|
| | | | Current | Planned | Qty | Size | Reference pg # | Sq. Ft. | |
| **8. Holding & Sallyport** | | | | | | | | | |
| Sallyport | Sallyport | | | | 1 | 2,000 | | 2,000 | prisoner van or abmulance |
| | Enclosed Space | | | | | | | 0 | |
| | Vehicles | 4 | | | | | | 0 | |
| | | Subtotal: | | | | | | 2,000 | |
| Prisoner Intake Vestibule | Vestibule | 1 | | | 1 | 80 | | 80 | * Sally Port |
| | Gun Lockers - Outside | | | | | | | 0 | * Prisoner processing area |
| | Gun Lockers - Inside | | | | | | | 0 | |
| | Interlocking Doors | | | | | | | 0 | |
| | | Subtotal: | | | | | | 80 | |
| Interrogation Rooms/Video Arrangement | Interrogation Room | 1 | | | 1 | 80 | | 80 | |
| | Secure Table | | | | | | | 0 | |
| | Secure Stools | | | | | | | 0 | |
| | | Subtotal: | | | | | | 80 | |

| Space | Description | | Staff | | Space Needs | | | Net | Comments / *Adjacencies |
|---|---|---|---|---|---|---|---|---|---|
| | | | Current | Planned | Qty | Size | Reference pg # | Sq. Ft. | |
| Prisoner Processing Area | Room | | | | 1 | 400 | | 400 | * Command Desk |
| | Pre-Processing holding tank | | | | | | | 0 | |
| | Toilet & Shower w/ privacy | x | | | | | | 0 | |
| | Secure Counter | x | | | | | | 0 | |
| | Secure Cuff Bench | 4 | | | | | | 0 | |
| | Hose Bib | x | | | | | | 0 | |
| | Floor Drain | x | | | | | | 0 | |
| | Lockers 18x18 | 50 | | | | | | | |
| | Equipment: | | | | | | | | |
| | Log Book terminal (secure) | x | | | | | | 0 | |
| | Live Scan palm/prints | x | | | | | | 0 | |
| | Printer | 3 | | | | | | 0 | |
| | Distress button | x | | | | | | 0 | |
| | CLEMIS Camera (mug shots) | | | | | | | 0 | |
| | | Subtotal: | | | | | | 400 | |
| Strip Search/ Shower | Decon Shower | | | | 1 | 80 | | 80 | *off processing |
| | | | | | | | | 0 | *next to Sally Port |
| | | Subtotal: | | | | | | 80 | |
| Internal Vestibule Man Trap | Vestibule | | | | 1 | 80 | | 80 | |
| | Part of internal circulation | | | | | | | 0 | |
| | | Subtotal: | | | | | | 80 | |
| Staff Toilet | Unisex Room | | | | 1 | 80 | | 80 | |
| | | Subtotal: | | | | | | 80 | |
| Holding Cells | Cells (1 ADA) | | | | 1 | 100 | | 100 | |
| | Single Occupancy | x | | | 9 | 80 | | 720 | |
| | 8"H X 27"W Concrete Curb | | | | | | | 0 | |
| | Lavatory/Toilet Fixture | x | | | | | | 0 | |
| | 36" -40"H Sloping privacy wall | x | | | | | | 0 | |
| | Floor Drain | x | | | | | | 0 | |
| | | Subtotal: | | | | | | 820 | |

| Space | Description | | Staff Current | Staff Planned | Space Needs Qty | Space Needs Size | Space Needs Reference pg # | Net Sq. Ft. | Comments / *Adjacencies |
|---|---|---|---|---|---|---|---|---|---|
| Isolation Cell | Cell (ADA) | x | | | 2 | 100 | | 200 | Note: |
| | Single Occupancy | x | | | | | | 0 | For intoxicated / violent prisoners |
| | Padded Walls | x | | | 2 | 80 | | 160 | |
| | 8"H X 27"W Concrete Curb | x | | | | | | 0 | |
| | Lavatory/Toilet Fixture | x | | | | | | 0 | |
| | 36" -40"H Sloping Privacy Wall | x | | | | | | 0 | |
| | Floor Drain | x | | | | | | 0 | |
| | | Subtotal: | | | | | | 360 | |
| Kitchen / Meal Preparation | Kitchen | | | | 1 | 100 | | 100 | fridge |
| | Pantry | | | | | | | 0 | chest freezer |
| | Kitchen: | | | | | | | | |
| | Refrigerator/Freezer | | | | | | | 0 | |
| | Counter w/ sink | | | | | | | 0 | |
| | Microwave | | | | | | | 0 | |
| | Floor & Wall Cabinet | | | | | | | 0 | |
| | | Subtotal: | | | | | | 100 | |
| Janitor's Closet | Closet | | | | 1 | 60 | | 60 | |
| | Mop Sink | | | | | | | 0 | |
| | Floor Drain | | | | | | | 0 | |
| | | Subtotal: | | | | | | 60 | |
| Supplies Storage | Storage Room | | | | 1 | 80 | | 80 | |
| | Open shelving | | | | | | | 0 | |
| | | Subtotal: | | | | | | 80 | |
| Net Area | | | | | | | | 4,220 | |
| 50% Internal Circulation Factor | | | | | | | | 2110 | |
| Subtotal: Holding & SallyPort | | | 0 | 0 | | | | 6,330 | |

| Space | Description | | Staff Current | Staff Planned | Space Needs Qty | Space Needs Size | Space Needs Reference Pg # | Req'd Net Sq. Ft. | Comments / *Adjacencies |
|---|---|---|---|---|---|---|---|---|---|
| **9. Property (under investigations)** | | | | | | | | | |
| Evidence Preparation Area | Prep Area | | | | 1 | 200 | | 200 | |
| | Work Counter (bagging & tagging) | | | | | | | 0 | Needs counter space |
| | Sink w/ eyewash | | | | | | | 0 | |
| | Floor & Wall Cabinet | | | | | | | 0 | |
| | Equipment: | | | | | | | | |
| | Computer | | | | | | | 0 | |
| | Printer | | | | | | | 0 | |
| | Video Monitoring | | | | | | | 0 | |
| | | Subtotal: | | | | | | 200 | |
| Evidence Two-way Lockers | Locker Space | | | | 3 | 36 | | 108 | * Evidence Prep Area |
| | 3' Wide modular locker units | | | | | | | 0 | * Property Officer |
| | Compartment number & sizes | | | | | | | 0 | |
| | Long gun/riffle | | | | | | | 0 | |
| | Large Bulk item | | | | | | | 0 | |
| | Medium size | | | | | | | 0 | |
| | Small size | | | | | | | 0 | |
| | Refrigerated unit | No | | | | | | 0 | |
| | Two-way lockers | | | | | | | 0 | |
| | Drop Box (for envelopes etc.) | | | | | | | 0 | |
| | Keyless access control | | | | | | | 0 | |
| | | Subtotal: | | | | | | 108 | |
| Property Officer | Private Office | | | | 1 | 120 | | 120 | *Evidence Storage Room |
| | Workstation | | | | | | | 0 | |
| | File Cabinets | | | | | | | 0 | *Evidence Processing |
| | Equipment: | | | | | | | | *Evidence Lockers |
| | Computer | | | | | | | 0 | |
| | Printer | | | | | | | 0 | |
| | | Subtotal: | | | | | | 120 | |

| Space | Description | | Staff Current | Staff Planned | Space Needs Qty | Space Needs Size | Space Needs Reference Pg # | Req'd Net Sq. Ft. | Comments / *Adjacencies |
|---|---|---|---|---|---|---|---|---|---|
| Supplies Storage | Storage Room | | | | 1 | 80 | | 80 | *Evidence Processing |
| | Lockable Cabinets | | | | | | | 0 | |
| | Open Shelving | | | | | | | 0 | *Property Officer |
| | Evidence Supplies | | | | | | | 0 | |
| | | Subtotal: | | | | | | 80 | |
| Drying Room | Drying Room | | | | 1 | 100 | | 100 | *Property officer used in evidence storage |
| | Drying Enclosure | | | | | | | 0 | |
| | Hose bib | | | | | | | 0 | |
| | Floor Drain (filtered separately) | | | | | | | 0 | |
| | Vented Separately | | | | | | | 0 | |
| | | Subtotal: | | | | | | 100 | |
| Evidence Storage Room | Storage Room | | | | 1 | 900 | | 900 | |
| | High Density Storage System | x | | | | | | 0 | |
| | Weapon Storage | | | | 1 | 200 | | 200 | |
| | Wall Space | | | | | | | 0 | |
| | Cabinets | | | | | | | 0 | |
| | Drug Storage (room) | x | | | 1 | 100 | | 100 | |
| | Cash Safe | x | | | | | | 0 | |
| | Humidity-Control Refrigerator | x | | | | | | 0 | |
| | Work Area (desk & Chair) | | | | | | | 0 | |
| | Open Isle Shelving | | | | | | | 0 | |
| | Return Lockers (for checking in/out evidence used in trial | | | | | | | 0 | |
| | Vented Separately | x | | | | | | 0 | |
| | | Subtotal: | | | | | | 1,200 | |
| Forensic Garage | Storage Room | | | | 1 | 700 | | 700 | |
| | | Subtotal: | | | | | | 700 | |
| Bulk Evidence Storage | Storage Room | | | | 1 | 500 | | 500 | |
| | | Subtotal: | | | | | | 500 | |
| Evidence Release | Evidence Release | | | | | | | 0 | Possible side door to release |
| | | Subtotal: | | | | | | 0 | |
| Net Area | | | | | | | | 3,008 | |
| 20% Internal Circulation Factor | | | | | | | | 602 | |
| Subtotal: Property | | | 0 | 0 | | | | 3,610 | |

| Space | Description | | Staff Current | Staff Planned | Space Needs Qty | Space Needs Size | Space Needs Reference Pg # | Net Sq. Ft. | Comments / *Adjacencies |
|---|---|---|---|---|---|---|---|---|---|
| **10. Training** | | | | | | | | | |
| Training Officer | Private Office | | 1 | 1 | 1 | 130 | 3.07a | 130 | *Training Room |
| | Workstations | | | | | | | 0 | |
| | Guest Chairs | | | | | | | 0 | *Police Administration |
| | File Cabinets | | | | | | | 0 | |
| | Equipment: | | | | | | | | |
| | Computer | | | | | | | 0 | |
| | | Subtotal: | | | | | | 130 | |
| Training Files | File Room | | | | 0 | 0 | | 0 | Files in Administration Suite |
| | Cash Safe | | | | | | | 0 | |
| | | Subtotal: | | | | | | 0 | |
| Individual Training Study Carrels | Area for Carrels | | | | | | | 0 | *Training Officers |
| | Small Study Carrels for self-study | 4 | | | 4 | 6 | | 24 | Could be near Dispatch or near Report Writing Area |
| | | Subtotal: | | | | | | 24 | |
| Net Area | | | | | | | | 154 | |
| 25% Internal Circulation Factor | | | | | | | | 39 | |
| Subtotal: Training | | | 1 | 1 | | | | 193 | |

| Space | Description | | Staff | | Space Needs | | | Net | Comments / *Adjacencies |
|---|---|---|---|---|---|---|---|---|---|
| | | | Current | Planned | Qty | Size | Reference Pg # | Sq. Ft. | |
| **11. Fleet Maintenance Garage** | | | | | | | | | |
| Fleet Maintenance / Garage | Garage | | | | | | | 0 | *Evidence Storage Room |
| | Bays | 5 | | | 6 | 600 | | 3,600 | *Evidence Processing Area |
| | Vehicle lift system | x | | | | | | 0 | |
| | Air-conditioned Space | | | | | | | 0 | |
| | Electrical for welders and equipment | x | | | | | | 0 | |
| | Air compressed air plumbed throughout shop | x | | | | | | 0 | |
| | Tire air / balance | x | | | | | | | |
| | Hazmat cabinet - lockable | x | | | | | | | |
| | Plenty of LED lights | x | | | | | | 0 | |
| | Oil Drum | x | | | | | | | |
| | Workbench for each bay | x | | | | | | | |
| | Tire Storage | | | | | | | | |
| | Drums of cleaning juice | | | | | | | | |
| | Clean air filter/dirty air evacuation system | | | | | | | 0 | |
| | | Subtotal: | | | | | | 3,600 | |
| Toilet | Area | | | | 1 | 56 | | 56 | |
| | | Subtotal: | | | | | | 56 | |

| Space | Description | | Staff Current | Staff Planned | Space Needs Qty | Space Needs Size | Space Needs Reference Pg # | Net Sq. Ft. | Comments / *Adjacencies |
|---|---|---|---|---|---|---|---|---|---|
| Eye wash/shower | Area | | | | 1 | 10 | | 10 | |
| | | Subtotal: | | | | | | 10 | |
| Maintenance Office | Office | | 1 | 2 | 1 | 300 | | 300 | |
| | | Subtotal: | | | | | | 300 | |
| Parts Room | | | | | 1 | 500 | | 500 | *Off of security Staff Parking |
| | | | | | | | | 0 | |
| | | | | | | | | 0 | |
| | | | | | | | | 0 | |
| | | | | | | | | 0 | |
| | | Subtotal: | | | | | | 500 | |
| Vehicle Storage | | | | | | | | | |
| SWAT Van | | | | | | | | | |
| Patrol Bikes EXISTING- IN GARAGE AREA | Area | 10 | | | 10 | 15 | | 150 | Hang on Wall |
| | | Subtotal: | | | | | | 150 | |
| Motorcycles | Area | 2 | | | 2 | 10 | | 20 | *Off of security Staff Parking |
| | | Subtotal: | | | | | | 20 | |
| Bulk Evidence Storage - Fence in Sally Port | Storage Room | | | | | | | 0 | *Off of security Staff Parking |
| | Large-item Property | | | | | | | 0 | |
| | Found property | | | | | | | 0 | |
| | Bicycles | | | | | | | 0 | |
| | Misc. Large items | | | | | | | 0 | |
| | | Subtotal: | | | | | | 0 | |
| Net Area | | | | | | | | 4,636 | |
| 20% Internal Circulation Factor | | | | | | | | 927 | |
| Subtotal: Miscellaneous Spaces | | | 1 | 2 | | | | 5,563 | |

| Space | Description | | Staff Current | Staff Planned | Space Needs Qty | Space Needs Size | Space Needs Reference Pg # | Req'd Net Sq. Ft. | Comments / *Adjacencies | |
|---|---|---|---|---|---|---|---|---|---|---|
| **12. Building Support Areas** | | | | | | | | | | |
| Public Elevator | Elevator Space | | | | 1 | 200 | | 200 | *Public Lobby | |
| | Floor stops for public | x | | | | | | 0 | *Controlled access | |
| | | | | | | | | 0 | | |
| | | Subtotal: | | | | | | 200 | | |
| Elevator Mech. Room | Room | | | | 1 | 100 | | 100 | *Elevator | |
| | | Subtotal: | | | | | | 100 | | |
| Staff Elevator | Elevator Space | x | | | 1 | 200 | | 200 | *Public Lobby | |
| | Floor stops for staff | | | | | | | 0 | *Controlled access | |
| | | Subtotal: | | | | | | 200 | | |
| Elevator Mech. Room | Room | | | | 1 | 100 | | 100 | *Elevator | |
| | | Subtotal: | | | | | | 100 | | |
| Mechanical Room | Room | | | | 1 | 500 | | 500 | for main building | |
| | | Subtotal: | | | | | | 500 | | |
| Electrical Room | Room | | | | 1 | 300 | | 300 | for main building | |
| | | Subtotal: | | | | | | 300 | | |
| Building Supply Storage | Room | | | | 1 | 150 | | 150 | | |
| | Accessible Ceiling Space | | | | | | | 0 | | |
| | Climate-Controlled | | | | | | | 0 | | |
| | Open shelves | | | | | | | 0 | | |
| | | Subtotal: | | | | | | 150 | | |

| Space | Description | | Staff Current | Staff Planned | Space Needs Qty | Space Needs Size | Space Needs Reference Pg # | Req'd Net Sq. Ft. | Comments / *Adjacencies | |
|---|---|---|---|---|---|---|---|---|---|---|
| Event Storage Room | Room | | | | 1 | 100 | | 100 | Out of sight | |
| | Accessible Ceiling Space | | | | | | | 0 | | |
| | Climate-Controlled | | | | | | | 0 | | |
| | Open shelves | | | | | | | 0 | | |
| | | Subtotal: | | | | | | 100 | | |
| IT Closets | Room | | | | 2 | 100 | | 200 | Including low-voltage | |
| | | Subtotal: | | | | | | 200 | 1 per floor | |
| Server Room | Room | | | | 0 | 250 | | 0 | **See Communicatons** | |
| | Workbench for IT Repairs | | | | | | | | **- One central Server Room for entire building-** | |
| | Equipment: | | | | | | | | **Accessible but not a part of Communications Suite** | |
| | Electronics | | | | | | | 0 | | |
| | Radio | | | | | | | 0 | | |
| | Computer Servers | | | | | | | 0 | | |
| | | | | | | | | 0 | | |
| | | Subtotal: | | | | | | 0 | | |
| Custodian's Storage | Storage Room | | | | 1 | 200 | | 200 | *Police Staff Lobby | |
| | Misc. Item Storage | | | | | | | 0 | | |
| | Laundry tub | | | | | | | | | |
| | Double-door entryway | | | | | | | 0 | | |
| | | Subtotal: | | | | | | 200 | | |

| Space | Description | | Staff Current | Staff Planned | Space Needs Qty | Space Needs Size | Space Needs Reference Pg # | Req'd Net Sq. Ft. | Comments / *Adjacencies | |
|---|---|---|---|---|---|---|---|---|---|---|
| Janitor's Closet | Closet | | | | 2 | 50 | | 100 | *Toilets | |
| | Mop Sink | | | | | | | 0 | Note: | |
| | Floor Drain | | | | | | | 0 | 1 per floor | |
| | Shelving for Supplies | | | | | | | 0 | | |
| | | Subtotal: | | | | | | 100 | | |
| Computer Maintenance Area | Area | | | | | | | 0 | | |
| | Computer Maintenance | | | | | | | 0 | | |
| | | Subtotal: | | | | | | 0 | | |
| Fire Exit Stairs | Stairwell | | | | 2 | 400 | | 800 | Note: Min. No. of fire exit stairs required by code | |
| | Stairs and Basement | | | | | | | | | |
| | | Subtotal: | | | | | | 800 | | |
| Net Area | | | | | | | | 2,950 | | |
| 20% Internal Circulation Factor | | | | | | | | 590 | | |
| Subtotal: Building Support Areas | | | 0 | 0 | | | | 3,540 | | |

| Parking Requirements: | | Spaces |
|---|---|---|
| Peak demand for secure parking | | |
| Secure Impound parking needs | | 0 |
| Other outdoor parkin | | |
| Staff Parking | | 0 |
| Trailer Parking (Inside) | | |
| Trailer Parking (Outside) | | |
| Public (Visitor) Parking | | 12 |
| | Total Spaces | 0 |

| Fire Station 1 Operations Building Area Calculations | Current Staff | Planned Staff | Area Required |
|---|---|---|---|
| 1. Public Spaces | 0 | 0 | 252 |
| 2. Fire Administration | 1 | 1 | 387 |
| 3. Cold Zone Suppression Operations | 1 | 1 | 675 |
| 4. Cold Zone Staff Commons | 6 | 20 | 4,101 |
| 5. Warm Zone | 0 | 0 | 2,431 |
| 6. Hot Zone Apparatus Bay (Four Bays) | 0 | 0 | 8,084 |
| 7. Optional Mezzanine/Basement Area | 0 | 0 | 0 |
| 8. Physical Training Tower | 0 | 0 | 0 |
| 9. Building Support Area | 0 | 0 | 540 |
| Total | 8 | 22 | |
| Subtotal | | | 16,472 |
| 15% Gross-Up Factor (Common circulation, structure, shafts, etc.)<br>(Use additional 5% Gross-Up Factor for Renovation) | | | 2,471 |
| **Total Station #1 Building Area** | | | 18,942 |

| Space | Description | | Staff | | Space Needs | | | Net | |
|---|---|---|---|---|---|---|---|---|---|
| | | | Current | Planned | Qty | Size | Reference Pg# | Sq. Ft. | Comments / *Adjacencies |
| **1. Public Areas** | | | | | | | | | |
| Public Vestibule & Lobby | Lobby | | | | 1 | 100 | | 100 | **Locked and Buzz in after hours** |
| | | | | | | | | 0 | |
| | | Subtotal: | | | | | | 100 | |
| Front Counter | Counter | | | | 1 | 10 | | 10 | |
| | | Subtotal: | | | | | | 10 | |
| Public Unisex Toilet | Unisex toilet | | | | 1 | 77 | | 77 | |
| | | | | | | | | 0 | |
| | | Subtotal: | | | | | | 77 | |
| Net Area | | | | | | | | 187 | |
| 35% Internal Circulation Factor | | | | | | | | 65 | |
| Subtotal: Public Areas | | | 0 | 0 | | | | 252 | |

| Space | Description | | Staff Current | Staff Planned | Space Needs Qty | Space Needs Size | Space Needs Reference Pg# | Net Sq. Ft. | Comments / *Adjacencies |
|---|---|---|---|---|---|---|---|---|---|
| **2. Fire Administration** | **WITH PUBLIC SAFETY ADMINISTRATON** | | | | | | | | |
| Fire Inspector | Private Office | | 1 | 1 | 1 | 130 | 03.06 | 130 | |
| | Desk w/ credenza | | | | | | | 0 | |
| | Guest Chairs | | | | | | | 0 | |
| | Four-shelf bookcase | | | | | | | 0 | |
| | Two-drawer file cabinet | | | | | | | 0 | |
| | | Subtotal: | | | | | | 130 | |
| Work Area | Counter | | | | 1 | 80 | | 80 | |
| | Storage | | | | | | | | |
| | Multifunction printer | | | | | | | | |
| | Coffee Bar | | | | | | | 0 | |
| | | Subtotal: | | | | | | 80 | |
| Staff Unisex Toilet | Unisex Staff Toilet | | | | 1 | 77 | | 77 | |
| | ADA | | | | | | | | |
| | w/ Urinal | | | | | | | | |
| | | Subtotal: | | | | | | 77 | |
| Net Area | | | | | | | | 287 | |
| 35% Internal Circulation Factor | | | | | | | | 100 | |
| Subtotal: Fire Administration | | | 1 | 1 | | | | 387 | |

| Space | Description | | Staff | | Space Needs | | | Net | Comments / *Adjacencies |
|---|---|---|---|---|---|---|---|---|---|
| | | | Current | Planned | Qty | Size | Reference Pg # | Sq. Ft. | |
| **3.Cold Zone Suppression Operations** | | | | | | | | | |
| Captain | Private Office | | 1 | 1 | 1 | 130 | | 130 | |
| | | | | | | | | | |
| | Sleep Room: | | | | 1 | 100 | | 100 | |
| | Bed | | | | | | | 0 | |
| | Locker 2' X 3' X 6' | | | | | | | 0 | |
| | | Subtotal: | | | | | | 230 | |
| Watch Desk | Office | | | | 1 | 270 | | 270 | *App Bay |
| | Report writing Carrels | 4 | | | | | | 0 | *Day Room |
| | File Cabinets | | | | | | | 0 | |
| | Chairs | 4 | | | | | | | |
| | Radio Equipment | | | | | | | 0 | |
| | | Subtotal: | | | | | | 270 | |
| Net Area | | | | | | | | 500 | |
| 35% Internal Circulation Factor | | | | | | | | 175 | |
| Subtotal: Cold Zone Suppression Operations | | | 1 | 1 | | | | 675 | |

| Space | Description | | Staff Current | Staff Planned | Space Needs Qty | Space Needs Size | Space Needs Reference Pg # | Net Sq. Ft. | Comments / *Adjacencies |
|---|---|---|---|---|---|---|---|---|---|
| **4.Cold Zone Spaces** | | | | | | | | | |
| Staff Vestibule & Lobby | Vestibule | | | | 1 | 80 | | 80 | |
| | Lobby | | | | 1 | 100 | | 100 | |
| | Mud Room | | | | | | | 0 | |
| | Staff Elevator | | | | | | | 0 | |
| | Open Stair | | | | | | | 0 | |
| | Display Area | | | | | | | 0 | |
| | Mailbox | | | | | | | 0 | |
| | Drinking Fountain | | | | | | | 0 | |
| | Floor Mat | | | | | | | 0 | |
| | Prox. Access Control | | | | | | | 0 | |
| | | Subtotal: | | | | | | 180 | |
| Station 1 firefighters | | | 4 | 18 | | | | | |
| Firefighers' Sleep Rooms | Private Room 6/shift; shared by two shifts | | | | 6 | 110 | | 660 | to accommodate up to 6/shift: Captain has own sleeproom |
| | POC | | 2 | 2 | | | | | on duty; included in count above |
| | Bed | | | | | | | 0 | |
| | | Subtotal: | | | | | | 660 | |
| Wellness Room | Private Room | | | | 1 | 120 | | 120 | |
| | Future Sleep Rms | | | | | | | | |
| | Training area | | | | | | | 0 | |
| | | | | | | | | 0 | |
| | | | | | | | | 0 | |
| | | | | | | | | 0 | |
| | | Subtotal: | | | | | | 120 | |
| Fire Simulator Room | Dedicated Room | | | | 1 | 200 | | 200 | |
| | Driving Simulator | | | | | | | | |
| | | | | | | | | | |
| | | Subtotal: | | | | | | 200 | |
| Locker Alcove (additional lockers) | Locker Alcove | | | | 1 | 240 | | 240 | |
| | Locker 4'x2'x6' | 10 | | | | | | 0 | |
| | | | | | | | | 0 | |
| | | Subtotal: | | | | | | 240 | |

| Space | Description | | Staff Current | Staff Planned | Space Needs Qty | Space Needs Size | Space Needs Reference Pg # | Net Sq. Ft. | Comments / *Adjacencies |
|---|---|---|---|---|---|---|---|---|---|
| Shower Rooms | Shower Room | | | | 3 | 77 | | 231 | Cold Zone |
| | Shower Room (ADA) | | | | | | | 0 | |
| | All to include: | | | | | | | | |
| | Bench | x | | | | | | 0 | *Locker Alcove |
| | Toilet | x | | | | | | 0 | |
| | Sink | x | | | | | | 0 | |
| | Shower | x | | | | | | 0 | |
| | | Subtotal: | | | | | | 231 | |
| Day Room | Day Room | | | | | | | 0 | *Kitchen |
| | Chairs | 8 | | | 1 | 250 | | 250 | *Dining Room |
| | Telephone | | | | | | | 0 | |
| | TV | | | | | | | 0 | |
| | | Subtotal: | | | | | | 250 | |
| Exercise Room | Exercise Room | | | | 1 | 500 | 07.09C | 500 | |
| | | Subtotal: | | | | | | 500 | |
| Kitchen | Kitchen | | | | 1 | 450 | | 450 | *Day Room |
| | Food Pantry | 3 | | | | | | 0 | *Dining Room |
| | Cabinets | | | | | | | 0 | * Access to Patio |
| | Countertop w/ sink | | | | | | | 0 | Counter w/ stools in kitchen |
| | Commercial-grade Microwave | 1 | | | | | | 0 | |
| | Commercial Range | 1 | | | | | | 0 | 6 burners |
| | Commercial Hood w/ fire suppression | 1 | | | | | | 0 | |
| | Dishwasher | 1 | | | | | | 0 | |
| | Commercial Freezer | 1 | | | | | | 0 | |
| | Commercial Freezer | 1 | | | | | | | |
| | Commercial Refrigerator Double Door | 1 | | | | | | | |
| | | Subtotal: | | | | | | 450 | |
| Dining Room | Dining Room | | | | 1 | 250 | | 250 | *Kitchen |
| | Table - size of table | | | | | | | 0 | |
| | Chairs | 10 | | | | | | 0 | |
| | | | | | | | | 0 | |
| | | Subtotal: | | | | | | 250 | |
| Custodial Storage | Area | | | | 1 | 80 | | 80 | |
| | Metal shelves | | | | | | | 0 | |
| | | Subtotal: | | | | | | 80 | |
| Laundry Room | Room | | | | 1 | 120 | | 120 | Wash/Dry large enough for bedding |

| Space | Description | | Staff Current | Staff Planned | Space Needs Qty | Space Needs Size | Space Needs Reference Pg # | Net Sq. Ft. | Comments / *Adjacencies |
|---|---|---|---|---|---|---|---|---|---|
| | Residential Washer | | | | | | | | |
| | Residential Dryer | | | | | | | | |
| | Wash tub | | | | | | | | |
| | Base Cabinets | | | | | | | | |
| | Wall Cabinets | | | | | | | 0 | |
| | | Subtotal: | | | | | | 120 | |
| Net Area | | | | | | | | 3,281 | |
| 25% Internal Circulation Factor | | | | | | | | 820 | |
| Subtotal: Cold Zone Staff | | | 6 | 20 | | | | 4,101 | |

| Space | Description | | Staff | | Space Needs | | | Net | Comments / *Adjacencies |
|---|---|---|---|---|---|---|---|---|---|
| | | | Current | Planned | Qty | Size | Reference Pg # | Sq. Ft. | |
| **5. Warm Zone** | | | | | | | | | |
| Personal Decon Room | Warm Zone Room | | | | 1 | 500 | | 500 | |
| | 18" stackable lockers | 25 | | | | | | 0 | |
| | Shower Rooms | 2 | | | | | | | |
| | Stackable Washer/ Dryer (contaminated clothes) | 1 | | | | | | | |
| | Toilet Room | 2 | | | | | | | |
| | Dry Decon Cabinet | 2 person | | | | | | | |
| | | | | | | | | | |
| | | Subtotal: | | | | | | 500 | |
| Turn Out Gear Room | Gear Room | | | | 1 | 700 | | 700 | *Apparatus Bay |
| | Mesh Open Racks (3'x2') | 40 | | | | | | | *Decon Room |
| | | | | | | | | | 2 sets of gear per Fire Fighter |
| | | | | | | | | | |
| | | | | | | | | 0 | |
| | | Subtotal: | | | | | | 700 | |
| Laundry and Equipment Decon | Positive pressure Room | | | | 1 | 400 | | 400 | *Apparatus Bay |
| | Stackable Residential Washer & Dryer (Rags) | x | | | | | | 0 | |
| | Laundry Tub | x | | | | | | 0 | |
| | Shelving (Soap and Cleaning Supplies) | x | | | | | | 0 | |
| | Mop Sink | x | | | | | | 0 | |
| | Wash/Extract (60lb) | x | | | | | | 0 | |
| | 3 Tub Sink (SS) | x | | | | | | | |
| | Eye Wash | x | | | | | | 0 | |
| | Gear Dryer | x | | | | | | | |
| | Mask/Tank washer | x | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | Subtotal: | | | | | | 400 | |
| EMS Supplies/Storage Secure Storage | Area | | | | 1 | 150 | | 150 | *Apparatus Bay |
| | shelving | | | | | | | 0 | |
| | Sink for future | | | | | | | 0 | |
| | Refrigerator small | | | | | | | 0 | |
| | Counter space | | | | | | | | |
| | | Subtotal: | | | | | | 150 | |
| Hot/Warm Zone Transition vesitbule | Area | | | | 1 | 120 | | 120 | *Apparatus Bay |
| | Storage Space w/ Locking Fence | | | | | | | 0 | |
| | Sink for future | | | | | | | 0 | |
| | | | | | | | | 0 | |
| | | Subtotal: | | | | | | 120 | |
| Net Area | | | | | | | | 1,870 | |
| 30% Internal Circulation Factor | | | | | | | | 561 | |
| Subtotal: Staff Commons | | | 0 | 0 | | | | 2,431 | |

| Space | Description | | Staff | | Space Needs | | | Net Sq. Ft. | Comments / *Adjacencies |
|---|---|---|---|---|---|---|---|---|---|
| | | | Current | Planned | Qty | Size | Reference Pg # | | |
| **6. Apparatus Bay (Hot Zone)** | | | | | | | | | |
| Apparatus Bay (18'x65') Single deep (18'x80') double deep | Apparatus Bay | 18x65 | | | 4 | 1,440 | 12.06 sim | 5,760 | 4 Pull Through Bays @ Station 1 |
| | 14'x14' Bi-fold | | | | | | | 0 | 4 fold in front and sectional in back |
| | Apparatus | Length | | | | | | | |
| | Engine 5 | 30' 8" | | | 1 | | | 0 | |
| | New Engine | 34' | | | | | | | |
| | Tower 1<br>48'6"L x 12'11"W x 11'6"H | 48' 6" | | | 1 | | | 0 | |
| | Squad 1 | 26' | | | 1 | | | 0 | |
| | 519 Command | 18' | | | | | | | |
| | | | | | | | | | |
| | MEP | | | | | | | | |
| | Space Ventilation | | | | | | | 0 | |
| | Vehicle Exhaust Connection | | | | | | | 0 | |
| | 2" Fill & Washing Connection | | | | | | | 0 | |
| | Compressed Air Lines over each bay | | | | | | | 0 | |
| | Hose Bibs & Reels | | | | | | | 0 | |
| | Oil Interceptor | | | | | | | 0 | |
| | Trench Drain | | | | | | | 0 | |
| | Infrared Linear Ceiling | | | | | | | 0 | |
| | Radient Heat Floor | | | | | | | | |
| | Radient Heat Approach | | | | | | | | |
| | | | | | | | | | |
| | | Subtotal: | | | | | | 5,760 | |
| Hose Drying and Storage | Area | | | | 1 | 120 | | 120 | *Apparatus Bay |
| | Dehumidification Room | | | | | | | 0 | |
| | Storage Racks for Hoses | | | | | | | 0 | |
| | Exhaust Fan | | | | | | | 0 | |
| | Hose Washer | | | | 1 | 120 | | 120 | |
| | Floor Drain | | | | | | | 0 | |
| | | Subtotal: | | | | | | 240 | |

| Space | Description | | Staff | | Space Needs | | | Net Sq. Ft. | Comments / *Adjacencies |
|---|---|---|---|---|---|---|---|---|---|
| | | | Current | Planned | Qty | Size | Reference Pg # | | |
| | | | | | | | | | |
| Toilet | Unisex Toilet | | | | 1 | 77 | | 77 | *Apparatus Bay |
| | | | | | | | | 0 | |
| | | Subtotal: | | | | | | 77 | |
| SCBA Maintenance | Clean Room | | | | 1 | 160 | | 160 | *Apparatus Bay |
| | | | | | | | | 0 | |
| | | | | | | | | 0 | |
| | | | | | | | | 0 | |
| | | Subtotal: | | | | | | 160 | |
| SCBA Cascade Room | Room | | | | 1 | 200 | | 200 | *Apparatus Bay |
| | Oxygen Filling Station | | | | | | | 0 | |
| | Oxygen Bottles Storage | | | | | | | 0 | |
| | Air Bottles Storage | | | | | | | 0 | |
| | Explosion proof container | | | | | | | 0 | |
| | | Subtotal: | | | | | | 200 | |
| Parts/shop | Shop | | | | 1 | 300 | | 300 | *Apparatus Bay |
| | Station Compressor | | | | | | | 0 | |
| | Fire Cabinet | | | | | | | 0 | |
| | | | | | | | | 0 | |
| | | Subtotal: | | | | | | 300 | |
| Net Area | | | | | | | | 6,737 | |
| 20% Internal Circulation Factor | | | | | | | | 1347 | |
| Subtotal: Apparatus Bay | | | 0 | 0 | | | | 8,084 | |

| Space | Description | | Staff | | Space Needs | | | Net | Comments / *Adjacencies |
|---|---|---|---|---|---|---|---|---|---|
| | | | Current | Planned | Qty | Size | Reference Pg # | Sq. Ft. | |
| **7. Optional Mezzanine Area** | | | | | | | | | |
| Mezzanine Area | | | | | | | | 0 | *Apparatus Bay |
| | | Subtotal: | | | | | | 0 | See picture |
| Net Areas | | | | | | | | 0 | |
| Circulation Factor | | | | | | | | 0 | |
| Subtotal: Optional Mezzanine/Basement Area | | | 0 | 0 | | | | 0 | |

| Space | Description | | Staff | | Space Needs | | | Net | Comments / *Adjacencies |
|---|---|---|---|---|---|---|---|---|---|
| | | | Current | Planned | Qty | Size | Reference Pg # | Sq. Ft. | |
| **8. Physical Training Tower** | | | | | | | | | |
| Training Tower | Optional | | | | | | | 0 | Separate Facility |
| | | Subtotal: | | | | | | 0 | |
| Live Burn Tower | Optional | | | | | | | 0 | Separate Facility |
| | | Subtotal: | | | | | | 0 | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| Net Areas | | | | | | | | 0 | |
| 25% Internal Circulation Factor | | | | | | | | 0 | |
| Subtotal: Physical Training Tower | | | 0 | 0 | | | | 0 | |

| Space | Description | | Staff | | Space Needs | | | Net | Comments / *Adjacencies |
|---|---|---|---|---|---|---|---|---|---|
| | | | Current | Planned | Qty | Size | Reference Pg # | Sq. Ft. | |
| **9. Building Support Areas** | | | | | | | | | |
| Mechanical Room | Room | | | | 1 | | | 250 | |
| | | Subtotal: | | | | | | 250 | |
| Electrical/Server Room | Room | | | | 1 | | | 200 | |
| | | Subtotal: | | | | | | 200 | |
| Net Area | | | | | | | | 450 | |
| 20% Internal Circulation Factor | | | | | | | | 90 | |
| Subtotal: Building Support Areas | | | 0 | 0 | | | | 540 | |

| **Parking Requirements:** | **Spaces** |
|---|---|
| Other outdoor parking | |
| Staff Parking | 20 |
| Public (Visitor) Parking | **none** |
| **Total Spaces** | 20 |

| Building Area Calculations | Current Staff | Planned Staff | Area Required |
|---|---|---|---|
| 1. Public Spaces | 0 | 0 | 270 |
| 3. CZ- Suppression Operations | 1 | 1 | 702 |
| 4. CZ- Living | 10 | 10 | 3,696 |
| 5. Warm Zone | 0 | 0 | 1,924 |
| 6. Apparatus Bay (Hot Zone) | 0 | 0 | 5,396 |
| 7. Building Support Area | 0 | 0 | 696 |
| Total | 11 | 11 | |
| Subtotal | | | 12,685 |
| 15% Gross-Up Factor (Common circulation, structure, shafts, etc.)<br>(Use additional 5% Gross-Up Factor for Renovation) | | | 1,903 |
| **Total Main Building Area** | | | 14,587 |

| Space | Description | | Staff | | Space Needs | | | Net | |
|---|---|---|---|---|---|---|---|---|---|
| | | | Current | Planned | Qty | Size | Reference Pg# | Sq. Ft. | Comments / *Adjacencies |
| **1. Public Areas** | | | | | | | | | |
| Public Vestibule & Lobby | Vestibule | | | | 1 | 100 | | 100 | |
| | Lobby | | | | 1 | 100 | | 100 | baby can be dropped off in drop off in Lobbly |
| | | Subtotal: | | | | | | 200 | |
| Front Window (no counter) | Counter | | | | | | | 0 | Window to Command Desk (sim to existing Station 2) |
| | | Subtotal: | | | | | | 0 | |
| Blood Draw/Pressure Check | Area in Lobby | | | | 1 | | | | |
| | | Subtotal: | | | | | | 0 | |
| Net Area | | | | | | | | 200 | |
| 35% Internal Circulation Factor | | | | | | | | 70 | |
| Subtotal: Public Areas | | | 0 | 0 | | | | 270 | |

| Space | Description | | Staff Current | Staff Planned | Space Needs Qty | Space Needs Size | Space Needs Reference Pg # | Net Sq. Ft. | Comments / *Adjacencies |
|---|---|---|---|---|---|---|---|---|---|
| **3. CZ- Suppression Operations** | | | | | | | | | |
| Lieutenant (Station 2 only) | Private Office | | 1 | 1 | 1 | 130 | 03.06 | 130 | |
| | | | | | | | | | |
| | Sleep Room: | | | | 1 | 100 | *sim 07.07 | 100 | |
| | Bed | | | | | | | 0 | |
| | Locker 2' X 3' X 6' | | | | | | | 0 | |
| | Equipment: | | | | | | | | |
| | Computer | | | | | | | 0 | |
| | Multifunction printer | | | | | | | 0 | |
| | | Subtotal: | | | | | | 230 | |
| Watch Desk (Window to Lobby) | Office | | | | 1 | 270 | | 270 | |
| | Carrels | 2 | | | 2 | 10 | | 20 | reports |
| | computer | 2 | | | | | | 0 | |
| | Radio Equipment | | | | | | | | |
| | | 1 | | | | | | 0 | |
| | | Subtotal: | | | | | | 290 | |
| Net Area | | | | | | | | 520 | |
| 35% Internal Circulation Factor | | | | | | | | 182 | |
| Subtotal: Cold Zone Suppression Operations | | | 1 | 1 | | | | 702 | |

| Space | Description | | Staff | | Space Needs | | | Net | Comments / *Adjacencies |
|---|---|---|---|---|---|---|---|---|---|
| | | | Current | Planned | Qty | Size | Reference Pg # | Sq. Ft. | |
| **4. C Z - Living** | | | | | | | | | |
| Firefighers' Sleep Rooms | Private Room | | 10 | 10 | 4 | 120 | 7.10 | 480 | 2 FT and 2 POC |
| | | | | | | | | | |
| | Bed | | | | | | | 0 | |
| | Lockers | | | | | | | 0 | |
| | Linen Storage | | | | | | | 0 | |
| | | | | | | | | 0 | |
| | | Subtotal: | | | | | | 480 | |
| Wellness Room | Private Room | | | | 1 | 100 | | 100 | |
| | Future Sleep Rms | | | | | | | | |
| | Bed | | | | | | | 0 | |
| | Lockers | | | | | | | 0 | |
| | Linen Storage | | | | | | | 0 | |
| | | | | | | | | 0 | |
| | | Subtotal: | | | | | | 100 | |
| Locker Alcove | Locker Alcove | | | | 1 | 50 | | 50 | 10 at 2 |
| | 4'x2'x6' | 10 | | | | | | 0 | 8 at 3 |
| | | Subtotal: | | | | | | 50 | |
| Superior EMS Sleep + Shower Rooms | Private Room | | | | 2 | 100 | 7.10 | 200 | |
| | Future Sleep Rms | | | | | | | | |
| | Bed | | | | | | | 0 | |
| | Lockers | | | | | | | 0 | |
| | Linen Storage | | | | | | | 0 | |
| | Shower Room | | | | 1 | 100 | 7.07a | 100 | |
| | | Subtotal: | | | | | | 300 | |
| Firefighter Shower Rooms | Shower Room | | | | 2 | 100 | 7.07.b | 200 | *Apparatus Bay |
| | Shower Room (ADA) | | | | | | | 0 | |
| | All to include: | | | | | | | | |
| | Bench | | | | | | | 0 | *Locker Alcove |
| | Toilet | | | | | | | 0 | |
| | Sink | | | | | | | 0 | |
| | Shower | | | | | | | 0 | |
| | | Subtotal: | | | | | | 200 | |

| Space | Description | | Staff | | Space Needs | | | Net | Comments / *Adjacencies |
|---|---|---|---|---|---|---|---|---|---|
| | | | Current | Planned | Qty | Size | Reference Pg # | Sq. Ft. | |
| Toilet | Toilet Room | | | | 1 | 77 | 7.05b | 77 | *Apparatus Bay |
| | Urinal | | | | | | | 0 | |
| | Toilet | | | | | | | | |
| | Sink | | | | | | | 0 | *Locker Alcove |
| | | | | | | | | 0 | |
| | | Subtotal: | | | | | | 77 | |
| Day Room | Day Room | | | | 1 | 250 | | 250 | *Kitchen |
| | ~~Study~~ Chairs | 6 | | | | | | 0 | *Dining Room |
| | Telephone | | | | | | | 0 | |
| | TV | | | | | | | 0 | |
| | | Subtotal: | | | | | | 250 | |
| Exercise Room | Exercise Room | | | | 1 | 500 | 7.09c | 500 | |
| | Weight Rack | | | | | | | | |
| | Dumbell Rack | | | | | | | | |
| | Treadmill | 1 | | | | | | | |
| | Elliptical | 1 | | | | | | | |
| | TRX Equipment | 1 | | | | | | | |
| | Mirrors | 1 | | | | | | | |
| | Sound Walls/Floor | | | | | | | | |
| | Monitors/TV | | | | | | | | |
| | Bluetooth speakers | | | | | | | | |
| | Stair Master | 1 | | | | | | | |
| | | Subtotal: | | | | | | 500 | |
| Kitchen | Kitchen | | | | 1 | 400 | | 400 | *Day Room |
| | Walk-in Food Pantry | 3 | | | | | | 0 | *Dining Room |
| | Cabinets | | | | | | | 0 | * Access to Patio |
| | Countertop w/ sink | | | | | | | 0 | Counter w/ stools in kitchen |
| | Refrigerators | 2 | | | | | | 0 | One Supreior, One Fire |
| | Commercial-grade Microwave | 1 | | | | | | 0 | |
| | Commercial Range | 1 | | | | | | 0 | |
| | Commercial Hood w/ fire suppression | 1 | | | | | | 0 | |
| | Dishwasher | 1 | | | | | | 0 | |
| | Commercial Freezer | 1 | | | | | | 0 | |
| | | | | | | | | | |
| | | Subtotal: | | | | | | 400 | |

| Space | Description | | Staff | | Space Needs | | | Net | Comments / *Adjacencies |
|---|---|---|---|---|---|---|---|---|---|
| | | | Current | Planned | Qty | Size | Reference Pg # | Sq. Ft. | |
| Dining Room | Dining Room | | | | 1 | 250 | | 250 | *Kitchen |
| | Table - size of table | 10-12 | | | | | | 0 | |
| | Chairs | | | | | | | 0 | |
| | | | | | | | | 0 | |
| | | Subtotal: | | | | | | 250 | |
| Custodial Storage | Area | | | | 1 | 80 | | 80 | |
| | Metal shelves | | | | | | | 0 | |
| | | Subtotal: | | | | | | 80 | |
| Small Training / Reading Room | Table for 6 | | | | 1 | 150 | 05.03 | 150 | |
| | computer stations | 2 | | | | | | 0 | |
| | Book Case/Library | | | | | | | | |
| | | | | | | | | 0 | |
| | | Subtotal: | | | | | | 150 | |
| Laundry Room | Room | | | | 1 | 120 | | 120 | Wash/Dry large enough for bedding |
| | Residential Washer | | | | | | | | |
| | Residential Dryer | | | | | | | | |
| | Wash tub | | | | | | | | |
| | Base Cabinets | | | | | | | | |
| | Wall Cabinets | | | | | | | 0 | |
| | | Subtotal: | | | | | | 120 | |
| Net Area | | | | | | | | 2,957 | |
| 25% Internal Circulation Factor | | | | | | | | 739 | |
| Subtotal: Cold Zone Staff | | | 10 | 10 | | | | 3,696 | |

| Space | Description | | Staff Current | Staff Planned | Space Needs Qty | Space Needs Size | Space Needs Reference Pg # | Net Sq. Ft. | Comments / *Adjacencies |
|---|---|---|---|---|---|---|---|---|---|
| **5. Warm Zone** | | | | | | | | | |
| Personal Decon Room | Warm Zone Room | | | | 1 | 300 | | 300 | |
| | 18" stackable lockers | 20 | | | | | | 0 | |
| | Shower Rooms | 2 | | | | | | | |
| | Stackable Washer/ Dryer (contaminated clothes) | 1 | | | | | | | |
| | Toilet Room | 2 | | | | | | | |
| | Dry Decon | 2 person | | | | | | | |
| | | Subtotal: | | | | | | 300 | |
| Turn Out Gear Room | Gear Room | | | | 1 | 470 | | 470 | *Apparatus Bay |
| | Mesh Open Racks (2'x3') | 30 | | | | | | | *Decon Room |
| | | | | | | | | | 2 sets of gear per Fire Fighter |
| | | | | | | | | | Doubles as storm shelter |
| | | | | | | | | 0 | Separate Vent & Supply |
| | | Subtotal: | | | | | | 470 | |
| Laundry and Equipment Decon | Positive pressure Room | | | | 1 | 350 | | 350 | *Apparatus Bay |
| | Commercial Stackable Washer & Dryer (Rags) | 1 | | | | | | 0 | |
| | Laundry Tub | 1 | | | | | | 0 | |
| | Shelving (Soap and Cleaning Supplies) | 1 | | | | | | 0 | |
| | Mop Sink | 1 | | | | | | 0 | |
| | Wash/Extract (60lb) | 1 | | | | | | 0 | |
| | 3 Tub Sink (SS) | 1 | | | | | | | |
| | Eye Wash | 1 | | | | | | 0 | |
| | Gear Dryer | 1 | | | | | | | |
| | Mask/Tank washer | 1 | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | Subtotal: | | | | | | 350 | |
| EMS Supplies/Storage Secure Storage | Area | | | | 2 | 120 | | 240 | *Apparatus Bay |
| | Sink for future | | | | | | | 0 | One for Superior one for FF |
| | storage shelves | | | | | | | 0 | |
| | | Subtotal: | | | | | | 240 | |
| Hot/Warm Zone Transition vesitbule | Area | | | | 1 | 120 | | 120 | *Apparatus Bay |
| | | | | | | | | 0 | one per entry |
| | | | | | | | | 0 | 300 |
| | | Subtotal: | | | | | | 120 | |
| Net Area | | | | | | | | 1,480 | |
| 30% Internal Circulation Factor | | | | | | | | 444 | |
| Subtotal: Staff Commons | | | 0 | 0 | | | | 1,924 | |

| Space | Description | | Staff | | Space Needs | | | Net Sq. Ft. | Comments / *Adjacencies |
|---|---|---|---|---|---|---|---|---|---|
| | | | Current | Planned | Qty | Size | Reference Pg # | | |
| **6. Apparatus Bay (Hot Zone)** | | | | | | | | | |
| Apparatus Bay (18'x65') Single deep (18'x80') double deep | Apparatus Bay | | 18x65 | | 1 | 3,800 | 12 | 3,800 | **Station #2** three bay pull thru w/boat. **Station #3** three bay pull thru |
| | 14'x14' Bi-fold | | | | | | | 0 | Bi-fold doors front, Oh'd rear |
| | Apparatus | Length | | | | | | | |
| | Engine 2 | 31' 11" | | | 1 | | | 0 | Station 2 |
| | Squad 2 | 26' | | | 1 | | | 0 | Station 2 |
| | 529 Command | 19' 5" | | | 1 | | | 0 | Station 2 |
| | Boat on trailer | 16' | | | 1 | | | 0 | Station 2 |
| | Squad 2 | 26' | | | 1 | | | 0 | Station 2 |
| | | | | | | | | | |
| | Engine 3 | 32' 1" | | | 1 | | | 0 | Station 3 |
| | Rescue 3 | 18' 2" | | | 1 | | | 0 | Station 3 |
| | Ambulance | 22'-0" | | | 1 | | | 0 | Station 3 |
| | | | | | | | | | |
| | MEP | | | | | | | | |
| | Space Ventilation | x | | | | | | 0 | Plimavent |
| | Under vehicle wash | x | | | | | | | |
| | Vehicle Exhaust | x | | | | | | 0 | |
| | 2" Fill & Washing Connection | x | | | | | | 0 | |
| | Compressed Air Lines over each bay | x | | | | | | 0 | |
| | Hose Bibs & Reels | x | | | | | | 0 | |
| | Oil Interceptor | x | | | | | | 0 | |
| | Trench Drain | x | | | | | | 0 | |
| | Infrared Linear Ceiling | | | | | | | 0 | |
| | | Subtotal: | | | | | | 3,800 | |
| Battery Charging area | Area | | | | 1 | | | 0 | *Apparatus Bay |
| | 2hr rated room | | | | | | | 0 | |
| | Charges Li batteries | | | | | | | 0 | |
| | | | | | | | | 0 | |
| | | Subtotal: | | | | | | 0 | |

| Space | Description | | Staff | | Space Needs | | | Net Sq. Ft. | Comments / *Adjacencies |
|---|---|---|---|---|---|---|---|---|---|
| | | | Current | Planned | Qty | Size | Reference Pg # | | |
| Hose Drying and Storage | Area | | | | 1 | 120 | | 120 | *Apparatus Bay |
| | | | | | | | | 0 | |
| | Storage Racks for Hoses | x | | | | | | 0 | |
| | Hose Washer | x | | | | | | 0 | |
| | Floor Drain | x | | | | | | 0 | |
| | Dry Cabinet | x | | | | | | 0 | |
| | | Subtotal: | | | | | | 120 | |
| Toilet | Unisex Toilet | | | | 1 | 77 | | 77 | *Apparatus Bay |
| | | | | | | | | 0 | |
| | | Subtotal: | | | | | | 77 | |
| SCBA Maintenance | Clean Room | | | | 1 | 100 | | 100 | *Apparatus Bay |
| | | | | | | | | 0 | |
| | | | | | | | | 0 | |
| | | | | | | | | 0 | |
| | | Subtotal: | | | | | | 100 | |
| SCBA Cascade Room | Room | | | | 1 | 150 | | 150 | *Apparatus Bay |
| | Air Bottles Storage | | | | | | | 0 | |
| | Working Counter | | | | | | | 0 | |
| | Writing Desk | | | | | | | 0 | |
| | | Subtotal: | | | | | | 150 | |
| Parts/shop | Room | | | | 1 | 150 | | 150 | *Apparatus Bay |
| | | | | | | | | 0 | |
| | | | | | | | | 0 | |
| | | | | | | | | 0 | |
| | | Subtotal: | | | | | | 150 | |
| Station Compressor Room | Room | | | | 1 | 100 | | 100 | INCLUDE IN PARTS/SHOP? |
| | Fresh Air Intake | | | | | | | 0 | |
| | Exhaust build up heat to outside | | | | | | | 0 | |
| | Concrete pad | | | | | | | 0 | |
| | | Subtotal: | | | | | | 100 | |
| Net Area | | | | | | | | 4,497 | |
| 20% Internal Circulation Factor | | | | | | | | 899 | |
| Subtotal: Apparatus Bay | | | 0 | 0 | | | | 5,396 | |

| Space | Description | | Staff | | Space Needs | | | Net | Comments / *Adjacencies |
|---|---|---|---|---|---|---|---|---|---|
| | | | Current | Planned | Qty | Size | Reference Pg # | Sq. Ft. | |
| **9. Building Support Areas** | | | | | | | | | |
| Mechanical Room | Room | | | | 1 | 300 | | 300 | |
| | | Subtotal: | | | | | | 300 | |
| Electrical Room | Room | | | | 1 | 200 | | 200 | |
| | | Subtotal: | | | | | | 200 | |
| Server Room | Room | | | | 1 | 80 | | 80 | |
| | | | | | | | | | |
| | | Subtotal: | | | | | | 80 | |
| Net Area | | | | | | | | 580 | |
| 20% Internal Circulation Factor | | | | | | | | 116 | |
| Subtotal: Building Support Areas | | | 0 | 0 | | | | 696 | |

| Parking Requirements: | Spaces |
|---|---|
| Other outdoor parking | ? |
| Staff Parking | |
| Public (Visitor) Parking | **See Shared Spaces** |
| **Total Spaces** | 0 |

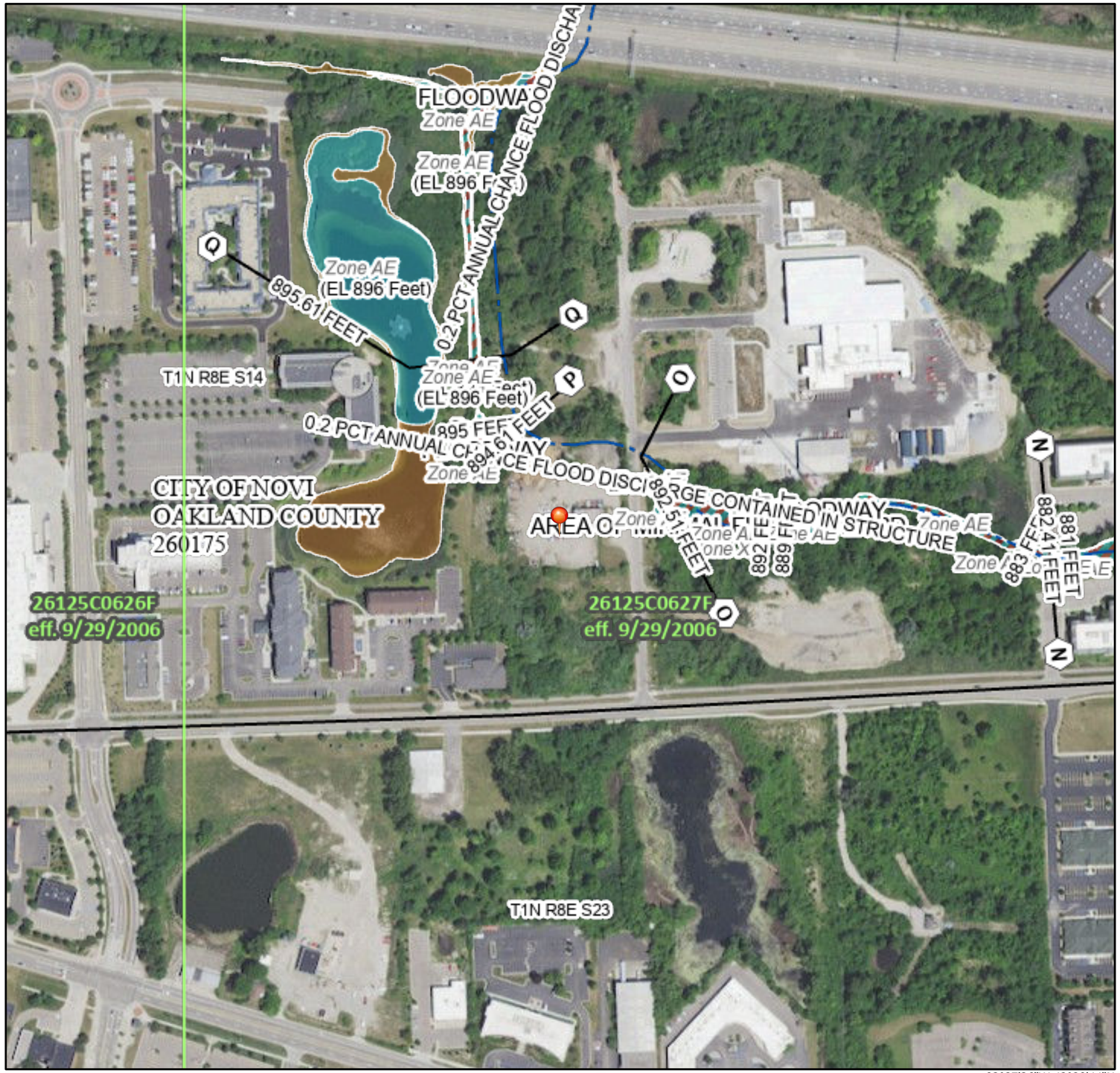
# SECTION F

## SITE PLAN + BLOCK DIAGRAM

# National Flood Hazard Layer FIRMette

FEMA

83°28'14"W 42°29'10"N




*Basemap Imagery Source: USGS National Map 2023*

## Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

**SPECIAL FLOOD HAZARD AREAS**
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

**OTHER AREAS OF FLOOD HAZARD**
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

**OTHER AREAS**
- NO SCREEN — Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

**GENERAL STRUCTURES**
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

**OTHER FEATURES**
- 20.2 — Cross Sections with 1% Annual Chance
- 17.5 — Water Surface Elevation
- Coastal Transect
- 513 — Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

**MAP PANELS**
- Digital Data Available
- No Digital Data Available
- Unmapped

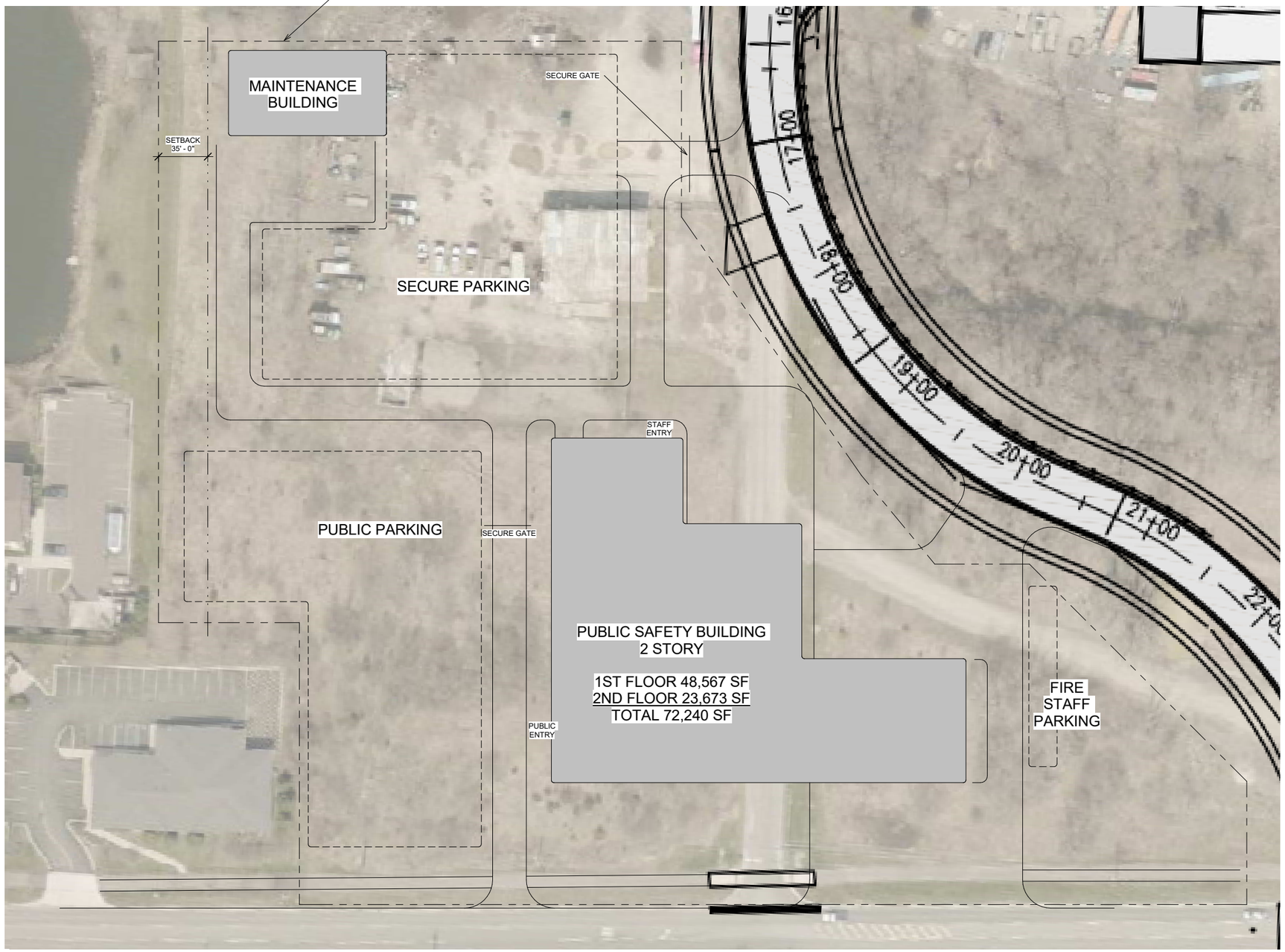
N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 8/16/2023 at 2:21 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.




BLOCK DIAGRAM CONCEPT

November 21, 2023

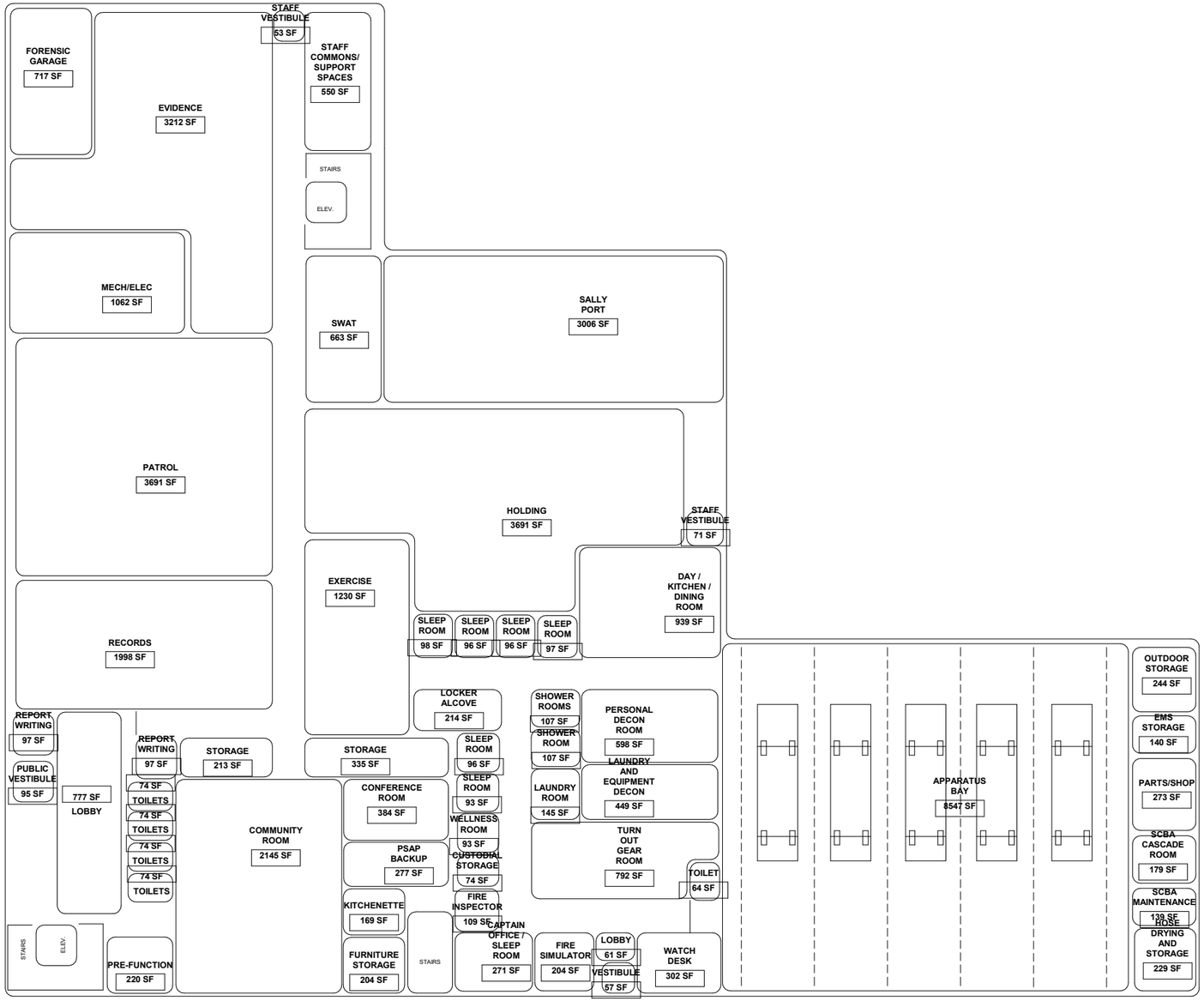
# City of Novi

## Public Safety Building

Concept Site Plan

Scale: 1" = 40'- 0"

Redstone Architects, Inc.
Law Enforcement - Justice - Public Safety - Municipal




BLOCK DIAGRAM CONCEPT

November 21, 2023

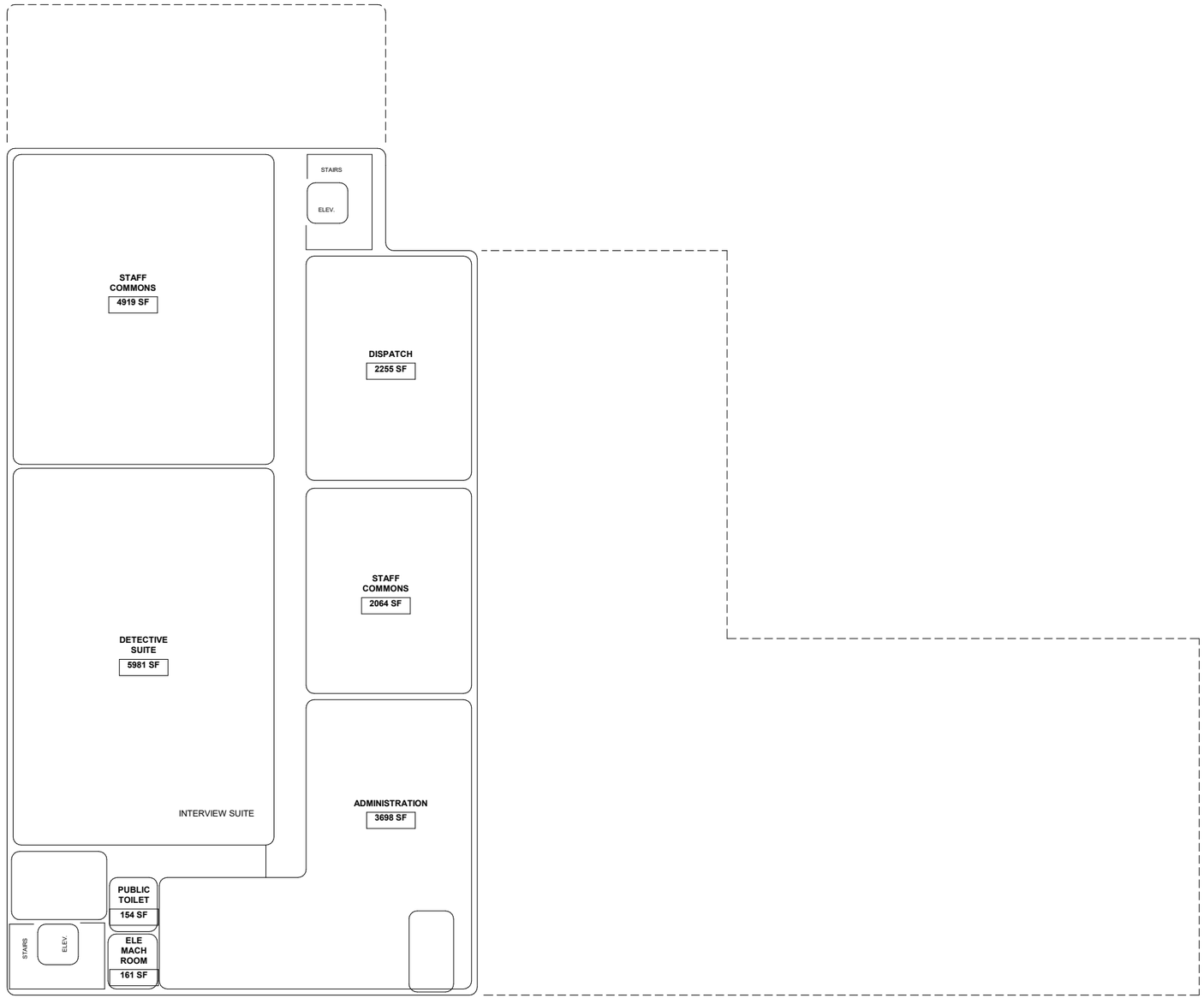
# City of Novi

## Public Safety Building

## Concept Plan - Level 1

Scale: 1/16" = 1'- 0"

Redstone Architects, Inc.
Law Enforcement - Justice - Public Safety - Municipal




BLOCK DIAGRAM CONCEPT

November 21, 2023

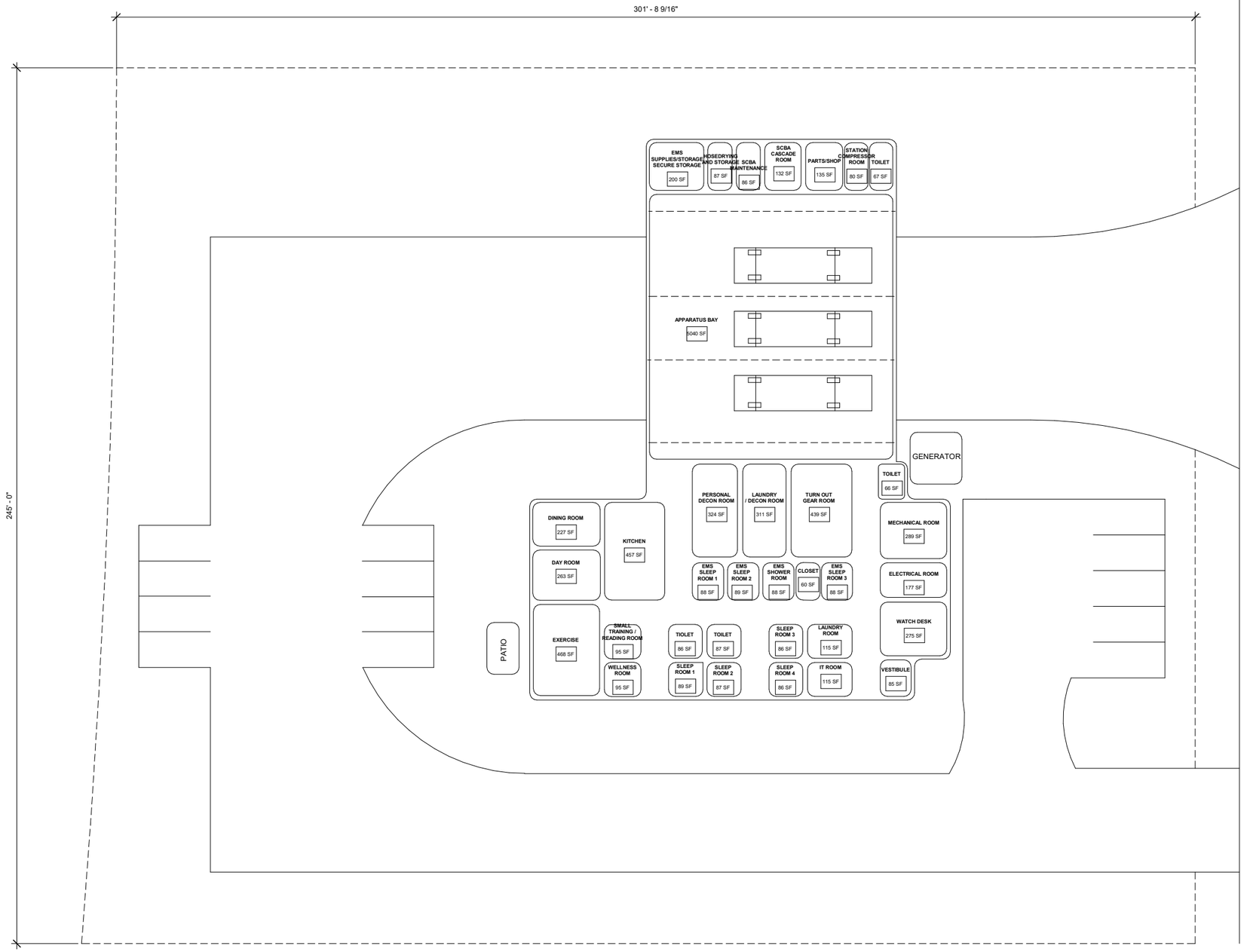
# City of Novi

## Public Safety Building

Concept Plan - Level 2

Scale: 1/16" = 1'- 0"

Redstone Architects, Inc.
Law Enforcement - Justice - Public Safety - Municipal




## Concept Plan

Scale: 1/16" = 1'- 0"

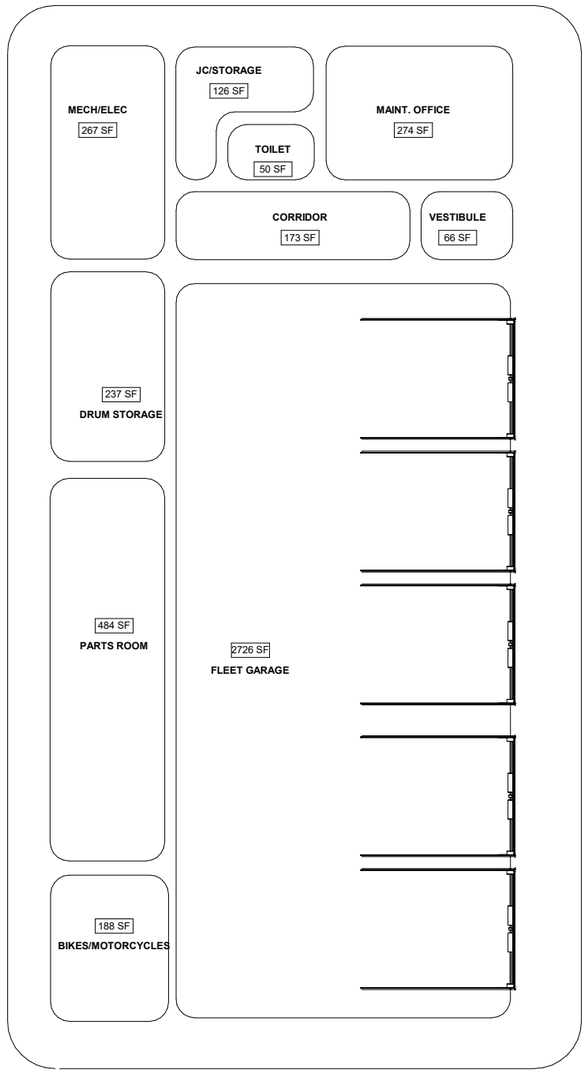
BLOCK DIAGRAM CONCEPT

September 28, 2023

# City of Novi

Fire Station 3 Study

Redstone Architects, Inc.
Law Enforcement - Justice - Public Safety - Municipal




## Concept Plan - Fleet Maintenance Garage

Scale: 1/8" = 1'- 0"

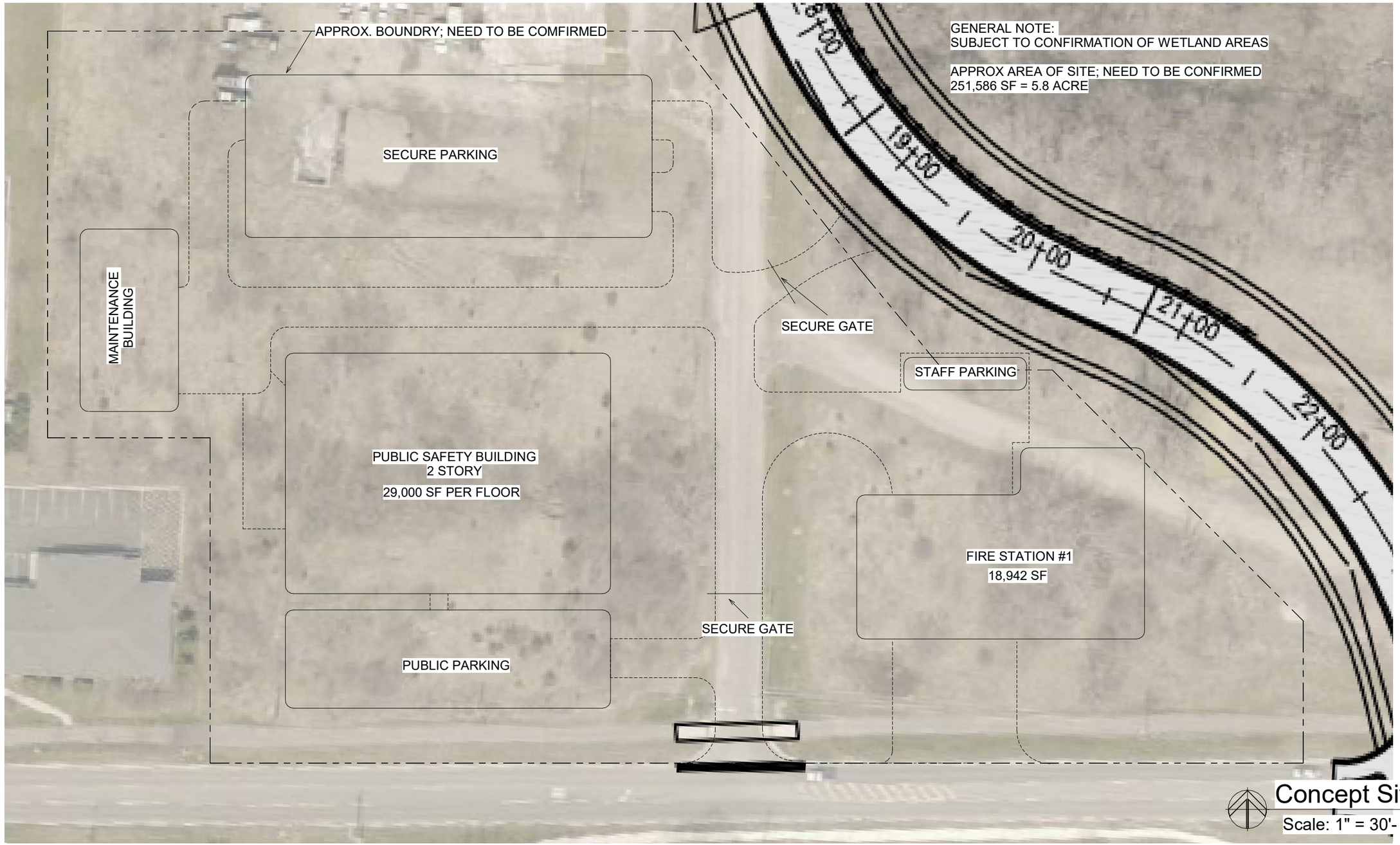
BLOCK DIAGRAM CONCEPT

September 28, 2023

# City of Novi

Public Safety Building

Redstone Architects, Inc.
Law Enforcement - Justice - Public Safety - Municipal




Concept Site Plan

Scale: 1" = 30'- 0"

BLOCK DIAGRAM CONCEPT

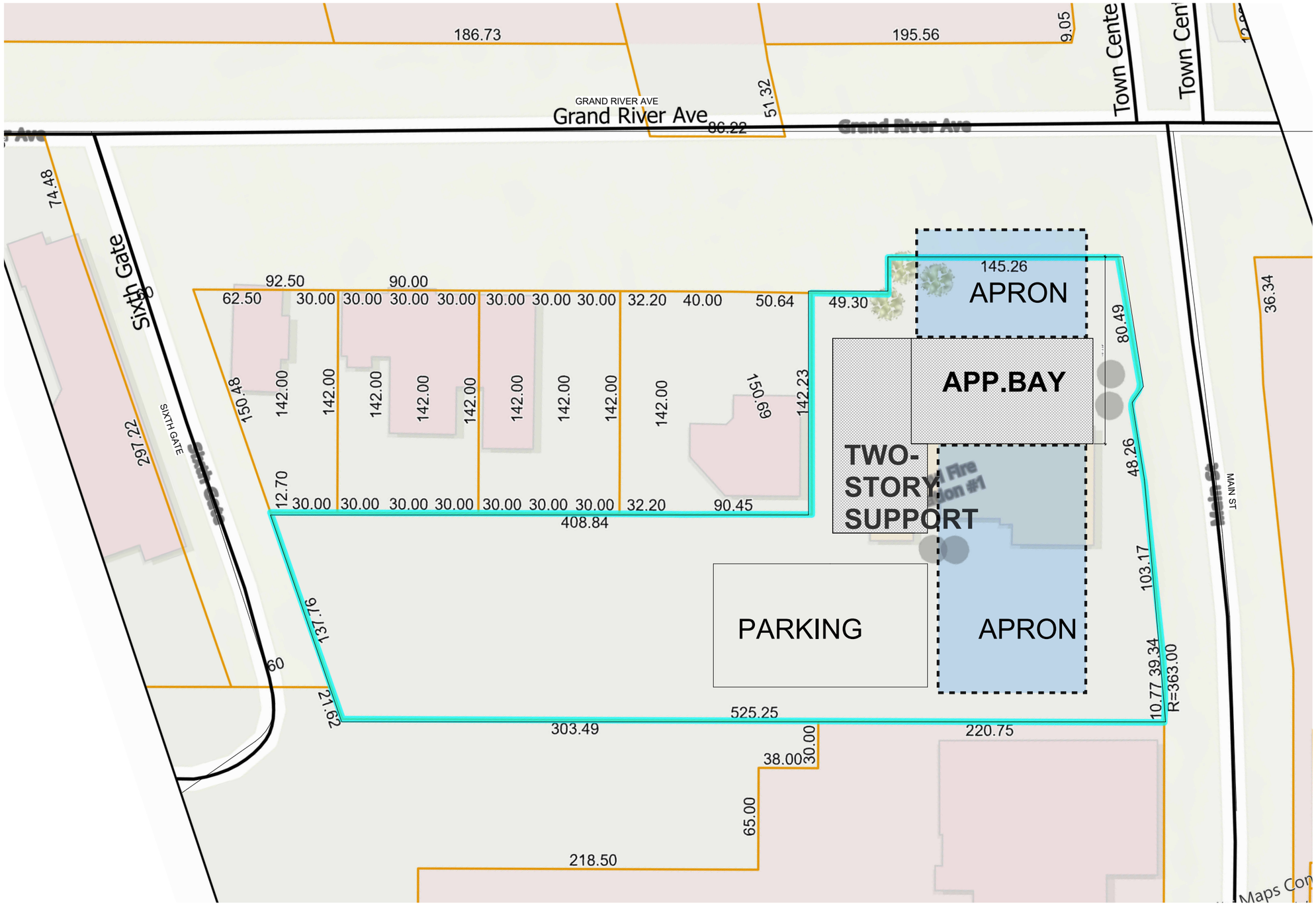
**FINAL REPORT - LEE BEGOLE SITE OPTION 1 - SEPARATE BUILDINGS - JANUARY 2024**

September 28, 2023

# City of Novi

Public Safety Building

Redstone Architects, Inc.
Law Enforcement - Justice - Public Safety - Municipal




**OPTION 2: NEW STATION #1 ON EXISTING SITE - REQUIRES A TWO-STORY PORTION**

# Fire Station Location Analysis

## Initial Report: 1/18/2024

### Data Used in the Analysis:

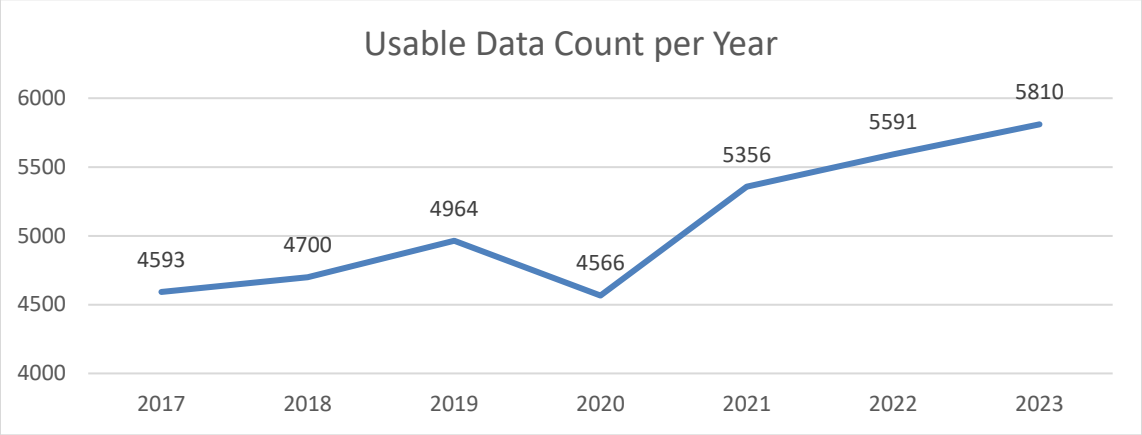
- Fire Incidents from 1/1/2017-12/31/2023 provided by the Fire Department.
    - 35,580 total priority runs that could be mapped.
- Existing Streets GIS layer provided by SEMCOG and updated to include newly built streets, one way indicator, and speed limit for existing streets.
    - Used in baseline drive time analysis.
- Proposed Streets GIS layer updated to include proposed streets: Lee BeGole Dr connection to Crescent Blvd, new roundabout on 11 Mile Rd at Lee BeGole Dr, and new street between 11 Mile Rd and Grand River Ave.
    - Used in each scenario analysis that includes proposed fire stations.
- Fire Stations GIS layer that includes existing stations and proposed stations.

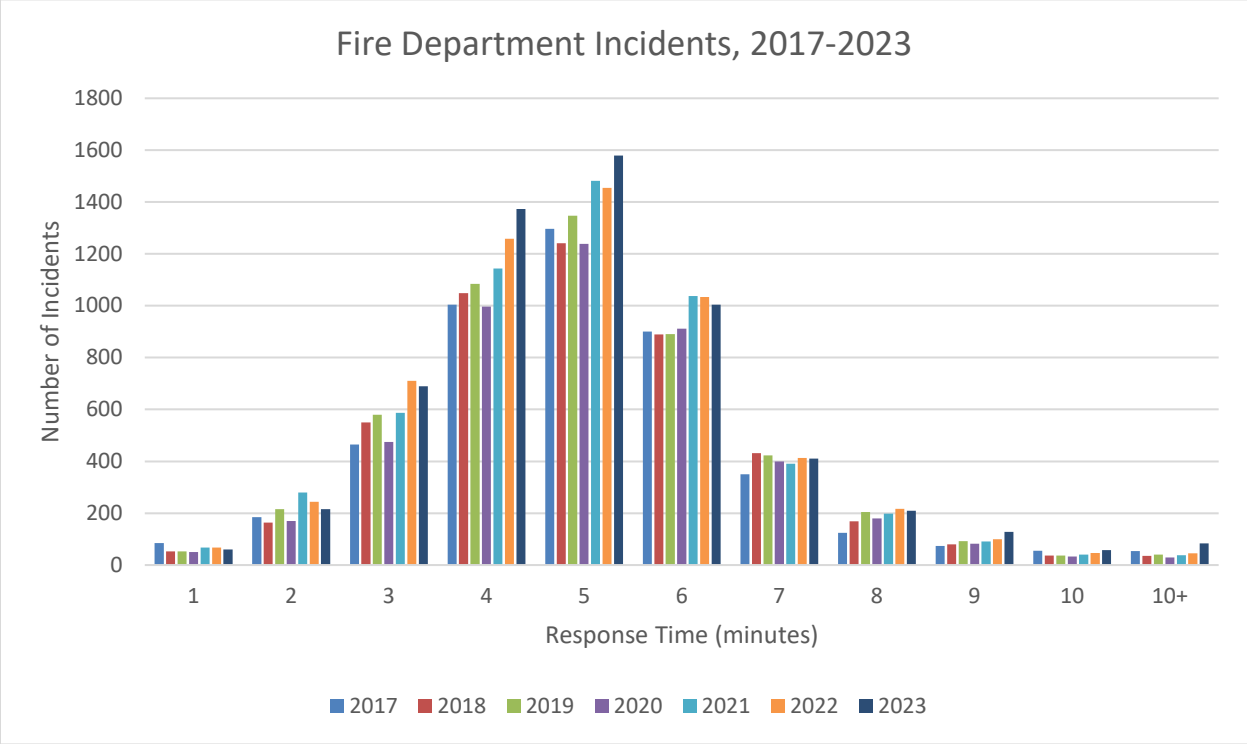
### Variables:

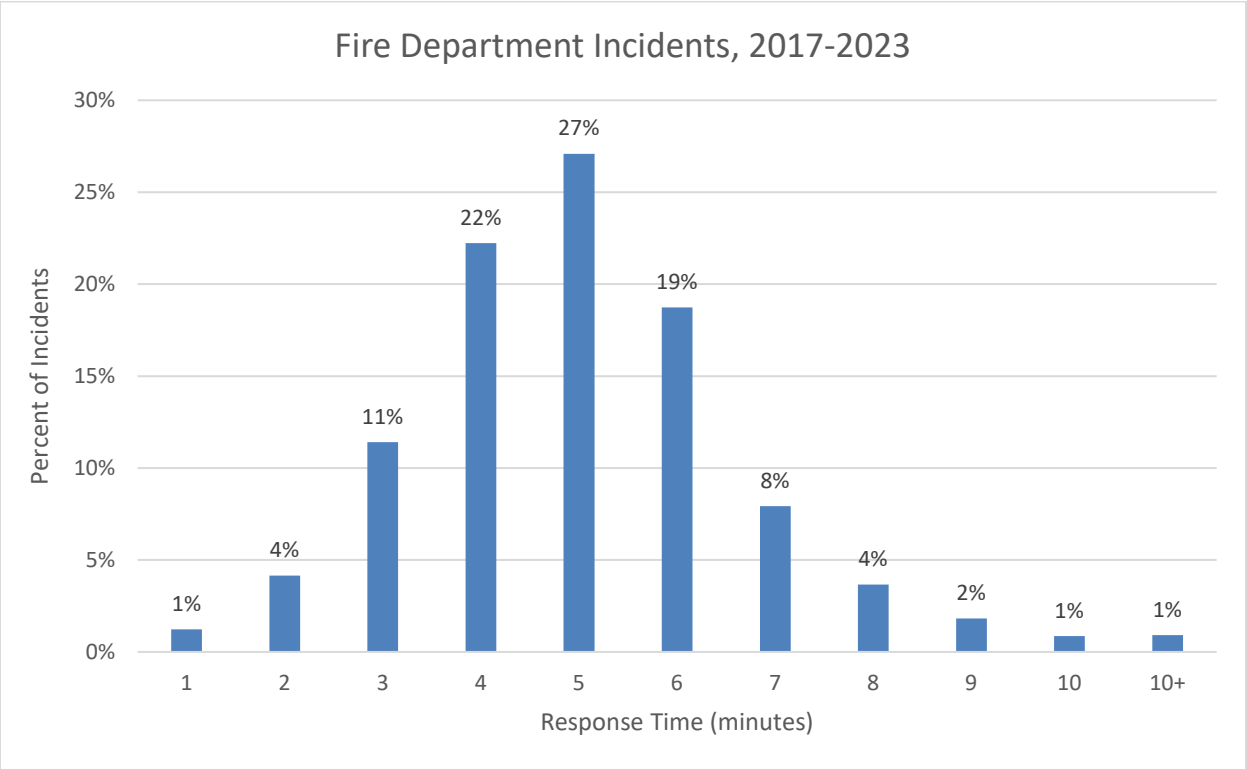
- Posted speed limit.
- Routes allowed outside city limits.
- Freeway use allowed.
- U-turns are allowed at road dead-ends only.
- Average turn-out time assigned to each station:
    - Station 1 = 1:59 minutes
    - Station 2 = 1:55 minutes
    - Station 3 = 1:52 minutes
    - Station 4 = 1:49 minutes
    - Proposed Stations = 1:54 minutes

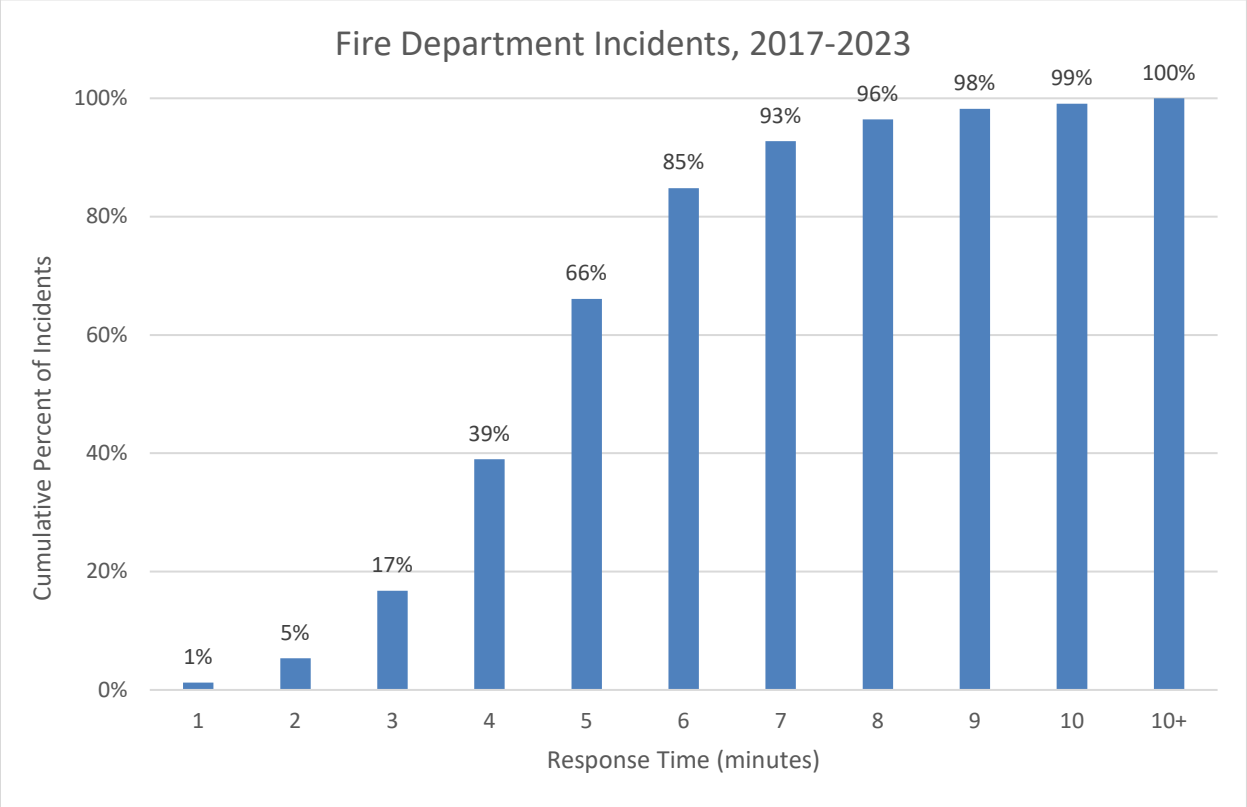
### Fire Incident Analysis:

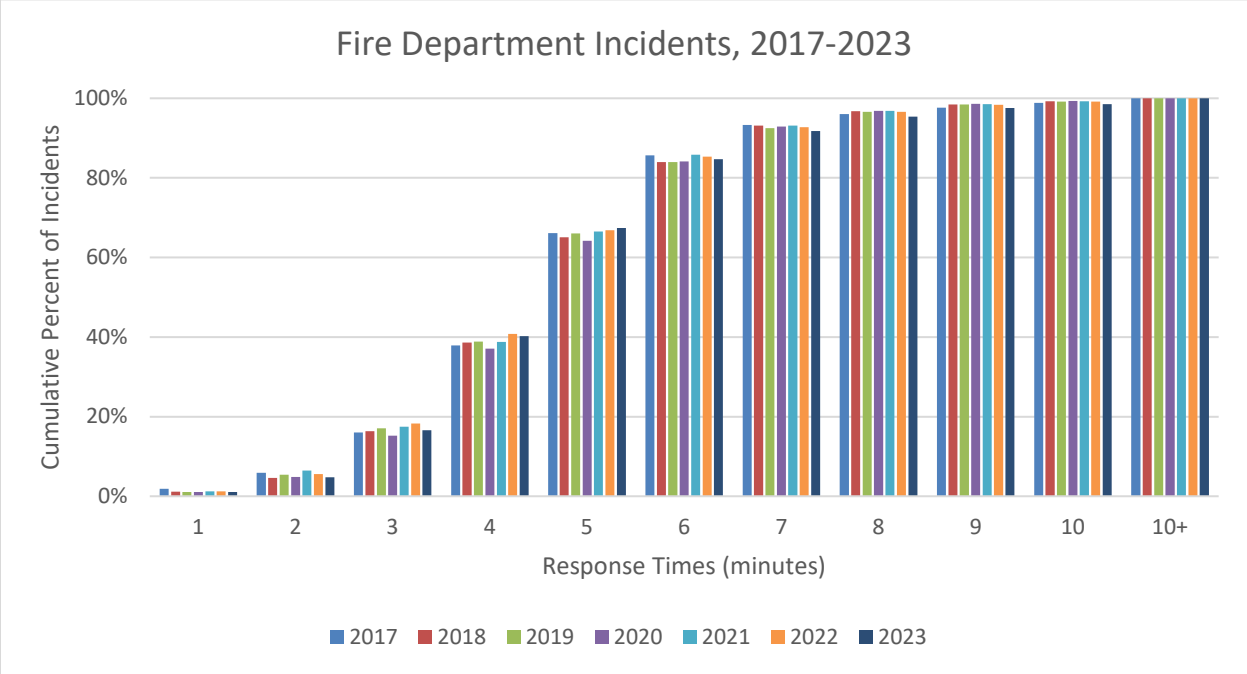
The following charts illustrate the existing conditions based on the fire incident data:




Fire Department Incidents, 2017-2023
Number of Incidents
1800
1600
1400
1200
1000
800
600
400
200
0
1
2
3
4
5
6
7
8
9
10
10+
Response Time (minutes)
2017
2018
2019
2020
2021
2022
2023


Fire Department Incidents, 2017-2023
Percent of Incidents
30%
25%
20%
15%
10%
5%
0%
1%
4%
11%
22%
27%
19%
8%
4%
2%
1%
1%
1
2
3
4
5
6
7
8
9
10
10+
Response Time (minutes)

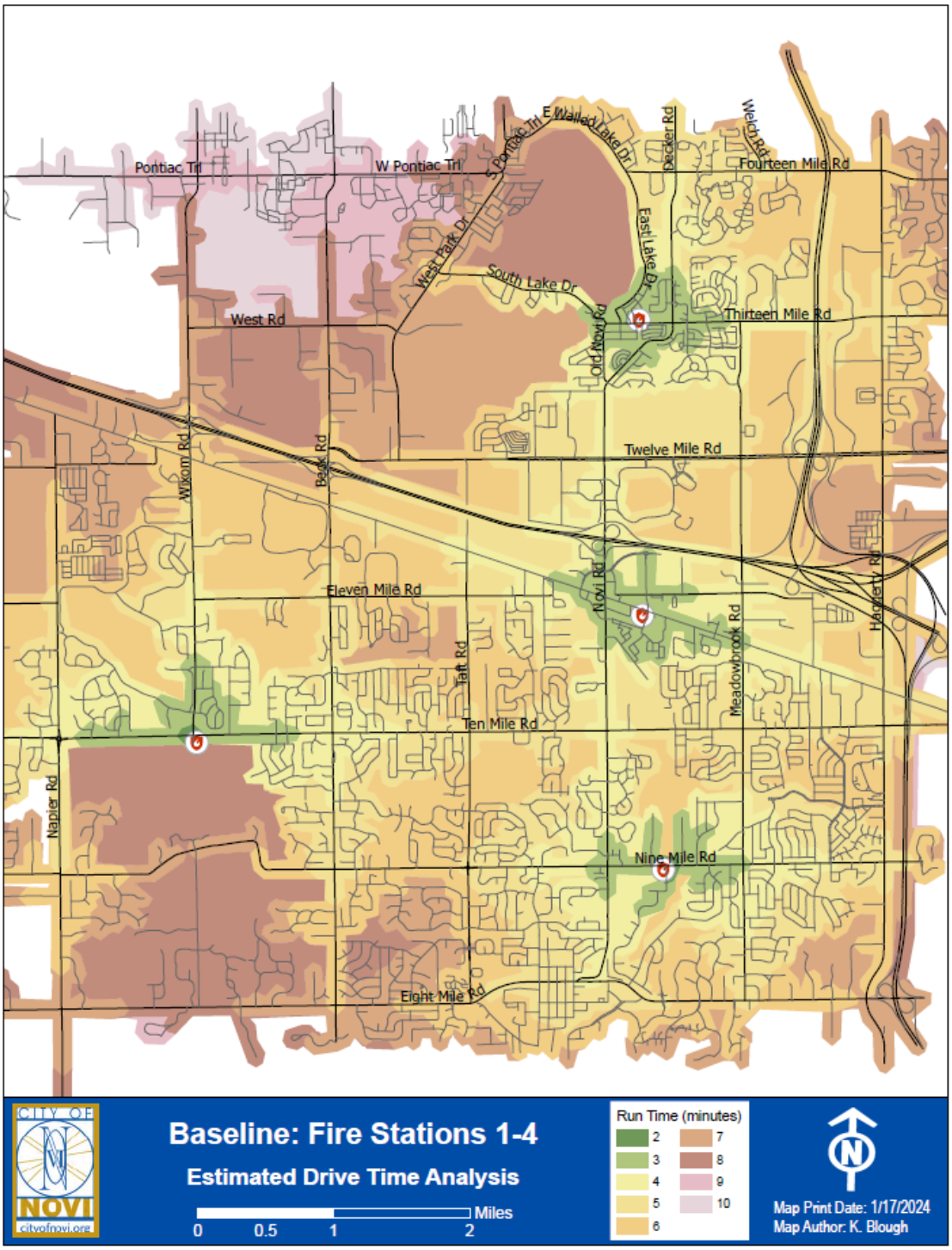

Fire Department Incidents, 2017-2023
Cumulative Percent of Incidents
100%
80%
60%
40%
20%
0%
1%
5%
17%
39%
66%
85%
93%
96%
98%
99%
100%
1
2
3
4
5
6
7
8
9
10
10+
Response Time (minutes)


Fire Department Incidents, 2017-2023
Cumulative Percent of Incidents
100%
80%
60%
40%
20%
0%
1
2
3
4
5
6
7
8
9
10
10+
Response Times (minutes)
2017
2018
2019
2020
2021
2022
2023

## Baseline Drive Time Analysis:

- Existing Fire Stations 1-4

A drive time analysis produces polygons that represent *estimated* response time based on the variables described on Page 1. The resulting map shows how long it takes to reach all parts of the city from the four existing fire stations.



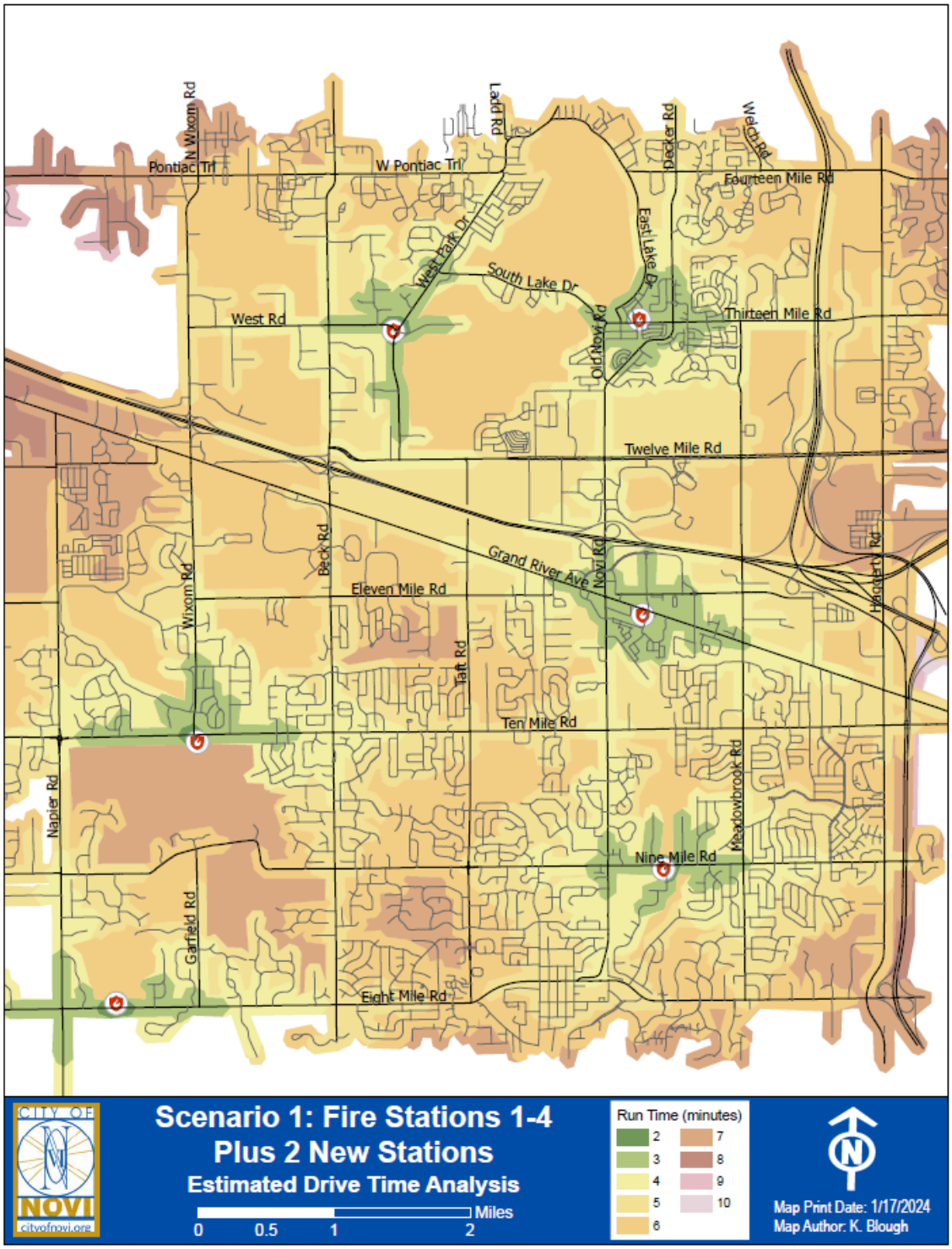
## Model Validity:

Since a drive time analysis produces estimated run times, it is important to understand if the model reflects the actual run times as accurately as possible. The average run time for incidents located within each drive time area was calculated and summarized in the table below.

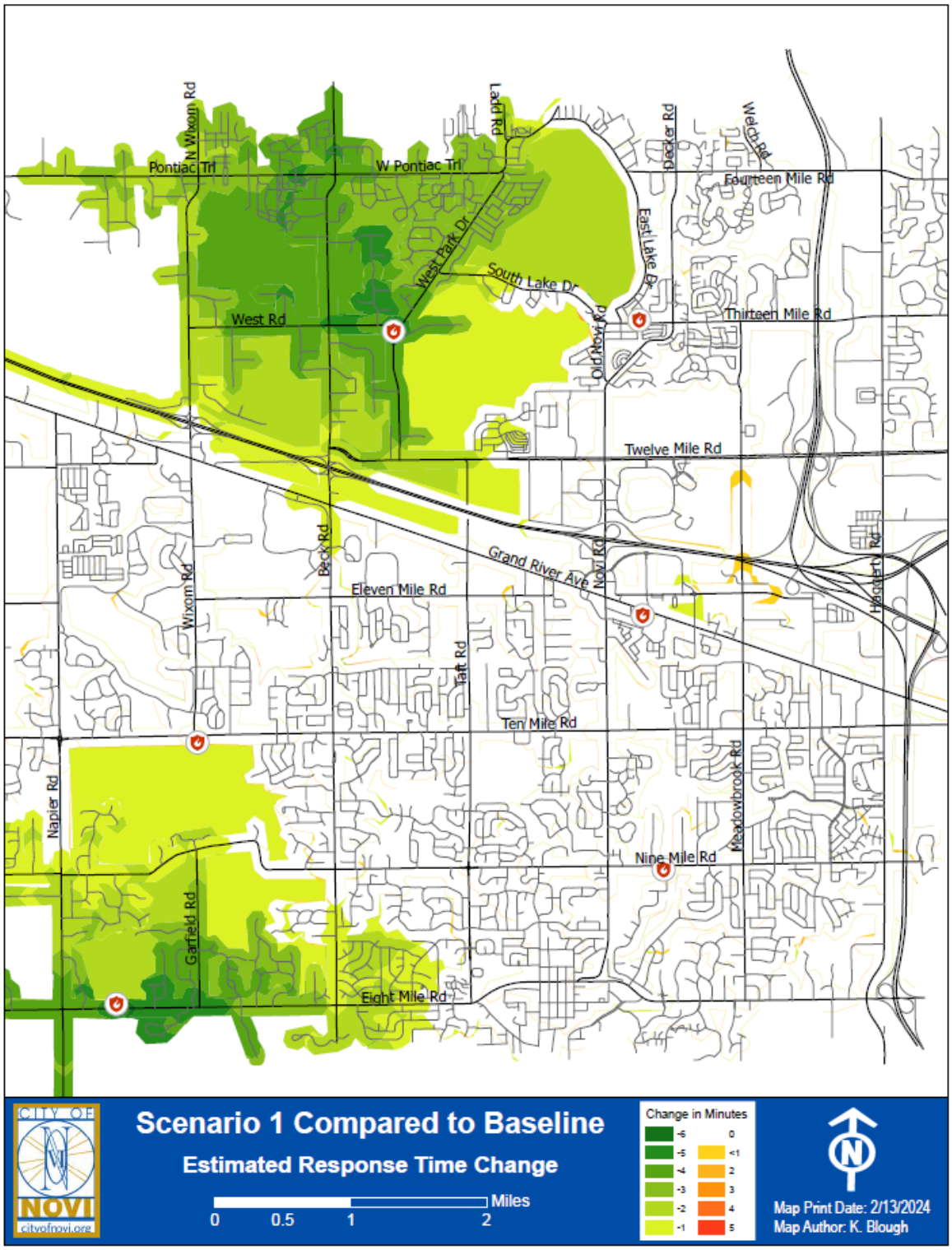
| Drive Time Area Minutes | Actual Incident Average Minutes |
|---|---|
| 2 | 3.74 |
| 3 | 3.58 |
| 4 | 4.31 |
| 5 | 4.94 |
| 6 | 5.42 |
| 7 | 6.56 |
| 8 | 6.40 |
| 9 | 7.88 |

## Scenario 1 Drive Time Analysis:

- Existing Fire Stations 1-4
- Two Proposed Fire Stations:
    - West Rd at West Park Dr
    - Eight Mile Rd East of Napier Rd

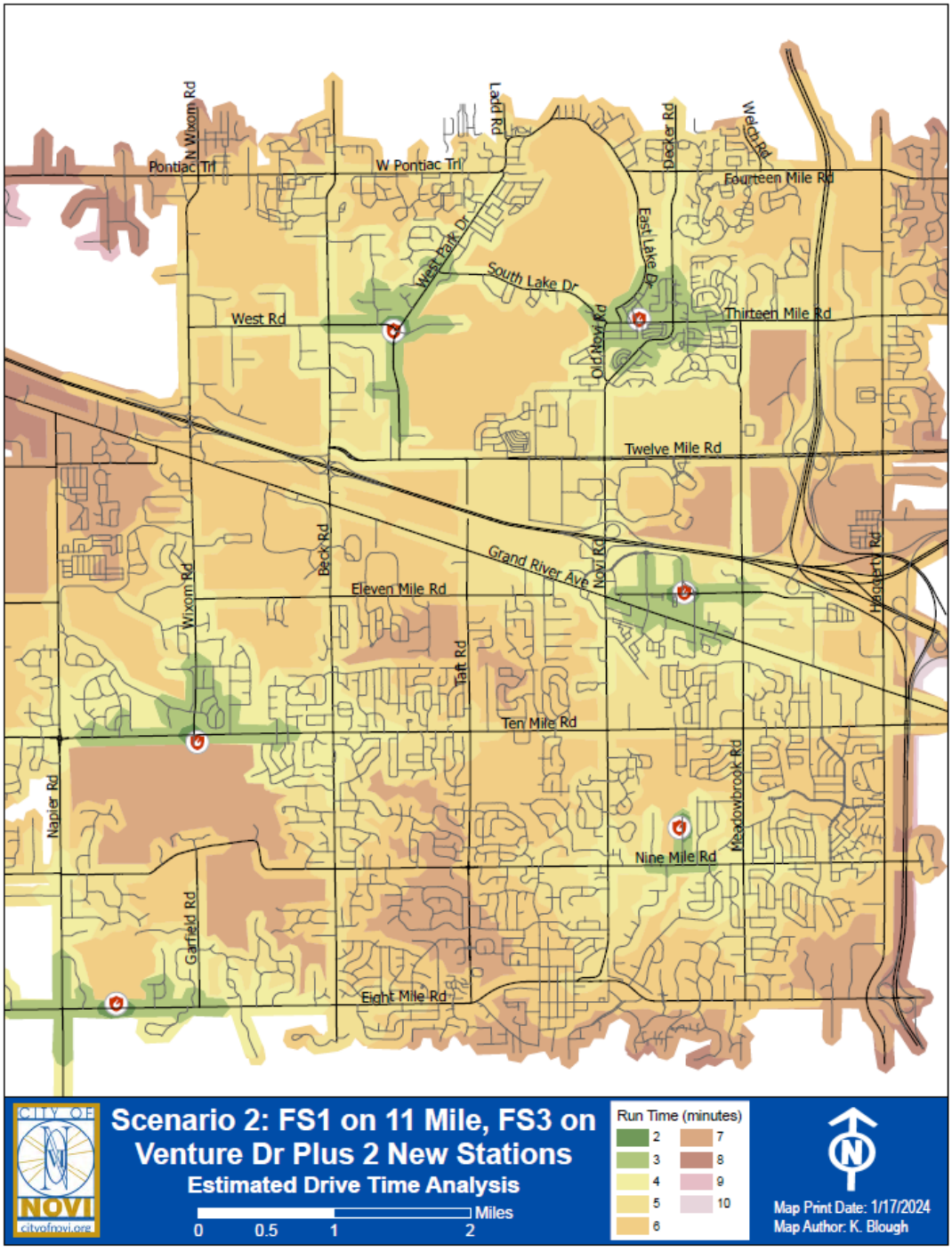


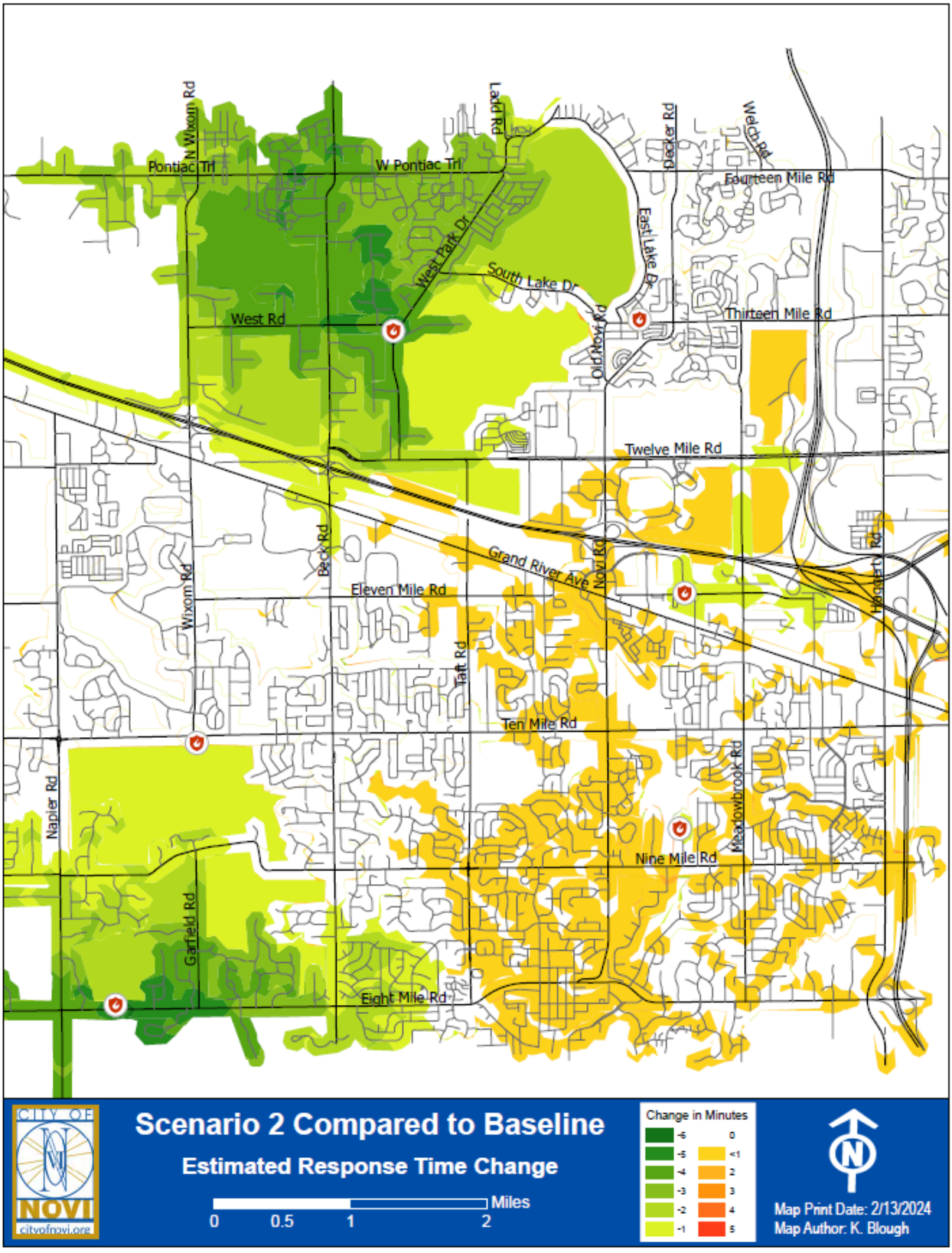
Comparing the drive time areas created by the scenario variables to the baseline polygons shows where the results vary, either decreasing or increasing the response times. Note: The areas where response times increase by more than 2 minutes are located at the edge of the map and are so small that they are not visible on the map.



## Scenario 2 Drive Time Analysis:

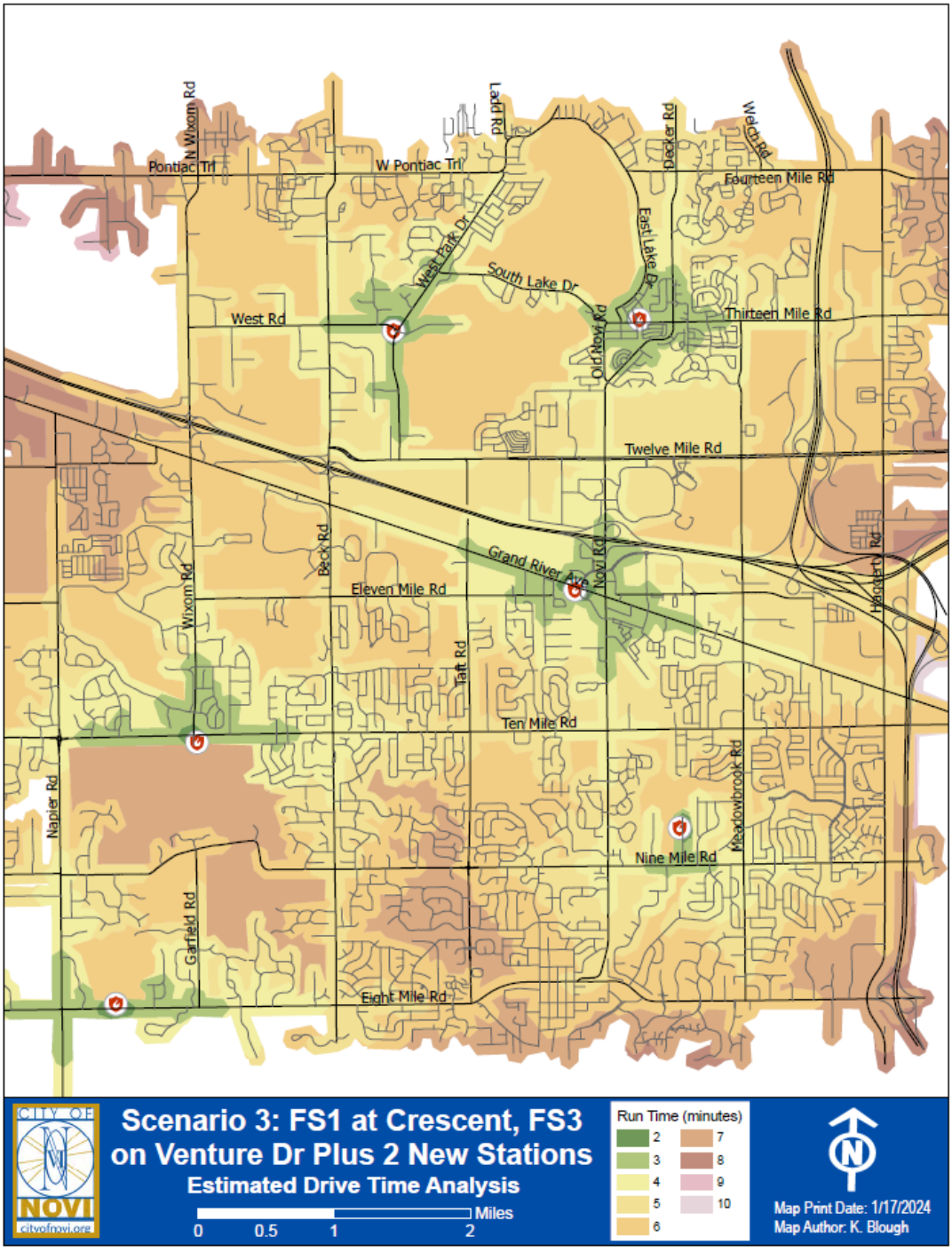
- Existing Fire Stations 2 & 4
- Four Proposed Fire Stations:
    - Fire Station 1 – Eleven Mile Rd at Lee BeGole Dr
    - Fire Station 3 – Venture Dr
    - West Rd at West Park Dr
    - Eight Mile Rd East of Napier Rd

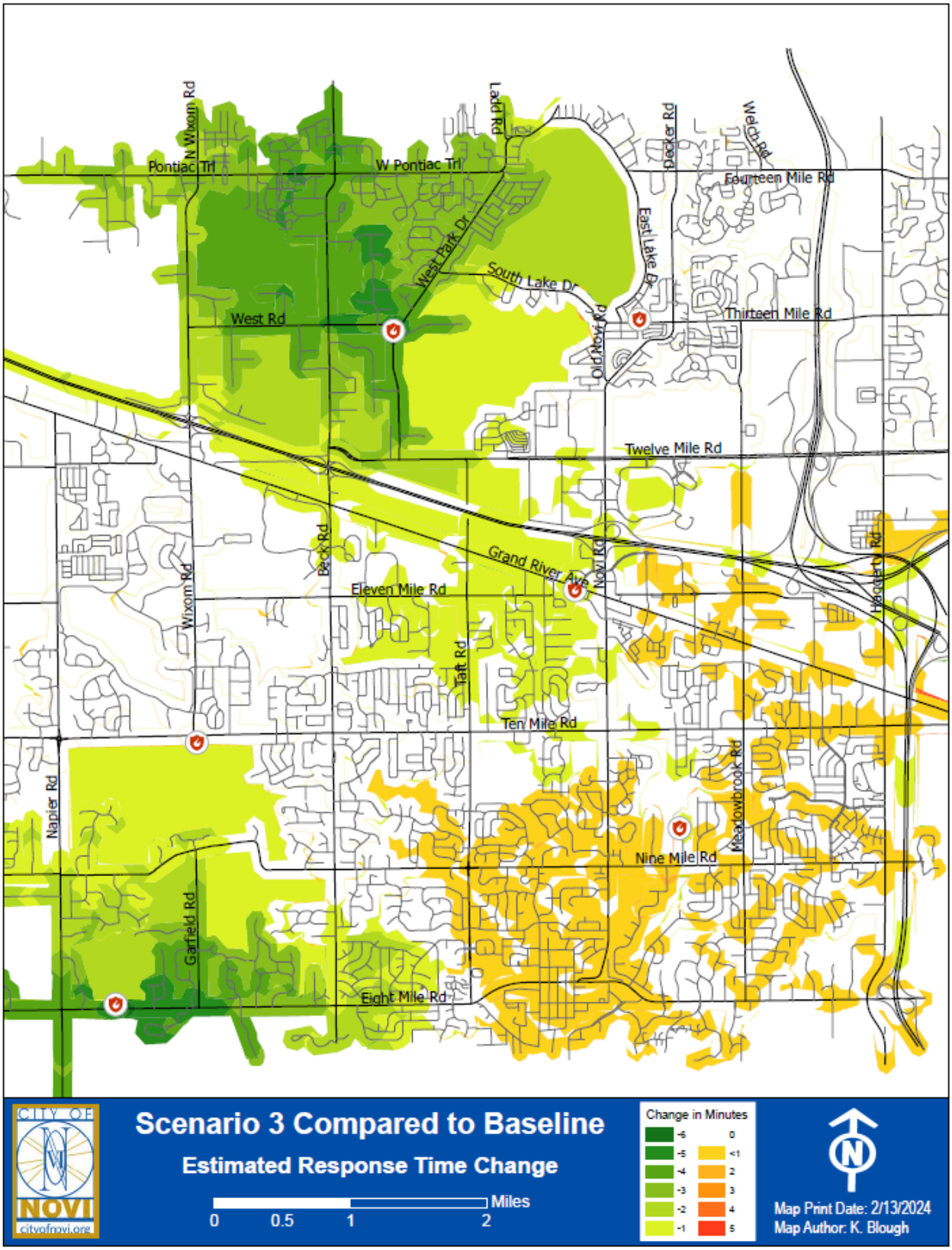



Pontiac Trl
N Wixom Rd
W Pontiac Trl
Ladd Rd
Decker Rd
Wagon Rd
Fourteen Mile Rd
West Park Dr
South Lake Dr
East Lake Dr
West Rd
Old Novi Rd
Thirteen Mile Rd
Twelve Mile Rd
Beck Rd
Grand River Ave
Novi Rd
Haggerty Rd
Wixom Rd
Eleven Mile Rd
Taft Rd
Ten Mile Rd
Napier Rd
Meadowbrook Rd
Nine Mile Rd
Garfield Rd
Eight Mile Rd
CITY OF NOVI
citvofnovi.org
Scenario 2 Compared to Baseline
Estimated Response Time Change
Miles
0
0.5
1
2
Change in Minutes
-6
-5
-4
-3
-2
-1
0
<1
2
3
4
5
N
Map Print Date: 2/13/2024
Map Author: K. Blough

## Scenario 3 Drive Time Analysis:

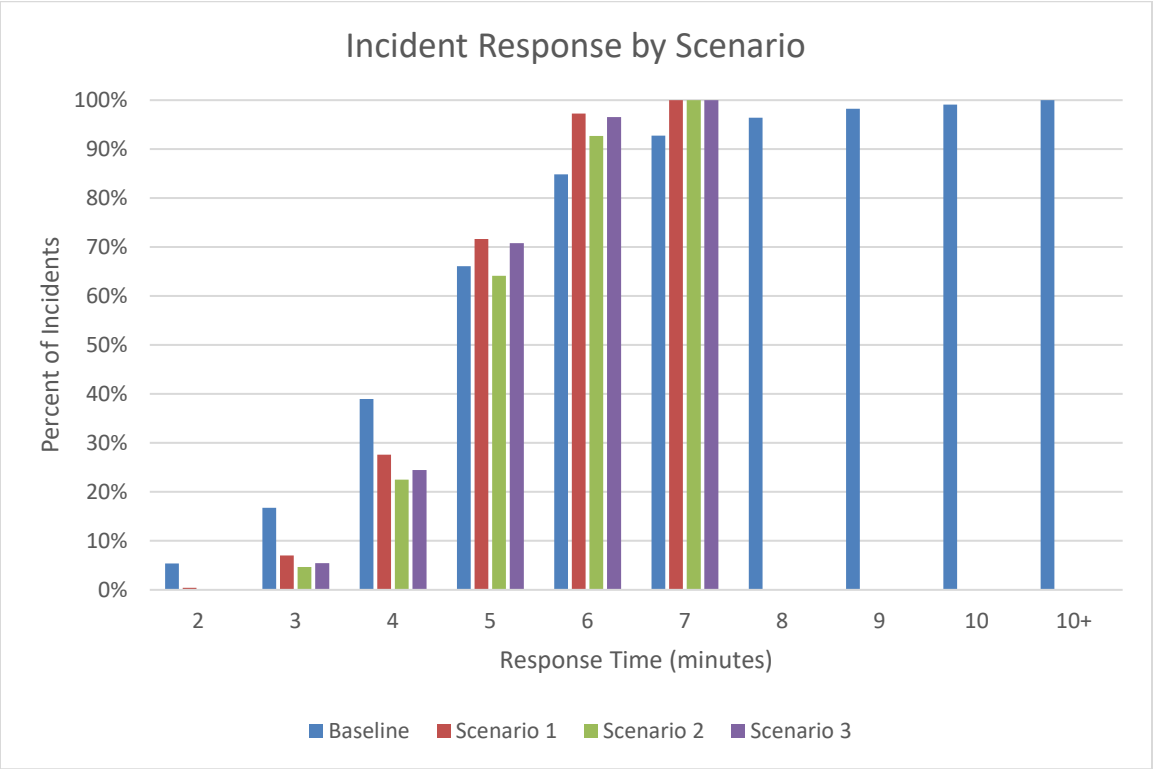
- Existing Fire Stations 2 & 4
- Four Proposed Fire Stations:
    - Fire Station 1 – Grand River Ave at Crescent Blvd
    - Fire Station 3 – Venture Dr
    - West Rd at West Park Dr
    - Eight Mile Rd East of Napier Rd




Pontiac Trl
N Wixom Rd
W Pontiac Trl
Ladd Rd
Decker Rd
Welch Rd
Fourteen Mile Rd
West Park Dr
South Lake Dr
East Lake Dr
West Rd
Old Novi Rd
Thirteen Mile Rd
Twelve Mile Rd
Beck Rd
Grand River Ave
Novi Rd
Haggerty Rd
Wixom Rd
Eleven Mile Rd
Taft Rd
Ten Mile Rd
Napier Rd
Meadowbrook Rd
Nine Mile Rd
Garfield Rd
Eight Mile Rd
CITY OF NOVI
citvofnovi.org
Scenario 3 Compared to Baseline
Estimated Response Time Change
Miles
0
0.5
1
2
Change in Minutes
-6
-5
-4
-3
-2
-1
0
<1
2
3
4
5
N
Map Print Date: 2/13/2024
Map Author: K. Blough

## Scenarios Summary:

Each fire incident was assigned a new response time based on each scenario's drive time areas. The number of incidents per scenario response time is summarized in the chart below.



# Novi Fire Department Strategic Plan

**September 2022**

cityofnovi.org

## STRATEGIC PLANNING STEERING COMMITTEE

**Erick W. Zinser**, Director of Public Safety / Chief of Police

**Jeffery R. Johnson**, Fire Chief

**Scott Baetens**, Assistant Chief of Police

**Charles Boulard**, Community Development Director

**Jessica Dorey**, Senior Budget Analyst

**Dustin Hawley**, Superior Ambulance of Michigan General Manager

**Philip Duczyminski**, Training Officer

**Carl Johnson**, Finance Director / Chief Financial Officer

**John B. Martin**, Assistant Fire Chief

**Barbara McBeth**, City Planner

**Larry Morabito**, Ret. Fire Chief / National Fire Academy Adjunct Faculty

**Kevin Pierce**, Fire Marshal

**Stacey Stover EdD**, Novi Resident / Education Consultant with the Michigan Department of Education

**Sheryl Walsh-Molloy**, Director of Communications

**Alisha Welicki**, Superior Ambulance of Michigan Operations Manager North

### CITY COUNCIL

Bob Gatt, Mayor

Dave Staudt, Mayor Pro Tem

Laura Marie Casey

Hugh Crawford

Justin Fischer

Brian Smith

Ericka Thomas

### CITY MANAGER

Peter E. Auger

### ASSISTANT CITY MANAGER

Victor Cardenas

### DIRECTOR OF PUBLIC SAFETY/ CHIEF OF POLICE

Erick W. Zinser

### FIRE CHIEF

Jeffery R. Johnson

# Message from the Director

On behalf of the Novi Fire Department, I am proud to present the Department's 2022-27 Strategic Plan. This plan and incorporated goals are the result of hours of input and planning by not only the Strategic Planning Team, but also the Fire Department team members.

This document established five Strategic Priorities: Equipment and Technology; Organizational Culture; Community Outreach; Training; and Partnerships. The Novi Public Safety Administrative Team continues to work closely with the Fire Department command team and all staff to further develop action items and goals to advance the Novi Fire Department.

Additional recent milestones include:

- Completed staffing coverage 24 hours/7 days per week at all fire stations on July 1, 2017.
- An enhanced new Emergency Medical Service contract with Superior Air-Ground Ambulance in January 2018 with increased performance measurements.
- Added Automatic Mutual Aid Agreements with Northville Township in 2016; City of Farmington Hills in 2018; and Salem Township in 2021 for a total of six, including the cities of Wixom, Northville, and Walled Lake.
- In 2019, the Novi Fire Department earned a Class 2 from Insurance Services Office (ISO).
- The 2020 National Citizen Survey completed for the City of Novi shows a 94% positive rating of excellent/good for the Fire Department.

During our 2021 planning process, we developed and renamed our five Strategic Priorities as follows: **Infrastructure; Wellness and Health; Community Risk Reduction; Training; and Response.**

We are proud of the many great accomplishments previously mentioned and of all our dedicated team members for their service and sacrifice to our community. The new 2022-27 Strategic Plan will guide us by providing the road map for the next five years. Our focus will remain on continuous improvement and making the Novi Fire Department better every day.

Erick W. Zinser
Director of Public Safety/Chief of Police

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# Mission

The Novi Fire Department shall strive to provide protection of life, property, and the environment from the effects of fire, medical emergencies, and hazards.

We will engage the community in our mission through progressive community outreach and education in the areas of health, safety, and emergency preparedness all the while accomplishing this in a professional fashion which embodies respect, dignity, patience, and empathy for all.

# Vision

## “Partners With Our Community”

# Values

The Novi Fire Department takes pride in our commitment to delivering quality, professional service by maintaining our skills, knowledge, and abilities. All members will conduct themselves in an ethical manner and treat each other and those we serve humanely, decently, and honestly. We subscribe to the following values:

**Accountability** – Members of the Novi Fire Department will be accountable to each other and the community we serve. We accept responsibility for our decisions and actions.

**Excellence** – Striving for constant improvement to better serve the community and one another.

**Integrity** – Always doing what is right even when it is difficult or unpopular so what we do individually and as an organization will stand up to public scrutiny.

**Safety** – The safety of our citizens and employees is a top priority of the Novi Fire Department. Every effort will be made to balance personal risk versus the value of life and property.

**Valor** – Courageously encountering adversity, accepting responsibility for one’s actions, and providing respectful and professional conduct to the public and our members.

**Dedication** – Wholly committed to the mission and vision of our department. The faithful observance of duty beckons us to fulfill our obligations professionally and honestly.

**Unity** – Place a high importance on unity in the organization and individual contributions to the work group. It is essential that we pull together in routine and stressful times and support each other.

# History of the Novi Fire Department

The Novi Fire Department was established in 1929 to protect the lives and property of the people of Novi from fire and other threatening circumstances. It was at this time the township purchased a REO fire truck and enlisted Walter Tuck as the first Fire Chief, a position he filled for nearly 25 years. The REO fire truck was used until 1946 when it was replaced by a Chevrolet truck with a 350-gallon water tank. Two years later the REO truck was updated, reinstated, and turned into a water wagon.

The vehicles were housed in a garage behind the Novi Auto Parts Store until 1953 when a modern township office was completed that included bays for the fire trucks. This building served as the Township Office and headquarters for the Police Department, the Fire Department, and dispatch. A family living in the apartment above the truck bays would set off the siren to alert volunteers of a fire emergency and initiate a chain of phone calls.

In 1954, the township hired Lee BeGole as the Director of Public Safety. The existing Fire Department was comprised solely of paid-on-call community members serving the township of just less than 5,000. When a fire call came into the station, BeGole would drive the fire truck and the fire fighters would meet him at the scene. By 1956, the Township had purchased an American La France fire truck with a 700-gallon tank and BeGole had appointed Fred Loynes as the Fire Chief and Homer Kent as the Assistant Fire Chief. Duane Bell, who ran a local sporting goods store, succeeded Loynes as the Chief, serving until 1978.

In 1978, Arthur Lenaghan was hired as the Chief and Station 3 was completed, including two full-size truck bays, an office, and small kitchen. Station 2 was a pole barn on the south end of Walled Lake, erected in the early 1970's.

In 1981, two new stations were completed — one to replace the old pole barn at Thirteen Mile Road and Paramount and a second to become the new Headquarters, Fire Station 1, on Grand River Avenue, east of Novi Road. The modern Station 1 included three full size drive-through bays, a classroom, and offices for the Fire Chief, Fire Marshal, and Clerk.

A fourth station was built in 1984 at Beck and Eleven Mile Roads and served as Station 4 until 2003 when a modern training center and tower and spacious new station was built at Ten Mile

# History of the Novi Fire Department

and Wixom Roads. The Beck Road Station now serves as an emergency medical services satellite station.

The old township building continued to be used as a training center in the 1990's, until it was finally razed at the close of the decade.

With the retirement of Chief Lenaghan in 2006, Frank Smith became Novi's Fire Chief. Chief Smith retired from the fire department in 2010.

In early 2010, the City of Novi created a Public Safety Administration team to provide the management accountability for Police and Fire functions. David E. Molloy was named Director of Public Safety/Chief of Police and Jeffery Johnson Director of EMS and Fire Operations.

In 2019, Director Johnson was named Fire Chief overseeing the Novi Fire Department.

In early 2022, David E. Molloy retired and Erick W. Zinser was named the Director of Public Safety

# Background

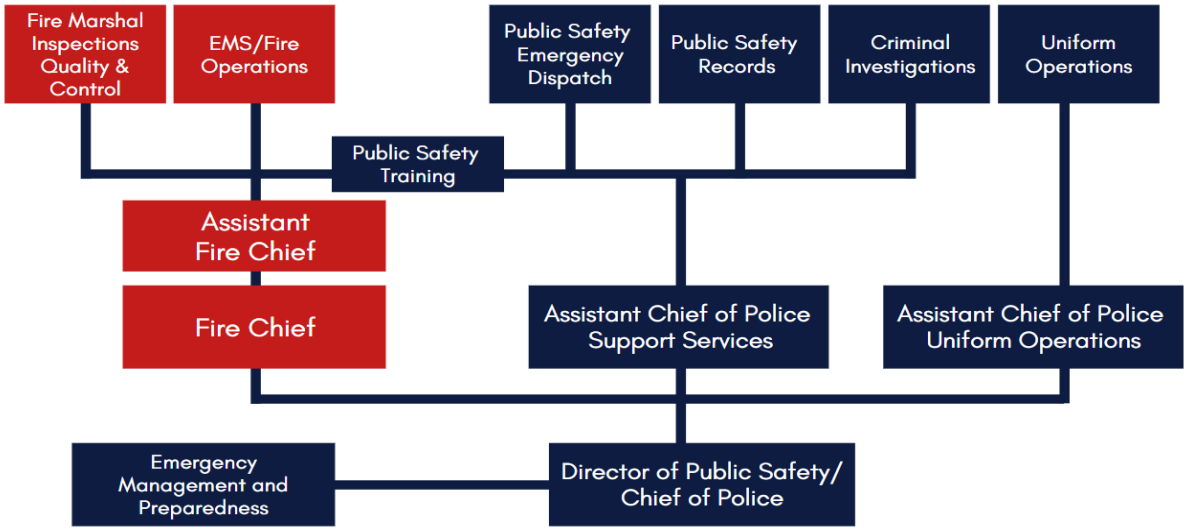
The Novi Fire Department is a combination fire department made up of 30 professional firefighters who work the weekday shifts and 62 professional firefighters who work the nighttime and weekend shifts.

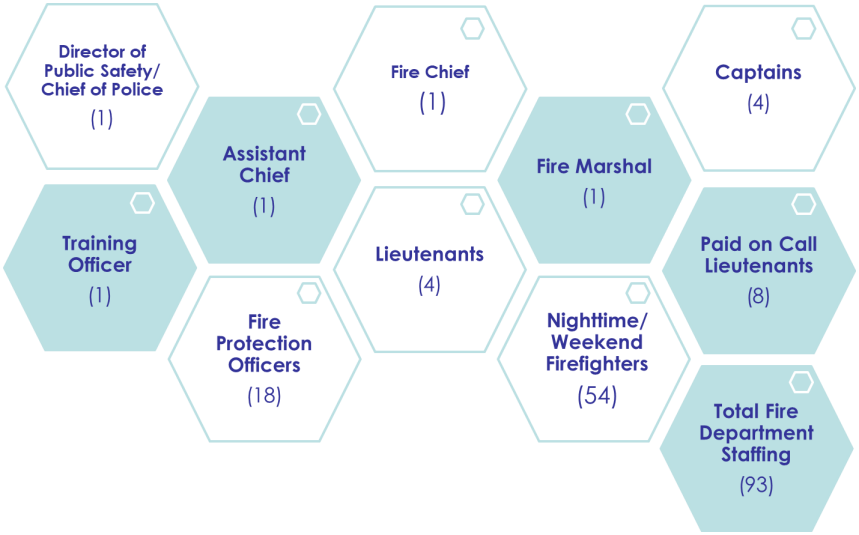
As a Combination Fire Department, we provide the City of Novi and our visitors with the most efficient and effective organization by delivering fire and emergency medical service response. All firefighters are professionally trained to the same state required fire and emergency medical services standards. Many Fire Protection Officers also complete the Fire Inspector training. All staff are held to the same performance directives, rules, and standards of conduct. We work together as teams to solve challenges and believe everyone exercises leadership, from the newest recruit to the most senior firefighter. All fire officers are selected through a professional process.

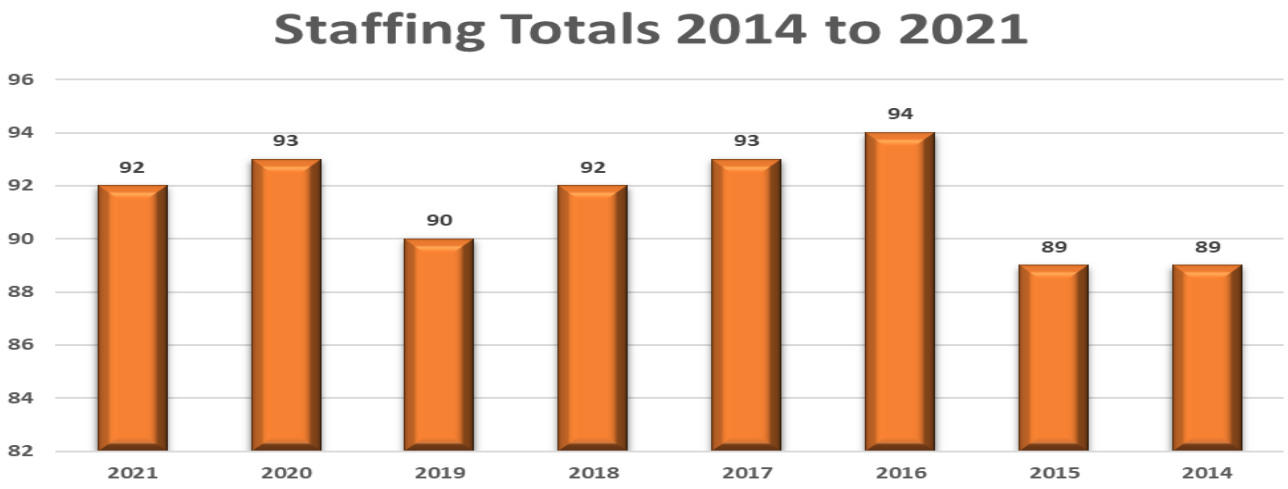
Effective February 1, 2019, the Novi Fire Department earned a Classification "2" rating from the Insurance Services Office (ISO), making us one of the highest-rated Fire Departments in the State of Michigan. ISO reviews specific areas of fire protection then assigns a Public Protection Classification (PPC). Class 1 represents a department that delivers the most exceptional fire protection, and a class 10 designation does not meet ISO's minimum criteria. The City of Novi's previous classification was a "5".

In 2018, the City of Novi entered into a 5-year contract agreement with Superior Air-Ground Ambulance Service for Advanced Life Support (ALS) and transportation. The contractual benchmark for priority calls is a 7-minute and 00 second response time on 90% of the priority calls with no responses exceeding 10 minutes, except for extenuating circumstances. The benchmark for non-priority calls is a 10-minute response on 90% of the calls with no responses exceeding 12 minutes, except for extenuating circumstances. Our Novi Public Safety Executive Team, in cooperation with our Fire Command Team are committed to assuring delivery of the highest degree of emergency medical treatment and transport to our community members and visitors. Superior Ambulance is an integral part of our service deployment model.

# Background


Fire Marshal Inspections Quality & Control
EMS/Fire Operations
Public Safety Emergency Dispatch
Public Safety Records
Criminal Investigations
Uniform Operations
Public Safety Training
Assistant Fire Chief
Fire Chief
Assistant Chief of Police Support Services
Assistant Chief of Police Uniform Operations
Emergency Management and Preparedness
Director of Public Safety/ Chief of Police


Director of Public Safety/ Chief of Police (1)
Assistant Chief (1)
Fire Chief (1)
Fire Marshal (1)
Captains (4)
Training Officer (1)
Lieutenants (4)
Paid on Call Lieutenants (8)
Fire Protection Officers (18)
Nighttime/ Weekend Firefighters (54)
Total Fire Department Staffing (93)


Staffing Totals 2014 to 2021
96
94
92
90
88
86
84
82
92
93
90
92
93
94
89
89
2021
2020
2019
2018
2017
2016
2015
2014

# Future Challenges/Trends

**Aging Population**

The Novi Fire Department provides a tiered first response to emergency medical services (EMS) in partnership with our private advanced life support provider, Superior Ambulance. The City of Novi currently services 12 Adult Group Homes, 3 Assisted Living Facilities, 4 Long-Term Care/ Rehabilitation Facilities, and 14 Multiple (Independent, Assisted Living, and Memory) Care Facilities. The Novi Fire Department and Superior Ambulance have closely monitored our calls for service including new senior facilities opened in the past two years.

From 2018 to 2021 a total of 12,437 patients sixty-five years and older received care by the Novi Fire Department. During the same time frame there were a total of 7,554 requests for EMS to Seniors residing at these care facilities. The only exception is during the 2020 COVID year when all our statistics slightly decreased. It is important for the Novi Fire Department and Superior Ambulance to continually examine the data and adjust as it impacts our EMS services.

The Novi Fire Department continues to experience an upward trend in total calls for service. Between 2020 to 2021, recovering from the pandemic we experienced a12.18% increase in calls. The rise in EMS patients went from 4,036 in 2020 to 5,108 in 2021 a 26.6% increase. This demonstrates that the trend of increasing calls for service is on track to pre-pandemic expectations, especially with our aging population.

**New Energy Sources**

Fire Departments are increasingly experiencing challenges with lithium-ion batteries, solar and wind turbine alternative energy sources as the world shifts away from fossil fuels. Electric vehicles and mobile devices are becoming more prevalent, yet have increase risks for potential fire and thermal runaway making them very difficult to control and extinguish.

**Technology**

Advances in technology will assist firefighters to respond to fire and emergency medical calls. Some of these improvements like firefighting turn-out gear, self-contained breathing apparatus and thermal imaging cameras have greatly enhanced firefighting. Additionally the use of new types of safe foam with encapsulating agents to address battery fires and drone technology to support aerial views for structure fires, missing persons and technical rescues.

# Future Challenges/Trends

**Recruitment/Retention**

The Novi Fire Department and Human Resource teams are focused on city council's goal to develop and increase recruiting efforts, ensure highly qualified new hires into the system. This plan provides highlights from some of our ongoing efforts that are producing significant results.

- Recruitment banners have been installed at Fire Stations 1, 2, 3, 4, and the Civic Center. These banners have been extremely successful. When we ask candidates how they found out about the position, many have mentioned driving by and seeing the banners. Candidates also mention seeing the posting that Human Resources places on multiple job sites and directs them to Application Pro.
- Another way we are gaining interest is from Engage Magazine. In a previous edition, we highlighted five of our members. The article showcased these staff members and helped promote our recruitment efforts.
- 17,000 postcards/mailers featuring our members were sent to select zip codes in Novi. Specifically, we targeted 48374 and 48375. These cards are also handed out at community events like the City's "Meet Your City Superhero" at ITC Sports Park and Walled Lake Elementary in June 2021.

**Pandemic: COVID-19**

When we first learned of Coronavirus (COVID-19) in early March 2020, the City of Novi and the Novi Fire Department began taking immediate measures to change operational procedures and protocols to adhere with State and County Executive Orders.

**Firefighter Health and Safety**

Heart Attack, Cancer, Mental Health

**Mandated Training**

State EMS/Fire

**Communications**

Cloud-base technologies, First Net, Mobile Computers, and devices.

# Mutual and Automatic Aid

For years, the Novi Fire Department has provided mutual aid to our Western Wayne County and Oakland County neighbors through existing inter-local agreements.

As a member of the Western Wayne County Fire Department Mutual Aid Association (WWCFDMAA), the Novi Fire Department is one of 21 fire departments from Oakland, Wayne, and Washtenaw Counties to benefit from the ability to immediately call for assistance from any of the member departments for fire and emergency medical services. In addition, members share a Hazardous Incident Response Team (HIRT) and Urban Search and Rescue (USAR) team that provide vehicles, equipment and support trailers for hazardous materials and search and rescue incidents.

The Novi Fire Department is also a member of the Oakland County Mutual Aid Association (OCMAA) which consists of 30 Fire and Public Safety Departments in Oakland County. These neighboring communities can immediately be called to provide fire and emergency medical services with back-up staff and fire vehicles. OCMAA also provides HIRT, USAR and Incident Management Teams for additional specialized support. We are also members of the Western Oakland Fire Department Mutual Aid Association (WOMAA) with neighboring department serving southwest Oakland County.

The Novi Fire Department is a member of the State of Michigan Mutual Aid Box Alarm System (MABAS) through WWCFDMAA (MABAS 3203) and OCMAA (MABAS 3201). MABAS provides fire departments the ability to build “Box Cards” listing out predetermined fire, medical, disaster resources and assets to assist the City of Novi for manmade or natural disasters. MABAS improves disaster response capabilities, communication, and coordination, reduces the impact of a disaster, strengthens interstate mobilization, and brings fire service stakeholders together.

The Novi Regional 911 Communications Center can use MABAS to aide in the mitigation of large-scale incidents. As an incident grows beyond the capabilities of the local resources, the Novi regional 911 Communications Center, at the direction of the Incident Commander, will contact the Oakland County Sheriff’s Dispatch and request MABAS assistance.

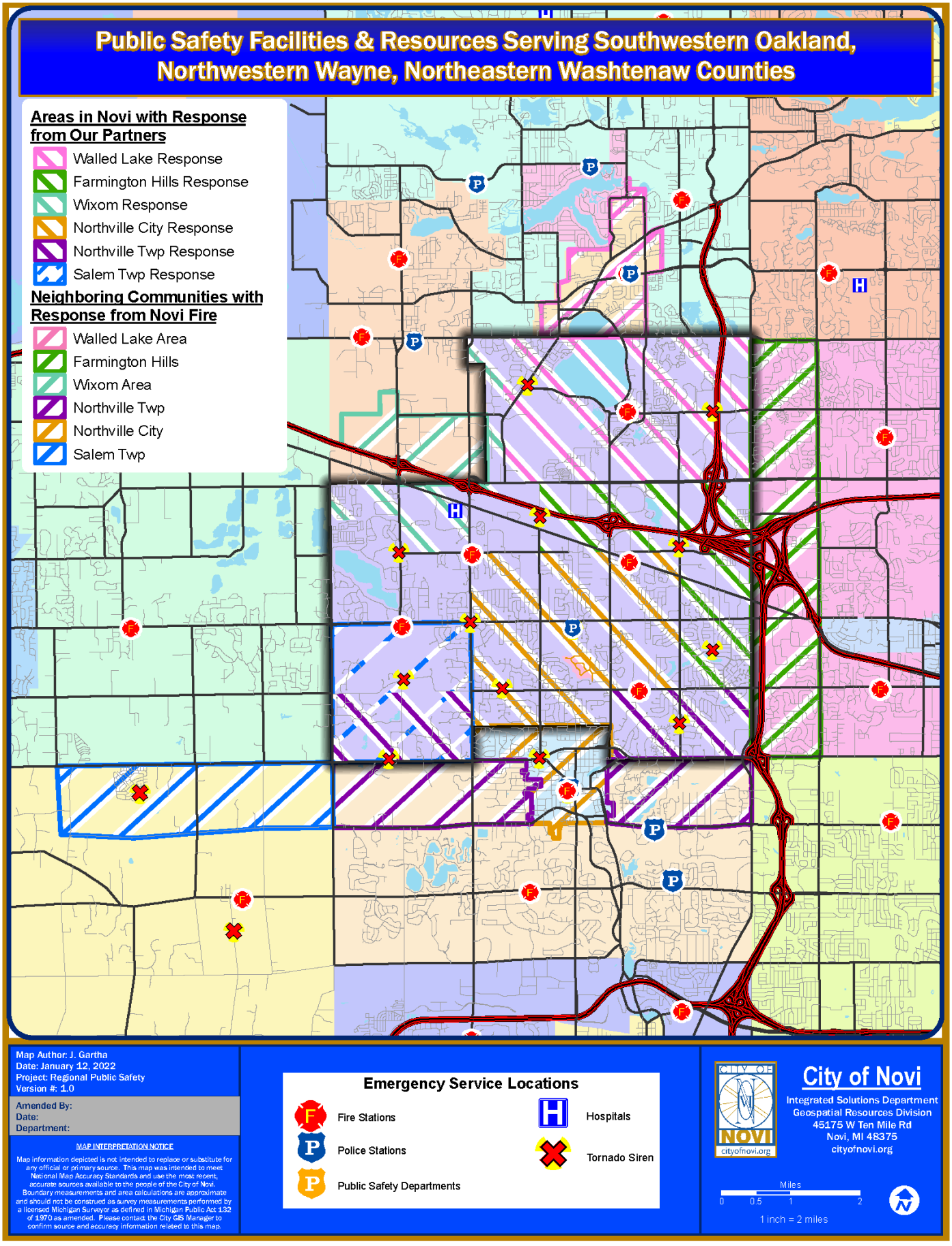
The City of Novi Fire Department has proactively established Automatic Mutual Aid Agreement (AMA) with the City of Wixom, City of Northville, Northville Township, City of Walled Lake, Farmington Hills and Salem Township fire departments that have all proven to be highly effective.

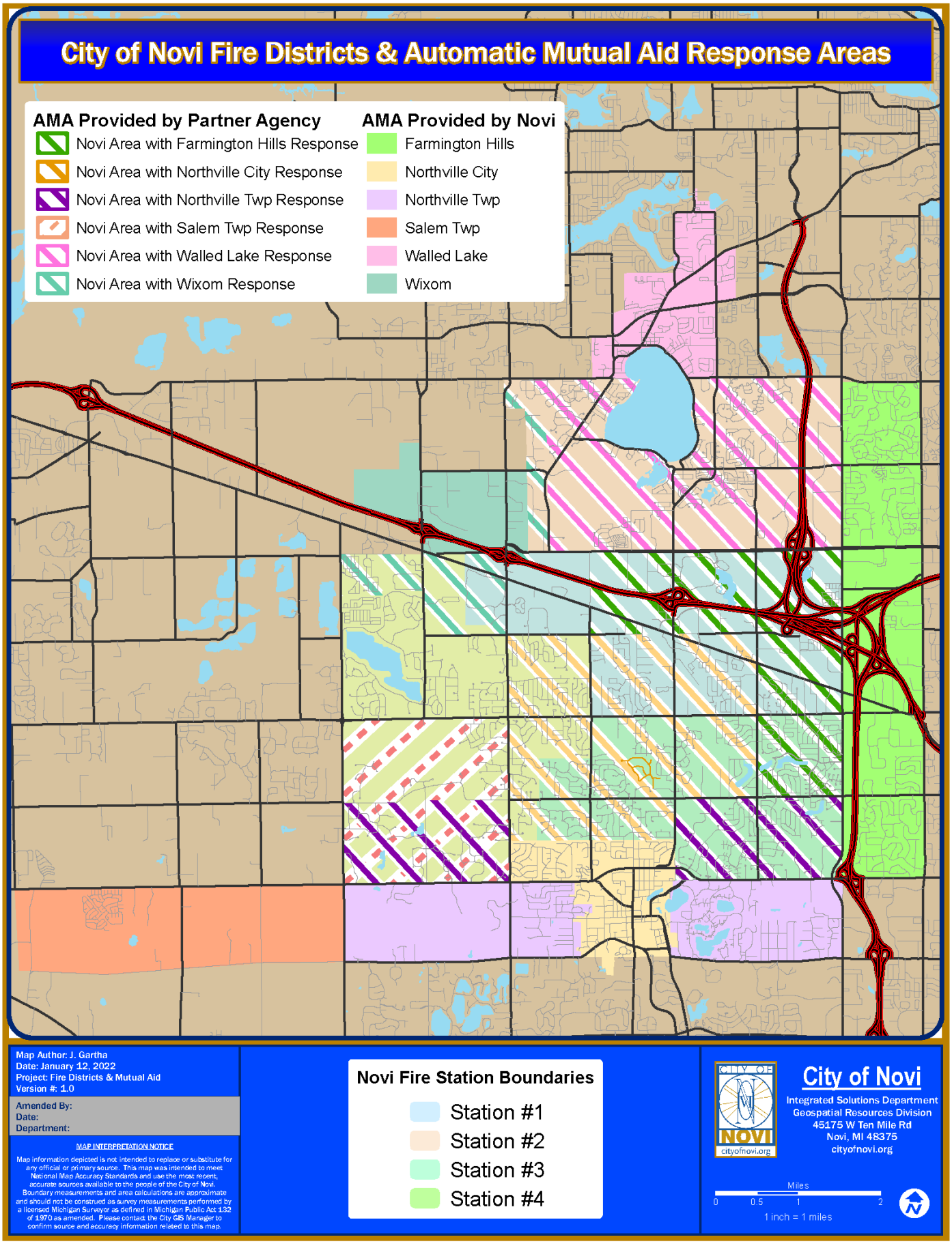
# Mutual and Automatic Aid

With AMA, the resources are **automatically** provided at no cost. The AMA agreements provide an engine, ladder or tender, and send them automatically to any confirmed structure fire (e.g., multiple calls of smoke/flames visible) in designated areas of the city.

Reasons for AMA:

- Immediate response of a minimum 2-person firefighting crew with fire apparatus to structure fires.
- Can utilize crew for initial fire attack or rapid intervention team to back firefighting crews (two in-two out) and provides immediate resources without having to take extra steps to call and further delay the response.
- Safer operations by having the extra resource and personnel to back-up the initial fire attack will help both fire departments meet the National Fire Protection Association recommend standard for minimum staffing and crews to effectively operate at a working structure fire.
- The Insurance Service Office (ISO) rating schedule utilized by the insurance industry recognizes communities with AMA and count these additional resources in the overall rating schedule. This may help to reduce the City of Novi's fire rating.
- The locations of assets from a neighboring community are closer to respond and assist one another.


Public Safety Facilities & Resources Serving Southwestern Oakland, Northwestern Wayne, Northeastern Washtenaw Counties
Areas in Novi with Response from Our Partners
Walled Lake Response
Farmington Hills Response
Wixom Response
Northville City Response
Northville Twp Response
Salem Twp Response
Neighboring Communities with Response from Novi Fire
Walled Lake Area
Farmington Hills
Wixom Area
Northville Twp
Northville City
Salem Twp
Map Author: J. Gartha
Date: January 12, 2022
Project: Regional Public Safety
Version #: 1.0
Amended By:
Date:
Department:
MAP INTERPRETATION NOTICE
Map information depicted is not intended to replace or substitute for any official or primary source. This map was intended to meet National Map Accuracy Standards and use the most recent, accurate sources available to the people of the City of Novi. Boundary measurements and area calculations are approximate and should not be construed as survey measurements performed by a licensed Michigan Surveyor as defined in Michigan Public Act 132 of 1970 as amended. Please contact the City GIS Manager to confirm source and accuracy information related to this map.
Emergency Service Locations
Fire Stations
Police Stations
Public Safety Departments
Hospitals
Tornado Siren
CITY OF NOVI
cityofnovi.org
City of Novi
Integrated Solutions Department
Geospatial Resources Division
45175 W Ten Mile Rd
Novi, MI 48375
cityofnovi.org
Miles
0 0.5 1 2
1 inch = 2 miles


City of Novi Fire Districts & Automatic Mutual Aid Response Areas
AMA Provided by Partner Agency
Novi Area with Farmington Hills Response
Novi Area with Northville City Response
Novi Area with Northville Twp Response
Novi Area with Salem Twp Response
Novi Area with Walled Lake Response
Novi Area with Wixom Response
AMA Provided by Novi
Farmington Hills
Northville City
Northville Twp
Salem Twp
Walled Lake
Wixom
Map Author: J. Gartha
Date: January 12, 2022
Project: Fire Districts & Mutual Aid
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Novi Fire Station Boundaries
Station #1
Station #2
Station #3
Station #4
City of Novi
Integrated Solutions Department
Geospatial Resources Division
45175 W Ten Mile Rd
Novi, MI 48375
cityofnovi.org
Miles
0 0.5 1 2
1 inch = 1 miles

# Peer Communities

## Commerce Township

The Commerce Township Fire Department is a combination fire department comprised of both full and part-time personnel. During their last audit by the Insurance Services Office (ISO) in 2018, they received a Public Protection Classification rating of 4. The Commerce Fire department has a total of four fire stations located throughout the township.

The fire department provides Basic Life Support (BLS) emergency medical non-transporting service. Star Ambulance is contracted to provide Advanced Life Support (ALS) capabilities and patient transport services. A similar arrangement as the City of Novi and Superior with no subsidy.

The total number of calls in 2020 was 3,542. Of this total, 3,477 were emergency medical calls.

Demographics:

28.2 Square Miles & 42,000 Residents

Staffing Levels:

There are a total of 34 full-time personnel (Fire Chief, Fire Marshal, 3 Captains, 3 Lieutenants, and 26 Firefighters). Currently, there are 12 part-time personnel all of which are Paid-on-Call members.

Budget:

The actual budget for the Commerce Fire Department in 2020 was $4,572,753. The adopted budget for 2021 is $5,823,284.

## Macomb Township

The Macomb Township Fire Department is a combination fire department comprisal of both full and part-time (Paid-on-Call and Auxiliary) personnel. During their last audit with ISO in 2018 they received a PPC classification rating of 3. The Department has a total of four fire stations located throughout the township. The most recent was the remodel of Station No. 1 which is now a Public Safety Facility opened in early 2021. This houses a Macomb County Sheriff Office substation as part of the facility.

The fire department provides BLS emergency medical non-transporting service. Medstar Ambulance is contracted to provide ALS capabilities and patient transport. A similar arrangement as the City of Novi and Superior with no subsidy.

# Peer Communities

The total number of calls in 2020 was 5,436. Of this total 4,651 were emergency medical calls.

Demographics:

36.1 Square Miles & 97,404 Residents

Staffing Levels:

There is a total of 29 full-time personnel (Fire Chief, Deputy Fire Chief, 6 Sergeants and 21 Firefighters). Currently there are 36 part-time personnel (4 Officers, 28 Paid-on-Call and 4 Auxiliary).

Budget:

The actual budget for the Macomb Township Fire Department in 2020 was $7,240,514. The adopted budget for 2021 is $7,435,614.

## Portage

The Portage Public Safety Department Fire Division is a combination fire department. As a Public Safety Department, they maintain separate police and fire divisions. The fire division at one time was one of only three departments in the Michigan that held accreditation through the Commission on Fire Accreditation International (CFAI). Currently, they are one of 10 departments in Michigan that are listed as Registered Agencies with CFAI. This means they are in the process of entering back into accreditation with CFAI. The fire division is comprised of both full and part-time personnel. During their last audit by ISO in 2018 they received a PPC classification rating of 3. The Portage Fire Division has a total of three fire stations located throughout the municipality. In October 2020, they dedicated the new Station No. 2 to the community.

The Portage Fire Division provides Medical First Response (MFR) emergency medical non-transporting service. Pride Care Ambulance is contracted to provide ALS capabilities and patient transport services. A similar arrangement as the City of Novi and Superior with no subsidy.

The total number of calls in 2020 was 4,128. Of this total, 3,229 were emergency medical calls.

Demographics:

35.17 Square Miles & 49,500 Residents

Staffing Levels:

There is a total of 36 full-time personnel (Director, Deputy Fire Chief, Assistant Fire Chief, Division Chief of Training, Fire Marshal, Accreditation Manager, 3 Battalion Chiefs, 9 Captains, and

18 Firefighters). Currently there are 5 part-time Paid-on-Call personnel (Allocated for 34 total).

Budget:

The actual amended budget for the Portage Fire Division for 2020 was $5,662,945. The adopted budget for 2021 is $5,568,505.

## City of Wyoming

The City of Wyoming Department of Public Safety Fire Bureau is a combination fire department. As a Public Safety Department, they maintain separate police and fire divisions. The fire bureau is comprised of both full and part-time personnel. The Wyoming DPS Fire Bureau is currently one of 10 fire departments in Michigan that are Registered Agencies with CFAI. This means that they are in the process of entering into accreditation with CFAI. During their last audit by ISO in 2019, they received a PPC classification rating of 4. The Wyoming PSD has a total of four fire stations located throughout the municipality. Two fire stations are staffed by Paid-on-Call and two by full-time personnel 24 hours a day/seven days a week.

The City of Wyoming DPS Fire Bureau provides Basic Life Support (BLS) emergency medical non-transporting service. AMR Ambulance and Life EMS are contracted to provide ALS capabilities and patient transport services.  A similar arrangement as the City of Novi and Superior with no subsidy.

The total number of calls that the Wyoming DPS Fire Bureau responded to in 2020 was 6,474. Of this total 4,069 were emergency medical calls.

Demographics:

24.5 Square Miles & 75,820 Residents

Staffing Levels:

There is a total of 31 full-time personnel (Fire Chief/Deputy Director, Deputy Fire Chief, Fire Marshal, Fire Inspector, 3 Lieutenants, 3 Equipment Operators, and 21 Firefighters). Currently there are 16 part-time personnel (1 part-time, 1 Paid-on-Call Lieutenant, 6 Paid-on-Call Firefighters and 8 dual trained employees).

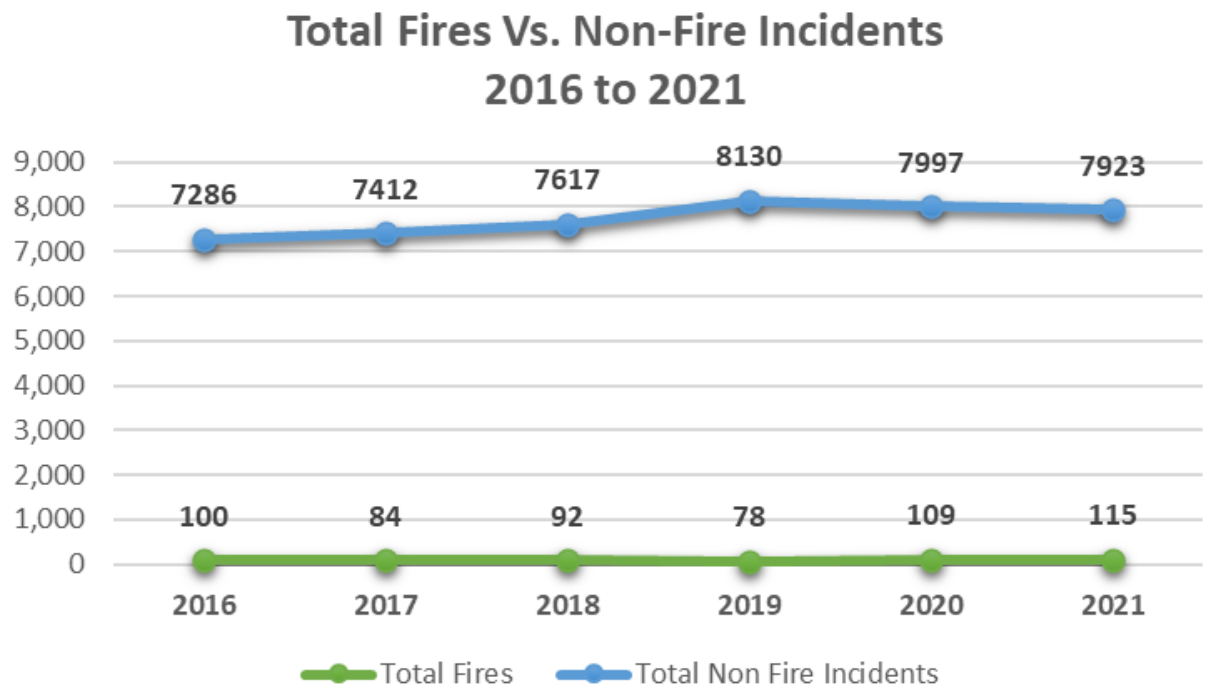
Budget:

The actual amended budget for the City of Wyoming DPS Fire Bureau for 2020 was $5,554,451. The adopted budget for 2021 is $6,280,907.

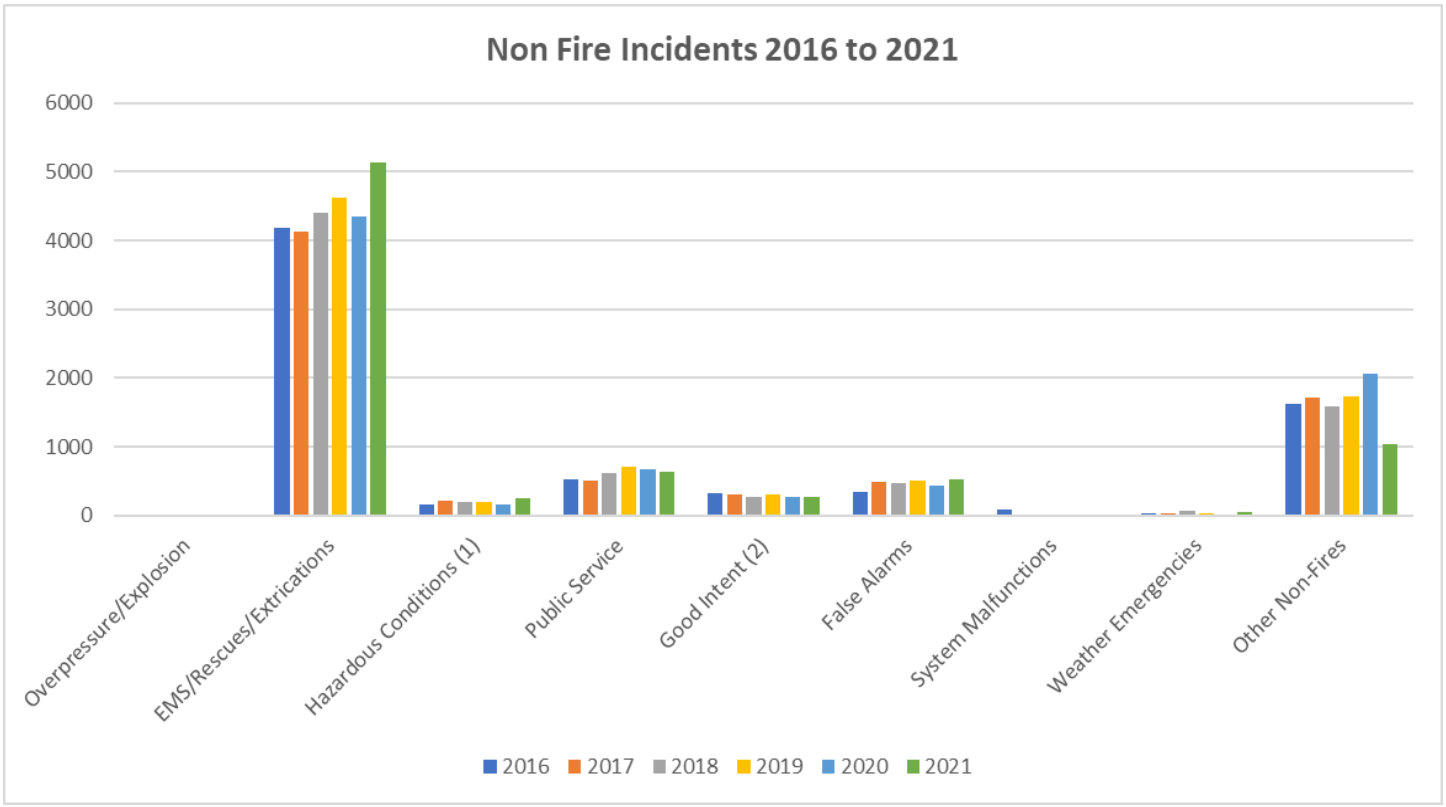
# Incident Breakdown Report

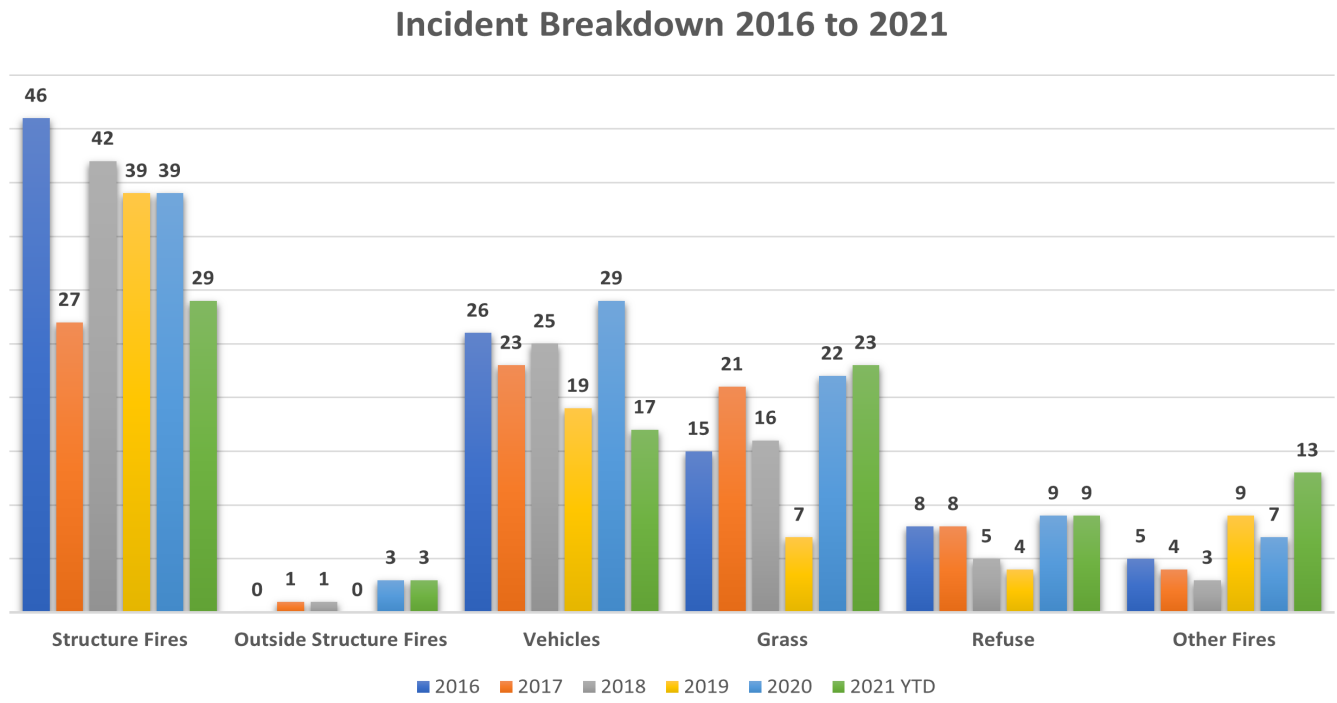
| Novi Fire Department | | | | | | |
|---|---|---|---|---|---|---|
| **INCIDENT BREAKDOWN REPORT 2016-2021** | | | | | | |
| | **2016** | **2017** | **2018** | **2019** | **2020** | **2021** |
| **Fire Incidents** | | | | | | |
| Structure Fires | 46 | 27 | 42 | 39 | 39 | 39 |
| Outside Structure Fires | 0 | 1 | 1 | 0 | 3 | 3 |
| Vehicles | 26 | 23 | 25 | 19 | 29 | 24 |
| Grass | 15 | 21 | 16 | 7 | 22 | 23 |
| Refuse | 8 | 8 | 5 | 4 | 9 | 9 |
| Other Fires | 5 | 4 | 3 | 9 | 7 | 17 |
| **Total Fire Incidents** | 100 | 84 | 92 | 78 | 109 | 115 |
| | | | | | | |
| **Non Fire Incidents** | | | | | | |
| | **2016** | **2017** | **2018** | **2019** | **2020** | **2021** |
| Overpressure/Explosion | 0 | 0 | 0 | 3 | 0 | 0 |
| EMS/Rescues/Extrications | 4,189 | 4121 | 4396 | 4617 | 4354 | 5129 |
| Hazardous Conditions (1) | 163 | 208 | 204 | 198 | 169 | 244 |
| Public Service | 530 | 516 | 610 | 717 | 674 | 644 |
| Good Intent (2) | 322 | 302 | 278 | 301 | 270 | 263 |
| False Alarms | 346 | 496 | 467 | 506 | 435 | 533 |
| System Malfunctions | 82 | 22 | 15 | 24 | 11 | 17 |
| Weather Emergencies | 28 | 34 | 67 | 38 | 19 | 49 |
| Other Non-Fires | 1,626 | 1713 | 1580 | 1726 | 2065 | 1044 |
| **Total Non Fire Incidents** | 7286 | 7412 | 7617 | 8130 | 7997 | 7923 |
| | | | | | | |
| | **2016** | **2017** | **2018** | **2019** | **2020** | **2021** |
| | | | | | | |
| Total Fires | 100 | 84 | 92 | 78 | 109 | 115 |
| Total Non Fire Incidents | 7286 | 7412 | 7617 | 8130 | 7997 | 7923 |
| **Total Alarms** | 7,386 | 7496 | 7709 | 8208 | 8106 | 8038 |
| | | | | | | |
| **Where Fires are Occurring** | | | | | | |
| | **2016** | **2017** | **2018** | **2019** | **2020** | **2021** |
| Public Assembly | 1 | 1 | 6 | 4 | 1 | 3 |
| Educational | 0 | 0 | 0 | 0 | 0 | 1 |
| Institutional | 0 | 0 | 1 | 1 | 2 | 0 |
| Single Family Dwelling | 19 | 14 | 14 | 12 | 20 | 14 |
| Apartments | 12 | 4 | 15 | 11 | 6 | 15 |
| Motel/Hotel | 6 | 2 | 2 | 3 | 1 | 2 |
| Stores/Sales | 3 | 4 | 2 | 0 | 1 | 0 |
| Office | 1 | 1 | 0 | 0 | 0 | 0 |
| Industrial | 2 | 0 | 0 | 1 | 2 | 2 |

# Incident Breakdown Report



# Incident Breakdown Report



# Personnel List

**Director of Public Safety/Chief of Police**
**Erick Zinser**

**Fire Chief**
**Jeffrey R. Johnson**

**Assistant Fire Chief**
**John B. Martin**

Barratt, Dennis R.
Behan, Steven S.
Blamy, Matthew J.
Boggs, Mitchell S.
Bostwick, Paul E.
Breuhan, Peter G.
Brogan, Nathan L.
Calhoun, Alex M.
Cannon, Ryan P.
Copeland, Andrew J.
Correia, Joshua M.
Cox, Victor A.
Discher, Scott D.
Duczyminski, Philip C.
Dudley, Craig S.
Farahani, Amir
Ferman, Raymond S.
Fitzgerald, Dane F.
Franklin, Jeffery B.
Freier, Logan M.
Gearns-Hazlett, Jonathan
Gengle, Adorian F.
Giovannini, Kimberly A.
Gonwicha, William D.
Jackson, Noah A.
Johnson, Conner G.
Kassab, Zahi A.
Kellerman, Joeseph R.
Kesselly, Molubah M.
Koons, Michelle L.
Kouda, Mark S.
Krabach, Sean L.
Lawson, Eric W.
Leung, Eric W.
Lis, Greg M.
Luke, Brian J.
Marken, Mathew W.
Moss, Jason P.
O' Neill, Andrew W.
Olando, Michael A.
Oliverio, Remo M.
Osborne, Matthew H.
Paterni, George M.
Pehrson, Mark A.
Petersen, Daniel J.
Pierce, Kevin S.
Porter, Timothy S.
Prokes, Mark R.
Racicot, Troy D.
Ruccolo, Anthony J.
Ryan, Nathan A.
Rydzewski, Brandon J.
Schira, Vincent J.
Schulkey, Daniel J.
Schultz, Daniel S.
Schwartz, Adam M.
Sentz, Trevor J.
Seog, Todd D.
Skalski, Eric R.
Takla, Bechara A.
Tejero, Tabitha I.
Theisen, Mark
Tunnard, Matthew B.
Villanueva, Jose L.
Welter, Niklaus P.
Zemla, Frank B.

# Strategic Planning Session

The Novi Fire Department held a Staff Visioning Session at the Novi Public Library on August 31, 2021. All members from the Novi Fire Department (internal stakeholders) were invited and encouraged to participate. A total of 29 staff were in attendance, including the Strategic Planning Team members.

To help participants prepare for the retreat, numerous documents (Mission, Vision and Values) and videos “Meaningful Vision” (2020) and “Strategic Thinking” (2012) by Simon Sinek and “Developing Strategic Plan Goals and Objectives” by Center for Public Safety Excellence University (2021) were sent to all department members. Included were the proposed five strategic themes: Infrastructure, Health and Wellness, Community Risk Reduction, Training, and Response with a definition for each.

By sending this information ahead of the session, it challenged members to critically examine the values, beliefs, philosophies, desires, and drives of the Novi Fire Department. The aim was to ensure that they align with not just what we say, but what we do and where we are going.

The agenda and presentation were designed to promote positive team dynamics, while meeting a specific set of desired outcomes. The retreat was intended to foster open communication, drive collaboration, and discuss critical changes necessary for improving the future of the Novi Fire Department. To share and gather information from our internal stakeholders in an open forum. The Strategic Planning Team early in the process followed two reference books as guidelines including Applied Strategic Planning by Goodstein (2008) and Fire Department Strategic Planning, 2nd edition by Wallace (2006).

Each participant was given a packet that included: the Strategic Planning Staff Visioning Session Agenda, S.M.A.R.T. Goals Definitions (Pullein, 2021) and Worksheet (Rintablee Daily Printable Graphics, 2013), Strategic Themes/Initiatives Defined, with several SWOT Analysis Templates including Online S3 (2016) and Template Business (2021). All participants were randomly placed in one of three work groups for the duration of the session.

The program began with an introduction by the Director of Public Safety who encouraged participants to focus on the best interest of the community. Professor Stacey Stover, lead facilitator, helped set the atmosphere of what the attendees were about to embark on by showing a brief inspirational video called “Make an Impact” (Scott, 2020).

# Strategic Planning Session

To ensure community needs are incorporated into the departments strategic plan, Nathan Mueller, Community Relations Manager for the City of Novi, shared the results from the August 2021 SurveyMonkey (Addendum A). The focus of the survey was to determine what is important (goals, objectives, and services) to our external stakeholders and where we can improve based on the Citizen/Business Survey feedback.

Two other facilitators, Novi Middle School Principal Rob Baker and former City of Novi Emergency Management Coordinator Marshall Johnson, steered their team's discussion and captured the results/ideas through each phase. First, they conducted a SWOT Analysis defining our Strength, Weakness, Opportunities and Threats. Results were captured and shared among all three groups. Each group briefly reported out on their SWOT Analysis results to all in attendance. These results were added to our Strategic Plan in the final SWOT Analysis.

The final group activity of the evening took place to develop our Goal and Objectives for each of the five Strategic Themes: Infrastructure, Health and Wellness, Community Risk Reduction, Training, and Response. Professor Stover had previous shared the "Brainstorm Rules" (DESIGN KIT, n.d.) and the results were captured by the facilitators then shared with everyone. Each group briefly reported out on their goals and objectives to all in attendance.

All members were given the opportunity to weigh in on the priority of each goal, using stickers to determine the internal stakeholder's personal importance of the objectives.

The results for the Goals and Objectives were then incorporated into the Strategic Plan. They are listed under each Strategic Theme with an estimated timeline for completion and assignment to key team members.

# SWOT Analysis

## Strengths

Tax base - Cost-effective model - Education - Training
Community feedback - Pay scale - Progressive
Equipment - Professionalism - Experience level - Resources
Budget - Apparatus maintenance - Progressive leadership
Diverse workforce - Response times - Committed personnel
Call volume - Empathetic leadership - New /latest technology
EMS training - Community partnerships - Apparatus replacement - Health & fitness equipment/programs

## Weaknesses

Facilities - Officer development - Staffing
Recruiting and retention - Combined training with shifts
Standardization between shifts - Public perception
Social media presence - Fragmented department - Training
Communication - Leadership - Department Marketing
Post event debriefings - Splintering from department mission
Live burn training facility

Source: AHA! (2021)

# SWOT Analysis

## Opportunities

Standardization of shifts - Community Risk Reduction - File of Life program - Senior blood pressure checks
Partnering with schools - Building inspections - Customer service - Birthday drive-by details - Staff health and wellness
Social media - More diversity - Joint training (full/part-time and ambulance company)
More community outreach - Accreditation - Support people in need - Department marketing - Develop leaders - Mutual Aid packs - Adequate staffing - Fire prevention programs

## Threats

Mental health - Community growth - Ego's - Aging population
Social issues - Light weight building construction - High risk low frequency calls - Pandemics - Remaining status quo
Reduction in fires - Lack of Paid-on-Call
Fragmentation of Department - Political interference
Not keeping up with changing times
Shortage of resources - Social media - EMS transports Community make-up - Education or knowledge
New technology

Source: AHA! (2021)

# Goal 1: Infrastructure

**Ensure the fire department has the appropriate facilities to meet the evolving needs of our department and community, now and in the future.**

### Objective 1A

Evaluate the current conditions of the existing four fire stations and develop a plan to meet the needs of the department now and into the future.

**Assignment**

Architect/Consultant

### Objective 1B

Conduct a long-term needs analysis for all four fire stations.

**Assignment**

Architect/Consultant

### Objective 1C

Evaluate and establish a Capital Improvement Plan for all four City of Novi Fire Stations.

**Assignment**

Fire Chief
Assistant Fire Chief

# Strategic Goals

## Goal 2: Infrastructure

**Create a sustainable system of internal communication that facilitates the receiving and sharing of information in a manner that is timely, relevant, and accurate.**

### Objective 2A

Identify the current methods of internal communication used by the fire department and determine how effective they are by surveying department members assessing for timeliness, accuracy, and clarity.

Timeline: 2022

**Assignment**

Captain
Lieutenant

### Objective 2B

Analyze technology deficiencies used in communications based on results from Objective 2A and develop an improvement plan.

Timeline: 2022

**Assignment**

Captain

# Goal 3: Infrastructure

## Ensure that effective recruitment, selection, retention, and promotional programs meet the long-term needs of the fire department.

### Objective 3A

Analyze and evaluate current recruitment and retention efforts for all fire department positions.

Timeline: 2022

**Assignment**

Lieutenant
Human Resources Department

### Objective 3B

From the information obtained in Objective 3A, develop and begin implementing recruitment and retention initiatives from successful fire departments nationwide.

Timeline: 2022

**Assignment**

Captain
Lieutenant
Human Resources Department

### Objective 3C

Develop a plan to research/implement the best practices for integrating all fire department staffing.

Timeline: 2024

**Assignment**

Assistant Fire Chief
Training Officer
Lieutenant
Human Resources Department

# Strategic Goals

## Goal 4: Infrastructure

### Evaluate the necessary performance objectives to achieve department accreditation through the Commission on Fire Accreditation International.

**Objective 4A**

Prepare and develop a community-driven, five-year strategic plan for the Fire Department.

Timeline: 2022

**Assignment**
Fire Chief
Assistant Fire Chief

**Objective 4B**

Conduct a comprehensive community hazard and risk assessment. Develop and publish a Community Risk and Standards of Cover document for the department.

Timeline: 2024

**Assignment**
Fire Chief
Assistant Fire Chief

**Objective 4C**

Develop a self-assessment appraisal document of the fire department utilizing the Center for Public Safety Excellence/Commission on Fire Accreditation International Fire and Emergency Services Self Assessment Manual criteria.

Timeline: 2025

**Assignment**
Fire Chief
Assistant Fire Chief
Emergency Management Coordinator/
Fire Accreditation Manager

**Objective 4D**

Achieve agency accreditation for by the Commission on Fire Accreditation International.

Timeline: 2026

**Assignment**
Fire Chief
Assistant Fire Chief
Emergency Management Coordinator/
Fire Accreditation Manager

# Goal 5: Health & Wellness

## Prioritize and enhance a wellness culture to improve the mental and physical readiness of the individual and organization.

### Objective 5A

Review, create, and maintain initiatives that promote and sustain staff health and wellness.

Timeline: 2022

**Assignment**

Training Officer
Lieutenant
Human Resources Department

### Objective 5B

Evaluate the current fitness equipment currently supplied by the department and its use for physical health by fire department members.

Timeline: 2023

**Assignment**

Captain
Lieutenant

### Objective 5C

Research best practices for cancer identification, reduction, and prevention for fire personnel.

Timeline: 2023

**Assignment**

Captain
Lieutenant

### Objective 5D

Identify and implement beneficial mental health policies, training, and services for all department personnel.

Timeline: 2022

**Assignment**

Training Officer
Lieutenant

# Strategic Goals

## Goal 6: Community Risk Reduction

**Develop comprehensive outreach programs to ensure community education which fosters civic engagement and increases active participation.**

### Objective 6A

Compile and evaluate historical data of Community Risk Reduction initiatives the fire department performed over the last 10 years.

**Assignment**

Fire Marshal
Captain
Lieutenant

### Objective 6B

Develop a committee to identify community needs and establish new initiatives to deliver quality Community Risk Reduction programs to the public.

**Assignment**

Fire Marshal

### Objective 6C

Develop and implement a strategy to market Community Risk Reduction programs identified in Objective 6B with the use of social media platforms.

**Assignment**

Fire Marshal
Captain
Lieutenant

# Goal 7: Training

## Enhance the department's training program that supports all fire department employees in their professional development.

### Objective 7A

Evaluate all training, EMS, and fire to ensure program requirements comply with Federal, State, Michigan Occupational Safety and Health Administration, and department standards.

Timeline: 2022

**Assignment**

Assistant Fire Chief
Training Officer
Human Resources Department

### Objective 7B

Evaluate the strengths and weaknesses of the current department training plan and delivery methods. Develop recommendations for changes based upon the evaluation and implement.

Timeline: 2023

**Assignment**

Training Officer
Lieutenant

### Objective 7C

Evaluate the use of technology to increase training retention and proficiency.

Timeline: 2022

**Assignment**

Captain
Lieutenant

# Goal 7: Training

## Enhance the fire department training program that supports all employees in their professional development.

### Objective 7D

**Develop and provide training with our Automatic Mutual Aid, Mutual Aid Box Alarm and neighboring fire departments.**

**Assignment**

**Training Officer**
**Lieutenant**

### Objective 7E

**Develop a structured succession plan for all employees to increase opportunities for advancement within the department.**

**Assignment**

**Fire Chief**
**Assistant Fire Chief**

# Goal 8: Response

## Provide timely and efficient service delivery to a growing and dynamic population, ensuring safety to our community.

### Objective 8A

Evaluate if the current procedure for priority medical dispatching by the outside ambulance company is efficient to reduce response times.

**Assignment**

Assistant Fire Chief
Dispatch Manager
Superior Leadership

### Objective 8B

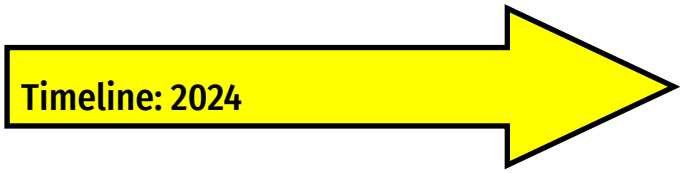
Evaluate the current deployment model of department apparatus to determine if staging of resources at peak times in strategic areas reduces response times.

**Assignment**

Captain
Lieutenant

### Objective 8C

Evaluate service delivery, policies, and programs to develop a list of improvements.




**Assignment**

Assistant Fire Chief
Captain

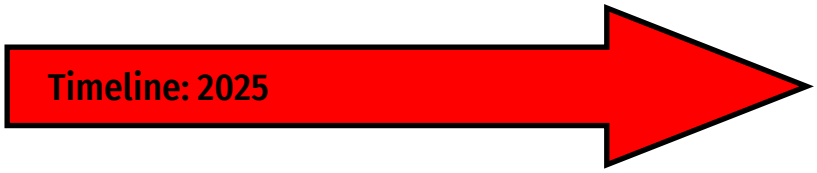
# Strategic Goals

## Goal 8: Response

### Provide timely and efficient service delivery to a growing and dynamic population, ensuring safety to our community.

### Objective 8D

**Compile historical data, analyze and modify response model to meet current and future service delivery requirements.**

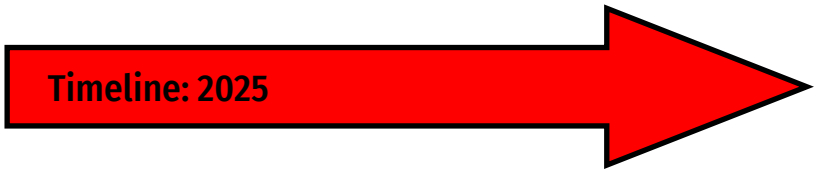



**Assignment**

Captain
Lieutenant

### Objective 8E

**Create and implement a schedule that balances the expectations and abilities of all fire department staffing with the anticipated call volumes.**




**Assignment**

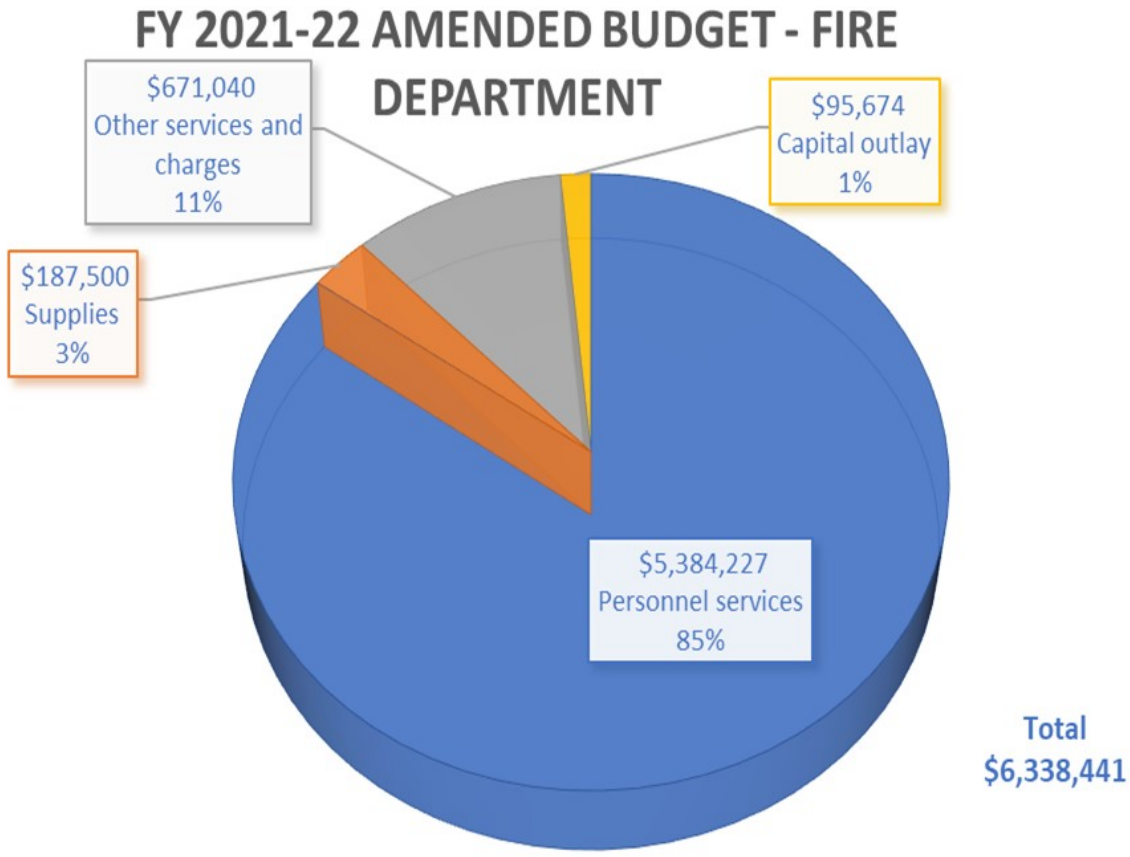
Fire Chief
Captain
Lieutenant

# Funding

The Novi Public Safety Department is funded by a dedicated police and fire charter millage that was authorized to supplement the operations of the police and fire departments, including payment for personnel-related expenditures and for the purchase of fire trucks, apparatus, and equipment. Voters approved the dedicated millage in November 1987 (1.8 mills.)

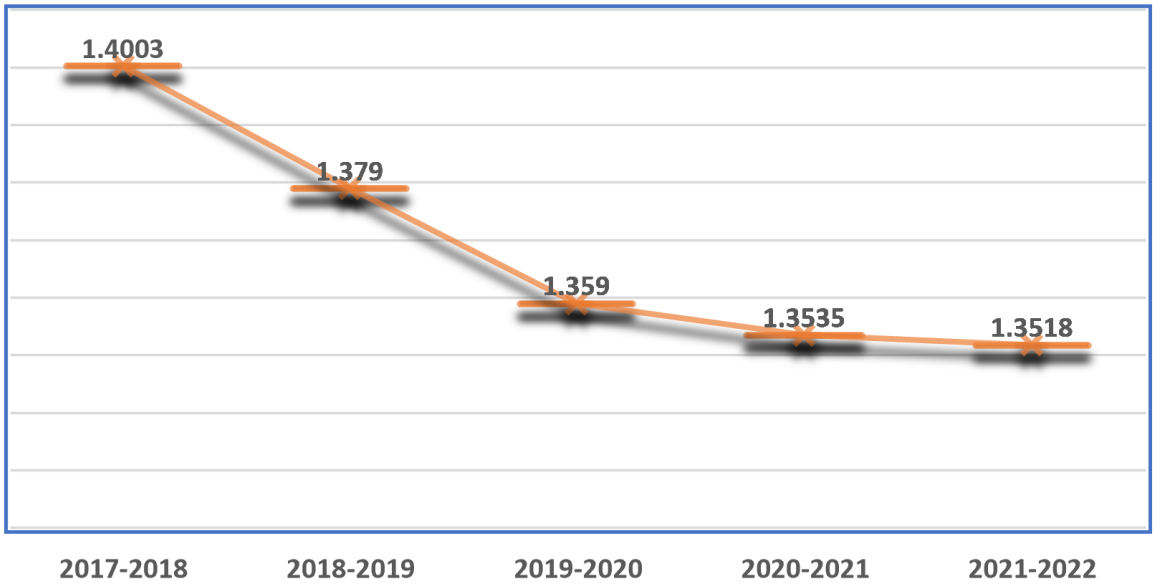
The Police and Fire Departments' annual operating budget includes salaries & fringe benefits, supplies, other services and charges, and capital expenditures. The Fire Department's FY 2021-22 amended budget is **$6,338,441.**

As a regular practice, both the Police and Fire Departments actively seek out federal and local grand funding opportunities for personnel costs and capital equipment purchases that might otherwise not occur.

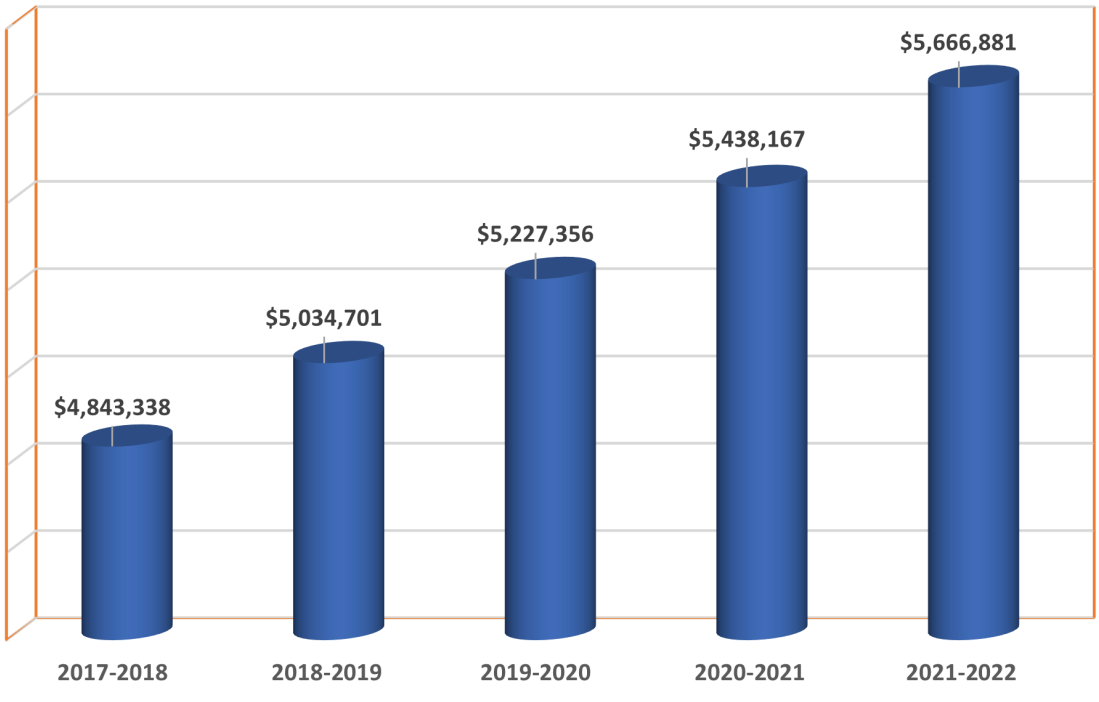


# Funding

## Police & Fire Millage Rate




## 5 Year Revenue History



# Facilities

### Public Safety Administration Building

In February 2010, the City of Novi created a Public Safety Administration Team to provide management and accountability for Police and Fire functions, the City's most critical services. Fire Administration, Public Safety Records, and Public Safety 911 Communications are located at 45125 W. Ten Mile Road on the Civic Center Campus.

### Fire Station 1

Fire Station 1 was built in 1981 to serve central Novi. The original building consisted of 6,481 square feet, including three apparatus bays, support spaces, and administrative offices. In 1988, 2,295 square feet were added to accommodate the expanding needs of the department. The station is located in a downtown commercial district near the busy intersection of Novi Road and Grand River Avenue. This station is staffed with 24-hour firefighting operations/seven days per week. A Fire Captain is also assigned to this station.

### Fire Station 2

Fire Station 2 was built in 1981 as a 4,123 square foot facility to serve northwestern Novi. In 2009, 900 square-feet were added to accommodate future needs of the department. The station is located in a residential district on the north side of 13 Mile Road, west of Novi Road. This station includes two bay areas and is staffed with 24-hour firefighting operations and Superior Ambulance crews seven days per week. A Fire Lieutenant is currently assigned to this station. Firefighters at this station also respond to water rescues at nearby Walled Lake.

# Facilities

### Fire Station 3

Fire Station 3 was built in 1978 to serve southeast Novi. The building consists of 3,880 square feet and is located in an industrial district south of Nine Mile Road, between Novi and Meadowbrook Roads. This station includes two bay areas and is staffed with 24-hour firefighting operations and Superior Ambulance crews seven days per week.

### Fire Station 4

In 2003, Fire Station 4 was built to service southwest Novi. The building consists of 11,380 square feet. The station is located in a residential district at the intersection of Ten Mile and Wixom Roads. This station includes three bay areas, a Training Center and three-and-a-half story Fire Training Tower. This facility serves as the City's back-up Emergency Operations Center and is staffed with 24-hour firefighting operations/seven days per week.

### Fire Station 5 — Superior Air-Ground Ambulance

Station 5 was built in 1984 and served as Fire Station 4 for the western sections of Novi until 2003 when a new Fire Station 4 and Training Center was built. The building is a two-bay station with a one-story area adjacent to the apparatus bay for housing support spaces, an office and living quarters. The building is 2,480 square feet in size plus a mezzanine of 415 square feet. The station is located at the intersection of Beck and Eleven Mile Roads. Station 5 is currently being leased by Superior Air-Ground Ambulance and staffed with at least 2 Superior employees. A total of 3 Advanced Life Support Ambulances are dedicated 24 hours a day exclusively to the City of Novi under the current agreement.

SUPERIOR AMBULANCE SERVICE

# Facilities Relocation Study

The City of Novi Planning Department was asked to assist the Fire Department with identifying possible alternate locations for Fire Stations #1 and #3. This builds on and updates information that was provided over the course of a few years, following the detailed Long-Term Needs Assessment prepared by the Sidock Group in 2014.

The standards identified for the possible relocation sites include the following:

- Within an approximately ¼ mile radius of the intersection of Grand River Avenue and Novi Road due to the benefits the new Fire Station #1 being close to that intersection, and for easy access to I-96; and within ¼ mile radius of existing Fire Station #3.
- Minimum site area of approximately 2 acres.
- Either privately owned, or already owned by the City.
- Property may be vacant or may have improvements.
- Access or proximity to a major thoroughfare with a traffic signal is preferred.
- Avoid known highly contaminated sites

Other aspects noted in the Sidock report that are not being evaluated in this memo are Runtime (the time required to respond to a call for service from location to arrival on scene), where the site is located within the Fire District Map, and any other critical Fire Department standards that the Planning Department is not aware of at this time.

**Fire Station #1**

Fire Station #1 is located at the southwest corner of Grand River Avenue and Main Street. The site fronts on and has direct access to Grand River Avenue, a major thoroughfare. The site is approximately 2.4 acres (and shares parking with the adjacent commercial development). The total building area is approximately 10,000 square feet per the Sidock study. The attached spreadsheet and maps offer several alternate locations that the Fire Department may want to consider for additional study.

Option D as shown on the first attached chart is the Country Building Supply property that was recently acquired by the City to assist in the construction of Bond Street on the south side of Grand River Avenue. The remainder of Option D property meets most of the criteria noted above, including proximity to the intersection of Grand River and Novi Road, access to and frontage on a

major thoroughfare with the benefit of access on two streets (once Bond Street is completed), and location at a planned traffic signal. The site is less than the minimum size that is determined by the Fire Department (~1.46 acres vs. 2.0 acres minimum is desirable), however, there are three residential lots immediately to the west that could expand the usable area, if those lots were acquired and the homes demolished.

**Fire Station #3**

Fire Station #3 is located at the southwest corner of Nine Mile Road and Roethel Drive. The site fronts on and has direct access to Roethel Drive. The site is approximately 0.84 acres, and the total building area is approximately 4000 square feet. The attached spreadsheet and map offer several alternate locations in the immediate area that the Fire Department may want to consider for additional study.

Since the previous alternative location report was prepared for this Fire Station, one additional parcel has been acquired by the City, referred to as Option C1 and located on Venture Drive. This parcel is 1.76 acres. Since it is on the west side of Venture Drive, it does not abut a residential district but instead backs up to the railroad tracks. The property is currently vacant land, and does not appear to contain any regulated woodlands or wetlands, so it may be simpler to develop than some other options.

## Fire Station #1 Potential Relocation Sites

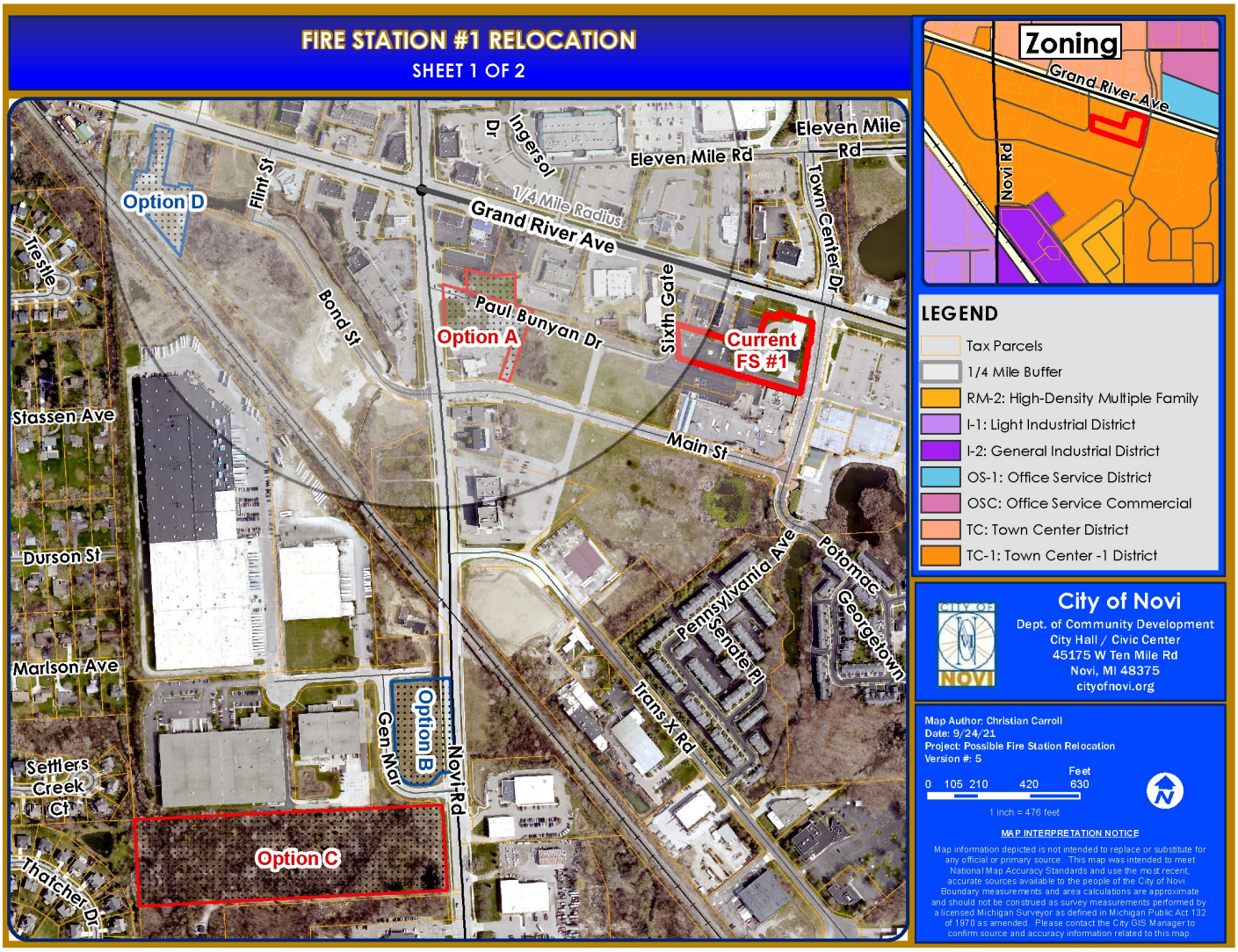
| FOR CONSIDERATION | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Option** | **Parcel #s** | **Location** | **Acres** | **Total Site Acreage** | **Access to Major Throughfare?** | **Access to Two Streets?** | **Within 1/4 mile of Existing Fire Station?** | **Zoning** | **Assessed Value** | **Owner** | **Occupant** | **Comments** |
| **Option A** | **22-23-176-034** | **43277 Main St** | 1.61 | 2.08 | Yes | Yes | Yes | **TC-1** | **$291,000.00** | Cassis, Victor R. Trust | Vacant Land | Former site of Novi Fire Station, will be near residential in the future |
| | **22-23-102-013** | **East of Novi Rd** | 0.47 | | | | | **TC-1** | **$81,850.00** | Cassis, Victor R. Trust | Vacant Land | |
| **Option B** | **22-22-276-017** | **West of Novi Road** | 2.31 | 2.31 | No | No | Yes | **I-1** | **$0.00** | Road Commission for Oakland County | Vacant Land | Access to Gen Mar Drive only due to elevation |
| **Option C** | **22-22-400-027** | **West of Novi Road** | 10.51 | 10.51 | Yes | No | No | **OS-1** | **$0.00** | City of Novi | Vacant Land | Large presence of wetlands and woodlands |
| **Option D** | **22-15-477-005** | **43755 Grand River Ave** | 1.46 | 1.46 | Yes | Yes | No | **TC-1** | **$0.00** | City of Novi | Country Bldg. Supply | Will have access to Bond Street in the future. Ability to expand with 3 residential lots nearby. |
| **Option E** | **22-14-451-002** | **26300 Lee BeGole Dr (Southwest Corner)** | 3.54 | 3.54 | Yes | Yes | No | **I-1** | **$0.00** | City of Novi | DPW | DPW Site, focusing on the southwest corner; next to residential in the future |
| **Option F** | **22-23-226-021** | **South of Eleven Mile** | 1.75 | 3.5 | Yes | No | No | **I-1** | **$85,250.00** | Stoychoff, Richard & Eleanor | Vacant Land | Wetland on a small portion of the site, near residential to the east |
| | **22-23-226-022** | **South of Eleven Mile** | 1.75 | | | | | **I-1** | **$91,100.00** | Roberts, Michael | Vacant Land | |

# Facilities
# Relocation Study

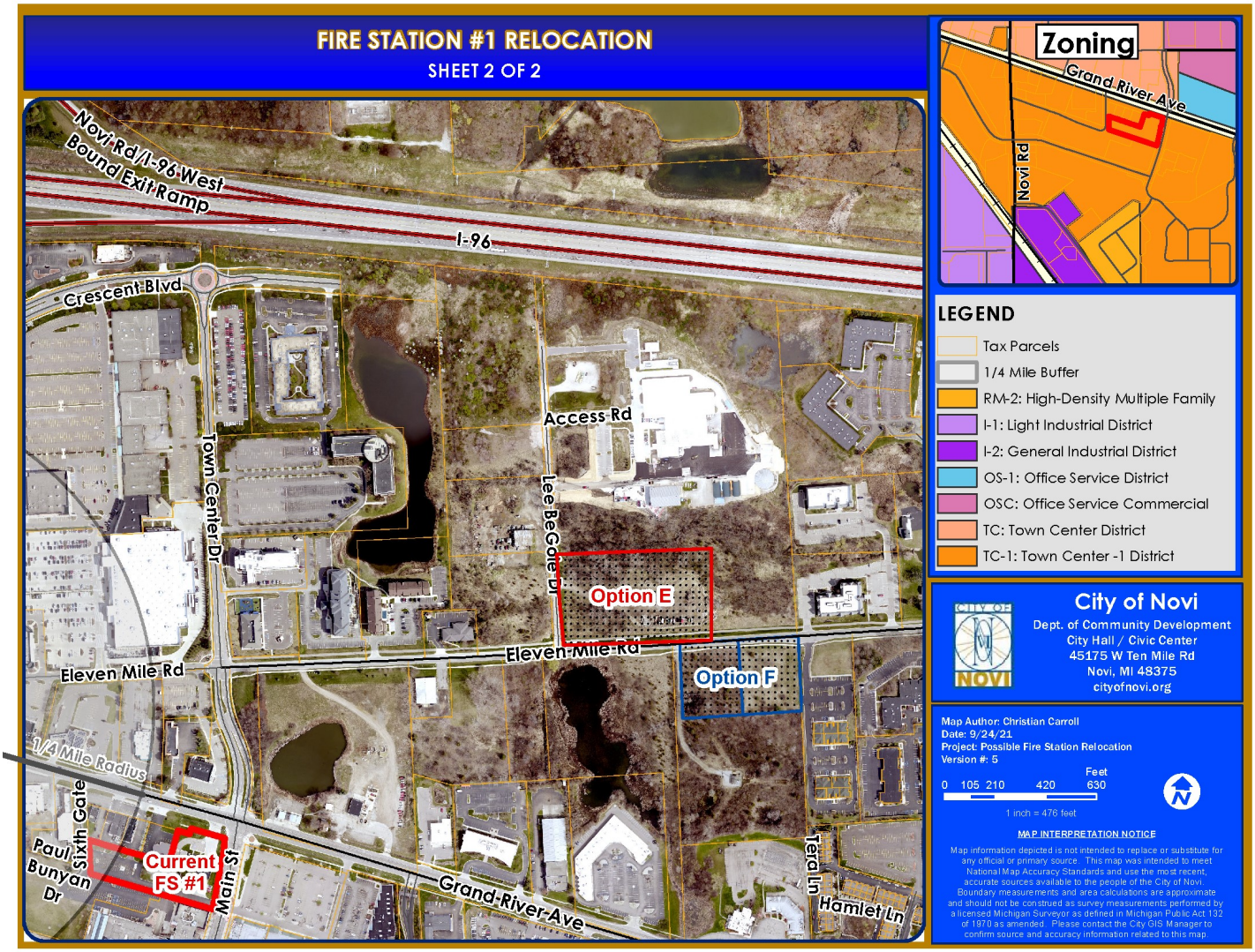
**Fire Station #3 Potential Relocation Sites**

| FOR CONSIDERATION | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Option | Parcel #s | Location | Acres | Total Site Acreage | Access to Major Throughfare? | Access to Two Streets? | Within 1/4 mile of Existing Fire Station? | Zoning | Assessed Value | Owner | Occupant | Comments |
| Option A | 22-26-401-023 | 22650 Venture Dr | 1.25 | 2.45 | No | No | Yes | I-1 | $69,550.00 | KEL Investments | Vacant land | Residential use to the east |
| | 22-26-401-022 | 22700 Venture Dr | 1.2 | | | | | I-1 | $67,000.00 | KEL Investments | Vacant land | Residential use to the east |
| Option B | 22-26-401-021 | 22750 Venture Dr | 1.2 | 2.82 | No | No | Yes | I-1 | $67,000.00 | KEL Investments | Vacant land | Residential use to the east |
| | 22-26-401-033 | 22850 Venture Dr | 1.62 | | | | | I-1 | $90,250.00 | Dougmore, LLC | Vacant land | Residential use to the east |
| Option C1 | 22-26-401-041 | West of Venture Dr | 1.76 | 3.38 | No | No | No | I-1 | $97,550.00 | City of Novi | Vacant land | Recently acquired by the City of Novi |
| Option C2 | 22-26-401-043 | 22705 Venture Dr | 1.62 | | No | No | Yes | I-1 | $78,600.00 | Boll Filter Corp | Vacant land | Directly south of City-Owned Property |
| Option D | 22-26-377-025 | East side Heslip Dr | 8.88 | 8.88 | No | No | Yes | I-1 | $1,192,650.00 | Arkin LLC | Arkin Ind. Park & Vacant land | Vacant land still available on the south portion of the parcel. The parcels were combined. |

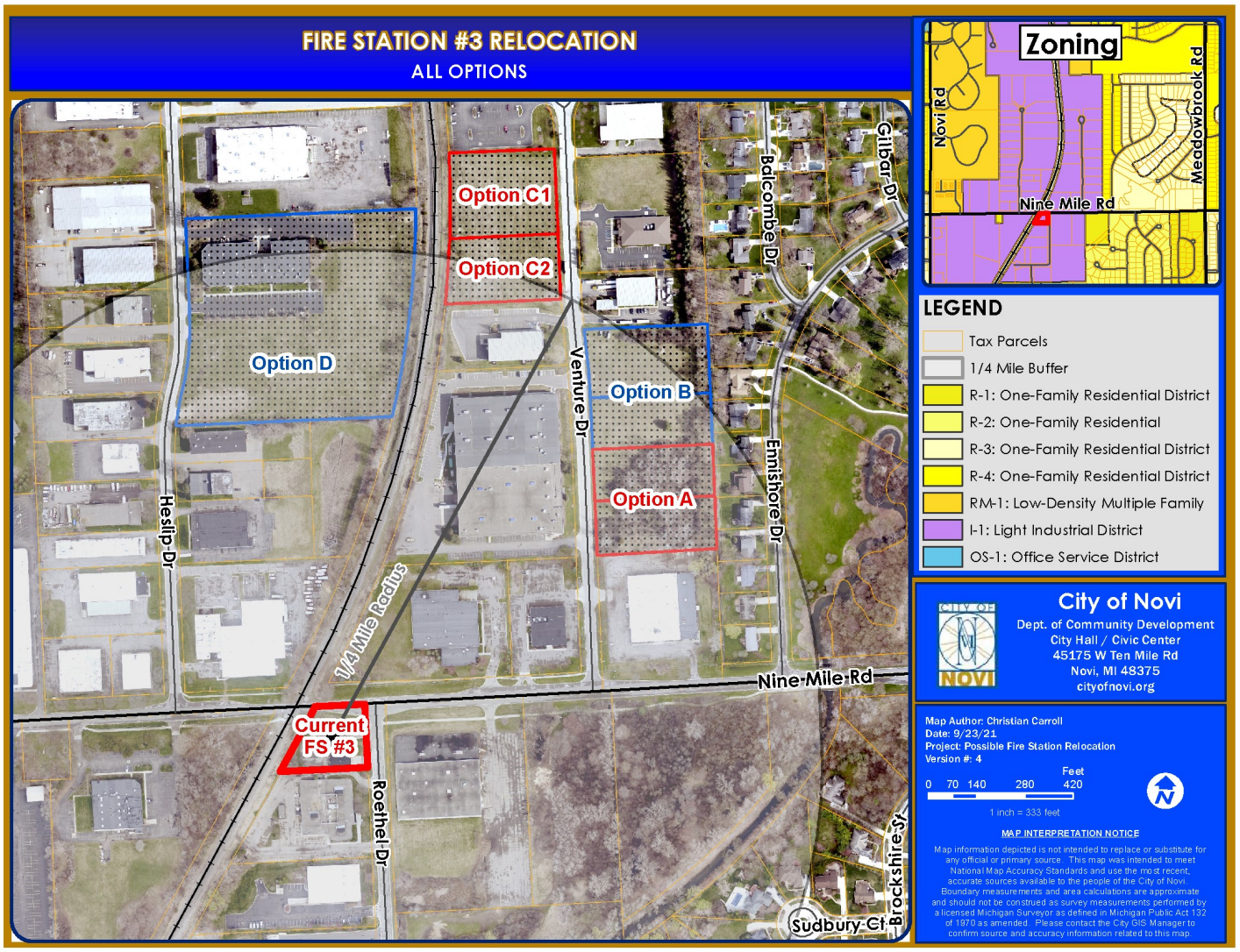
# Facilities Relocation Study



# Facilities
# Relocation Study



# Facilities Relocation Study



# Facilities

## Station 1 & 3 Response Heat Maps

Station No. 1's response heat map was developed using the 9,727 total priority calls that Station 1's resources responded to from January 1, 2017 to January 1, 2022. This map shows the actual response times from the current location of Fire Station 1 to the call location.

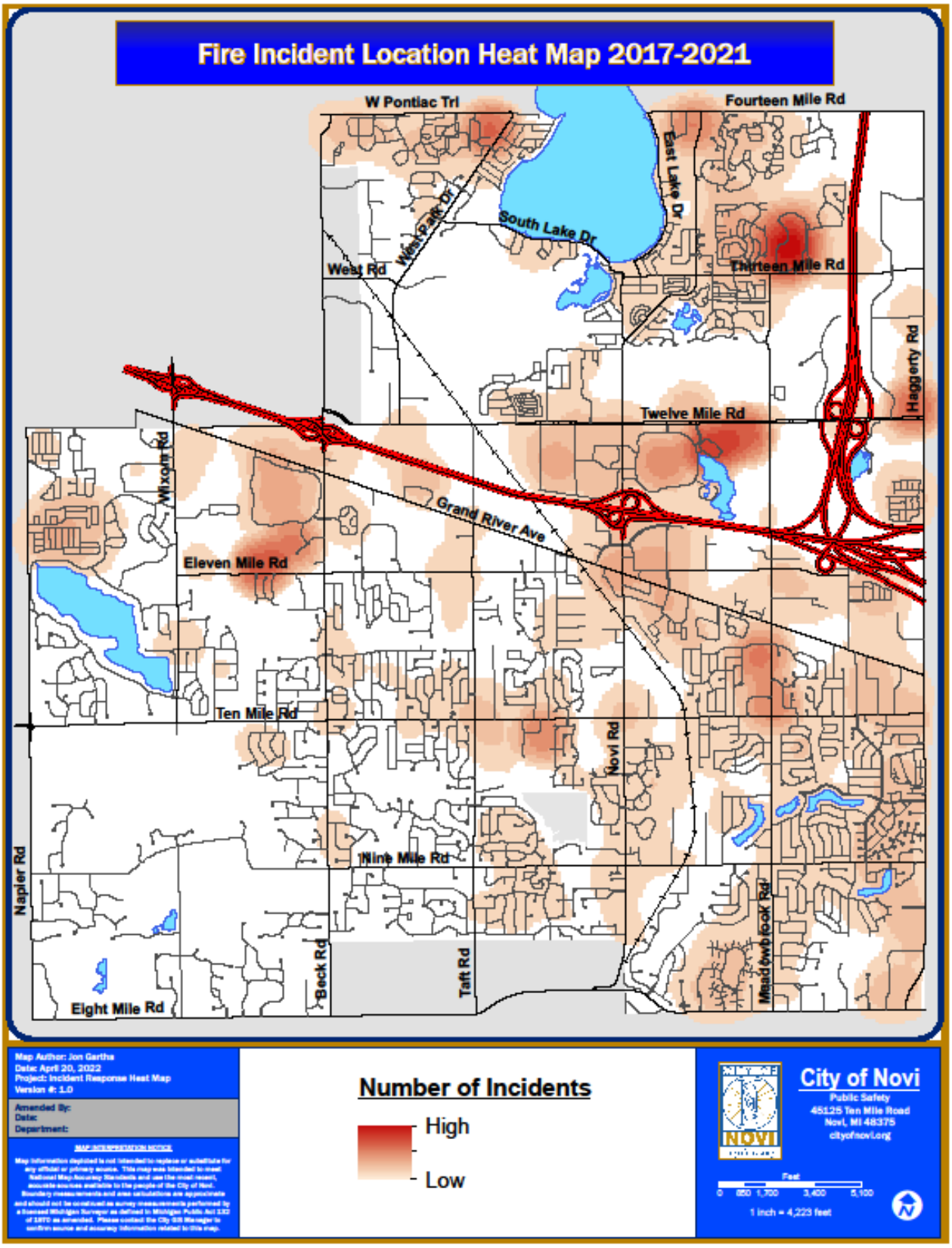
The map developed for the proposed location of Station 1 was based on the distance that a vehicle can travel in a specific amount of time while driving at posted speed limits. This map shows the theoretical travel time to areas surrounding proposed Fire Station 1.

Station No. 3's response map was developed by taking the 3,097 total priority calls that Station 3's resources responded to from January 1, 2017 to January 1, 2022. This map shows the actual response times from the current location of Fire Station 3 to the call location.

The map developed for the proposed location of Station 3 was based on the distance that a vehicle can travel in a specific amount of time while driving at posted speed limits. This map shows the theoretical travel time to areas surrounding proposed Fire Station 3.

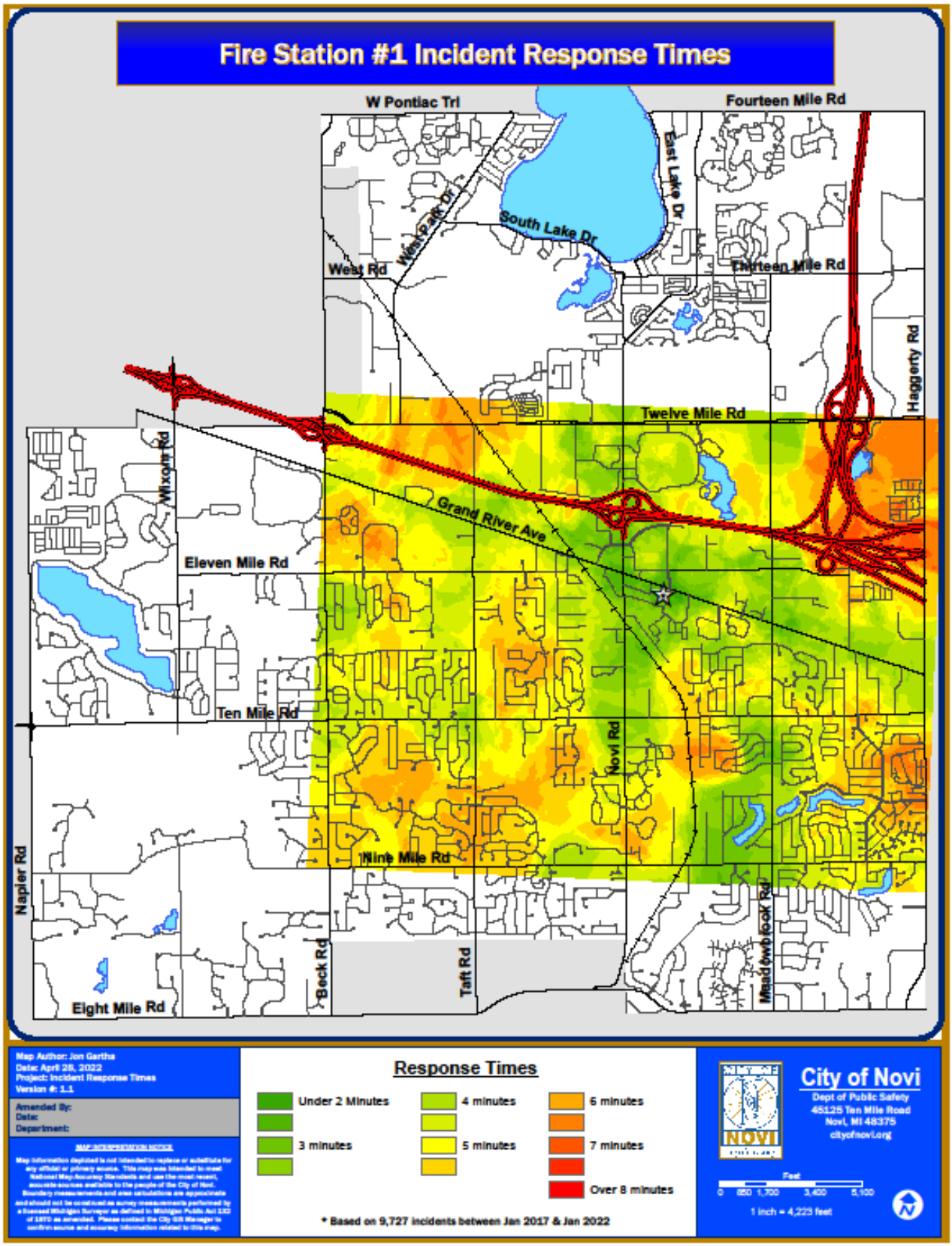
# Facilities

## Station 1 & 3 Response Heat Maps



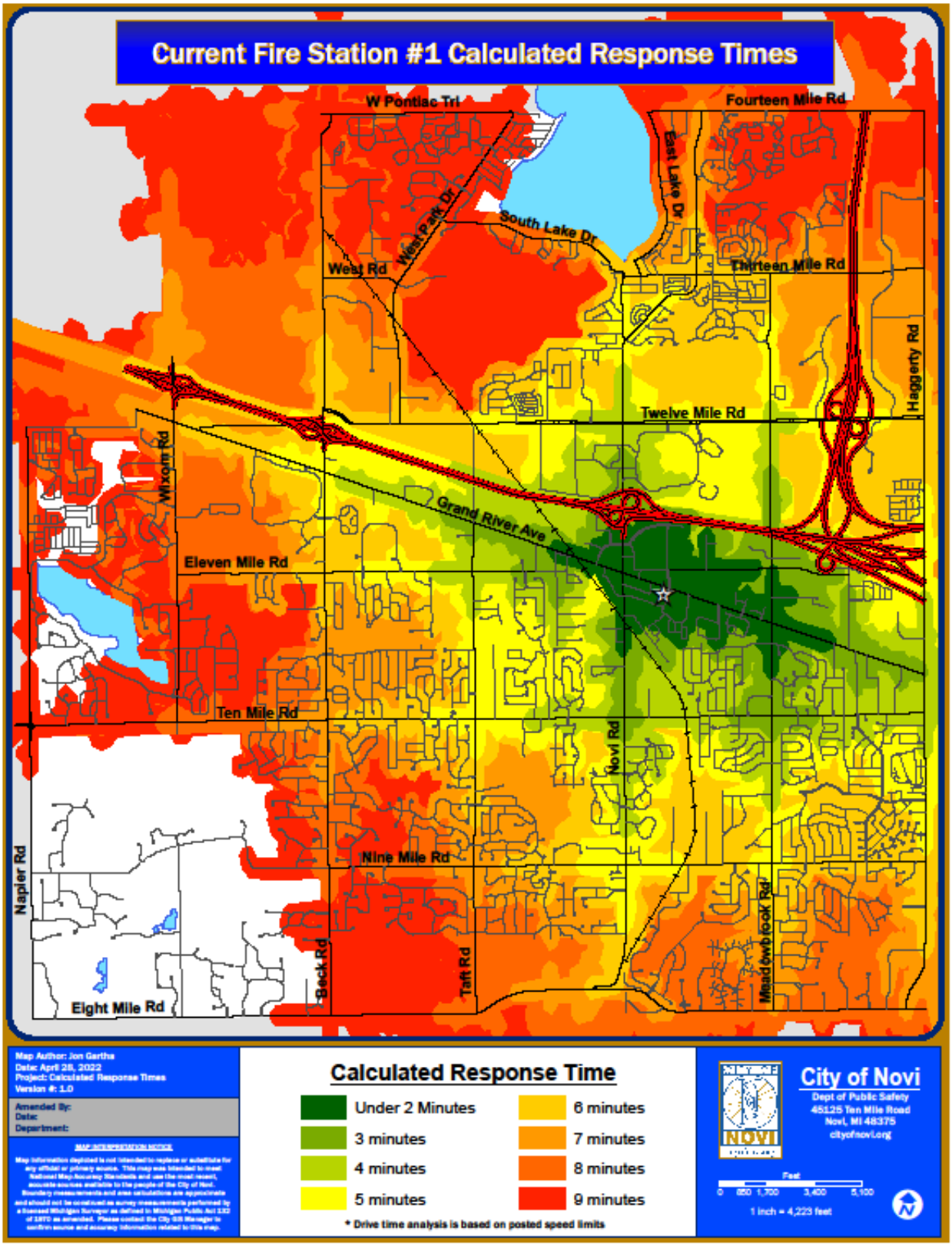
# Facilities

## Station 1 & 3 Response Heat Maps



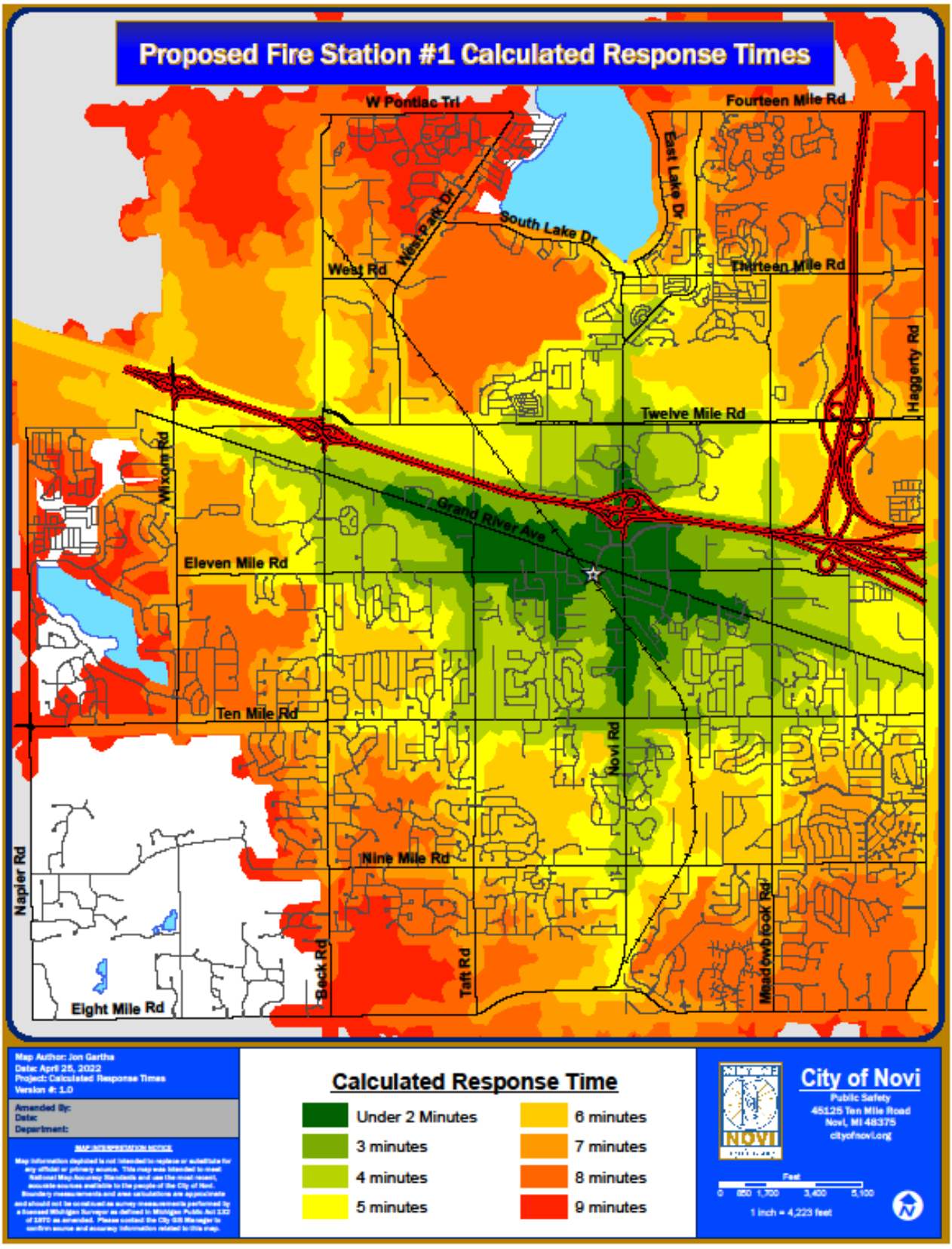
# Facilities

## Station 1 & 3 Response Heat Maps



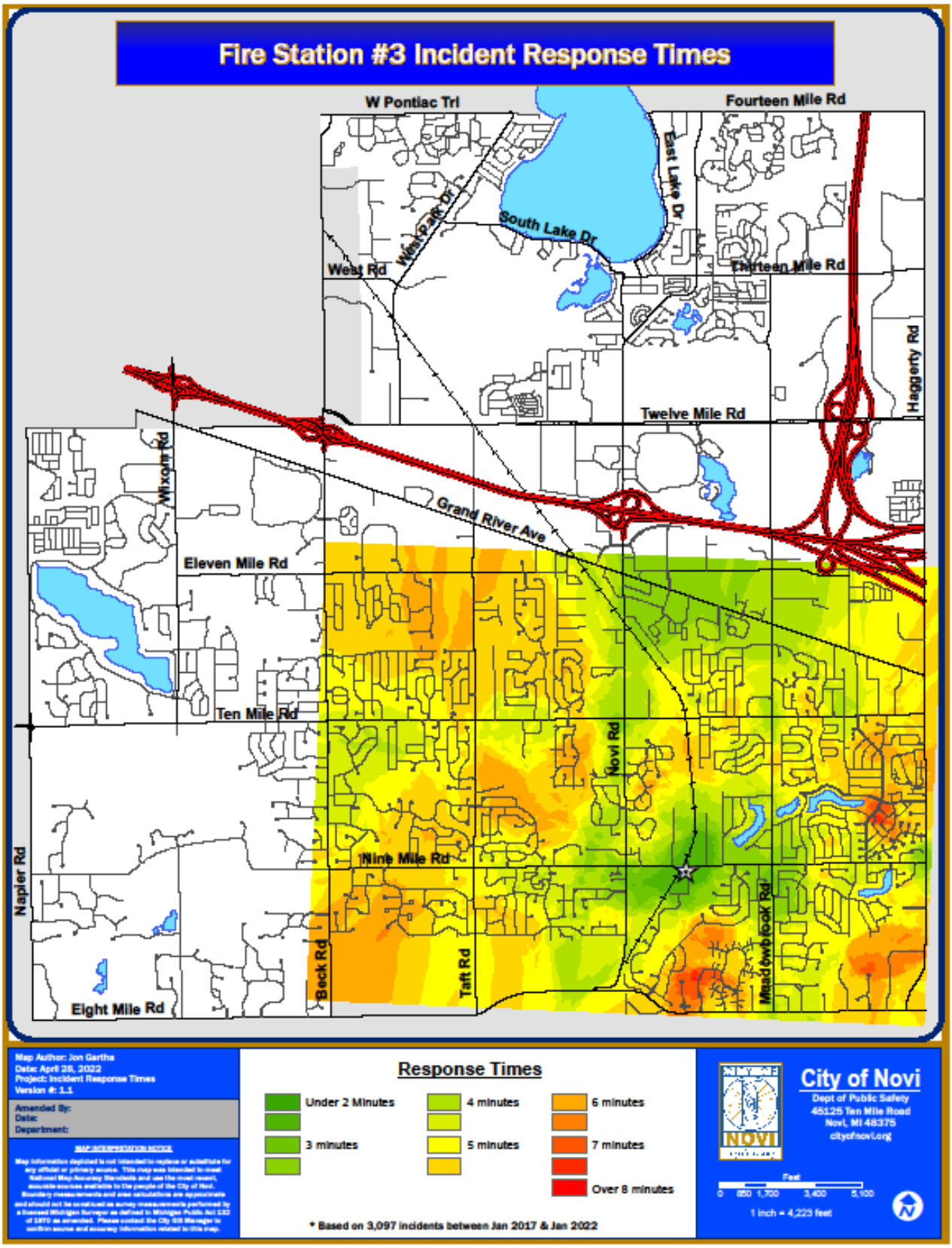
# Facilities

## Station 1 & 3 Response Heat Maps



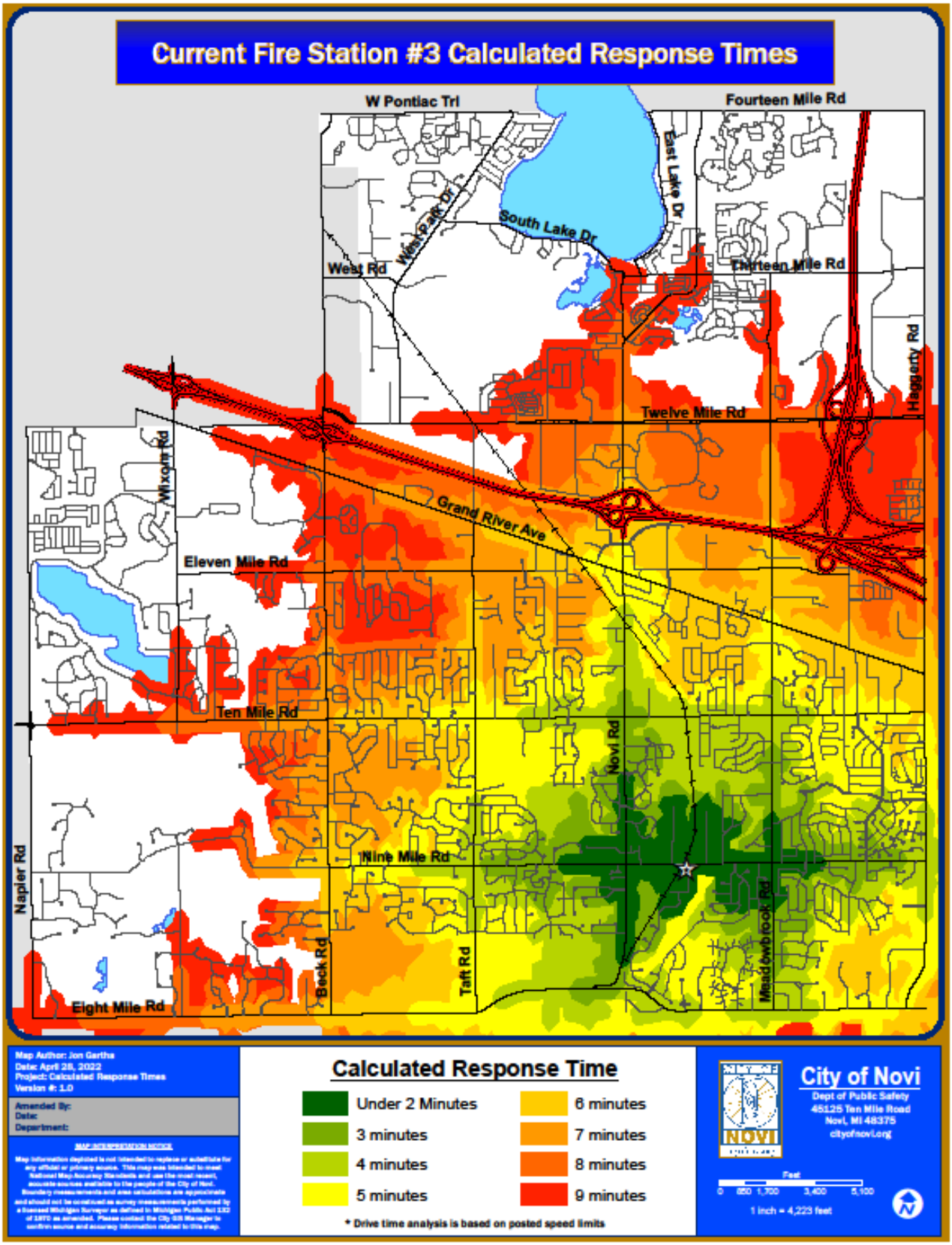
# Facilities

## Station 1 & 3 Response Heat Maps



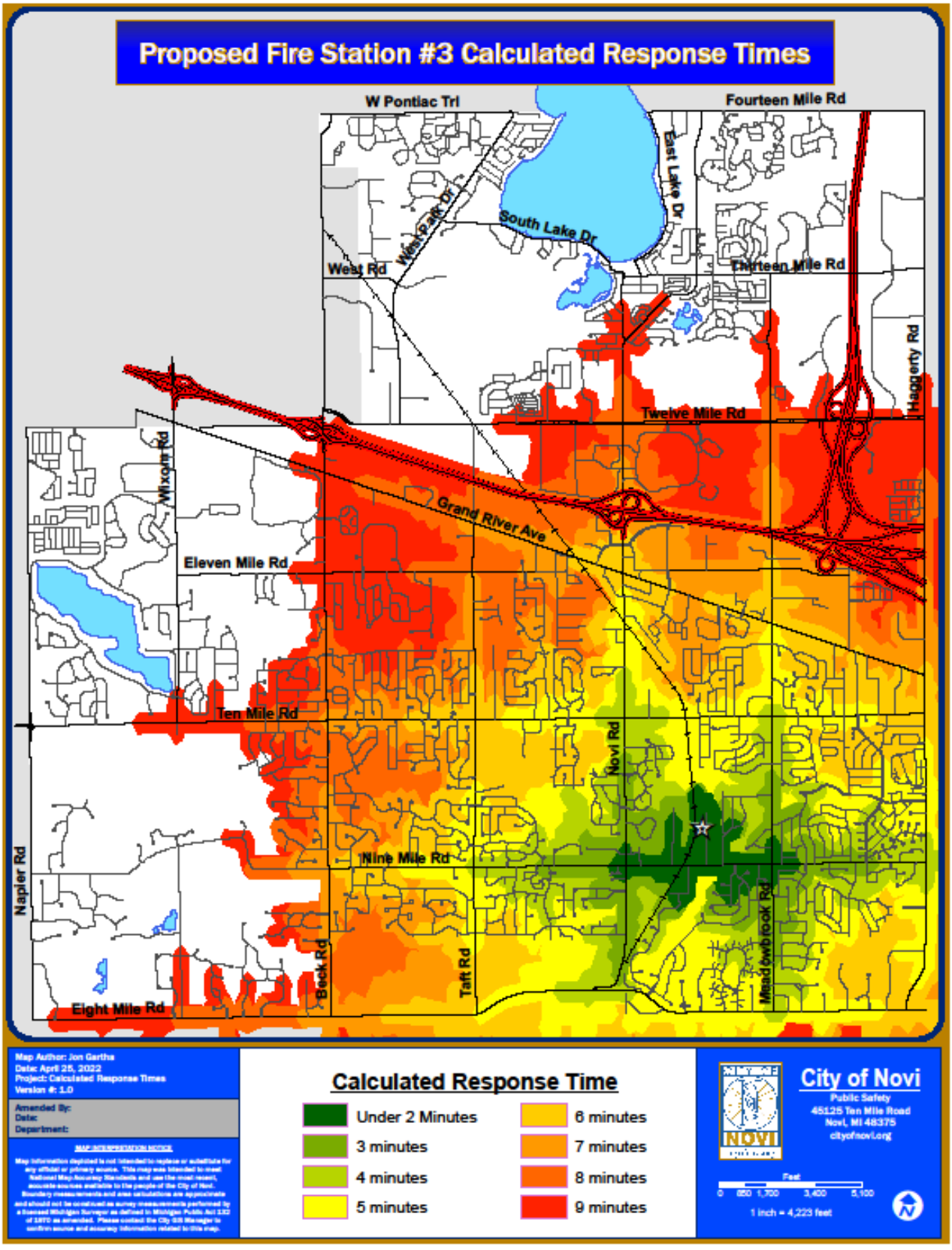
# Facilities

## Station 1 & 3 Response Heat Maps



# Facilities

## Station 1 & 3 Response Heat Maps



# Commitment Statement/Implementation

The Novi Fire Department is committed to implementing the goals suggested in this Strategic Plan over the next five years. The Strategic Planning team, along with Department leadership teams, will review the goals on an annual basis to ensure we are keeping track with the benchmarks established. We understand some objectives may require adjustments or adaptations, and changes will be made as necessary to meet the overall goals of the organization.

Ultimately, we will continuously strive to improve the Novi Fire Department's delivery and services to all residents, businesses, and guests of the City of Novi.

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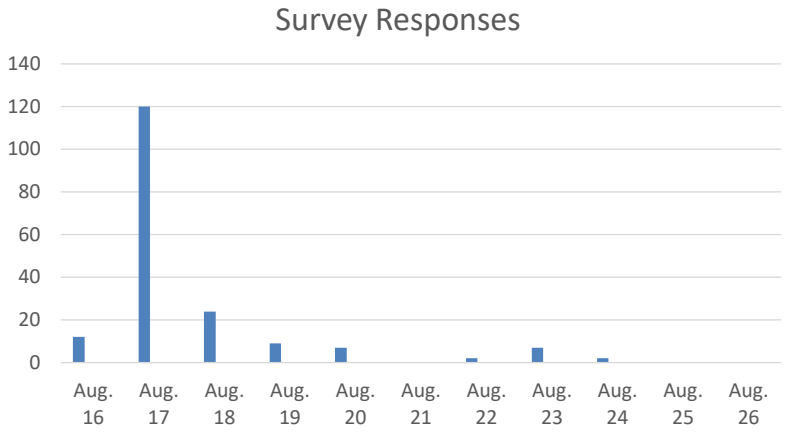
# Addendum
# Citizens/Business Survey Results

## Strategic Plan Survey Results

SurveyMonkey

**How we shared the survey:**

- Facebook & Nextdoor (8/16)
- Homepage of cityofnovi.org
- Two e-mails (8/17)
  - NBC – 2,365 sent, 713 opens, 109 clicks
  - The 6 – 9,513 sent, 2,806 opens, 471 clicks



# Addendum
# Citizens/Business Survey Results

## Strategic Plan Survey Results

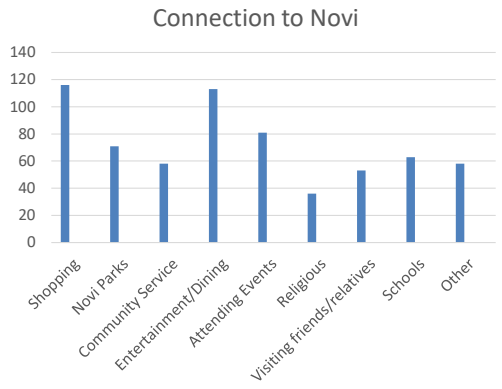
**Who were our responders and how are they connected to Novi?**

185
Total Responses

| | |
|---|---|
| 174 | 11 |
| Novi Residents | Non-Residents |
| 64 | 119 |
| Work in Novi | Don't work in Novi |

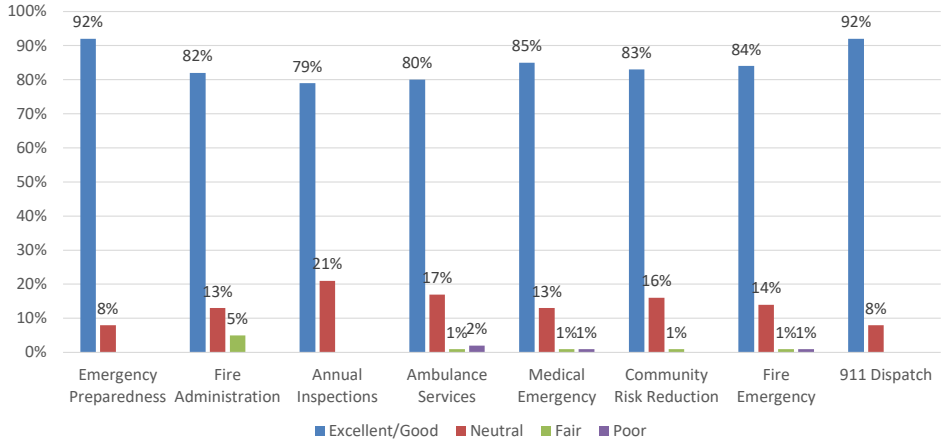
**General Overall Impression**

| | |
|---|---|
| 130 | 43 |
| Excellent | Good |
| 9 | 1 |
| Neutral | Fair |




## Strategic Plan Survey Results

**How would you rate your interaction with the Novi FD?**



# Addendum
# Citizens/Business Survey Results

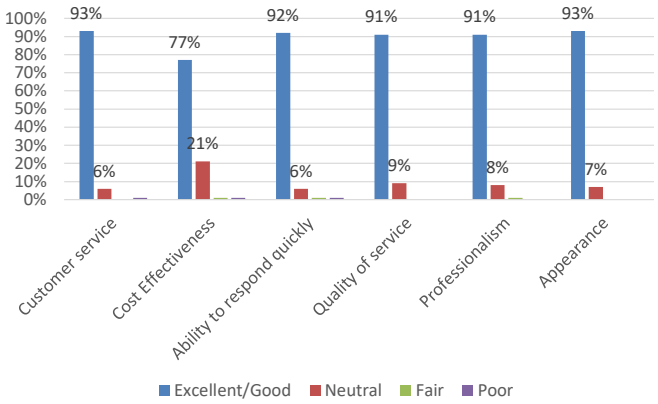
## Strategic Plan Survey Results

**Services not listed that are important to you:**

- CERT Training
- Child seat installation
- Community Risk Reduction
- Community Outreach (5)
- Construction Inspections
- CPR Training
- Fire Safety Seminars
- Home Fire Protection
- Individual Store Inspections
- Response to calls for odors, fire alarms & chair lift after surgery
- Special needs outreach
- **Staffing (1), Full-time staffing (2) with paramedic services (1)**

## Strategic Plan Survey Results

**Rate the Novi Fire Department in the following areas:**




**Why fair or poor ratings?**

- Inspectors have come into my business with no smiles, no greetings, acting like self-important dictators.
- Only complaint is with the volunteer fire department.
- We need 24-hour, full-time coverage. Not part-time, paid-on-call.

# Addendum
# Citizens/Business Survey Results

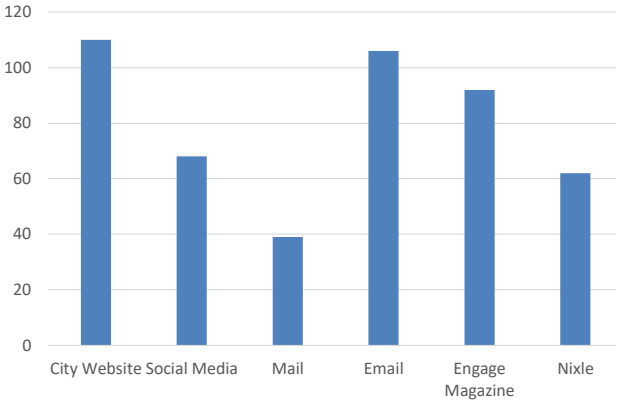
## Strategic Plan Survey Results

**Are you satisfied with the communication from the Novi FD?**

168 Yes  5 No

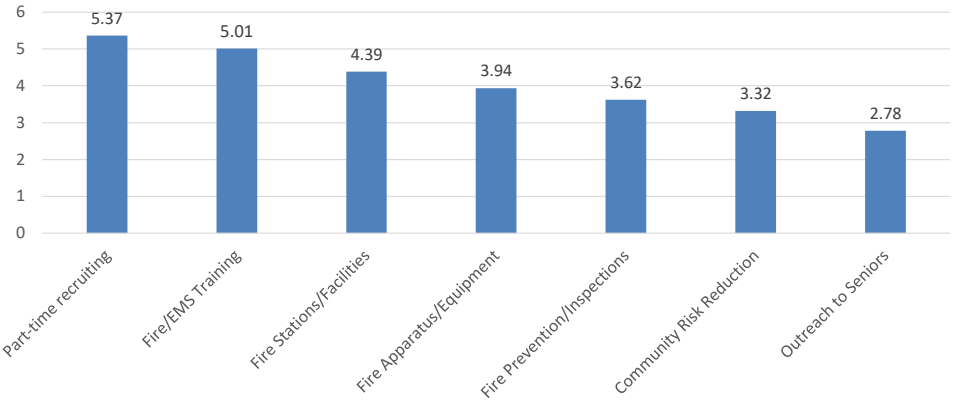
**Where would you like additional outreach?**

**How would you like the Novi Fire Department to communicate with you:**




## Strategic Plan Survey Results

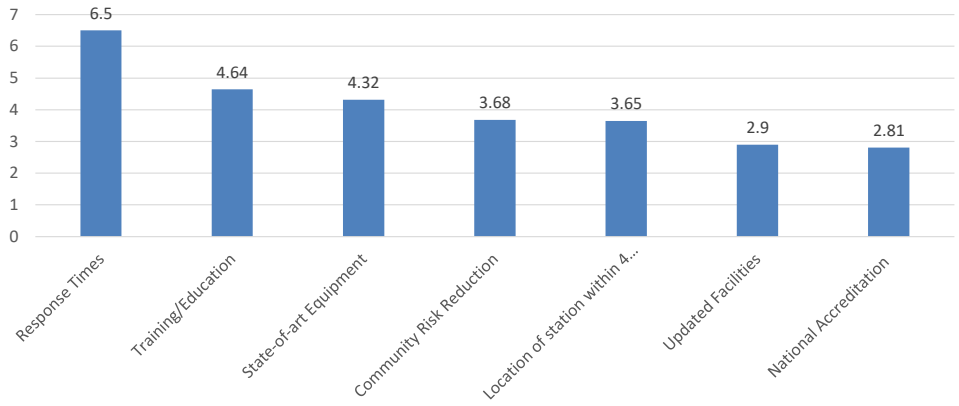
**Rank challenges Novi FD will face in next five years (1 most important, 7 least):**



# Addendum
# Citizens/Business Survey Results

## Strategic Plan Survey Results

**Rank your priorities for Novi FD services**
**(1 most important, 7 least):**




## Strategic Plan Survey Results

**Additional Comments:**

- **Access when you need it most will always be No. 1. Training and talent will always be second.**
- **All the contacts I have had with Novi Fire have been very informative and positive. With our growth, must make sure staffing meets demands.**
- **Chief Johnson and AC Martin are excellent leaders for our Novi. Proud of them and their dedication.**
- **EMS needs to be looked at. Your department should provide ALS.**
- **I think everything but national accreditation is vital for our department.**
- **If the City continues training, updating equipment, etc. they will remain a top FD. To be nationally accredited is a lot of paperwork, money, and sometimes a waste of time.**
- **Public safety is my number one priority in the community.**
- **Response times trump all others. Minutes count.**
- **With the turnover Novi FD has, training is the hardest to maintain quality and experience.**
- **Would like to see Novi with more full-time and less volunteers. Novi is too big of a community for volunteers.**

# REDSTONE ARCHITECTS INC.

Specialists in Law Enforcement, Justice, and Public Safety Architecture

*ESTABLISHED 1937*

## Facility Study for Novi Police Department

## Novi, Michigan

## December 6, 2022

Daniel Redstone,FAIA
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T: 248.418.0990
F: 248.418.0999
2709 S. Telegraph Road
Bloomfield Hills, MI 48302

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# SECTION 1

## FACILITY STUDY REPORT:
## INTRODUCTION
## PROCESS
## DESIGN OPTIONS
## PROJECT COST PROJECTION
## SUMMARY

# FACILITY STUDY REPORT

**INTRODUCTION:**

The Novi Police Department Headquarters Building is located on the Novi Civic Center Campus. Originally built in 1980, the building was expanded to inlcude holding cells, a large training room as maintenance bays. In total, the current facility contains approximately 38,000 square feet.

When originally designed, the issues of secure, operational police areas, and proper separations between the public and police staff were not identifed or prioritized as required design issues. A 2013 study recommended relatively minor renovations and upgrades, but no action was taken. Not only has the Department almost doubled in size since 2013, the Department now houses a number of outside agencies within its investigation's department.

In 2021 the Department identified a number of space and operational deficiencies and requested a review of the existing building for possible renovation and/or expansion that might address the Department's concerns.

**PROCESS:**

Redstone Architects was engaged by the City of Novi in the Spring of 2022 to identify current and future space needs as well as developing concepts proposing how the building might be renovated to accommodate those needs. The goals of the study were:

- Provide sufficient space for all departments to operate in a safe and professional environment.
- Create a functional and efficient building update that would build partnerships with the different departments and staff.
- Address security issues by creating well defined, separate zones for Officers, Staff and the Public.

Throughout the process members of the City's team included:

- Robert Petty, Chief Information Officer
- Scott Baetens, Assistant Police Chief
- Eric Zinser, Director of Public Safety / Chief of Police
- Victor Cardenas, Assistant City Manager
- Peter Auger, City Manager

Redstone was directed to begin with a 'blank slate' in developing its study.

**ASSESS SPACE NEEDS FOR SPECIFIC DEPARTMENTS**

In order to confirm the need for additional operational spaces, initial interviews with members of the Department were held on March 30, 2022. Some of the immediate space issues identified by the department included:

- The need for increased need for space in Investigations and Patrol functions including a controlled interview suite for witnesses and suspects
- Increased Investigation space needs for special Task Force Operations
- Increased need for Public Safety Administrative Offices
- Improved Security throughout the Building
- Increased interaction between the various departments within the Police Department
- Providing spaces for the mental and physical wellness for members of the Department. Within the police operational area, there is no place to go to decompress (quiet room) or for a nursing staff member to go for lactation.
- Providing for public interaction with the department in the Public Lobby area. Currently, in the Public Lobby there are no report writing rooms outside of the police operational area, nor is there a video-arraignment attorney room off of the lobby.

**SECURITY ISSUES**

In addition to insufficient operational spaces there are a number of security issues within the building and the with the site itself.

- The Exercise Room is located on the second floor of the facility, adjacent to the Detective Bureau, and can be accessed by other city employees through the Training Room entrance. A single door on the second floor separates the Exercise Room from Police Department operations.
- Visitors to the Fire Inspector walk down the long, seconf floor hallway and enter a door that is also the access to the Detective Bureau. These visitors may or may not be escorted.
- Visitors to Investigations, Records, and Administration are given badges to access departments on the 2nd floor, either through the only stair to the 2nd floor that is accessible (through a secure door) from the public lobby or the elevator.
- Site: There is only one means of egress into the Police Department Parking lot- from 10 Mile Road. Should this drive become blocked, the department would be partially immobilized.
- Detectives interviewing a suspect (non-arrestee) and taking them into custody must walk that arrestee through the operational area of the department to the holding area.

**DESIGN OPTIONS:**

Our initial assessment of Investigations and Uniform Services (Patrol) confirmed that both departments were lacking in space as shown on the summary page of our Space Needs Assessment.

Specifically, the Detective Bureau occupies approximately 3,300sf, but needs over 5,000sf of space based on our interviews. There is currently no controlled interview suite for witnesses or suspects.

Similarly, Patrol currently occupies approximately 1,600sf of space but requires about 2,900sf including grossing factors for circulation.

**EXISTING BUILDING RENOVATION**

Redstone initially developed options to address the need for additional space and security, including;

- Adding a addition to the front of the building increase the Public Lobby and locate a communicating stair and elevator to get the public to the 2nd floor; relocate the Exercise Room, and expand first floor Patrol Operations.
- Adding a 2nd floor above the Training Room.
- Adding space above the 1st floor addition to accommodate a controlled interview suite;
- Incorporating the long hallway on the upper level for use by Investigations to provide more useable space for the Department.
- Relocating certain functions to provide more security.

At the request of the City, Redstone also engaged its structural engineer to look at the feasibility of adding a 2nd floor above the Training Room. The engineer determined that this option was not feasible. Concepts were then presented and discussed on June 1, 2022 and then modified based on Departmental and City comments.

The concept was updated and discussed again on August 15, 2022. The concensus among both the City Administration and Police Department Team Members was that trying to renovate within the existing structure was not a viable option.

**Redstone was requested to develop another option – adding an addtion to the north**

**BUILDING ADDITION TO THE NORTH**

At the Team meeting in August the City requested that a new addition to the north housing locker rooms, a second training room, a city-accessible exercise and training room be explored. Redstone prepared a site concept showing an addition to the north dated August 25, 2022, followed by new layouts for the existing building.

This new concept would free up existing space on the first floor to permit patrol operations to expand into the vacated locker rooms, giving it the space it needs without totally disrupting operations. It would also provide for a locker room and kitchen for Dispatch Operations.- not a part of the original study.

The new, north addition is approximately 9,450sf, and has public access from a new north parking area.

Police gain a second mean of egress from the secure police parking area, reducing the opportunity of completely blocking the current, sole access to the secure parking lot.

In addition to the north addition, the public lobby and access to the 2nd floor by the public would add approximately 2,000sf to the west side of the building.

Within the existing building, much of the 2nd floor investigations area will be renovated. On the 1st floor Patrol operations will be completed reorganized; the vacated locker rooms will become patrol operations and SRT Ready Rooms spaces; duty bags lockers, Patrol Lieutenants, and report writing carrels will be on the main access corridor, and lockers will be provided for the dispatch personnel. A small addition on the west side will provide for an expanded public entry and lobby that will provide stair and elevator access to the 2nd floor without entering a secure, operational area; report writing rooms, and a video arraignment viewing room.

Drawings are attached which show the existing floor plans and the proposed concept plans including the north addition.

The concept was sent to the City in Early October 2022. Comments back from the City and the Police Department were favorable. The Department and City felt that the new concept would be the most operationally efficient and a secure option for the Police Department. It was also thought that the addition would be less disruptive and less costly, and asked that Redstone provide a cost projection for this concept.

**PROJECT COST PROJECTION:**

Our Cost Consultant, O'Brien Construction Company, has walked the exisitng building and developed a high-level construction cost projection based on the North Addition concept. Included in the projection are allowances for updating or replacing existing mechanical, electrical and IT support systems, as well as site civil improvements.

As shown in the estimate, O'Brien projects a project budget of approximately $7,000,000, of which $4,000,000 would be for the new addition and approximately $3,000,000 would be for renovations required in the existing building.

**SUMMARY:**

The proposed north addition will provide the Novi Police Department with the ability to address its operational issues in the coming years while continuing to utilize the existing building. The existing structure, which is now over 40 years old, will continue to age requiring that building components and its existing systems will continue to be serviced or replaced in coming years.

# SECTION 2

## APPENDIX:
## EXISTING MAIN LEVEL
## EXISTING UPPER LEVEL

N

## EXISTING MAIN LEVEL FLOOR PLAN

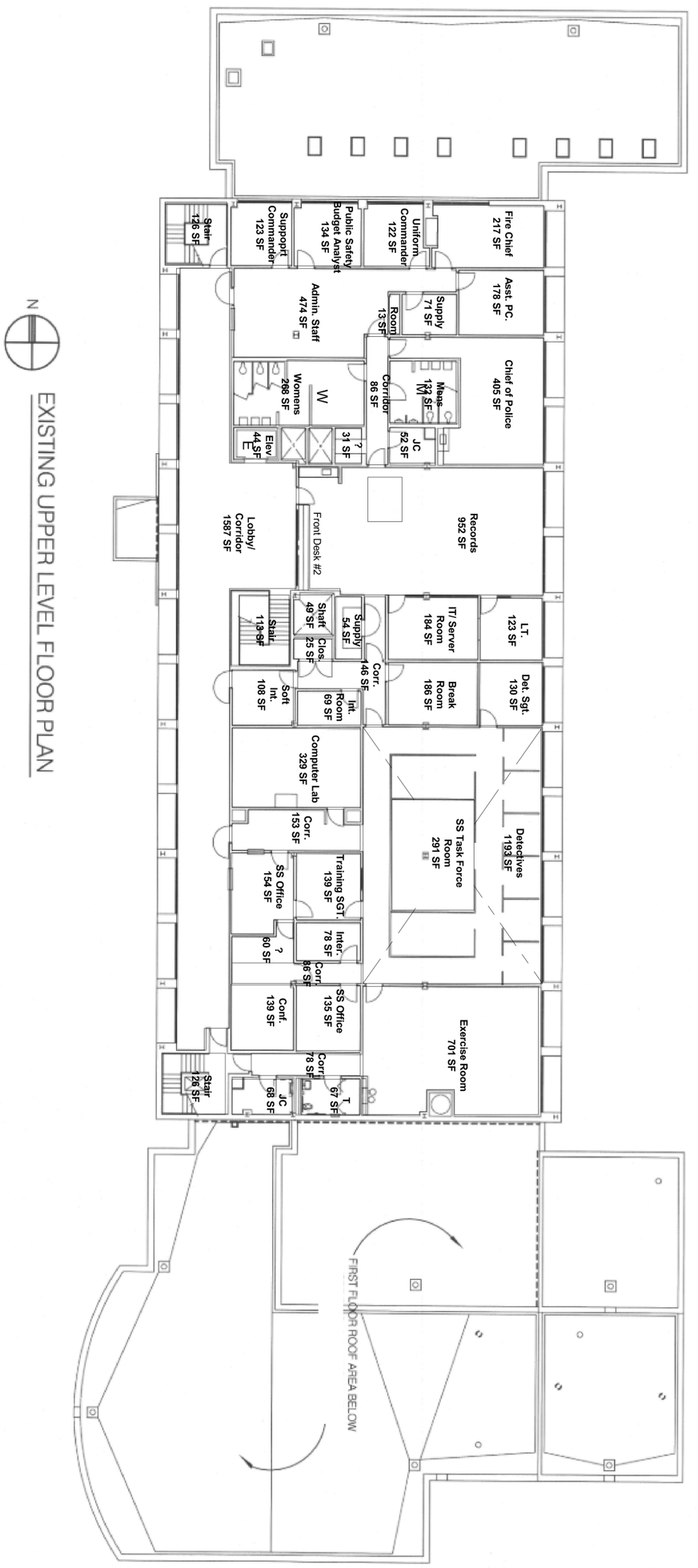
Scale: 1" = 20'-0"

June 1, 2022

Redstone Architects, Inc.
Law Enforcement - Justice - Public Safety - Municipal

Preliminary Design Concepts

# City of Novi
Public Safety Building Renovation Study


N
EXISTING UPPER LEVEL FLOOR PLAN
Stair 126 SF
Support Commander 123 SF
Public Safety Budget Analyst 134 SF
Uniform Commander 122 SF
Fire Chief 217 SF
Asst. PC. 178 SF
Admin Staff 474 SF
Supply 71 SF
Room 13 SF
Chief of Police 405 SF
Womens 288 SF
W
Corridor 86 SF
Mens 132 SF
M
Elev. 44 SF
E
? 31 SF
JC 52 SF
Lobby/ Corridor 1587 SF
Front Desk #2
Records 952 SF
Stair 119 SF
Shaft 49 SF
Clos. 25 SF
Supply 54 SF
IT/ Server Room 184 SF
LT. 123 SF
Corr. 146 SF
Soft Int. 108 SF
Int. Room 69 SF
Break Room 186 SF
Det. Sgt. 130 SF
Computer Lab 329 SF
Corr. 153 SF
SS Task Force Room 291 SF
Detectives 193 SF
SS Office 154 SF
Training SGT. 139 SF
? 60 SF
Inter. 78 SF
Corr. 86 SF
Conf. 139 SF
SS Office 135 SF
Exercise Room 701 SF
Corr. 78 SF
Stair 126 SF
JC 68 SF
T 67 SF
FIRST FLOOR ROOF AREA BELOW

# SECTION 3

## APPENDIX:
## SPACE NEEDS ASSESSMENT

| Department or Space Type | Current Staff | Future Staff | Req'd Sq. Ft. | Existing Sq. Ft. |
|---|---|---|---|---|
| 1. Public Areas | 0 | 0 | 4,724 | 3,150 |
| 2. Staff Common Areas | 0 | 0 | 8,685 | 4,237 |
| 3. Police Administration | 6 | 6 | 2,168 | 2,691 |
| 4. Records | 4 | 5 | 1,113 | 1,155 |
| 5. Detective Bureau (Plus Task Force members- 16) | 18 | 18 | 4,898 | 3,320 |
| 6. Uniform Operations - Including Cadets | 50 | 50 | 2,644 | 1,632 |
| 7. Holding - Not part of Study | 0 | 0 | 0 | 0 |
| 8. Property- Not part of Study | 0 | 0 | 0 | 0 |
| 9. Miscellaneous Building Spaces- Not part of Study | 0 | 0 | 0 | 0 |
| 10. Building Support Areas | 0 | 0 | 0 | 0 |
| Total | 78 | 79 | | |
| Subtotal | | | 24,233 | 16,184 |
| 15% Gross-Up Factor (Common circulation, structure, shafts, etc.)<br>(Use additional 5% Gross-Up Factor for Renovation) | | | 3635 | 2428 |
| **Total Main Building Area** | | | 27868 | 18612 |

| Space | Description | Staff Current | Staff Planned | Space Needs Qty | Space Needs Size | Space Needs Reference Pg # | Req'd Net Sq. Ft. | Existing Sq. Ft. | Comments / *Adjacencies |
|---|---|---|---|---|---|---|---|---|---|
| **1. Public Areas INCLUDING NORTH ADDITION** | | | | | | | | | |
| Public Vestibule & Lobby | Lobby 1st | | | 1 | 528 | | 528 | 433 | *Lobby open for 24/7 |
| | lobby 2nd | | | | | | | 1587 | |
| | Vestibule | | | 1 | 152 | | 152 | 0 | |
| | Waiting Area | | | | | | 0 | 0 | |
| | Man Trap X-Ray Unit (Built into Vestibule) | | | | | | 0 | 0 | |
| | Open Stair | | | | | | 0 | 0 | |
| | ~~Report Writing Counter~~ | | | | | | 0 | 0 | See Report Writing Below |
| | Equipment: | | | | | | 0 | | |
| | Floor Mat | | | | | | 0 | 0 | |
| | Intercom / Buzzer | | | | | | 0 | 0 | |
| | After Hrs. 911 Phone | | | | | | 0 | 0 | |
| | Chairs | | | | | | 0 | 0 | |
| | Display area/ bulletins | | | 0 | 200 | | | | included in lobby area |
| | | | | | | | 0 | 0 | |
| | Brochure Rack | | | | | | 0 | 0 | |
| | Drinking Fountain | | | | | | 0 | 0 | |
| | Overhead Monitors | | | | | | 0 | 0 | |
| | | | | | | | 0 | 0 | |
| | Subtotal: | | | | | | 680 | 2,020 | |
| Public Report Writing Room(s) | Report Writing Room | | | 2 | 100 | | 200 | 0 | Public Side Room only; large enough to watch video |
| | Locate Room(s) on secure side | | | 1 | 100 | | 100 | 0 | *Front Desk |
| | Built-in Table and Chairs | | | | | | 0 | 0 | |
| | Live Scan in One | | | 1 | 25 | | 25 | 0 | |
| | Subtotal: | | | | | | 325 | 0 | |
| Video Arraignment Attorney Room | Seating | | | 1 | 100 | | 100 | 0 | *Public Lobby |
| | TV | | | | | | 0 | 0 | *Front Desk |
| | | | | | | | 0 | 0 | |
| | | | | | | | 0 | 0 | |
| | Subtotal: | | | | | | 100 | 0 | |
| Public Toilet(s) | | | | 1 | 66 | | 66 | 108 | |
| | 1st Floor Unisex Toilet | | | | | | | | MAIN FLOOR LOBBY |
| | 2nd Floor Men's & Women's | | | | | | 0 | 0 | |
| | Subtotal: | | | | | | 66 | 108 | |

| Space | Description | | Staff Current | Staff Planned | Space Needs Qty | Space Needs Size | Space Needs Reference Pg # | Req'd Net Sq. Ft. | Existing Sq. Ft. | Comments / *Adjacencies |
|---|---|---|---|---|---|---|---|---|---|---|
| NORTH ADDITION PUBLIC TOILETS | | | | | 2 | 220 | | 440 | 108 | |
| | 1st Floor Unisex Toilet | | | | | | | | | MAIN FLOOR LOBBY |
| | 2nd Floor Men's & Women's | | | | | | | 0 | 0 | |
| | | Subtotal: | | | | | | 440 | 108 | |
| Front Desk | Public Counter: | | | | | | | 88 | 84 | |
| | Linear ft. Public Counter | | | | | | | 0 | 0 | MAIN FLOOR PD DESK; 2ND FLOOR RECORDS COUNTER |
| | ADA Counter | 1 | | | | | | 0 | 0 | |
| | Position for staff counter | | | | | | | 0 | 0 | |
| | Public waiting/queuing space | | | | | | | 0 | 0 | |
| | Position alcove - Police Communications Center (back-up) | | | | | | | 0 | 0 | |
| | Equipment: | | | | | | | 0 | 0 | |
| | Desk | | | | | | | 0 | 0 | |
| | Shared printer/copier | | | | | | | 0 | 0 | |
| | Cash Drawers | | | | | | | 0 | 0 | |
| | Computers | | | | | | | 0 | 0 | |
| | Security Monitors | | | | | | | 0 | 0 | |
| | | Subtotal: | | | | | | 88 | 84 | |

| Space | Description | | Staff Current | Staff Planned | Space Needs Qty | Space Needs Size | Space Needs Reference Pg # | Req'd Net Sq. Ft. | Existing Sq. Ft. | Comments / *Adjacencies |
|---|---|---|---|---|---|---|---|---|---|---|
| Communicating Stair-**PUBLIC** | Stairwell | | | | | | | 336 | 217 | **CONNECT PUBLIC LOBBY ON BOTH FLOORS** |
| | | Subtotal: | | | | | | 336 | 217 | |
| NEW PUBLIC TRAINING ROOM-NORTH ADDITION CONCEPT ONLY | Briefing Room | 70-100 | | | 1 | 1,800 | | 1,800 | 0 | |
| | Counter surface w/ cabinets | | | | | | | 0 | 0 | |
| | Tables | | | | | | | 0 | 0 | |
| | Chairs | | | | | | | 0 | 0 | |
| | Desk/Lectern | | | | | | | 0 | 0 | |
| | | Subtotal: | | | | | | 1,800 | 0 | |
| Elevator (2 floors | Elevator | | | | | | | 102 | 88 | |
| | | Subtotal: | | | | | | 102 | 88 | |
| Net Area | | | | | | | | 3,937 | 2,625 | |
| 20% Internal Circulation Factor | | | | | | | | 787 | 525 | |
| Subtotal: Public Areas | | | 0 | 0 | | | | 4,724 | 3,150 | |

| Space | Description | Staff | | Space Needs | | | Req'd Net Sq. Ft. | Existing Sq. Ft. | Comments / *Adjacencies |
|---|---|---|---|---|---|---|---|---|---|
| | | Current | Planned | Qty | Size | Reference pg # | | | |
| **2. Staff Common Areas** | | | | | | | | | |
| Staff Vestibule & Lobby | Vestibule | | | 1 | 80 | | 80 | 98 | **CURRENTLY 3 STAFF ENTRY DOORS** |
| | Lobby | | | 2 | 100 | | 200 | 0 | **NEED TO CREATE MAIN STAFF ENTRY** |
| | Mud Room | | | | | | 0 | 0 | |
| | Staff Elevator | | | | | | 0 | 0 | |
| | Open Stair | | | | | | 0 | 0 | |
| | Display Area | | | | | | 0 | 0 | |
| | Mailbox | | | | | | 0 | 0 | |
| | Drinking Fountain | | | | | | 0 | 0 | |
| | Floor Mat | | | | | | 0 | 0 | |
| | Prox. Access Control | | | | | | 0 | 0 | |
| | Subtotal: | | | | | | 280 | 98 | |
| Lunch Room / Hub | | | | | | | | | **THE DEPARTMENT NEEDS TO HAVE ONE SHARED BREAK AREA** |
| | Lunch/Hub | | | 1 | 375 | | 375 | 241 | |
| | Kitchenette: | | | | | | | | |
| | Refrigerator | | | | | | 0 | 0 | |
| | Counter w/ sink | | | | | | 0 | 0 | Current area is off of Patrol |
| | TV/Monitor | | | | | | 0 | 0 | |
| | Vending Machines | | | | | | 0 | 0 | |
| | Subtotal: | | | | | | 375 | 241 | |

| Space | Description | Staff Current | Staff Planned | Space Needs Qty | Space Needs Size | Space Needs Reference pg # | Req'd Net Sq. Ft. | Existing Sq. Ft. | Comments / *Adjacencies |
|---|---|---|---|---|---|---|---|---|---|
| 2ND FLOOR COFFEE NOOK | | | | 1 | 40 | | 40 | 186 | 2nd floor break area |
| | | | | | | | 0 | 0 | |
| | Subtotal: | | | | | | 40 | 186 | |
| Staff Toilets | Unisex | | | 2 | 77 | | 154 | 480 | 2nd floor near Admin |
| | | | | | | | 0 | 0 | |
| | Subtotal: | | | | | | 154 | 480 | - One set per floor |
| Quiet Room | Quiet Room | | | 2 | 100 | | 200 | 0 | two beds requested. **Decompression room a better** |
| | Chair | | | | | | 0 | 0 | **idea** |
| | Sofa | | | | | | 0 | 0 | |
| | Coffee Table | | | | | | 0 | 0 | |
| | Subtotal: | | | | | | 200 | 0 | |
| Exercise Room | Exercise Room | | | 1 | 1,000 | | 1,000 | 701 | LOCATE IN NEW ADDITION SECURE SEPARATION FROM PD |
| | Universal Gym | | | | | | 0 | 0 | ACTIVITIES |
| | Secure Storage | | | | | | 0 | 0 | |
| | Athletic Flooring | | | | | | 0 | 0 | |
| | Exercise Equipment | | | | | | 0 | 0 | |
| | Exercise machines | | | | | | 0 | 0 | |
| | Treadmills | | | | | | 0 | 0 | |
| | Free weights | | | | | | 0 | 0 | |
| | Subtotal: | | | | | | 1,000 | 701 | |
| Defensive Tactics Room | Defensive Tactics | | | | | | 0 | 0 | AT RANGE; NOT NEEDED |
| | Athletic Flooring | | | | | | 0 | 0 | |
| | Storage Room | | | | | | 0 | 0 | |
| | Wall Mounted Pads | | | | | | 0 | 0 | |
| | Subtotal: | | | | | | 0 | 0 | |

| Space | Description | | Staff Current | Staff Planned | Space Needs Qty | Space Needs Size | Space Needs Reference pg # | Req'd Net Sq. Ft. | Existing Sq. Ft. | Comments / *Adjacencies |
|---|---|---|---|---|---|---|---|---|---|---|
| Individual Shower / Changing Rooms | | | | | | | | | | LOCKER ROOMS IN ADDITION |
| | Toilets w/ ADA | | | | 6 | 72 | | 432 | 0 | |
| | Urinals | | | | | | | 0 | 0 | *Exercise Room |
| | Lavatories | | | | | | | 0 | 0 | |
| | Showers | | | | | | | 0 | 0 | |
| | | Subtotal: | | | | | | 432 | 0 | |
| LOCKER ROOMS; MOVE TO NORTH ADDITION; APPROXIMATE; SF ALLOCATION ONLY | | | | | | | | | | **NEW LOCKER ROOMS IN ADDITION** |
| | Locker Room | | | | | | | 4,200 | 1,553 | |
| | 12x24x72 Lockers | | | | | | | 0 | 0 | *Exercise Room |
| | 24x24x72 VISITOR/CITY | 6 | | | | | | 0 | 0 | |
| | 36x24x72 WOMENS | 90 | | | | | | | | |
| | 36x24x72 MENS | 30 | | | | | | 0 | 0 | |
| | Toilets w/ ADA | | | | | | | 0 | 0 | |
| | Urinals | | | | | | | 0 | 0 | |
| | Lavatories | | | | | | | 0 | 0 | |
| | Showers | | | | | | | 0 | 0 | |
| | Battery Chargers | | | | | | | 0 | 0 | |
| | Bunk Room(s) | | | | | | | 0 | 0 | |
| | Separate Gear Bags | | | | | | | 0 | 0 | |
| | | Subtotal: | | | | | | 4,200 | 1,553 | |
| Net Area | | | | | | | | 6,681 | 3,259 | |
| 30% Internal Circulation Factor | | | | | | | | 2004 | 978 | |
| Subtotal: Staff Common Areas | | | 0 | 0 | | | | 8,685 | 4,237 | |

| Space | Description | Staff | | Space Needs | | | Req'd Net Sq. Ft. | Existing Sq. Ft. | Comments / *Adjacencies |
|---|---|---|---|---|---|---|---|---|---|
| | | Current | Planned | Qty | Size | Reference pg # | | | |
| **3. Police Administration** | | | | | | | | | |
| Public Safety Director/Chief of Police | Private Office | 1 | 1 | 1 | 275 | 3.02 | 404 | 405 | *Executive Secretary |
| | Sm. Conf. Table | | | | | | 0 | 0 | *Admin. Conference Room |
| | Conf. Table Chairs | | | | | | 0 | 0 | |
| | Guest Chairs | | | | | | 0 | 0 | |
| | Four-Shelf Bookcase | | | | | | 0 | 0 | |
| | Two-Drawer File | | | | | | | | |
| | Cabinet | | | | | | 0 | 0 | |
| | Coffee Bar closet | | | | | | 0 | 0 | |
| | Subtotal: | | | | | | 0 | 405 | |
| COMMANDER (2) ONE IN PATROL | Private Office | 1 | 1 | 1 | 225 | 3.03 | 120 | 122 | *Chief of Police |
| | Sm. Conf. Table | | | | | | 0 | 0 | |
| | Conf. Table Chairs | | | | | | 0 | 0 | |
| | Guest Chairs | | | | | | 0 | 0 | |
| | Four-Shelf Bookcase | | | | | | 0 | 0 | |
| | Two-Drawer File | | | | | | | | |
| | Cabinet | | | | | | 0 | 0 | |
| | Desk w/ credenza | | | | | | 0 | 0 | |
| | Subtotal: | | | | | | 120 | 122 | |
| Assistant Police Chief | Private Office | 1 | 1 | 1 | 225 | 3.03 | 179 | 178 | *Chief of Police |
| | Sm. Conf. Table | | | | | | 0 | 0 | |
| | Conf. Table Chairs | | | | | | 0 | 0 | |
| | Guest Chairs | | | | | | 0 | 0 | |
| | Four-Shelf Bookcase | | | | | | 0 | 0 | |
| | Two-Drawer File | | | | | | | | |
| | Cabinet | | | | | | 0 | 0 | |
| | Desk w/ credenza | | | | | | 0 | 0 | |
| | Subtotal: | | | | | | 179 | 178 | |

| Space | Description | Staff | | Space Needs | | | Req'd Net Sq. Ft. | Existing Sq. Ft. | Comments / *Adjacencies |
|---|---|---|---|---|---|---|---|---|---|
| | | Current | Planned | Qty | Size | Reference pg # | | | |
| Fire Chief | Private Office | 1 | 1 | 1 | 225 | 3.03 | 228 | 217 | *Chief of Police |
| | Sm. Conf. Table | | | | | | 0 | 0 | |
| | Conf. Table Chairs | | | | | | 0 | 0 | |
| | Guest Chairs | | | | | | 0 | 0 | |
| | Four-Shelf Bookcase | | | | | | 0 | 0 | |
| | Two-Drawer File Cabinet | | | | | | 0 | 0 | |
| | Desk w/ credenza | | | | | | 0 | 0 | |
| | Subtotal: | | | | | | 228 | 217 | |

| Space | Description | | Staff Current | Staff Planned | Space Needs Qty | Space Needs Size | Space Needs Reference pg # | Req'd Net Sq. Ft. | Existing Sq. Ft. | Comments / *Adjacencies |
|---|---|---|---|---|---|---|---|---|---|---|
| Admnistrative | Private Office | | | | | | | 593 | 474 | *File Room |
| Assistant Area | Open Office | 1 | 1 | 1 | 1 | 64 | | 0 | 0 | included in this space |
| | Guest Chairs | | | | | | | 0 | 0 | *Chief of Police |
| | | | | | | | | | | *Admin. Conference Room |
| | Four-shelf bookcase | | | | | | | 0 | 0 | |
| | Two-drawer file | | | | | | | 0 | 0 | *Waiting Area/Entry |
| | | | | | | | | | | Note: Personnel files located in office. |
| | Desk w/ Credenza | | | | | | | 0 | 0 | |
| | | Subtotal: | | | | | | 593 | 474 | |
| BUDGET ANALYST | Private Office | | 1 | 1 | 1 | 133 | | 133 | 134 | located in Admin |
| | Guest Chairs | | | | | | | 0 | 0 | |
| | Four-Shelf bookcase | | | | | | | 0 | 0 | |
| | Two-drawer file | | | | | | | 0 | 0 | |
| | Desk w/ credenza | | | | | | | 0 | 0 | |
| | | Subtotal: | | | | | | 133 | 134 | |
| File Room | File Room | | | | 1 | 80 | | 80 | 0 | *Executive Secretary |
| | File Cabinets | | | | | | | 0 | 0 | |
| | Lateral | | | | | | | 0 | 0 | |
| | Vertical | | | | | | | 0 | 0 | |
| | Worktop | | | | | | | 0 | 0 | |
| | | Subtotal: | | | | | | 80 | 0 | |

| Space | Description | Staff | | Space Needs | | | Req'd Net Sq. Ft. | Existing Sq. Ft. | Comments / *Adjacencies |
|---|---|---|---|---|---|---|---|---|---|
| | | Current | Planned | Qty | Size | Reference pg # | | | |
| Work Room | Work Room | | | 1 | 80 | | 80 | 0 | |
| | Open shelving | | | | | | 0 | 0 | In Admin Staff area |
| | Floor Cabinet | | | | | | 0 | 0 | |
| | Wall Cabinet | | | | | | 0 | 0 | |
| | Equipment: | | | | | | | | |
| | Copier | | | | | | 0 | 0 | |
| | Scanner | | | | | | 0 | 0 | |
| | Fax | | | | | | 0 | 0 | |
| | Shared Printer | | | | | | 0 | 0 | |
| | Subtotal: | | | | | | 80 | 0 | |
| Conference Rm. | Conference Room | | | 1 | 277 | 5.02B | 277 | 0 | *Waiting Area/Entry |
| | Seating (8-10) | | | | | similar | 0 | 0 | *Chief of Police |
| | conference Table | | | | | | 0 | 0 | *Executive Secretary |
| | Credenza | | | | | | 0 | 0 | *Unisex Toilet |
| | Flat Screen | | | | | | 0 | 0 | |
| | White Board | | | | | | 0 | 0 | |
| | Coffee Station w/ sink | | | | | | 0 | 0 | |
| | Storage Closet | | | | | | 0 | 0 | |
| | | | | | | | 0 | 0 | |
| | Subtotal: | | | | | | 277 | 0 | |
| Waiting Area / Entry | Waiting Area | | | 1 | 50 | | 265 | 0 | **In Admin Staff Area** |
| | Guest chairs | | | | | | 0 | 0 | |
| | Coffee table | | | | | | 0 | 0 | |
| | Subtotal: | | | | | | 265 | 0 | |
| Coat closet | Closet | | | 1 | 35 | | 35 | 0 | *Waiting Area/Entry |
| | Subtotal: | | | | | | 35 | 0 | |
| Supply Closet | Closet | | | 1 | 67 | | 67 | 0 | *Waiting Area/Entry |
| | Subtotal: | | | | | | 67 | 0 | |
| Janitor Closet | Closet | | | 1 | 35 | | 41 | 50 | *Waiting Area/Entry |
| | Subtotal: | | | | | | 41 | 50 | |
| Unisex Toilet | Visitor Toilet (ADA accessible) | | | 1 | 56 | | 70 | 0 | *Waiting Area/Entry |
| | Staff Toilet (ADA accessible) | | | | | | 0 | 490 | *Admin. Conference Room |
| | Subtotal: | | | | | | 70 | 490 | |
| Net Area | | | | | | | 2,168 | 2,070 | 1454 |
| 30% Internal Circulation Factor | | | | | | | 0 | 621 | included in proposed plan |
| Subtotal: Police Administration | | 6 | 6 | | | | **2,168** | **2,691** | |

| Space | Description | Staff Current | Staff Planned | Space Needs Qty | Space Needs Size | Space Needs Reference pg # | Req'd Net Sq. Ft. | Existing Sq. Ft. | Comments / *Adjacencies |
|---|---|---|---|---|---|---|---|---|---|
| **4. Records** | | | | | | | | | |
| ADMIN. LT. | Private Office | | | 1 | 180 | | 180 | 123 | *Records Clerk |
| | Desk w/ credenza | | | | | | 0 | 0 | |
| | Guest Chairs | | | | | | 0 | 0 | |
| | File Cabinets | | | | | | 0 | 0 | |
| | Equipment: | | | | | | 0 | 0 | |
| | Computer | | | | | | 0 | 0 | |
| | Subtotal: | | | | | | 0 | 123 | |
| Records Counter | Public Counter | | | | | | 0 | 0 | *Public Lobby |
| | Linear feet five ft. | | | 2 | 40 | | 80 | 80 | *Records Clerks |
| | Position 2 | | | | | | 0 | 0 | **TWO WINDOWS; ONE ADA** |
| | Bullet Resistant | | | | | | 0 | 0 | |
| | Public | | | | | | 0 | 0 | |
| | Equipment: | | | | | | | | |
| | Computers | | | | | | 0 | 0 | |
| | Shared | | | | | | 0 | 0 | |
| | Cash safe | | | | | | 0 | 0 | |
| | Subtotal: | | | | | | 80 | 80 | |
| Records Clerks | workstations | 4 | 5 | 5 | 64 | | 320 | 952 | *Public Lobby |
| | File | | | | | | 0 | 0 | |
| | Equipment: | | | | | | | | |
| | Computer | | | | | | 0 | 0 | |
| | Printer | | | | | | 0 | 0 | |
| | Subtotal: | | | | | | 320 | 952 | |
| Fingerprinting Area | Area | | | | | | 56 | 0 | |
| | | | | | | | 0 | 0 | **reconfigure space at door to lobby; create man-trap with glass** |
| | Alcove: Desk & Wall Cabinets | | | | | | | | |
| | For ink Prints | | | | | | 0 | 0 | |
| | On secure side of Public Lobby | | | | | | 0 | 0 | |
| | Subtotal: | | | | | | 56 | 0 | |

| Space | Description | Staff Current | Staff Planned | Space Needs Qty | Space Needs Size | Space Needs Reference pg # | Req'd Net Sq. Ft. | Existing Sq. Ft. | Comments / *Adjacencies |
|---|---|---|---|---|---|---|---|---|---|
| System Administrator (IT Officer) | Private Office | | | 1 | 72 | | 72 | incl | included in Clerks area |
| | Guest Chairs | | | | | | 0 | 0 | |
| | Two-drawer file cabinet | | | | | | 0 | 0 | |
| | Desk w/ credenza | | | | | | 0 | 0 | |
| | Work counter surface (for repairs) | | | | | | 0 | 0 | |
| | Software storage | | | | | | 0 | 0 | |
| | Equipment: | | | | | | 0 | 0 | |
| | Computer | | | | | | 0 | 0 | |
| | Subtotal: | | | | | | 72 | 0 | |
| Work Area | Work Room | | | 1 | 100 | | 100 | 0 | included in Clerks area |
| | Open Space | | | | | | 0 | 0 | |
| | Equipment: | | | | | | | | |
| | Multifunction Printer | | | | | | 0 | 0 | |
| | Special Equipment | | | | | | 0 | 0 | |
| | Shredder | | | | | | 0 | 0 | |
| | | | | | | | 0 | 0 | |
| | Subtotal: | | | | | | 100 | 0 | |
| Office Supply Room | Supply Closet | | | 1 | 100 | | 100 | 0 | included in clerks area |
| | Open Area | | | | | | 0 | 0 | |
| | Subtotal: | | | | | | 100 | 0 | |
| Active Files | Open Area | | | 1 | 200 | | 200 | 0 | *Records Clerks |
| | Space Saver Storage System | | | | | | 0 | 0 | two- high density units- 6' wide; currently about 12 4-drawers |
| | File Cabinets | | | | | | 0 | 0 | included in clerks area |
| | Fingerprint Cards | | | | | | 0 | 0 | |
| | Gun Registration | | | | | | 0 | 0 | |
| | Accident Reports | | | | | | 0 | 0 | |
| | Warrants & add paperwork | | | | | | 0 | 0 | |
| | Misc. Files | | | | | | 0 | 0 | |
| | Subtotal: | | | | | | 200 | 0 | |

| Space | Description | Staff | | Space Needs | | | Req'd Net Sq. Ft. | Existing Sq. Ft. | Comments / *Adjacencies |
|---|---|---|---|---|---|---|---|---|---|
| | | Current | Planned | Qty | Size | Reference pg # | | | |
| Archives (Records Vault) | Archives Room | | | 0 | 0 | | 0 | 0 | in basement |
| | File Cabinets | | | | | | 0 | 0 | |
| | Storage System: | | | | | | 0 | 0 | |
| | Manual | | | | | | 0 | 0 | |
| | Electric | | | | | | 0 | 0 | |
| | Subtotal: | | | | | | 0 | 0 | |
| Net Area | | | | | | | 856 | 1,155 | |
| 30% Internal Circulation Factor | | | | | | | 257 | included | |
| Subtotal: Records | | 4 | 5 | | | | 1,113 | 1,155 | |

| Space | Description | | Staff Current | Staff Planned | Space Needs Qty | Space Needs Size | Space Needs Reference Pg # | Net Req'd Sq. Ft. | Existing Sq. Ft. | Comments |
|---|---|---|---|---|---|---|---|---|---|---|
| **5. Detective Bureau** | | | | | | | | | | |
| Detective Sergeant | Private Office | | 1 | 1 | 1 | 131 | | 131 | 130 | |
| | Guest chairs | | | | | | | 0 | 0 | |
| | Two-drawer file cabinet | | | | | | | 0 | 0 | |
| | Desk w/ credenza | | | | | | | 0 | 0 | |
| | Equipment: | | | | | | | | | |
| | Computer | | | | | | | 0 | 0 | |
| | | Subtotal: | | | | | | 0 | 130 | |
| Victim Advocate | Private Office | | 1 | 1 | | | | 0 | 0 | |
| | Guest Chairs | | | | | | | 0 | 0 | |
| | Two-drawer file cabinet | | | | | | | 0 | 0 | |
| | Desk w/ credenza | | | | | | | 0 | 0 | |
| | Equipment: | | | | | | | | | |
| | Computer | | | | | | | 0 | 0 | |
| | | Subtotal: | | | | | | 0 | 0 | |
| Detectives | Workstation | 8 | 6 | 6 | 8 | 64 | | 512 | 1,193 | |
| | Hoteling Workstation | | | | 4 | 48 | | 192 | 0 | |
| | Task Force/ SS work Area | | | | | | | 0 | 291 | |
| | Equipment: | | | | | | | | | |
| | Computer | | | | | | | 0 | 0 | |
| | Printer | | | | | | | 0 | 0 | |
| | | Subtotal: | | | | | | 704 | 1,484 | |
| SGT. Training and Standards | Private Office | | 1 | 1 | 1 | 135 | | 135 | 0 | Reports to Adm. Lt. |
| | Guest Chairs | | | | | | | 0 | 0 | |
| | Four-Shelf bookcase | | | | | | | 0 | 0 | |
| | Two-drawer file | | | | | | | 0 | 0 | |
| | Desk w/ credenza | | | | | | | 0 | 0 | |
| | | Subtotal: | | | | | | 135 | 0 | |

| Space | Description | Staff | | Space Needs | | | Net Req'd | Existing | Comments |
|---|---|---|---|---|---|---|---|---|---|
| | | Current | Planned | Qty | Size | Reference Pg # | Sq. Ft. | Sq. Ft. | |
| School Resource Officers | Workstation | 2 | 2 | 2 | 36 | | 72 | 0 | small carrels for summer |
| | Equipment: | | | | | | | | |
| | Computer | | | | | | 0 | 0 | |
| | Printer | | | | | | 0 | 0 | |
| | Subtotal: | | | | | | 72 | 0 | |
| **Detectives Storage Room for DUTY BAGS** | Storage Room | | | 1 | 165 | | 165 | 0 | *Detectives |
| | CUBBIES | | | | | | 0 | 0 | |
| | Subtotal: | | | | | | 165 | 0 | |
| Juvenile Detective **INCLUDED ABOVE** | Workstation 1 | | | 0 | 0 | | 0 | 0 | included above |
| | Four-drawer file cabinet | | | | | | 0 | 0 | |
| | Equipment: | | | | | | | | |
| | Computer | | | | | | 0 | 0 | |
| | Printer | | | | | | 0 | 0 | |
| | Subtotal: | | | | | | 0 | 0 | |
| EOC Manager | Private Office | 1 | 1 | | | | 115 | 0 | |
| | Open shelving | | | | | | 0 | 0 | |
| | Subtotal: | | | | | | 115 | 0 | |
| Property Officer (Evidence) | Private Office | 1 | 1 | | | | 0 | 0 | See Property |
| | Open shelving | | | | | | 0 | 0 | |
| | Subtotal: | | | | | | 0 | 0 | |
| Active Files **AT DESKS** | File Room | | | | | | 0 | 0 | |
| | Four-drawer file cabinets | | | | | | 0 | 0 | |
| | Subtotal: | | | | | | 0 | 0 | |
| Archives | Archives Room | | | | | | 0 | 0 | IN RECORDS |
| | Space Saver storage | | | | | | 0 | 0 | |
| | Four-drawer file cabinet | | | | | | 0 | 0 | |
| | Subtotal: | | | | | | 0 | 0 | |

| Space | Description | Staff | | Space Needs | | | Net Req'd | Existing | Comments |
|---|---|---|---|---|---|---|---|---|---|
| | | Current | Planned | Qty | Size | Reference Pg # | Sq. Ft. | Sq. Ft. | |
| Conference Room/ TASK FORCE CASE ROOM | Conference Room | | | 1 | 250 | | 278 | 139 | |
| | Coat Closet | | | | | | 0 | 0 | |
| | Coffee Station | | | | | | 0 | 0 | |
| | Storage Closet | | | | | | 0 | 0 | |
| | Seating 10 | | | | | | 0 | 0 | |
| | Conference Table | | | | | | 0 | 0 | |
| | Credenza | | | | | | 0 | 0 | |
| | Flat Screen | | | | | | 0 | 0 | |
| | White Board | | | | | | 0 | 0 | |
| | Equipment: | | | | | | | | |
| | Projector | | | | | | 0 | 0 | |
| | Projection Screen | | | | | | 0 | 0 | |
| | TV/DVD | | | | | | 0 | 0 | |
| | Subtotal: | | | | | | 278 | 139 | |
| Work Area | Work Area | | | 1 | 80 | | 80 | 0 | included |
| | Floor Cabinets | | | | | | 0 | 0 | |
| | Wall Cabinets | | | | | | 0 | 0 | |
| | Coffee Station | | | | | | | | |
| | Equipment: | | | | | | | | |
| | Copier | | | | | | 0 | 0 | |
| | Scanner | | | | | | 0 | 0 | |
| | Fax | | | | | | 0 | 0 | |
| | Shared printer | | | | | | 0 | 0 | |
| | Subtotal: | | | | | | 80 | 0 | |
| SONIC/DEA/ FBI /SEMFCTF | Private Office | 5 | 5 | 3 | 130 | 03.06 | 390 | 0 | included above |
| | Guest Chairs | | | | | | 0 | 0 | |
| | | | | | | | | | One future |
| | Four-Shelf bookcase | | | | | | 0 | 0 | |
| | Two-drawer file | | | | | | 0 | 0 | |
| | Desk w/ credenza | | | | | | 0 | 0 | |
| | Subtotal: | | | | | | 390 | 0 | |

| Space | Description | | Staff Current | Staff Planned | Space Needs Qty | Space Needs Size | Space Needs Reference Pg # | Net Req'd Sq. Ft. | Existing Sq. Ft. | Comments |
|---|---|---|---|---|---|---|---|---|---|---|
| Secret Service Offices | Private Office | | | | 2 | 130 | 03.06 | 260 | 290 | included above |
| | Guest Chairs | | | | | | | 0 | 0 | |
| | Four-Shelf bookcase | | | | | | | 0 | 0 | |
| | Two-drawer file | | | | | | | 0 | 0 | |
| | Desk w/ credenza | | | | | | | 0 | 0 | |
| | | Subtotal: | | | | | | 260 | 290 | |
| TASK FORCE WORKSTATIONS | Room | | | | 16 | 64 | 04.04B | 1,024 | 291 | |
| | Work table | | | | | | | 0 | 0 | |
| | Work counter | | | | | | | 0 | 0 | |
| | Coat Closet | | | | | | | 0 | 0 | |
| | White Board | | | | | | | 0 | 0 | |
| | | Subtotal: | | | | | | 1,024 | 291 | |
| FORENSIC LAB- IT | Crime Lab Room | | | | | | | 294 | 329 | |
| | Work counter | | | | | | | 0 | 0 | |
| | Shelving storage | | | | | | | 0 | 0 | |
| | | Subtotal: | | | | | | 294 | 329 | |
| **Interview Suite (s) ADDED** | | | | | | | | | | |
| Interview Rooms | Interview Room | 1 | | | 1 | 100 | | 100 | 78 | Existing in DB |
| | Interview Table | | | | | | | 0 | 0 | |
| | Interview Chairs | | | | | | | 0 | 0 | |
| | A/V Recording | | | | | | | 0 | 0 | |
| | Gun Lockers (located outside) | | | | | | | 0 | 0 | |
| | Sound-proof walls and ceiling | | | | | | | 0 | 0 | |
| | | Subtotal: | | | | | | 100 | 78 | |
| Soft Interview Room | Interview Room | 1 | | | 1 | 120 | | 120 | 0 | *Waiting area |
| | Interview Table | | | | | | | 0 | 0 | *DB Executive Secretary |
| | Interview Chairs | | | | | | | 0 | 0 | |
| | Seat | | | | | | | 0 | 0 | |
| | Sofa | | | | | | | 0 | 0 | |
| | Coffee Table | | | | | | | 0 | 0 | |
| | TV | | | | | | | 0 | 0 | |
| | A/V Recording | | | | | | | 0 | 0 | |
| | Gun Lockers (located outside) | | | | | | | 0 | 0 | |
| | Sound proof walls and ceiling | | | | | | | 0 | 0 | |
| | | Subtotal: | | | | | | 120 | 0 | |

| Space | Description | Staff Current | Staff Planned | Space Needs Qty | Space Needs Size | Space Needs Reference Pg # | Net Req'd Sq. Ft. | Existing Sq. Ft. | Comments |
|---|---|---|---|---|---|---|---|---|---|
| Waiting Area | Waiting Area 1 | | | 1 | 80 | | 80 | 0 | |
| | chairs | | | | | | 0 | 0 | |
| | Coffee Table | | | | | | 0 | 0 | |
| | Subtotal: | | | | | | 80 | 0 | |
| Visitor Toilet (Unisex) | Toilet (ADA Accessible) | | | 1 | 66 | | 66 | 0 | |
| | Subtotal: | | | | | | 66 | 0 | |
| Net Area | | | | | | | 3,768 | 2,875 | |
| 30% Internal Circulation Factor-Planning- actual for existing | | | | | | | 1130 | 445 | |
| Subtotal: Detective Bureau | | 18 | 18 | | | | **4,898** | **3,320** | measures at 3,344sf. |

| Space | Description | Staff Current | Staff Planned | Space Needs Qty | Space Needs Size | Space Needs Reference pg # | Req'd Net Sq. Ft. | Existing Sq. Ft. | Comments / *Adjacencies |
|---|---|---|---|---|---|---|---|---|---|
| **6. UNIFORM OPERATIONS** | | | | | | | | | |
| Patrol Lieutenants A & B Shifts | Private Office | 2 | 2 | 2 | 135 | | 270 | 240 | *Front Desk / Command Desk |
| | Workstation | | | | | | 0 | 0 | |
| | File Cabinet | | | | | | 0 | 0 | |
| | Conference Area | | | | | | 0 | 0 | |
| | Equipment: | | | | | | | | |
| | Computer | | | | | | 0 | 0 | |
| | Printer | | | | | | 0 | 0 | |
| | Subtotal: | | | | | | 0 | 240 | |
| Patrol Sergeants A | Road Patrol Area | 4 | 4 | 1 | 305 | 3.08A | 305 | 289 | *Front Desk / Command Desk |
| | Workstations | | | | | | 0 | 0 | EXISTING SPACE |
| | Work Area | | | | | | 0 | 0 | |
| | Shared Conference Table | | | | | | 0 | 0 | |
| | Subtotal: | | | | | | 305 | 289 | |
| Patrol Sergeants B | Road Patrol Area | 4 | 4 | 0 | 250 | 3.08A | 0 | see above | *Front Desk / Command Desk |
| | Workstations | | | | | | 0 | 0 | |
| | Work Area | | | | | | 0 | 0 | |
| | Shared Conference Table | | | | | | 0 | 0 | **OPTION TO HAVE 4 IN ONE ROOM** |
| | Subtotal: | | | | | | 0 | 0 | |
| Patrol Officers | Road Patrol | 38 | 38 | | | | | | |
| | Subtotal: | | | | | | 0 | 0 | |
| Patrol Officers | Police Cadets | 0 | 0 | | | | | | five Cadets not inlcuded |
| | Subtotal: | | | | | | 0 | 0 | |

| Space | Description | | Staff Current | Staff Planned | Space Needs Qty | Space Needs Size | Space Needs Reference pg # | Req'd Net Sq. Ft. | Existing Sq. Ft. | Comments / *Adjacencies |
|---|---|---|---|---|---|---|---|---|---|---|
| Work Area / Office Supplies | | | | | | | | | | *Shift Lieutenant / Sergeant Offices |
| | Work Room | | | | | | | 0 | 0 | |
| | Office Supplies | | | | | | | 0 | 0 | |
| | Secure Storage Closet | | | | | | | 0 | 0 | |
| | Floor Cabinets | | | | | | | 0 | 0 | |
| | Wall Cabinets | | | | | | | 0 | 0 | |
| | Equipment: | | | | | | | | | |
| | Printer/Scanner/Fax/Copier | | | | | | | 0 | 0 | |
| | | Subtotal: | | | | | | 0 | 0 | |
| Mailboxes | Mailboxes | | | | 1 | 80 | | 80 | 0 | *Staff Lobby |
| | Boxes | | | | | | | 0 | 0 | *Briefing Room |
| | Work Counter | | | | | | | 0 | 0 | *Shift Lieutenant / Sergeant Offices |
| | Location: | | | | | | | | | |
| | Central Open area | | | | | | | 0 | 0 | |
| | Secure Office area | | | | | | | 0 | 0 | |
| | | Subtotal: | | | | | | 80 | 0 | |
| Briefing Room | Briefing Room | 10 | | | 1 | 450 | 6.04B | 450 | 637 | *Staff Lobby |
| | Counter surface w/ cabinets | | | | | | | 0 | 0 | *Armory |
| | Tables | | | | | | | 0 | 0 | |
| | Chairs | | | | | | | 0 | 0 | |
| | Desk/Lectern | | | | | | | 0 | 0 | |
| | Voice/Data/Power: | | | | | | | | | |
| | Perimeter Walls | | | | | | | 0 | 0 | |
| | Floor Mounted | | | | | | | 0 | 0 | |
| | Equipment: | | | | | | | | | |
| | A/V Cabinet | | | | | | | 0 | 0 | |
| | Full Electronics | | | | | | | 0 | 0 | |
| | Monitor | | | | | | | 0 | 0 | |
| | Flat screen for CAD session | | | | | | | 0 | 0 | |
| | White Board | | | | | | | 0 | 0 | |
| | Smart Board | | | | | | | 0 | 0 | |
| | | Subtotal: | | | | | | 450 | 637 | |

| Space | Description | Staff Current | Staff Planned | Space Needs Qty | Space Needs Size | Space Needs Reference pg # | Req'd Net Sq. Ft. | Existing Sq. Ft. | Comments / *Adjacencies |
|---|---|---|---|---|---|---|---|---|---|
| **SWAT READY ROOM ADDED** | BRIEFING 10 | | | 1 | 274 | | 274 | | SWAT LOCKERS IN GARAGE AREA |
| | Counter surface w/ cabinets | | | | | | 0 | 0 | *Armory |
| | Tables | | | | | | 0 | 0 | |
| | Chairs | | | | | | 0 | 0 | |
| | Desk/Lectern | | | | | | 0 | 0 | |
| | Smart Board | | | | | | 0 | 0 | |
| | Subtotal: | | | | | | 274 | 0 | |
| Patrol Storage | | | | 1 | 350 | | 350 | 0 | |
| | | | | | | | 0 | 0 | |
| | Subtotal: | | | | | | 350 | 0 | |
| Report Writing Room | Report writing room | | | 4 | 35 | | 140 | in Briefing | *Staff Lobby |
| | Carrels | | | | | | 0 | 0 | *Briefing Room |
| | Computer Teminials | | | | | | 0 | 0 | *Shift Lieutenant / Sgt Offices |
| | Docking Stations | | | | | | 0 | 0 | |
| | Shared Printer | | | 1 | 24 | | 24 | 0 | |
| | Desk | | | | | | 0 | 0 | |
| | Bookshelves | | | | | | 0 | 0 | |
| | Subtotal: | | | | | | 164 | 0 | |
| Duty Gear Bags | Storage Room | | | 1 | 135 | | 135 | 0 | *Briefing Room |
| | | | | | | | 0 | 0 | *Shift Lieutenant / Sgt Offices |
| | | | | | | | 0 | 0 | |
| | | | | | | | 0 | 0 | |
| | | | | | | | 0 | 0 | |
| | Subtotal: | | | | | | 135 | 0 | |
| Armory SMALL **(CURRENTLY A CLOSET)** | Armory | | | 1 | 176 | | 176 | 89 | *Shift Lieutenant / Sgt Offices |
| | Gun Cleaning Area (Ventilated) | | | | | | 0 | 0 | **GUN CLEANING AT GUN RANGE** |
| | Work Bench w/ Lighting | | | | | | 0 | 0 | |
| | Heavy Duty shelving units | | | | | | 0 | 0 | |
| | Ammo Storage | | | | | | 0 | 0 | |
| | Gun Racks ( ) linear ft. | | | | | | 0 | 0 | |
| | Extra weapons (guns and rifles) | | | | | | 0 | 0 | |
| | Porfessional gun discharge box | | | | | | 0 | 0 | |
| | Writing board | | | | | | 0 | 0 | |
| | Alarm | | | | | | 0 | 0 | |
| | Subtotal: | | | | | | 176 | 89 | |

| Space | Description | Staff Current | Staff Planned | Space Needs Qty | Space Needs Size | Space Needs Reference pg # | Req'd Net Sq. Ft. | Existing Sq. Ft. | Comments / *Adjacencies |
|---|---|---|---|---|---|---|---|---|---|
| Traffic Officers | | | | | | | | | *Traffic Lieutenants / |
| | Workstations | 2 | 2 | | | | 0 | 0 | Sergeants |
| | Conference Table w/ 4 Chairs | | | | | | 0 | 0 | *Near Road Patrol |
| | Equipment: | | | | | | | | |
| | Computer | | | | | | 0 | 0 | |
| | Printer | | | | | | 0 | 0 | |
| | Subtotal: | | | | | | 0 | 0 | |
| Uniform Storage | Storage | | | | | | 0 | 0 | |
| | Open Shleving | | | | | | 0 | 0 | |
| | Returned Uniforms | | | | | | 0 | 0 | |
| | Returned Equipment | | | | | | 0 | 0 | |
| | Subtotal: | | | | | | 0 | 0 | |
| Traffic Storage | Storage Room | | | | | | 0 | 0 | CURRENTLY IN GARAGE |
| | Subtotal: | | | | | | 0 | 0 | |
| Motorcycle Storage | Storage Space | | | | | | 0 | 0 | IN GARAGE |
| | Subtotal: | | | | | | 0 | 0 | |
| Officer Bicycles | Bike Storage | | | | | | 0 | 0 | CURRENTLY IN GARAGE |
| | Subtotal: | | | | | | 0 | 0 | |
| Kennel **TWO DOGS** | Kennel | | | 1 | 100 | | 100 | 0 | *Near Sally Port |
| | Dog Cages | | | | | | 0 | 0 | **ADDED AT STAFF ENTRY** |
| | Air-conditioned space | | | | | | 0 | 0 | |
| | Subtotal: | | | | | | 100 | 0 | |
| Net Area | | | | | | | 2,034 | 1,255 | |
| 30% Internal Circulation Factor | | | | | | | 610 | 377 | |
| Subtotal: Road Patrol | | 50 | 50 | | | | 2,644 | 1,632 | |

# SECTION 4

## APPENDIX:
## PROPOSED SITE PLAN
## PROPOSED MAIN LEVEL
## PROPOSED UPPER LEVEL

NEW STAFF ENTRY

PROPOSED KENNEL ADDITION 286 sq ft

NEW EGRESS PAVING

70'-0"

28'-8"

4'-0"

PROPOSED VESTIBULE ADDITION 92 sq ft

LOCKER ROOM
120 LOCKERS
8 CHANGING ROOMS
4,100SF

64'-0"

NEW SECURITY GATE

30'-0"

16'-0"

PUBLIC TOILETS @460SF

EXERCISE ROOM
1 CHANGING ROOM
@990SF

EXISTING BUILDING

PUBLIC ENTRY

LOBBY @460SF

51'-0"

MECHANICAL @440SF

TRAINING ROOM
70-100 PEOPLE
@1,800SF

TRAINING STORAGE @275SF

PROPOSED NORTH ADDITION @9,450 sq ft INCLUDING CIRCULATION

PROPOSED LOBBY/ INTERVIEW ADDITION @950 sq ft

PROPOSED LUNCH AREA

39'-6 3/8"

70'-0"

39'-8"

60'-0"

REVISE CIRCULAR DRIVE

## North Addition Concept Site Plan

Scale: 1/32" =1'-0"

August 25, 2022

Redstone Architects, Inc.
Law Enforcement - Justice - Public Safety - Municipal

North Addition Building Concept Plan

City of Novi
Public Safety Building Renovation Study

## Main Level Concept Plan

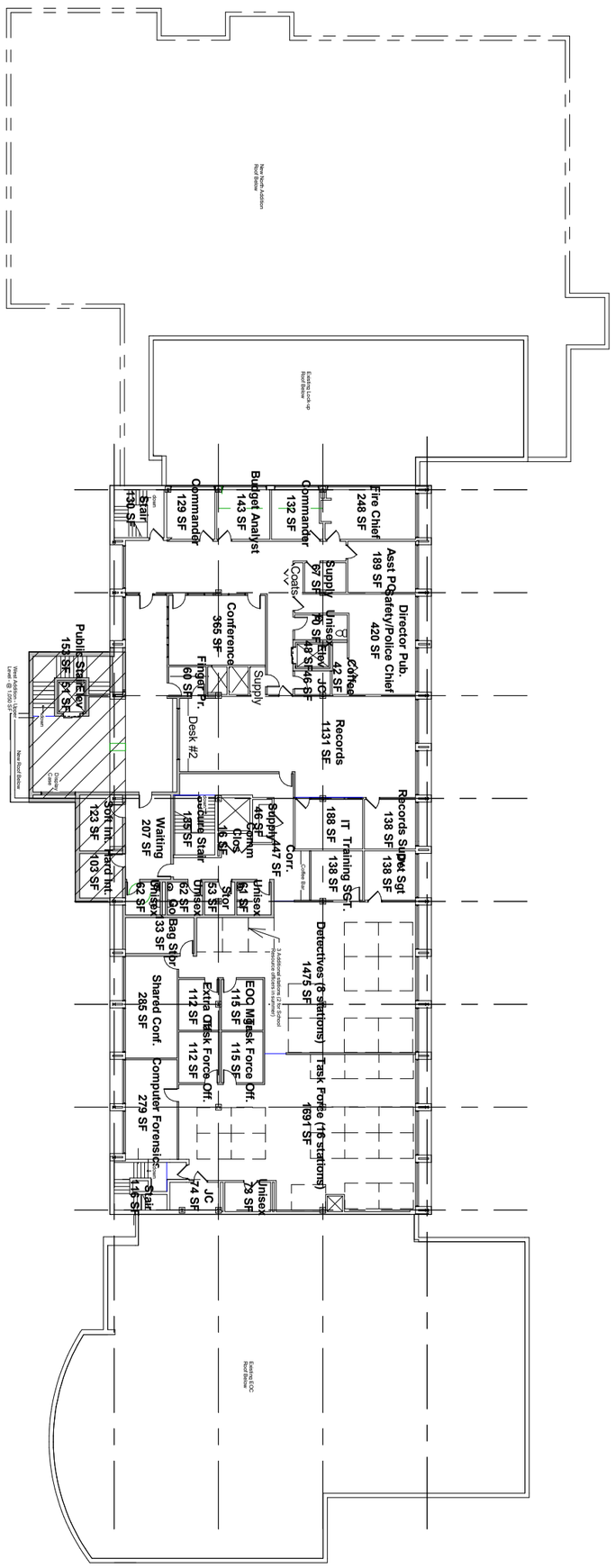
Scale: 1" = 30'-0"

Redstone Architects, Inc.
Law Enforcement - Justice - Public Safety - Municipal

October 3, 2022

Updated Building Concept Plan

City of Novi
Public Safety Building Renovation Study




## Upper Level Concept Plan

Scale: 1" = 30'-0"

Updated Building Concept Plan — October 3, 2022

# City of Novi

Public Safety Building Renovation Study

Redstone Architects, Inc.
Law Enforcement - Justice - Public Safety - Municipal

# SECTION 5

## APPENDIX:
## COST ESTIMATE

Quote: 1060 / Date: 12/5/2022
Project Number: PC-22013

O'Brien Construction Company, Inc
966 Livernois
Troy, MI
48083, US
(248) 334-2470

Prepared By:
Mike Brown
(248) 334-2470
mbrown@obriencc.com

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Project: Novi Police Station Addition & Renovation Conceptual Budget

**Scope of Work**

02 - Demolition

| | Total Cost |
|---|---|
| 02-410 Selective Demolition - Renovation - 1st Floor | $ 42,400.00 |
| 02-410 Selective Demolition - Renovation - 2nd Floor | $ 42,000.00 |
| 02-410 Selective Demolition - Elevator Demo | $ 35,000.00 |
| | $ 119,400.00 |

03 - Concrete

| | Total Cost |
|---|---|
| 03-300 Concrete Foundations - Addition | $ 120,000.00 |
| 03-310 Concrete Slabs - Addition | $ 85,000.00 |
| 03-300 Concrete Foundations - Renovation - 1st Floor | $ 30,000.00 |
| 03-310 Concrete Slabs - Renovation - 1st Floor | $ 10,800.00 |
| 03-310 Concrete Slabs - Infill At Elevator - Renovation - 1st Floor | $ 2,500.00 |
| 03-310 Concrete Slabs - Stair Pans & Landings - Renovation | $ 3,600.00 |
| 03-310 Concrete Slabs - Renovation - 2nd Floor | $ 12,600.00 |
| 03-300 Concrete Foundations - Elevator Pit | $ 110,000.00 |
| | $ 374,500.00 |

04 - Masonry

| | Total Cost |
|---|---|
| 04-520 Brick Veneer - Addition | $ 126,000.00 |

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# CITY OF NOVI CITY COUNCIL
# APRIL 8, 2024

**SUBJECT:** Initial review of Planned Rezoning Overlay (PRO) eligibility of the request of Novi-Ten Associates, for JZ23-09 Novi Ten PRO for a Zoning Map Amendment from Light Industrial (I-1) and Office Service (OS-1) to Low Density Multiple Family (RM-1) and General Business (B-3) with a Planned Rezoning Overlay. The subject site is approximately 34-acres and is located east of Novi Road, south of Ten Mile Road (Section 26). The applicant is proposing to develop a 71-unit multiple-family townhome development on the RM-1 portion, and approximately 35,900 square feet of commercial space on the B-3 portion. Under the PRO Ordinance, this initial review by City Council is an opportunity to review and comment on the eligibility of the proposal and offer feedback.

**SUBMITTING DEPARTMENT:** Community Development Department - Planning

**BACKGROUND INFORMATION:**

The petitioner is requesting a Zoning Map Amendment for approximately 34 acres of property on the south side of Ten Mile Road, to the east of Novi Road, utilizing the Planned Rezoning Overlay option. The site is currently vacant and was historically part of the original Erwin Orchard, which operated in Novi from 1920-1983. The Ridgeview of Novi development is to the south, along with the Novi Athletic Club and Novi Ice Arena & Dog Park further south. The railroad tracks border the eastern property line. North of Ten Mile Road are industrial uses, and commercial uses are to the west.

The current zoning of the property is I-1 Light Industrial on the eastern side, and OS-1 Office Service on the western side. The adjacent parcels on the west are also OS-1. The Ridgeview development to the south is zoned RM-1 with a PRO, while the Athletic Club and Ice arena area is I-1, as is the area east of the railroad tracks. North of 10 Mile is zoned I-2 and I-1.

The Future Land Use Map identifies this property as Community Office on the west and Industrial Research Development Technology on the east. To the south and east is planned for Industrial, north of the site is planned for Industrial and Heavy Industrial, and on the western side is Community Office.

There is floodplain area associated with Chapman Creek along the southern property boundary and the Walled Lake Branch of the Middle Rouge along the eastern side of the site extending down toward the dog park. The natural features map also indicates extensive wetland area within the floodplain, and regulated woodlands are present in most areas of the site.

The applicant is proposing to utilize the Planned Rezoning Overlay options to rezone about 7 acres of the property to B-3 General Business, and about 27 acres to RM-1 Low Density Multiple Family. The initial PRO plan shows a total of 71 attached 2-story townhome units on the site. The RM-1 residential portion is accessed by one entrance off Ten Mile Road, with a secondary emergency access drive to commercial portion of the project. Parking is provided in garages, on the garage aprons, and a few small bays of surface parking.

For the B-3 commercial portion, the current concept plan shows a total of 35,900 square feet in 4 separate buildings. Access to the B-3 site would be from 3 curb cuts on 10 Mile Road – one is the existing shared driveway with Maly Dental office, and the other two are new. The plan notes retail and restaurant uses within the commercial buildings – but generally other uses permitted in the B-3 district could be tenants in those spaces. However, the applicant does offer to prohibit certain uses as a condition of the PRO Agreement, including gas station, auto repair, car wash, marijuana sales, check cashing and pawn shops.

The applicant describes the project as creating a walkable community, with linkages to the existing paved public trail through Ridgeview Villas, which connects to Nick Lindstrom Drive and to the nature trail behind the Novi Athletic Club and dog park area. They also propose a paved path around the proposed townhouses that would be available to the public, and two new overlook areas. A park area with seating is proposed between the commercial and residential area, and two pickleball/tennis courts are proposed in the northeast corner of the site, which are proposed to be donated to the City for public use. Staff notes some concern that the pickleball courts may create a noise disturbance to the closest residential units, and the associated parking area requiring another curb cut on 10 Mile. Grading required for this area may also impact the flood zone. Therefore, the applicant may want to reconsider the pickleball courts, and instead provide a more low-impact nature park that would fit with City Council's goal to develop more accessible pocket parks, and even connect to the dog park to the south.

Staff and consultants have identified some issues with the proposed rezoning and PRO Plan. First, the zoning districts indicated do not match the Future Land Use map guidance. Staff has concerns with the proposed residential use's compatibility with the adjacent I-2 Heavy Industrial to the north. However, it is adjacent to similar multiple family communities on the south side, and there are similar commercial uses to the west, so in some respects the proposed zoning is more compatible with those developments.

One of the biggest issues with the proposal is the traffic impacts. The applicant's traffic study notes that a significant increase in the number of vehicle trips are

expected. A number of road improvements to 10 Mile could help mitigate this increase, including extending the 5-lane cross-section further east. The traffic study assumed the commercial development size was 60,000 square feet, while the current proposal for 35,900 square feet would result in lesser impacts. Driveway spacing and major drive deviations are likely to be required.

Engineering notes there is capacity for the water and sewer demands for the proposed use in the public utilities, and stormwater detention is to be provided in a single storm sewer detention system on the east side of the site, with controlled outlet into the floodplain to the east.

The proposed landscaping is generally in conformance with the ordinance. The applicant has added screening between the residential and commercial portions of the property and have indicated that the deficiencies in foundation landscaping and greenbelt berm in the commercial portion will be corrected in the site plan submittal. Landscaping waivers for street trees and greenbelt canopy trees along 10 Mile Road are supported by staff due to conflicts with existing underground utilities.

Façade review notes that the commercial buildings are in full compliance with the ordinance. For the residential buildings, Section 9 façade waivers would be required for an underage of brick on the rear and some front facades, and an overage of asphalt shingles on some front facades. These waivers are supported as they are minor in nature and do not adversely affect the overall aesthetic quality.

Wetland impacts have been minimized, with approximately 0.1 acre (less than 0.9% of the total wetland area on site) of permanent impact to a few small pockets of wetlands in the upland area. A large portion of the site, 15.87 acres of wetland, woodlands, and floodplain area, is proposed to be protected in a conservation easement to ensure permanent preservation. This could be considered a benefit to the public as it is beyond what is required.

**PROPERTY HISTORY**

Two previous Planned Rezoning Overlay applications have been proposed for the subject property in 2004 and 2009. The first proposed 150,000 square feet of retail and about 18,000 square feet of office. The project was canceled before going to City Council. In 2009, a proposal for a 64,000 square foot Kroger and 41,000 square feet of other retail was proposed. That project was denied by City Council on October 11, 2010.

**PRO ORDINANCE**

The PRO option creates a "floating district" with a conceptual plan attached to the rezoning of a parcel. As part of the PRO, the underlying zoning is proposed to be changed and the applicant enters into a PRO agreement with the City, whereby the City and the applicant agree to a conceptual plan for development of the site. Following final approval of the PRO concept plan, conditions for the development, and a PRO agreement, the applicant will submit for Preliminary and Final Site Plan approval under standard site plan review procedures. The PRO runs with the land, so future owners, successors, or assignees are bound by the terms of the agreement, absent modification by the City of Novi. If the development has not begun within

two (2) years, the rezoning and PRO concept plan expires, and the agreement becomes void.

City Council adopted revisions to the Planned Rezoning Overlay ordinance. Under the terms of the new ordinance, the Planning Commission does not make a formal recommendation to City Council after the first public hearing. Instead, the initial review is an opportunity for the members of the Planning Commission, and then City Council, to hear public comment, and to review and comment on whether the project meets the requirements of eligibility for Planned Rezoning Overlay proposal. Section 7.13.2.B.ii states:

> *In order to be eligible for the proposal and review of a rezoning with PRO, an applicant must propose a rezoning of property to a new zoning district classification, and must, as part of such proposal, propose clearly-identified site-specific conditions relating to the proposed improvements that,*
>
> *(1) are in material respects, more strict or limiting than the regulations that would apply to the land under the proposed new zoning district, including such regulations or conditions as set forth in Subsection C below; and*
>
> *(2) constitute an overall benefit to the public that outweighs any material detriments or that could not otherwise be accomplished without the proposed rezoning.*

(See Full text, including Subsection C)

After this initial round of comments by the public bodies, the applicant may choose to make any changes, additions or deletions to the proposal based on the feedback received. The applicant will then submit their formalized PRO Plan, which will be reviewed by City staff and consultants. The project would then be scheduled for a 2nd public hearing before Planning Commission. Following the 2nd public hearing the Planning Commission will make a recommendation on the project to City Council. City Council would then consider the rezoning with PRO, and if it determines it may approve it, would direct the City Attorney to work with the applicant on a PRO Agreement. Once completed, that final PRO Agreement would go back to Council for final determination.

**PLANNING COMMISSION**

The Planning Commission held an initial Public Hearing on February 21, 2024, to review and make comments on the proposal's eligibility for using the Planned Rezoning Overlay option. Comments made at that time are reflected in the meeting minutes included in this packet, and the Commission's comments are summarized here:

- Commissioners stated concerns with the traffic impacts on Ten Mile Road given the proximity to the railroad, which can often block traffic flow.

- Commissioners thought it could be a nice benefit to have more pickleball courts in the City since the sport is so popular, but there are concerns about the noise next to residential units and the parking area may cause issues on 10 Mile.

- Commissioners thought the residential use could be an aesthetic enhancement for the area with the preservation of woodland and wetland areas compared to a Light Industrial use.

- Commissioners appreciated the development would have a very small impact on existing wetlands, and that much of the area would be protected in a conservation easement.

- Commissioners thought the retail should not be designed like a strip mall, and that it could be attractive.

- Commissioners asked staff to provide data about the increase or decrease in crime with neighborhoods adjacent to trails. According to the Police Department, there have been no reports of crime related to the ITC Trail, either along the trail or at properties adjacent to the trail.

- Commissioners thought resident concerns regarding flooding should be more clearly explained or other measures implemented to ensure no increased risk of flooding would result.

**SUMMARY OF CONDITIONS AND BENEFITS OFFERED**

**PART 1: Summary of possible conditions from applicant, or staff and consultant's review letters *that may be considered to meet the standard of clearly identified site-specific conditions that are more strict or limiting than the regulations that would apply to the land under the proposed new zoning district:***

1. The eastern portion of the site adjacent to the railroad tracks and the south 50-foot-wide strip along the wetland of the proposed PRO, totaling approximately 15.87 acres, are to be maintained as a natural area with a conservation easement to preserve the existing marshland and wildlife habitat. This natural area wraps around the PRO.
2. On the west end of the residential portion between the retail area, the applicant proposes a new 0.4-acre park with seating and a playground.
3. To achieve walkability and connectivity of the area, a trail system is proposed which consists of new paths and existing sidewalks. This walkway system provides connectivity between the existing and proposed residential areas, the preserved marshland nature areas, the proposed tennis courts/pickleball courts, the Novi Athletic Club, Ice Arena, and Dog Park, and with the local retail along Ten Mile Road. The retail consists of the new proposed retail and restaurant areas, and the existing Walgreen's and dental office, and other businesses on Novi Road. The proposed trail system, including new overlook areas east of the Novi Athletic Club, could become a usable and accessible community resource.
4. Two new tennis courts/pickleball courts are to be provided at the north end of the new conservation area along 10 Mile Road, as well as parking spaces for the courts. The applicant has stated these will be available for general public use.

5. Proposed use restrictions not permitting certain automotive and other business uses in the proposed B-3 commercial zoning (Sec. 3.1.12.B & C) are to be part of the PRO. Prohibited uses are:
    a. *Vehicle Oriented Uses: gas/fueling station, auto repair, and car wash*
    b. *Check cashing, Pawn shop, Marijuana sales (already not permitted in the City of Novi will also be excluded by the PRO documents in case the city's law is changed to allow it in the future.)*
6. Open Space (Section 3.1.7.D) the amount of open space provided for the RM-1 townhouses exceeds ordinance requirements.
7. Commercial Building Setbacks: Setbacks proposed exceed ordinance requirements:
    a. Front: 30 feet required….92 feet provided
    b. Rear: 20 feet required….83 feet provided
    c. Side: 15 feet required…..93 feet provided
8. Residential Building height (Sec. 3.1.7.D): 29 feet maximum proposed is more limiting than the 35 feet permitted.
9. Commercial Building Height (Sec. 3.1.12.D): Twenty-three feet maximum proposed is more limiting than the 30 feet permitted.
10. Residential Lot Coverage (Sec. 3.1.7.D): 25% maximum is permitted, 14% is proposed.
11. Environmental Stewardship in Residential Buildings:
    a. EV charging infrastructure will be prewired in every garage.
    b. Energy Star rated appliances.
    c. Low maintenance exterior materials (brick, cement board siding, 30-year shingles
    d. Low-E, EnergyStar rated windows
    e. High-Efficiency Insulation
12. Road improvements along 10 Mile Road: As noted in the applicant's Traffic Study, the additional traffic on 10 Mile Road indicates certain improvements are warranted. The applicant's response letter indicates that they will assume responsibility for some of these improvements, however additional clarifications, and coordination with RCOC will be required to fully document the expectations in the PRO Agreement as this project progresses.

**PART 2: Summary of conditions that may be considered to meet the standard of *constituting an overall benefit to the public that outweighs any material detriments or that could not otherwise be accomplished without the proposed rezoning:***

1. The eastern portion of the site adjacent to the railroad tracks and the south 50-foot-wide strip along the wetland of the proposed PRO, totaling approximately 15.87 acres, are to be maintained as a natural area with a conservation easement to preserve the existing marshland and wildlife habitat. This natural area wraps around the PRO.

2. To achieve walkability and connectivity of the area, a trail system is proposed which consists of new paths and existing sidewalks. This walkway system provides connectivity between the existing and proposed residential areas, the preserved marshland nature areas, the proposed tennis courts/pickleball courts, the Novi Athletic Club, Ice Arena, and Dog Park, and with the local

retail along Ten Mile Road. The retail consists of the new proposed retail and restaurant areas, and the existing Walgreen's and dental office, and other businesses on Novi Road. The proposed trail system, including new overlook areas east of the Novi Athletic Club, could become a usable and accessible community resource.

3. On the west end of the residential portion between the retail area, the applicant proposes a new 0.4-acre park with seating and a playground.

4. Two new tennis courts/pickleball courts are being added at the north end of the new conservation area along 10 Mile Road, as well as parking spaces for the courts. **The applicant indicates they will construct the courts, and then donate them to the City to assume control and maintenance.**

5. The applicant's narrative includes an appeal to consider as a public benefit his previous land donation of 18 acres (valued at $3.2 million) which the city used to construct the Novi Ice Arena and the Dog Park behind it. This donation was acknowledged in a letter of Commendation from former Mayor Richard Clark on January 28, 2000.

**DEVIATIONS**

The proposed PRO Concept Plan includes the following ordinance deviation requests:

1. Building Orientation (Sec. 3.8.2.D): *deviation is requested for proposed residential building to not be configured 45 degrees to the property lines normally for aesthetic reasons. Most of the buildings are not on any main road and they front to a substantial irregular shaped 20-acre wetland nature area of a minimum 200 feet wide separation across from Toll's existing multifamily Ridgeview project.*

2. Side and Rear Setbacks (Sec 3.1.7.D and Sec 3.6.2.B): *A Zoning Ordinance deviation is requested to reduce the side setback from 75 feet to 25 feet along the north property line for two residential buildings abutting the proposed commercial area (B-3). This has been granted elsewhere in the city and still includes screening between the residential and commercial. That screening is located on the residential edge of the zoning line that separates the residential from the commercial and functions with the same screening effect. (Only a small portion, at northwest corner being wall plus landscape, instead of berm.) Deviates from Section 5.5.3.A.ii but provides same screening, as it is located between the uses.*

3. Parking along Major Drives (Sec. 5.10): *A Zoning Ordinance deviation is requested to allow for perpendicular parking on a major drive.*

4. Major Drive Radius (Sec. 5.10): Deviation from the ordinance requirement for a minimum centerline radius of 100 feet, to allow the 85-foot radius shown at the western curve.

5. Landscape Berms (Section 5.5.3.A.ii): *A Zoning Ordinance deviation is requested to not provide a 10 to 15-foot-high landscape berm on a proposed RM-1 district adjacent to an I-1 district. This deviation is requested to waive this requirement to preserve open viewing to the beautiful natural features instead of the usual berm screening that blocks the views from industrial.*

6. Right-of-Way Landscaping (Section 5.5.3.B.ii): *A deviation for the lack the required street trees and berm along 10 Mile Road due to underground utilities. The required trees are to be provided elsewhere.*

7. Distance between Buildings (Sec 3.8.2.H): *A Zoning Ordinance deviation is requested to reduce the building separation distance from the calculated formula (resulting in 31-32.72 feet required) to a distance of 30 feet between all buildings.*

8. Section 9 Waiver (Section 5.15): Proposed elevations for residential buildings have an underage of minimum required brick on all rear and some front facades (26-27% proposed, 30% minimum required) and an overage of Asphalt shingles (56% front side, 50% maximum allowed). **Commercial buildings are fully compliant with ordinance**.

9. Same Side and Opposite Side Driveway Spacing (City Code 11.216.d.1): Deviations appear to be needed – further details are needed to determine.

**CITY COUNCIL ACTION:** This is City Council's opportunity to comment on the eligibility of the proposal according to the standards of the PRO Ordinance and offer feedback to the applicant. No motion is necessary at this time, but the table below contains the examples of conditions that may be more strict or limiting, and/or provide an overall benefit to the public, as listed in the Ordinance that could be discussed at the City Council meeting.

| Types of PRO Conditions (Section 7.13.2.C.ii.b) | Included | Notes |
|---|---|---|
| (1) Establishment of development features such as the location, size, height, area, or mass of buildings, structures, or other improvements in a manner that cannot be required under the Ordinance or the City's Code of Ordinances, to be shown in the PRO Plan. | Yes | Buildings and layout to be as shown in the PRO Plan, height of residential buildings less than allowable . |
| (2) Specification of the maximum density or intensity of development and/or use, as shown on the PRO Plan and expressed in terms fashioned for the particular development and/or use (for example, and in no respect by way of limitation, units per acre, maximum usable floor area, hours of operation, and the like). | Yes | The number of units and commercial area shown in PRO Plan could be stated as the maximum intensity allowed. |
| (3) Provision for setbacks, landscaping, and other buffers in a manner that exceeds what the Ordinance of the Code of Ordinances can require. | Yes | Residential buildings are shown to be greater setback than minimum required where adjacent to Ridgeview Villas. |
| (4) Exceptional site and building design, architecture, and other features beyond the minimum requirements of the Ordinance or the Code of Ordinances. | | Not proposed |
| (5) Preservation of natural resources and/or features, such as woodlands and wetlands, in a manner that cannot be accomplished through the Ordinance or the Code of Ordinances and that exceeds what is otherwise required. If such areas are to be affected by the proposed development, provisions designed to minimize or mitigate such impact. | Yes | Applicant proposes preservation of over 15.87 acres of woodlands/ wetlands/floodplain. |
| (6) Limitations on the land uses otherwise allowed under the proposed zoning district, including, but not limited to, specification of uses that are permitted and those that are not permitted. | Yes | Residential uses would be limited to attached townhome units only. The applicant states they will be for-sale units. Commercial area would prohibit certain B-3 uses from the property: *gas/fueling station, auto repair, and car wash; check cashing and pawn shops* |

| | | |
|---|---|---|
| (7) Provision of a public improvement or improvements that would not otherwise be required under the ordinance or Code of Ordinances to further the public health, safety, and welfare, protect existing or planned uses, or alleviate or lessen an existing or potential problem related to public facilities. These can include, but are not limited to, road and infrastructure improvements; relocation of overhead utilities; or other public facilities or improvements. | Yes | Off-road trail system to connect to existing sidewalks to the south, including Novi Ice Arena and Dog Park; Construction of two overlook amenities areas east of Novi Athletic Club.<br>**Ridgeview Villas had soil remediation (arsenic) – unclear whether that is present here** |
| (8) Improvements or other measures to improve traffic congestion or vehicular movement with regard to existing conditions or conditions anticipated to result from the development. | Yes | Applicant proposes to construct improvements on 10 Mile to alleviate traffic impacts – Add a passing lane |
| (9) Improvements to site drainage (storm water) or drainage in the area of the development not otherwise required by the Code of Ordinances. | | No Stormwater Management beyond what is required |
| (10) Limitations on signage. | | Not proposed |
| (11) Creation or preservation of public or private parkland or open space. | Yes | Private parkland created with preservation of woodlands and wetlands. Publicly accessible paved pathway, small park area with 2 tennis/pickleball courts proposed to be donated to City. Another pocket park proposed between the commercial and residential with seating, possible play structure |
| (12) Other representation, limitations, improvements, or provisions approved by the City Council. | | |

**MAPS**

**Location**

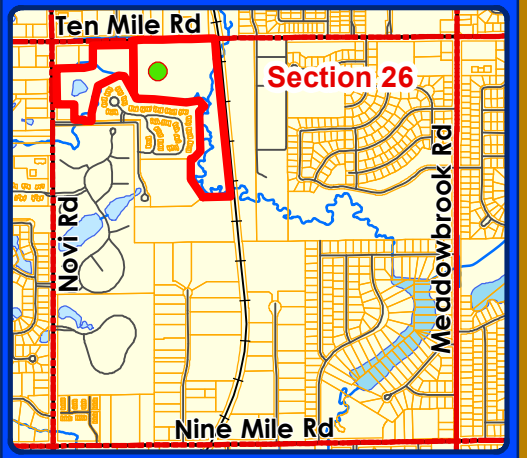
**Zoning**

**Future Land Use**

**Natural Features**

**Floodplain**

# NOVI TEN PRO
## LOCATION




**Legend**

Subject Property


**City of Novi**
Dept. of Community Development
City Hall / Civic Center
45175 W Ten Mile Rd
Novi, MI 48375
cityofnovi.org


Map Author: Lindsay Bell
Date: 10/31/23
Project: NOVI-TEN PRO
Version #: 1

Feet
0 80 160 320 480

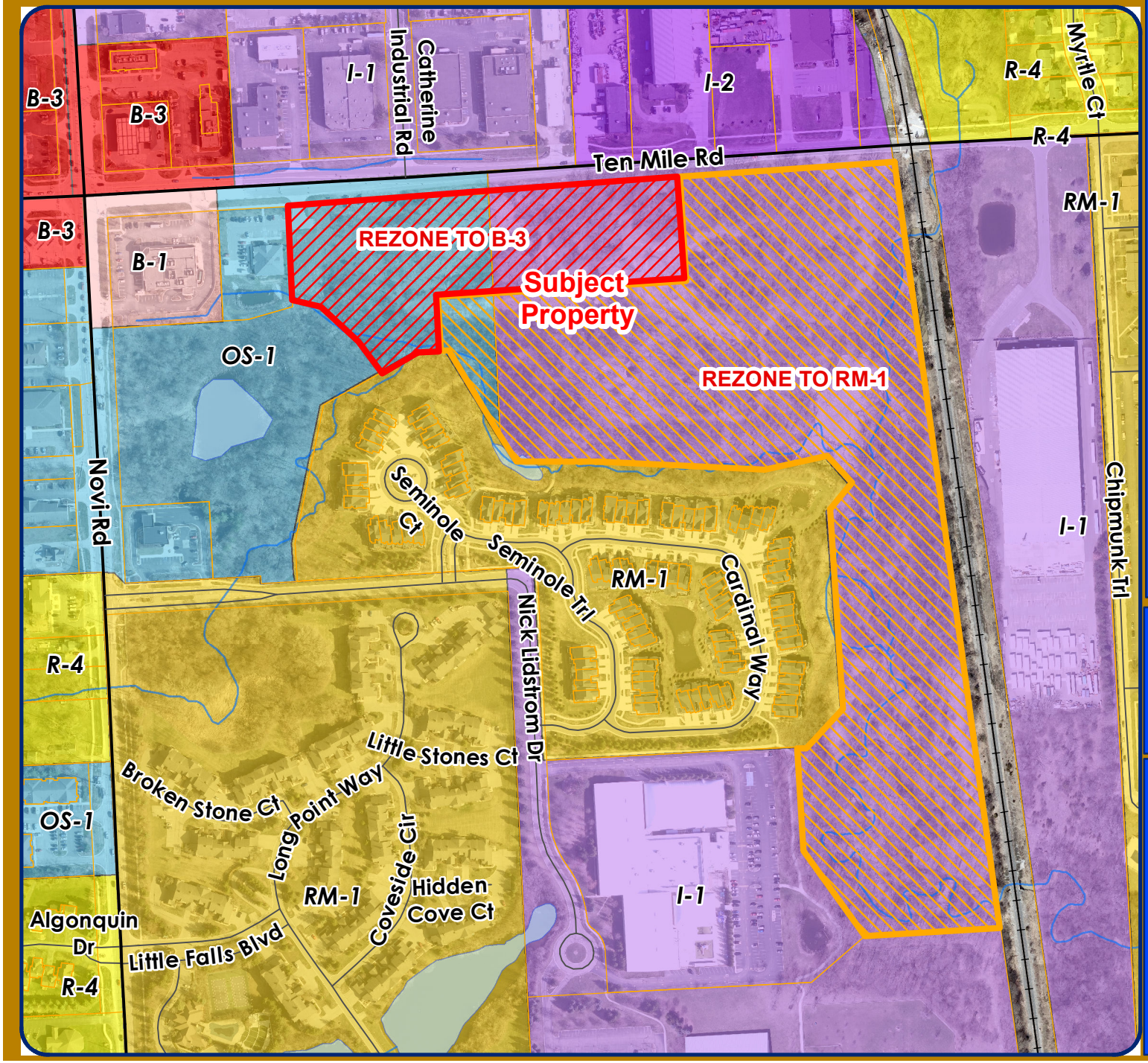
1 inch = 375 feet

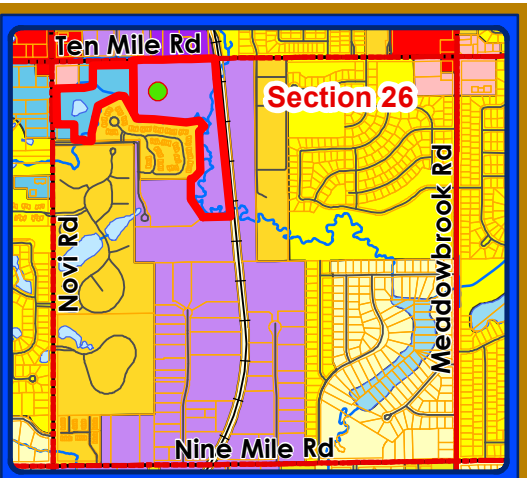

**MAP INTERPRETATION NOTICE**

Map information depicted is not intended to replace or substitute for any official or primary source. This map was intended to meet National Map Accuracy Standards and use the most recent, accurate sources available to the people of the City of Novi. Boundary measurements and area calculations are approximate and should not be construed as survey measurements performed by a licensed Michigan Surveyor as defined in Michigan Public Act 132 of 1970 as amended. Please contact the City GIS Manager to confirm source and accuracy information related to this map.

# NOVI TEN PRO

## ZONING




**Legend**

- R-4: One-Family Residential District
- RM-1: Low-Density Multiple Family
- B-1: Local Business District
- B-3: General Business District
- I-1: Light Industrial District
- I-2: General Industrial District
- OS-1: Office Service District
- Subject Property


**City of Novi**
Dept. of Community Development
City Hall / Civic Center
45175 W Ten Mile Rd
Novi, MI 48375
cityofnovi.org


Map Author: Lindsay Bell
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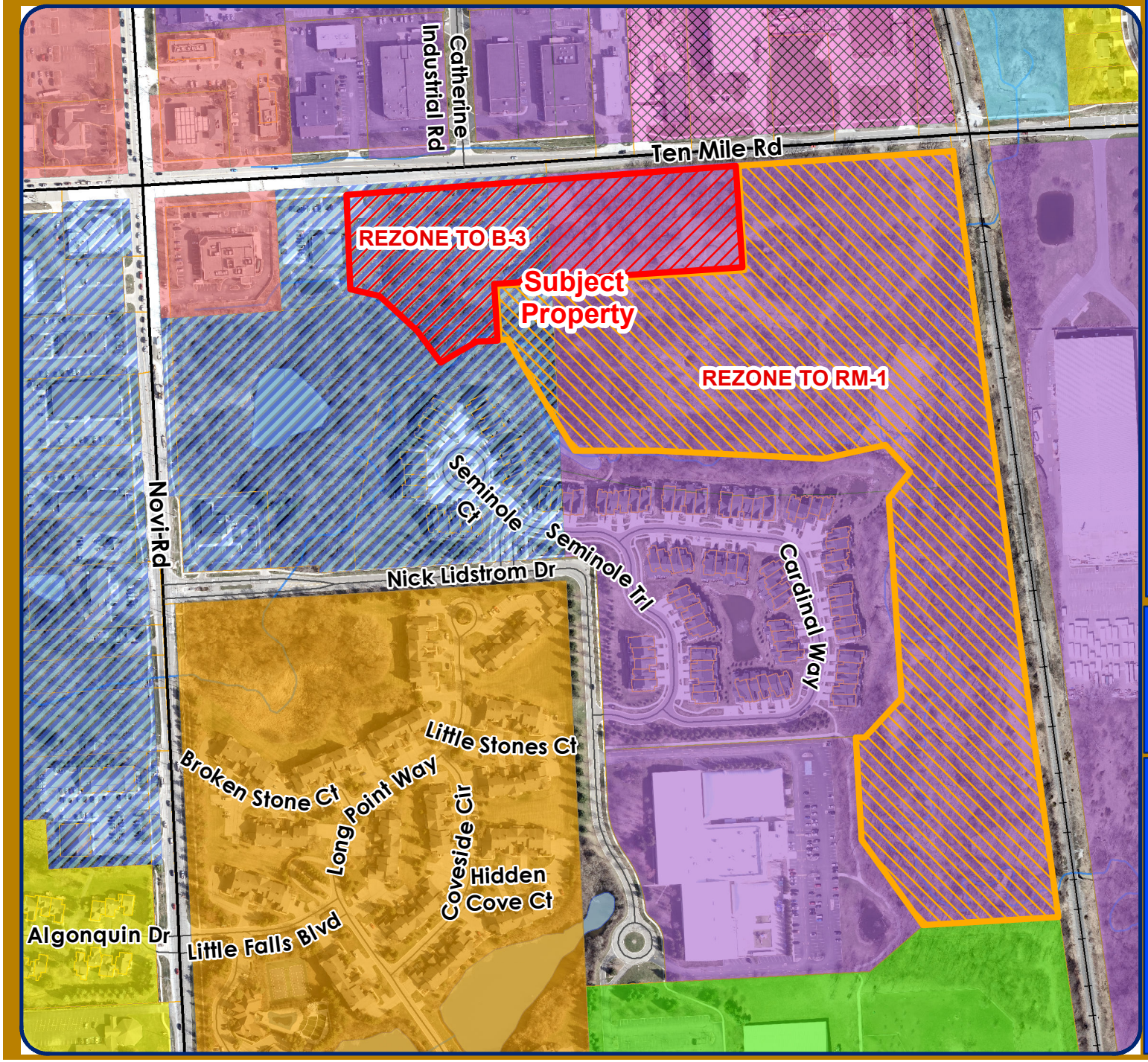
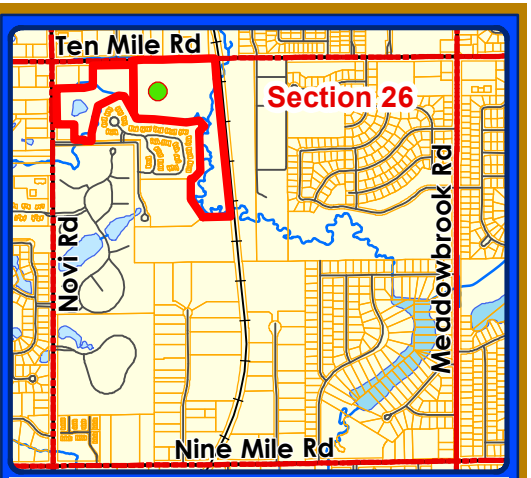
# NOVI TEN PRO

## FUTURE LAND USE




**Legend**

- Single Family
- Multiple-Family Residential
- Community Office
- Industrial, Research, Development and Technology
- Heavy Industrial
- Local Commercial
- Public
- Public Park
- Subject Property


**City of Novi**
Dept. of Community Development
City Hall / Civic Center
45175 W Ten Mile Rd
Novi, MI 48375
cityofnovi.org


Map Author: Lindsay Bell
Date: 10/31/23
Project: NOVI-TEN PRO
Version #: 1

Feet
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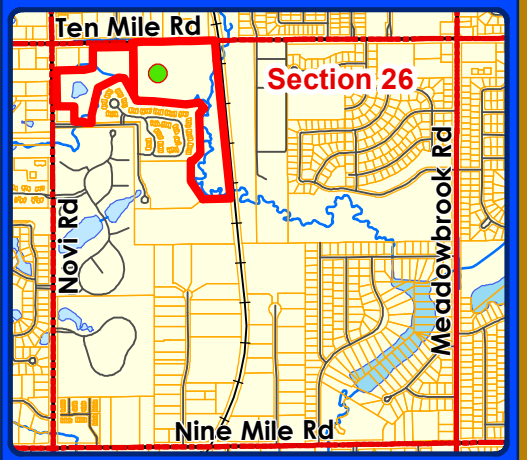
# NOVI TEN PRO
## FLOODPLAIN AREAS




**Legend**

**FEMA Flood Zone**

**Flood Zone**

AE - Base floodplain

Subject Property


**City of Novi**
Dept. of Community Development
City Hall / Civic Center
45175 W Ten Mile Rd
Novi, MI 48375
cityofnovi.org


Map Author: Lindsay Bell
Date: 10/31/23
Project: NOVI-TEN PRO
Version #: 1

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0 80 160 320 480

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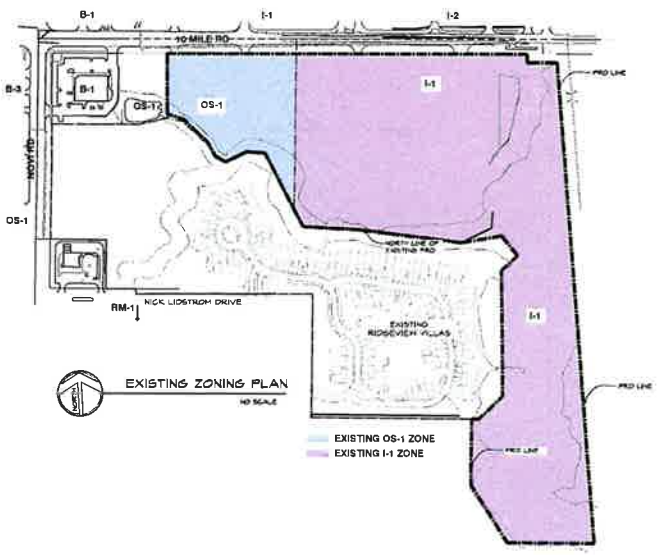
**INITIAL PRO CONCEPT PLAN**
**JANUARY 2, 2024**

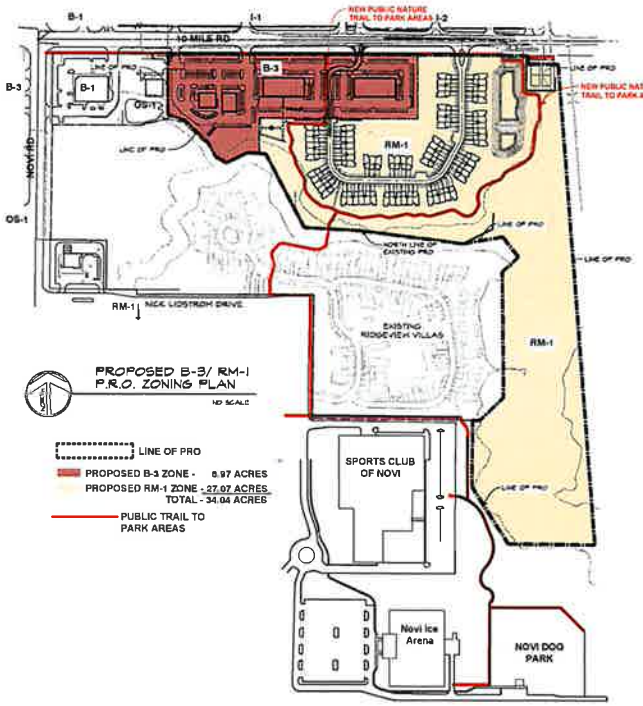
# NOVI TEN ASSOCIATES

## PROPOSED RE-ZONING & PRO PLAN

## WALKABLE RESIDENTIAL & COMMUNITY COMMERCIAL DEVELOPMENT

## NOVI, MICHIGAN




PROPOSED PARCEL B1 LEGAL DESCRIPTION (PART OF PARCELS: 22-26-101-028 & 22-26-101-024):

A PARCEL OF LAND LOCATED IN AND BEING PART OF THE NORTHWEST 1/4 OF SECTION 26, TOWN 1 NORTH, RANGE 8 EAST, CITY OF NOVI, OAKLAND COUNTY, MICHIGAN AND BEING MORE PATICULARLY DESCRIBED AS:

COMMENCING AT THE NORTHWEST CORNER OF SECTION 26, T1N, R8E, CITY OF NOVI, OAKLAND COUNTY, MICHIGAN; THENCE N86°27'27"E 1354.10 FEET; ALONG THE NORTH SECTION LINE AND THE CENTERLINE OF 10 MILE ROAD (120 FEET WIDE); THENCE S03°32'33"E 60.01 FEET TO THE POINT OF BEGINNING; THENCE N86°27'27"E 1003.81 FEET; THENCE S03°32'33"E 260.00 FEET; THENCE S86°27'27"W 320.00 FEET; THENCE S86°58'01"W 325.46 FEET; THENCE S01°32'15"E 144.88 FEET; THENCE N90°00'00"W 45.89 FEET; THENCE S60°51'08"W 96.39 FEET; THENCE N64°10'09"W 47.98 FEET; THENCE N32°30'06"W 64.67 FEET; THENCE N50°04'25"W 115.03 FEET; THENCE N75°25'58"W 71.24 FEET; THENCE N01°32'33"W 283.46 FEET, TO THE POINT OF BEGINNING, CONTAINING 6.97 ACREAS OF LAND (303,826 SFT); MORE OR LESS AND BEING SUBJECT TO EASEMENTS AND RESTRICTIONS OF RECORD, IF ANY.

PROPOSED PARCEL B2/B3 LEGAL DESCRIPTION (PART OF PARCELS: 22-26-101-028 & 22-26-101-024):

A PARCEL OF LAND LOCATED IN AND BEING PART OF THE NORTHWEST 1/4 OF SECTION 26, TOWN 1 NORTH, RANGE 8 EAST, CITY OF NOVI, OAKLAND COUNTY, MICHIGAN AND BEING MORE PATICULARLY DESCRIBED AS:

COMMENCING AT THE NORTHWEST CORNER OF SECTION 26, T1N, R8E, CITY OF NOVI, OAKLAND COUNTY, MICHIGAN; THENCE N86°27'27"E 1354.10 FEET; ALONG THE NORTH SECTION LINE AND THE CENTERLINE OF 10 MILE ROAD (120 FEET WIDE); THENCE S03°32'33"E 60.01 FEET TO THE POINT OF BEGINNING; THENCE N86°27'27"E 1003.81 FEET; THENCE S07°58'33"E 1012.13 FEET; THENCE N35°58'56"W 379.43 FEET; THENCE N03°03'33"W 269.20 FEET; THENCE N86°56'27"E 30.00 FEET; THENCE N41°47'02"E 133.85 FEET; THENCE N41°34'07"E 98.51 FEET; THENCE N41°34'10"W 105.00 FEET; THENCE S76°46'23"W 167.10 FEET; THENCE N86°32'33"W 420.86 FEET; THENCE S89°39'16"W 231.65 FEET; THENCE N31°39'21"W 339.33 FEET; THENCE N90°00'00"W 75.00 FEET; THENCE N04°10'41"W 519.60 FEET; THENCE N43°34'07"E 91.51 FEET; THENCE N41°34'10"W 105.00 FEET; THENCE S76°46'23"W 167.10 FEET; THENCE N86°32'33"W 420.86 FEET; THENCE S89°39'16"W 231.65 FEET; THENCE N31°39'21"W 339.33 FEET; THENCE N90°00'00"W 26.31 FEET; THENCE N03°32'33"W 144.88 FEET; THENCE N86°59'59"E 329.46 FEET; THENCE N86°27'27"E 320.00 FEET; THENCE N03°32'33"W 260.00 FEET, TO THE POINT OF BEGINNING, CONTAINING 27.07 ACREAS OF LAND (1,179,267 SFT); MORE OR LESS AND BEING SUBJECT TO EASEMENTS AND RESTRICTIONS OF RECORD, IF ANY


**CLIENT:**
NOVI TEN ASSOCIATES
1 WEST SQUARE LAKE RD.
BLOOMFIELD HILLS, MICHIGAN 48302
PH (248) 334-4800

THE TOWNS AT NOVI STATION
MICHIGAN DIVISION OFFICE
28200 TOWN CENTER DR. SUITE 200
NOVI, MICHIGAN 48375
PH (248) 904-1308

**ARCHITECT: (EXCLUDING RESIDENTIAL)**
SIEGAL/ TUOMAALA ASSOCIATES
ARCHITECTS AND PLANNERS, INC.
29200 NORTHWESTERN HIGHWAY
SOUTHFIELD, MICHIGAN 48034
PH (248) 352-0099

**CIVIL ENGINEER**
SEIBER, KEAST LEHNER
CONSULTING ENGINEERS
29205 COUNTRY CLUB DRIVE
SUITE C8
FARMINGTON HILLS, MICHIGAN 48331
PH (248) 308-3331


## DRAWING LIST


**TITLE SHEET**
P-0 EXISTING AND PROPOSED ZONING

**ARCHITECTURAL**
P-1 REGIONAL PLAN
P-2 SITE PLAN WITH EXISTING ZONING
P-3 PRO PLAN
P-4 WALKABLE COMMUNITY PLAN
P-5 B-3 ZONING SITE PLAN
P-6 RETAIL BUILDING FLOOR PLANS
P-7 RETAIL BUILDINGS A & B ELEVATIONS
P-8 RETAIL BUILDING C ELEVATIONS
P-9 RESTAURANT BUILDING D ELEVATIONS
P-10 RETAIL BUILDING PHOTOMETRIC LAYOUT
P-11 RETAIL BUILDING PHOTOMETRIC SPECIFICATIONS

**CIVIL ENGINEERING**
1. COVER SHEET
2. BOUNDARY SURVEY
3. TOPOGRAPHIC SURVEY
4. SOIL BORING LOGS
5. SOIL BORING LOGS
6. PROPOSED PLANNED REZONING OVERLAY PLAN
7. EXISTING AND PROPOSED ZONING
8. STORM WATER MANAGEMENT PLAN
9. OPEN SPACE PLAN
10. TRUCK ROUTING PLAN
11. PHOTOMETRIC LIGHTING PLAN

**TOLL RM-1 ARCHITECTURAL PLANS (BY TOLL)**
TBI-2 HOME FLOOR PLAN & ELEVATIONS
TBI-3 BUILDING ELEVATIONS
TBE-1 SCHEDULE REGULATING FACADE MATERIALS
TBE-10 SCHEDULE REGULATING FACADE MATERIALS
TBE SCHEDULE REGULATING FACADE MATERIALS

**LANDSCAPE (RM-1)**
L-1 CONCEPTUAL LANDSCAPE PLAN
L-2 GREENBELT AND ENTRY
L-3 WOODLAND PLAN
L-4 LANDSCAPE DETAILS
L-5 TREE LIST

**LANDSCAPE (B-3)**
L-1 TREE REMOVAL AND PROTECTION PLAN
L-2 TREE SURVEY
L-3 B-3 ZONING LANDSCAPE PLAN (CONCEPTUAL)



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29200 northwestern hwy
suite 100
southfield, mi 48034
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f • 248 • 352 • 0088
www.sta-architects.com

SITE LOCATION MAP

project name:
NOVI TEN PRO

project location:
NOVI, MICHIGAN

date/revision:
- Oct 04, 2023 - Issue PRO
- Jan. 02, 2024 - Revised PRO

sheet title:
EXISTING AND PROPOSED ZONING

project number:
1537E

sheet number:
P.0


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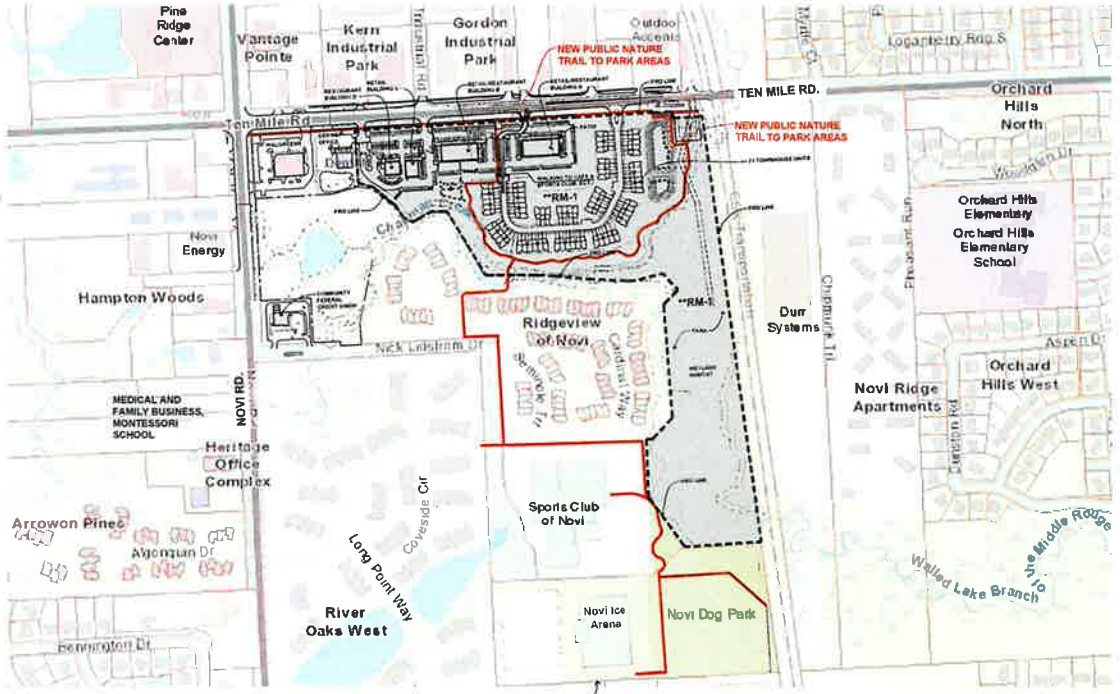
300 YARDS TO 1/2 MILE NORTH
- LOCAL RETAIL
- RESTAURANT / TAKE-OUT
- AUTOMOTIVE
- ANIMAL EMERGENCY CENTER
- WORSHIP
- USPS OFFICE

1/2 TO 1 MILE WEST
- NOVI CIVIC CENTER
- NOVI PUBLIC SAFETY
- NOVI PUBLIC LIBRARY
- PARKS & SPORTS ARENA
- NOVI HIGH SCHOOL
- WORSHIP




TENNIS SPORTS CLUB AND ARENA FACILITIES, CHILD CARE, DANCE / YOGA, BANQUET ROOMS FOR BIRTHDAY'S, ETC.

PRO LINE

PUBLIC TRAIL TO PARK AREAS

## PRO REGIONAL PLAN

NO SCALE

THIS PLAN INDICATES THE PROPOSED RESIDENTIAL AND COMMERCIAL DEVELOPMENT, THAT WILL TIE IN THE EXISTING RESIDENTIAL COMMUNITIES TO THE SOUTH VIA A VIEWING / WALKING PATH THRU THE NATURE ARES, AND TO THE EXISTING RECREATIONAL FACILITIES ALSO TO THE SOUTH, AND CONTINUES NORTHWARD TO SUCH AS THE SIDEWALK CAFE AND OTHER COMMUNITY COMMERCIAL. SEE SHEET P-3 FOR ADDITIONAL INFORMATION.

*B-3 GENERAL BUSINESS DISTRICT:
APPROX 6.97 ACRES

**RM-1 RESIDENTIAL:
APPROX 27.07 ACRES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project name:
NOVI TEN PRO

project location:
NOVI, MICHIGAN

date/revision:
- Oct.04, 2023 - Issue PRO
- Jan. 02, 2024 - Revised PRO

sheet title:
PRO REGIONAL PLAN

project number:
1537E

sheet number:
P-1

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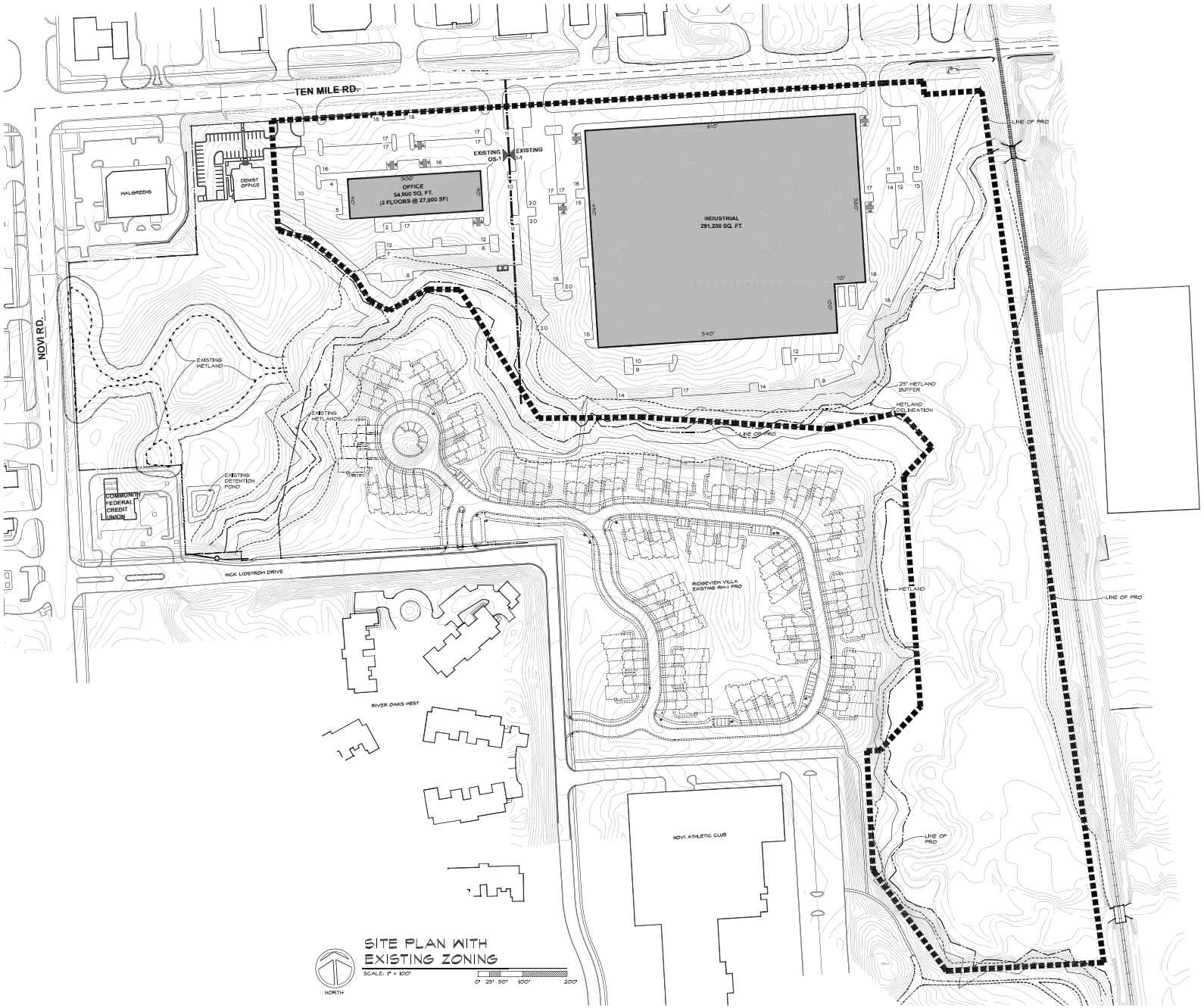


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suite 160
southfield, mi 48034

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STATE OF MICHIGAN
LONNY S. ZIMMERMAN
LICENSED
No. 1301021328
REGISTERED ARCHITECT

project name:
NOVI TEN PRO

project location:
NOVI, MICHIGAN
SECTION 26

date/revision:
- Oct.04, 2023 - Issue PRO
- Jan. 02, 2024 - Revised PRO

sheet title:
Site Plan With Existing Zoning

project number:
1537E

sheet number:
P.2

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## PRO CONCEPT PLAN

NORTH

## GENERAL NOTES:

1. THE SCREENING BETWEEN RESIDENTIAL AND COMMERCIAL PROPERTY IS PROVIDED ON THE RESIDENTIAL SIDE OF THE PROPERTY BORDER, NOT THE COMMERCIAL SIDE. SAME EFFECTIVE RESULT.

## REFERENCED PLAN NOTES:

1. 20 FT WIDE TEMPORARY EMERGENCY ACCESS ROAD TO MEET COUNTY ROAD STANDARDS HERE OR OTHERWISE LOCATED TO 10 MILE ROAD.
2. PICNIC AREA FOR CARRY OUT CAFE FOODS, ETC.
3. GAZEBO AND PICNIC TABLES IN PARK AT WEST END.
4. PROP. 6' HIGH MASONRY WALL OR OTHER CITY APPROVED BUFFER.
5. BREAKAWAY GATE PER CITY OF NOVI STANDARDS
6. NO WALL OR BERM BETWEEN RESIDENTIAL AND COMMERCIAL ZONING AT PARK.

LINE OF PRO

P = 15.97 ACRES PARK/NATURE AREA (CONSERVATION EASEMENT)

PUBLIC TRAIL TO PARK AREAS (SEE SHEET P.4 FOR COMPLETE TRAIL SYSTEM)

**35.04 ACRES TOTAL PRO**

*B-3 GENERAL BUSINESS DISTRICT ZONING
6.97 ACRES: RETAIL BUILDINGS A, B, & C AND SUPERMARKET

**RM-1 LOW RISE MULTIPLE FAMILY DISTRICT
27.07 ACRES: 71 TOWNHOUSE UNITS & PARK/NATURE AREA

SEE CIVIL ENGINEERING, LANDSCAPE & PHOTOMETRIC DRAWINGS FOR ADDITIONAL INFORMATION

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suite 160
southfield, mi 48034
p+ 248+352+0099
f+ 248+352+0088
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project name:
NOVI TEN PRO

project location:
NOVI, MICHIGAN
SECTION 26

date/revision:
- Oct 04, 2023 - Issue PRO
- Jan. 02, 2024 - Revised PRO

sheet title:
PRO PLAN

project number:
1537E

sheet number:
P.3

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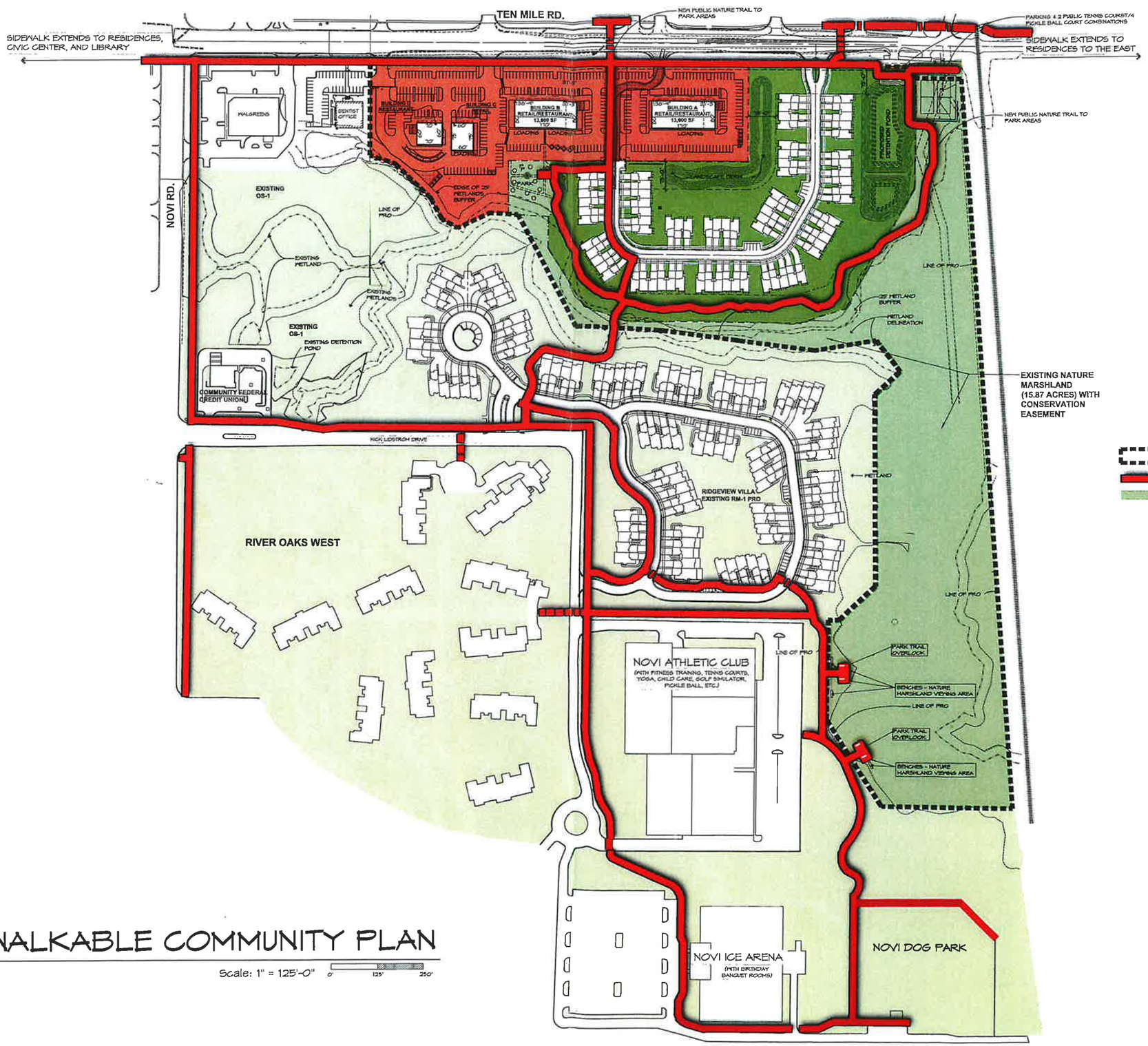


# WALKABLE COMMUNITY PLAN

NORTH

Scale: 1" = 125'-0" 0' 125' 250'


STA

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suite 160
southfield, mi 48034

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www.sta-architects.com


STATE OF MICHIGAN
LONNY S. KIMMERMAN
ARCHITECT
No. 1301021326
LICENSED ARCHITECT

project name:
NOVI TEN PRO

project location:
NOVI, MICHIGAN
SECTION 26

date/revision:
- Oct.04, 2023 - Issue PRO
- Jan. 02, 2024 - Revised PRO

sheet title:
WALKABLE COMMUNITY PLAN

project number:
1537E

sheet number:
P.4

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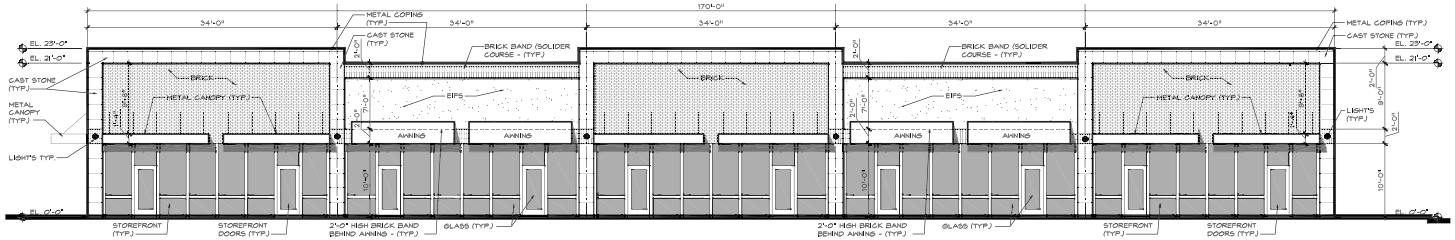
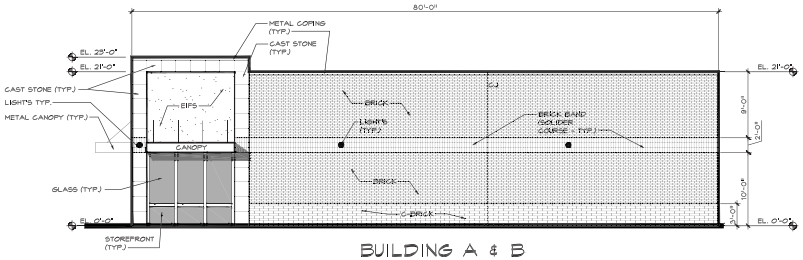


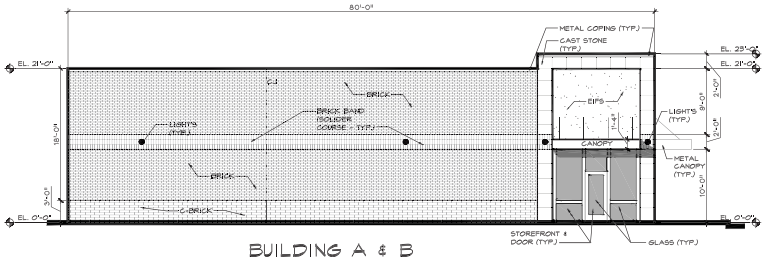

BUILDING A & B
NORTH ELEVATION

Scale: 1/8" = 1'-0"



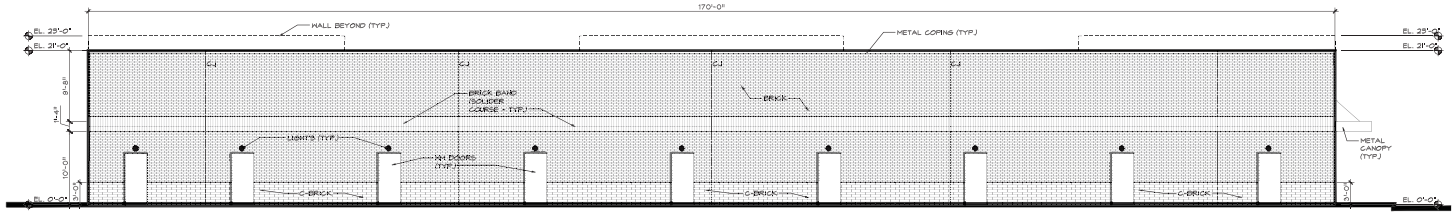

BUILDING A & B
WEST ELEVATION

Scale: 1/8" = 1'-0"




BUILDING A & B
EAST ELEVATION

Scale: 1/8" = 1'-0"




BUILDING A & B
SOUTH ELEVATION

Scale: 1/8" = 1'-0"

**RETAIL/RESTAURANT BUILDINGS A & B - FACADE MATERIAL CHART**

NORTH

| MATERIAL | AREA (SF) | % TOTAL | ORDINANCE |
|---|---|---|---|
| BRICK | 1482 | 51.1% | 30% MIN |
| C-BRICK | - | - | 25% MAX |
| EIFS | 448 | 11.9% | 25% MAX |
| CAST STONE | 460 | 18.3% | 25% MAX |
| METAL PANEL | 168 | 6.7% | 50% MAX (CANOPY + FASCIA) |
| TOTAL VISION GLASS | 2508<br>+1266<br>3774 SF | 100 % | |

SOUTH

| MATERIAL | AREA (SF) | % TOTAL | ORDINANCE |
|---|---|---|---|
| BRICK | 3452 | 82.7% | 30% MIN |
| C-BRICK | 424 | 12.0% | 25% MAX |
| EIFS | - | - | 25% MAX |
| CAST STONE | - | - | 25% MAX |
| METAL PANEL (DOORS) | 184 | 5.3% | 50% MAX |
| TOTAL | 3510 SF | 100 % | |

WEST

| MATERIAL | AREA (SF) | % TOTAL | ORDINANCE |
|---|---|---|---|
| BRICK | 1150 | 72.2% | 30% MIN |
| C-BRICK | 142 | 12.1% | 25% MAX |
| EIFS | 108 | 6.8% | 25% MAX |
| CAST STONE | 116 | 7.3% | 25% MAX |
| METAL PANEL | 26.0 | 1.6% | 50% MAX (CANOPY + FASCIA) |
| TOTAL VISION GLASS | 1542S<br>+122<br>1112 SF | 100 % | |

EAST

| MATERIAL | AREA (SF) | % TOTAL | ORDINANCE |
|---|---|---|---|
| BRICK | 1150 | 72.2% | 30% MIN |
| C-BRICK | 142 | 12.1% | 25% MAX |
| EIFS | 108 | 6.8% | 25% MAX |
| CAST STONE | 116 | 7.3% | 25% MAX |
| METAL PANEL | 26.4 | 1.6% | 50% MAX (CANOPY + FASCIA) |
| TOTAL VISION GLASS | 1535<br>+120<br>1112 SF | 100 % | |

WALL MATERIAL BEHIND AWNING IS INDICATED

NOTES:
1. ALL ROOF MOUNTED MECHANICAL EQUIPMENT TO BE SCREENED.
2. SEE SHEETS P.10 & P.11 FOR WALL LIGHT PHOTOMETRICS.


SIEGAL/TUOMAALA ASSOCIATES ARCHITECTS & PLANNERS INC.

29200 northwestern hwy
suite 160
southfield, mi 48034

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www.sta-architects.com


project name:
NOVI TEN PRO

project location:
NOVI, MICHIGAN
SECTION 26

date/revision:
- Oct.04, 2023 - Issue PRO
- Jan. 02, 2024 - Revised PRO

sheet title:
RETAIL BUILDINGS A & B ELEVATIONS

project number:
1537E

sheet number:
P.7

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**RETAIL C - FACADE MATERIAL CHART**

NORTH

| MATERIAL | AREA (SF) | % TOTAL | ORDINANCE |
|---|---|---|---|
| BRICK | 447 | 60.4% | 30% MIN |
| C-BRICK | - | - | 25% MAX |
| EIFS | - | - | 25% MAX |
| CAST STONE | 250 | 31.1% | 25% MAX |
| METAL PANEL | 63 | 8.5% | 50% MAX (CANOPY + FASCIA) |
| TOTAL | 740 | 100 % | |
| VISION GLASS | +520 | | |
| | 1260 SF | | |

WEST

| MATERIAL | AREA (SF) | % TOTAL | ORDINANCE |
|---|---|---|---|
| BRICK | 1081 | 72.4% | 30% MIN |
| C-BRICK | 171 | 12.2% | 25% MAX |
| EIFS | 84 | 5.8% | 25% MAX |
| CAST STONE | 108 | 7.4% | 25% MAX |
| METAL PANEL | 25 | 1.7% | 50% MAX |
| TOTAL | 1455 | 100 % | |
| VISION GLASS | +120 | | |
| | 1515 SF | | |

**RETAIL C - FACADE MATERIAL CHART (CONTINUED)**

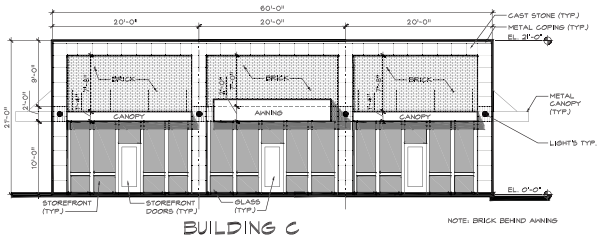
SOUTH

| MATERIAL | AREA (SF) | % TOTAL | ORDINANCE |
|---|---|---|---|
| BRICK | 1044 | 82.9% | 30% MIN |
| C-BRICK | 153 | 12.1% | 25% MAX |
| EIFS | - | - | 25% MAX |
| CAST STONE | - | - | 25% MAX |
| METAL PANEL (DOORS) | 63 | 5.0% | 50% MAX |
| TOTAL | 1260 SF | 100 % | |

EAST

| MATERIAL | AREA (SF) | % TOTAL | ORDINANCE |
|---|---|---|---|
| BRICK | 1081 | 72.4% | 30% MIN |
| C-BRICK | 171 | 12.2% | 25% MAX |
| EIFS | 84 | 5.8% | 25% MAX |
| CAST STONE | 108 | 7.4% | 25% MAX |
| METAL PANEL | 25 | 1.7% | 50% MAX |
| TOTAL | 1455 | 100 % | |
| VISION GLASS | +120 | | |
| | 1515 SF | | |

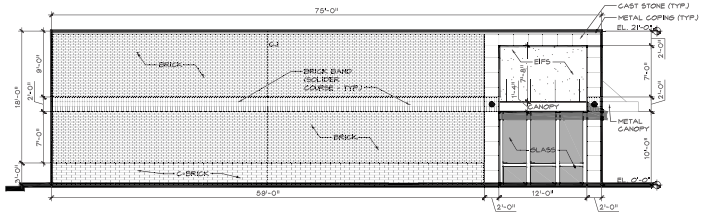
WALL MATERIAL BEHIND AWNING IS INDICATED




NOTE: BRICK BEHIND AWNING

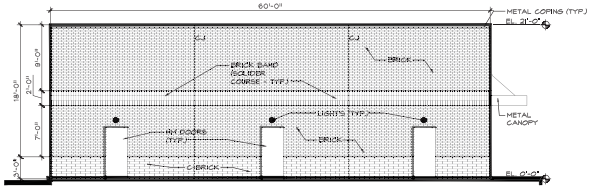
BUILDING C
NORTH ELEVATION

Scale: 1/8" = 1'-0"



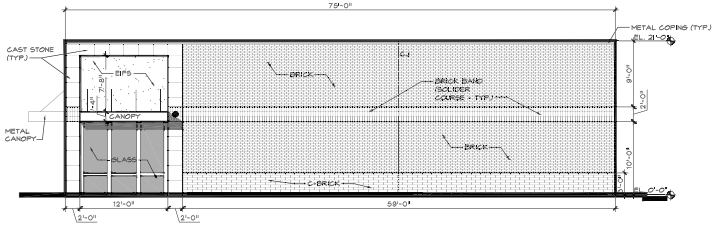

BUILDING C
EAST ELEVATION

Scale: 1/8" = 1'-0"




BUILDING C
SOUTH ELEVATION

Scale: 1/8" = 1'-0"




BUILDING C
WEST ELEVATION

Scale: 1/8" = 1'-0"

NOTES:
1. ALL ROOF MOUNTED MECHANICAL EQUIPMENT TO BE SCREENED.
2. SEE SHEETS P.10 & P.11 FOR WALL LIGHT PHOTOMETRICS.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sheet title:
RETAIL
BUILDING C
ELEVATIONS

project number:
1537E

sheet number:
P.8

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**RETAIL D - FACADE MATERIAL CHART**

NORTH

| MATERIAL | AREA (SF) | % TOTAL | ORDINANCE |
|---|---|---|---|
| BRICK | 575 | 60.5% | 30% MIN |
| C-BRICK | - | - | 25% MAX |
| EIFS | - | - | 25% MAX |
| CAST STONE | 320 | 33.7% | 25% MAX |
| METAL PANEL | 55 | 5.8% | 50% MAX (CANOPY + FASCIA) |
| TOTAL VISION GLASS | 950<br>+ 580<br>1530 SF | 100 % | |

WEST

| MATERIAL | AREA (SF) | % TOTAL | ORDINANCE |
|---|---|---|---|
| BRICK | 712 | 62.5% | 30% MIN |
| C-BRICK | 132 | 11.6% | 25% MAX |
| EIFS | 188 | 14.7% | 25% MAX |
| CAST STONE | 108 | 9.5% | 25% MAX |
| METAL PANEL (COPING) | 20 | 1.7% | 50% MAX (CANOPY + FASCIA) |
| TOTAL VISION GLASS | 1140<br>+ 120<br>1260 SF | 100 % | |

**RETAIL D - FACADE MATERIAL CHART (CONTINUED)**

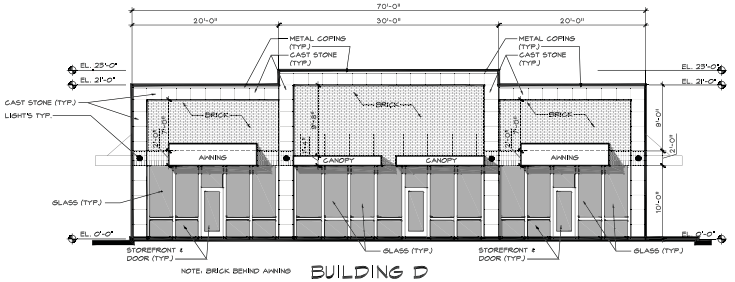
SOUTH

| MATERIAL | AREA (SF) | % TOTAL | ORDINANCE |
|---|---|---|---|
| BRICK | 1201 | 81.7% | 30% MIN |
| C-BRICK | 183 | 12.5% | 25% MAX |
| EIFS | - | - | 25% MAX |
| CAST STONE | - | | 25% MAX |
| METAL PANEL (DOORS & COPING) | 86 | 5.8% | 50% MAX |
| TOTAL | 1470 SF | 100 % | |

EAST

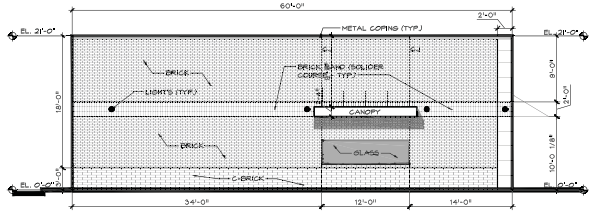
| MATERIAL | AREA (SF) | % TOTAL | ORDINANCE |
|---|---|---|---|
| BRICK | 965.8 | 74.2% | 30% MIN |
| C-BRICK | 174 | 14.3% | 25% MAX |
| EIFS | - | - | 25% MAX |
| CAST STONE | 42 | 3.4% | 25% MAX |
| METAL PANEL (DOORS & COPING) | 38.2 | 3.1% | 50% MAX |
| TOTAL VISION GLASS | 1220<br>+ 40<br>1260 SF | 100 % | |

WALL MATERIAL BEHIND AWNING IS INDICATED



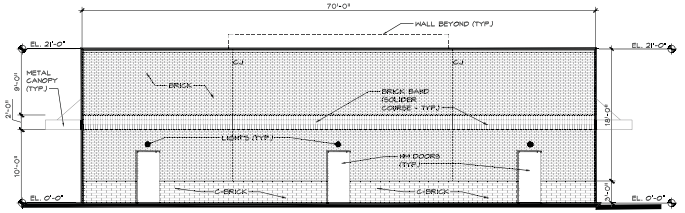

BUILDING D
NORTH ELEVATION

Scale: 1/8" = 1'-0"



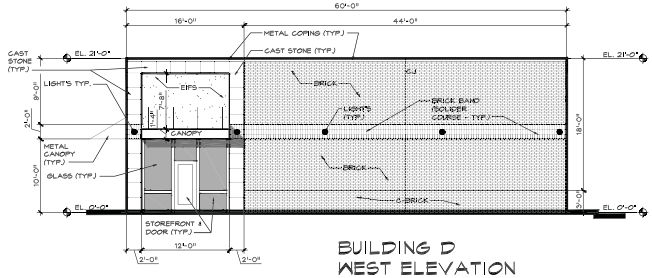

BUILDING D
EAST ELEVATION

Scale: 1/8" = 1'-0"




BUILDING D
SOUTH ELEVATION

Scale: 1/8" = 1'-0"




BUILDING D
WEST ELEVATION

Scale: 1/8" = 1'-0"

NOTES:
1. ALL ROOF MOUNTED MECHANICAL EQUIPMENT TO BE SCREENED.
2. SEE SHEETS P.10 & P.11 FOR WALL LIGHT PHOTOMETRICS.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RESTAURANT BUILDING D ELEVATIONS

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1537E

sheet number:
P.9

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# REZONING AND PLANNED REZONING OVERLAY ("PRO") CONCEPT PLAN

# NOVI TEN TOWN HOMES AND RETAIL

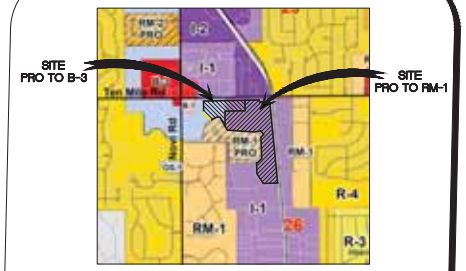
*SECTION 26, TOWN 1 NORTH, RANGE 8 EAST,*
*CITY OF NOVI, OAKLAND COUNTY, MICHIGAN*

PREPARED FOR:

**NOVI TEN ASSOCIATES, LLC**

7 W. SQAURE LAKE ROAD
BLOOMFIELD HILLS, MICHIGAN 48302
248.909.1308

## ZONING MAP




PROP. ZONING: PRO TO RM-1
PRO TO B-3

## FIRE DEPARTMENT NOTES

1. All fire hydrants & water mains shall be installed & in service prior to above foundation building construction as each phase is built.
2. All roads shall be paved and capable of supporting 35 tons prior to construction above foundation.
3. Building addresses shall be posted facing the street during all phases of construction. Addresses shall be a minimum of three inches in height on a contrasting background.
4. Provide 4–6" diameter concrete filled steel posts 48" above finish grade at each hydrant as required.
5. Fire lanes shall be posted with "Fire Lane – No Parking" signs in accordance with Ordinance #85.99.02.

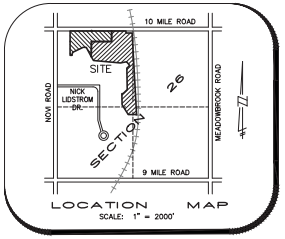
## NOTES

1. ALL WORK SHALL CONFORM TO THE CITY OF NOVI'S CURRENT STANDARDS AND SPECIFICATIONS.
2. THE CONTRACTOR MUST OBTAIN A PERMIT FROM THE CITY OF NOVI FOR ANY WORK WITHIN THE RIGHT-OF-WAY OF NICK LIDSTROM DRIVE.
3. ALL PAVEMENT MARKINGS, TRAFFIC CONTROL SIGNS, AND PARKING SIGNS SHALL COMPLY WITH THE DESIGN AND PLACEMENT REQUIREMENTS OF THE 2011 MICHIGAN MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.

SCALE

150 0 75 150 300 600

( IN FEET )
Scale: 1 inch = 150 ft.




## SOILS MAP

### SOIL CLASSIFICATIONS

(PER "SOILS SURVEY OF OAKLAND COUNTY MICHIGAN", UNITED STATES DEPT. OF AGRICULTURE, SOIL CONSERVATION SERVICE IN COOPERATION WITH MICHIGAN AGRICULTURAL EXPERIMENT STATION, ISSUED MARCH 1982)

10B – MARLETTE SANDY LOAM, 1 TO 6 PERCENT SLOPES
10C – MARLETTE SANDY LOAM, 6 TO 12 PERCENT SLOPES
43 – SLOAN–MARLETTE ASSOCIATION

## SHEET INDEX


ENGINEERING PLANS:
1. COVER SHEET
2. BOUNDARY SURVEY
3. TOPOGRAPHIC SURVEY
4.–5. SOIL BORING LOGS
6. PROPOSED PLANNED REZONING OVERLAY PLAN
7. EXISTING AND PROPOSED ZONING
8. STORM WATER MANAGEMENT PLAN
9. OPEN SPACE PLAN
10. TRUCK ROUTING PLAN
11. PHOTOMETRIC LIGHTING PLAN

LANDSCAPE PLANS: (TOLL MULTI–FAMILY)
L–1 CONCEPTUAL LANDSCAPE PLAN
L–2 GREENBELT AND ENTRY
L–3 WOODLAND PLAN
L–4 LANDSCAPE DETAILS
L–5 TREE LIST

ARCHITECTURAL PLANS: (TOLL MULTI–FAMILY)
1–10 BUILDING FLOOR PLAN & ELEVATION
11. SCHEDULE REGULATING FACADE MATERIALS

SEE P SHEETS FOR ADDITIONAL SITE & RETAIL INFORMAITON


LANDSCAPE PLANS PROVIDED BY:

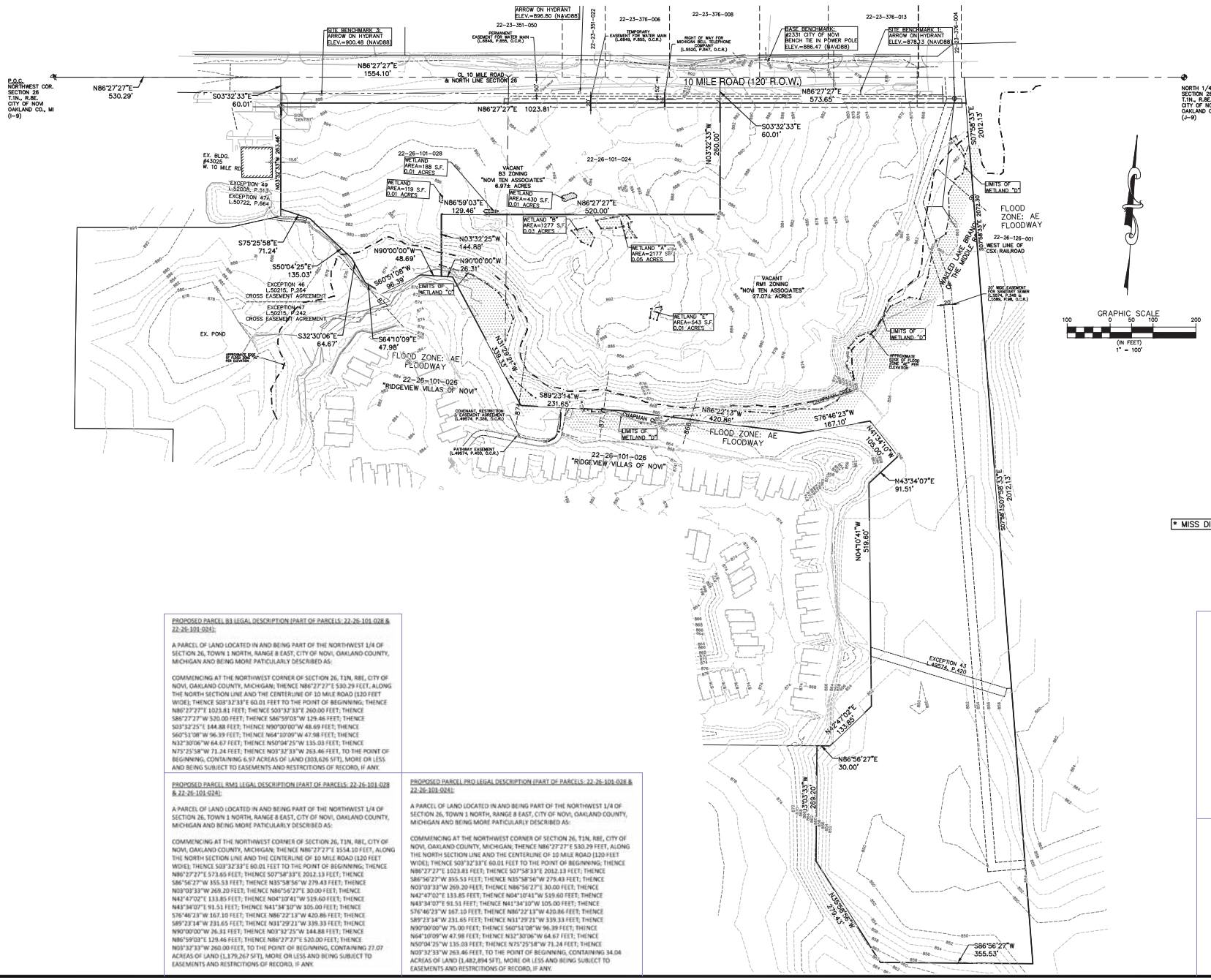
ALLEN DESIGN
557 CARPENTER
NORTHVILLE, MICHIGAN 48167
PHONE: 248.467.4668


SEIBER KEAST LEHNER
ENGINEERING | SURVEYING


CITY PROJECT NUMBER
JZ23-0009

| REVISIONS | | | ENGINEER'S SEAL |
|---|---|---|---|
| NO | ITEM | DATE | |
| 1. | ADD COMMERCIAL PER CLIENT | 05-19-22 | |
| 2. | ISSUED | 02-28-23 | |
| 3. | REVISE PRO | 01-02-24 | |

DATE: 05-29-23 | DESIGNED BY: A.A. | CHECKED BY: J.E. | JOB NUMBER: 21-006 | DRAWING FILE: 21006-CS.dwg




* MISS DIG NOT CONTACTED FOR SURVEY *

UTILITY DISCLAIMER NOTE:
ALL WATER MAIN, SEWER LINES AND UNDERGROUND UTILITY LINES HAVE BEEN FIELD LOCATED WHERE VISIBLE. WHEN AVAILABLE, UNDERGROUND LOCATIONS HAVE BEEN TAKEN FROM RECORD DOCUMENTS, AND NO GUARANTEE CAN BE MADE TO THE EXACTNESS OF THESE LOCATIONS.

PROPOSED PARCEL B3 LEGAL DESCRIPTION (PART OF PARCELS: 22-26-101-028 & 22-26-101-024):

A PARCEL OF LAND LOCATED IN AND BEING PART OF THE NORTHWEST 1/4 OF SECTION 26, TOWN 1 NORTH, RANGE 8 EAST, CITY OF NOVI, OAKLAND COUNTY, MICHIGAN AND BEING MORE PATICULARLY DESCRIBED AS:

COMMENCING AT THE NORTHWEST CORNER OF SECTION 26, T1N, R8E, CITY OF NOVI, OAKLAND COUNTY, MICHIGAN; THENCE N86°27'27"E 530.29 FEET, ALONG THE NORTH SECTION LINE AND THE CENTERLINE OF 10 MILE ROAD (120 FEET WIDE); THENCE S03°32'33"E 60.01 FEET TO THE POINT OF BEGINNING; THENCE N86°27'27"E 1023.81 FEET; THENCE S01°32'33"E 260.00 FEET; THENCE S86°27'27"W 520.00 FEET; THENCE S86°59'03"W 129.46 FEET; THENCE S03°32'25"E 144.88 FEET; THENCE N90°00'00"W 48.69 FEET; THENCE S60°51'08"W 96.39 FEET; THENCE N64°10'09"W 47.98 FEET; THENCE N32°30'06"W 64.67 FEET; THENCE N75°25'58"W 71.24 FEET; THENCE N03°32'33"W 263.46 FEET, TO THE POINT OF BEGINNING, CONTAINING 6.97 ACREAS OF LAND (303,626 SFT), MORE OR LESS AND BEING SUBJECT TO EASEMENTS AND RESTRICTIONS OF RECORD, IF ANY.

PROPOSED PARCEL RM1 LEGAL DESCRIPTION (PART OF PARCELS: 22-26-101-028 & 22-26-101-024):

A PARCEL OF LAND LOCATED IN AND BEING PART OF THE NORTHWEST 1/4 OF SECTION 26, TOWN 1 NORTH, RANGE 8 EAST, CITY OF NOVI, OAKLAND COUNTY, MICHIGAN AND BEING MORE PATICULARLY DESCRIBED AS:

COMMENCING AT THE NORTHWEST CORNER OF SECTION 26, T1N, R8E, CITY OF NOVI, OAKLAND COUNTY, MICHIGAN; THENCE N86°27'27"E 1554.10 FEET, ALONG THE NORTH SECTION LINE AND THE CENTERLINE OF 10 MILE ROAD (120 FEET WIDE); THENCE S03°32'33"E 60.01 FEET TO THE POINT OF BEGINNING; THENCE N86°27'27"E 573.65 FEET; THENCE S07°58'33"E 2012.13 FEET; THENCE S86°56'27"W 355.53 FEET; THENCE N35°58'56"W 279.43 FEET; THENCE N03°03'33"W 269.20 FEET; THENCE N86°56'27"E 30.00 FEET; THENCE N43°47'02"E 133.85 FEET; THENCE N04°10'41"W 519.60 FEET; THENCE N43°34'07"E 91.51 FEET; THENCE N41°34'10"W 105.00 FEET; THENCE S76°46'23"W 167.10 FEET; THENCE N86°22'13"W 420.86 FEET; THENCE S89°23'14"W 231.65 FEET; THENCE N31°29'21"W 339.33 FEET; THENCE N90°00'00"W 26.31 FEET; THENCE N03°32'25"W 144.88 FEET; THENCE N86°59'03"E 129.46 FEET; THENCE N86°27'27"E 520.00 FEET; THENCE N03°32'33"W 260.00 FEET, TO THE POINT OF BEGINNING, CONTAINING 27.07 ACREAS OF LAND (1,179,267 SFT), MORE OR LESS AND BEING SUBJECT TO EASEMENTS AND RESTRICTIONS OF RECORD, IF ANY.

PROPOSED PARCEL PRO LEGAL DESCRIPTION (PART OF PARCELS: 22-26-101-028 & 22-26-101-024):

A PARCEL OF LAND LOCATED IN AND BEING PART OF THE NORTHWEST 1/4 OF SECTION 26, TOWN 1 NORTH, RANGE 8 EAST, CITY OF NOVI, OAKLAND COUNTY, MICHIGAN AND BEING MORE PATICULARLY DESCRIBED AS:

COMMENCING AT THE NORTHWEST CORNER OF SECTION 26, T1N, R8E, CITY OF NOVI, OAKLAND COUNTY, MICHIGAN; THENCE N86°27'27"E 530.29 FEET, ALONG THE NORTH SECTION LINE AND THE CENTERLINE OF 10 MILE ROAD (120 FEET WIDE); THENCE S03°32'33"E 60.01 FEET TO THE POINT OF BEGINNING; THENCE N86°27'27"E 1023.81 FEET; THENCE S07°58'33"E 2012.13 FEET; THENCE S86°56'27"W 355.53 FEET; THENCE N35°58'56"W 279.43 FEET; THENCE N03°03'33"W 269.20 FEET; THENCE N86°56'27"E 30.00 FEET; THENCE N42°47'02"E 133.85 FEET; THENCE N04°10'41"W 519.60 FEET; THENCE N43°34'07"E 91.51 FEET; THENCE N41°34'10"W 105.00 FEET; THENCE S76°46'23"W 167.10 FEET; THENCE N86°22'13"W 420.86 FEET; THENCE S89°23'14"W 231.65 FEET; THENCE N31°29'21"W 339.33 FEET; THENCE N90°00'00"W 75.00 FEET; THENCE S60°51'08"W 96.39 FEET; THENCE N64°10'09"W 47.98 FEET; THENCE N32°30'06"W 64.67 FEET; THENCE N50°04'25"W 135.03 FEET; THENCE N75°25'58"W 71.24 FEET; THENCE N03°32'33"W 263.46 FEET, TO THE POINT OF BEGINNING, CONTAINING 34.04 ACREAS OF LAND (1,482,894 SFT), MORE OR LESS AND BEING SUBJECT TO EASEMENTS AND RESTRICTIONS OF RECORD, IF ANY.

BENCHMARKS:
BASE BENCHMARK:
@2331 CITY OF NOVI
BENCH TIE SET IN SOUTH FACE OF POWER POLE LOCATED EAST OF DRIVE #42850 AND 8 FEET NORTH OF BACK OF CURB
ELEVATION=886.47 (NAVD88)

SITE BENCHMARK 1:
ARROW ON HYDRANT
LOCATED SOUTH SIDE OF 10 MILE ROAD
DIRECTLY NORTH OF SUBJECT PROPERTY
ELEVATION=878.13 (NAVD88)

SITE BENCHMARK 2:
ARROW ON HYDRANT
LOCATED SOUTH SIDE OF 10 MILE ROAD
ELEVATION=896.80

SITE BENCHMARK 3:
ARROW ON HYDRANT
LOCATED SOUTH SIDE OF 10 MILE ROAD
ELEVATION=900.48

FLOOD ZONE:
THE PROPERTY FALLS WITHIN FLOOD ZONE X AND ZONE AE, SPECIAL FLOOD HAZARD AND REGULATORY FLOODWAY (BASE FLOOD ELEVATIONS AS NOTED ON PLAN, RANGES FROM 875 TO 863)
MAP No. 26125C0628F & 26125C0629F
DATED: 9/29/2006

LEGEND
- SECTION CORNER
- OVERHEAD UTILITY LINES
- EXISTING FENCE
- EXISTING SANITARY MANHOLE
- EXISTING STORM SQ. CATCH BASIN
- EXISTING STORM ROUND CATCH BASIN
- EXISTING STORM MANHOLE
- EXISTING GAS MARKER
- EXISTING FIRE HYDRANT
- UTILITY POLE
- PUBLIC INFORMATION SIGN
- F.I. FOUND IRON
- F.MON. FOUND MONUMENT
- S.I. SET IRON
- P.O.C. POINT OF COMMENCEMENT
- P.O.B. POINT OF BEGINNING

SEIBER KEAST LEHNER
ENGINEERING | SURVEYING
Professional Engineers
Professional Surveyors
Professional Planners
Professional Landscape Architects
Professional Traffic Engineers
Professional Environmental Engineers
Professional Construction Managers
Professional Water Resource Engineers
Professional Wastewater Engineers
Professional Water Distribution Engineers
Professional Water Treatment Engineers
Professional Water Supply Engineers
Professional Water Quality Engineers
Professional Water Resource Engineers
Professional Wastewater Engineers
Professional Water Distribution Engineers
Professional Water Treatment Engineers
Professional Water Supply Engineers
Professional Water Quality Engineers

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| NO. | DESCRIPTION | DATE |
|---|---|---|
| 1. | ADD COMMERCIAL PER CLIENT | 05-19-22 |
| 2. | ISSUED | 02-28-23 |
| 3. | REVISE PRO | 05-02-24 |

811 MISS DIG SYSTEM, INC. 3 WORKING DAYS BEFORE YOU DIG CALL MISS DIG 1-800-482-7171 OR 811 IN MICHIGAN

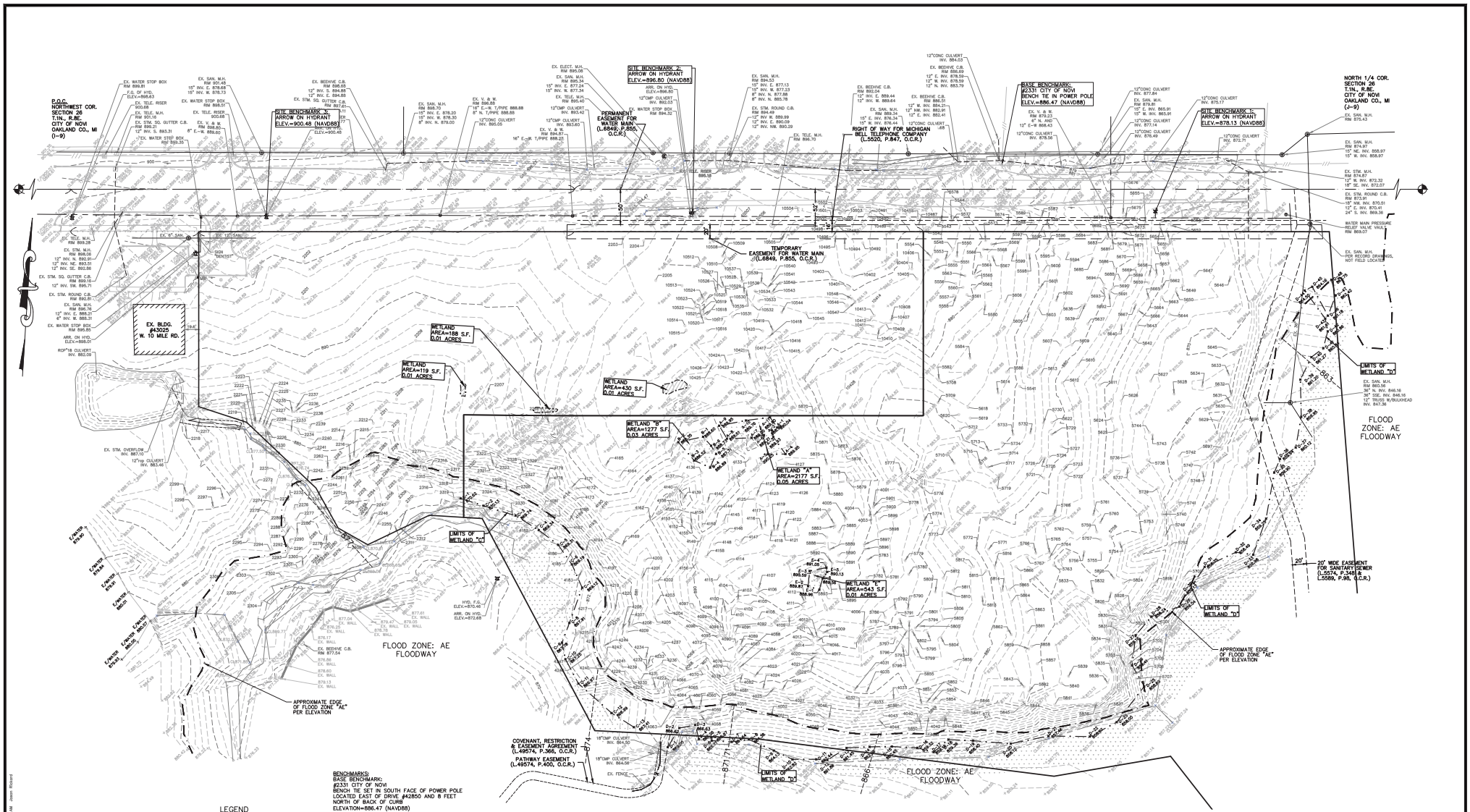
DRAWN BY: N.G.
DATE: 05-29-23
CHECKED BY: J.R.
JOB No.: 21-006

CLIENT:
NOVI TEN ASSOCIATES, LLC
7 W. SQUARE LAKE ROAD
BLOOMFIELD HILLS
MICHIGAN 48302
248.909.1308

PROJECT NAME:
NOVI TEN TOWN HOMES
SECTION 26, TOWN 1 NORTH, RANGE 8 EAST
CITY OF NOVI, OAKLAND COUNTY, MICHIGAN
SHEET TITLE:
BOUNDARY SURVEY

SHEET
2

N:\21-006 Novi Ten North\CAD\PRO PLANS\210006-BNDY.dwg 12/29/2023 9:24 AM Jason Rickard




LEGEND

- SECTION CORNER
- OVERHEAD UTILITY LINES
- EXISTING FENCE
- EXISTING SANITARY MANHOLE
- EXISTING STORM SQ. CATCH BASIN
- EXISTING STORM ROUND CATCH BASIN
- EXISTING STORM MANHOLE
- EXISTING GAS MARKER
- EXISTING FIRE HYDRANT
- UTILITY POLE
- PUBLIC INFORMATION SIGN
- F.I. FOUND IRON
- F.MON. FOUND MONUMENT
- S.I. SET IRON
- P.O.C. POINT OF COMMENCEMENT
- P.O.B. POINT OF BEGINNING

BENCHMARKS:
BASE BENCHMARK:
#2331 CITY OF NOVI
BENCH TIE SET IN SOUTH FACE OF POWER POLE LOCATED EAST OF DRIVE #42850 AND 8 FEET NORTH OF BACK OF CURB
ELEVATION=886.47 (NAVD88)

SITE BENCHMARK 1:
ARROW ON HYDRANT
LOCATED SOUTH SIDE OF 10 MILE ROAD DIRECTLY NORTH OF SUBJECT PROPERTY
ELEVATION=878.13 (NAVD88)

SITE BENCHMARK 2:
ARROW ON HYDRANT
LOCATED SOUTH SIDE OF 10 MILE ROAD
ELEVATION=896.80

SITE BENCHMARK 3:
ARROW ON HYDRANT
LOCATED SOUTH SIDE OF 10 MILE ROAD
ELEVATION=900.48

FLOOD ZONE:
THE PROPERTY FALLS WITHIN FLOOD ZONE X AND ZONE AE, SPECIAL FLOOD HAZARD AND REGULATORY FLOODWAY (BASE FLOOD ELEVATIONS AS NOTED ON PLAN, RANGES FROM 875 TO 883)
MAP No. 26125C0628F & 26125C0629F
DATED: 9/29/2006

UTILITY DISCLAIMER NOTE:
ALL WATER MAIN, SEWER LINES AND UNDERGROUND UTILITY LINES HAVE BEEN FIELD LOCATED WHERE VISIBLE. WHEN AVAILABLE, UNDERGROUND LOCATIONS HAVE BEEN TAKEN FROM RECORD DOCUMENTS, AND NO GUARANTEE CAN BE MADE TO THE EXACTNESS OF THESE LOCATIONS.

GRAPHIC SCALE
60 0 30 60 120
(IN FEET)
1" = 60'

* MISS DIG NOT CONTACTED FOR SURVEY *

811
3 WORKING DAYS
BEFORE YOU DIG
CALL MISS DIG
1-800-482-7171
TOLL FREE FOR THE LOCATION OF UNDERGROUND FACILITIES

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CLIENT:
NOVI TEN ASSOCIATES, LLC
7 W. SQUARE LAKE ROAD
BLOOMFIELD HILLS
MICHIGAN 48302
248.909.1308

DRAWN BY: N.G.
DATE: 05-29-23
CHECKED BY: J.R.
JOB No.: 21-006

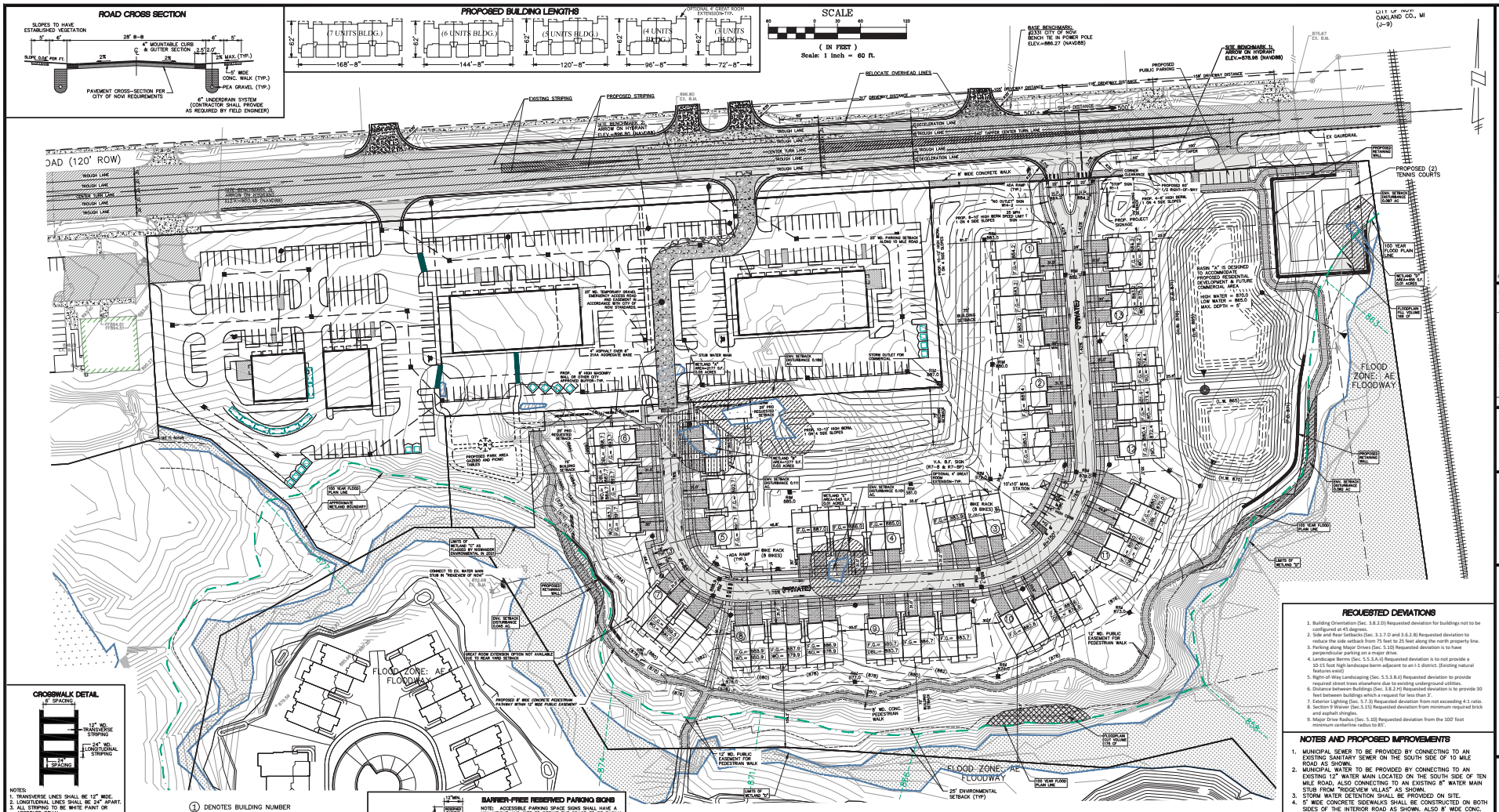
| NO. | DESCRIPTION | DATE |
|---|---|---|
| 1. | ADD COMMERCIAL PER CLIENT | 05-19-22 |
| 2. | ISSUED | 02-28-23 |
| 3. | REVISE PRO | 01-02-24 |

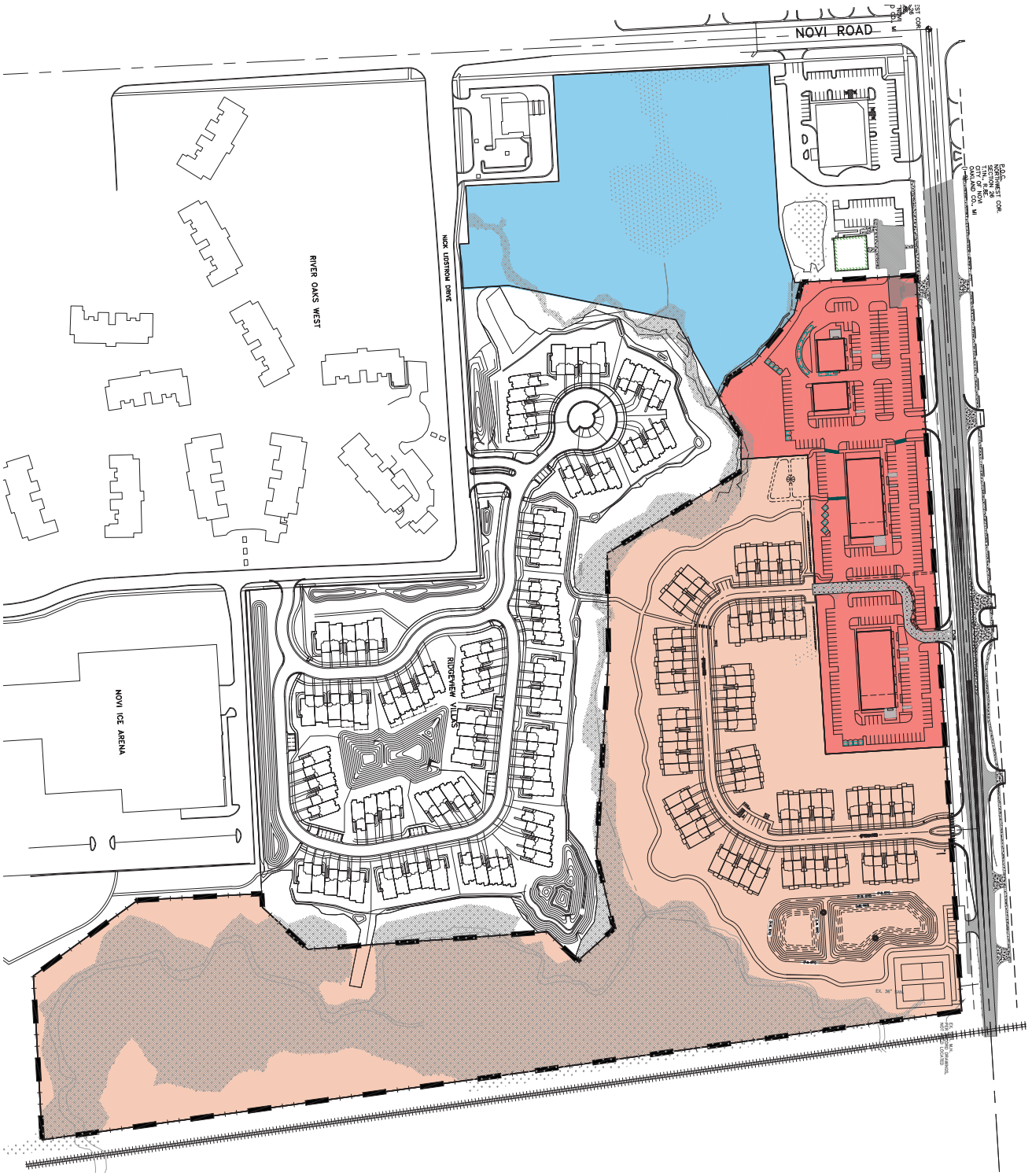
PROJECT NAME:
NOVI TEN TOWN HOMES
SECTION 26, TOWN 1 NORTH, RANGE 8 EAST
CITY OF NOVI, OAKLAND COUNTY, MICHIGAN

SHEET TITLE:
TOPOGRAPHIC SURVEY

SHEET
3

21-006 Novi Ten North\CAD\PRO PLANS\21006-TPO.dwg 12/29/2023 8:25 AM Jason Rickard


ROAD CROSS SECTION
SLOPES TO HAVE ESTABLISHED VEGETATION
28' B-B
4" MOUNTABLE CURB & GUTTER SECTION
2.5'
2.5'
6'
5'
SLOPE SLOPE PER FT.
2%
2%
2% MAX. (TYP.)
5' WIDE CONC. WALK (TYP.)
PEA GRAVEL (TYP.)
PAVEMENT CROSS-SECTION PER CITY OF NOVI REQUIREMENTS
6" UNDERDRAIN SYSTEM (CONTRACTOR SHALL PROVIDE AS REQUIRED BY FIELD ENGINEER)
PROPOSED BUILDING LENGTHS
(7 UNITS BLDG.)
(6 UNITS BLDG.)
(5 UNITS BLDG.)
(4 UNITS BLDG.)
(3 UNITS BLDG.)
62'
168'-8"
144'-8"
120'-8"
96'-8"
72'-8"
OPTIONAL 4' GREAT ROOM EXTENSION-TYP.
SCALE
0 30 60 120
( IN FEET )
Scale: 1 inch = 60 ft.
BASE BENCHMARK: #2331 CITY OF NOVI BENCH TIE IN POWER POLE ELEV.=886.27 (NAVD88)
SITE BENCHMARK 1: ARROW ON HYDRANT ELEV.=878.96 (NAVD88)
RELOCATE OVERHEAD LINES
EXISTING STRIPING
PROPOSED STRIPING
SITE BENCHMARK #2: ARROW ON HYDRANT ELEV.=880.85 (NAVD88)
PROPOSED PUBLIC PARKING
-10' DRIVEWAY DISTANCE
-30' DRIVEWAY DISTANCE
-150' DRIVEWAY DISTANCE
-100' PROXIMITY DISTANCE
-500' SIGHT DISTANCE
DECELERATION LANE
TAPER
CENTER TURN LANE
EX. DAUDRAL
PROPOSED RETAINING WALL
PROPOSED (2) TENNIS COURTS
8' WIDE CONCRETE WALK
ADA RAMP (TYP.)
"STOP" SIGN
PROPOSED 60' I.D. RIGHT-OF-WAY
"NO OUTLET" SIGN
PROP. 4'-0" HIGH BERM W/ 3:1 SIDE SLOPES
PROP. PROJECT SIGNAGE
100 YEAR FLOOD PLAIN LINE
BASIN "A" IS DESIGNED TO ACCOMMODATE PROPOSED RESIDENTIAL DEVELOPMENT & FUTURE COMMERCIAL AREA.
HIGH WATER = 870.0
LOW WATER = 865.0
MAX. DEPTH = 5'
WETLAND "A" (WEA=504 S.F. 0.01 ACRES)
FLOODPLAIN VOLUME TBE OF
FLOOD ZONE: AE FLOODWAY
PROPOSED 20' FIRE ACCESS EASEMENT
PROP. 15'-17' HIGH BERM, 3:1 SIDE SLOPES
PROP. 6'-10" HIGH BERM, 3:1 SIDE SLOPES
PROP. 8' HIGH MASONRY WALL BY OTHER CITY, NOVI, BUILDING-TYP.
STUB WATER MAIN
STORM OUTLET FOR
PROPOSED PARK AREA GAZEBO AND PICNIC TABLES
10' WIDE TEMPORARY GRAVEL EMERGENCY ACCESS ROAD, ACCOMMODATING WEIGHT OF NOVI STANDARDS
6" ASPHALT OVER 6" 21AA AGGREGATE BASE
20' WIDE PROPOSED ACCESS ROAD
100 YEAR FLOOD PLAIN LINE
APPROXIMATE WETLAND BOUNDARY
LIMITS OF WETLAND "B" AS DETERMINED BY ASTI ENVIRONMENTAL IN 2020
CONNECT TO EX. WATER MAIN STUB IN "RIDGEVIEW OF NOVI"
PROPOSED RETAINING WALL
GREAT ROOM EXTENSION OPTION NOT AVAILABLE DUE TO REAR YARD SETBACK
PROPOSED 8' WIDE CONCRETE PEDESTRIAN PATHWAY WITHIN 12' WIDE PUBLIC EASEMENT
FLOOD ZONE: AE FLOODWAY
PROPOSED 8' WIDE CONCRETE PEDESTRIAN WALK
12' WD. PUBLIC EASEMENT FOR PEDESTRIAN WALK
25' ENVIRONMENTAL SETBACK (TYP)
LIMITS OF WETLAND "A"
LIMITS OF WETLAND "B"
PROPOSED 10' WIDE CONCRETE PEDESTRIAN WALK
V.A. B.F. SIGN (R7-8 & R7-8P)
OPTIONAL 4' GREAT ROOM EXTENSION-TYP.
10'x10' MAIL STATION
BIKE RACK (8 BIKES)
1.76%
PRIVATE
1.76%
1.76%
1.76%




B-3 GENERAL BUSINESS DISTRICT ZONING
7.97 ACRES

RM-1 RESIDENTIAL ZONING
27.07 ACRES & 71 UNITS

PRO LINE

EXISTING OS-1 ZONING TO REMAIN

PROPOSED B-3 ZONING

PROPOSED RM-1 ZONING

100 0 50 100 200 400
( IN FEET )
1 inch = 100 ft.

PROJECT NAME:
NOVI TEN TOWN HOMES
SECTION 26, TOWN 1 NORTH, RANGE 8 EAST
CITY OF NOVI, OAKLAND COUNTY, MICHIGAN

SHEET TITLE:
EXISTING AND PROPOSED ZONING

SHEET 7

CLIENT:
NOVI TEN ASSOCIATES, LLC
7 W. SQUARE LAKE ROAD
BLOOMFIELD HILLS
MICHIGAN 48302
248.909.1308

DRAWN BY: N.G.
DATE: 05-29-23
CHECKED BY: J.R.
JOB No.: 21-006

811 3 WORKING DAYS BEFORE YOU DIG CALL MISS DIG 1-800-482-7171 (TOLL FREE FOR THE LOCATION OF UNDERGROUND FACILITIES)

| NO. | DESCRIPTION | DATE |
|---|---|---|
| 1. | ADD COMMERCIAL PER CLIENT | 05-19-22 |
| 2. | ISSUED | 02-28-23 |
| 3. | REVISE PRO | 01-02-24 |

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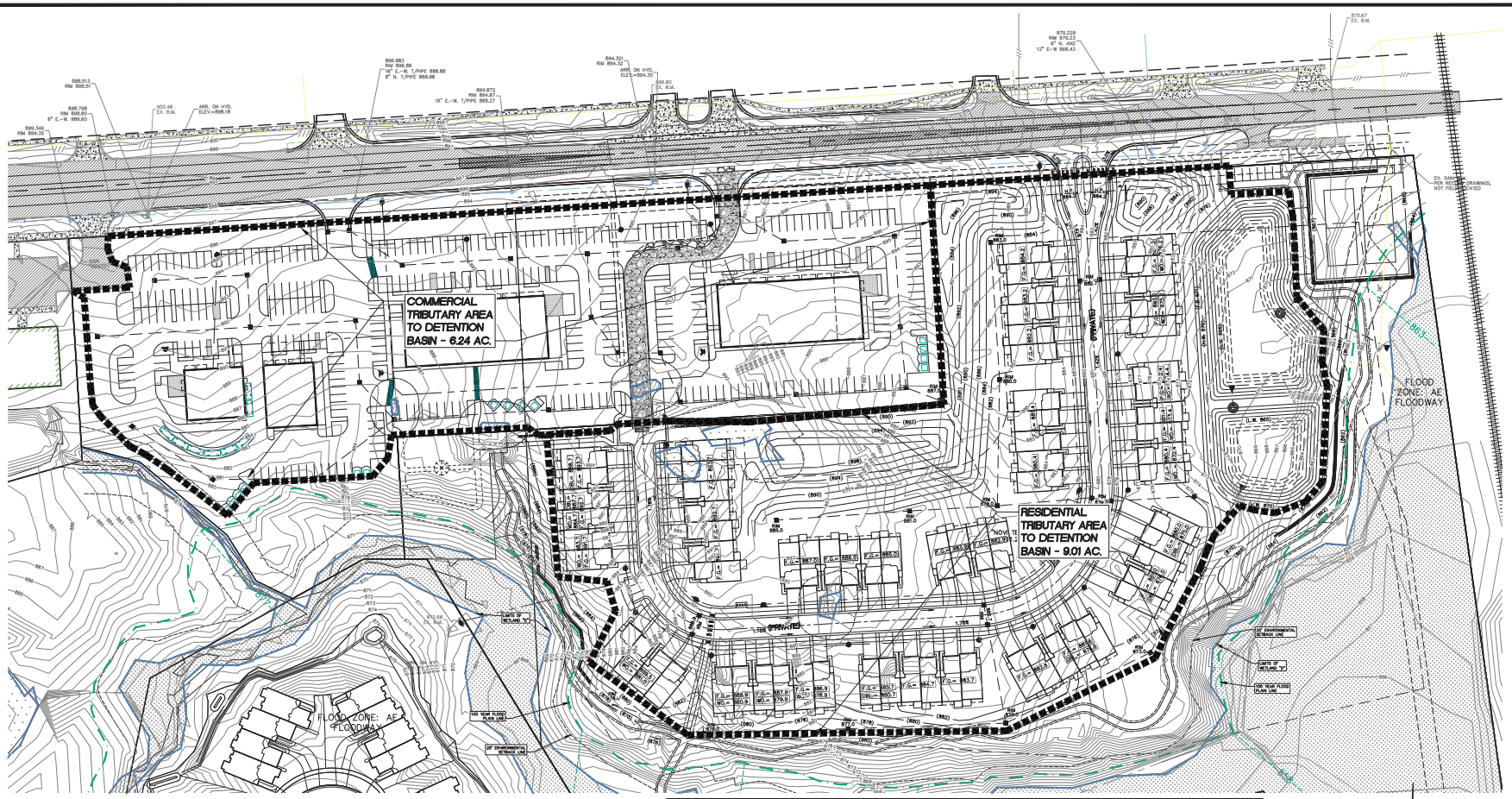
CLINTON TOWNSHIP LOCATION
[illegible]
CLINTON TOWNSHIP, MI 48035
[illegible]

FARMINGTON HILLS LOCATION
[illegible]
FARMINGTON HILLS, MI 48331
[illegible]



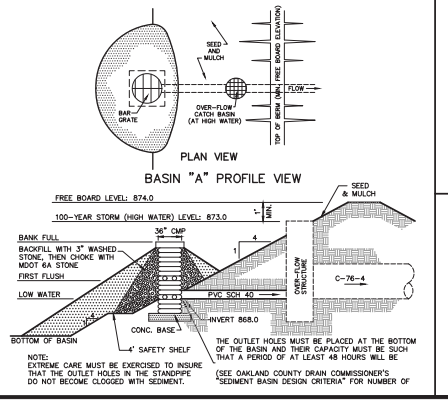

## MAINTENANCE SCHEDULE:

THE PROPERTY OWNER IS RESPONSIBLE FOR THE MAINTENANCE OF THE DETENTION BASIN. MAINTENANCE SHOULD BE PERFORMED FOLLOWING ANY STORM AND SHOULD INCLUDE:

1. CHECKING THE DEPTH OF SEDIMENT DEPOSIT TO ENSURE THE CAPACITY OF THE BASIN IS ADEQUATE FOR STORM WATER AND SEDIMENT DEPOSITION, AND FOR THE REMOVING OF SEDIMENT.
2. CHECKING THE BASIN FOR PIPING, SEEPAGE, OR OTHER MECHANICAL DAMAGE.
3. CHECKING FOR THE PRESENCE OF ANY SOIL CAKING, WHICH WOULD PREVENT PROPER DRAINAGE FROM THE BASIN.
4. CHECKING THE OUTFALL TO ENSURE DRAINAGE IS NOT CAUSING ANY ROSIVE VELOCITIES AND TO ENSURE THE OUTLET IS NOT CLOGGED.
5. ANY PROBLEM DISCOVERED DURING THE MAINTENANCE CHECKS SHOULD BE ADDRESSED IMMEDIATELY.
6. SEDIMENT REMOVED DURING CLEANING SHOULD BE PLACED AT AN UPLAND AREA AND STABILIZED SO THAT IT DOES NOT RE-ENTER THE DRAINAGE COURSE.

## STORM WATER DETENTION CALCULATIONS

## DETENTION BASIN SEDIMENT FILTER DETAIL




SCALE

60 0 30 60 120 240

( IN FEET )

Scale: 1 inch = 60 ft.

**LEGEND**

| EXISTING | PROPOSED | |
|---|---|---|
| | | PAVEMENT (ASPHALT) |
| | | SIDE WALK (CONCRETE) CONCRETE CURB AND GUTTER |
| | | STORM SEWER |
| | | SANITARY SEWER |
| | | WATER MAIN |
| | | MANHOLE |
| | | CATCH BASIN W/STREAM GUARD |
| | | CURB INLET W/SILT SAC |
| | | END SECTION |
| | | GATE VALVE |
| | | HYDRANT |
| | | FLOOD PLAIN |
| 1000 | 1000 | CONTOURS |
| 1000.00 | 1000.00 | SPOT ELEVATION |

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PROFESSIONAL LANDSCAPE ARCHITECTS
SEIBER KEAST LEHNER
Troy Office | Novi Office | Ann Arbor Office
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Plymouth, MI 48170
734.927.1337

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| 1. | ADD COMMERCIAL FOR CLIENT | 05-15-22 |
| 2. | ISSUED | 02-28-23 |
| 3. | REVISE PRO | 05-29-23 |

811 3 WORKING DAYS BEFORE YOU DIG 1-800-482-7171 MISS DIG System, Inc.

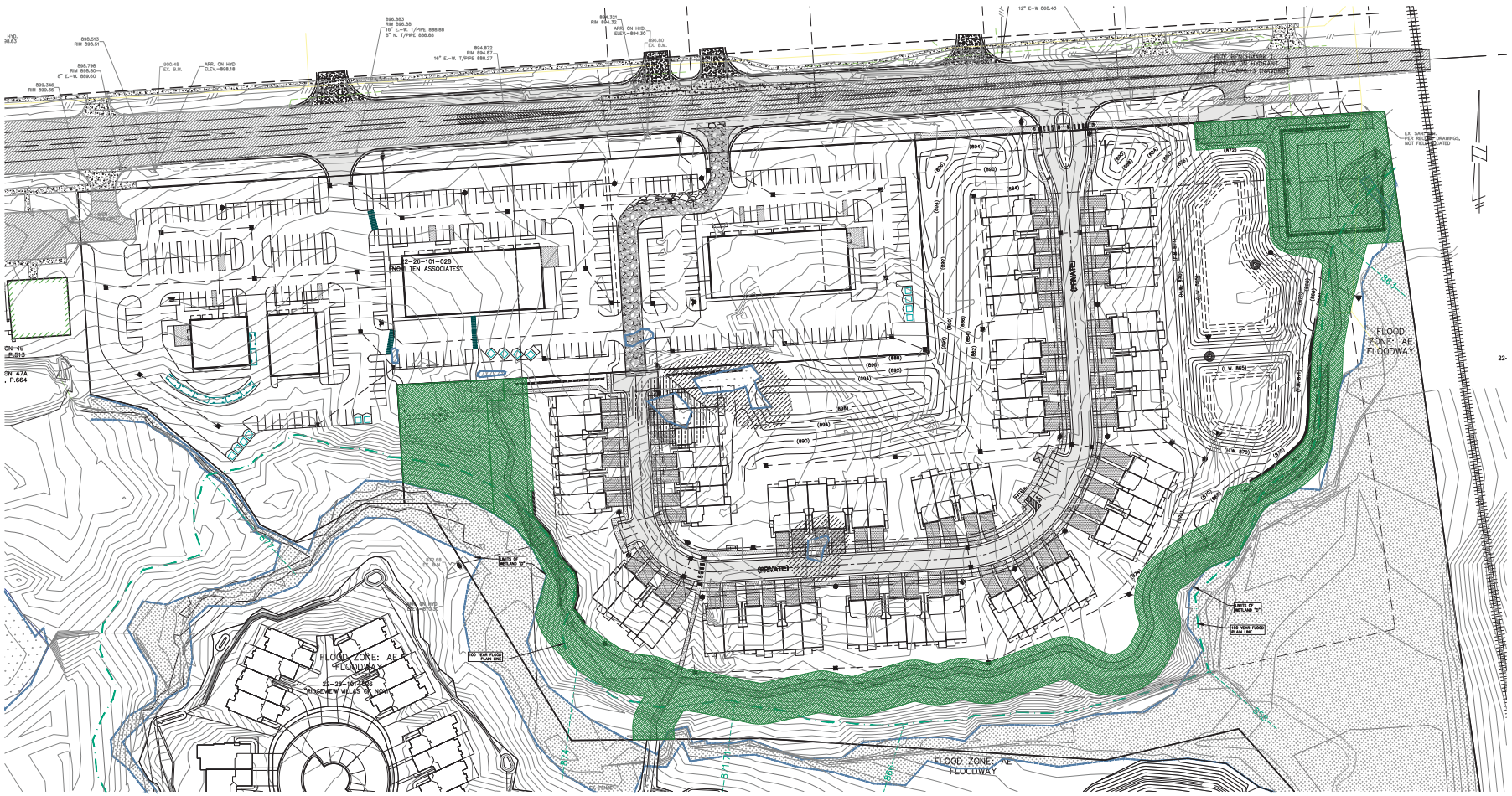
DRAWN BY:
DATE: 05-29-23
CHECKED BY:
JOB No.: 21-006

CLIENT:
NOVI TEN ASSOCIATES, LLC
30 SOUTH LAKE ROAD
BLOOMFIELD HILLS
MICHIGAN 48302
248.909.1308

PROJECT NAME:
NOVI TEN TOWN HOMES
SECTION 26, TOWN 1 NORTH, RANGE 8 EAST
CITY OF NOVI, OAKLAND COUNTY, MICHIGAN

SHEET TITLE:
STORM WATER MANAGEMENT PLAN

SHEET
8




SCALE

60 0 30 60 120 240

( IN FEET )

Scale: 1 inch = 60 ft.

## Residential Usable Open Space Calculations Sec. 3.1.8.D

| | | |
|---|---|---|
| TOTAL No. OF RESIDENTIAL UNITS | = | 71 |
| USABLE OPEN SPACE REQUIRED | = | 200 S.F. PER UNIT |
| | = | 14,200 S.F. = 0.32 AC. |
| USABLE OPEN SPACE PROVIDED | = | 107,423 S.F. = 2.47 AC. |

= USABLE OPEN SPACE 50' WIDE MIN

## LEGEND

EXISTING / PROPOSED

- PAVEMENT (ASPHALT)
- SIDE WALK (CONCRETE)
- CONCRETE CURB AND GUTTER
- STORM SEWER
- SANITARY SEWER
- WATER MAIN
- MANHOLE
- CATCH BASIN
- CURB INLET W/SILT SAC
- END SECTION
- GATE VALVE
- HYDRANT
- FLOOD PLAIN
- CONTOURS
- SPOT ELEVATION
- SURFACE DRAINAGE
- OVERFLOW ROUTE
- TREE FENCE
- SILT FENCE
- PROPOSED DRIVEWAY LOCATION
- LIMIT OF DISTURBANCE

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TROY OFFICE | 248.519.1111 | 248.519.1115
FARMINGTON HILLS OFFICE | 248.519.1111
SEIBERKEAST.COM

| NO. | DESCRIPTION | DATE |
|---|---|---|
| 1. | ADD COMMERCIAL PER CLIENT | 05-15-23 |
| 2. | ISSUED | 02-28-24 |
| 3. | REVISE PRO | 01-08-24 |

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OR MISSDIG.ORG

DRAWN BY:
DATE: 05-29-23
CHECKED BY:
DATE:
JOB No.: 21-006

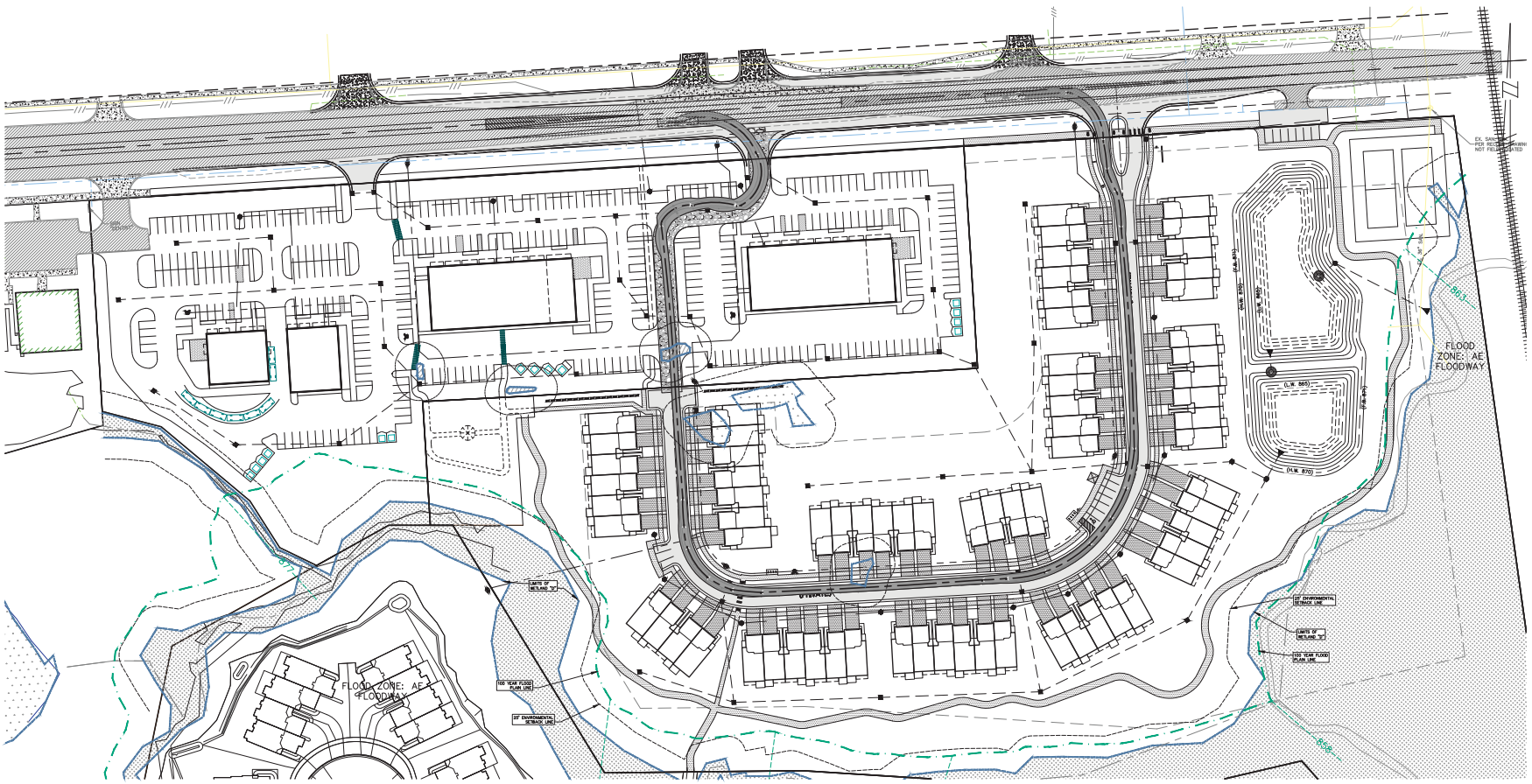
CLIENT:
NOVI TEN ASSOCIATES, LLC
41 W. MAPLE / LAKE ROAD
BLOOMFIELD HILLS
MICHIGAN 48302
248.909.1308

PROJECT NAME:
NOVI TEN TOWN HOMES
SECTION 26, TOWN 1 NORTH, RANGE 8 EAST
CITY OF NOVI, OAKLAND COUNTY, MICHIGAN

SHEET TITLE:
OPEN SPACE PLAN

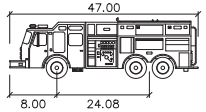
SHEET
9

P:\SKE Novi Ten North\CAD\PDS PLANS\2020s\2026s\2026s.dwg, 12/28/2023 9:27 AM, Jason Roland




SCALE

( IN FEET )
Scale: 1 inch = 60 ft.




47' FIRE TRUCK

| | feet |
|---|---|
| Width | : 8.42 |
| Track | : 8.42 |
| Lock to Lock Time | : 6.0 |
| Steering Angle | : 33.3 |

## LEGEND

| EXISTING | PROPOSED | |
|---|---|---|
| | | PAVEMENT (ASPHALT) |
| | | SIDE WALK (CONCRETE) |
| | | CONCRETE CURB AND GUTTER |
| | | STORM SEWER |
| | | SANITARY SEWER |
| | | WATER MAIN |
| | | MANHOLE |
| | | CATCH BASIN |
| | | CURB INLET W/SILT SAC |
| | | END SECTION |
| | | GATE VALVE |
| | | HYDRANT |
| | | FLOOD PLAIN |
| 1000 | 1000 | CONTOURS |
| + 1000.0 | 1000.00 T/C | SPOT ELEVATION |
| | | SURFACE DRAINAGE |
| | | OVERFLOW ROUTE |
| | | TREE FENCE |
| | | SILT FENCE |
| | | PROPOSED DRIVEWAY LOCATION |
| | | LIMIT OF DISTURBANCE |

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TROY OFFICE | 248.519.2420
2667 E. MAPLE ROAD
TROY, MICHIGAN 48083
GRAND RAPIDS OFFICE | 616.776.1020
3996 RIVERHILL DRIVE
GRAND RAPIDS, MICHIGAN 49534

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OR MISSDIG.ORG

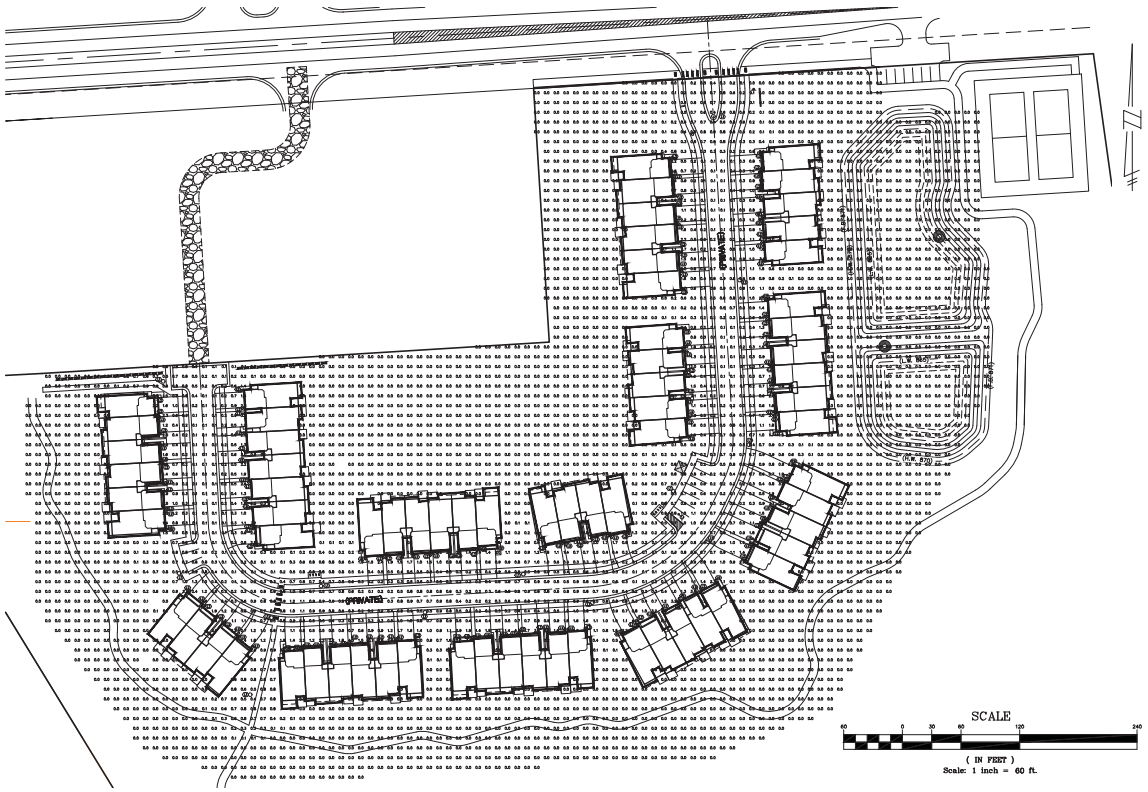
DRAWN BY: MJ
DATE: 05-29-23
CHECKED BY: AJC
JOB No.: 21-006

CLIENT:
NOVI TEN ASSOCIATES, LLC
M. SCHULTE
BLOOMFIELD HILLS
MICHIGAN 48302
248.909.1308

PROJECT NAME:
NOVI TEN TOWN HOMES
SECTION 26, TOWN 1 NORTH, RANGE 8 EAST
CITY OF NOVI, OAKLAND COUNTY, MICHIGAN

SHEET TITLE:
TRUCK ROUTING PLAN

SHEET
10




## GENERAL PHOTOMETRIC SCHEDULE

| | |
|---|---|
| AVERAGE FOOT–CANDLES | 0.25 |
| MAXIMUM FOOT–CANDLES | 5.4 |
| MINIMUM FOOT–CANDLES | 0.0 |
| MINIMUM TO MAXIMUM FC RATIO | 0.00 |
| MAXIMUM TO MINIMUM FC RATIO | 5.40 / 0.00 |
| AVERAGE TO MINIMUM FC RATIO | 0.25 / 0.00 |

## LUMINAIRE SCHEDULE

| CALLOUT | SYMBOL | QUANTITY | MANUFACTURER | CATALOG NUMBER | DESCRIPTION | MOUNTING HEIGHT | LUMENS / LAMP | LAMP DEPRECIATION |
|---|---|---|---|---|---|---|---|---|
| L1 | | 10 | Holophane | GVD3 P20 40K XXXX GL5LU RB FC | GranVille Gen3, P20 Performance Package, 4000K CCT, 70CRI, Type 5 lunar optic distribution with Ribs and Bands and Full Cover | 10' | 4044 | 0.9 |
| L2 | | 136 | Generation Brands | 8592–12 | One light outdoor wall lantern – Med A19 75W (or LED eqv.) bulb | 6'–6" | 1100 | 0.9 |


8. Light fixtures shall not be mounted in excess of the maximum height limitation of the ... zoned. For lighting in residential districts and for uses adjacent to residential districts or uses, light fixtures shall not be mounted in excess of twenty-five (25) feet above grade. Fixture height shall be measured from the grade of the illuminated surface to the bottom of the fixture.
9. Electrical service to light fixtures shall be placed underground.
10. No flashing light shall be permitted.
11. Glare control shall be accomplished primarily through the proper selection and application of lighting equipment. Only after these means have been exhausted shall landscaping, fencing and similar screening methods be considered acceptable means for reducing glare.
12. Outdoor lighting shall be designed to achieve uniform illumination levels. The ratio of the average light level of the surface being lit to the lowest light of the surface being lit, measured in foot-candles (fc), shall not exceed four to one (4:1).
13. The use of low color rendering active such as metal halide is permitted over high and low pressure sodium lamps.
14. Only necessary lighting for security purposes and limited operations shall be permitted after a site's hours of operation.
15. Lighting for security purposes shall be directed only onto the area to be secured.
   i. All fixtures shall be located, shielded and aimed so that light is not cast upon adjacent properties or streets. Where adjacent properties or streets are unnecessarily transmitted into the night sky.
   ii. Fixtures mounted on the building and designed to illuminate the facade are prohibited.
   iii. The illumination of canopy soffit is prohibited.
16. The following illumination levels shall act as minimum standards for all exterior lighting. Maximum lighting will be governed by the first by one (4:1) ratio of average to minimum illumination of the surface being lit. Where a site abuts a residential district, maximum illumination at the property line shall not exceed one (1) foot-candle. But city may modify these levels if it could cause problems and deprived residents and businesses for the use and enjoyment area.

| Use | Minimum Illumination* (foot-candles) |
|---|---|
| Parking Areas | 0.2 |
| Loading and Unloading Areas | 0.4 |
| Walkways | 0.2 |
| Building Entrances Frequent Use | 1.0 |
| Building Entrances Infrequent Use | 0.2 |

*The minimum light measured in foot-candles at the point of least illumination when measured at ground level.

   i. Where a site abuts a residential district or use, the following special conditions shall apply:
      i. The height of light fixtures shall not exceed twenty-five (25) feet.
      ii. All fixtures shall have a cut-off angle of ninety (90) degrees or less.
      iii. No point light source shall be visible at the property line (adjacent to residential or ground level.
      iv. Maximum illumination at the property line shall not exceed one-half (1/2) foot candle.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TRAFFIC ENGINEERING | CIVIL ENGINEERING
41 ANN STREET, NORTHVILLE, MICHIGAN 48167
248.735.8787 | www.skldesign.com


| NO. | DESCRIPTION | DATE |
|---|---|---|
| 1. | ADD COMMERCIAL PER CLIENT | 05-15-23 |
| 2. | ISSUED | 02-28-23 |
| 3. | REVISE PPD | 01-05-24 |

MISS DIG 811
3 WORKING DAYS BEFORE YOU DIG
CALL MISS DIG
1-800-482-7171
(IT'S THE LAW!)
MICHIGAN STATUTE

DRAWN BY: MJ
DATE: 05-29-23
CHECKED BY: AS
JOB No.: 21-006

CLIENT:
NOVI TEN ASSOCIATES, LLC
7700 WEST LAKE ROAD
BLOOMFIELD HILLS
MICHIGAN 48302
248.909.1308

PROJECT NAME:
NOVI TEN TOWN HOMES
SECTION 26, TOWN 1 NORTH, RANGE 8 EAST
CITY OF NOVI, OAKLAND COUNTY, MICHIGAN

SHEET TITLE:
PHOTOMETRIC LIGHTING PLAN

SHEET
11


21-006 Novi Ten Town\CAD\PD PLANS\21006-PH.dwg 12/28/2023 9:29 AM Jason Roland

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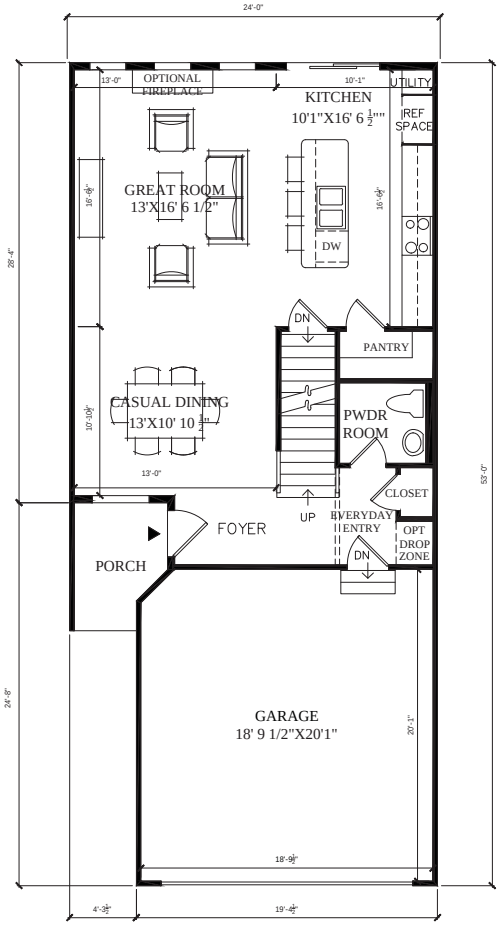
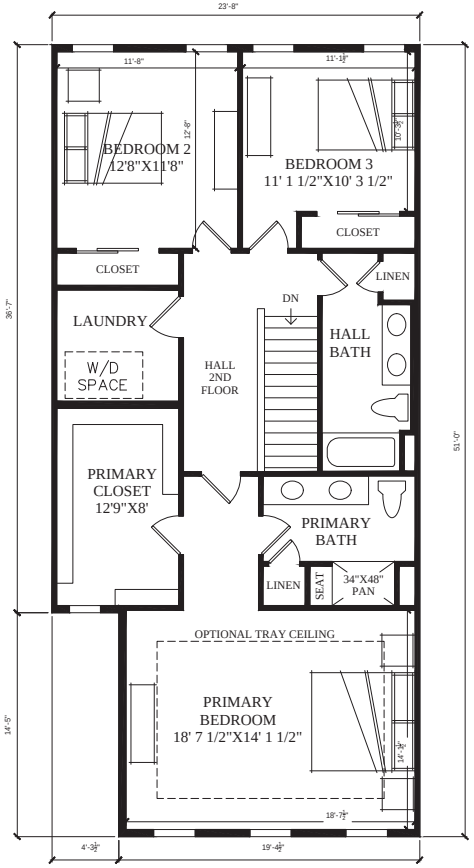



HOWE - FIRST FLOOR PLAN

SCALE: 1/8"=1'-0"




HOWE - SECOND FLOOR PLAN

SCALE: 1/8"=1'-0"

TOLLARCHITECTURE
PHILADELPHIA - ORLANDO
DALLAS - LOS ANGELES - SEATTLE
1140 Virginia Drive, Fort Washington, PA 19034
P 215.938.8300 | F 215.938.8314
A Division of Toll Brothers

SHEET REVISION INFO

SET REVISION INFO

PRODUCT LINE

MODEL/PROJECT NAME

ELEVATION NAME

DRAWN BY: -

CHECKED BY: -

SHEET DATE: 6-30-2023

SHEET DESCRIPTION: HOWE FLOOR PLANS

SHEET NUMBER: TB-1

SERIAL NUMBER

DATE: Friday, April 28, 2023 - 9:17:25 am

DATE: Friday, June 30, 2023 - 10:27:49 am

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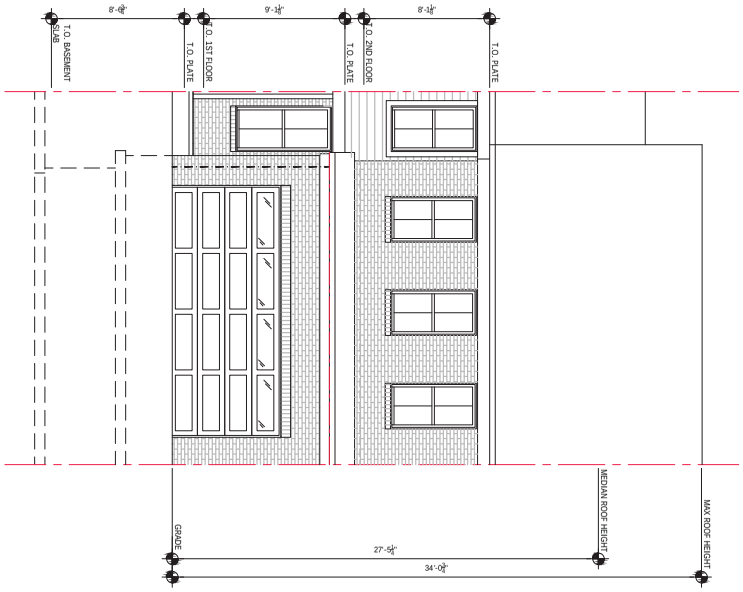
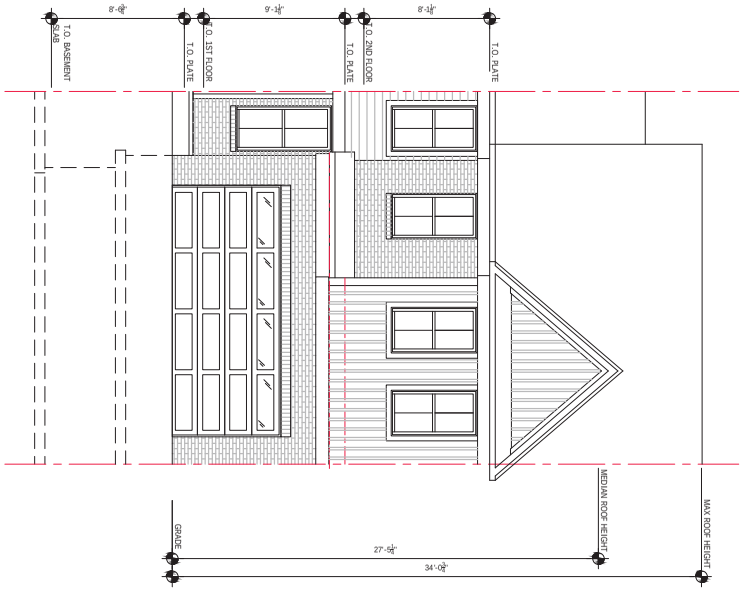
## HOWE NEWHAVEN - FRONT ELEVATION

SCALE: 1/8"=1'-0"



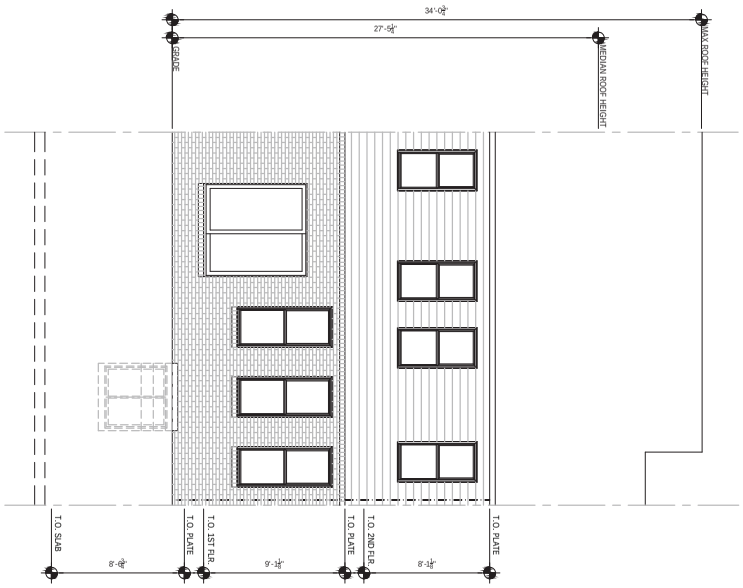

## HOWE WETHERBY - FRONT ELEVATION

SCALE: 1/8"=1'-0"




## HOWE ALL ELEVATIONS - REAR ELEVATION

SCALE: 1/8"=1'-0"




| | | | | | |
|---|---|---|---|---|---|
| SERIAL NUMBER | SHEET DESCRIPTION: HOWE ELEVATIONS | DRAWN BY - | PRODUCT LINE | SHEET REVISION INFO | TOLLARCHITECTURE<br>PHILADELPHIA - ORLANDO<br>DALLAS - LOS ANGELES - SEATTLE<br>1140 Virginia Drive, Fort Washington, PA 19034<br>P 215-295-5300 \| F 215-295-5314<br>A Division of Toll Brothers |
| | | CHECKED BY - | MODEL/PROJECT NAME | | |
| | | SHEET DATE - 6-30-2023 | | SET REVISION INFO | |
| | SHEET NUMBER: TB-2 | | ELEVATION NAME | | |

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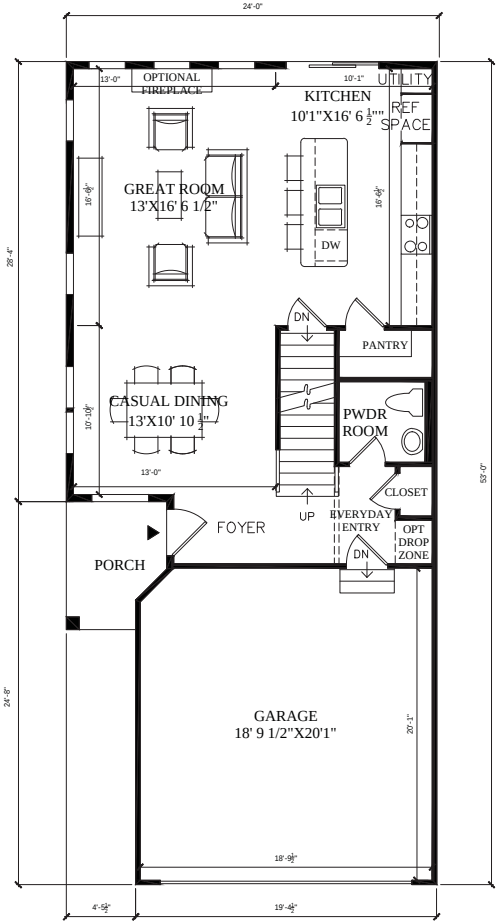
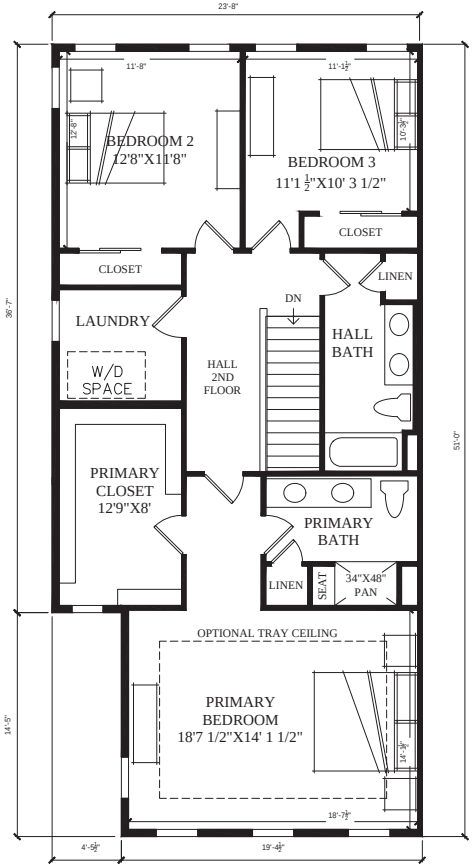



HOWE ELITE - FIRST FLOOR PLAN

SCALE: 1/8"=1'-0"




HOWE ELITE - SECOND FLOOR PLAN

SCALE: 1/8"=1'-0"

TOLLARCHITECTURE

PHILADELPHIA - ORLANDO
DALLAS - LOS ANGELES - SEATTLE

1140 Virginia Drive, Fort Washington, PA 19034
P 215.938.8000 | F 215.938.8314
A Division of Toll Brothers

SHEET REVISION INFO

SET REVISION INFO

PRODUCT LINE

MODEL/PROJECT NAME

ELEVATION NAME

DRAWN BY -

CHECKED BY -

SHEET DATE - 6-30-2023

SHEET DESCRIPTION: HOWE ELITE FLOOR PLANS

SHEET NUMBER: TB-3

SERIAL NUMBER

DATE: Friday, April 28, 2023 - 9:17:29 am

DATE: Friday, June 30, 2023 - 10:27:50 am

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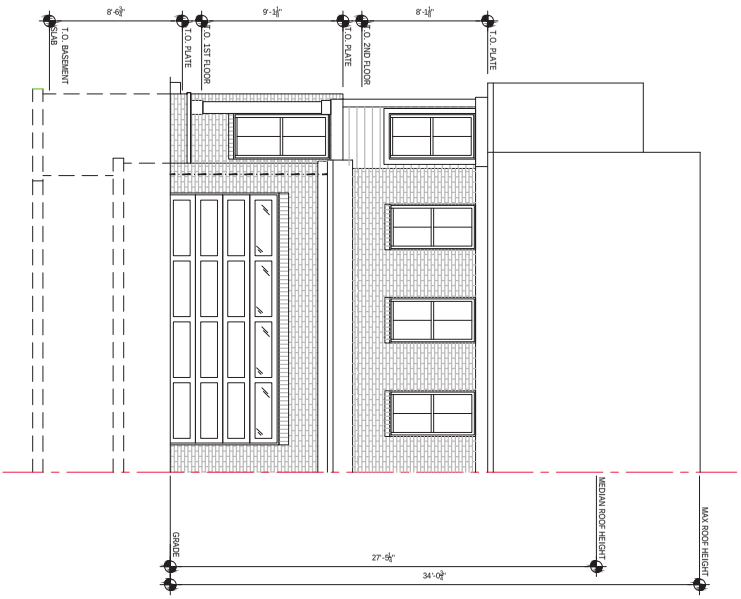
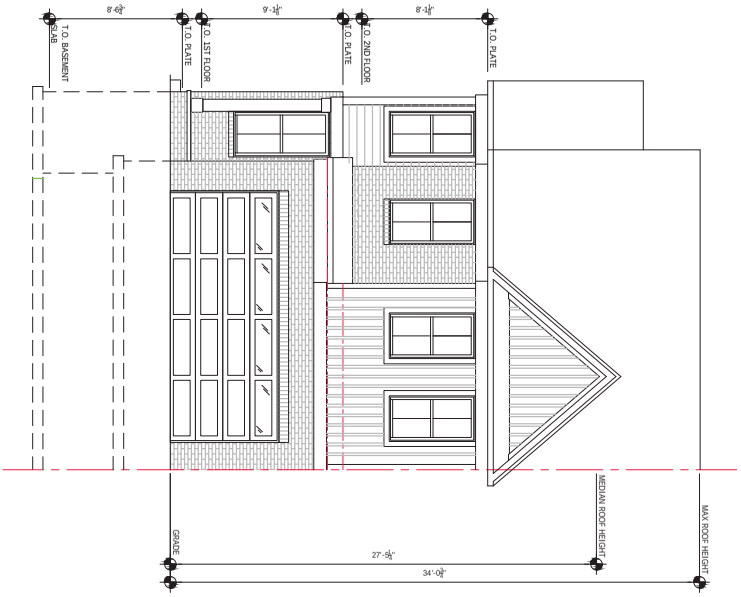
## HOWE ELITE NEWHAVEN - FRONT ELEVATION

SCALE: 3/8"=1'-0"



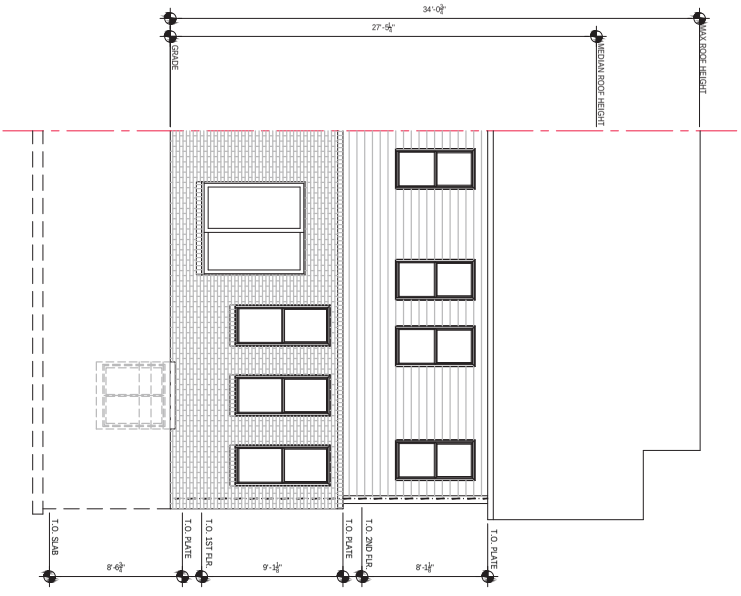

## HOWE ELITE WETHERBY - FRONT ELEVATION

SCALE: 3/8"=1'-0"




## HOWE ELITE ALL ELEVATIONS - REAR ELEVATION

SCALE: 3/8"=1'-0"




| | | | | | |
|---|---|---|---|---|---|
| SERIAL NUMBER | SHEET DESCRIPTION: HOWE ELITE ELEVATIONS | DRAWN BY - | PRODUCT LINE | SHEET REVISION INFO | TOLLARCHITECTURE<br>PHILADELPHIA - ORLANDO<br>DALLAS - LOS ANGELES - SEATTLE |
| | | CHECKED BY - | MODEL/PROJECT NAME | SET REVISION INFO | 1140 Virginia Drive, Fort Washington, PA 19034<br>P 215-205-5300 \| F 215-205-5314<br>A Division of Toll Brothers |
| | SHEET NUMBER: TB-4 | SHEET DATE - 6-30-2023 | ELEVATION NAME | | |

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HOWE ELITE WETHERBY - SIDE ELEVATION

SCALE: $\frac{1}{8}$"=1'-0"

HOWE ELITE NEWHAVEN - SIDE ELEVATION

SCALE: $\frac{1}{8}$"=1'-0"

TOLLARCHITECTURE
PHILADELPHIA - ORLANDO
DALLAS - LOS ANGELES - SEATTLE
1140 Virginia Drive, Fort Washington, PA 19034
P 215.938.8300 | F 215.938.8314
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SHEET REVISION INFO

SET REVISION INFO

PRODUCT LINE

MODEL/PROJECT NAME

ELEVATION NAME

DRAWN BY -

CHECKED BY -

SHEET DATE - 6-30-2023

SHEET DESCRIPTION: HOWE ELITE ELEVATIONS

SHEET NUMBER: TB-5

SERIAL NUMBER

DATE: Friday, April 28, 2023 - 9:27:33 am

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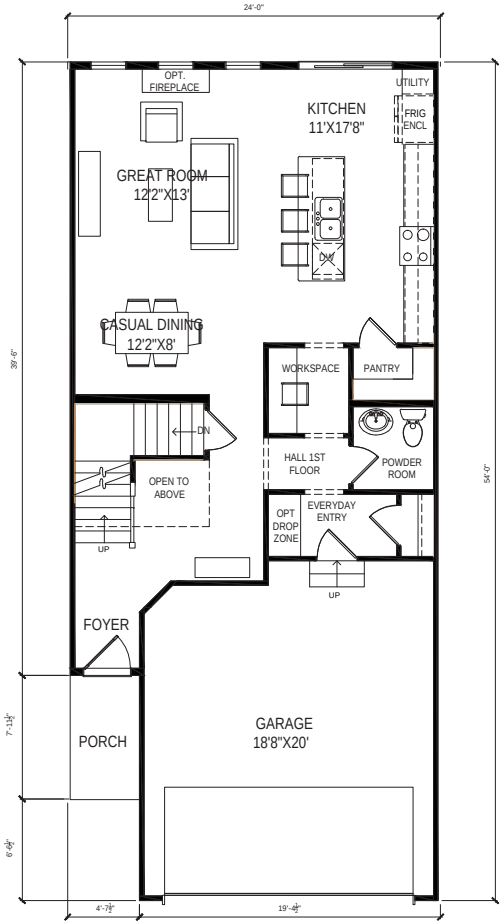
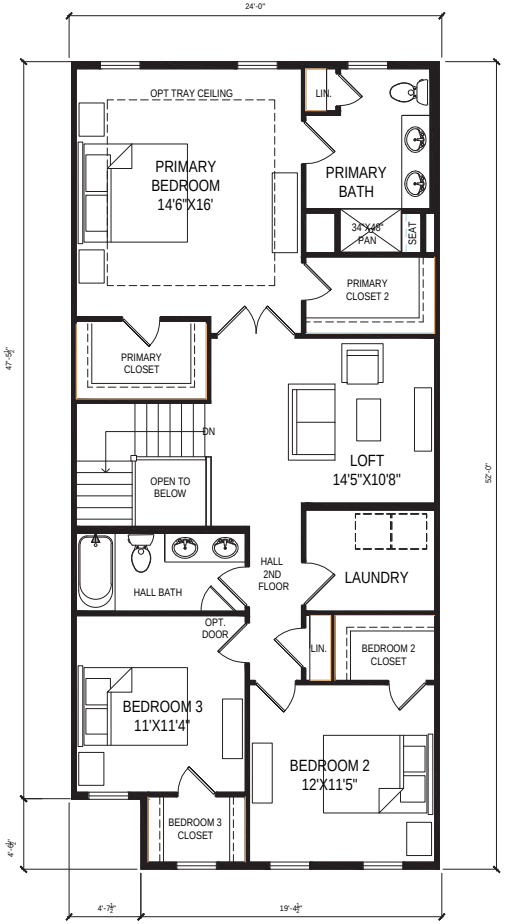



SANDERS - FIRST FLOOR PLAN

SCALE: $\frac{1}{8}$"=1'-0"




SANDERS - SECOND FLOOR PLAN

SCALE: $\frac{1}{8}$"=1'-0"

TOLLARCHITECTURE
PHILADELPHIA - ORLANDO
DALLAS - LOS ANGELES - SEATTLE
1140 Virginia Drive, Fort Washington, PA 19034
T 215.938.8000 | F 215.938.8314
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SHEET REVISION INFO

SET REVISION INFO

PRODUCT LINE

MODEL/PROJECT NAME

ELEVATION NAME

DRAWN BY -

CHECKED BY -

SHEET DATE - 6-30-2023

SHEET DESCRIPTION: SANDERS FLOOR PLANS

SHEET NUMBER: TB-6

SERIAL NUMBER

DATE: Friday, April 28, 2023 - 9:27:51 am

DATE: Friday, June 30, 2023 - 10:27:52 am

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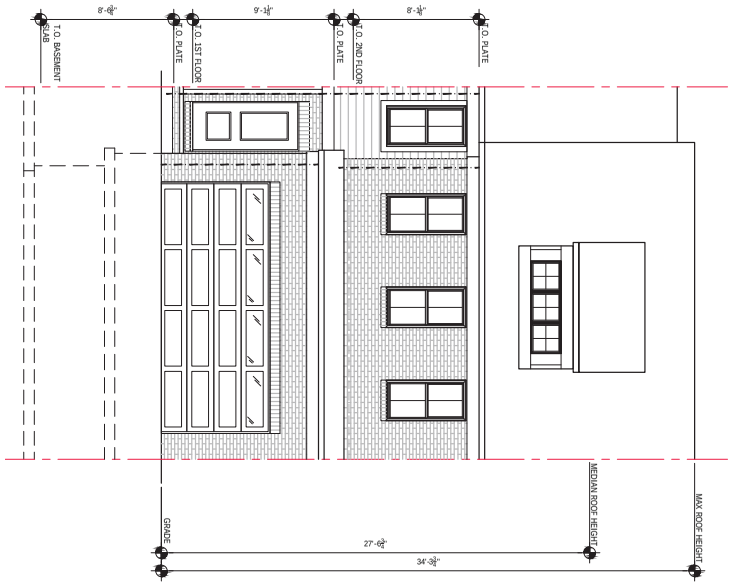
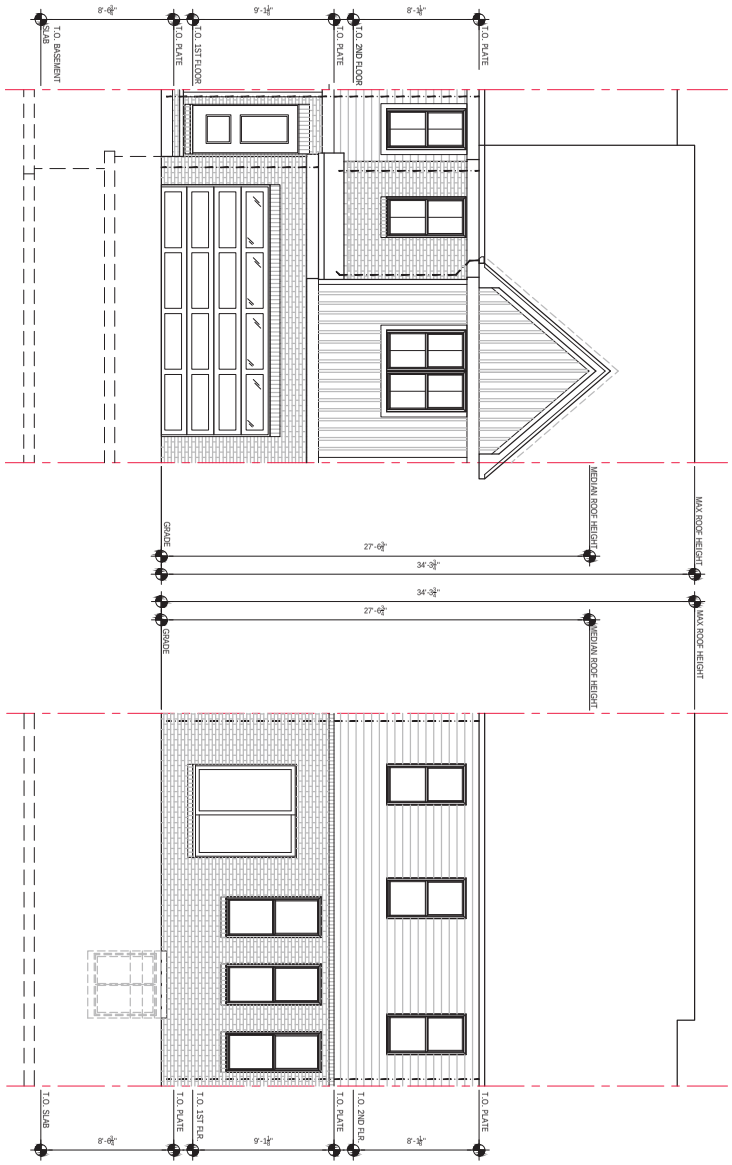
## SANDERS NEWHAVEN - FRONT ELEVATION

SCALE: 1/8"=1'-0"




## SANDERS WETHERBY - FRONT ELEVATION

SCALE: 1/8"=1'-0"




## SANDERS ALL ELEVATIONS - REAR ELEVATION

SCALE: 1/8"=1'-0"

| | | | | | |
|---|---|---|---|---|---|
| SERIAL NUMBER | SHEET DESCRIPTION: SANDERS ELEVATIONS | DRAWN BY - | PRODUCT LINE | SHEET REVISION INFO | TOLLARCHITECTURE<br>PHILADELPHIA - ORLANDO<br>DALLAS - LOS ANGELES - SEATTLE<br>1140 Virginia Drive, Fort Washington, PA 19034<br>P 215-205-5300 \| F 215-205-5314<br>A Division of Toll Brothers |
| | | CHECKED BY - | MODEL/PROJECT NAME | | |
| | | SHEET DATE - 6-30-2023 | | SET REVISION INFO | |
| | SHEET NUMBER: TB-7 | | ELEVATION NAME | | |

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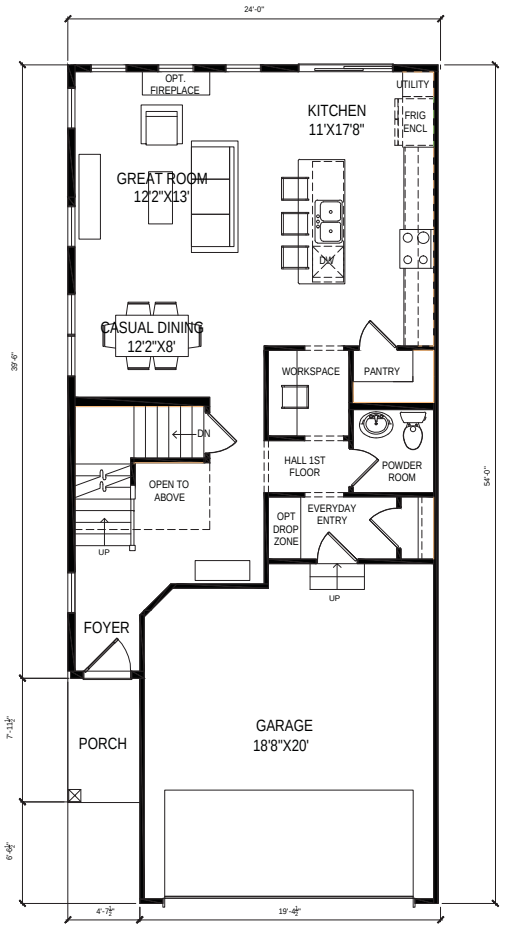
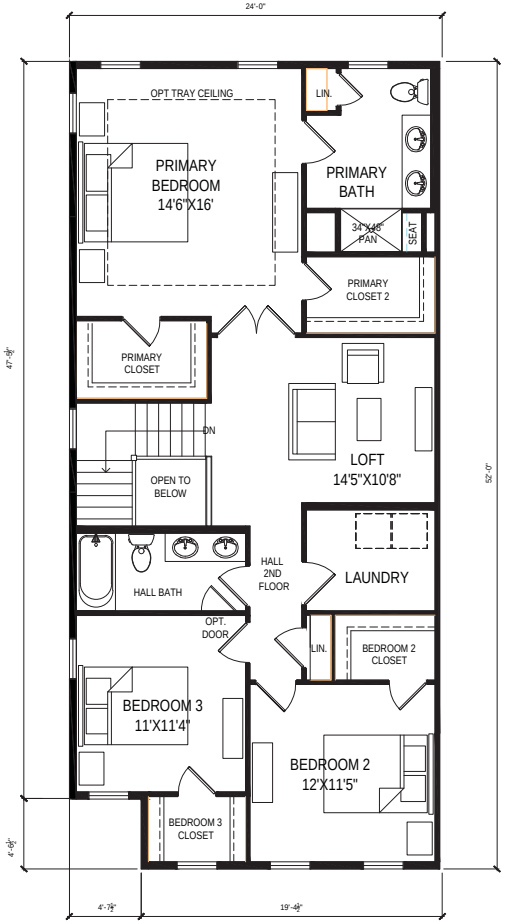



SANDERS ELITE- FIRST FLOOR PLAN

SCALE: $\frac{1}{8}$"=1'-0"




SANDERS ELITE- FIRST FLOOR PLAN

SCALE: $\frac{1}{8}$"=1'-0"

TOLLARCHITECTURE
PHILADELPHIA - ORLANDO
DALLAS - LOS ANGELES - SEATTLE
1140 Virginia Drive, Fort Washington, PA 19034
P 215.938.8000 | F 215.938.8314
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SHEET REVISION INFO

SET REVISION INFO

PRODUCT LINE

MODEL/PROJECT NAME

ELEVATION NAME

DRAWN BY -

CHECKED BY -

SHEET DATE - 6-30-2023

SHEET DESCRIPTION: SANDERS ELITE FLOOR PLANS

SHEET NUMBER: TB-8

SERIAL NUMBER

DATE: Friday, April 28, 2023 - 9:17:23 am

DATE: Friday, June 30, 2023 - 10:27:53 am

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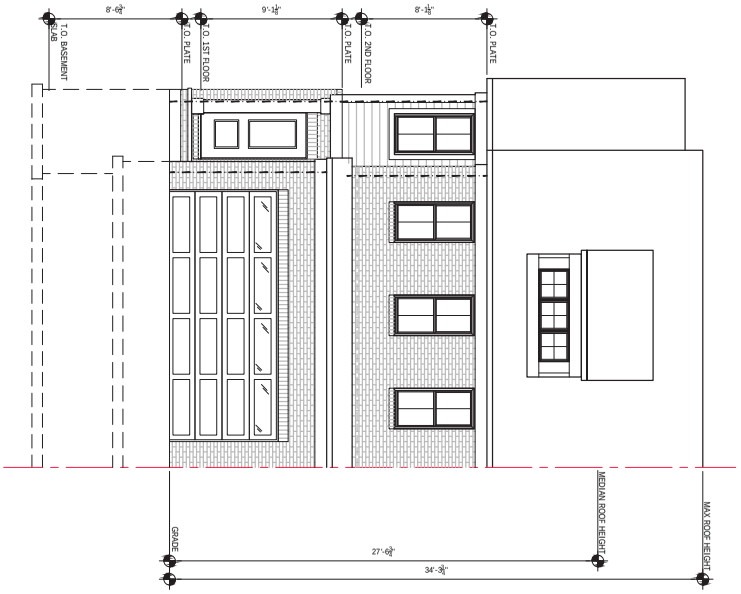
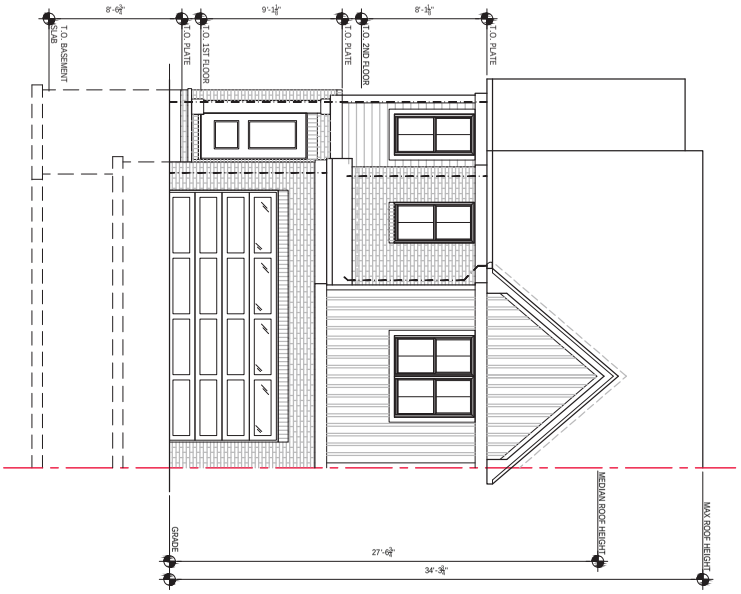
## SANDERS ELITE NEWHAVEN - FRONT ELEVATION

SCALE: 1/8"=1'-0"



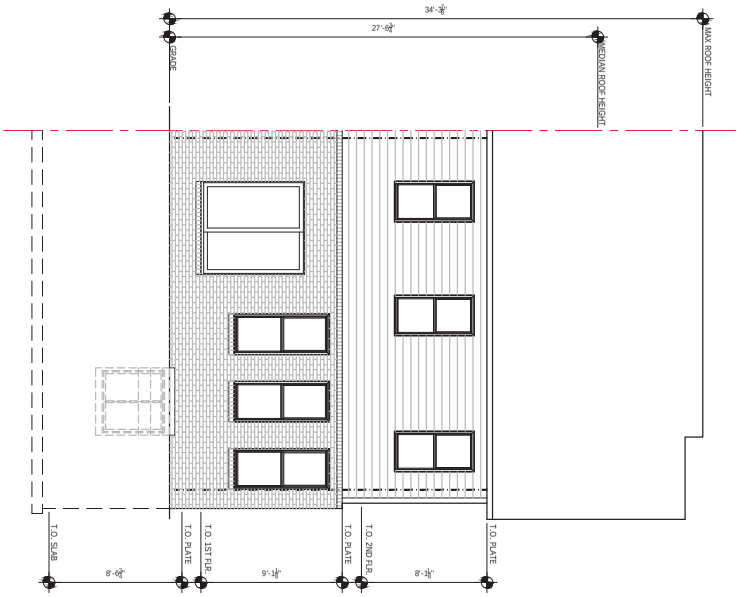

## SANDERS ELITE WETHERBY - FRONT ELEVATION

SCALE: 1/8"=1'-0"




## SANDERS ELITE ALL ELEVATIONS - REAR ELEVATION

SCALE: 1/8"=1'-0"




| | | | | | |
|---|---|---|---|---|---|
| SERIAL NUMBER | SHEET DESCRIPTION: SANDERS ELITE ELEVATIONS | DRAWN BY - / CHECKED BY - / SHEET DATE 6-30-2023 | PRODUCT LINE / MODEL/PROJECT NAME / ELEVATION NAME | SHEET REVISION INFO / SET REVISION INFO | TOLLARCHITECTURE<br>PHILADELPHIA - ORLANDO<br>DALLAS - LOS ANGELES - SEATTLE<br>1140 Virginia Drive, Fort Washington, PA 19034<br>P 215-205-5300 \| F 215-205-5314<br>A Division of Toll Brothers |
| SHEET NUMBER | TB-9 | | | | |

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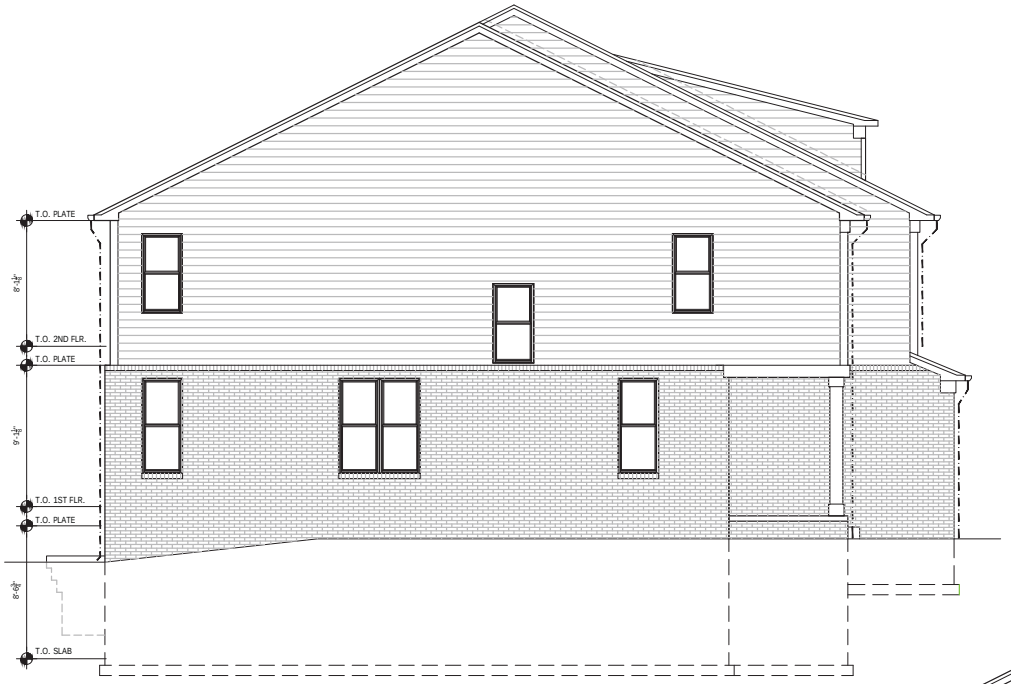
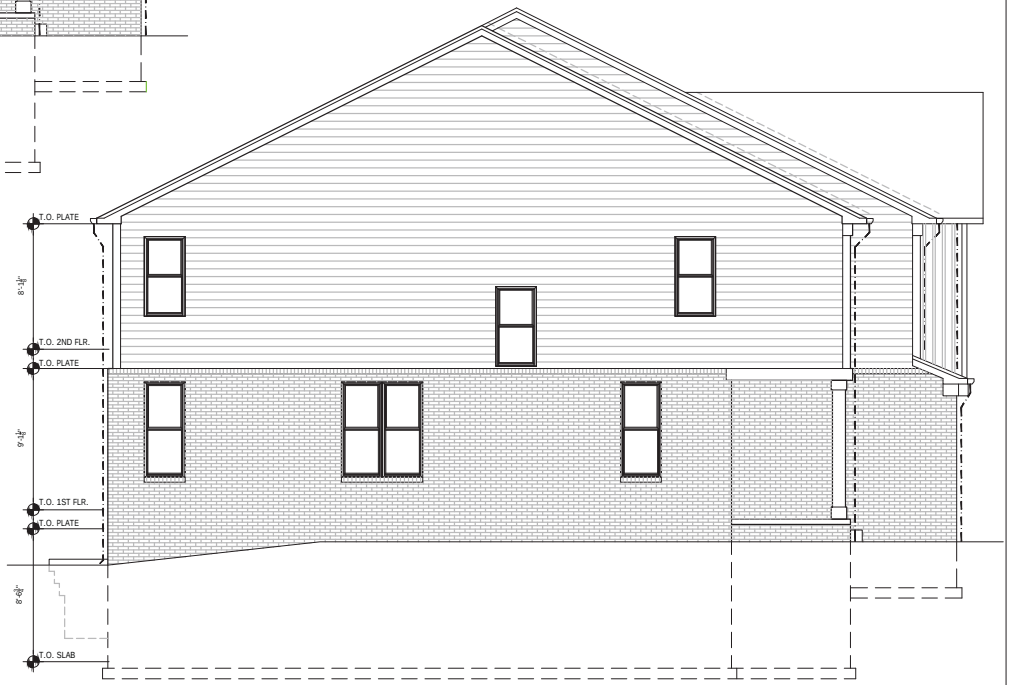



SANDERS ELITE NEWHAVEN - SIDE ELEVATION

SCALE: $\frac{1}{8}$"=1'-0"




SANDERS ELITE WETHERBY - SIDE ELEVATION

SCALE: $\frac{1}{8}$"=1'-0"

TOLLARCHITECTURE
PHILADELPHIA - ORLANDO
DALLAS - LOS ANGELES - SEATTLE
1140 Virginia Drive, Fort Washington, PA 19034
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SHEET REVISION INFO

SET REVISION INFO

PRODUCT LINE

MODEL/PROJECT NAME

ELEVATION NAME

DRAWN BY -

CHECKED BY -

SHEET DATE - 6-30-2023

SHEET DESCRIPTION
SANDERS ELITE ELEVATIONS

SHEET NUMBER
TB-10

SERIAL NUMBER

DATE: Friday, April 28, 2023 - 9:27:23 am

DATE: Friday, April 28, 2023 - 9:27:5 am

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| | 5.15 Schedule Regulating Façade Materials - RM-1 - Region 1 | | | | | |
|---|---|---|---|---|---|---|
| | Ordinance | | | | | |
| | Brick Natural Clay - Minimum 30% | | Wood Siding, painted, t&g and batten siding - Maximum 50% | | Asphalt Shingles - Maximum 50% | |
| Model/ Elevation | Meets | Deviation Req'd | Meets | Deviation Req'd | Meets | Deviation Req'd |
| Howe/ Newhaven - Front Elevation | X | | X | | | X-55% |
| Howe/ Wetherby - Front Elevation | | X-22% | X | | X | |
| Howe/ All Elevations - Rear Elevation | | X-27% | X | | X | |
| Howe Elite/ Newhaven - Front Elevation | X | | X | | | X-55% |
| Howe Elite/ Wetherby - Front Elevation | | X-22% | X | | X | |
| Howe Elite/ All Elevations- Rear Elevation | | X-27% | X | | X | |
| Howe Elite/ Newhaven - Side Elevation | X | | | X-62% | X | |
| Howe Elite/ Wetherby - Side Elevation | X | | | X-59% | X | |
| Sanders/ Newhaven - Front Elevation | X | | X | | X | |
| Sanders/ Wetherby - Front Elevation | | X-21% | X | | X | |
| Sanders/ All Elevations - Rear Elevation | | X-26% | X | | X | |
| Sanders Elite/ Newhaven - Front Elevation | X | | X | | X | |
| Sanders Elite/ Wetherby - Front Elevation | | X-22% | X | | X | |
| Sanders Elite/ All Elevations- Rear Elevation | | X-26% | X | | X | |
| Sanders Elite/ Newhaven- Side Elevation | X | | | X-62% | X | |
| Sanders Elite/ Wetherby- Side Elevation | X | | | X-58% | X | |

SHEET DESCRIPTION: FACADE MATERIAL SQUARE FOOTAGES

SHEET NUMBER: TB-11

DRAWN BY -

CHECKED BY -

SHEET DATE - 6-30-2023

PRODUCT LINE

MODEL/PROJECT NAME

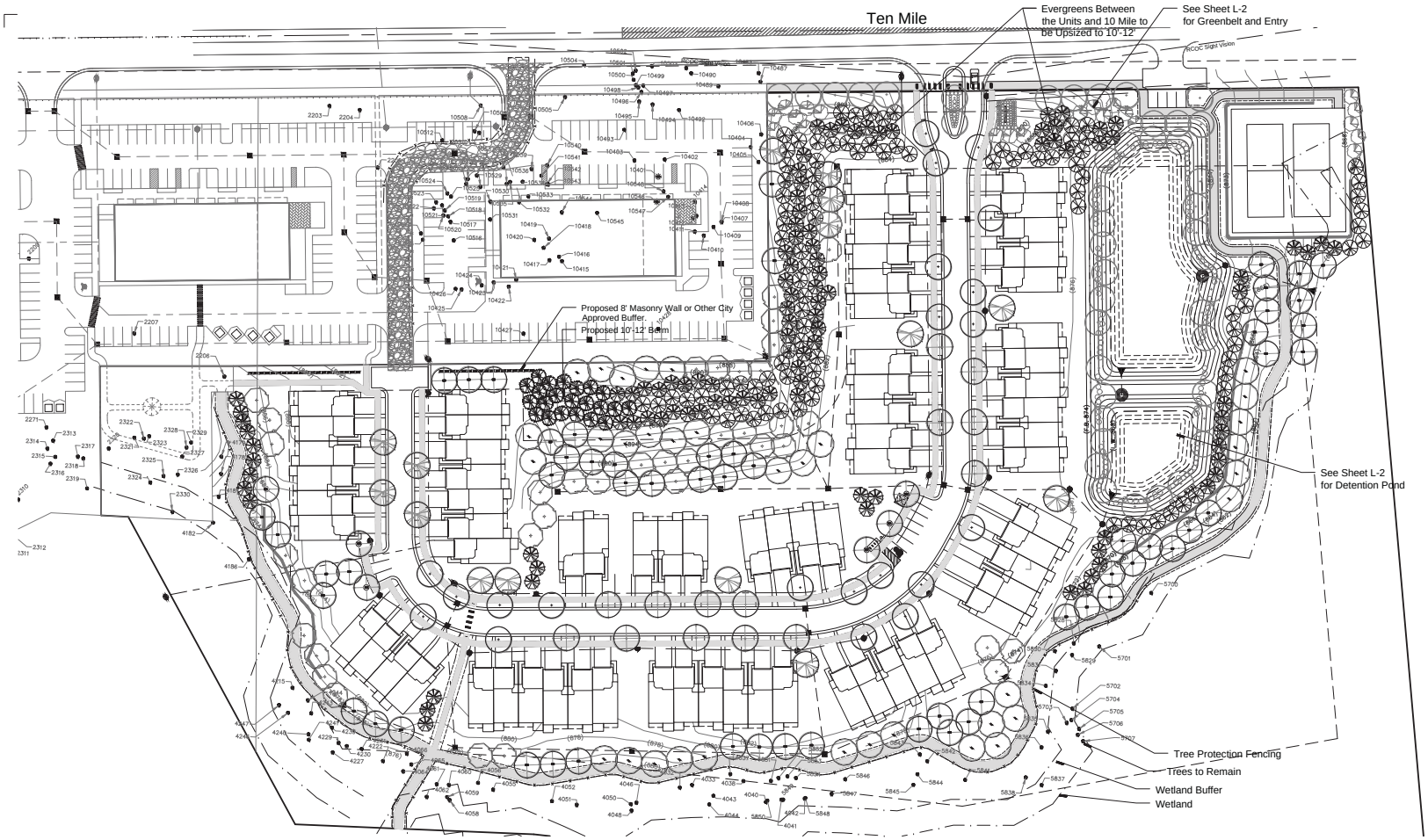
ELEVATION NAME

SHEET REVISION INFO

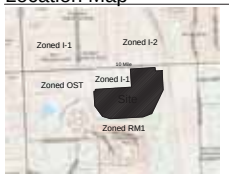
SET REVISION INFO

SERIAL NUMBER

TOLLARCHITECTURE
PHILADELPHIA - ORLANDO
DALLAS - LOS ANGELES - SEATTLE
1140 Virginia Drive, Fort Washington, PA 19034
P 215.938.8000 | F 215.938.8314
A Division of Toll Brothers




## Location Map




North
No Scale

## Landscape Summary

**Street Trees**

| | | |
|---|---|---|
| Street Frontage | | 2,368 l.f. |
| Less Drives | 1,136 l.f. | |
| Net Frontage | | 1,232 l.f. |
| Trees Required | | 35 Trees (1,232 / 35) |
| Trees Provided | | 35 Trees |

**Multi-Family Trees**

| | |
|---|---|
| Total Units | 71 Units |
| Trees Required | 213 Trees (71 x 3) |
| Trees Provided | 213 Trees |

**Parking Lot Landscaping**

| | |
|---|---|
| Parking Lot Perimeter | 163 l.f. |
| Trees Required | 4.7 Trees (163 / 35) |
| Trees Provided | 5 Trees |

**Woodland Replacement**

| | |
|---|---|
| Replacement Required | 697 Trees |
| Total Trees Provided | 181 Trees |
| Trees to be Paid into Fund | 516 Trees |

Notes:

- Soils Information is Shown on Sheet 2.
- Trees Shall be Planted 10' from Utility Structures Including Hydrants and 5' from Utility Lines.
- Tree Shall not Be Planted within 4' of Property Lines.
- Snow Shall be Deposited Adjacent to Drives and within the Curb Lawn. Any Damaged Trees Shall be Replaced as Needed.
- All Utility Boxes Shall be Screen per Detail on Sheet L-3. Approximately 8-12 Shrubs will be Required per Box.
- No Overhead Lines Exist.
- Phragmites and Japanese Knotweed and not Present on this Site.
- An Irrigation Plan will be Provided for Stamping Sets.

Requested Waivers:

1. Landscape waiver from Sec. 5.5.3.B.ii for deficiency in required trees along Ten Mile due to Water Main Conflict.

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LAND PLANNING / LANDSCAPE ARCHITECTURE
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Seal:

Title:
Conceptual Landscape Plan

Project:
The Towns at Novi Station
Novi, Michigan

Prepared for:
Toll Brothers
26200 Town Center Drive, Suite 200
Novi, Michigan 48375

| Revision: | Issued: |
|---|---|
| Submission | September 14, 2022 |
| Issued | February 28, 2023 |
| Revised | April 27, 2023 |
| Revised | January 2, 2024 |

Job Number:
21-027

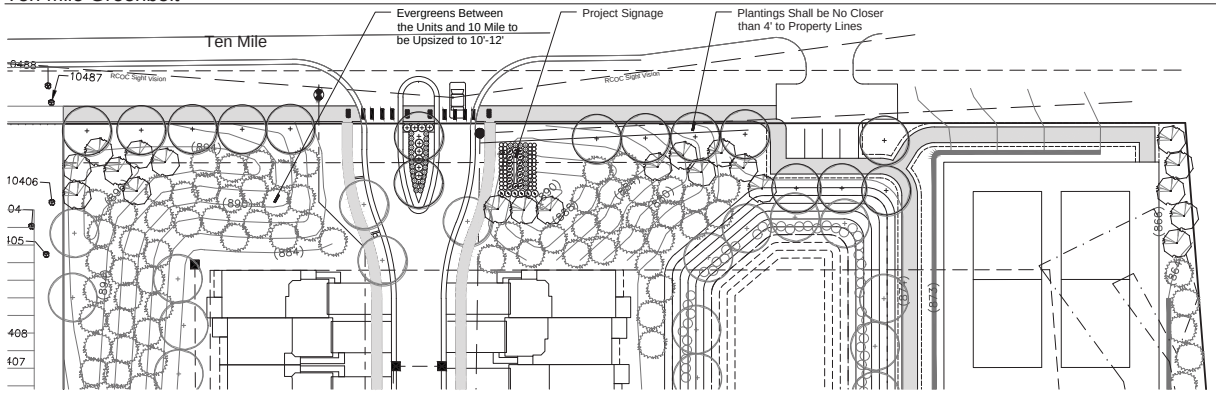
Drawn By: jca
Checked By: jca

0' 25' 50'
NORTH
1"=50'

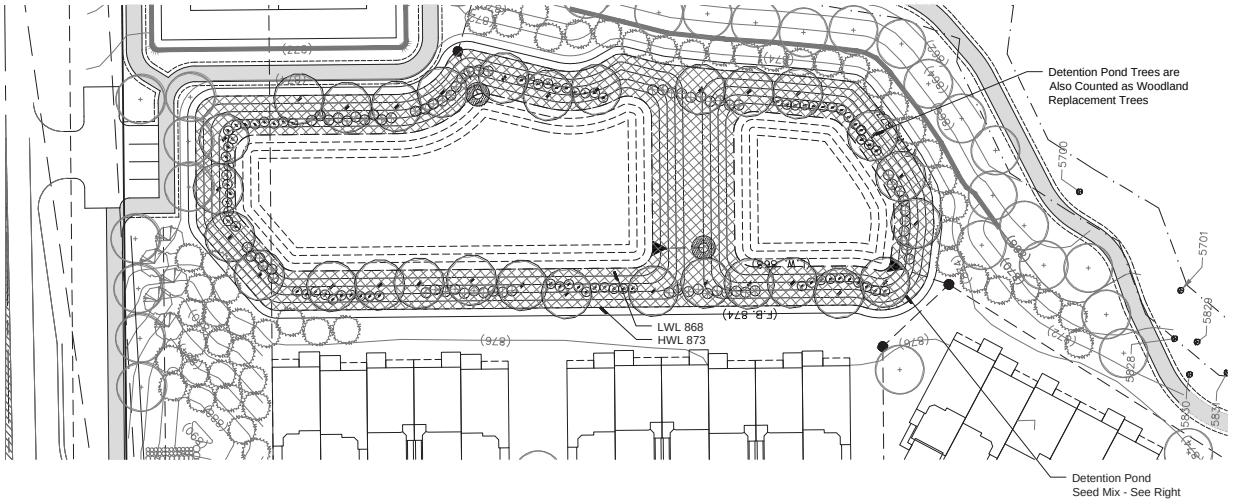
Sheet No.
L-1

811 Know what's below. Call before you dig.

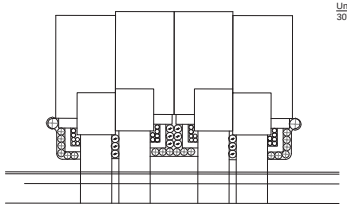
## Ten Mile Greenbelt




## Detention Pond




## Typical Unit



| Unit Length | Required Landscape (35%) | Landscape Provided (40.0%) |
|---|---|---|
| 30' | 10.5' | 12' |

## Landscape Summary

| | |
|---|---|
| Street Lawn | |
| Total Street Frontage | 573 l.f. |
| Less Drive Opening | 149 l.f. |
| Net Street Frontage | 424 l.f. |
| Trees Required | 12.1 Trees (424 / 35) |
| Trees Provided | 0 Trees |
| Greenbelt Plantings | |
| Total Street Frontage | 573 l.f. |
| Less Drive Opening | 58 l.f. |
| Net Street Frontage | 515 l.f. |
| Canopy Trees Required | 14.7 Trees (515 / 35) |
| Canopy Trees Provided | 15 Trees |
| Sub-Canopy Trees Required | 20.6 Trees (515 / 25) |
| Sub-Canopy Trees Provided | 21 Trees |
| Detention Pond Plantings | |
| 10' from LWL Elevation | 975 l.f.( Elev. 870.5) |
| Required Planting | 680 l.f. (70%) |
| Planting Provided | 695 l.f. (72%) |
| Pond Frontage for Trees | 634' |
| Trees Required | 18.1 Trees (634 / 35) |
| Trees Provided | 29 Trees |

20,783 s.f. Total Area

34.2 lbs. per Acre Application Rate
16.3 lbs. of Detention Seed Mix Required
3"-6" of Topsoil with 20%-30% Compost Shall be Placed in this Area.

Note:
Contractor Shall Provide Proof of Seed to be Used in the Form of an Invoice or Photo of the Seed Bag to rmeader@cityofnovi.org for Approval Prior to Installation. If an Unacceptable Seed Mix is Used, the City Reserves the Right to Destroy the Plants and Re-seed with and Acceptable Mix at the Developer's Expense.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t. 248.467.4668


Seal:

Title:

Greenbelt and Entry

Project:

The Towns at Novi Station
Novi, Michigan

Prepared for:

Toll Brothers
26200 Town Center Drive, Suite 200
Novi, Michigan 48375

| Revision: | Issued: |
|---|---|
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Job Number:

21-027

| Drawn By: | Checked By: |
|---|---|
| jca | jca |

0' 15' 30'
NORTH
1"=30'

Sheet No.

L-2


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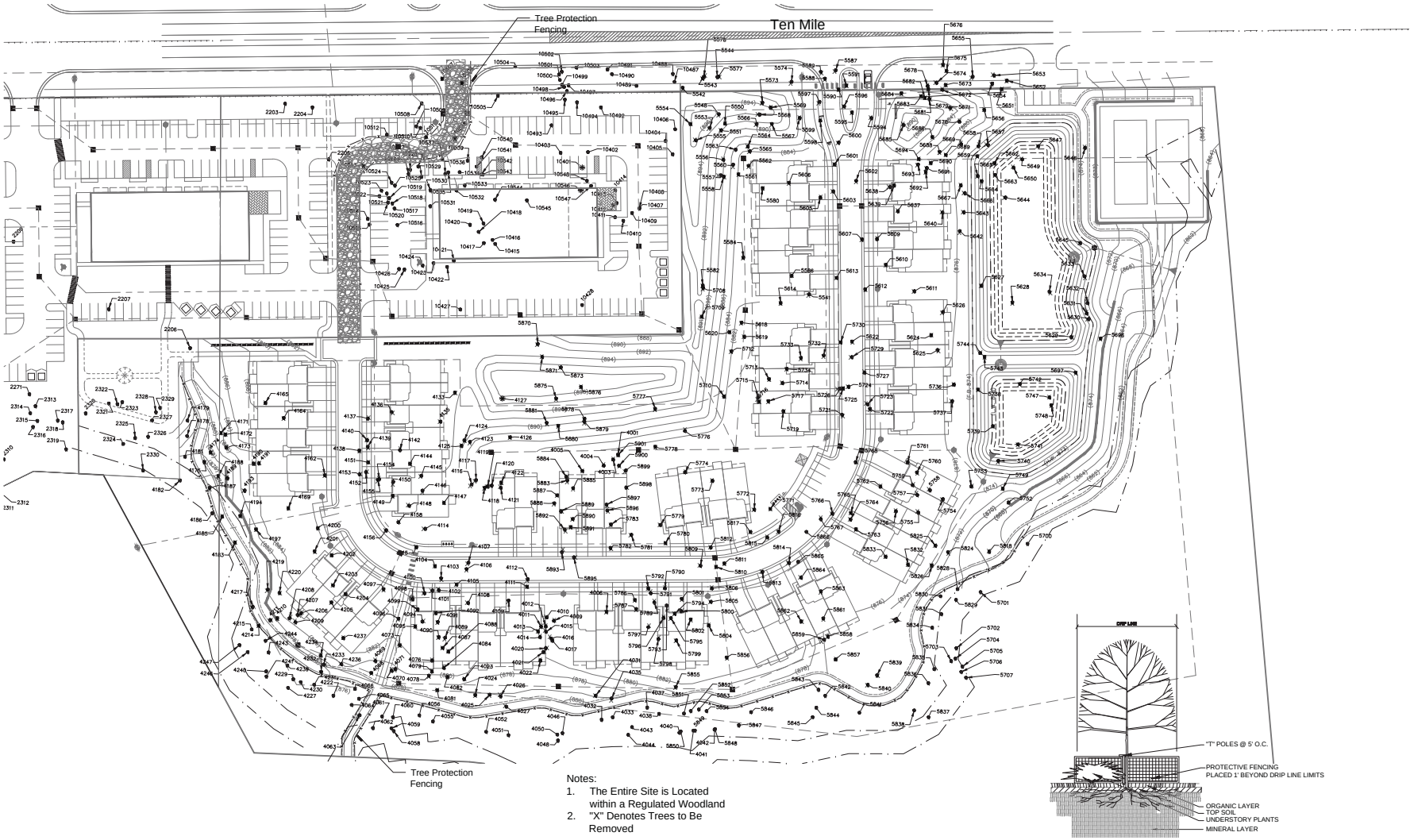
811 Know what's below. Call before you dig.




Notes:

1. The Entire Site is Located within a Regulated Woodland
2. "X" Denotes Trees to Be Removed




1. Either Plastic or Wood Orange Snow Fencing Shall be Installed at or Beyond the Dripline, Unless More Substantial Fencing is Required.
2. Stakes Shall be Metal "T" Poles Spaced no Further than 5' on Center.
3. Fencing Shall not be Installed Closer to the Tree than the Dripline of Those Trees to be Saved. Special Circumstances Shall be Reviewed by the City.
4. Fencing Shall be Erected Prior to Construction. The City Shall be Notified Once the Fencing is Instaled for Inspection.
5. Under no Circumstances Shall the Protective Fencing be Removed Without Proper Approval from the City.
6. No Person Shall Conduct any Activity Within Areas Proposed to Remain. This Shall Include, but not Limited to:
   a. No Solvents or Chemicals Within Protected Areas.
   b. No Building Materials or Construction Equipment Within Protected Areas.
   c. No Grade Changes, Including Fill, Within Protected Areas.
   d. No Removal of Vegetation from the Ground Up Without Permission from the Proper Reviewing Authority, Including the Woodlands Review Board.
   e. Any Required Swale Needs to be Directed Around the Protected Areas. Instances Where Swales are Approved Through a Protected Area, the Swales Need to be HAND DUG. Machinery of Any Kind is Prohibited.
7. Regulated Woodland or Regulated Trees Adjacent to the Property are Also Required to be Protected Whether or not they are Shown on the Plan.

## TREE PROTECTION DETAIL

Not to scale

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Seal:

Title:

Woodland Plan

Project:

The Towns at Novi Station
Novi, Michigan

Prepared for:

Toll Brothers
26200 Town Center Drive, Suite 200
Novi, Michigan 48375

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Job Number:

21-027

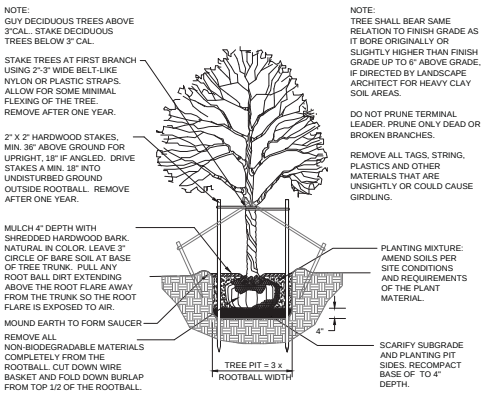
| Drawn By: | Checked By: |
|---|---|
| jca | jca |

0' 25' 50'

NORTH
1"=50'

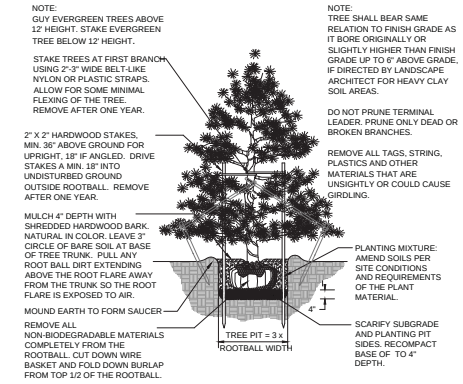
Sheet No.

L-3



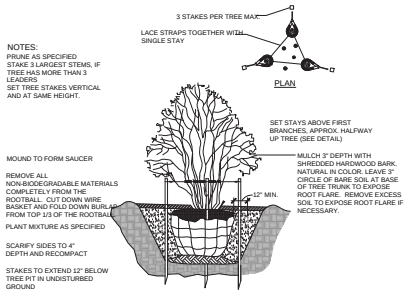

## DECIDUOUS TREE PLANTING DETAIL

Not to scale



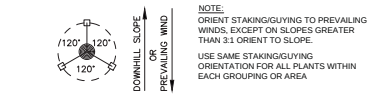

## EVERGREEN TREE PLANTING DETAIL

Not to scale

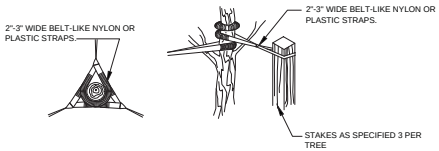



## MULTI-STEM TREE PLANTING DETAIL

NOT TO SCALE




STAKING/GUYING LOCATION

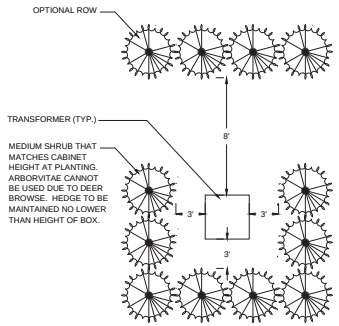



GUYING DETAIL

STAKING DETAIL

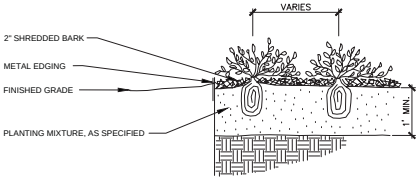
## TREE STAKING DETAIL

Not to scale



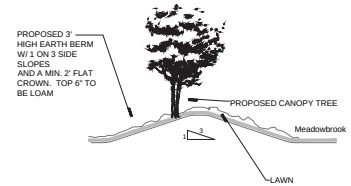

## TRANSFORMER SCREENING DETAIL

Not to scale



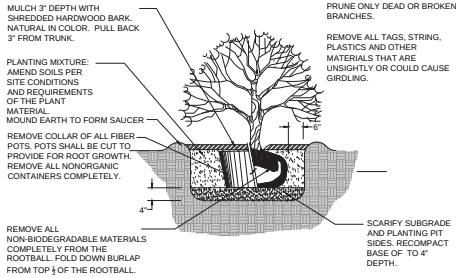

## PERENNIAL PLANTING DETAIL

Not to scale




## Berm Detail

HORIZONTAL SCALE: 1"=10'




## SHRUB PLANTING DETAIL

NOT TO SCALE

## LANDSCAPE NOTES

1. All plants shall be north Midwest American region grown, No. 1 grade plant materials, and shall be true to name, free from physical damage and wind burn.
2. Plants shall be full, well-branched, and in healthy vigorous growing condition.
3. Plants shall be watered before and after planting is complete.
4. All trees must be staked, fertilized and mulched and shall be guaranteed to exhibit a normal growth cycle for at least two (2) full years following City approval.
5. All material shall conform to the guidelines established in the most recent edition of the American Standard for Nursery Stock.
6. Provide clean backfill soil, using material stockpiled on site. Soil shall be screened and free of any debris, foreign material, and stone.
7. "Agriform" tabs or similar slow-release fertilizer shall be added to the planting pits before being backfilled.
8. Amended planting mix shall consist of 1/3 screened topsoil, 1/3 sand and 1/3 compost, mixed well and spread to the depth as indicated in planting details.
9. All plantings shall be mulched per planting details located on this sheet.
10. The Landscape Contractor shall be responsible for all work shown on the landscape drawings and specifications.
11. No substitutions or changes of location, or plant types shall be made without the approval of the Landscape Architect.
12. The Landscape Architect shall be notified in writing of any discrepancies between the plans and field conditions prior to installation.
13. The Landscape Contractor shall be responsible for maintaining all plant material in a vertical condition throughout the guaranteed period.
14. The Landscape Architect shall have the right, at any stage of the installation, to reject any work or material that does not meet the requirements of the plans and specifications, if requested by owner.
15. Contractor shall be responsible for checking plant quantities to ensure quantities on drawings and plant list are the same. In the event of a discrepancy, the quantities on the plans shall prevail.
16. The Landscape Contractor shall seed and mulch or sod (as indicated on plans) all areas disturbed during construction, throughout the contract limits.
17. A pre-emergent weed control agent, "Preen" or equal, shall be applied uniformly on top of all mulching in all planting beds.
18. Sod shall be two year old "Baron/Cheriadelphi" Kentucky Blue Grass grown in a sod nursery on loam soil.

## CITY OF NOVI NOTES

1. All landscape islands shall be backfilled with a sand mixture to facilitate drainage.
2. All proposed landscape islands shall be curbed.
3. All landscape areas shall be irrigated.
4. Overhead utility lines and poles to be relocated as directed by utility company of record.
5. Evergreen and canopy trees shall be planted a minimum of 10' from a fire hydrant, and manhole, 15' from overhead wires.
6. All plant material shall be guaranteed for two (2) years after City Approval and shall be installed and maintained according to City of Novi standards. Replace Failing Material within 3 Months of Discovering the Need for Replacement. One cultivation per month shall occur in June-August.
7. All proposed street trees shall be planted a minimum of 4' from both the back of curb and proposed walks.
8. All tree and shrub planting beds shall be mulched with shredded hardwood bark, spread to minimum depth of 4". All lawn area trees shall have a 4' diameter circle of shredded hardwood mulch 3" away from trunk. All perennial, annual and ground cover beds shall receive 2" of dark colored bark mulch as indicated on the plant list. Mulch is to be free from debris and foreign material, and shall contain no pieces of inconsistent size.
9. All Substitutions or Deviations from the Landscape Plan Must be Approved in Writing by the City of Novi Prior to their Installation.

NOTES:
THE APPROXIMATE DATE OF INSTALLATION FOR THE PROPOSED LANDSCAPE WILL BE MARCH 15 AND NOVEMBER 15 OF 2024 OR 2025.

THE SITE WILL BE MAINTAINED BY THE DEVELOPER IN ACCORDANCE WITH THE STANDARDS SET FORTH IN THE CITY OF NOVI ZONING ORDINANCE. THIS INCLUDES WEEDING AND WATERING AS REQUIRED BY NORMAL MAINTENANCE PRACTICES.

DEVELOPER SHALL BE RESPONSIBLE FOR REPLACING ANY TREES WITHIN UTILITY EASEMENTS THAT ARE DAMAGED THROUGH NORMAL MAINTENANCE OR REPAIRS.

PLANT MATERIALS SHALL BE GUARANTEED FOR 2 YEARS AND SHALL BE MAINTAINED IN ACCORDANCE WITH CITY ORDINANCES. WARRANTY PERIOD BEGINS AT THE TIME OF CITY APPROVAL. WATERING AS NECESSARY SHALL OCCUR DURING THIS WARRANTY PERIOD.

ANY SUBSTITUTIONS MUST BE SUBMITTED IN WRITING AND APPROVED BY THE CITY.

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ALLENDESIGN
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t. 248.467.4668

Seal:

Title:
Landscape Details

Project:
The Towns at Novi Station
Novi, Michigan

Prepared for:
Toll Brothers
26200 Town Center Drive, Suite 200
Novi, Michigan 48375

| Revision: | Issued: |
|---|---|
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| Revised | April 27, 2023 |
| Revised | January 2, 2024 |

Job Number:
21-027

| Drawn By: | Checked By: |
|---|---|
| jca | jca |

Sheet No.
L-4

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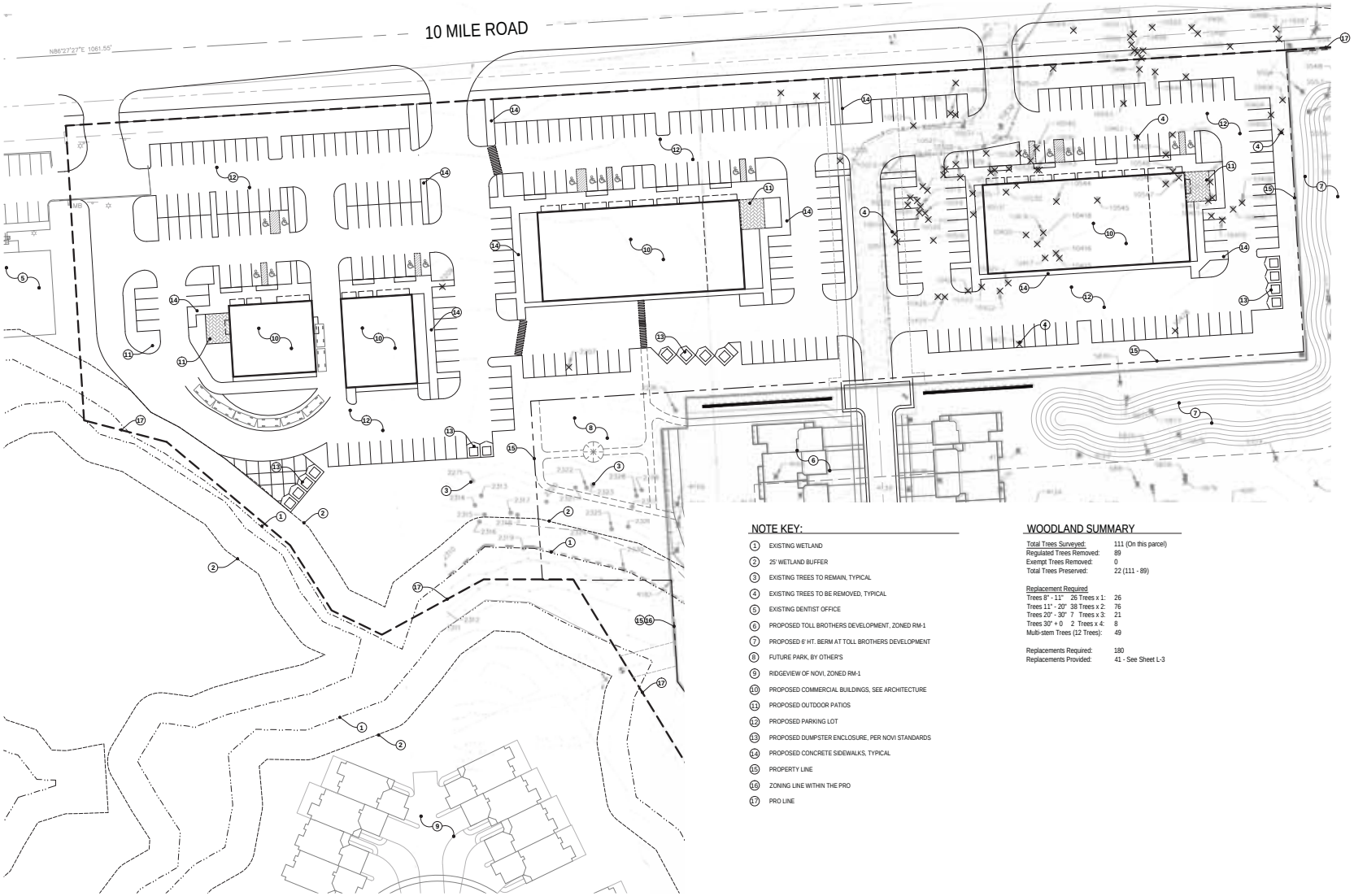
# Tree List

| TAG NO. | DIAMETER | COMMON NAME | BOTANICAL NAME | STATUS | Required Replacement | Multi-Stem Replacement |
|---|---|---|---|---|---|---|
| 4001 | 13 | Big Tooth Aspen | Populus grandidentata | Remove | 2 | |
| 4003 | 14 | Big Tooth Aspen | Populus grandidentata | Remove | 2 | |
| 4004 | 13 | Big Tooth Aspen | Populus grandidentata | Remove | 2 | |
| 4005 | 13 | Eastern Cottonwood | Populus deltoides | Remove | 2 | |
| 4009 | 11 | Eastern Cottonwood | Populus deltoides | Remove | 1 | |
| 4010 | 10 | Eastern Cottonwood | Populus deltoides | Remove | 2 | |
| 4011 | 10 | Eastern Cottonwood | Populus deltoides | Remove | 1 | |
| 4012 | 10 | Eastern Cottonwood | Populus deltoides | Remove | 1 | |
| 4013 | 10 | Eastern Cottonwood | Populus deltoides | Remove | 1 | |
| 4014 | 14 | Eastern Cottonwood | Populus deltoides | Remove | 2 | |
| 4015 | 9 | American Elm | Ulmus americana | Remove | 1 | |
| 4016 | 12 | Eastern Cottonwood | Populus deltoides | Remove | 2 | |
| 4017 | 10 | Eastern Cottonwood | Populus deltoides | Remove | 1 | |
| 4020 | 16 | Eastern Cottonwood | Populus deltoides | Remove | 2 | |
| 4021 | 14 | Eastern Cottonwood | Populus deltoides | Remove | 2 | |
| 4022 | 18 | Eastern Cottonwood | Populus deltoides | Remove | 2 | |
| 4023 | 15 | Box elder | Acer negundo | Remove | 2 | |
| 4024 | 15 | American Elm | Ulmus americana | Remove | 2 | |
| 4025 | 12 | Box elder | Acer negundo | Remove | 2 | |
| 4026 | 14 | Box elder | Acer negundo | Remove | 2 | |
| 4027 | 12 | Black Walnut | Juglans nigra | Remove | 2 | |
| 4031 | 17 | Box elder | Acer negundo | Remove | 2 | |
| 4032 | 16 | Black Cherry | Prunus serotina | Save | | |
| 4033 | 10 | Black Cherry | Prunus serotina | Save | | |
| 4035 | 11 | Black Walnut | Juglans nigra | Remove | 1 | |
| 4037 | 10 | Black Walnut | Juglans nigra | Save | | |
| 4038 | 13 | Black Cherry | Prunus serotina | Save | | |
| 4040 | 24 | Box elder | Acer negundo | Save | | |
| 4041 | 10 | American Elm | Ulmus americana | Save | | |
| 4042 | 20 | American Elm | Ulmus americana | Save | | |
| 4043 | 8 | Hawthorn | Crataegus spp. | Save | | |
| 4044 | 12 | Box elder | Acer negundo | Save | | |
| 4046 | 12 | Black Cherry | Prunus serotina | Save | | |
| 4048 | 13 | American Elm | Ulmus americana | Save | | |
| 4050 | 14,14 | Black Cherry | Prunus serotina | Save | | |
| 4051 | 14 | Black Cherry | Prunus serotina | Save | | |
| 4052 | 14,14 | Box elder | Acer negundo | Save | | |
| 4055 | 14 | Box elder | Acer negundo | Save | | |
| 4056 | 12 | Box elder | Acer negundo | Save | | |
| 4058 | 8 | Box elder | Acer negundo | Save | | |
| 4059 | 10 | Box elder | Acer negundo | Save | | |
| 4060 | 9 | Black Cherry | Prunus serotina | Save | | |
| 4061 | 12 | Black Cherry | Prunus serotina | Save | | |
| 4062 | 16 | American Elm | Ulmus americana | Save | | |
| 4063 | 17 | Black Cherry | Prunus serotina | Remove | 2 | |
| 4064 | 10 | Red Oak | Quercus rubra | Save | | |
| 4065 | 15 | Black Cherry | Prunus serotina | Save | | |
| 4066 | 17 | Black Cherry | Prunus serotina | Save | | |
| 4068 | 12 | Box elder | Acer negundo | Remove | 2 | |
| 4069 | 24 | Common Apple | Malus spp. | Remove | 3 | |
| 4070 | 14 | Box elder | Acer negundo | Remove | 2 | |
| 4071 | 8 | Box elder | Acer negundo | Remove | 1 | |
| 4073 | 8 | Box elder | Acer negundo | Remove | 1 | |
| 4076 | 16 | Box elder | Acer negundo | Remove | 2 | |
| 4078 | 13 | Box elder | Acer negundo | Remove | 2 | |
| 4079 | 8 | Box elder | Acer negundo | Remove | 1 | |
| 4081 | 14 | Box elder | Acer negundo | Remove | 2 | |
| 4083 | 14 | Box elder | Acer negundo | Remove | 2 | |
| 4084 | 8 | Box elder | Acer negundo | Remove | 1 | |
| 4087 | 8 | Box elder | Acer negundo | Remove | 1 | |
| 4088 | 12 | Box elder | Acer negundo | Remove | 2 | |
| 4089 | 15 | Box elder | Acer negundo | Remove | 2 | |
| 4090 | 9 | Box elder | Acer negundo | Remove | 1 | |
| 4091 | 12 | Box elder | Acer negundo | Remove | 2 | |
| 4092 | 15,15,15 | Box elder | Acer negundo | Remove | 6 | |
| 4094 | 12 | Box elder | Acer negundo | Remove | 2 | |
| 4095 | 13 | Box elder | Acer negundo | Remove | 2 | |
| 4096 | 15 | Box elder | Acer negundo | Remove | 2 | |
| 4097 | 12 | Box elder | Acer negundo | Remove | 2 | |
| 4098 | 10 | Box elder | Acer negundo | Remove | 1 | |
| 4099 | 10 | Box elder | Acer negundo | Remove | 1 | |
| 4100 | 8 | Box elder | Acer negundo | Remove | 1 | |
| 4101 | 8 | Box elder | Acer negundo | Remove | 1 | |
| 4102 | 16 | Eastern Cottonwood | Populus deltoides | Remove | 2 | |
| 4103 | 24 | Eastern Cottonwood | Populus deltoides | Remove | 3 | |
| 4104 | 18 | Eastern Cottonwood | Populus deltoides | Remove | 2 | |
| 4105 | 10 | Box elder | Acer negundo | Remove | 2 | |
| 4106 | 14 | Eastern Cottonwood | Populus deltoides | Remove | 2 | |
| 4107 | 18 | Eastern Cottonwood | Populus deltoides | Remove | 2 | |
| 4108 | 16 | Eastern Cottonwood | Populus deltoides | Remove | 2 | |
| 4109 | 16 | Eastern Cottonwood | Populus deltoides | Remove | 2 | |
| 4111 | 8 | Eastern Cottonwood | Populus deltoides | Remove | 1 | |
| 4112 | 10 | Eastern Cottonwood | Populus deltoides | Remove | 1 | |
| 4114 | 8 | Box elder | Acer negundo | Remove | 1 | |
| 4115 | 12 | Black Cherry | Prunus serotina | Remove | 2 | |
| 4116 | 9 | Box elder | Acer negundo | Remove | 1 | |
| 4117 | 8 | Box elder | Acer negundo | Remove | 1 | |
| 4118 | 8 | Box elder | Acer negundo | Remove | 1 | |
| 4119 | 18 | Box elder | Acer negundo | Remove | 2 | |
| 4121 | 12 | Box elder | Acer negundo | Remove | 2 | |
| 4122 | 10 | Box elder | Acer negundo | Remove | 1 | |
| 4123 | 18 | Box elder | Acer negundo | Remove | 2 | |
| 4124 | 18 | Box elder | Acer negundo | Remove | 2 | |
| 4125 | 27 | Box elder | Acer negundo | Remove | 3 | |
| 4127 | 8 | White Spruce | Picea glauca | Remove | 1 | |
| 4135 | 10,10 | Box elder | Acer negundo | Remove | | 3 |
| 4136 | 13,15,15 | Eastern Cottonwood | Populus deltoides | Remove | | 6 |
| 4137 | 12 | Box elder | Acer negundo | Remove | 2 | |
| 4138 | 13 | Box elder | Acer negundo | Remove | 2 | |
| 4140 | 14 | Box elder | Acer negundo | Remove | 2 | |
| 4142 | 18 | Box elder | Acer negundo | Remove | 2 | |
| 4144 | 12 | Box elder | Acer negundo | Remove | 2 | |
| 4145 | 8 | Box elder | Acer negundo | Remove | 1 | |
| 4146 | 11 | Box elder | Acer negundo | Remove | 1 | |
| 4147 | 10 | Box elder | Acer negundo | Remove | 1 | |
| 4148 | 10 | Box elder | Acer negundo | Remove | 1 | |
| 4149 | 10 | Box elder | Acer negundo | Remove | 1 | |
| 4150 | 12 | Box elder | Acer negundo | Remove | 2 | |
| 4151 | 14 | Box elder | Acer negundo | Remove | 2 | |
| 4152 | 17 | Box elder | Acer negundo | Remove | 2 | |
| 4153 | 18 | Box elder | Acer negundo | Remove | 2 | |
| 4154 | 10 | Box elder | Acer negundo | Remove | 2 | |
| 4155 | 22 | Eastern Cottonwood | Populus deltoides | Remove | 3 | |
| 4156 | 12 | Box elder | Acer negundo | Remove | 2 | |
| 4158 | 13 | Box elder | Acer negundo | Remove | 2 | |
| 4164 | 10 | Black Cherry | Prunus serotina | Remove | 1 | |
| 4165 | 8,8 | Hawthorn | Crataegus spp. | Remove | | 2 |
| 4169 | 27 | American Elm | Ulmus americana | Remove | 3 | |
| 4171 | 9 | Black Cherry | Prunus serotina | Remove | 1 | |
| 4172 | 9,8 | Black Cherry | Prunus serotina | Remove | | 2 |
| 4173 | 13 | White Ash | Fraxinus americana | Remove | 2 | |
| 4174 | 9 | Black Cherry | Prunus serotina | Remove | 1 | |
| 4175 | 9 | Black Cherry | Prunus serotina | Remove | 1 | |
| 4178 | 10 | Black Cherry | Prunus serotina | Save | | |
| 4179 | 8 | Black Cherry | Prunus serotina | Save | | |
| 4181 | 10 | Black Cherry | Prunus serotina | Save | | |
| 4182 | 11 | Hawthorn | Crataegus spp. | Save | | |
| 4183 | 9 | Box elder | Acer negundo | Remove | 1 | |
| 4185 | 9 | Black Cherry | Prunus serotina | Remove | 1 | |
| 4186 | 12 | Box elder | Acer negundo | Save | | |
| 4187 | 11 | Black Cherry | Prunus serotina | Remove | 1 | |
| 4188 | 9 | Black Cherry | Prunus serotina | Remove | 1 | |
| 4189 | 14 | Black Cherry | Prunus serotina | Remove | 2 | |
| 4190 | 11 | Box elder | Acer negundo | Remove | 1 | |
| 4191 | 12 | Common Apple | Malus spp. | Remove | 2 | |
| 4193 | 8 | Black Cherry | Prunus serotina | Remove | 1 | |
| 4194 | 9 | Common Apple | Malus spp. | Remove | 1 | |
| 4196 | 10 | Black Cherry | Prunus serotina | Remove | 1 | |
| 4201 | 14 | American Elm | Ulmus americana | Remove | 2 | |
| 4202 | 10 | Black Cherry | Prunus serotina | Remove | 1 | |
| 4203 | 12 | Black Cherry | Prunus serotina | Remove | 2 | |
| 4204 | 12 | Black Cherry | Prunus serotina | Remove | 2 | |
| 4205 | 9 | Common Apple | Malus spp. | Remove | 1 | |
| 4206 | 9 | Black Cherry | Prunus serotina | Remove | 1 | |
| 4208 | 8 | Common Apple | Malus spp. | Remove | 1 | |
| 4209 | 24 | Box elder | Acer negundo | Remove | 3 | |
| 4210 | 8,8 | Common Apple | Malus spp. | Remove | | 2 |
| 4211 | 8 | Black Cherry | Prunus serotina | Remove | 1 | |
| 4214 | 12,12 | Black Cherry | Prunus serotina | Remove | | 3 |
| 4215 | 10,10 | Black Cherry | Prunus serotina | Save | | |
| 4217 | 12 | Black Cherry | Prunus serotina | Remove | 2 | |
| 4219 | 8 | Black Cherry | Prunus serotina | Remove | 1 | |
| 4220 | 14 | Black Cherry | Prunus serotina | Remove | 2 | |
| 4223 | 29 | American Elm | Ulmus americana | Save | | |
| 4227 | 8 | Black Cherry | Prunus serotina | Save | | |
| 4229 | 16 | Black Cherry | Prunus serotina | Save | | |
| 4230 | 16 | Black Cherry | Prunus serotina | Save | | |

| TAG NO. | DIAMETER | COMMON NAME | BOTANICAL NAME | STATUS | Required Replacement | Multi-Stem Replacement |
|---|---|---|---|---|---|---|
| 4231 | 13 | Black Cherry | Prunus serotina | Save | | |
| 4232 | 13 | Black Cherry | Prunus serotina | Remove | 2 | |
| 4233 | 11 | Black Cherry | Prunus serotina | Remove | 1 | |
| 4234 | 14 | Black Cherry | Prunus serotina | Remove | 2 | |
| 4236 | 8 | Black Cherry | Prunus serotina | Remove | 1 | |
| 4237 | 14 | Black Cherry | Prunus serotina | Remove | 2 | |
| 4239 | 9 | Black Cherry | Prunus serotina | Save | | |
| 4240 | 15 | Black Cherry | Prunus serotina | Save | | |
| 4241 | 16 | Box elder | Acer negundo | Save | | |
| 4243 | 8 | Black Cherry | Prunus serotina | Save | | |
| 4244 | 9 | Black Cherry | Prunus serotina | Save | | |
| 4246 | 8 | Black Cherry | Prunus serotina | Save | | |
| 4247 | 8 | Black Cherry | Prunus serotina | Save | | |
| 4541 | 16 | Hawthorn | Crataegus spp. | Remove | 2 | |
| 4542 | 12,12 | Box elder | Acer negundo | Remove | | 3 |
| 4543 | 17 | Box elder | Acer negundo | Remove | 2 | |
| 4544 | 14 | Box elder | Acer negundo | Remove | 2 | |
| 4548 | 8 | Box elder | Acer negundo | Remove | 1 | |
| 4550 | 8 | Box elder | Acer negundo | Remove | 1 | |
| 4551 | 8 | Box elder | Acer negundo | Remove | 1 | |
| 4553 | 12 | Box elder | Acer negundo | Remove | 2 | |
| 4554 | 10 | Box elder | Acer negundo | Remove | 1 | |
| 4555 | 12 | Box elder | Acer negundo | Remove | 2 | |
| 4556 | 14 | Box elder | Acer negundo | Remove | 2 | |
| 4557 | 16 | Box elder | Acer negundo | Remove | 2 | |
| 4558 | 12 | Box elder | Acer negundo | Remove | 2 | |
| 4560 | 10 | Box elder | Acer negundo | Remove | 1 | |
| 4561 | 10,10 | Box elder | Acer negundo | Remove | 2 | |
| 4562 | 12,12 | Box elder | Acer negundo | Remove | | 3 |
| 4563 | 14 | Box elder | Acer negundo | Remove | 2 | |
| 4564 | 12 | Box elder | Acer negundo | Remove | 2 | |
| 4565 | 14 | Box elder | Acer negundo | Remove | 2 | |
| 4566 | 11 | Box elder | Acer negundo | Remove | 1 | |
| 4567 | 8 | Box elder | Acer negundo | Remove | 1 | |
| 4568 | 12 | Box elder | Acer negundo | Remove | 2 | |
| 4569 | 9 | Box elder | Acer negundo | Remove | 1 | |
| 4573 | 11 | Box elder | Acer negundo | Remove | 1 | |
| 4574 | 19 | Box elder | Acer negundo | Remove | 2 | |
| 4576 | 11 | Box elder | Acer negundo | Remove | 1 | |
| 4577 | 13 | Box elder | Acer negundo | Remove | 2 | |
| 4578 | 18 | Box elder | Acer negundo | Remove | 2 | |
| 4580 | 10 | Common Apple | Malus spp. | Remove | 2 | |
| 4582 | 10 | Common Apple | Malus spp. | Remove | 1 | |
| 4584 | 8 | Box elder | Acer negundo | Remove | 1 | |
| 4585 | 8 | Common Pear | Pyrus spp. | Remove | 1 | |
| 4587 | 8 | Box elder | Acer negundo | Remove | 1 | |
| 4588 | 18 | Box elder | Acer negundo | Remove | 2 | |
| 4589 | 10 | Box elder | Acer negundo | Remove | 2 | |
| 4590 | 8 | Box elder | Acer negundo | Remove | 1 | |
| 4591 | 8 | Box elder | Acer negundo | Remove | 1 | |
| 4592 | 8 | Box elder | Acer negundo | Remove | 1 | |
| 4593 | 27 | Box elder | Acer negundo | Remove | 3 | |
| 4618 | 8 | Box elder | Acer negundo | Remove | 1 | |
| 4620 | 10 | Hawthorn | Crataegus spp. | Remove | 1 | |
| 4622 | 11 | Hawthorn | Crataegus spp. | Remove | 1 | |
| 4624 | 10 | Hawthorn | Crataegus spp. | Remove | 1 | |
| 4625 | 10 | Black Cherry | Prunus serotina | Remove | 2 | |
| 4626 | 11 | Hawthorn | Crataegus spp. | Remove | 1 | |
| 4627 | 18 | Box elder | Acer negundo | Remove | 2 | |
| 4628 | 13 | Box elder | Acer negundo | Remove | 2 | |
| 4631 | 11 | Black Walnut | Juglans nigra | Save | | |
| 4632 | 8 | White Ash | Fraxinus americana | Remove | 1 | |
| 4633 | 14,14 | Box elder | Acer negundo | Remove | | 4 |
| 4634 | 21 | Black Walnut | Juglans nigra | Save | | |
| 4635 | 18 | Black Cherry | Prunus serotina | Save | | |
| 4636 | 8 | Black Cherry | Prunus serotina | Save | | |
| 4637 | 24 | Eastern Cottonwood | Populus deltoides | Save | | |
| 4638 | 8 | Common Apple | Malus spp. | Save | | |
| 4639 | 10 | Box elder | Acer negundo | Remove | 1 | |
| 4640 | 20 | Box elder | Acer negundo | Remove | 2 | |
| 4641 | 12,12 | Box elder | Acer negundo | Save | | |
| 4642 | 16 | Black Cherry | Prunus serotina | Save | | |
| 4643 | 11 | Black Cherry | Prunus serotina | Save | | |
| 4644 | 10 | Black Cherry | Prunus serotina | Save | | |
| 4645 | 12 | Black Cherry | Prunus serotina | Save | | |
| 4646 | 10 | Hawthorn | Crataegus spp. | Save | | |
| 4647 | 9 | Hawthorn | Crataegus spp. | Save | | |
| 4648 | 19 | Hawthorn | Crataegus spp. | Save | | |
| 4649 | 10 | American Elm | Ulmus americana | Save | | |
| 4650 | 18 | Box elder | Acer negundo | Save | | |
| 4651 | 24 | Black Cherry | Prunus serotina | Save | | |
| 4652 | 10 | Black Cherry | Prunus serotina | Save | | |
| 4653 | 14 | Box elder | Acer negundo | Save | | |
| 4654 | 12 | Black Cherry | Prunus serotina | Save | | |
| 4655 | 16 | Box elder | Acer negundo | Remove | 2 | |
| 4656 | 24 | Box elder | Acer negundo | Remove | 3 | |
| 4657 | 10 | Box elder | Acer negundo | Remove | 2 | |
| 4658 | 19 | Box elder | Acer negundo | Remove | 2 | |
| 4659 | 8 | Box elder | Acer negundo | Remove | 1 | |
| 4660 | 12 | Box elder | Acer negundo | Remove | 2 | |
| 4661 | 13,13 | Box elder | Acer negundo | Remove | 4 | |
| 4662 | 14 | Box elder | Acer negundo | Remove | 2 | |
| 4663 | 10 | Box elder | Acer negundo | Remove | 1 | |
| 4664 | 10 | Box elder | Acer negundo | Remove | 1 | |
| 4665 | 12 | Box elder | Acer negundo | Remove | 2 | |
| 4666 | 11 | Box elder | Acer negundo | Remove | 1 | |
| 4667 | 10 | Box elder | Acer negundo | Remove | 1 | |
| 4668 | 10 | Box elder | Acer negundo | Remove | 1 | |
| 4669 | 18 | Box elder | Acer negundo | Remove | 2 | |
| 4670 | 24 | Box elder | Acer negundo | Remove | 3 | |
| 4671 | 11 | Box elder | Acer negundo | Remove | 1 | |
| 4672 | 12 | American Elm | Ulmus americana | Remove | 2 | |
| 4673 | 13 | Box elder | Acer negundo | Remove | 2 | |
| 4675 | 32 | Box elder | Acer negundo | Remove | 4 | |
| 4676 | 20 | Box elder | Acer negundo | Remove | 3 | |
| 4678 | 12 | Box elder | Acer negundo | Remove | 2 | |
| 4679 | 10 | Box elder | Acer negundo | Remove | 1 | |
| 4680 | 12 | Box elder | Acer negundo | Remove | 2 | |
| 4681 | 12 | Box elder | Acer negundo | Remove | 2 | |
| 4683 | 7,12 | Eastern Cottonwood | Populus deltoides | Remove | 3 | |
| 4684 | 21 | Eastern Cottonwood | Populus deltoides | Remove | | 4 |
| 4685 | 11,11,11,11 | Eastern Cottonwood | Populus deltoides | Remove | | 4 |
| 4690 | 13,13 | Eastern Cottonwood | Populus deltoides | Remove | | 4 |
| 4691 | 16,16 | Eastern Cottonwood | Populus deltoides | Remove | | 4 |
| 4692 | 16,16 | Eastern Cottonwood | Populus deltoides | Remove | | 4 |
| 4693 | 12,12 | Eastern Cottonwood | Populus deltoides | Remove | | 4 |
| 4696 | 10,12,12,14 | Eastern Cottonwood | Populus deltoides | Remove | | 5 |
| 4697 | 12 | Box elder | Acer negundo | Remove | 2 | |
| 4698 | 15 | Box elder | Acer negundo | Remove | 2 | |
| 4699 | 20 | Big Tooth Aspen | Populus grandidentata | Remove | 3 | |
| 4900 | 8 | Big Tooth Aspen | Populus grandidentata | Remove | 1 | |
| 4901 | 13 | Big Tooth Aspen | Populus grandidentata | Remove | 2 | |
| 4902 | 17 | Eastern Red Cedar | Juniperus virginiana | Save | | |
| 10401 | 8,9 | Honey Locust | Gleditsia triacanthos | Save | | |
| 10403 | 18 | Box elder | Acer negundo | Save | | |
| 10404 | 16 | Box elder | Acer negundo | Save | | |
| 10405 | 14 | Box elder | Acer negundo | Save | | |
| 10406 | 11 | Box elder | Acer negundo | Save | | |
| 10407 | 22 | Box elder | Acer negundo | Save | | |
| 10408 | 9 | Box elder | Acer negundo | Save | | |
| 10409 | 12 | Box elder | Acer negundo | Save | | |
| 10410 | 15 | Box elder | Acer negundo | Save | | |
| 10411 | 9 | Box elder | Acer negundo | Save | | |
| 10412 | 15 | Box elder | Acer negundo | Save | | |
| 10413 | 8 | Box elder | Acer negundo | Save | | |
| 10414 | 10 | Box elder | Acer negundo | Save | | |
| 10415 | 24 | Box elder | Acer negundo | Save | | |
| 10416 | 20 | Box elder | Acer negundo | Save | | |
| 10417 | 10,22 | Box elder | Acer negundo | Save | | |
| 10418 | 10,15 | Box elder | Acer negundo | Save | | |
| 10419 | 9 | Box elder | Acer negundo | Save | | |
| 10420 | 12 | Box elder | Acer negundo | Save | | |
| 10421 | 8 | Box elder | Acer negundo | Save | | |
| 10422 | 12 | Box elder | Acer negundo | Save | | |
| 10423 | 10 | Box elder | Acer negundo | Save | | |
| 10424 | 16 | Box elder | Acer negundo | Save | | |

| TAG NO. | DIAMETER | COMMON NAME | BOTANICAL NAME | STATUS | Required Replacement | Multi-Stem Replacement |
|---|---|---|---|---|---|---|
| 5731 | 20 | Black Walnut | Juglans nigra | Remove | 2 | |
| 5738 | 10 | Black Walnut | Juglans nigra | Remove | 1 | |
| 5739 | 22 | Black Walnut | Juglans nigra | Remove | 3 | |
| 5740 | 15 | Black Walnut | Juglans nigra | Remove | 2 | |
| 5741 | 20 | Black Walnut | Juglans nigra | Remove | 2 | |
| 5743 | 14 | Box elder | Acer negundo | Remove | 2 | |
| 5744 | 12 | Box elder | Acer negundo | Remove | 2 | |
| 5747 | 13 | Box elder | Acer negundo | Remove | 2 | |
| 5748 | 16 | Box elder | Acer negundo | Remove | 2 | |
| 5749 | 10 | Black Cherry | Prunus serotina | Remove | 1 | |
| 5752 | 20 | Box elder | Acer negundo | Remove | 3 | |
| 5753 | 10 | Hawthorn | Crataegus spp. | Remove | 1 | |
| 5755 | 24 | Black Cherry | Prunus serotina | Remove | 3 | |
| 5756 | 16 | Box elder | Acer negundo | Remove | 2 | |
| 5757 | 9 | Box elder | Acer negundo | Remove | 1 | |
| 5758 | 8,13 | Box elder | Acer negundo | Remove | 2 | |
| 5760 | 22 | Box elder | Acer negundo | Remove | 3 | |
| 5761 | 20 | Box elder | Acer negundo | Remove | 2 | |
| 5762 | 12 | Box elder | Acer negundo | Remove | 2 | |
| 5763 | 10 | Box elder | Acer negundo | Remove | 1 | |
| 5764 | 11 | Box elder | Acer negundo | Remove | 1 | |
| 5765 | 8 | Box elder | Acer negundo | Remove | 1 | |
| 5766 | 15,15,15 | Black Cherry | Prunus serotina | Remove | | 6 |
| 5767 | 12 | Black Cherry | Prunus serotina | Remove | 2 | |
| 5768 | 18,18 | Box elder | Acer negundo | Remove | | 5 |
| 5771 | 15 | Box elder | Acer negundo | Remove | 2 | |
| 5772 | 28 | Box elder | Acer negundo | Remove | 3 | |
| 5773 | 10 | Box elder | Acer negundo | Remove | 1 | |
| 5774 | 14 | Box elder | Acer negundo | Remove | 2 | |
| 5776 | 10 | Hawthorn | Crataegus spp. | Remove | 1 | |
| 5777 | 15,15 | Black Walnut | Juglans nigra | Remove | | 4 |
| 5778 | 19 | Black Walnut | Juglans nigra | Remove | 2 | |
| 5779 | 12,12,12,12 | Black Cherry | Prunus serotina | Remove | | 6 |
| 5780 | 18 | Black Cherry | Prunus serotina | Remove | 2 | |
| 5781 | 12 | Box elder | Acer negundo | Remove | 2 | |
| 5782 | 12 | Box elder | Acer negundo | Remove | 2 | |
| 5783 | 11,11 | Box elder | Acer negundo | Remove | | 3 |
| 5786 | 10 | Box elder | Acer negundo | Remove | 1 | |
| 5787 | 18 | Box elder | Acer negundo | Remove | 2 | |
| 5789 | 8 | Box elder | Acer negundo | Remove | 1 | |
| 5790 | 10,10 | Box elder | Acer negundo | Remove | | 3 |
| 5791 | 12 | Box elder | Acer negundo | Remove | 2 | |
| 5792 | 15 | Box elder | Acer negundo | Remove | 2 | |
| 5793 | 7,13 | Box elder | Acer negundo | Remove | 2 | |
| 5794 | 10 | Box elder | Acer negundo | Remove | 2 | |
| 5795 | 10 | Box elder | Acer negundo | Remove | 2 | |
| 5796 | 13 | Box elder | Acer negundo | Remove | 2 | |
| 5797 | 8 | Box elder | Acer negundo | Remove | 1 | |
| 5798 | 8,9 | Box elder | Acer negundo | Remove | 1 | |
| 5799 | 13 | American Elm | Ulmus americana | Remove | 2 | |
| 5800 | 17 | Box elder | Acer negundo | Remove | 2 | |
| 5801 | 9 | Box elder | Acer negundo | Remove | 1 | |
| 5802 | 18 | Eastern Cottonwood | Populus deltoides | Remove | 2 | |
| 5804 | 8 | Box elder | Acer negundo | Remove | 1 | |
| 5805 | 12 | Box elder | Acer negundo | Remove | 2 | |
| 5806 | 8 | Box elder | Acer negundo | Remove | 1 | |
| 5807 | 8 | Box elder | Acer negundo | Remove | 1 | |
| 5809 | 16 | Box elder | Acer negundo | Remove | 2 | |
| 5810 | 6,6,8 | Box elder | Acer negundo | Remove | 2 | |
| 5811 | 10 | Box elder | Acer negundo | Remove | 1 | |
| 5812 | 18 | Box elder | Acer negundo | Remove | 2 | |
| 5813 | 16 | Box elder | Acer negundo | Remove | 2 | |
| 5814 | 16 | Box elder | Acer negundo | Remove | 2 | |
| 5815 | 10,10 | Box elder | Acer negundo | Remove | | 3 |
| 5816 | 12 | Box elder | Acer negundo | Remove | 2 | |
| 5817 | 10 | Box elder | Acer negundo | Remove | 1 | |
| 5818 | 13 | Black Walnut | Juglans nigra | Remove | 2 | |
| 5824 | 8 | Hawthorn | Crataegus spp. | Remove | 1 | |
| 5825 | 16 | Box elder | Acer negundo | Remove | 2 | |
| 5826 | 16 | Box elder | Acer negundo | Remove | 2 | |
| 5828 | 10 | Black Walnut | Juglans nigra | Save | | |
| 5829 | 16 | Black Walnut | Juglans nigra | Save | | |
| 5830 | 14 | American Elm | Ulmus americana | Save | | |
| 5831 | 11 | Black Walnut | Juglans nigra | Save | | |
| 5832 | 8 | White Ash | Fraxinus americana | Remove | 1 | |
| 5833 | 14,14 | Box elder | Acer negundo | Remove | | 4 |
| 5834 | 21 | Black Walnut | Juglans nigra | Save | | |
| 5835 | 18 | Black Cherry | Prunus serotina | Save | | |
| 5836 | 8 | Black Cherry | Prunus serotina | Save | | |
| 5837 | 24 | Eastern Cottonwood | Populus deltoides | Save | | |
| 5838 | 8 | Common Apple | Malus spp. | Save | | |
| 5839 | 10 | Box elder | Acer negundo | Remove | 1 | |
| 5840 | 20 | Box elder | Acer negundo | Remove | 2 | |
| 5841 | 12,12 | Box elder | Acer negundo | Save | | |
| 5842 | 16 | Black Cherry | Prunus serotina | Save | | |
| 5843 | 11 | Black Cherry | Prunus serotina | Save | | |
| 5844 | 10 | Black Cherry | Prunus serotina | Save | | |
| 5845 | 12 | Black Cherry | Prunus serotina | Save | | |
| 5846 | 10 | Hawthorn | Crataegus spp. | Save | | |
| 5847 | 9 | Hawthorn | Crataegus spp. | Save | | |
| 5848 | 19 | Hawthorn | Crataegus spp. | Save | | |
| 5849 | 10 | American Elm | Ulmus americana | Save | | |
| 5850 | 18 | Box elder | Acer negundo | Save | | |
| 5851 | 24 | Black Cherry | Prunus serotina | Save | | |
| 5852 | 10 | Black Cherry | Prunus serotina | Save | | |
| 5853 | 14 | Black Cherry | Prunus serotina | Save | | |
| 5854 | 12 | Black Cherry | Prunus serotina | Save | | |
| 5855 | 16 | Box elder | Acer negundo | Remove | 2 | |
| 5856 | 24 | Box elder | Acer negundo | Remove | 3 | |
| 5857 | 10 | Box elder | Acer negundo | Remove | 2 | |
| 5858 | 19 | Box elder | Acer negundo | Remove | 2 | |
| 5859 | 8 | Box elder | Acer negundo | Remove | 1 | |
| 5860 | 12 | Box elder | Acer negundo | Remove | 2 | |
| 5861 | 28 | Box elder | Acer negundo | Remove | 3 | |
| 5862 | 13,13 | Box elder | Acer negundo | Remove | | 4 |
| 5863 | 8 | Box elder | Acer negundo | Remove | 1 | |
| 5864 | 17 | Box elder | Acer negundo | Remove | 2 | |
| 5865 | 16,16 | Box elder | Acer negundo | Save | | |
| 5866 | 10,10 | Box elder | Acer negundo | Save | | |
| 5870 | 12 | Box elder | Acer negundo | Remove | 2 | |
| 5871 | 11 | Box elder | Acer negundo | Remove | 1 | |
| 5873 | 13 | Eastern Cottonwood | Populus deltoides | Remove | 2 | |
| 5875 | 32 | Box elder | Acer negundo | Remove | 4 | |
| 5876 | 20 | Box elder | Acer negundo | Remove | 3 | |
| 5878 | 12 | Box elder | Acer negundo | Remove | 2 | |
| 5879 | 10 | Box elder | Acer negundo | Remove | 1 | |
| 5880 | 12 | Box elder | Acer negundo | Remove | 2 | |
| 5881 | 12 | Box elder | Acer negundo | Remove | 2 | |
| 5883 | 7,12 | Eastern Cottonwood | Populus deltoides | Remove | 3 | |
| 5884 | 21 | Eastern Cottonwood | Populus deltoides | Remove | | 4 |
| 5885 | 15,15 | Big Tooth Aspen | Populus grandidentata | Remove | | 4 |
| 5887 | 9 | American Elm | Ulmus americana | Remove | 1 | |
| 5888 | 11,11,11,11 | Eastern Cottonwood | Populus deltoides | Remove | | 4 |
| 5890 | 13,13 | Eastern Cottonwood | Populus deltoides | Remove | | 4 |
| 5891 | 16,16 | Eastern Cottonwood | Populus deltoides | Remove | | 4 |
| 5892 | 16,16 | Eastern Cottonwood | Populus deltoides | Remove | | 4 |
| 5893 | 12,12 | Eastern Cottonwood | Populus deltoides | Remove | | 4 |
| 5896 | 10,12,14 | Eastern Cottonwood | Populus deltoides | Remove | | 5 |
| 5897 | 12 | Box elder | Acer negundo | Remove | 2 | |
| 5898 | 15 | Box elder | Acer negundo | Remove | 2 | |
| 5899 | 12 | Big Tooth Aspen | Populus grandidentata | Remove | 2 | |
| 5900 | 8 | Big Tooth Aspen | Populus grandidentata | Remove | 1 | |
| 5901 | 13 | Big Tooth Aspen | Populus grandidentata | Remove | 2 | |
| 10401 | 17 | Eastern Red Cedar | Juniperus virginiana | Save | | |
| 10402 | 8,9 | Honey Locust | Gleditsia triacanthos | Save | | |
| 10403 | 18 | Box elder | Acer negundo | Save | | |
| 10404 | 16 | Box elder | Acer negundo | Save | | |
| 10405 | 14 | Box elder | Acer negundo | Save | | |
| 10406 | 11 | Box elder | Acer negundo | Save | | |
| 10407 | 22 | Box elder | Acer negundo | Save | | |
| 10408 | 9 | Box elder | Acer negundo | Save | | |
| 10409 | 12 | Box elder | Acer negundo | Save | | |
| 10410 | 15 | Box elder | Acer negundo | Save | | |
| 10411 | 9 | Box elder | Acer negundo | Save | | |
| 10412 | 15 | Box elder | Acer negundo | Save | | |
| 10413 | 8 | Box elder | Acer negundo | Save | | |
| 10414 | 10 | Box elder | Acer negundo | Save | | |
| 10415 | 24 | Box elder | Acer negundo | Save | | |
| 10416 | 20 | Box elder | Acer negundo | Save | | |
| 10417 | 10,22 | Box elder | Acer negundo | Save | | |
| 10418 | 10,15 | Box elder | Acer negundo | Save | | |
| 10419 | 9 | Box elder | Acer negundo | Save | | |
| 10420 | 12 | Box elder | Acer negundo | Save | | |
| 10421 | 8 | Box elder | Acer negundo | Save | | |
| 10422 | 12 | Box elder | Acer negundo | Save | | |
| 10423 | 10 | Box elder | Acer negundo | Save | | |
| 10424 | 16 | Box elder | Acer negundo | Save | | |

| TAG NO. | DIAMETER | COMMON NAME | BOTANICAL NAME | STATUS | Required Replacement | Multi-Stem Replacement |
|---|---|---|---|---|---|---|
| 10425 | 15 | Common Apple | Malus spp. | Save | | |
| 10426 | 8 | Box elder | Acer negundo | Save | | |
| 10427 | 12,12,18 | Box elder | Acer negundo | Save | | |
| 10428 | 10,13 | Eastern Cottonwood | Populus deltoides | Save | | |
| 10487 | 11,13 | Honey Locust | Gleditsia triacanthos | Save | | |
| 10488 | 18 | Honey Locust | Gleditsia triacanthos | Save | | |
| 10489 | 24 | Unknown Tree | | Save | | |
| 10490 | 13 | Honey Locust | Gleditsia triacanthos | Save | | |
| 10491 | 24 | Unknown Tree | | Save | | |
| 10492 | 18 | Honey Locust | Gleditsia triacanthos | Save | | |
| 10493 | 36 | Black Cherry | Prunus serotina | Save | | |
| 10494 | 9 | Honey Locust | Gleditsia triacanthos | Save | | |
| 10495 | 9 | Honey Locust | Gleditsia triacanthos | Save | | |
| 10498 | 8 | Honey Locust | Gleditsia triacanthos | Save | | |
| 10497 | 8,8 | Box elder | Acer negundo | Save | | |
| 10498 | 8 | Box elder | Acer negundo | Save | | |
| 10499 | 8 | Box elder | Acer negundo | Save | | |
| 10500 | 9 | Box elder | Acer negundo | Save | | |
| 




## NOTE KEY:

1. EXISTING WETLAND
2. 25' WETLAND BUFFER
3. EXISTING TREES TO REMAIN, TYPICAL
4. EXISTING TREES TO BE REMOVED, TYPICAL
5. EXISTING DENTIST OFFICE
6. PROPOSED TOLL BROTHERS DEVELOPMENT, ZONED RM-1
7. PROPOSED 6' HT. BERM AT TOLL BROTHERS DEVELOPMENT
8. FUTURE PARK, BY OTHER'S
9. RIDGEVIEW OF NOVI, ZONED RM-1
10. PROPOSED COMMERCIAL BUILDINGS, SEE ARCHITECTURE
11. PROPOSED OUTDOOR PATIOS
12. PROPOSED PARKING LOT
13. PROPOSED DUMPSTER ENCLOSURE, PER NOVI STANDARDS
14. PROPOSED CONCRETE SIDEWALKS, TYPICAL
15. PROPERTY LINE
16. ZONING LINE WITHIN THE PRO
17. PRO LINE

## WOODLAND SUMMARY

| | |
|---|---|
| Total Trees Surveyed: | 111 (On this parcel) |
| Regulated Trees Removed: | 89 |
| Exempt Trees Removed: | 0 |
| Total Trees Preserved: | 22 (111 - 89) |

Replacement Required

| | | |
|---|---|---|
| Trees 8" - 11" | 26 Trees x 1: | 26 |
| Trees 11" - 20" | 38 Trees x 2: | 76 |
| Trees 20" - 30" | 7 Trees x 3: | 21 |
| Trees 30" + | 0 2 Trees x 4: | 8 |
| Multi-stem Trees (12 Trees): | | 49 |
| Replacements Required: | | 180 |
| Replacements Provided: | | 41 - See Sheet L-3 |

NOT FOR CONSTRUCTION

TREE SURVEY PROVIDED BY:

ALLEN DESIGN
557 Carpenter
Northville, MI 48167
248.467.4668

Dated: 03.28.2023
Job No.: 21-027

SCALE: 1" = 40'-0"

NORTH

VVLA vert verde landscape architecture
734.249.2568 Plymouth, MI
james@vertverde.com

Issued For:

| | |
|---|---|
| 06.23.2023 | PRO Submittal |
| 12.22.2023 | Revised PRO Submittal |

Project:

**NOVI TEN PRO**

10 Mile Road
Novi, Michigan

Project Sponsor:

Weiss Construction Co.
41001 Grand River Ave.
Novi, MI 48375

Sheet Name:

Tree Removal and Protection Plan

Seal:

| | |
|---|---|
| Drawn: | JG |
| Checked: | JG |
| Date: | 06.2023 |
| Scale: | 1" = 40'-0" |

Project Number:

23.035

Sheet Number:

L - 1

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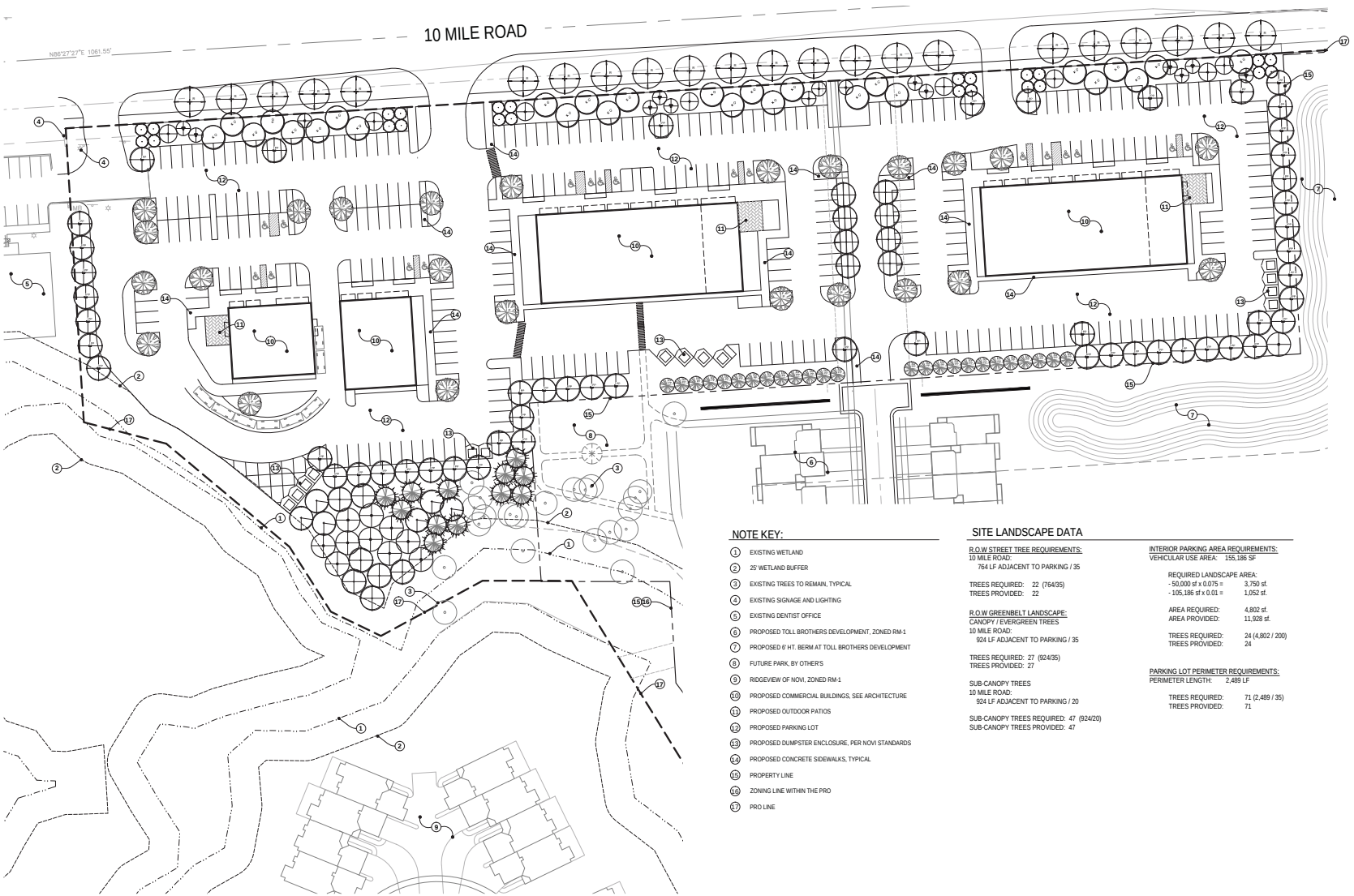
| TAG NO. | DIAMETER | COMMON NAME | BOTANICAL NAME | STATUS | Required Replacement | Multi-Stem Replacement |
|---|---|---|---|---|---|---|
| 4001 | 13 | Big Tooth Aspen | Populus grandidentata | Remove | 2 | |
| 4003 | 14 | Big Tooth Aspen | Populus grandidentata | Remove | 2 | |
| 4004 | 13 | Big Tooth Aspen | Populus grandidentata | Remove | 2 | |
| 4005 | 13 | Eastern Cottonwood | Populus deltoides | Remove | 2 | |
| 4009 | 11 | Eastern Cottonwood | Populus deltoides | Remove | 1 | |
| 4010 | 18 | Eastern Cottonwood | Populus deltoides | Remove | 2 | |
| 4011 | 10 | Eastern Cottonwood | Populus deltoides | Remove | 1 | |
| 4012 | 10 | Eastern Cottonwood | Populus deltoides | Remove | 1 | |
| 4013 | 10 | Eastern Cottonwood | Populus deltoides | Remove | 1 | |
| 4014 | 14 | Eastern Cottonwood | Populus deltoides | Remove | 2 | |
| 4015 | 9 | American Elm | Ulmus americana | Remove | 1 | |
| 4016 | 13 | Eastern Cottonwood | Populus deltoides | Remove | 2 | |
| 4017 | 10 | Eastern Cottonwood | Populus deltoides | Remove | 1 | |
| 4020 | 16 | Eastern Cottonwood | Populus deltoides | Remove | 2 | |
| 4021 | 14 | Eastern Cottonwood | Populus deltoides | Remove | 2 | |
| 4022 | 18 | Eastern Cottonwood | Populus deltoides | Remove | 2 | |
| 4023 | 15 | Box elder | Acer negundo | Remove | 2 | |
| 4024 | 15 | American Elm | Ulmus americana | Remove | 2 | |
| 4025 | 12 | Box elder | Acer negundo | Remove | 2 | |
| 4026 | 14 | Box elder | Acer negundo | Remove | 2 | |
| 4027 | 12 | Black Walnut | Juglans nigra | Remove | 2 | |
| 4031 | 17 | Box elder | Acer negundo | Remove | 2 | |
| 4032 | 16 | Black Cherry | Prunus serotina | Remove | 2 | |
| 4033 | 10 | Black Cherry | Prunus serotina | Remove | 2 | |
| 4035 | 11 | Black Walnut | Juglans nigra | Remove | 1 | |
| 4037 | 10 | Black Walnut | Juglans nigra | Remove | 1 | |
| 4038 | 13 | Black Cherry | Prunus serotina | Remove | 2 | |
| 4040 | 24 | Box elder | Acer negundo | Remove | 3 | |
| 4041 | 10 | American Elm | Ulmus americana | Remove | 1 | |
| 4042 | 20 | American Elm | Ulmus americana | Remove | 2 | |
| 4043 | 8 | Hawthorn | Crataegus spp | Remove | 1 | |
| 4044 | 12 | Box elder | Acer negundo | Remove | 2 | |
| 4046 | 12 | Black Cherry | Prunus serotina | Remove | 2 | |
| 4048 | 13 | American Elm | Ulmus americana | Save | | |
| 4050 | 14,14 | Black Cherry | Prunus serotina | Remove | | 4 |
| 4051 | 14 | Black Cherry | Prunus serotina | Remove | 2 | |
| 4055 | 14 | Box elder | Acer negundo | Remove | 2 | |
| 4056 | 12 | Box elder | Acer negundo | Remove | 2 | |
| 4058 | 8 | Box elder | Acer negundo | Save | | |
| 4059 | 10 | Box elder | Acer negundo | Save | | |
| 4060 | 9 | Black Cherry | Prunus serotina | Remove | 1 | |
| 4061 | 12 | Black Cherry | Prunus serotina | Remove | 2 | |
| 4062 | 16 | American Elm | Ulmus americana | Save | | |
| 4063 | 17 | Black Cherry | Prunus serotina | Remove | 2 | |
| 4064 | 10 | Red Oak | Quercus rubra | Remove | 1 | |
| 4065 | 15 | Black Cherry | Prunus serotina | Remove | 2 | |
| 4066 | 17 | Black Cherry | Prunus serotina | Remove | 2 | |
| 4068 | 12 | Box elder | Acer negundo | Remove | 2 | |
| 4069 | 24 | Common Apple | Malus spp | Remove | 3 | |
| 4070 | 14 | Box elder | Acer negundo | Remove | 2 | |
| 4071 | 8 | Box elder | Acer negundo | Remove | 1 | |
| 4073 | 8 | Box elder | Acer negundo | Remove | 1 | |
| 4076 | 18 | Box elder | Acer negundo | Remove | 2 | |
| 4078 | 13 | Box elder | Acer negundo | Remove | 2 | |
| 4079 | 8 | Box elder | Acer negundo | Remove | 1 | |
| 4081 | 14 | Box elder | Acer negundo | Remove | 2 | |
| 4082 | 14 | Box elder | Acer negundo | Remove | 2 | |
| 4084 | 8 | Box elder | Acer negundo | Remove | 1 | |
| 4087 | 8 | Box elder | Acer negundo | Remove | 1 | |
| 4088 | 12 | Box elder | Acer negundo | Remove | 2 | |
| 4089 | 13 | Box elder | Acer negundo | Remove | 2 | |
| 4090 | 9 | Box elder | Acer negundo | Remove | 1 | |
| 4091 | 12 | Box elder | Acer negundo | Remove | 2 | |
| 4092 | 15,15,15 | Box elder | Acer negundo | Remove | | 6 |
| 4094 | 12 | Box elder | Acer negundo | Remove | 2 | |
| 4095 | 13 | Box elder | Acer negundo | Remove | 2 | |
| 4096 | 15 | Box elder | Acer negundo | Remove | 2 | |
| 4097 | 12 | Box elder | Acer negundo | Remove | 2 | |
| 4098 | 10 | Box elder | Acer negundo | Remove | 1 | |
| 4099 | 19 | Box elder | Acer negundo | Remove | 1 | |
| 4100 | 8 | Box elder | Acer negundo | Remove | 1 | |
| 4101 | 8 | Box elder | Acer negundo | Remove | 1 | |
| 4102 | 16 | Eastern Cottonwood | Populus deltoides | Remove | 2 | |
| 4103 | 24 | Eastern Cottonwood | Populus deltoides | Remove | 2 | |
| 4104 | 18 | Eastern Cottonwood | Populus deltoides | Remove | 2 | |
| 4105 | 15 | Box elder | Acer negundo | Remove | 2 | |
| 4106 | 14 | Eastern Cottonwood | Populus deltoides | Remove | 2 | |
| 4107 | 15 | Eastern Cottonwood | Populus deltoides | Remove | 2 | |
| 4108 | 15 | Eastern Cottonwood | Populus deltoides | Remove | 2 | |
| 4109 | 15 | Eastern Cottonwood | Populus deltoides | Remove | 2 | |
| 4111 | 8 | Eastern Cottonwood | Populus deltoides | Remove | 1 | |
| 4112 | 10 | Eastern Cottonwood | Populus deltoides | Remove | 1 | |
| 4114 | 8 | Box elder | Acer negundo | Remove | 1 | |
| 4115 | 12 | Black Cherry | Prunus serotina | Remove | 2 | |
| 4116 | 9 | Box elder | Acer negundo | Remove | 1 | |
| 4117 | 8 | Box elder | Acer negundo | Remove | 1 | |
| 4118 | 8 | Box elder | Acer negundo | Remove | 1 | |
| 4119 | 16 | Box elder | Acer negundo | Remove | 2 | |
| 4121 | 12 | Box elder | Acer negundo | Remove | 2 | |
| 4122 | 10 | Box elder | Acer negundo | Remove | 1 | |
| 4123 | 18 | Box elder | Acer negundo | Remove | 2 | |
| 4124 | 18 | Box elder | Acer negundo | Remove | 2 | |
| 4125 | 22 | Box elder | Acer negundo | Remove | 3 | |
| 4127 | 8 | White Spruce | Picea glauca | Remove | 1 | |
| 4135 | 10,10 | Box elder | Acer negundo | Remove | | 3 |
| 4136 | 13,15,15 | Eastern Cottonwood | Populus deltoides | Remove | | 6 |
| 4137 | 12 | Box elder | Acer negundo | Remove | 2 | |
| 4138 | 13 | Box elder | Acer negundo | Remove | 2 | |
| 4140 | 14 | Box elder | Acer negundo | Remove | 2 | |
| 4142 | 18 | Box elder | Acer negundo | Remove | 2 | |
| 4144 | 12 | Box elder | Acer negundo | Remove | 2 | |
| 4145 | 8 | Box elder | Acer negundo | Remove | 1 | |
| 4146 | 11 | Box elder | Acer negundo | Remove | 1 | |
| 4147 | 10 | Box elder | Acer negundo | Remove | 1 | |
| 4148 | 10 | Box elder | Acer negundo | Remove | 1 | |
| 4149 | 10 | Box elder | Acer negundo | Remove | 1 | |
| 4150 | 12 | Box elder | Acer negundo | Remove | 2 | |
| 4151 | 14 | Box elder | Acer negundo | Remove | 2 | |
| 4152 | 17 | Box elder | Acer negundo | Remove | 2 | |
| 4153 | 18 | Box elder | Acer negundo | Remove | 2 | |
| 4154 | 18 | Box elder | Acer negundo | Remove | 2 | |
| 4155 | 22 | Eastern Cottonwood | Populus deltoides | Remove | 3 | |
| 4156 | 12 | Box elder | Acer negundo | Remove | 2 | |
| 4158 | 13 | Box elder | Acer negundo | Remove | 2 | |
| 4164 | 10 | Black Cherry | Prunus serotina | Remove | 1 | |
| 4165 | 8,8 | Hawthorn | Crataegus spp | Remove | | 2 |
| 4169 | 27 | American Elm | Ulmus americana | Remove | 3 | |
| 4171 | 9 | Black Cherry | Prunus serotina | Remove | 1 | |
| 4172 | 8,8 | Black Cherry | Prunus serotina | Remove | | 2 |
| 4173 | 13 | White Ash | Fraxinus americana | Remove | 2 | |
| 4174 | 9 | Black Cherry | Prunus serotina | Remove | 1 | |
| 4175 | 9 | Black Cherry | Prunus serotina | Remove | 1 | |
| 4178 | 10 | Black Cherry | Prunus serotina | Remove | 1 | |
| 4179 | 8 | Black Cherry | Prunus serotina | Remove | 1 | |
| 4181 | 10 | Black Cherry | Prunus serotina | Remove | 1 | |
| 4182 | 11 | Hawthorn | Crataegus spp | Save | | |
| 4183 | 9 | Box elder | Acer negundo | Save | | |
| 4185 | 9 | Black Cherry | Prunus serotina | Save | | |
| 4186 | 12 | Box elder | Acer negundo | Save | | |
| 4187 | 11 | Black Cherry | Prunus serotina | Remove | 1 | |
| 4188 | 9 | Black Cherry | Prunus serotina | Remove | 1 | |
| 4189 | 14 | Black Cherry | Prunus serotina | Remove | 2 | |
| 4190 | 11 | Box elder | Acer negundo | Remove | 1 | |
| 4191 | 12 | Common Apple | Malus spp | Remove | 2 | |
| 4193 | 8 | Black Cherry | Prunus serotina | Remove | 1 | |
| 4194 | 9 | Common Apple | Malus spp | Remove | 1 | |
| 4197 | 10 | Black Cherry | Prunus serotina | Remove | 1 | |
| 4201 | 14 | American Elm | Ulmus americana | Remove | 2 | |
| 4202 | 10 | Black Cherry | Prunus serotina | Remove | 1 | |
| 4203 | 12 | Black Cherry | Prunus serotina | Remove | 2 | |
| 4204 | 12 | Black Cherry | Prunus serotina | Remove | 2 | |
| 4205 | 9 | Common Apple | Malus spp | Remove | 1 | |
| 4206 | 9 | Black Cherry | Prunus serotina | Remove | 1 | |
| 4208 | 8 | Common Apple | Malus spp | Remove | 1 | |
| 4209 | 24 | Box elder | Acer negundo | Remove | 3 | |
| 4210 | 8,8 | Common Apple | Malus spp | Remove | | 2 |
| 4211 | 9 | Black Cherry | Prunus serotina | Remove | 1 | |
| 4214 | 12,12 | Black Cherry | Prunus serotina | Remove | | 3 |
| 4215 | 10,10 | Black Cherry | Prunus serotina | Remove | | 3 |
| 4217 | 12 | Black Cherry | Prunus serotina | Remove | 2 | |
| 4219 | 8 | Black Cherry | Prunus serotina | Remove | 1 | |
| 4220 | 14 | Black Cherry | Prunus serotina | Remove | 2 | |
| 4222 | 22 | American Elm | Ulmus americana | Remove | 3 | |
| 4227 | 8 | Black Cherry | Prunus serotina | Remove | 1 | |
| 4229 | 10 | Black Cherry | Prunus serotina | Remove | 2 | |
| 4230 | 16 | Black Cherry | Prunus serotina | Remove | 2 | |

| TAG NO. | DIAMETER | COMMON NAME | BOTANICAL NAME | STATUS | Required Replacement | Multi-Stem Replacement |
|---|---|---|---|---|---|---|
| 4231 | 13 | Black Cherry | Prunus serotina | Remove | 2 | |
| 4232 | 13 | Black Cherry | Prunus serotina | Remove | 2 | |
| 4253 | 11 | Black Cherry | Prunus serotina | Remove | 1 | |
| 4234 | 14 | Black Cherry | Prunus serotina | Remove | 2 | |
| 4236 | 8 | Black Cherry | Prunus serotina | Remove | 1 | |
| 4237 | 14 | Black Cherry | Prunus serotina | Remove | 2 | |
| 4239 | 12 | Black Cherry | Prunus serotina | Remove | 1 | |
| 4240 | 15 | Black Cherry | Prunus serotina | Remove | 2 | |
| 4241 | 18 | Box elder | Acer negundo | Remove | 2 | |
| 4243 | 8 | Black Cherry | Prunus serotina | Remove | 1 | |
| 4244 | 9 | Black Cherry | Prunus serotina | Remove | 1 | |
| 4246 | 10 | Black Cherry | Prunus serotina | Remove | 1 | |
| 4247 | 8 | Black Cherry | Prunus serotina | Save | | |
| 5641 | 18 | Hawthorn | Crataegus spp | Remove | 2 | |
| 5642 | 12,12 | Box elder | Acer negundo | Remove | | 3 |
| 5643 | 17 | Box elder | Acer negundo | Remove | 2 | |
| 5644 | 14 | Box elder | Acer negundo | Remove | 2 | |
| 5648 | 8 | Box elder | Acer negundo | Remove | 1 | |
| 5650 | 8 | Box elder | Acer negundo | Remove | 1 | |
| 5651 | 8 | Box elder | Acer negundo | Remove | 1 | |
| 5653 | 12 | Box elder | Acer negundo | Remove | 2 | |
| 5654 | 14 | Box elder | Acer negundo | Remove | 2 | |
| 5655 | 12 | Box elder | Acer negundo | Remove | 2 | |
| 5656 | 14 | Box elder | Acer negundo | Remove | 2 | |
| 5657 | 16 | Box elder | Acer negundo | Remove | 2 | |
| 5658 | 12 | Box elder | Acer negundo | Remove | 2 | |
| 5660 | 10 | Box elder | Acer negundo | Remove | 1 | |
| 5661 | 19,10 | Box elder | Acer negundo | Remove | | 3 |
| 5662 | 12,12 | Box elder | Acer negundo | Remove | | 3 |
| 5663 | 14 | Box elder | Acer negundo | Remove | 2 | |
| 5664 | 12 | Box elder | Acer negundo | Remove | 2 | |
| 5665 | 14 | Box elder | Acer negundo | Remove | 2 | |
| 5666 | 11 | Box elder | Acer negundo | Remove | 1 | |
| 5667 | 12 | Box elder | Acer negundo | Remove | 2 | |
| 5668 | 9 | Box elder | Acer negundo | Remove | 1 | |
| 5669 | 9 | Box elder | Acer negundo | Remove | 1 | |
| 5673 | 11 | Box elder | Acer negundo | Remove | 1 | |
| 5674 | 19 | Box elder | Acer negundo | Remove | 2 | |
| 5677 | 13 | Box elder | Acer negundo | Remove | 2 | |
| 5678 | 18 | Box elder | Acer negundo | Remove | 2 | |
| 5680 | 18 | Common Apple | Malus spp | Remove | 3 | |
| 5682 | 10 | Common Apple | Malus spp | Remove | 1 | |
| 5684 | 16 | White Ash | Fraxinus americana | Remove | 2 | |
| 5691 | 15,15,15 | Common Apple | Malus spp | Remove | | 6 |
| 5692 | 11 | Hawthorn | Crataegus spp | Remove | 1 | |
| 5695 | 28 | Eastern Cottonwood | Populus deltoides | Remove | 3 | |
| 5696 | 17 | Box elder | Acer negundo | Remove | 2 | |
| 5697 | 9 | Hawthorn | Crataegus spp | Remove | 1 | |
| 5699 | 9 | Eastern Cottonwood | Populus deltoides | Remove | 1 | |
| 5610 | 14 | Eastern Cottonwood | Populus deltoides | Remove | 2 | |
| 5611 | 12 | Eastern Cottonwood | Populus deltoides | Remove | 2 | |
| 5612 | 24 | Box elder | Acer negundo | Remove | 3 | |
| 5613 | 27 | Box elder | Acer negundo | Remove | 3 | |
| 5618 | 8 | Box elder | Acer negundo | Remove | 1 | |
| 5629 | 10 | Hawthorn | Crataegus spp | Remove | 1 | |
| 5622 | 11 | Hawthorn | Crataegus spp | Remove | 1 | |
| 5624 | 19 | Hawthorn | Crataegus spp | Remove | 1 | |
| 5625 | 18 | Black Cherry | Prunus serotina | Remove | 2 | |
| 5626 | 11 | Hawthorn | Crataegus spp | Remove | 1 | |
| 5627 | 18 | Box elder | Acer negundo | Remove | 2 | |
| 5628 | 13 | Box elder | Acer negundo | Remove | 2 | |
| 5629 | 10 | White Ash | Fraxinus americana | Remove | 1 | |
| 5630 | 8 | White Ash | Fraxinus americana | Remove | 1 | |
| 5631 | 8 | White Ash | Fraxinus americana | Remove | 1 | |
| 5632 | 11 | White Ash | Fraxinus americana | Remove | 1 | |
| 5633 | 8 | Box elder | Acer negundo | Remove | 1 | |
| 5634 | 24,24 | Black Cherry | Prunus serotina | Remove | | 6 |
| 5637 | 11 | Box elder | Acer negundo | Remove | 1 | |
| 5638 | 9 | Box elder | Acer negundo | Remove | 1 | |
| 5639 | 12 | Box elder | Acer negundo | Remove | 2 | |
| 5640 | 12 | Box elder | Acer negundo | Remove | 2 | |
| 5642 | 14 | Box elder | Acer negundo | Remove | 2 | |
| 5643 | 15 | Box elder | Acer negundo | Remove | 2 | |
| 5644 | 15 | Box elder | Acer negundo | Remove | 2 | |
| 5645 | 8,8 | Box elder | Acer negundo | Remove | | 2 |
| 5646 | 12 | Common Apple | Malus spp | Remove | 2 | |
| 5647 | 12 | Box elder | Acer negundo | Remove | 2 | |
| 5648 | 14 | Box elder | Acer negundo | Remove | 2 | |
| 5636 | 16 | White Ash | Fraxinus americana | Remove | 2 | |
| 5651 | 19 | Box elder | Acer negundo | Remove | 2 | |
| 5652 | 13 | Box elder | Acer negundo | Remove | 2 | |
| 5653 | 13 | Box elder | Acer negundo | Remove | 1 | |
| 5654 | 10 | Eastern Cottonwood | Populus deltoides | Remove | 1 | |
| 5655 | 9 | Box elder | Acer negundo | Remove | 1 | |
| 5656 | 8,16 | Box elder | Acer negundo | Remove | | 3 |
| 5657 | 19 | Box elder | Acer negundo | Remove | 2 | |
| 5658 | 10 | White Ash | Fraxinus americana | Remove | 1 | |
| 5659 | 10 | Eastern Cottonwood | Populus deltoides | Remove | 1 | |
| 5662 | 8 | Eastern Cottonwood | Populus deltoides | Remove | 1 | |
| 5664 | 10 | Eastern Cottonwood | Populus deltoides | Remove | 1 | |
| 5666 | 14 | Eastern Cottonwood | Populus deltoides | Remove | 2 | |
| 5667 | 15 | Eastern Cottonwood | Populus deltoides | Remove | 2 | |
| 5669 | 18 | Box elder | Acer negundo | Remove | 2 | |
| 5670 | 24 | Box elder | Acer negundo | Remove | 3 | |
| 5671 | 18 | Box elder | Acer negundo | Remove | 2 | |
| 5672 | 10 | Box elder | Acer negundo | Remove | 1 | |
| 5673 | 14 | Box elder | Acer negundo | Remove | 2 | |
| 5673 | 12 | American Elm | Ulmus americana | Remove | 2 | |
| 5676 | 12 | Box elder | Acer negundo | Remove | 2 | |
| 5678 | 8 | Box elder | Acer negundo | Remove | 1 | |
| 5681 | 10 | Box elder | Acer negundo | Remove | 1 | |
| 5682 | 9 | Box elder | Acer negundo | Remove | 1 | |
| 5683 | 9 | Box elder | Acer negundo | Remove | 1 | |
| 5684 | 20 | Box elder | Acer negundo | Remove | 2 | |
| 5685 | 12 | Sugar Maple | Acer saccharum | Remove | 2 | |
| 5686 | 12 | American Elm | Ulmus americana | Remove | 2 | |
| 5688 | 10 | Box elder | Acer negundo | Remove | 1 | |
| 5689 | 12,12 | Box elder | Acer negundo | Remove | | 3 |
| 5690 | 13 | Box elder | Acer negundo | Remove | 2 | |
| 5691 | 10 | Box elder | Acer negundo | Remove | 1 | |
| 5692 | 10 | Box elder | Acer negundo | Remove | 1 | |
| 5693 | 10 | Box elder | Acer negundo | Remove | 1 | |
| 5694 | 8,12 | Box elder | Acer negundo | Remove | 2 | |
| 5696 | 14 | Box elder | Acer negundo | Remove | 2 | |
| 5697 | 10 | Black Walnut | Juglans nigra | Remove | 1 | |
| 5700 | 9 | Sugar Maple | Acer saccharum | Save | | |
| 5701 | 22 | Black Walnut | Juglans nigra | Save | | |
| 5702 | 14 | Black Walnut | Juglans nigra | Save | | |
| 5703 | 15 | Black Walnut | Juglans nigra | Save | | |
| 5704 | 12 | Black Walnut | Juglans nigra | Save | | |
| 5705 | 12 | Black Walnut | Juglans nigra | Save | | |
| 5706 | 14 | Black Walnut | Juglans nigra | Save | | |
| 5707 | 21 | Black Walnut | Juglans nigra | Save | | |
| 5706 | 19 | Common Apple | Malus spp. | Remove | 1 | |
| 5710 | 8 | Eastern Cottonwood | Populus deltoides | Remove | 1 | |
| 5713 | 13 | Common Apple | Malus spp. | Remove | 2 | |
| 5714 | 13 | Common Apple | Malus spp. | Remove | 2 | |
| 5715 | 12 | Common Apple | Malus spp. | Remove | 2 | |
| 5716 | 9 | Common Apple | Malus spp. | Remove | 1 | |
| 5717 | 10 | Common Apple | Malus spp. | Remove | 1 | |
| 5719 | 8,8 | Common Apple | Malus spp. | Remove | | 3 |
| 5721 | 18 | Box elder | Acer negundo | Remove | 2 | |
| 5722 | 13 | Box elder | Acer negundo | Remove | 2 | |
| 5723 | 24 | Black Cherry | Prunus serotina | Remove | 3 | |
| 5724 | 13 | Box elder | Acer negundo | Remove | 2 | |
| 5725 | 19 | Box elder | Acer negundo | Remove | 2 | |
| 5726 | 14 | Box elder | Acer negundo | Remove | 2 | |
| 5727 | 12 | Common Apple | Malus spp. | Remove | 2 | |
| 5729 | 9 | Common Apple | Malus spp. | Remove | 1 | |
| 5732 | 24 | Black Cherry | Prunus serotina | Remove | 3 | |
| 5733 | 8 | Black Cherry | Prunus serotina | Remove | 1 | |
| 5734 | 9 | White Ash | Fraxinus americana | Remove | 1 | |
| 5736 | 12 | Black Walnut | Juglans nigra | Remove | 2 | |

| TAG NO. | DIAMETER | COMMON NAME | BOTANICAL NAME | STATUS | Required Replacement | Multi-Stem Replacement |
|---|---|---|---|---|---|---|
| 5737 | 20 | Black Walnut | Juglans nigra | Remove | 2 | |
| 5738 | 16 | Black Walnut | Juglans nigra | Remove | 1 | |
| 5739 | 22 | Black Walnut | Juglans nigra | Remove | 3 | |
| 5740 | 13 | Black Walnut | Juglans nigra | Remove | 2 | |
| 5741 | 26 | Black Walnut | Juglans nigra | Remove | 2 | |
| 5743 | 14 | Box elder | Acer negundo | Remove | 2 | |
| 5744 | 12 | Box elder | Acer negundo | Remove | 2 | |
| 5747 | 13 | Box elder | Acer negundo | Remove | 2 | |
| 5748 | 18 | Box elder | Acer negundo | Remove | 2 | |
| 5749 | 16 | Black Cherry | Prunus serotina | Remove | 2 | |
| 5752 | 26 | Box elder | Acer negundo | Remove | 3 | |
| 5753 | 16 | Hawthorn | Crataegus spp | Remove | 1 | |
| 5756 | 24 | Black Cherry | Prunus serotina | Remove | 3 | |
| 5756 | 18 | Box elder | Acer negundo | Remove | 2 | |
| 5757 | 9 | Box elder | Acer negundo | Remove | 1 | |
| 5758 | 6,13 | Box elder | Acer negundo | Remove | 2 | |
| 5760 | 22 | Box elder | Acer negundo | Remove | 2 | |
| 5761 | 26 | Box elder | Acer negundo | Remove | 2 | |
| 5762 | 12 | Box elder | Acer negundo | Remove | 2 | |
| 5763 | 10 | Box elder | Acer negundo | Remove | 1 | |
| 5764 | 11 | Box elder | Acer negundo | Remove | 1 | |
| 5765 | 8 | Box elder | Acer negundo | Remove | 1 | |
| 5766 | 15,15,15 | Black Cherry | Prunus serotina | Remove | | 6 |
| 5767 | 12 | Black Cherry | Prunus serotina | Remove | 2 | |
| 5768 | 18,18 | Box elder | Acer negundo | Remove | | 5 |
| 5771 | 16 | Box elder | Acer negundo | Remove | 2 | |
| 5772 | 28 | Box elder | Acer negundo | Remove | 3 | |
| 5773 | 10 | Box elder | Acer negundo | Remove | 1 | |
| 5774 | 14 | Box elder | Acer negundo | Remove | 2 | |
| 5776 | 10 | Hawthorn | Crataegus spp | Remove | 1 | |
| 5777 | 15,15 | Black Walnut | Juglans nigra | Remove | | 4 |
| 5778 | 19 | Black Walnut | Juglans nigra | Remove | 2 | |
| 5779 | 12,12,12,12 | Black Cherry | Prunus serotina | Remove | | 6 |
| 5780 | 18 | Black Cherry | Prunus serotina | Remove | 2 | |
| 5781 | 12 | Box elder | Acer negundo | Remove | 2 | |
| 5782 | 12 | Box elder | Acer negundo | Remove | 2 | |
| 5783 | 11,11 | Box elder | Acer negundo | Remove | | 3 |
| 5786 | 10 | Box elder | Acer negundo | Remove | 1 | |
| 5787 | 18 | Box elder | Acer negundo | Remove | 2 | |
| 5789 | 8 | Box elder | Acer negundo | Remove | 1 | |
| 5790 | 10,10 | Box elder | Acer negundo | Remove | | 3 |
| 5791 | 12 | Box elder | Acer negundo | Remove | 2 | |
| 5792 | 15 | Box elder | Acer negundo | Remove | 2 | |
| 5793 | 7,13 | Box elder | Acer negundo | Remove | 2 | |
| 5794 | 13 | Box elder | Acer negundo | Remove | 2 | |
| 5795 | 10 | Box elder | Acer negundo | Remove | 1 | |
| 5796 | 13 | Box elder | Acer negundo | Remove | 2 | |
| 5797 | 8 | Box elder | Acer negundo | Remove | 1 | |
| 5798 | 6,9 | Box elder | Acer negundo | Remove | 1 | |
| 5799 | 13 | American Elm | Ulmus americana | Remove | 2 | |
| 5802 | 17 | Box elder | Acer negundo | Remove | 2 | |
| 5801 | 6 | Box elder | Acer negundo | Remove | 1 | |
| 5802 | 16 | Eastern Cottonwood | Populus deltoides | Remove | 2 | |
| 5804 | 8 | Box elder | Acer negundo | Remove | 1 | |
| 5805 | 12 | Box elder | Acer negundo | Remove | 2 | |
| 5806 | 8 | Box elder | Acer negundo | Remove | 1 | |
| 5807 | 8 | Box elder | Acer negundo | Remove | 1 | |
| 5809 | 17 | Box elder | Acer negundo | Remove | 2 | |
| 5810 | 6,6,8 | Box elder | Acer negundo | Remove | 1 | |
| 5811 | 10 | Box elder | Acer negundo | Remove | 1 | |
| 5812 | 18 | Box elder | Acer negundo | Remove | 2 | |
| 5813 | 18 | Box elder | Acer negundo | Remove | 2 | |
| 5814 | 16 | Box elder | Acer negundo | Remove | 2 | |
| 5815 | 10,10 | Box elder | Acer negundo | Remove | | 3 |
| 5816 | 12 | Box elder | Acer negundo | Remove | 2 | |
| 5817 | 10 | Box elder | Acer negundo | Remove | 1 | |
| 5818 | 13 | Black Walnut | Juglans nigra | Remove | 2 | |
| 5824 | 8 | Hawthorn | Crataegus spp | Remove | 1 | |
| 5825 | 16 | Box elder | Acer negundo | Remove | 2 | |
| 5826 | 19 | Box elder | Acer negundo | Remove | 2 | |
| 5827 | 10 | Black Walnut | Juglans nigra | Remove | 1 | |
| 5828 | 16 | Black Walnut | Juglans nigra | Save | | |
| 5830 | 14 | American Elm | Ulmus americana | Remove | 2 | |
| 5831 | 11 | Black Walnut | Juglans nigra | Save | | |
| 5832 | 8 | White Ash | Fraxinus americana | Remove | 1 | |
| 5833 | 14,14 | Box elder | Acer negundo | Remove | | 4 |
| 5834 | 21 | Black Walnut | Juglans nigra | Remove | 3 | |
| 5835 | 18 | Black Cherry | Prunus serotina | Remove | 2 | |
| 5836 | 8 | Black Cherry | Prunus serotina | Remove | 1 | |
| 5837 | 24 | Eastern Cottonwood | Populus deltoides | Save | | |
| 5838 | 6 | Common Apple | Malus spp. | Save | | |
| 5839 | 19 | Box elder | Acer negundo | Remove | 1 | |
| 5840 | 20 | Box elder | Acer negundo | Remove | 3 | |
| 5841 | 12,12 | Box elder | Acer negundo | Remove | | 3 |
| 5842 | 15 | Black Cherry | Prunus serotina | Remove | 2 | |
| 5843 | 17 | Black Cherry | Prunus serotina | Remove | 2 | |
| 5844 | 19 | Black Cherry | Prunus serotina | Remove | 1 | |
| 5845 | 12 | Black Cherry | Prunus serotina | Remove | 2 | |
| 5846 | 19 | Hawthorn | Crataegus spp. | Remove | 1 | |
| 5847 | 9 | Hawthorn | Crataegus spp. | Remove | 1 | |
| 5848 | 19 | Hawthorn | Crataegus spp | Remove | 2 | |
| 5849 | 10 | American Elm | Ulmus americana | Remove | 1 | |
| 5850 | 18 | Box elder | Acer negundo | Remove | 2 | |
| 5851 | 24 | Black Cherry | Prunus serotina | Remove | 3 | |
| 5852 | 10 | Black Cherry | Prunus serotina | Remove | 1 | |
| 5853 | 14 | Black Cherry | Prunus serotina | Remove | 2 | |
| 5854 | 12 | Black Cherry | Prunus serotina | Remove | 2 | |
| 5855 | 16 | Box elder | Acer negundo | Remove | 2 | |
| 5856 | 24 | Box elder | Acer negundo | Remove | 3 | |
| 5857 | 18 | Box elder | Acer negundo | Remove | 2 | |
| 5858 | 10 | Box elder | Acer negundo | Remove | 1 | |
| 5859 | 8 | Box elder | Acer negundo | Remove | 1 | |
| 5861 | 28 | Box elder | Acer negundo | Remove | 3 | |
| 5862 | 10,13 | Box elder | Acer negundo | Remove | 2 | |
| 5863 | 8 | Box elder | Acer negundo | Remove | 1 | |
| 5864 | 17 | Box elder | Acer negundo | Remove | 2 | |
| 5865 | 16,16 | Box elder | Acer negundo | Save | | |
| 5866 | 16,10 | Box elder | Acer negundo | Save | | |
| 5870 | 12 | Box elder | Acer negundo | Remove | 2 | |
| 5871 | 11 | Box elder | Acer negundo | Remove | 1 | |
| 5873 | 13 | Eastern Cottonwood | Populus deltoides | Remove | 2 | |
| 5875 | 32 | Box elder | Acer negundo | Remove | 4 | |
| 5876 | 26 | Box elder | Acer negundo | Remove | 3 | |
| 5878 | 12 | Box elder | Acer negundo | Remove | 2 | |
| 5879 | 10 | Box elder | Acer negundo | Remove | 1 | |
| 5880 | 12 | Box elder | Acer negundo | Remove | 2 | |
| 5881 | 12 | Box elder | Acer negundo | Remove | 2 | |
| 5882 | 7,12 | Eastern Cottonwood | Populus deltoides | Remove | 2 | |
| 5884 | 21 | Eastern Cottonwood | Populus deltoides | Remove | 3 | |
| 5885 | 15,15 | Big Tooth Aspen | Populus grandidentata | Remove | | 4 |
| 5887 | 9 | American Elm | Ulmus americana | Remove | 1 | |
| 5888 | 11,11,11 | Eastern Cottonwood | Populus deltoides | Remove | | 4 |
| 5890 | 13,13 | Eastern Cottonwood | Populus deltoides | Remove | | 4 |
| 5891 | 16,16 | Eastern Cottonwood | Populus deltoides | Remove | | 4 |
| 5892 | 16,16 | Eastern Cottonwood | Populus deltoides | Remove | | 4 |
| 5893 | 12,12 | Eastern Cottonwood | Populus deltoides | Remove | | 3 |
| 5896 | 10,12,14 | Eastern Cottonwood | Populus deltoides | Remove | | 5 |
| 5897 | 10 | Box elder | Acer negundo | Remove | 2 | |
| 5898 | 15 | Box elder | Acer negundo | Remove | 2 | |
| 5899 | 12 | Big Tooth Aspen | Populus grandidentata | Remove | 2 | |
| 5900 | 8 | Big Tooth Aspen | Populus grandidentata | Remove | 1 | |
| 5901 | 13 | Big Tooth Aspen | Populus grandidentata | Remove | 2 | |
| 10401 | 17 | Eastern Red Cedar | Juniperus virginiana | REMOVE | 2 | |
| 10402 | 8,9 | Honey Locust | Gleditsia triacanthos | REMOVE | | 2 |
| 10403 | 18 | Box elder | Acer negundo | REMOVE | 2 | |
| 10404 | 16 | Box elder | Acer negundo | REMOVE | 2 | |
| 10405 | 14 | Box elder | Acer negundo | REMOVE | 2 | |
| 10406 | 11 | Box elder | Acer negundo | REMOVE | 1 | |
| 10407 | 22 | Box elder | Acer negundo | REMOVE | 3 | |
| 10408 | 9 | Box elder | Acer negundo | REMOVE | 1 | |
| 10409 | 12 | Box elder | Acer negundo | REMOVE | 2 | |
| 10410 | 15 | Box elder | Acer negundo | REMOVE | 2 | |
| 10411 | 9 | Box elder | Acer negundo | REMOVE | 1 | |
| 10412 | 19 | Box elder | Acer negundo | REMOVE | 2 | |
| 10413 | 8 | Box elder | Acer negundo | REMOVE | 1 | |
| 10414 | 13 | Box elder | Acer negundo | REMOVE | 2 | |
| 10415 | 24 | Box elder | Acer negundo | REMOVE | 3 | |
| 10416 | 20 | Box elder | Acer negundo | REMOVE | 2 | |
| 10417 | 10,22 | Box elder | Acer negundo | REMOVE | | 4 |
| 10418 | 10,16 | Box elder | Acer negundo | REMOVE | | 4 |
| 10419 | 9 | Box elder | Acer negundo | REMOVE | 1 | |
| 10420 | 12 | Box elder | Acer negundo | REMOVE | 2 | |
| 10421 | 8 | Box elder | Acer negundo | REMOVE | 1 | |
| 10422 | 12 | Box elder | Acer negundo | REMOVE | 2 | |
| 10423 | 10 | Box elder | Acer negundo | REMOVE | 1 | |
| 10424 | 16 | Box elder | Acer negundo | REMOVE | 2 | |

| TAG NO. | DIAMETER | COMMON NAME | BOTANICAL NAME | STATUS | Required Replacement | Multi-Stem Replacement |
|---|---|---|---|---|---|---|
| 10425 | 15 | Common Apple | Malus spp | REMOVE | 2 | |
| 10426 | 9 | Box elder | Acer negundo | REMOVE | 1 | |
| 10427 | 12,12,18 | Box elder | Acer negundo | REMOVE | | 6 |
| 10428 | 10,13 | Eastern Cottonwood | Populus deltoides | REMOVE | | 3 |
| 10429 | 11,13 | Honey Locust | Gleditsia triacanthos | REMOVE | | 3 |
| 10430 | 18 | Honey Locust | Gleditsia triacanthos | REMOVE | 2 | |
| 10431 | 24 | Unknown Tree | | REMOVE | 3 | |
| 10432 | 18 | Honey Locust |




## NOTE KEY:

1. EXISTING WETLAND
2. 25' WETLAND BUFFER
3. EXISTING TREES TO REMAIN, TYPICAL
4. EXISTING SIGNAGE AND LIGHTING
5. EXISTING DENTIST OFFICE
6. PROPOSED TOLL BROTHERS DEVELOPMENT, ZONED RM-1
7. PROPOSED 6' HT. BERM AT TOLL BROTHERS DEVELOPMENT
8. FUTURE PARK, BY OTHER'S
9. RIDGEVIEW OF NOVI, ZONED RM-1
10. PROPOSED COMMERCIAL BUILDINGS, SEE ARCHITECTURE
11. PROPOSED OUTDOOR PATIOS
12. PROPOSED PARKING LOT
13. PROPOSED DUMPSTER ENCLOSURE, PER NOVI STANDARDS
14. PROPOSED CONCRETE SIDEWALKS, TYPICAL
15. PROPERTY LINE
16. ZONING LINE WITHIN THE PRO
17. PRO LINE

## SITE LANDSCAPE DATA

R.O.W STREET TREE REQUIREMENTS:
10 MILE ROAD:
764 LF ADJACENT TO PARKING / 35

TREES REQUIRED: 22 (764/35)
TREES PROVIDED: 22

R.O.W GREENBELT LANDSCAPE:
CANOPY / EVERGREEN TREES
10 MILE ROAD:
924 LF ADJACENT TO PARKING / 35

TREES REQUIRED: 27 (924/35)
TREES PROVIDED: 27

SUB-CANOPY TREES
10 MILE ROAD:
924 LF ADJACENT TO PARKING / 20

SUB-CANOPY TREES REQUIRED: 47 (924/20)
SUB-CANOPY TREES PROVIDED: 47

INTERIOR PARKING AREA REQUIREMENTS:
VEHICULAR USE AREA: 155,186 SF

REQUIRED LANDSCAPE AREA:
- 50,000 sf x 0.075 = 3,750 sf.
- 105,186 sf x 0.01 = 1,052 sf.

AREA REQUIRED: 4,802 sf.
AREA PROVIDED: 11,928 sf.

TREES REQUIRED: 24 (4,802 / 200)
TREES PROVIDED: 24

PARKING LOT PERIMETER REQUIREMENTS:
PERIMETER LENGTH: 2,489 LF

TREES REQUIRED: 71 (2,489 / 35)
TREES PROVIDED: 71

NOT FOR CONSTRUCTION

0 20 40 80
SCALE: 1" = 40'-0"

NORTH

VVLA vert verde landscape architecture
734.249.2568 Plymouth, MI
james@vertverde.com

Issued For:
06.23.2023 PRO Submittal
12.22.2023 Revised PRO Submittal

Project:
**NOVI TEN PRO**
10 Mile Road
Novi, Michigan

Project Sponsor:
Weiss Construction Co.
41001 Grand River Ave.
Novi, MI 48375

Sheet Name:
B3 Zoning Landscape Plan (Conceptual)

Seal:

Drawn: JG
Checked: JG
Date: 06.2023
Scale: 1" = 40'-0"

Project Number:
23.035

Sheet Number:
L - 3

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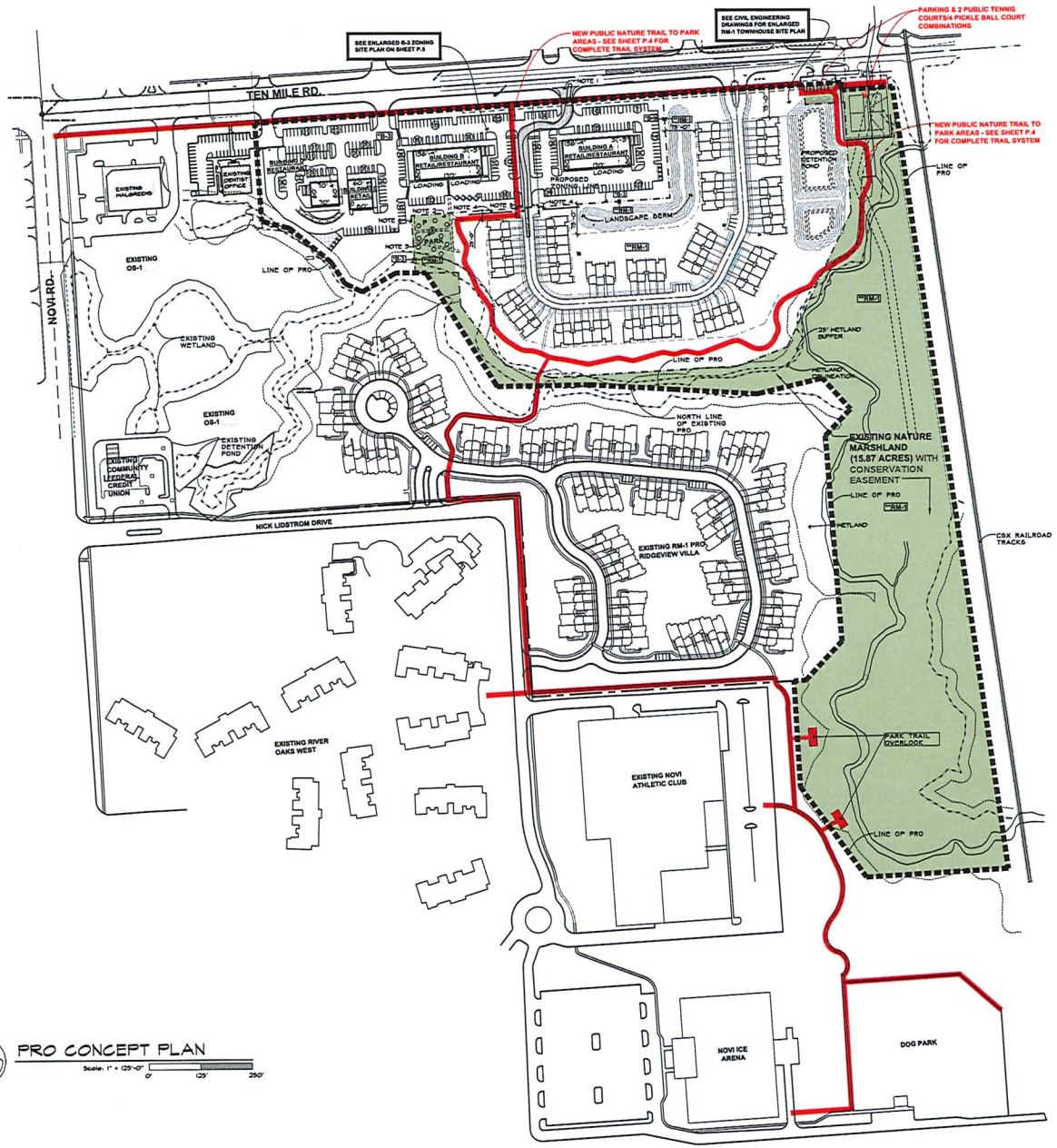
# PROJECT NARRATIVE

# EXECUTIVE SUMMARY

We respectfully submit the attached 34.04 acre Novi 10 PRO rezoning plan which initially went before your Novi Pre-Application Concept Committee and was met with their approval, as it conforms with traditional and national urban planning goals and the city of Novi's many stated specific goals of good urban planning, including having a "Walkable Community "at this location. We submitted an updated proposal on October 4, 2023 and received comments response on November 3, 2023. This current submission (January 2, 2023) addresses the concerns indicated in the November 3, 2023 review.

The key large elements include 27.07 acres of proposed RM-1 zoning containing 71 residential townhouses bounded by marshland, river, and natural wildlife park area on the east side, containing new combined tennis/pickleball courts and nature overlooks, and bounded on the west side by a park. 15.87 acres of the RM-1 natural and park area which surround the townhouses and extend south as far as the Novi Dog Park will have a conservation easement to protect it from future development. North of the residential property is a 6.97 acre small 35,900 square foot area local retail area which is proposed to be rezoned to B-3, containing new amenities such as a sidewalk cafe and other local services. The goal is to create a **walkable community** with easy pedestrian walking paths connecting these numerous widely varied amenities, all which are conveniently accessible, for a walkable village type community for functional life needs and recreation. This will be beneficial to existing residents in surrounding areas and residents of this proposed new residential development to provide access to the proposed new nature trails, recreation areas, small local retail area, and new walkable connections to other existing complimentary amenities; such as: the sports club, tennis courts, childcare, and the nearby arena facility, with ice rinks, yoga, banquet and children's party rooms, as well as the dog park, and other park area with swing sets , picnic areas and climbing apparatus. Overall, this PRO creates a cohesive array of walkable areas which are a beneficial improvement for the community.

See the two (2) drawings that follow for an overall graphic picture of the Novi-10 PRO:




## PRO CONCEPT PLAN

Scale: 1" = 125'-0"  0'  125'  250'

NORTH

## GENERAL NOTES:

1. THE SCREENING BETWEEN RESIDENTIAL AND COMMERCIAL PROPERTY IS PROVIDED ON THE RESIDENTIAL SIDE OF THE PROPERTY BORDER, NOT THE COMMERCIAL SIDE. SAME EFFECTIVE RESULT.

## REFERENCED PLAN NOTES:

1. 20 FT WIDE TEMPORARY EMERGENCY ACCESS ROAD TO MEET COUNTY ROAD STANDARDS HERE OR OTHERWISE LOCATED TO 10 MILE ROAD.
2. PICNIC AREA FOR CARRY OUT, CAFE FOODS, ETC.
3. GAZEBO AND PICNIC TABLES IN PARK AT WEST END.
4. PROP. 8' HIGH MASONRY WALL OR OTHER CITY APPROVED BUFFER.
5. BREAKAWAY GATE PER CITY OF NOVI STANDARDS
6. NO WALL OR BERM BETWEEN RESIDENTIAL AND COMMERCIAL ZONING AT PARK.

LINE OF PRO

P = 15.87 ACRES PARK/NATURE AREA (CONSERVATION EASEMENT)

PUBLIC TRAIL TO PARK AREAS (SEE SHEET P.4 FOR COMPLETE TRAIL SYSTEM)

**35.04 ACRES TOTAL PRO**

***B-3 GENERAL BUSINESS DISTRICT ZONING**
**6.97 ACRES: RETAIL BUILDINGS A, B, & C AND SUPERMARKET**

****RM-1 LOW RISE MULTIPLE FAMILY DISTRICT**
**27.07 ACRES: 71 TOWNHOUSE UNITS & PARK/NATURE AREA**

**SEE CIVIL ENGINEERING, LANDSCAPE & PHOTOMETRIC DRAWINGS FOR ADDITIONAL INFORMATION**


STA

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STATE OF MICHIGAN
LONNY S. KIMMERMAN
ARCHITECT
No. 1301021328
REGISTERED ARCHITECT


project name:
NOVI TEN PRO

project location:
NOVI, MICHIGAN
SECTION 26

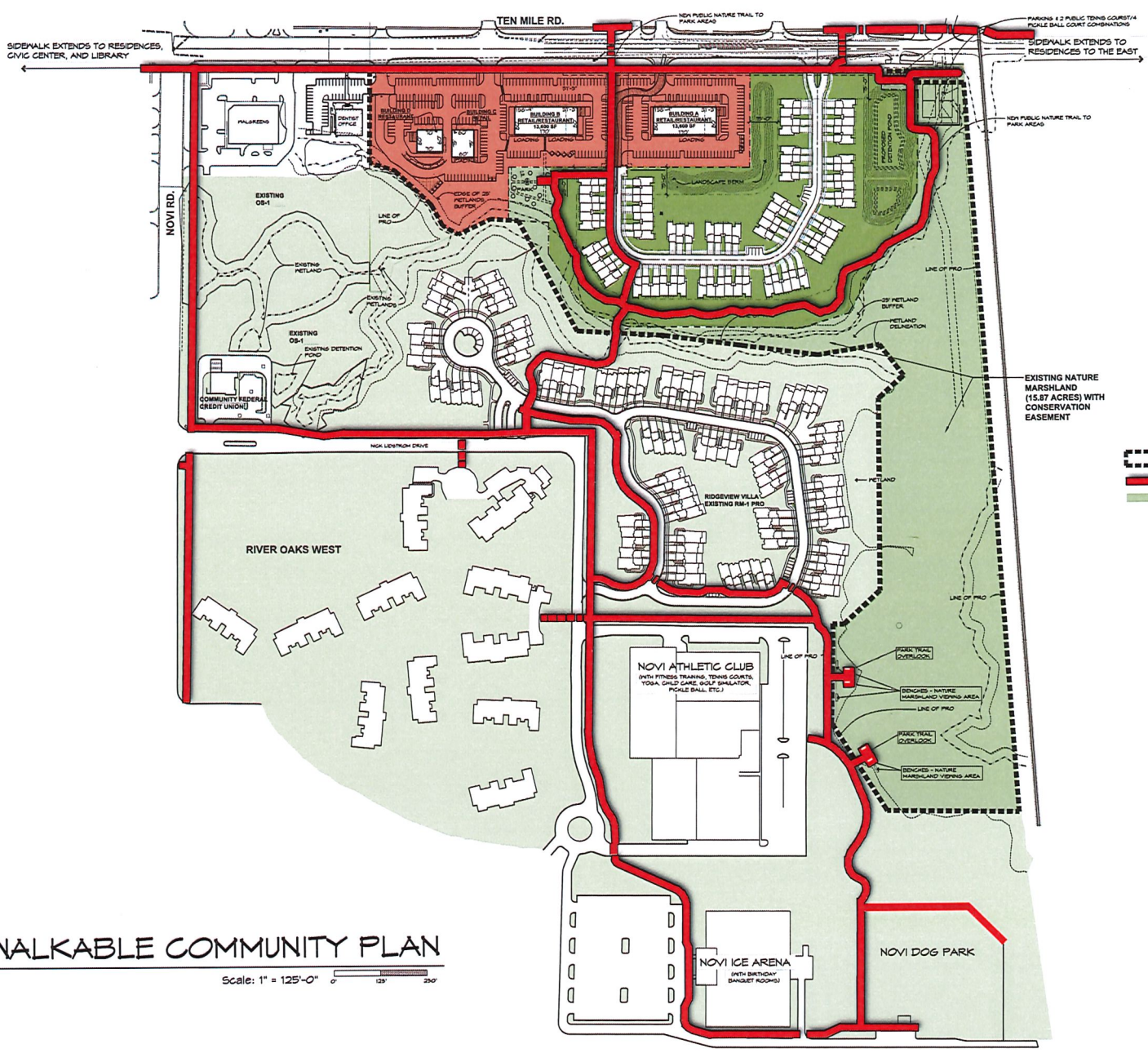
date/revision:
- Oct.04, 2023 - Issue PRO
- Jan. 02, 2024 - Revised PRO

sheet title:
PRO PLAN

project number:
1537E

sheet number:
P.3

copyright 02.2022




# WALKABLE COMMUNITY PLAN

Scale: 1" = 125'-0"

NORTH


STA

SIEGAL/TUOMAALA ASSOCIATES ARCHITECTS & PLANNERS INC.

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LONNY S. ZIMMERMAN ARCHITECT NO 1301021328 REGISTERED ARCHITECT


project name:
NOVI TEN PRO

project location:
NOVI, MICHIGAN
SECTION 26

date/revision:
- Oct.04, 2023 - Issue PRO
- Jan. 02, 2024 - Revised PRO

sheet title:
WALKABLE COMMUNITY PLAN

project number:
1537E

sheet number:
P.4

copyright 02.2022

## NARRATIVE – INCLUDING BENEFITS & DEVIATIONS

January 2, 2024,

To: City of Novi, Attn: Ms. Barbara McBeth, Novi City Planner
Staff/ Planning Commission/ City Council
Re: Proposed Novi 10 Property PRO Rezoning - Narrative

Dear members:

**SUMMARY**: We respectfully submit the attached 34.04 acre Novi 10 PRO rezoning plan which initially went before your Novi Pre-Application Concept Committee and was met with their approval, as it conforms with traditional and national urban planning goals and the city of Novi's many stated specific goals of good urban planning, including having a "Walkable Community "at this location. We submitted an updated proposal on October 4, 2023 and received comments response on November 3, 2023. This current submission (January 2, 2024) addresses the concerns indicated in the November 3, 2023 review.

The key large elements include 27.07 acres of proposed RM-1 zoning containing 71 residential townhouses bounded by marshland, river, and natural wildlife park area on the east side, containing new combined tennis/pickleball courts and nature overlooks, and bounded on the west side by a park. 15.87 acres of the RM-1 natural and park area which surround the townhouses and extend south as far as the Novi Dog Park will have a conservation easement to protect it from future development. North of the residential property is a 6.97 acre small 35,900 square foot area local retail area which is proposed to be rezoned to B-3, containing new amenities such as a sidewalk cafe and other local services. The goal is to create a **walkable community** with easy pedestrian walking paths connecting these numerous widely varied amenities, all which are conveniently accessible, for a walkable village type community for functional life needs and recreation. This will be beneficial to existing residents in surrounding areas and residents of this proposed new residential development to provide access to the proposed new nature trails, recreation areas, small local retail area, and new walkable connections to other existing complimentary amenities; such as: the sports club, tennis courts, childcare, and the nearby arena facility, with ice rinks, yoga, banquet and children's party rooms, as well as the dog park, and other park area with swing sets , picnic areas and climbing apparatus. Overall, this PRO creates a cohesive array of walkable areas which are a beneficial improvement for the community. As required by the city PRO process, an additional listing of new community benefits is listed below.

Additionally, an 18 Acre certified charitable donation was requested by the city (Dog Park and Arena Facility land), as detailed in the city's Letter of Commendation at the end of this narration. Novi- 10 gave this land to the city of Novi and would like this to please be considered.

**KEY DETAILS:** The proposed residential townhouses are compatible with the existing townhouse residential areas that are adjacent and to the south. This PRO proposes to replace the existing industrial zoning and office zoning districts with a multi-family zoning and a commercial zoning district to better reflect the needs of the community, with the residential being townhouses and the commercial being small stores and services. Changing work and life patterns have made the existing OS-1 office zoning less feasible, and there is a large amount of excess unleased office space currently,

with more coming on the market in the years to come. In addition, 2023 data from CoStar Realty Information Inc. indicates a 35% drop in industrial leasing demand in the city of Novi based on absorption of industrial inventory. In contrast to this, local retail and restaurant use are in demand currently and are projected to be even more in demand in Novi's future. The RM-1 proposed 71 townhouse units in the PRO is north of existing multi-family (previous PRO) in a portion of the existing I-1 industrial zoning district. The large 15.87 acre natural park area marshland and wetland to the east is bounded by the railroad tracks and currently zoned I-1 industrial. This area would be unsuitable for industrial development even if there was industrial demand, which is why this PRO proposes to change from I-1 zoning to RM-1 zoning for this 15.87 acres and create a conservation easement for it. This RM-1 zoning is consistent with adjacent existing multi-family developments, and the 11.2 acre balance of the proposed new 27.07 RM-1 zoning is for multi- family townhouses in this PRO. The 15.87 acre natural area will contain a trail network and overlooks, and newly constructed tennis/pickleball courts and their parking spaces.

A portion of the proposed RM-1 townhouses are across 10 Mile Road from parcels zoned I-2 Industrial. To effectively separate the two uses in addition to the 120 foot right- of-way separation distance, the Novi-10 PRO proposes a visual and sound separation by constructing berms with dense landscaping along a portion of the residential development.

The balance of the total 34.04 acre Novi-10 PRO, which is 6.97 acres, will have local commercial neighborhood uses with rezoning proposed from OS-1 and I-1 zoning to B-3 zoning. Specific uses not suitable for this neighborhood have been excluded and are listed below. To facilitate the traffic movement to and from the commercial buildings, the PRO proposes to add an eastbound and a westbound lane to 10 Mile Road, along with tapers at the driveways, with the driveways wide enough to accommodate a separate left turn exit lane onto west bound 10 Mile Road.

In summary, the 27.07 acre 71 townhouses and natural area will be in the proposed RM-1 zoning, while the 35,900 square foot local retail will be in the 6.97 acre proposed B-3 zoning. It is anticipated that this entire project will begin immediately upon approval of this PRO.

**ECONOMIC IMPACT**: This development will create approximately 100 new permanent fulltime and part time jobs in the new retail stores and restaurants. It is anticipated that combined construction costs for the commercial and the residential projects will be over $35,000,000, which will provide numerous construction jobs.

**CONFORMANCE & FURTHERANCE OF NOVI MASTER PLAN GOALS**: The following list demonstrates how the proposed development successfully well implements many of the primary clearly stated goals of Novi's 2016 Master Plan including key elements such as a "Walkable Community" and many others. And this is all consistent with traditional planning principles, especially with respect to protecting natural features and natural marshland habitats, which also advance walkability, connectivity, and consistency with the patterns of existing uses on adjacent parcels. The Master Plan makes many statements regarding these concepts, all rightfully so, which benefit the residents of the local community. The Novi 10 PRO plan presented here directly addresses and furthers these stated goals in numerous ways, which create improvements to accommodate the Master Plan, far improved in this location over with the existing industrial and office zoning it replaces. Below are specific descriptions

which demonstrate these PRO improvements and further implementations of the Novi Master Plan's clearly stated goals and defined elements.

**1. PARKS AND RECREATION:** Master Plan Page 6 – "The city maintains a diverse park system that includes a growing trail network along with active and passive recreation opportunities ... Maintaining and enhancing these strengths will be important to continue the City's success into the future..." benefitting its residents. In furtherance of this same goal, this proposed Novi 10 PRO provides some additional park areas and additional walking paths connecting the existing residential developments to the south and additional residential areas to the northeast along 10 Mile Road, thru this proposed development to access the existing nature trails, and community recreational facilities. (Dog park, sports club, ice arena). The new paths complete connections between such park and recreation spots for all the various residential developments and bring all these features into a walkable, and especially bikeable easy to reach neighborhood system.

**2. CONNECTIVITY**: Master Plan Page 8 –... The walking and bike path system through and around the proposed PRO, as indicated above, provides neighborhood connectivity, which includes the PRO neighborhood retail, and the various separate existing Novi recreation facilities to the south, as well as the proposed local retail/services area and others in the area. The PRO street adds to the existing vehicular connectivity beyond the walkable and bikeable distance.

**3. DIVERSITY**: Master Plan Page 10 – "Diversity of housing is important for a balanced community ... young professionals and empty nesters seek a smaller home with lower maintenance..." The townhomes and local retail/services development of the proposed Novi 10 PRO is the correct solution for this recognized goal, especially when factoring in connectivity and reduced auto trips. And this project simply implements more of the City's same judgments that this is a great location for such types of smaller condominium homes.

**4. ENVIRONMENT & OPEN SPACE:** Master Plan Page 18 – "... Such features contribute greatly to the character of the community, and they can be used to enhance development and improve the quality of life." In furtherance of that exact goal: the Novi 10 PRO substantially contributes with the addition of the 1000's of feet of trails, along with Novi-10's prior contributions of trails here for hiking and viewing of the natural wetland, wildlife area, along the south and east boundary of the PRO area (bordering the railroad to the east) and the other multi-family developments on the around Nick Lidstrom Drive. Substantial additional areas of this nature marshland area will now be defined and protected from potential undesirable future development and encroachments, and 3 acres of this natural area, including tennis/ pickleball courts on 10 Mile Road will be donated to the city of Novi.

**5. BENEFICIAL SCENIC NATURE VIEWS AREAS**: Master Plan Page 20 – "...floodplains can serve as a great 'viewshed' for development..." The multi-family residential, proposed picnic area and orientation of the local retail/services development of the proposed Novi 10 PRO respects and takes advantage of the beautiful wildlife views in the wetland area, much as the existing, very successful recently built Ridgeview Villa development to the south also does. This natural

area is now contained within the proposed PRO. Further, the nature path system along the natural marshland area with long expansive (1000s of feet new extra hiking areas and bench overlooks, create more such nature viewing areas. Furthermore, removing the industrial development that would occur under the current zoning eliminates the negative views and aesthetic and economic detriments that would **devalue** those residential areas from such Industrial uses, for the life quality of existing residents to the south. The

**6. SUPPORTIVE LOCAL RETAIL**: Master Plan Page 35 & 36 – "As the number of households increase, new demand for goods and services is created. By 2025, the community can support about 590,000 additional square feet of retail goods space at any and all locations. Accommodating the current and future newly generated demand will provide the opportunity for infills of extra retail amenities such as this plan accomplishes, in addition to filling of other vacancies." The proposed Novi 10 PRO retail plan again addresses this by providing a modest quantity of local retail and services within walking range of many surrounding residents. At this time the specific retail and service providers are not known, but market studies confirm there is current demand and will include small retail and personal services, including uses such as sidewalk café overlooking the marshland, a small restaurant, or specialty market, a small medical or other professional office, childcare, exercise, yoga club, etc. These services will be walkable for the new residents, as well as for the existing residents to the south, and those east on 10 Mile Road. As part of the proposed PRO, we propose to prohibit uses that we believe are objectionable, and not in the community's best interest at this location: Gas station, Automobile Repair, Car Wash, Check Cashing, and Pawn Shop. Marijuana sales (already not permitted in the city of Novi) will also be excluded by the PRO documents in case the city's law is changed to allow it in the future.

The PRO drawings indicate locations for four retail buildings on the B-3 portion, along with the required parking, walkways and landscaping to show one feasible layout. At the time of site plan approval, a final site plan will be indicated with the required civil engineering and landscape. At this point in time, we request that the PRO be approved subject to the final B-3 buildings, parking, landscape, and engineering compliance with Novi standards.

**7. "GENERAL GOAL: ENVIRONMENTAL STEWARDSHIP":** Master Plan Page 40 –
Item13. Protect and maintain natural features..." Please refer to the comments above, supporting this exactly.
Item 14. Increase recreational opportunities..." Please refer to the comments above regarding the walking paths and new park areas onsite as well as nature trails and hiking connections to such as the Dog Park, etc. which this development will provide.
Item 15. Encourage energy-efficient and environmentally sustainable development through raising awareness and standards that support best practices. The proposed Novi 10 PRO addresses this directly. What better teaching opportunity can there be for young families having easy access to these diverse natural areas and trail...and in their own backyards!

**8. WALKABLE ACTIVITIES ACCESS:** Master Plan Page 41 – "The City should provide more activities and shopping within walking/cycling distance, such as cities like Ann Arbor or

Northville or Plymouth offer." The Novi 10 PRO does exactly this; promoting connectivity and walkability and potentially reducing day-to-day auto trips.

**9. PROTECTING NATURE AREAS:** Master Plan Page 59 – "The City of Novi has a long history of protecting natural features." The Novi 10 PRO accomplishes this by preserving the 15.87 acres of open natural land along the east and south sides of the PRO with a conservation easement.

**CONCLUSIONS: As demonstrated above, the proposed PRO will be an asset to the community, in conformance with the stated goals and specific elements of Novi Master Plan, and other well recognized practices of sound Urban Planning for the benefit of the City of Novi.**

## BENEFITS, DEVIATIONS, AND SUBSTANTIAL CONSIDERATIONS

Per PRO Application process, additional info: Many of these items summarized here for this list, are described in greater detail above)

In the Novi 10 PRO plan, both Novi Ten Associates and Toll Brothers will provide the following **Benefits** to the community and the relatively small zoning ordinance **Deviations**. Also included is a list of **Supplemental Substantial Positive Considerations**.

### A. BENEFITS:

1. The complete east portion adjacent to the railroad tracks and the south 50 foot wide strip along the wetland of the proposed PRO (15.87 acres of the 27.07 RM-1 rezoning) are being retained as natural area with a conservation easement to preserve and protect its existing marshland and wildlife. This natural area, with wetlands, wraps around the PRO and includes on the west end a proposed new 0.4 acre park/playground located between the proposed residential and retail sites. The proposed trail system, with its overlooks near the Novi Athletic Club becomes a usable and accessible community resource.

2. To help achieve walkability and connectivity of the entire area, a trail system is being added which consists of new paths and existing sidewalks. This walkway system provides connectivity between surrounding existing residential areas and new proposed PRO residential area with all the marshland nature areas, the proposed tennis courts/ pickleball courts, the Novi Athletic Club, Ice Arena, and Dog Park, and with the new proposed local along Ten Mile Road. The retail consists of the new proposed retail and restaurant areas, and the existing Walgreen's and dental office.
   New Walkways and bike paths that overlook 15.87 acre wildlife area and connect this PRO development to the recreation areas: The $3.2 million dollars' worth of Novi 10 land previously donated to the city, initiated by Novi request (18 Acres of land): For the Novi Arena Facility and the Novi Dog Park

3. Two new tennis courts/pickleball courts are being added at the north end of the new conservation area along 10 Mile Road, as well as parking spaces for the courts.
4. Proposed use restrictions not permitting certain automotive and other business uses in the proposed B-3 commercial zoning (Sec. 3.1.12.B & C) are to be part of the PRO. Not permitted uses are:
   A. Vehicle oriented uses- Gas Station, Automotive Repair, and Car wash
   B. Other excluded uses- Check cashing, Pawn shop (Marijuana sales already not permitted in the city of Novi) will also be excluded by the PRO documents in case the city's law is changed to allow it in the future.)
5. Open Space: (Sec. 3.1.7.D) The amount of open space provided for the RM-1 townhouses exceeds the ordinance requirements.
6. Commercial Building Setbacks:
   Front- 30 ft. required.....92 ft. provided
   Rear- 20 ft. required.....83 ft. provided
   Side- 15 ft. required.....93 ft. provided
7. Residential Building Height (Sec. 3.1.7.D)
   35 ft. permitted.....29 ft. max. proposed
8. Commercial Building Height (Sec. 3.1.12.D)
   30 ft. permitted.....23 ft. max. proposed
9. Residential Lot Coverage (Sec. 3.1.7.D)
   25% max. permitted
   14% provided

**B. DEVIATIONS:**

1. Zoning Ordinance section 3.8.2.D – deviation for proposed residential buildings not to be configured 45 degrees at the property lines normally for aesthetic reasons. Most of the buildings are not on any main road and they front to a substantial irregular shaped 20 acre wetland nature area of a minimum 200 feet wide separation across from Toll's existing multi-family Ridgeview project. Also, please note, this is one of the most common easily granted variance requests: where layouts are dictated by natural land features such as two rivers and large canyon, not created by the applicant.

2. Zoning Ordinance sections 3.1.7.D and 3.6.2.B – deviation for the two residential buildings at the northwest corner of the RM-1 are set back 25 feet from the proposed B-3 district in lieu of the required 75 feet. This has been granted elsewhere in the city and still includes screening between the residential and commercial. That screening is located on the residential edge of the zoning line that separates the residential from the commercial and functions with same screening effect. (Only a small portion, at northwest corner being wall plus landscape, instead of berm). Is on Residential side and none will be on the commercial side of the line. Deviates from Zoning Ordinance section 5.5.3.A.ii but provides same screening! Is still located between the residential and commercial.

3. Zoning Ordinance Section 5.10 – request deviation allowing perpendicular parking on a 'major' drive in the residential.

4. Zoning Ordinance section 5.5.3.A.ii – requires a 10-15 foot high berm with a 6 foot crest next to I-1 district. A PRO deviation is requested to wave this requirement to preserve open viewing to the beautiful natural features instead of the usual berm screening that blocks the views from Industrial.
.
5. Zoning Ordinance Section 5.5.3.B.ii requires trees along 10 Mile Rd. A PRO deviation is requested due to a conflict with the existing water main location, but the total tree count remains in compliance with the ordinance.

6.. Zoning Ordinance Section 3.8.2.H, the distance formula for side-to-side building separation requires 37.56 feet maximum (at the residential buildings) based on the equations provided. 30 feet is provided, being a deviation of 7.56 feet to enable this project to be more viable and provide all such benefits to a modest amount of more residents. This is still far less than density such as R6.

7. Zoning Ordinance Section 5.7.3, Exterior Lighting shall not exceed 4:1 ratio. That is typical commercial practice. For residential, we request a small deviation to fully conform with common municipal lighting standards for residential areas.

8. Section 9 Waiver (Sec.5.15) Requested deviation from minimum required brick and asphalt shingles.

9. Major Drive Radius (Sec. 5.10) Requested deviation from the 100' foot minimum centerline radius to 85'.

**C. SUPPLEMENTAL SUBSTANTIAL CONSIDERATIONS:**

To provide a more comprehensive picture to the City of Novi administration, staff and expert consultants please note these additional facts that are not specifically detailed in the attached PRO concept package and may not be otherwise apparent until mentioned here.

**Regarding Master Plan Goals**:

1. SP Designation: Historically, the designations in the Master Plan ((in this case; industrial and office) are not the only uses that are in the best interest of the city. In many instances other zoning or uses have been permitted because they benefit the city. This site and the entire parent parcels, from 10 Mile Road to Arena Drive/Lindstrom Drive comprise well over 100 acres and have substantial geographical features, these include a large deep canyon and low marshland nature area varying from 100 to 400 feet wide in sections and over 1000 feet long and includes a large wetland of over 25 acres. The wetland has a "T" shaped intersection of three substantial river flows that naturally zig zag a bit and crisscross through this property. For these reasons, this property was designated for years by the City as "SP" (Special Planning District), which needed extra attention to accommodate such geographic realities not created by the applicant landowner.

2. Historical Improvements to Master Plan and Zoning: This SP Master Plan overall Property including the adjacent parent parcel, contains uses approved by the city that were not

designated in the master plan, but approved because they were determined by the city to be in the best interest of the community, overall. These prior approved uses include:

a. The land use for the dog park was approved.
b. The land designated as the Arena building (multi-use facility) was approved.
c. The Sports Club of Novi was approved.
d. The residential Ridgeway Villa was approved.
e. These new uses here presented are simply implementing more of the same SP approach, being very compatible and consistent with those same residential and commercial type adjacent uses, approved, in this good pattern of SP special review and the many other clearly stated goals of the city (Walkable amenities etc.).

**Conclusion:** As with the previous PRO, these same uses and elements are present, including bordering large canyons and wetlands that affected those other portions of this overall area. . And as with the previous parcels, this proposed Novi 10 PRO also is constant with and further implements the ideals and goals of the Master Plan (e.g., walkability, etc.) even though the uses are not specifically named in the Master Plan or on the zoning map.

The same adjacent beneficial uses are currently in place in the immediate surroundings. For example, on directly adjacent lands there is commercial on adjacent street corners and residential to the south. Accordingly, we ask that this same pattern of good planning be approved for continuance here, of what exists on the adjacent lands which fulfill the written goals of the Master Plan: walkable community, with good recreation and other stated benefits etc.

Please also consider the following substantial elements:

1. The Novi 10 PRO proposes upgrades that are deserving approval on their own as legitimately beneficial to the City of Novi and community residents and in conformance with traditional good neighborhood urban planning concepts, even if there were no extra benefits to "boost" this zoning request.
2. Further, as is required as part of the PRO process, we do offer extra NEW benefits for both the residential and commercial areas. These include new walkable trails as well as a small park and picnic area next to the commercial and the residential areas, and other listed. .
3.

Further, while this proposed rezoning should be granted simply as a clear benefit, but please also consider that as a benefit to the residents of Novi, the following : I have been a member of this community for decades and the City of Novi formally came to me many years ago, solely on its own initiative, (we were ourselves proposing no development or any action at all) and City asked that I help them out with a donation of land that they needed for the Novi Arena facility and the Novi Dog Park area but were far short on funds to do so. I did accommodate that request, never asking nor receiving anything then or EVER in exchange for that large donation (18 acres, appraised at $ 3.2 million dollars and audited by the IRS as a pure charitable donation.) The only deed restriction is that such lands be used for children's recreation and other direct resident recreational beneficial uses, (e.g., not for such as a municipal vehicle repair facility)

This land donation was completely initiated and asked for by the City of Novi, for its own goals, etc., and not any Novi 10 Associates goals. The city recognized that charitable good deed with the attached official NOVI LETTER OF COMMENDATION.

Further Perspective: While this previous donation does not count as one of the NEW extra benefits required for the PRO evaluation, it is in fact part of our same parent land parcel, from same owner, same family applicant and Novi is empowered to consider ALL relevant facts in their totality. And so accordingly, I hereby respectfully request that this prior 18 acre ($3.2 million dollar land donation) be recognized for its benefit to the City of Novi. While certainly not determinative, it should not be totally discounted either. Please further note, the reason this is mentioned lastly in the analysis is, as detailed above, even if this was no factor, this proposed project is, on its own, beneficial to the community and in conformance with sound urban planning and the city's stated goals, without any extra such benefits given to the city. And this application is not as some mere typical real estate developer but is from a demonstrated solid member of this community for over 40 years, having lived and worked here for over three generations, and caring about the welfare of our community. And we humbly ask for this project to please be approved expeditiously, as submitted here.

**SUMMARIZING:** There are numerous examples where the City's actions have recognized that current zoning and/or Master Plan designations can evolve and be updated and improved, including right at this location., to benefit the community and its residents. This site, with its 15.87 acres of meandering wetland marsh wildlife areas, of which 3 acres will be donated to the city of Novi, does deserve such special consideration as designated SP (Special Planning) in the past. Here the surrounding parcels previously developed – the arena facility, the sports club, the dog park, the Ridgeway Villas multifamily, were all uses recognized as beneficial and approved, though none were designated in the zoning or Master Plan at the time. This proposed Novi 10 PRO plan is likewise a natural extension of the same previous concepts and benefits to the community for residential development and consistent commercial uses, including those adjacent across 10 Mile and Novi Roads for easier (close) access without elderly people or a parent with small children having to walk that somewhat greater distance and busy intersection walking. This development also protects the nature features of the larger property and provides new and improved connectivity, for recreation and retail access as recognized and desired by the community in the Master Plan stated goals.

The proposed Novi 10 PRO, with its residential development and retail zoning should all be considered valid and approved, "standing on its own feet", as were all the prior ones as being beneficial for the community.
And especially beneficial, with all the extra benefits above and beyond all regulations, for the city residents.

We have for decades always been good citizens and caring and contributing to this community. Please keep all these benefits in mind during your review process and don't hesitate to contact us if you have any questions or comments. Thank you for your consideration.

Dan Weiss, Novi 10 Associates

## COMMUNITY IMPACT STATEMENT

# NOVI TEN ASSOCIATES PROPOSED REZONING & PRO CONCEPT PLAN

Walkable Residential &
Commercial Community Development

## Community Impact Statement

**January 2, 2024 (Revised)**

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## SITE DESCRIPTION

The Novi Ten Associates Proposed Rezoning & PRO Concept Plan development consists of two separate developments, being the Novi Ten Commercial development and The Towns at Novi Station. They are adjacent and contribute to Novi's written, oft-stated interest of developing Walkable Community areas. Both sections are situated on the south side of Ten Mile Road and approximately 530 feet east of Novi Road. The projects are proposed to be constructed on smaller portions from of two existing "parent" Parcels 22-26-101-028 and 22-26-101-024 which contain approximately 12.24 acres and 30.66 acres, respectively. The westerly section is currently zoned OS-1 (Office Service District) and the easterly area is currently zoned I-1 (Light Industrial District). Also, the site includes some community park and nature trials.

Out of these parent parcels, the Novi Ten Commercial Development will utilize approximately 8.35 acres of the overall PRO area and is requesting to rezone the proposed commercial portion of the development to B-3 (General Business District) under a Planned Rezoning Overlay ("PRO"). The Towns at Novi Station will utilize approximately 11.20 acres of overall parcel(s) and is requesting to rezone to RM-1 (Low Density, Low Rise Multiple Family District) under a PRO. The remainder of the two parent parcels will be simply split and remain in their current condition and under current zoning until further development is requested by the Owner. Much of it, the easterly portion is natural marshland area.

The Novi Ten Commercial Development shown is conceptual in nature and details what could be possible under the proposed Planned Rezoning Overlay to the B-3 General Business District. The conceptual plan shows a potential market, two restaurants, sidewalk café with outdoor seating, and possible childcare or medical office on that 8.35 acres with 1,024 feet of Ten Mile Road Frontage. These conceptual plans will likely change as future land uses and possible users are secured in the future.

The Towns at Novi Station portion of the development is proposed to be Constructed by Toll Brothers, Inc. as shown. Toll Brothers has a long history of successful developments within the City of Novi and other communities, including Island Lake of Novi and the recently completed Ridgeview of Novi located immediately south of this proposed project. Toll Brothers is proposing to construct seventy-one (71) townhome units within fourteen (14) buildings on 11.20 acres with 355 feet of Ten Mile Road frontage.

The whole development road frontage includes 1,379 feet along Ten Mile Road which is under the jurisdiction of the Road Commission for Oakland County. Access to the Site will be provided from the existing Ten Mile Road.

The Walled Lake Branch of the Middle Rouge River ("Middle Rouge River") runs along the Eastern side of the site and will serve as the storm water outlet for the project. The Chapman Creek runs along the south side of the project.

## TOPOGRAPHY

Topographically, the site consists mostly of a gently to moderately sloping terrain, highest along Ten Mile Road and sloping down toward the Chapman Creek to the south and the Middle Rouge River to the east. The banks of the Chapman Creek and Middle Rouge River are relatively steep (60%-70%) through the site with the creek and river are roughly 0-5 feet below the remainder of the property. The sites highest elevation on site is in the commercial portion of the property and is approximately 897 feet and slopes at approximately 0.5% towards the Chapman Creek. The highest point on residential portion of the development is approximately 894 feet. Approximately ½ of the residential property flows towards the Chapman Creek and the other half flows toward the Middle Rouge River with 1-10% slopes. There are a few small insignificant pockets of poor drainage in the residential area. Please refer to the site documents.

## ADJACENT LAND USES

The proposed developments are surrounded by commercial, industrial and residential uses within the I-1, I-2, B-1, and RM-1 districts (please refer to the site documents):

- North – Industrial uses in the I-1 and I-2 Districts on the other side of Ten Mile Road.
- East – vacant property in the I-1 district, the Middle Rouge River and C&O railroad tracks.
- South – RM-1 residential use.
- West – Vacant OS-1 property fronting on Novi Road and Walgreens and a Dentist office in the B-1 district.

## DRAINAGE COURSES

As noted previously the Walled Lake Branch of the Middle Rouge River is located along the easterly side of the site and the Chapman Creek runs along the south side of the site. The Chapman Creek flows east into the Middle Rouge River. The Middle Rouge River runs south and eventually flows into the City of Northville. Both the Chapman Creek and the Middle Rouge River contain City of Novi, EGLE and FEMA regulated floodplains and floodways. At this time, the project is not anticipated to impact any floodplain or floodways and local, state and federal floodplain permitting is not anticipated to be required for the proposed project.

The entire PRO site including both the commercial and residential areas will be drained by means of sheet flow directed into a single proposed storm sewer system. The storm sewer will lead to a single open detention basin in the residential portion of the property. This proposed basin in the residential portion of the property will service the storm water management needs of both the commercial and residential portions of development. The detention basin will ultimately discharge on-site into the Middle Rouge River.

## VEGETATION

The site contains both City of Novi regulated and non-regulated woodlands. A woodland survey has been performed on both the commercial and residential portions of the project. Woodland on

the northeast portion of the site is a sparse and becomes denser as the property heads south and east.

## WETLANDS

Wetlands have been identified, flagged, and surveyed on the residential portion of the project as detailed on the PRO Site Plan. There are no wetlands identified or located on the Commercial portion of the project.

## WILDLIFE

Wildlife commonly found on the site consists of small mammals such as field mice, squirrels, raccoons, fox and rabbits. A variety of small birds normally populate the area.

## SOILS CLASSIFICATIONS

The soils classification as provided by the United States Soil Conservation Services Soil Survey of Oakland County, indicates Marlette Sandy Loams with 1 to 12 percent slopes.

## MUNICIPAL WATER SUPPLY

Municipal water supply is available to the site by means of an existing 12-inch diameter water main on the south side of Ten Mile Road.

The residential development will connect to the existing 12-inch water main in Ten Mile Road and will provided with a water main secondary loop by connecting to the existing 8-inch water main stub provided by Ridgeview on Novi on the south side of the Chapman Creek. An 8-inch water main stub will be provided at T-turnaround for future connection by the Commercial development. Adequate water supply is anticipated for both domestic and firefighting purposes.

## WASTEWATER DISPOSAL

An existing 36-inch Oakland County Water Resource Commission interceptor sewer is located along the eastern portion of the property and will provide sanitary service to the residential portion of the project. A city of Novi sanitary sewer is located on the north side of Ten Mile Road and will provide sanitary sewer service to the proposed commercial portion of the project. No off-site easements are required for the sewer connection.

The residential portion of the development has 71 Multiple Family Residences multiplied by a unit factor of 0.60 single family unit / multiple family unit, resulting in 42.6 equivalent Single-Family units. At a rate of 3.2 people per Single Family residential unit, the service population for the residential portion of the development is 137 people. With a peaking factor of 4.0, the peak flow from the project would be 0.09 cubic feet per second. The capacity of the 36-inch diameter interceptor sanitary sewer is vastly larger than 0.09 cubic feet per second required to service this project, therefore, capacity is sufficient. Additionally, the Oakland County Water Re-

source Commission has already indicated that the proposed project could be serviced by their interceptor sewer.

The retail/commercial portion of the development will be approx. 35,900 square feet of usable area multiplied by a unit factor of 0.40 units / 1,000 square feet of space, resulting in 14.36 equivalent single -family units. At a rate of 3.2 people per Single Family residential unit the service population for the commercial portion of the development is 46 people. With a peaking factor of 4.0, the peak flow from the project would be 0.14 cubic feet per second. The capacity of a 15-inch diameter sanitary sewer at minimum slope (0.15 feet per 100 feet) is 2.50 cubic feet per second, therefore, capacity is sufficient.

## PUBLIC UTILITIES

Public utilities such as electricity, telephone, gas, and cable television, are available on Ten Mile Road.

## PHASING

The residential development will be constructed in one phase. The commercial development is currently only a Concept Plan and will be developed later when retail/service tenants are identified.

And as soon as the PRO is approved, the development of such as the sidewalk cafes etc. to serve the local, walkable community will be pursued immediately.

## ROADWAYS

The interior drives for both the residential and commercial developments are proposed to be private. The proposed two new commercial driveways will be wide enough to allow a separate left turn exit lane. The PRO plans indicate a 20ft wide temporary emergency access road to meet City of Novi standards connecting Toll's northwest drive and 10 Mile Road.

The Traffic Impact Study has been performed for this proposed PRO plan by Midwestern Consulting. The study indicates that the proposed development is not expected to have a significant traffic impact on the overall level of service at the major intersections of Ten Mile Road with Novi Road and with Meadowbrook Road. The study was reviewed by AECOM, the city of Novi's traffic consultants and when reviewed in detail, a December 19, 2023 memo was sent by them with the following: " *...AECOM recommends* ***approval of the Traffic Impact Study with the mitigations/improvements."***

The listed improvements are:
- *Widen eastbound 10 Mile Road to two through lanes, ending with a right-turn lane at the site's easternmost residential driveway.*
- *Widen westbound 10 Mile Road to two through lanes west from the 3rd site driveway to help provide additional capacity for outbound site traffic.*

• *Provide a continuous center lane turn lane to serve the 1st, 2nd, and 3rd commercial driveways.*
• *Provide separate outbound left-turn / right-turn lanes for the site's 2nd and 3rd commercial driveways to allow right-turning traffic to exit the site when vehicles are waiting to turn left.*

These recommendations have been indicated in the proposed PRO documents.

## ENVIRONMENTAL CONCERNS

Ecologically, the development will affect the existing vegetation and ground cover to the extent that all existing field grasses and trees will be removed. And in conformance with the Novi Tree ordinance, replacements and other regulated accommodations will be all complied with (Novi Tree Fund). A conservation easement will be added to the 15.87 acres of existing marshland and new park area.

The ground water table will be affected slightly due to the extent of paving and building coverage. However, no deep excavations are planned which would contribute to the lowering of the ground water table. Soil erosion control will be provided on the site in accordance with the City of Novi requirements. Surface water run-off is expected to contain some road salts and oils carried by automobiles. As common, and in conformance with all applicable regulations, most suspended sediments will be removed in the storm water quality/detention basins, and oil and gas separators proposed in the development, to keep such from entering the river.

Air quality will be affected somewhat by automobile emissions. In addition, the net ambient air temperature of the site will be increased slightly due to the loss of vegetation and the addition of pavement and buildings.

Noise levels will increase compared to vacant land due to the additional automobile and truck traffic, and exterior air conditioning units, but will not be higher than the surrounding similar uses and compared to noise levels if the property was developed under existing zoning.

An aesthetic impact will result from the introduction of man-made structures and site improvements, but the building designs will be compatible with surrounding buildings.

Site lighting will be designed to maintain a low profile and prevent light spill and glare onto the adjacent property. A photometric plan and light fixture catalog cuts have been provided in the plan set and complies with all regulations.

Finally, landscaping will soften the overall impact of the development. A total of 252 trees are proposed to be planted. (See the Planting Schedule on the Landscape Plans Sheet L-1). No hazardous or toxic chemicals will be stored on-site except for household cleaners, pesticides and fertilizers used for lawn and plant care. No underground storage tanks, wells, or septic tanks are proposed.

## STORM WATER DISPOSAL

Storm water generated on the proposed site will be collected by on site storm sewer and delivered to a single on-site detention located in the residential portion of the development sized to detain the 100-year flood storm event generated from both the commercial and the residential developments. The detention basin will ultimately discharge on-site water, out into the Middle Rouge River.

## DEMANDS ON POLICE DEPARTMENT SERVICES

The Novi Police Department is professionally managed and has approximately 70 dedicated and well-trained full-time officers as well as a professional, proactive, and service oriented civilian staff. They have a long track record of managing the City of Novi's public safety needs for a population of 60,000 residents. The population increase of 137 people for the residential portion of the development and a "residential equivalent" of 65 people for the commercial development yields a combined net increase of 202 equivalent residents associated with both developments. This equivalent population increase represents a nominal increase (0.3%) in overall population and ***will not impact police services in any significant way.*** According to the 2008 ICMA report, the NPD received approximately 71,100 calls in a one-year period when the population was approximately 55,000. Therefore, there are approximately 1.3 calls per person annually. Based on those statistics, both developments will generate 262 calls over a one-year period, or 0.7 calls per day. The NPD handles approximately 189 calls per day, so the increase represents a nominal change (0.03%). The increase in demand on Police Department Services is especially small when you consider the increase that could potentially take place under existing zoning versus the increase proposed with the proposed use.

## DEMANDS ON FIRE DEPARTMENT SERVICES

The Novi Fire Department has been serving the Novi Community since 1929 and is staffed by a combination of full time and paid-on-call employees who operate from four fire stations located throughout the city. The average call-to-arrival-time in Novi is 341 seconds. The population increase of 137 people for the residential portion of the development and a "residential equivalent" of 65 people for the commercial development yields a combined net increase of 202 equivalent residents associated with both developments. Based on the estimated proposed development population of 202 persons, the total projected annual Fire Department responses is 2. The project is located approximately 1-mile south Fire Station No. 1 located at 42975 Grand River Avenue and 1 mile north of Fire Station No. 3 located at 42785 9 Mile Road. Due to the proximity of two fire stations, response time is expected to be minimal.

The population increase of 202 equivalent residents at both developments represents a nominal increase in overall population (0.3%) and will not impact fire services in any significant way. Over a 15-year period (2002-2017) NFD responded to approx. 25-30 structure fires per year for a population of 60,000. The anticipated additional calls for structure fires at The Towns at Novi Station is statistically negligible.

Per a December 2015 NFPA Report, only 3% of structure fires are from retail stores, so it is anticipated that commercial development of the proposed site will have a minimum impact on fire services.
Over 64% of fire runs nationally are for medical emergencies per the NFPA, and this proposed development will add a very small additional number of medical fire runs compared to the large amount of existing residential and commercial development already present.

## REFUSE AND SOLID WASTE DISPOSAL

In the residential portion of the development, refuse and solid waste will be disposed into trash cans and will be picked up by a weekly refuse collection company.

For the commercial portion of the development, refuse and solid waste will be disposed into a dumpster adjacent to the building. Offsite private contractors will collect the trash for final disposal.

## EDUCATIONAL DEMANDS ON THE PUBLIC SCHOOL SYSTEM

The total 2014/2015 student enrollment in the Novi Community Schools is 6,266. Of this total, 2,020 were of High School Age (9-12$^{th}$ grade), 1,056 attended Middle School (7-8$^{th}$ grade), and 3,190 were enrolled at the elementary school level. Some impact is expected upon the community educational system due to the expected 20 +/- school age children living in the complex.

## ECONOMIC IMPACT

**Jobs:** The jobs provided by the residential and commercial construction will have a positive direct impact on the economy. Work opportunities are created in the construction industry, as well as in industries that provide products or services to builders and buyers. Additional employment is created local support businesses restaurants, services, for real estate agents, lawyers, and brokers providing new home services. The National Association of Homebuilders estimates that 1.16 full-time equivalent jobs result from building each multifamily unit having a market value of $116,000. The Towns at Novi Station will have an even greater economic impact based on the projected sales prices of between $500,000 - $550,000 per unit.

The proposed commercial development will provide local, walkable retail and services for the new townhome development and the many nearby existing residents, thus providing new permanent local retail, service and professional job/career opportunities. We can expect 50 to 100 new part- and full-time positions to be created, depending on what services eventually occupy the structures to be built and the hours these services are open for business. The Towns at Novi Station employment impact can be calculated as approximately 4 jobs per unit, or 284 jobs. No onsite permanent employees are anticipated for the project.

**Government Revenues:** The National Association of Homebuilders estimates that $33,494 in government revenues result from each multifamily unit (market value of $116,000.) Adjusting the metric for an average sales price of $525,000, we estimate there would be approximately

$151,589 in government revenues per unit. For The Towns at Novi Station, this calculates to over $10.7 Million in various government revenues. The revenue comes not only in the form of increased property taxes, but also comes from income taxes on worker wages, business taxes, sales taxes, and municipal fees for permits and services.

**Property Tax:**

Breaking out the property tax from the above calculation, if we assume an assessed value of $525,000/unit (SEV $212,000) and use the City of Novi 2020 homestead tax rates (37.04 mils) the annual property tax revenue generated would be approximately $7,850/unit, or $557,500 annually.

For the food market building in the Commercial development, assuming a square footage of 28,942, a taxable value of $38.16 / sf, and using the City of Novi Millage rate of 41.0707 mils, the annual tax generated from the market will be approximately $45,358.

The proposed retail stores, restaurants, and other approved B-3 uses total 39,500 square feet. Using this square footage, a taxable value of $85.88 / sf, and using the City of Novi Millage rate of 41.0707 mils, the annual tax generated from the market will be approximately $139,300.

## SOCIAL IMPACT

The project is located on Ten Mile Road east of Novi Road. The site is currently vacant and undeveloped. Development of The Towns at Novi Station will have a positive social impact on the community. The Towns at Novi Station will provide residents opportunities to participate in active community life and meet their needs for shopping, services, & entertainment within a short drive to the city center. The project is proposed to provide a walkable sidewalk connection to Ridgeview of Novi to the south which provides walkable connectivity to the Novi Dog Park, the Novi Ice Arena and the Sports Club of Novi. The proposed commercial development will be provided with sidewalk connectivity to the proposed Towns at Novi Station, the existing Ridgeview of Novi and the Existing River Oaks Apartments on Novi Road. Also, the park and nature viewing hiking paths and the conservation easement add to the overall community.

End

**PLANNING REVIEW**
**January 24, 2024**

# PLAN REVIEW CENTER REPORT

**Planning Review**

January 24, 2024

**JZ23-09 NOVI-TEN PRO**

Zoning Map Amendment No. 18.740

## PETITIONER

Novi Ten Associates

## REVIEW TYPE

2nd Revised PRO Concept Plan: Consideration of Eligibility

Rezoning Request from OS-1 Office Service and I-1 Light Industrial to Low-Density Multiple Family RM-1 and B-3 General Business with a Planned Rezoning Overlay

## PROPERTY CHARACTERISTICS

| | | |
|---|---|---|
| **Section** | 26 | |
| **Site Location** | South of Ten Mile Road, East of Novi Road; | |
| **Site School District** | Novi Community School District | |
| **Current Site Zoning** | OST, Office Service Technology | |
| **Proposed Site Zoning** | RM-1, Low-Density Multiple Family | |
| **Adjoining Zoning** | North | I-1 Light Industrial and I-2 General Industrial |
| | East | I-1 Light Industrial |
| | West | OS-1, Office Service and B-1 Local Business |
| | South | RM-1, Low-Density Multiple Family with PRO |
| **Current Site Use** | Vacant | |
| **Adjoining Uses** | North | Warehouse, Machine suppliers, Contractors, Software/Computer services, Outdoor storage |
| | East | Vacant, Railroad ROW |
| | West | Pharmacy, Dental Office |
| | South | Ridgeview Villas multiple family residential |
| **Site Size** | 34 acres proposed for rezoning: 6.97 to B-3 and 27 to RM-1 | |
| **Parcel ID's** | 50-22-26-101-024, 50-22-26-101-028 (portions) | |
| **Plan Date** | January 2, 2024 | |

## PROJECT SUMMARY

The subject property is located on the south side of Ten Mile Road, east of Novi Road in Section 26 of the City of Novi. The property to be rezoned totals about 34 acres. About 27 acres is proposed to be rezoned to RM-1, Low-Density Multiple Family. The applicant is proposing to develop 71-unit multiple-family residential units in 14 townhouse-style buildings on a portion, while preserving 15.87 acres as a natural area. To the west and north of the residential area, 6.97 acres is proposed to be rezoned to B-3, General Business. The commercial area would be developed with approximately 39,500 square feet of restaurant and retail uses. Three new access points to Ten Mile Road would be constructed – one for the residential section and two for the commercial portion. The commercial piece would also utilize the existing driveway shared with the dental office. Two pickleball/tennis courts with parking spaces at the eastern side of the property would have a separate access drive from 10 Mile. The applicant is requesting to rezone with a Planned Rezoning Overlay.

## PRO OPTION

The PRO option creates a "floating district" with a conceptual plan attached to the rezoning of a parcel. As part of the PRO, the underlying zoning is proposed to be changed (in this case from OS-1 and I-1 to RM-1 and B-3), and the applicant submits a detailed conceptual plan for development of the site, along with site-specific conditions relating to the proposed improvements. After Staff and consultant review, the proposed request goes through initial review by the Planning Commission and City Council to review and comment on whether the project meets the requirements of eligibility for a PRO. The applicant can then make any changes to the Concept Plan based on the feedback received, and resubmit for formal review. The Planning Commission holds a public hearing and makes a recommendation to City Council. The City Council reviews the Concept Plan, and if the plan receives tentative approval, it directs the preparation of an agreement between the City and the applicant, which also requires City Council approval. Following final approval of the PRO concept plan and PRO agreement, the applicant will submit for Preliminary and Final Site Plan approval under standard site plan review procedures. If development is not commenced within two years from the effective date of the PRO Agreement it will expire, unless otherwise agreed to by the parties.

## RECOMMENDATION

Staff notes concerns about the proposed residential uses' compatibility with the heavy industrial zoning to the north, inconsistency with the recommendations of the Master Plan for Land Use Future Land Use Map, and the estimated increase in traffic. The identified benefits of rezoning are creating a walkable community for the new residential area and the existing residents to the south. The commercial portion would serve as a shopping area for nearby residents, with walkable access proposed from River Oaks West and Ridgeview of Novi, as well as employees of surrounding businesses and other destinations.

## PROJECT HISTORY

Conceptual documents for the project were submitted and reviewed by City staff and consultants in a pre-application submittal in July 2021. Comments were provided on the information submitted based on compliance with the Zoning Ordinance and City Codes, but **no recommendations for approval were made at that time**. Since then, a revised Planned Rezoning Overlay ordinance was adopted by City Council.

In March 2023, the Initial PRO Concept Plan was submitted for review. Staff determined that several aspects of the B-3 component did not meet the standards of the PRO Ordinance, as there were no detailed plans, use or size restrictions, or any other conditions presented that would provide an overall benefit to the public that would outweigh the detriments. As presented at that time, the B-3 rezoning would not be eligible for the optional rezoning with Planned Rezoning Overlay.

Since then, the applicant submitted a revised concept plan in October with more details on the B-3 portion of the site, clarification of benefits and deviations, and additional area to be rezoned to RM-1 rather than remaining I-1 Light Industrial. Based on comments received from staff on that review, the applicant asked to have their full traffic study reviewed by the City's consultant, and have again submitted revisions to their concept plan.

## REVIEW COMMENTS

This project was reviewed for conformance with the Zoning Ordinance with respect to Article 3 (Zoning Districts), Article 4 (Use Standards), Article 5 (Site Standards), Section 7.13 (Amendments to Ordinance) and any other applicable provisions of the Zoning Ordinance. **Please see the attached chart for additional information pertaining to ordinance requirements.** Items in **bold** below must be addressed and incorporated as part of future submittals or in the PRO Agreement:

1. Supporting Documentation: The applicant has provided the following studies as part of their application packet:
   a. **Narrative:** The statement provided indicates that the proposed rezoning allows for development of a walkable community that will connect existing residents to the south to a commercial destination, and new residents with a pathway network within the site and to nearby destinations. It is not clear whether the off-site pedestrian connections, such as direct connections to the River Oaks Apartments, as shown on Sheet P.4, are intended to be coordinated as a part of the project, and built by the applicant.

      The narrative statement also notes the conditions and deviations proposed for the project, as well as public benefits. Those are detailed later in this review. Additional suggested conditions are provided later in this review.

   b. **Community Impact Statement**: The statement provided was revised January 2, 2024. The statement anticipates the proposed uses would have a minor impact on City services, roads and utilities, and environmental features. Positive social and economic impacts are anticipated. **The applicant should update the statement prior to formal PRO Plan submittal – several of the statements still seem to reflect previous versions of the Concept Plan (such as the size of the commercial and residential areas). In addition, several of the data referenced are from 10+ years ago (School enrollment, NFPA and ICMA reports, etc.) and more recent data should be provided.**

   c. **Rezoning Traffic Impact Study:** AECOM's review of the submitted study (dated November 28, 2022) notes that the change of use will result in a significant increase in traffic on the local road network. The proposed mix of uses is estimated to add approximately 25% more trips compared to existing conditions, or over 6,500 total weekday trips. Development permitted under the current zoning would add about 2,500 daily trips, or 61% less than the proposed change. Such a large increase in daily trips would require changes to the road network to accommodate the new traffic. The applicant is encouraged to meet with the Road Commission for Oakland County as 10 Mile Road is under its jurisdiction. A Full Traffic Study has since been submitted and reviewed by the City's Traffic Consultant. The applicant indicates in the Community Impact Statement that they intend to complete the following improvements identified in the study to mitigate the traffic impacts:

      - *Widen eastbound 10 Mile Road to two through lanes, ending with a right-turn lane at the site's easternmost residential driveway.*
      - *Widen westbound 10 Mile Road to two through lanes west from the 3rd site driveway to help provide additional capacity for outbound site traffic.*
      - *Provide a continuous center turn lane to serve the 1st, 2nd, and 3rd commercial driveways.*
      - *Provide separate outbound left-turn/right-turn lanes for the site's 2nd and 3rd commercial driveways to allow right-turning traffic to exit the site when vehicles are waiting to turn left.*

   d. **Commercial Market Analysis:** The applicant has provided a Market Feasibility Analysis for Commercial Development prepared by The Chesapeake Group, Inc. dated July, 2022. The report indicates there will be a growth in the number of homes and income for Novi residents, which will increase sales by $94 million from 2021-2027. This would support an additional 229,000 square feet of retail goods and services by 2027. The report specifically points out that while most commercial establishments are appropriate for this site, vehicle-oriented purchase and service activity should be excluded based on the goal to enhance walkability of the area. *"Collectively, with the enhanced linkages to existing anchors, the food and food service composition of much of the activity on the site, and the proposed adjacent other housing development with direct pedestrian linkages to the site, the*

*commercial will act as a "village center" service the neighboring residential and anchor activity."*

e. **Wetland Delineation Reports:** Prepared by Niswander Environmental, dated February 2021, the report covers the area of the RM-1 residential site. Five wetland areas were identified, including 3 small areas that are proposed to be impacted. A separate report prepared by Niswander Environmental, dated June 2023, includes the Commercial area of the site. Three small wetland areas (0.1 acre total) that would be impacted, and one large wetland surrounding Chapman Creek, which is not proposed to be impacted.

f. **Sign Location Plan:** Detail of signage on sheet 3 of Civil drawings. The sign location plan is provided in the binder of materials, and notes the change of wording needed for each sign. **The sign locations and sign details meet the requirements of the Site Plan & Development Manual. The signage should be posted no later than February 1, 2024, to give proper notice prior to the public hearing before the Planning Commission on February 21, 2024.**

2. Intent of the Commercial District: It is the applicant's stated goal to create a Walkable Community, with the commercial area serving as a village center "for functional life needs and recreation." However, the intent and uses permitted in the B-3 district appear at odds with that goal. As stated in Section 3.1.12, the B-3 district "is designed to provide sites for more diversified business types which would be incompatible with the pedestrian movement in the Local Business district or the Community Business district." **Previously the applicant was asked to consider the B-2 Community Business district, which would be more consistent as it is "established to maintain a more pedestrian-friendly environment and to foster a physical development pattern that is well-planned, supportive of moderately intense commercial uses, and aesthetically appealing from both abutting thoroughfares and from within the district." The uses permitted in that district would be more suited to a village center. In response, the applicant states they would prohibit the following B-3 uses: Gas Station, Automobile Repair, Car Wash, Marijuana sales, Check Cashing, and Pawn Shop. Marijuana sales are not permitted in the City of Novi. Other uses that the applicant could consider excluding would be new and used car dealerships, hotel/motel, oil change establishments, and fast-food drive-through facilities, which could be detrimental to a walkable neighborhood.**

3. Drive-Through and Fast Food Restaurants: In the B-3 District, restaurants in the character of a fast food carryout, drive-in, fast food drive-through, or fast food sit-down are only permitted as a Special Land Use, and must meet certain requirements. As shown in the PRO Plan, a drive-through appears to be shown on the east side of building D (Restaurant use). The Ordinance states in Section 4.40 that such uses shall not be permitted less than 60 feet from any residential zoning district, and all drive-through lanes shall be located at least 150 feet from any residential zoning district. Building D is shown as restaurant use, and it appears that the proposed location of the proposed drive-through lane would now meet the requirements (drive through exceeds 156 feet from RM-1 zoning). Commercial buildings A and B also indicate potential restaurant uses, but they are located more than 80 feet from the residential zoning district and no drive-through lanes appear to be proposed. **A condition of development could be to limit the number of drive-through lanes on the site to one, and/or provide a greater minimum distance from the residential district.**

4. Land Division: The applicant proposes to rezone a portion of two larger parcels. It appears that the applicant intends to create three new parcels. **The proposed parcels may require a deviation from City Council to approve the land split. This will need to be clarified if the project moves forward.**

5. Density: In the RM-1 district, low-rise multiple family residential units are permitted, with the maximum density allowed based on the size of the proposed dwelling units. The applicant indicates all 71 proposed units will be three-bedroom units. The maximum density for 3-bedroom units is 5.4 dwelling units per acre (du/ac). This is also confirmed by the room count described in Section 3.8, which states the maximum number of rooms permitted is the land area in square feet divided by 2000. The applicant's room count is 284. **For 284 rooms, the parcel size should be a minimum of 13.04 acres.**

   **The size of the RM-1 area is 27.07 acres for the townhome parcel. To calculate density, the net site area of a site should exclude any wetlands greater than 2 acres, and right of way. Sheet 6 (revised) shows the total area of Wetland D is 10.729 acres. The net site area of the RM-1 development parcel as calculated by the applicant is 15.74 acres (excludes all 11.33 acres of wetlands on the site). As a result the density proposed is 4.5 dwelling units per acre (71 units/15.74 acres), which is within the ordinance standard.**

6. Adjacent Industrial Uses: On the eastern side of the subject site, the proposed RM-1 residential uses will be directly opposite I-2 General Industrial zoning to the north. The I-2 district permits the most intensive industrial uses in the City, and "is designed primarily for manufacturing, assembling and fabrication activities including large scale or specialized industrial operations, whose physical effects will be felt to some degree by surrounding districts." Because of those likely physical effects, including vibration, noise, and odors, and heavy truck traffic, I-2 zoning has historically not been permitted adjacent to residential uses. Currently the uses on the north side of 10 Mile in the I-2 district include building and landscape contractors, a metal machinery supplier, outdoor storage yards of building supplies and heavy machinery, and an office building. Other uses permitted in the I-2 district could replace those uses in the future, including auto engine and body repair shops, freight/trucking facilities, concrete operations, junkyards, and other production and manufacturing uses. Here and elsewhere in the city, I-2 areas are often separated from residential uses by railroad tracks, or by transitional and less intense zoning districts. Rezoning the property on the south side of Ten Mile to residential might further limit the industrial uses that are currently permitted on the north side of Ten Mile Road and/or require additional landscaping requirements if the industrial uses redevelop per Section 4.57 of the Zoning Ordinance. **The applicant should address how potential negative impacts of the existing and future adjacent industrial uses will be mitigated.**

7. Usable Open Space: The applicant shows the usable open space for the residential portion of the project is a 50-foot wide area along the southern edge of the property, and indicates an 8-foot concrete pathway in a public easement within it. Also included is the 0.4 acre park on the west side (between the residential and retail uses), and the pickleball courts on the northeast side of the site. A gazebo and picnic tables are indicated in the park area. **The applicant could consider providing a playground amenity in the park for children. The total usable open space proposed is 107,423 square feet, or 2.47 acres, which exceeds the amount required by the ordinance by 6.5 times.**

8. Wetland Impact: Wetland delineation was originally only completed for the RM-1 portion of the site. A wetland delineation report dated June 2023 evaluated the B-3 commercial area, and appears to show 3 more small wetland areas. The Wetland impacts are now quantified on Sheet 6, including buffer disturbance. The plans show a total wetland impact area of 0.101 acre, which is below the City's threshold to require mitigation.

9. Non-Motorized Access: The plan proposes the required 8-foot sidewalk along the frontage of 10 Mile Road, and 5-foot sidewalks on both sides of the private drive. Additional 8-foot wide concrete pathways are proposed along the south side of the project, connecting to the commercial portion on the west side, the existing stub path at Ridgeview of Novi to the south, and continuing along the southern edge of the property and back up to 10 Mile Road

(approximately 1,900-2,000 linear feet total). The path largely follows the floodplain line. In some areas it appears there are steep grades – the applicant's engineer should verify whether the pathway will be ADA accessible or will encounter any issues with constructability due to grading, flooding, woodland tree impacts, etc. **If the general public would be permitted to use the trails, an easement would need to be provided to permit such use – a 12-foot wide public easement is indicated on the plans. This would be included as a condition within the PRO Agreement. In the applicant's exhibit of the Walkable Community (P.4), there are two mid-block crossings of Ten Mile Road shown, as well as two pathway access points to River Oaks West which do not currently exist. The applicant should clarify if these items are being proposed for construction.**

10. Plan Review Chart: **The attached chart provides additional comments on many of the Ordinance review standards. Please refer to it in detail.**

11. Other Reviews:
    a. **Engineering:** Engineering previously indicated no objection to the PRO Concept Plan, with additional comments to be addressed in the Site Plan process. Negative impacts to public utilities are not expected with the requested change to residential and commercial use. **Please note that the City is in the process of adopting the Oakland County stormwater management standards. This project is expected to follow those new standards.**
    b. **Landscape:** Landscape review notes concerns with insufficient screening between proposed residential and adjacent commercial and industrial uses, lack of greenbelt berm along 10 Mile Road, and deficiencies in foundation landscaping for the commercial buildings. **Landscape does not recommend approval at this time.**
    c. **Traffic:** Traffic review notes that the applicant would need a deviation for the parking areas on the major drive for the RM-1 area. The traffic study shows that the proposed rezoning would result in substantially more vehicle trips compared to possible development under current zoning. **Therefore, the rezoning would be likely to cause negative impacts to the traffic network without improvements. The full traffic study was reviewed in December. That review letter is included in this packet.**
    d. **Woodlands:** The residential tree removal plan proposes a total of 375 tree removals requiring 697 Woodland Replacement Credits. The plans show 181 credits to be planted on site, and 516 credits paid into the Tree Fund. For the commercial portion: 180 replacements are required. 41 are proposed to be planted on site and a deposit to the tree fund will be made for the remaining credits**.**
    e. **Wetlands:** The previous Wetland review noted that wetland impacts are not consistent with the wetland report for the RM-1 portion of the property. **The wetlands in the B-3 area are now shown, with impacts provided in the table on Sheet 6.**
    f. **Façade:** Façade notes that the residential elevations provided are not compliant with ordinance standards in some areas where the brick component is under the minimum by a small amount. A Section 9 waiver would be supported. The Commercial building elevations are in full compliance with the Façade Ordinance.
    g. **Fire**: Fire recommends conditional approval if comments are addressed in site plan submittals.

## LAND USE AND ZONING: FOR SUBJECT PROPERTY AND ADJACENT PROPERTIES

*Figure 1: Current Zoning*

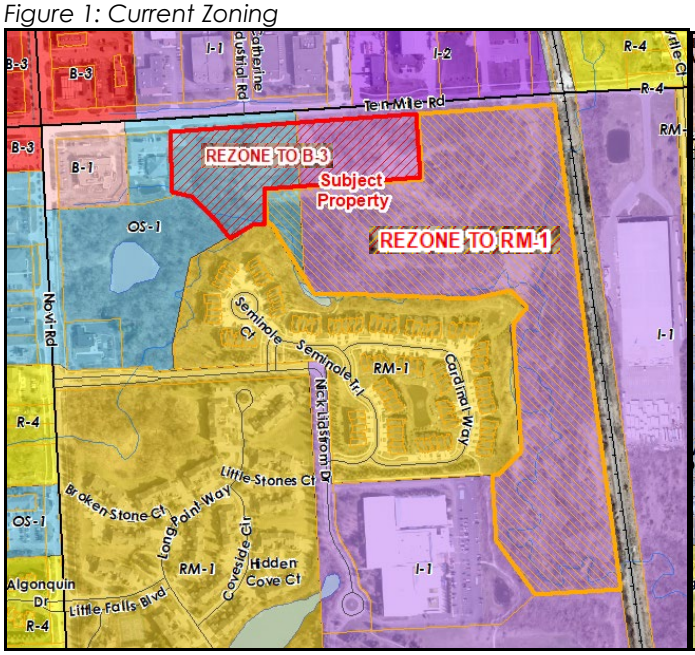
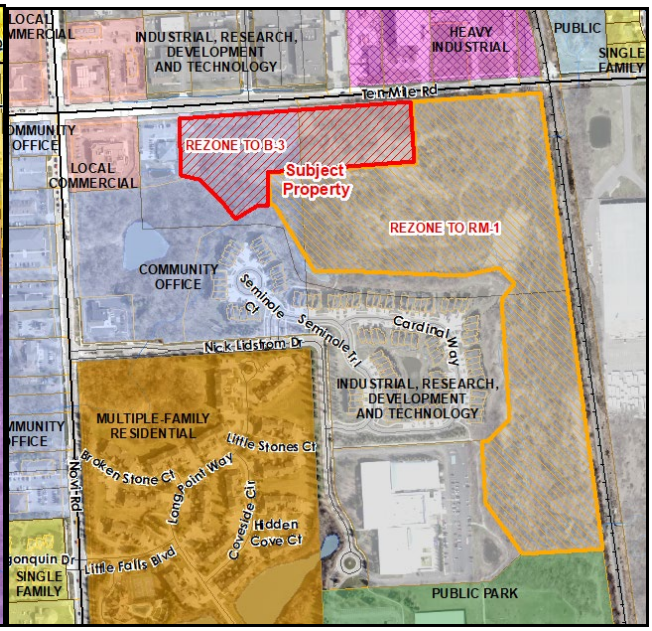



*Figure 2: Future Land Use*




The following table summarizes the zoning and land use status for the subject property and surrounding properties.

| | Existing Zoning | Existing Land Use | Master Plan Land Use Designation |
|---|---|---|---|
| **Subject Property** | OS-1 Office Service<br>I-1 Light Industrial | Vacant | Industrial Research Service and Technology; Heavy Industrial (Uses consistent with I-1 and I-2, respectively) |
| **Northern Parcels** | I-1 Light Industrial<br>I-2 General Industrial | Warehouse, Contractors, Outside Storage, Office | |
| **Eastern Parcels** | I-1 Light Industrial | Vacant | Industrial Research Service and Technology |
| **Western Parcels** | OS-1: Office Service | Dental Office; Vacant | Community Office |
| **Southern Parcels** | RM-1 with PRO | Multifamily residential | Community Office<br>Industrial Research Service and Technology |

### Compatibility with Surrounding Land Use

The subject property is located along the south side of Ten Mile Road and east of Novi Road. The north side of Ten Mile Road is developed with office, warehouse, outdoor storage and other industrial uses. The area to the south is developed as a multiple-family townhouse development, Ridgeview of Novi, which was approved as a Planned Rezoning Overlay in 2015. To the west is a dental office, and the remaining vacant portion of land owned by the applicant, which fronts on Novi Road. On the east side of the project is the remaining land owned by the applicant, which abuts the railroad tracks and contains a large area of wetland and floodplain associated with the Middle Rouge River. This area is now proposed for rezoning to RM-1, although it appears unlikely that it could ever be developed due to the floodplain.

*Figure 3: Names of surrounding developments and businesses*

The most noticeable impact of the proposed development on adjacent properties and 10 Mile Road users would be the increase in traffic, as shown in the applicant's traffic study. See additional comments regarding the Rezoning Traffic Study on page 3 and in AECOM's review letter attached. Some potential conflicts with the adjacent users could be the noise and disruption of existing truck traffic to the industrial areas to the north, including loading and unloading functions, on the proposed residents.

The residential use to the south may benefit from having a similar residential use development to the north rather than an industrial development, as well as convenient access to commercial goods and services.

The applicant's narrative notes the commercial area will be developed with "*new end users such as neighborhood sidewalk café, small market, etc.*" In the current submittal additional details of the site are provided, and the applicant has proposed a condition to prohibit certain uses from occupying the site.

*Figure 4: FEMA Floodplain areas*

## Comparison of Zoning Districts

The following tables provide comparisons of the current and proposed zoning classifications. The proposed B-3 district is compared to OS-1 (although there is some area proposed for B-3 that is currently I-1) and the proposed RM-1 area is compared to the current I-1 zoning. It is not a direct comparison, given that the character of the districts are clearly distinct from each other. It represents a change of use from Office to Commercial/Retail, and Industrial to Residential. The requirements for building and parking setbacks, height, buffering and lot coverage are similar for the OS-1 and B-3 districts.

| | OS-1 (EXISTING) | B-3 (PROPOSED) |
|---|---|---|
| Intent | The OS-1, Office Service District is designed to accommodate uses such as offices, banks, facilities for human care and personal services which can serve as transitional areas between residential and commercial districts and to provide a transition between major thoroughfares and residential districts. | The B-3, General Business district is designed to provide sites for more diversified business types which would often be incompatible with pedestrian movement in the Local Business or the Community Business district. |
| Principal Permitted Uses | Professional and medical office;<br>Facilities for human care;<br>Financial institutions with accessory drive-in facilities;<br>Personal service establishments;<br>Parking lots;<br>Places of worship; | Retail business and business service uses;<br>Dry cleaning;<br>Business establishments performing services on premises, professional services;<br>Professional and medical offices; |

| | OS-1 (EXISTING) | B-3 (PROPOSED) |
|---|---|---|
| | Publicly owned and operated parks, parkways and outdoor recreational facilities;<br>Public or private health and fitness facilities and clubs | Fueling stations;<br>Auto wash;<br>Bus station;<br>New & used car salesroom/showroom;<br>Tattoo parlors;<br>Public & private health and fitness;<br>Microbrews and brewpubs;<br>Day care and adult day care centers;<br>**See Section 3.1.12.B for full list |
| Special Land Uses | Mortuary establishments;<br>Publicly owned buildings, telephone exchange, and public utility offices;<br>Day care and adult day care centers;<br>Public or private indoor and private outdoor recreation | Outdoor space for sale of new & used vehicles;<br>Motel;<br>Veterinary hospitals or clinics;<br>Plant material nursery;<br>Public or private indoor/private outdoor recreation;<br>Mini-lube or oil change establishment;<br>Sale of produce and seasonal plant materials outdoors;<br>Fast food carryout, drive-in, drive-through or sit down;<br>**See Section 3.1.12.C for complete list |
| Lot Size | Except where otherwise provided in this Ordinance, the minimum lot area and width, and the maximum percent of lot coverage shall be determined on the basis of off-street parking, loading, greenbelt screening, yard setback or usable open space requirements as set forth in this Ordinance. | |
| Lot Coverage | | |
| Building Height | 30 feet | 30 feet |
| Building Setbacks | Front: 20 feet<br>Rear: 20 feet<br>Side: 15 feet<br>Exterior side yard setbacks same as front yard | Front: 30 feet<br>Rear: 20 feet<br>Side: 15 feet<br>Exterior side yard setbacks same as front yard |
| Parking Setbacks<br><br>See 3.6.2. for additional conditions | Front: 20 feet<br>Rear: 10 feet<br>Side: 10 feet<br>Exterior side yard setbacks same as front | Front: 20 feet<br>Rear: 10 feet<br>Side: 10 feet<br>Exterior side yard setbacks same as front |

| | I-1 (EXISTING) | RM-1 (PROPOSED) |
|---|---|---|
| Intent | The I-1 district is designed so as to primarily accommodate research, office, and light industrial uses, including wholesale activities, warehouses, and industrial operations whose external, physical effects are restricted to the area of the district and in no manner negatively affect any of the surrounding districts. | The RM-1 district is designed to provide sites for multiple-family structures, and related uses, which will generally serve as zones of transition between the non-residential districts, major thoroughfares and freeways and single family districts. |
| Principal Permitted Uses | Professional office, office sales and service, medical offices;<br>Publicly owned and operated parks, parkways and outdoor recreational facilities; | Multiple-family dwellings;<br>Independent and congregate elderly living facilities;<br>Two-family dwellings;<br>Shared elderly housing; |

| | I-1 (EXISTING) | RM-1 (PROPOSED) |
|---|---|---|
| | Public or private health and fitness facilities and clubs;<br>Research & Development, technical training and design of pilot/experimental products;<br>Data processing & computer centers;<br>Warehousing & wholesale establishments;<br>Manufacturing;<br>Industrial office sales, service and industrial office related uses;<br>Trade or industrial schools;<br>Laboratories experimental, film or testing;<br>Greenhouses;<br>Public utility, telephone exchange, electrical transformer stations and substations, etc.<br>Public or private indoor, private outdoor recreation facilities;<br>Pet boarding facilities;<br>Veterinary hospitals and clinics;<br>Motion picture, television, ratio and photographic production facilities;<br>**See attached copy of Section 3.1.18.B for full list | One-family dwellings;<br>Farms & greenhouses;<br>Public parks, parkways, and outdoor recreation;<br>Cemeteries;<br>Home occupations;<br>Family day care homes |
| Special Land Uses | See attached copy of Section 3.1.18.C, which would not be permitted on the subject property as it is adjacent to residential | Convalescent homes, assisted living facilities, hospice care facilities and child care centers |
| Lot Size | Except where otherwise provided in this Ordinance, the minimum lot area and width, and the maximum percent of lot coverage shall be determined on the basis of off-street parking, loading, greenbelt screening, yard setback or usable open space requirements as set forth in this Ordinance. | See Section 3.8.1 |
| Lot Coverage | | 25% |
| Building Height | 40 feet | 35 ft or 2 stories, whichever is less |
| Building Setbacks | Front: 40 feet<br>Side: 20 feet<br>Rear: 20 feet<br>**Setback increased to 100-feet where adjacent to residential district | Front: 75 feet<br>Rear: 75 feet<br>Side: 75 feet<br>Exterior side yard setbacks same as front |
| Parking Setbacks<br><br>See 3.6.2. for additional conditions | Front: 20 feet<br>Rear: 10 feet<br>Side: 10 feet<br>Exterior side yard setbacks same as front<br>**Setback increased to 100-feet where adjacent to residential district | Front: 75 feet<br>Rear: 20 feet<br>Side: 20 feet<br>Exterior side yard setbacks same as front |
| Usable Open Space | Not applicable | 200 square feet per unit |

## DEVELOPMENT POTENTIAL

The land is currently vacant. Development under the current OS-1 and I-1 zoning could result in a substantial amount of Office, Warehouse, or Research & Development buildings being constructed. On sheet P.2 of the Concept Plan provided, the applicant shows a 54,000 square foot office building on the OS-1 portion, and 291,200 square foot industrial building. However, this plan does

not show stormwater detention, and it is unclear whether the parking and landscaping requirements would be met by the layout proposed.

In 2009, the applicant submitted a PRO Concept Plan proposing to rezone portions of the property to B-2 and the rest to OS-1. Within the B-2 commercial portion a 64,245 square foot Kroger grocery store was proposed, with an additional 26,000 square feet of additional B-2 uses. A neighborhood shopping center with 40,978 square feet, and 18,000 square foot medical office building were also proposed.

The current concept plan proposes a development of 71 units (density of 4.5 dwellings per acre) for a low-density multifamily development which is less than the 5.4 maximum density allowed for three-bedroom units in the RM-1 zoning district on 15.75 acres (343 total number of rooms allowed, 284 rooms proposed). The Master Plan for Land Use does not anticipate residential uses of this property, so no density guidelines are provided on the future land use plan.

In this review letter, staff identifies concerns with compatibility of uses to the north, increase in traffic, and deficiencies in landscaping requirements. **Based on the feedback provided, and any additional comments from the Planning Commission and City Council during their initial consideration, the applicant should consider addressing those comments and revise the plans accordingly before the formal PRO Concept submittal.**

## 2016 MASTER PLAN FOR LAND USE: GOALS AND OBJECTIVES

The proposed use is currently not recommended by the 2016 Master Plan for Land Use. The following objectives as listed in the Master Plan are applicable for the proposed development. **The applicant should consider revisions to the plan to comply with as many goals as possible. Please refer to staff comments in bold and revisions recommended in bold and underline.**

1. **General Goal: Quality and Variety of Housing**
    a. Provide residential developments that support healthy lifestyles. Ensure the provision of neighborhood open space within residential developments. **The development proposes the required sidewalks along the public and private streets, as well as a walking path behind the units that connect to the development to the south. Two pickleball/tennis courts are proposed on the east side of the site, as well as two scenic overlook points to the east of Novi Athletic Club. The residential units would be within walking distance of several civic amenities as well as retail areas.**
    b. Safe housing and neighborhoods. Enhance the City of Novi's identity as an attractive community in which to live by maintaining structurally safe and attractive housing choices and safe neighborhoods.
    c. Maintain existing housing stock and related infrastructure.
    d. Provide a wide range of housing options. Attract new residents to the City by providing a full range of quality housing opportunities that meet the housing needs of all demographic groups including but not limited to singles, couples, first time home buyers, families and the elderly. **The for-sale units proposed would provide a low-maintenance housing option for buyers interested in a walkable context.**

2. **General Goal: Community Identity**
    a. Maintain quality architecture and design throughout the City. **The proposed elevations are mostly compliant with Façade Ordinance standards but would require a Section 9 waiver, which is supported. Please refer to the façade review letter.**

3. **General Goal: Environmental Stewardship**

a. Protect and maintain the City's woodlands, wetlands, water features, and open space. **The concept plan proposes removal of regulated woodland trees and impacts to several small wetland areas (approximately 0.1 acre). The narrative indicates a 15.87-acre area will be preserved within a wetland/woodland conservation easement.**
b. Increase recreational opportunities in the City. **The Concept plan proposes recreational opportunities for future residents and the general public, primarily in the form of a concrete pedestrian path behind the townhome buildings. The path is shown in a public easement, so would be available to other users besides the residents. Details for the park area should also be provided. The narrative also indicates two nature overlook areas with benches would be provided in the area east of the Novi Athletic Club, as well as 2 pickleball/tennis courts in the northeast corner of the property that would be available to the public.**
c. Encourage energy-efficient and environmentally sustainable development through raising awareness and standards that support best practices. **The applicant should consider sustainable, energy-efficient and best-practice design for site elements and building materials, such as LEED recommended strategies.**

**4. General Goal: Infrastructure**
a. Provide and maintain adequate water and sewer service for the City's needs. **Please refer to the Engineering memo. No significant concerns are noted.**
b. Provide and maintain adequate transportation facilities for the City's needs. Address vehicular and non-motorized transportation facilities. **The traffic study indicates that the surrounding road network may not accommodate the resulting increase in traffic without improvements.**

**5. General Goal: Economic Development / Community Identity**
a. Ensure compatibility between residential and non-residential developments. **Please refer to comments about compatibility with surrounding development earlier in this review.**

## MAJOR CONDITIONS OF PLANNED REZONING OVERLAY AGREEMENT

The Planned Rezoning Overlay process involves a PRO concept plan and specific PRO conditions in conjunction with a rezoning request. The submittal requirements and the process are codified under the PRO ordinance (Section 7.13.2). Within the process, which is initiated by the applicant, the applicant and City Council can agree on a series of conditions to be included as part of the approval which must be reflected in the Concept Plan and or the PRO agreement.

The PRO conditions must be in material respects, more strict or limiting than the regulations that would apply to the land under the proposed new zoning district. *Development and use of the property shall be subject to the more restrictive requirements shown or specified on the PRO Plan, and/or in the PRO Conditions imposed, and/or in other conditions and provisions set forth in the PRO Agreement.*

The applicant has listed the following benefits/conditions for development:

1. *"The complete east portion adjacent to the railroad tracks and the south 50-foot-wide strip along the wetland of the proposed PRO (15.87 acres of the 27.07 RM-1 rezoning) are being retained as a natural area with a conservation easement to preserve its existing marshland and wildlife. This natural area, with wetlands, wraps around the PRO and includes on the west end a proposed new 0.4 acre park/playground located between the proposed residential and retail sites. The proposed trail system, with its overlooks near the Novi Athletic Club becomes a usable and accessible community resource."*

2. *"To help achieve walkability and connectivity of the entire area, a trail system is being added which consists of new paths and existing sidewalks. This walkway system provides connectivity between surrounding existing residential areas and new proposed PRO residential area with all the marshland nature areas, the proposed tennis courts/pickleball courts, the Novi Athletic Club, Ice Arena, and Dog Park, and with the new proposed local (retail) along Ten Mile Road. The retail consists of the new proposed retail and restaurant areas, and the existing Walgreen's and dental office. New Walkways and bike paths that overlook 15.87 acre wildlife area and connect this PRO development to the recreation areas: The $3.2 million dollars worth of Novi 10 land previously donated to the city, initiated by Novi request (18 acres of land): For the Novi Arena Facility and the Novi Dog Park."*
3. *"Two new tennis courts/pickleball courts are being added at the north end of the new conservation area along 10 Mile Road, as well as parking spaces for the courts."*
4. *Proposed use restrictions not permitting certain automotive and other business uses in the proposed B-3 commercial zoning (Sec. 3.1.12.B & C) are to be part of the PRO. Not permitted uses are:*
    a. *Vehicle Oriented Uses: gas/fueling station, auto repair, and car wash,*
    b. *Other excluded uses: Check cashing, Pawn shop (Marijuana sales already not permitted in the City of Novi will also be excluded by the PRO documents in case the city's law is changed to allow it in the future.)*
5. *Open Space (Section 3.1.7.D) the amount of open space provided for the RM-1 townhouses exceeds ordinance requirements.*
6. *Commercial Building Setbacks:*
    a. *Front: 30 feet required….92 feet provided*
    b. *Rear: 20 feet required….83 feet provided*
    c. *Side: 15 feet required…..93 feet provided*
7. *Residential Building height* (Sec. 3.1.7.D)**:** *29* feet maximum proposed is more limiting than the 35 feet permitted.
8. *Commercial Building Height* (Sec. 3.1.12.D)*:* Twenty-three feet maximum proposed is more limiting than the 30 feet permitted.
9. *Residential Lot Coverage* (Sec. 3.1.7.D)**:** *25% maximum is permitted, 14% is proposed*

**Additional conditions to be included in the PRO Agreement, if it should be approved, will likely be added during the review process. For reference suggested conditions as stated in Section 7.13.2 of the Zoning Ordinance are as follows:**

1. Establishment of development features such as the location, size, height, area, or mass of buildings, structures, or other improvements in a manner that cannot be required under the Ordinance or the City's Code of Ordinances, to be shown in the PRO Plan.
2. Specification of the maximum density or intensity of development and/or use, as shown on the PRO Plan and expressed in terms fashioned for the particular development and/or use (for example, and in no respect by way of limitation, units per acre, maximum usable floor area, hours of operation, and the like).
3. Provision for setbacks, landscaping, and other buffers in a manner that exceeds what the Ordinance of the Code of Ordinances can require.
4. Exceptional site and building design, architecture, and other features beyond the minimum requirements of the Ordinance or the Code of Ordinances.
5. Preservation of natural resources and/or features, such as woodlands and wetlands, in a manner that cannot be accomplished through the Ordinance or the Code of Ordinances and that exceeds what is otherwise required. If such areas are to be affected by the proposed development, provisions designed to minimize or mitigate such impact.
6. Limitations on the land uses otherwise allowed under the proposed zoning district, including, but not limited to, specification of uses that are permitted and those that are not permitted.
7. Provision of a public improvement or improvements that would not otherwise be required under the ordinance or Code of Ordinances to further the public health, safety, and welfare, protect existing or planned uses, or alleviate or lessen an existing or potential

problem related to public facilities. These can include, but are not limited to, road and infrastructure improvements; relocation of overhead utilities; or other public facilities or improvements.
8. Improvements or other measures to improve traffic congestion or vehicular movement with regard to existing conditions or conditions anticipated to result from the development.
9. Improvements to site drainage (storm water) or drainage in the area of the development not otherwise required by the Code of Ordinances.
10. Limitations on signage.
11. Creation or preservation of public or private parkland or open space.
12. Other representation, limitations, improvements, or provisions that may be approved by City Council.

## ORDINANCE DEVIATIONS

Section 7.13.2.D.i.c(2) permits deviations from the strict interpretation of the Zoning Ordinance within a PRO agreement. These deviations must be accompanied by a finding by City Council that "***each Zoning Ordinance provision sought to be deviated would, if the deviation were not granted, prohibit an enhancement of the development that would be in the public interest, and that approving the deviation would be consistent with the Master Plan and compatible with the surrounding areas.***" Such deviations must be considered by City Council, who will make a finding of whether to include those deviations in a proposed PRO agreement. A PRO agreement would be considered by City Council only after tentative approval of the proposed concept plan and rezoning.

Staff has reviewed the applicant's Concept Plan in as much detail as possible to determine what deviations from the Zoning Ordinance are currently shown. The applicant may choose to revise the concept plan to better comply with the standards of the Zoning Ordinance, or may proceed with the plan as submitted with the understanding that those deviations would have to be approved by City Council in a proposed PRO agreement. **The applicant provided a request for certain deviations related to the area to be rezoned to RM-1. No detailed plans are provided for the portion to be rezoned to B-3, and no deviations, conditions or proposed benefits that would outweigh any detriments. The applicant should refer to all review letters and identify what deviations they would seek and what they would revise the plan to conform**.

The following are Ordinance deviations that have been requested by the applicant *shown in italics*. **Staff comments are in bold.**

1. Building Orientation *(Sec. 3.8.2.D): deviation is requested for proposed residential building to not be configured 45 degrees to the property lines normally for aesthetic reasons. Most of the buildings are not on any main road and they front to a substantial irregular shaped 20-acre wetland nature area of a minimum 200 feet wide separation across from Toll's existing multifamily Ridgeview project. Also, please note, this is one of the most common easily granted variance requests: where layouts are dictated by natural land features such as two rivers and large canyon, not created by the applicant.* **This deviation has been commonly requested and granted in both PRO development projects and in by-right multiple family site plan projects.**

2. Side and Rear Setbacks *(Sec 3.1.7.D and Sec 3.6.2.B): A Zoning Ordinance deviation is requested to reduce the side setback from 75 feet to 25 feet along the north property line for two residential buildings abutting the proposed commercial area (B-3). This has been granted elsewhere in the city and still includes screening between the residential and commercial. That screening is located on the residential edge of the zoning line that separates the residential from the commercial and functions with the same screening effect. (Only a small portion, at northwest corner being wall plus landscape, instead of berm.) Deviates from Section 5.5.3.A.ii but provides same screening, as it is located between the uses.*

3. Parking along Major Drives *(Sec. 5.10): A Zoning Ordinance deviation is requested to allow for perpendicular parking on a major drive*. **Angled and perpendicular parking is permitted on a minor drive, but not on a major drive; a total of 8 spaces of on-street perpendicular parking for guests is proposed the Major Drive in two locations.**

4. Major Drive Radius *(Sec. 5.10):* Deviation from the ordinance requirement for a minimum centerline radius of 100 feet, to allow the 85-foot radius shown at the western curve.

5. Landscape Berms (Section 5.5.3.A.ii): *A Zoning Ordinance deviation is requested to not provide a 10 to 15-foot-high landscape berm on a proposed RM-1 district adjacent to an I-1 district. This deviation is requested to wave this requirement to preserve open viewing to the beautiful natural features instead of the usual berm screening that blocks the views from industrial*. **The berm would be unnecessary in this case as the adjacent I-1 area is east of the railroad tracks and would likely result in greater wetland and woodland impacts.**

6. Right-of-Way Landscaping (Section 5.5.3.B.ii): *A deviation for the lack the required street trees and berm along 10 Mile Road due to underground utilities.* **The required trees are to be provided elsewhere. This deviation is supported due to the utility conflicts.**

7. Adjacent to Public Rights-of-Way – Berm/Wall (Zoning Sec. 5.5.3.B.ii, iii)*:* The required 3-foot-tall berm is not proposed. **This deviation is not supported.**

8. Building Foundation Landscaping *(*Zoning Sec 5.5.3.D): None of the commercial buildings meet the requirements for building foundation landscaping. **This deviation is not supported.**

9. Distance between Buildings *(Sec 3.8.2.H): A Zoning Ordinance deviation is requested to reduce the building separation distance from the calculated formula (resulting in 31-32.72 feet required) to a distance of 30 feet between all buildings.* **This deviation of less than 3 feet is considered minor and enables the layout of this project to fit within the available space while minimizing wetland and woodland impacts.**

10. Section 9 Waiver (Section 5.15): Proposed elevations for residential buildings have an underage of minimum required brick on all rear and some front facades (26-27% proposed, 30% minimum required) and an overage of Asphalt shingles (56% front side, 50% maximum allowed). **As the deviations are minor and do not adversely affect the aesthetic quality of the facades, the waiver is supported.**

See other review letters for additional possible deviations to be addressed in future submittals. All deviations from the ordinance requirements shall be identified and included in PRO Agreement. Any additional deviations identified during Site Plan Review (after the Concept Plan and PRO Agreement is approved), will require amendment of the PRO Agreement.

## APPLICANT'S BURDEN UNDER PRO ORDINANCE

The Planned Rezoning Overlay ordinance (PRO) requires the applicant to demonstrate that certain requirements and standards are met. The applicant should be prepared to discuss these items, especially in number 1 below, where the ordinance suggests that the enhancement under the PRO request would be unlikely to be achieved or would not be assured without utilizing the Planned Rezoning Overlay. Section 7.13.2.D.ii states the following:

1. *(Sec. 7.13.2.D.ii.a) The PRO accomplishes the integration of the proposed land development project with the characteristics of the project area in such a manner that results in an enhancement of the project area as compared to the existing zoning that*

*would be unlikely to be achieved or would not be assured in the absence of the use of a Planned Rezoning Overlay.*

2. *(Sec. 7.13.2.D.ii.b) Sufficient conditions shall be included on and in the PRO Plan and PRO Agreement such that the City Council concludes, in its discretion, that, as compared to the existing zoning and considering the site specific land use proposed by the applicant, it would be in the public interest to grant the Rezoning with Planned Rezoning Overlay. In determining whether approval of a proposed application would be in the public interest, the benefits which would reasonably be expected to accrue from the proposal shall be balanced against, and be found to clearly outweigh the reasonably foreseeable detriments thereof, taking into consideration reasonably accepted planning, engineering, environmental and other principles, as presented to the City Council, following recommendation by the Planning Commission, and also taking into consideration the special knowledge and understanding of the City by the City Council and Planning Commission.*

## IDENTIFYING BENEFITS TO PUBLIC RESULTING FROM THE REZONING AND THE PROPOSED DEVIATIONS

Section 7.13.2.D.ii states that the City Council must determine that the proposed PRO rezoning would be in the public interest and that the benefits to the public of the proposed PRO rezoning would clearly outweigh the detriments. The following benefits suggested by the applicant (*as listed in their narrative*) appear to qualify as public benefits as resulting from the development proposal:

1. *"The complete east portion adjacent to the railroad tracks and the south 50-foot-wide strip along the wetland of the proposed PRO (15.87 acres of the 27.07 RM-1 rezoning) are being retained as a natural area with a conservation easement to preserve its existing marshland and wildlife. This natural area, with wetlands, wraps around the PRO and includes on the west end a proposed new 0.4 acre park/playground located between the proposed residential and retail sites. The proposed trail system, with its overlooks near the Novi Athletic Club becomes a usable and accessible community resource."* **It would be beneficial to the City to have these wetland and woodland areas permanently protected within conservation easements. This area is covered by floodplain associated with the Walled Lake Branch of the Middle Rouge River, and Chapman Creek, so protecting the land around the rivers would benefit the watershed and wildlife habitat. It is unlikely that this area would ever be proposed for development because of the floodplain.**

2. *"To help achieve walkability and connectivity of the entire area, a trail system is being added which consists of new paths and existing sidewalks. This walkway system provides connectivity between surrounding existing residential areas and new proposed PRO residential area with all the marshland nature areas, the proposed tennis courts/pickleball courts, the Novi Athletic Club, Ice Arena, and Dog Park, and with the new proposed local (retail) along Ten Mile Road. The retail consists of the new proposed retail and restaurant areas, and the existing Walgreen's and dental office. New Walkways and bike paths that overlook 15.87 acre wildlife area and connect this PRO development to the recreation areas: The $3.2 million dollars worth of Novi 10 land previously donated to the city, initiated by Novi request (18 acres of land): For the Novi Arena Facility and the Novi Dog Park."* **The applicant is asked to clarify the intent of this improvement, and whether the applicant will be arranging and conducting off-site improvements.**

3. *"Two new tennis courts/pickleball courts are being added at the north end of the new conservation area along 10 Mile Road, as well as parking spaces for the courts."* **A new curb cut would be required to access the parking area, which may require a driveway spacing deviation. The plan indicates the new courts would be available for public use. The applicant would need to clarify if they intend to be responsible for on-going maintenance of**

**the improvements proposed. Additional study of the area proposed for the courts will be needed.**

4. The applicant's narrative includes an appeal to consider as a public benefit his previous land donation of 18 acres (valued at $3.2 million) which the city used to construct the Novi Ice Arena and the Dog Park behind it. This donation was acknowledged in a letter of Commendation from former Mayor Richard Clark on January 28, 2000.

**This is a PRO in which the applicant seeks both a rezoning and a list of ordinance deviations. In Staff's opinion the proposed benefits to the City could be further clarified, and we have offered some suggestions for the applicant to consider in this and the other review letters.**

**The Planning Commission and City Council should offer their thoughts on whether the proposed benefits would qualify, and whether they have other ideas for improvements to the proposal.**

## NEXT STEP: PLANNING COMMISSION CONSIDERATION OF ELIGIBILITY

The Planning Commission will have an opportunity to discuss the initial submittal and eligibility of the rezoning request from OS-1 (Office Service) and I-1 (Light Industrial) to B-3 (General Business) and RM-1 (Multiple Family Low Rise Residential) with a Planned Rezoning Overlay.

As stated in the newly amended PRO Ordinance,

> *In order to be eligible for the proposal and review of a rezoning with PRO, an applicant must propose a rezoning of property to a new zoning district classification, and must, as part of such proposal, propose clearly-identified site-specific conditions relating to the proposed improvements that,*
>
> *(1) are in material respects, more strict or limiting than the regulations that would apply to the land under the proposed new zoning district, including such regulations or conditions as set forth in Subsection C below; and*
>
> *(2) constitute an overall benefit to the public that outweighs any material detriments or that could not otherwise be accomplished without the proposed rezoning.*

(Click here for Full text of the PRO ordinance, including Subsection C)

This item is scheduled for initial review and comment on the PRO Plan on Wednesday, February 21, 2024. **Please ensure that the rezoning signage, as shown on Sheet 6 in the Rezoning Sign Detail, modified as appropriate for the locations in the zoning sign plan, are posted in the appropriate location no later than February 1, 2024, to give proper notice prior to the public hearing before the Planning Commission on February 21, 2024.**

## CITY COUNCIL CONSIDERATION OF ELIGIBILITY

Following the Planning Commission's initial review of the proposed project, the City Council will likewise have the opportunity to review the PRO proposal and comment on whether the project is eligible for the PRO process.

If the applicant has any questions concerning the above review or the process in general, do not hesitate to contact me at 248.347.0484 or lbell@cityofnovi.org.

Lindsay Bell

_____

Lindsay Bell, *AICP*, Senior Planner

**PLANNING REVIEW CHART:** B-3 and RM-1 with PRO Rezoning

**Review Date:** January 24, 2024
**Review Type:** 2nd Revised PRO Initial Concept
**Project Name:** JZ23-09 Novi-Ten Mile
East of Novi Road, South of Ten Mile
**Plan Date:** January 2, 2024
**Prepared by:** Lindsay Bell, Senior Planner
**E-mail:** lbell@cityofnovi.org; **Phone:** (248) 347-0484

*Items in **Bold** need to be addressed by the applicant with next submittal. Items in **Underlined Bold** are possible deviations identified. Underlined items need to be addressed during the Site Plan phase. Italic items are to be noted.*

| Item | Required Code | Proposed | Meets Code | Comments |
|---|---|---|---|---|
| **Zoning and Use Requirements** | | | | |
| **Master Plan** (adopted July 27, 2017) | West: Community Office; East: Industrial, R&D, Tech | 6.97 acres with 35,900 sf of commercial/office; 71-unit residential development with PRO overlay on 27.07 acres; | **No** | *Proposed rezoning is not consistent with the 2016 Master Plan* |
| **Area Study** | The site does not fall under any special category | NA | NA | |
| **Zoning** (Effective January 8, 2015) | OS-1 Office Service; I-1 Light Industrial | B-3 General Business; RM-1 Low Density Low-rise Multi-Residential District | **No** | **Planned Rezoning Overlay proposed – see detailed comments in Planning Review letter** |
| **Uses Permitted** (Sec 3.1.21.B & C) | Office and Service Uses Sec. 3.1.21.B. - Principal Uses Permitted. Sec. 3.1.21.C. – Special Land Uses Permitted. | 4 commercial buildings ~35,900 square feet shown for B-3 area (assumes restaurants and retail uses) Multiple Family Residential – 71 units | **TBD** | **B-3 use proposed exclusions are gas station, auto repair, car wash, marijuana sales, check cashing and pawn shop** |
| **Phasing** | Provide phases lines and detail description of activities in each phase | Applicant indicates Phasing not proposed | NA | |
| **Planned Rezoning Overlay Document Requirements (Section 7.13.2 and SDM:** Site development Manual) | | | | |
| **Written Statement** (Section 7.13.2) The statement should include the following: | Statement of eligibility for PRO Approval: Describe the rezoning requested including uses proposed, justification for why it makes sense | Provided in narrative | **TBD** | |
| | How does the project constitute an overall benefit to the public that outweighs any material detriments or could otherwise be accomplished without the rezoning? | Provided in narrative | Yes | **See detailed comments in Planning Review letter** |

| Item | Required Code | Proposed | Meets Code | Comments |
|---|---|---|---|---|
| | Deviations and Conditions proposed for inclusion in the PRO Agreement (i.e., Zoning Ordinance deviations, limitation on total units, height or uses, etc) | Some deviations and conditions proposed; Limitation on uses for B-3 portion | **TBD** | **See detailed comments and suggested conditions in Planning Review** |
| **Rezoning Traffic Impact Study** Site development Manual | Required regardless of site size, with requirements in SDM | Provided | Yes | *See TIS Review from AECOM* |
| **Community Impact Statement** (Sec. 2.2) | Required according to site plan manual (SDM link: Site development Manual) | Provided | Yes | |
| **Rezoning Signs** *(Site Plan Development Manual)* | Sign location plan<br><br>Mock-up of sign details | Provided in binder<br><br>Provided Sheet 6 | Yes<br><br>Yes | |
| **B-3 Commercial: Height, bulk, density and area limitations** (Sec 3.1.12.D) | | | | |
| **Frontage on a Public Street.** (Sec. 5.12) | Frontage on a Public Street is required | The site has frontage and access to Ten Mile Road | Yes | |
| **Minimum Zoning Lot Size** for each Unit: in Acres | Except where otherwise provided in this Ordinance, the minimum lot area and width, and the maximum percent of lot coverage shall be determined on the basis of off-street parking, loading, greenbelt screening, yard setback or usable open space | 42.9 acres total site size of existing parent parcels; **6.97 acres to be rezoned to B-3, 27.07 acres to RM-1** | Yes | *Remaining acreage excluded from PRO to remain OS-1 District* |
| **Minimum Zoning Lot Size** for each Unit: Width in Feet | | | NA | |
| **Maximum % of Lot Area Covered** (By All Buildings) | Section 3.6.2.D | | | |
| **Building Height** | 30 ft. | 23 ft max proposed | Yes | **Building height could be a condition that is more limiting than ordinance allows** |
| **B-3 Building Setbacks** (Sec 3.1.12.D) | | | | |
| Front (along 10 Mile Rd) | 30 ft. | 90 ft | Yes | **Building setbacks could be a condition that is** |

| Item | Required Code | Proposed | Meets Code | Comments |
|---|---|---|---|---|
| Rear (South) | 20 ft. | 91 ft | Yes | **more limiting than ordinance allows** |
| Side (East & West) | 15 ft. | 73 ft | Yes | |
| **B-3 Parking Setback** (Sec 3.1.12.D) Refer to applicable notes in Sec 3.6.2 | | | | |
| Front (along 10 Mile Rd) | 20 ft. | 20 ft | Yes | |
| Rear (West) | 10 ft. | 20 ft | Yes | |
| Side (North & South) | 10 ft. | 16 ft. min | Yes | |
| **B-3: Note To District Standards** (Sec 3.6.2) | | | | |
| **Exterior Side Yard Abutting a Street** (Sec 3.6.2.C) | All exterior side yards abutting a street shall be provided with a setback equal to front yard. | No exterior side yards | NA | |
| **Off-Street Parking in Front Yard** (Sec 3.6.2.E) | Front yard parking permitted if setback requirements of district and landscaping standards of Section 5.5.3 are observed | | | **See Landscape review letter for comments** |
| **Setback Abutting a Residential District** (Sec 3.6.2.L) | Minimum yard setback shall be 20 feet | 20 ft min proposed on east side | Yes | |
| **Wetland/Watercourse Setback** (Sec 3.6.2.M) | A setback of 25ft from wetlands and from high watermark course shall be maintained | Buffers are now shown on the plan and area of impact quantified | Yes | **Requires a natural features encroachment authorization** |
| **Parking setback screening** *(Sec 3.6.2.P)* | Required parking setback area shall be landscaped per Section 5.5.3. | | | **See Landscape review letter for comments** |
| **Modification of parking setback requirements** *(Sec 3.6.2.Q)* | The Planning Commission may modify parking setback requirements based on conditions listed in Sec 3.6.2.Q | | NA | |
| **B-3 District Required Conditions** *(Sec. 3.10)* | | | | |
| **Loading Requirements** *(Sec. 3.10.3.A)* | No truck well, loading dock, overhead door or other type of service bay door shall face a major thoroughfare, nor an abutting residential district. Pedestrian exits or emergency door are permitted on such building facades. | No truck wells or overhead doors indicated | Yes | |
| **Off-Street Loading and Unloading** | Required in the rear yard at a ratio of 10 sf for | | | |

| Item | Required Code | Proposed | Meets Code | Comments |
|---|---|---|---|---|
| (Sec. 5.4) | each front foot to building.<br><br>Bldg A: 1,700 sf<br>Bldg B: 1,700 sf<br>Bldg C: 600 sf<br>Bldg D: 700 sf | <br><br>Bldg A: 2,380 sf<br>Bldg B: 2,380 sf<br>Bldg C: 840 sf<br>Bldg D: 980 sf | <br><br>Yes | |
| **Number of Parking Spaces**<br>Restaurants<br>Retail<br>(Sec.5.2.12.A) | Restaurant (sit Down): 1 for each 70 sf GFA<br><br>Retail: 1 for each 200 sf GLFA<br>Assume:<br>Restaurant – 10,700 @ 70 sf = 153 spaces<br><br>Retail – 26,700 sf / 200 sf = 134 spaces<br><br>**288 spaces total** | Plan shows total of 298 spaces provided for commercial area | Yes | |
| **Parking Space Dimensions and Maneuvering Lanes** (Sec. 5.3.2) | - 90° Parking: 9 ft. x 19 ft.<br>- 24 ft. two way drives<br>9 ft. x 17 ft. parking spaces allowed along 7 ft. wide interior sidewalks as long as detail indicates a 4" curb at these locations and along landscaping | - 28 ft. two-way drives | Yes | **Refer to Traffic comments for comments on parking dimensions** |
| **Parking stall located adjacent to a parking lot entrance** (public or private)<br>(Sec. 5.3.13) | shall not be located closer than twenty-five (25) feet from the street right-of-way (ROW) line, street easement or sidewalk, whichever is closer | Does not apply | NA | |
| **Barrier Free Spaces**<br>Barrier Free Code | 2 accessible space (including 1 Van accessible) for every 26 to 50 spaces | | **TBD** | This would be reviewed in site plan submittal |
| **Barrier Free Space Dimensions** Barrier Free Code | - 8' wide with an 8' wide access aisle for van accessible spaces<br>- 8' wide with a 5' wide access aisle for regular accessible spaces | | **TBD** | This would be reviewed in site plan submittal |
| **Barrier Free Signs**<br>Barrier Free Code | One sign for each accessible parking space. | | **TBD** | This would be reviewed in site plan submittal |
| **Corner Clearance**<br>(Sec. 5.9) | No fence, wall, plant material, sign or other | | **TBD** | Note Corner Clearance zone on site plan and |

| Item | Required Code | Proposed | Meets Code | Comments |
|---|---|---|---|---|
| | obstruction shall be permitted within the clear view zone above a height of 2 feet from established street grade | | | landscape plans – this will be reviewed in site plan submittal |
| **Minimum number of Bicycle Parking** (Sec. 5.16.1) Retail/Restaurants/ Business Offices | 5% of required auto spaces, min. 2 spaces | | TBD | This would be reviewed in site plan submittal along with bike parking layout |
| **Bicycle Parking General requirements** *(Sec. 5.16)* | - No farther than 120 ft. from the entrance being served<br>- When 4 or more spaces are required for a building with multiple entrances, the spaces shall be provided in multiple locations<br>- Spaces to be paved and the bike rack shall be inverted "U" design<br>- Shall be accessible via 6 ft. paved sidewalk | | TBD | |
| **Bicycle Parking Lot layout** *(Sec 5.16.6)* | Parking space width: 7 ft.<br>One tier width: 11 ft.<br>Two tier width: 18 ft.<br>Maneuvering lane width: 4 ft.<br>Parking space depth: 32 in | | TBD | |
| **Residential: Height, bulk, density and area limitations** (Sec 3.1.8.D) | | | | |
| **Frontage on a Public Street.** (Sec. 5.12) | Frontage on a Public Street is required | The site has frontage and access to Ten Mile Road via private street | Yes | |
| **Minimum Parcel Size** for each Unit: in Acres (Sec 3.8.1) | RM-1 and RM-2 Required Conditions | | Yes | |
| **Minimum Zoning Lot Size** for each Unit: Width in Feet (Sec 3.8.1) | | | | |
| **Open Space Area** (Sec 3.1.8.D) | 200 sf Minimum usable open space per dwelling unit<br>For a total of 71 dwelling units, required Open Space: 14,200 SF<br><br>Refer to definitions for Usable Open Space and Open Space | Sheet 6 indicates 107,423 sf of usable open space provided - Consists of 50' width surrounding walking path, park with picnic tables/gazebo, and pickleball court area | Yes | **Open space could be a condition that is more strict than ordinance requires** |

| Item | Required Code | | Proposed | Meets Code | Comments |
|---|---|---|---|---|---|
| **Maximum % of Lot Area Covered** (By All Buildings) | 25% | | 14% | Yes | **Lot Coverage could be a condition that is more strict than ordinance requires** |
| **Building Height** (Sec. 3.20) | 35 ft. or 2 stories whichever is less | | 29 feet | Yes | **Building height could be a condition that is more strict than ordinance requires** |
| **Minimum Floor Area per Unit** (Sec. 3.1.8.D) | Efficiency | 400 sq. ft. | Not proposed | NA | |
| | 1 bedroom | 500 sq. ft. | Not proposed | NA | |
| | 2 bedroom | 750 sq. ft. | Not proposed | NA | |
| | 3 bedroom | 900 sq. ft. | 1,600-1,900 sq. ft. | Yes | |
| | 4 bedroom | 1,000 sq. ft. | Not Proposed | NA | |
| **Maximum Dwelling Unit Density/Net Site Area** (Sec. 3.1.8.D) | Efficiency | 5% | Not proposed | Yes | **Will ROW be dedicated? Could be considered additional public benefit** |
| | 1 bedroom | 10.9 Max 20% | Not proposed | | |
| | 2 bedroom | 7.3 | Not proposed | | |
| | 3+ bedroom | 5.4 | 4.5 DUA<br><br>Total site: 27.07 Acres<br>ROW Area: ?? Acres<br>Wetland: 11.33<br>**Net Site Area (given by applicant): 15.74 Acres** | Yes | |
| **Residential Building Setbacks** (Sec 3.1.8.D) | | | | | |
| Front (along 10 Mile Rd) | 75 ft. | | 75 ft. | Yes | *Additional setbacks required by Sec 3.6.2.B* |
| Rear (South) | 75 ft. | | 75 ft. | Yes | |
| Side | 75 ft. | | 75 ft.<br>**25 ft adjacent to B-3 portion** | Yes<br>**No** | **This would be a deviation.** |
| **Parking Setback** (Sec 3.1.8.D) (Sec 3.1.12.D) Refer to applicable notes in Sec 3.6.2 | | | | | |
| Front (along 10 Mile Rd) | 75 ft. | | 20 ft. on all sides. Parking is provided in the garage and in front of the garage. Proposed parking along the streets meets the setback requirements | Yes | |
| Rear (West) | 20 ft. | | | Yes | |
| Side (North & South) | 20 ft. | | | Yes | |
| **Residential: Note to District Standards** (Sec 3.6.2) | | | | | |

| Item | Required Code | Proposed | Meets Code | Comments |
|---|---|---|---|---|
| **Building structure setback** (Sec 3.6.2.B) | Other than single family or 2-family, building setback shall be minimum of whichever is greater:<br>1) height of main building;<br>2) 75 feet; or<br>3) setback listed in Section 3.1 (50 ft front) | Setbacks of 25 feet for 2 buildings adjacent to B-3 area | **No** | **This would be a deviation for side yard setbacks for 2 buildings adjacent to B-3 area.** |
| **Exterior Side Yard Abutting a Street** (Sec 3.6.2.C) | All exterior side yards abutting a street shall be provided with a setback equal to front yard. | No exterior side yards | NA | |
| **Wetland/Watercourse Setback** (Sec 3.6.2.M) | A setback of 25 ft from wetlands and from high watermark course shall be maintained | Wetlands exist in several areas of the site; impacts proposed | Yes | **See Wetland Review letter for detailed comments** |
| **RM-1 and RM-2 Required Conditions** (Sec 3.8) & (Sec 3.10) | | | | |
| **Total number of rooms** (Sec. 3.8.1) | Total No. of rooms < Net site area in SF/2000<br><br>**686,070 SF/2000 = 343** | Total number of rooms = 71 units x 4 rooms = **284 rooms** | Yes | *17% less than permitted* |
| **Public Utilities** (Sec. 3.8.1) | All public utilities should be available | All public utilities are available | Yes | **See Engineering Review for detailed comments** |
| **Maximum Number of Units** (Sec. 3.8.1.A.ii) | Efficiency < 5 percent of the units | Not Proposed | NA | |
| | 1 bedroom units < 20 percent of the units | Not Proposed | NA | |
| | Balance should be at least 2 bedroom units | All are 3-bedroom units | Yes | |
| **Room Count per Dwelling Unit Size** (Sec. 3.8.1.C)<br>*An extra room such as den, library or other extra room count as an additional bedroom | **Dwelling Unit Size** / **Room Count *** | | Yes | |
| | Efficiency / 1 | Not proposed | | |
| | 1 bedroom / 2 | Not proposed | | |
| | 2 bedroom / 3 | Not proposed | | |
| | 3 or more bedrooms / 4 | 4 | | |
| For the purpose of determining lot area requirements and density in a multiple-family district, a room is a living room, dining room or bedroom, equal to at least eighty (80) square feet in area. A room shall not include the area in kitchen, sanitary facilities, utility provisions, corridors, hallways, and storage. Plans presented showing one (1), two (2), or three (3) bedroom units and including a "den," "library," or other extra room shall count such extra room as a bedroom for the purpose of computing density. | | | | |
| **Setback along natural shoreline** (Sec. 3.8.2.A) | A minimum of 150 feet along natural shoreline is required. | No natural shoreline exists within the property | NA | |

| Item | Required Code | Proposed | Meets Code | Comments |
|---|---|---|---|---|
| **Structure frontage** (Sec. 3.8.2.B) | Each structure in the dwelling group shall front either on a dedicated public street or approved private drive. | All structures front on proposed private major drive | Yes | |
| **Maximum length of the buildings** (Sec. 3.8.2.C) | A single building or a group of attached buildings cannot exceed 180 ft. | Max of ~170 proposed, building entrances proposed | Yes | |
| **Modification of maximum length** (Sec. 3.8.2.C) | Planning Commission may modify the extra length up to 360 ft. if | | NA | |
| | Common areas with a minimum capacity of 50 persons for recreation or social purposes | | | |
| | Additional setback of 1 ft. for every 3 ft. in excess of 180 ft. from all property lines. | | | |
| **Building Orientation** (Sec. 3.8.2.D) | Where any multiple dwelling structure and/ or accessory structure is located along an outer perimeter property line adjacent to another residential or nonresidential district, said structure shall be oriented at a minimum angle of forty-five (45) degrees to said property line. | Buildings orientations do not appear to meet the minimum requirement for all buildings | **No** | **Applicant requests a deviation in the PRO Agreement** |
| **Yard setback restrictions** (Sec. 3.8.2.E) | Within any front, side or rear yard, off-street parking, maneuvering lanes, service drives or loading areas cannot exceed 30% of yard area | No off-street parking or loading area is proposed in exterior yard areas | Yes | |
| **Off-Street Parking or related drives** (Sec. 3.8.2.F)<br><br>Off-street parking and related drives shall be… | No closer than 25 ft. to any wall of a dwelling structure that contains openings involving living areas or | Complies – 25 feet | Yes | |
| | No closer than 8 ft. for other walls or | In conformance | Yes | |
| | No closer than 20 ft. from ROW and property line | In conformance | Yes | |
| **Pedestrian Connectivity** (Sec. 3.8.2.G) | 5 feet sidewalks on both sides of the Private drive are required to permit | 5-foot Sidewalks shown along the private drive | Yes | |

| Item | Required Code | Proposed | Meets Code | Comments |
|---|---|---|---|---|
| | safe and convenient pedestrian access. | | | |
| | Where feasible sidewalks shall be connected to other pedestrian features abutting the site. | Sidewalks shown to connect to Ridgeview pathway | Yes | |
| | All sidewalks shall comply with barrier free design standards | | | This would be reviewed in site plan submittal |
| **Minimum Distance between the buildings** (Sec. 3.8.2.H) | **(**Total length of building A **+** total length of building B **+** 2(height of building **+** height of building B)**)/**6<br><br>**Calculations show 31-36 feet required** | 30-31 feet | **No** | **Applicant requests deviation for distance between buildings in a few locations (variance of 1- 3 feet)** |
| **Minimum Distance between the buildings** (Sec. 3.8.2.H) | In no instance shall this distance be less than thirty (30) feet unless there is a corner-to-corner relationship in which case the minimum distance shall be fifteen (15) feet. | Buildings are min. of 30 ft. from each other | Yes | |
| **Number of Parking Spaces** Residential, Multiple-family (Sec.5.2.12.A) | Two (2) for each dwelling unit having two (2) or less bedrooms and two and one-half (2 ½) for each dwelling unit having three (3) or more bedrooms<br>**For 71 Three-BR units, required spaces = 178 spaces** | 142 garage spaces<br>142 driveway spaces<br>10 visitor spaces<br><br>**294 spaces total** | Yes | |
| **Parking Space Dimensions and Maneuvering Lanes** (Sec. 5.3.2) | - 90° Parking: 9 ft. x 19 ft.<br>- 24 ft. two way drives<br>- 9 ft. x 17 ft. parking spaces allowed along 7 ft. wide interior sidewalks as long as detail indicates a 4" curb at these locations and along landscaping | - 28 ft. two-way drives<br>- Parking shown in garages and driveways<br>- Parking spaces along drive - would need a deviation | Yes | **Refer to Traffic comments for comments on parking dimensions** |
| **Parking stall located adjacent to a parking lot entrance** (public or private) (Sec. 5.3.13) | - shall not be located closer than twenty-five (25) feet from the street right-of-way (ROW) line, street easement or sidewalk, whichever is closer | Does not apply | NA | |

| Item | Required Code | Proposed | Meets Code | Comments |
|---|---|---|---|---|
| **Barrier Free Spaces** Barrier Free Code | 2 accessible space (including 1 Van accessible) for every 26 to 50 spaces | 1 spaces provided | | This would be reviewed in site plan submittal |
| **Barrier Free Space Dimensions** Barrier Free Code | - 8' wide with an 8' wide access aisle for van accessible spaces<br>- 8' wide with a 5' wide access aisle for regular accessible spaces | | | |
| **Barrier Free Signs** Barrier Free Code | One sign for each accessible parking space. | | | |
| **Corner Clearance** (Sec. 5.9) | No fence, wall plant material, sign or other obstruction shall be permitted within the clear view zone above a height of 2 feet from established street grade | | | This would be reviewed in site plan submittal |
| **Minimum number of Bicycle Parking** (Sec. 5.16.1) Multiple-family residential | One (1) space for each five (5) dwelling units **Required: 15 Spaces** | 8 spaces in two locations; 16 spaces | Yes | |
| **Bicycle Parking General requirements** (Sec. 5.16) | No farther than 120 ft. from the entrance being served | 4 racks – 2 separate locations | Yes | |
| | When 4 or more spaces are required for a building with multiple entrances, the spaces shall be provided in multiple locations | | | |
| | Spaces to be paved and the bike rack shall be inverted "U" design<br>Shall be accessible via 6 ft. paved sidewalk | | | |
| **Bicycle Parking Lot layout** *(Sec 5.16.6)* | Parking space width: 7 ft.<br>One tier width: 11 ft.<br>Two tier width: 18 ft.<br>Maneuvering lane width: 4 ft.<br>Parking space depth: 32 in | Shown | Yes | **See new layout dimensions of recently adopted text amendment** |
| **5.10 Additional Road Design, Building Setback, And Parking Setback Requirements, Multiple-Family Uses** | | | | |
| **Road standards** *(Sec. 5.10)* | A private drive network within a cluster, two - family, multiple-family, or non-residential uses and | Major drive<br>28 feet wide | Yes | *Proposed road is "major drive" with direct access to exterior public road* |

| | | | | |
|---|---|---|---|---|
| | developments shall be built to City of Novi Design and Construction Standards for local street standards (28 feet back-to-back width) | | | |
| **Major Drives** | – Width: 28 feet | Proposed major drive is 28 feet wide | Yes | |
| **Minor Drive** | – Cannot exceed 600 feet<br>– Width: 24 feet with no on-street parking<br>– Width: 28 feet with parking on one side<br>– Parking on two sides is not allowed<br>– Needs turn-around if longer than 150 feet | No minor drive proposed | NA | |
| **Parking on Major and Minor Drives** (Sec. 5.10) | – Angled and perpendicular parking, permitted on minor drive, but not from a major drive;<br>– minimum centerline radius: 100 feet<br>– Adjacent parking and on-street parking shall be limited near curves with less than two-hundred thirty (230) feet of centerline radius<br>– Minimum building setback from the end of a parking stall shall be 25 feet in residential districts. | **On-street perpendicular parking is proposed on the Major Drive**<br><br>**Minimum centerline radius is 85-120'** | **No**<br><br>**No** | **Deviation for major road standards: on-street perpendicular parking, minimum centerline radius, and parking near curve greater than 230 ft?** |
| **Accessory and Roof top Structures** | | | | |
| **Dumpster**<br>Sec 4.19.2.F | - Located in rear yard<br>- Attached to the building or<br>- No closer than 10 ft. from building if not attached<br>- Not located in parking setback<br>- If no setback, then it cannot be any closer than 10 ft, from property line.<br>- Away from Barrier free Spaces | Individual trash pick-up for residential units<br><br>Dumpsters shown for commercial appear to be 20 feet from residential | Yes | |

| | | | | |
|---|---|---|---|---|
| **Dumpster Enclosure** Sec. 21-145. (c) Chapter 21 of City Code of Ordinances | - Screened from public view<br>- A wall or fence 1 ft. higher than height of refuse bin<br>- And no less than 5 ft. on three sides<br>- Posts or bumpers to protect the screening<br>- Hard surface pad.<br>- Screening Materials: Masonry, wood or evergreen shrubbery | Trash screening enclosures shown | Yes | *Details will be reviewed in site plan submittals* |
| **Roof top equipment and wall mounted utility equipment** Sec. 4.19.2.E.ii | All roof top equipment must be screened and all wall mounted utility equipment must be enclosed and integrated into the design and color of the building | Not shown | TBD | *Details will be reviewed in site plan submittals* |
| **Roof top appurtenances screening** | Roof top appurtenances shall be screened in accordance with applicable facade regulations, and shall not be visible from any street, road or adjacent property. | No roof top equipment for residential | TBD | |
| **Sidewalks and Other Requirements** | | | | |
| **Non-Motorized Plan** | Proposed Off-Road Trails and Neighborhood Connector Pathways. | 8-foot concrete pathway proposed; Mid-block crossings? | Yes | **Show any off-road trails proposed, especially if offered as a public benefit** |
| **Sidewalks** (Subdivision Ordinance: Sec. 4.05) | Sidewalks are required on both sides of proposed drives | 5-ft Sidewalks are proposed on both sides of the proposed private drive | Yes? | |
| **Public Sidewalks** (Chapter 11, Sec.11-276(b), Subdivision Ordinance: Sec. 4.05) | A 8-foot sidewalk is required along 10 Mile Road | Sidewalk proposed | Yes | |
| **Entryway lighting** Sec. 5.7 | One street light is required per entrance. | | | Applicant to work with engineering and DTE on the location and type of the fixtures proposed in the right of way for residential community |
| **Building Code and Other Requirements** | | | | |
| **Building Code** | Building exits must be connected to sidewalk | | NA | **Barrier-free requirements?** |

| | | | | |
|---|---|---|---|---|
| | system or parking lot. | | | |
| **Design and Construction Standards Manual** | Land description, Sidwell number (metes and bounds for acreage parcel, lot number(s), Liber, and page for subdivisions). | | | **Provide a legal description of proposed parcels with formal Concept Plan submittal** |
| **General layout and dimension of proposed physical improvements** | Location of all existing and proposed buildings, proposed building heights, building layouts, (floor area in square feet), location of proposed parking and parking layout, streets and drives, and indicate square footage of pavement area (indicate public or private). | Generally provided | Yes | **Refer to all review letters for additional information requested.** |
| **Economic Impact** | - Total cost of the proposed building & site improvements<br>- Number of anticipated jobs created (during construction & after building is occupied, if known) | - $35 million construction cost<br>- 100 new permanent full and part-time jobs, numerous construction jobs | | |
| **Other Permits and Approvals** | | | | |
| **Development/ Business Sign**<br><br>(City Code Sec 28.3)<br><br>Sign permit applications may be reviewed an part of Preliminary Site Plan or separately for Building Office review. | The leading edge of the sign structure shall be a minimum of 10 ft. behind the right-of-way.<br><br>Entranceway shall be a maximum of 24 square feet, measured by completely enclosing all lettering within a geometric shape.<br><br>Maximum height of the sign shall be 5 ft. | | | **Show the location of any entranceway signs if proposed;**<br>**Deviations from sign ordinance may be included in PRO submittal if variances are anticipated** |
| **Development and Street Names** | Development and street names must be approved by the Street Naming Committee before Preliminary Site Plan approval | Novi Ten Commercial and Towns at Novi Station proposed | | Submit a Project & Street Naming Application to get all names approved |
| **Property Split** | The proposed property split must be submitted to the Assessing Department for approval. | | | Property combinations/splits must be approved before final site plan approval |

| | | | | |
|---|---|---|---|---|
| **Other Legal Requirements** | | | | |
| **PRO Agreement** (Sec. 7.13.2.D(3) | A PRO Agreement shall be prepared by the City Attorney and the applicant (or designee) and approved by the City Council, and which shall incorporate the PRO Plan and set forth the PRO Conditions and conditions imposed | | | If tentative approval is granted, Council will direct City Attorney to prepare the agreement, which will then be shared with applicant for negotiation |
| **Master Deed/Covenants and Restrictions** | Applicant is required to submit this information for review with the Final Site Plan submittal | Not applicable at this moment | | If proposed, Master Deed draft shall be submitted prior to Stamping Set approval. |
| **Conservation easements** | Conservation easements may be required for woodland impacts | Conservation easements would be required if a condition in the PRO Agreement | | Draft documents would be required prior to stamping set approval. |
| **Lighting and Photometric Plan (Sec. 5.7)** | | | | |
| **Intent** (Sec. 5.7.1) | Establish appropriate minimum levels, prevent unnecessary glare, reduce spillover onto adjacent properties & reduce unnecessary transmission of light into the night sky | | Yes | |
| **Lighting Plan** (Sec. 5.7.A.i) | Site plan showing location of all existing & proposed buildings, landscaping, streets, drives, parking areas & exterior lighting fixtures | Provided separately for commercial and residential area | Yes | |
| **Building Lighting** (Sec. 5.7.2.A.iii) | Relevant building elevation drawings showing all fixtures, the portions of the walls to be illuminated, illuminance levels of walls and the aiming points of any remote fixtures. | Not provided | | **Provide building lighting at time of site plan submittal** |
| **Lighting Plan** (Sec.5.7.2.A.ii) | Specifications for all proposed & existing lighting fixtures | Provided | Yes | **Provide hours of operation** |
| | Photometric data | Provided | Yes | |
| | Fixture height | 25 feet commercial | Yes | |
| | Mounting & design | Provided | Yes | |
| | Glare control devices (Also see Sec. 5.7.3.D) | | | |
| | Type & color rendition of lamps | Provided – see below | TBD | |
| | Hours of operation | Not shown | | |

| | | | | |
|---|---|---|---|---|
| **Required Conditions** (Sec. 5.7.3.A) | Height not to exceed maximum height of zoning district (or 25 ft. where adjacent to residential districts or uses) | Commercial: 25 feet max<br>Residential: 6-10 feet proposed | Yes | |
| **Required Conditions** (Sec. 5.7.3.B) | - Electrical service to light fixtures shall be placed underground<br>- Flashing light shall not be permitted<br>- Only necessary lighting for security purposes & limited operations shall be permitted after a site's hours of operation | Notes provided | Yes | |
| **Indoor Lighting** *(Sec. 5.7.3.H)* | - Indoor lighting shall not be the source of exterior glare or spillover | | TBD | |
| **Security Lighting** (Sec. 5.7.3.H)<br><br>Lighting for security purposes shall be directed only onto the area to be secured. | - All fixtures shall be located, shielded and aimed at the areas to be secured.<br>- Fixtures mounted on the building and designed to illuminate the facade are preferred | | TBD | |
| **Color Spectrum Management** *(Sec. 5.7.3.F)* | Non-Res and Multifamily: For all permanent lighting installations - minimum Color Rendering Index of 70 and Correlated Color Temperature of no greater than 3000 Kelvin | CRI 70 for all fixtures<br><br>Appears 4000K CCT is proposed | **No** | *Clarify Correlated Color Temperature of fixtures – may not exceed 3000 Kelvin* |
| **Parking Lot Lighting** *(Sec. 5.7.3.J)* | - Provide the minimum illumination necessary to ensure adequate vision and comfort.<br>- Full cut-off fixtures shall be used to prevent glare and spillover. | Appears to be proposed | | |
| **Min. Illumination** (Sec. 5.7.3.L) | Parking areas: 0.2 min | 0.4 fc | Yes | **Provide missing minimum illumination levels** |
| | Loading & unloading areas: 0.4 min | 1.3 fc min | Yes | |
| | Walkways: 0.2 min | | | |
| | Building entrances, frequent use: 1.0 min | | | |
| | Building entrances, infrequent use: 0.2 min | | | |

| | | | | |
|---|---|---|---|---|
| **Average Light Level** *(Sec.5.7.3.L)* | Average light level of the surface being lit to the lowest light of the surface being lit shall not exceed 4:1 | Commercial: 3.8:1<br>Residential: 2.5:1 | Yes | *Revise calculations to show only lit areas (exclude 0.0 fc values to calculate ratio)* |
| **Max. Illumination adjacent to Non-Residential** *(Sec. 5.7.3.L)* | When site abuts a non-residential district, maximum illumination at the property line shall not exceed 1 foot candle | 0.5 max shown | Yes | |
| **Max. Illumination adjacent to Residential** *(Sec. 5.7.3.M)* | - Fixture height not to exceed 25 feet<br>- Cut off angle of 90 degrees or less<br>- No direct light source shall be visible at the property line adjacent to residential at ground level<br>- Maximum illumination at the prop line not to exceed 0.5 fc. | Max 25 feet shown<br><br>0.2 fc max shown at residential property line | Yes | |

**NOTES:**
1. This table is a working summary chart and not intended to substitute for any Ordinance or City of Novi requirements or standards.
2. The section of the applicable ordinance or standard is indicated in parenthesis. Please refer to those sections in Article 3, 4 and 5 of the zoning ordinance for further details
3. Please include a written response to any points requiring clarification or for any corresponding site plan modifications to the City of Novi Planning Department with future submittals.

**ENGINEERING REVIEW**
**October 27, 2023**

# PLAN REVIEW CENTER REPORT

10/27/2023

## Engineering Review

Novi-Ten PRO

JZ23-0009

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**Applicant**

Novi Ten Associates

**Review Type**

Revised Concept Plan Review

**Property Characteristics**

- Site Location: S of Ten Mile Road and East of Novi Road
- Site Size: 42.90 acres
- Plan Date: 10/4/2023
- Design Engineer: STA Siegal/Tuomaala Associates

**Project Summary**

- Proposed 71-unit residential condominiums with site access via 10 Mile Road. Private roads proposed.
- Construction of an approximately 39,500 square-foot building and associated parking. Site access would be provided via two proposed entrances on 10 Mile Road.
- Construction of a 5-foot-wide concrete sidewalk on both sides of the proposed private road, an 8-foot-wide concrete walk along a 10 Mile Road frontage, and an 8-foot-wide concrete pedestrian pathway extended from the existing path on the south side of the proposed improvement.
- Water service would be provided by an 8-inch extension from the existing 16-inch water main along the south side of 10 Mile Road and the existing 8-inch water main stub.
- Sanitary sewer service would be provided by connecting to an existing sanitary sewer along the south side of 10 Mile Road.
- Storm water would be collected by a single storm sewer collection system and detained in a basin sized for the 100-year storm event. The basin would subsequently dewater into the existing wetland east of basin footprint.

**Recommendation**

**We have no objection to the rezoning; Approval of the revised Concept Plan is recommended with the following items to be addressed in the next submittal.**

**Comments:**

The revised Concept Plan meets the general requirements of Chapter 11 with the following items to be addressed at the time of Preliminary Site Plan submittal (further engineering detail will be required at the time of the final site plan submittal):

**General**

1. A full engineering review was not performed due to the limited information provided in this submittal. Further information related to the utilities, easements, etc. will be required to provide a more detailed review.
2. The site plan shall be designed in accordance with the Design and Construction Standards (Chapter 11).
3. A right-of-way permit will be required from the City of Novi and Road Commission for Oakland County.
4. Any off-site easements must be executed prior to final approval of the plans. Drafts shall be submitted at the time of the Preliminary Site Plan submittal. The site plan is not considered feasible until it is confirmed that sewer can be extended to the property.
5. Submit a wetland permit application for the proposed 8-foot wide pathway at the time of Preliminary Site Plan submittal.
6. A letter from either the applicant or the applicant's engineer must be submitted with the Preliminary Site Plan submittal highlighting the changes made to the plans and addressing each of the comments in this review.
7. Show and label the master planned 60-foot half width right-of-way for 10 Mile Road. Label the additional right-of-way width to be dedicated along 10 Mile Road as "proposed" right-of-way.
8. Provide ADA ramps at accessible parking spaces.
9. Site distance measurements along Ten Mile shall be provided on the plans.
10. Clarify whether irrigation is proposed.

**Utilities**

11. The development under the proposed rezoning (62.8 REUs) would be either slightly higher or significantly lower than the range possible under the existing zoning (50.72 – 167.2 REUs). Therefore, the proposed impacts to the water and sewer system present no concerns.
12. The water main along Ten Mile is 16-inch. The plans currently show it as 12-inch. revise note #2 on sheet #6 accordingly.
13. OCWRC should be contacted to discuss their need to provide better access to the sewer along the east of this site. If discussions have already occurred, please provide information indicating OCWRC will be able to approve the proposed plan.

14. Our records show that there is an existing 8-inch sanitary crossing 10 Mile Road from the north side that we prefer you extend to serve your property.
15. OCWRC should be contacted to discuss the sanitary sewer connection to determine if they will allow a connection to the 36-inch interceptor manhole, which is under their jurisdiction. Show the existing utilities on the plans and the proposed connection to each. If discussions have already occurred, please provide information indicating OCWRC will be able to approve the proposed sewer connection.
16. Differentiate between existing and proposed utilities on the plans and indicate proposed connections.
17. Provide a basis of design for the proposed sanitary sewer and water main on the utility plan.
18. Provide a 20-foot easement over the proposed water main and sanitary sewer.
19. A tapping sleeve, valve and well shall be provided at every connection to existing mains.
20. The Non-Domestic User Survey form for sanitary sewer flow shall be submitted to the City so it can be forwarded to Oakland County.
21. The fire chief shall approve final locations of all hydrants.

**Paving & Grading**

22. Provide at least 3-foot of buffer distance between the sidewalk and any fixed objects, including hydrants and irrigation backflow devices. Include a note on the plan where the 3-foot separation cannot be provided.
23. Dimensions of parking stalls abutting a curb or sidewalk are to the face of curb or walk. All other dimensions are to back of curb unless otherwise indicated.
24. Provide existing topography and 2-foot contours extending at least 100 feet past the site boundary. Any off-site drainage entering this site shall be identified.
25. The proposed sidewalk on Ten Mile Road must be extended up to the east property line, or a variance will be required.

**Storm Water Management Plan**

26. Provide a sheet or sheets titled "Storm Water Management Plan" (SWMP) that complies with the Storm Water Ordinance and Chapter 5 of the new Engineering Design Manual (refer to the runoff coefficients, 1V:4H allowable basin slopes, etc.).
27. The SWMP must detail the storm water system design, calculations, details, and maintenance as stated in the ordinance.
28. Rather than a sediment forebay, a permanent water surface and storage volume are preferred. Refer to section 5.6.1 A. of the Engineering Design Manual for depth and volume requirements for wet detention basins.
29. A minimum permanent pool depth of 3 feet shall be provided. Where a permanent pool is provided for meeting the quality performance standards,

the volume of the permanent pool shall be equal to or greater than the first flush volume.

30. An adequate maintenance access route to the basin outlet structure and any other pretreatment structures shall be provided (15 feet wide, maximum slope of 1V:5H, and able to withstand the passage of heavy equipment). Verify the access route does not conflict with proposed landscaping.
31. A 25-foot vegetated buffer shall be provided around the perimeter of each storm water basin. This buffer cannot encroach onto adjacent lots.
32. Provide details for the outlet control structure.
33. Provide release rate calculations for the three design storm events (first flush, bank full, and 100-year).
34. The storm sewer connection to the future commercial area will need to be sized to accommodate the future flows.

**Flood Plain**

35. Application for a City floodplain permit shall be submitted as soon as possible to begin the review process. The City's floodplain consultant will review the submittal and provide initial comments regarding the review process.

**Soil Erosion and Sediment Control**

**36.** A SESC permit is required. A full review has not been completed at this time but will be completed once a complete package has been submitted, according to the permit application requirements.

**Off-Site Easements**

37. Any off-site easements must be executed prior to final approval of the plans. Drafts shall be submitted at the time of the Preliminary Site Plan submittal.

Please contact Adam Yako at 248-735-5695 with any questions.

Adam Yako
Project Engineer

**LANDSCAPE REVIEW**
**January 9, 2024**

# PLAN REVIEW CENTER REPORT

**January 9, 2024**

## Novi-Ten

**Revised PRO Concept Site Plan - Landscaping**

| **Review Type** | **Job #** |
|---|---|
| Revised PRO Concept Plan – Landscaping Review | JZ23-0009 |

**Property Characteristics**

- Site Location: Ten Mile Road east of Novi Road
- Site Acreage: 19.6 ac. (residential section is 11.2 ac.)
- Site Zoning: Current: I-1.
  Proposed: Commercial B-3, Residential RM-1
- Adjacent Zoning: North: I-1 and I-2, East: I-1, South: RM-1 PRO, West: OS-1
- Plan Date: January 2, 2024

**Ordinance Considerations**

This project was reviewed for conformance with Chapter 37: Woodland Protection, Zoning Article 5.5 Landscape Standards, the Landscape Design Manual and any other applicable provisions of the Zoning Ordinance. Please follow guidelines of the Zoning Ordinance and Landscape Design Guidelines. This review and the accompanying landscape chart are summaries and are not intended to substitute for any Ordinance.

Items in **bold** below must be addressed and incorporated as part of the PRO review. Underlined items should be included for the Preliminary Site Plans and *Underlined and italicized* items must be included on Final Site Plans.

**RECOMMENDATION:**

This project is **not recommended for Conceptual Plan Approval.** The residential portion of the project is mostly acceptable, except for the composition of the woodland replacements, but the commercial section requires significant deviations that are not recommended by staff.

**LANDSCAPE DEVIATIONS REQUIRED PER PLANS PROVIDED:**

**Residential:**

- No street trees along are proposed along 10 Mile Road – *supported by staff due to utility conflicts (would also be supported for Commercial section if utility conflicts were there too)*
- Deficiency in greenbelt canopy trees proposed – *supported by staff due to provision of publicly accessible tennis courts in greenbelt*.

**Commercial:**

- No street trees can be planted along 10 Mile Road due to a conflict with the existing water main – *supported by staff*
- Lack of greenbelt berm along 10 Mile Road – *not supported by staff*
- Deficiency in foundation landscaping for every building – *not supported by staff*

**General Notes:**

- **Please put the City's Project Number, JZ23-0009, on the STA cover sheet as well.**
- The residential building layout is different between the civil drawings and the residential landscape plan (L-1). **Please correct this inconsistency.**
- **Please use different sheet numbers for the Commercial and MF Residential properties (so**

**there aren't 2 L-1s, eg).**

- **Please add building numbers or letters to each of the buildings shown on the Residential and Commercial landscape plans**.

**Please work to remove the unsupported deviations noted above.**

## Ordinance Considerations

Existing Trees (Sec 37 Woodland Protection, Preliminary Site Plan checklist #17 and LDM 2.3 (2))

1. Tree survey and charts are provided for both sections.
2. Woodland replacement calculations are provided for both sections.
   a. **Commercial:** 180 replacements are required. 41 are proposed to be planted on site and a deposit to the tree fund will be made for the remaining credits**.**
   b. **MF Residential:** 697 replacements are required. 181 are proposed to be planted on site and a deposit to the tree fund will be made for the remaining credits**.**
3. **The calculations need to be revised to reflect that evergreens only count as 0.67 woodland replacement credits.**
4. **Only 10% of the planted replacement credits may be evergreen trees. The rest need to be deciduous canopy trees.**
5. Please show conservation easement boundaries for all woodland replacement trees.

Adjacent to Residential - Buffer (Zoning Sec. 5.5.3.A.ii and iii) (Both sections)

1. The project is adjacent to commercial property on the west, to multi-family residential on the south and to industrial property and the railroad to the east. Within the site, residential abuts commercial.
2. A 6-8 foot tall wall or landscaped berm is required between residential property and office/commercial uses.
3. The plan indicates a landscaped berm west of Residential Buildings 1 and 2 and Commercial Building A. The berm crest is only 3-4 feet above the commercial parking lot and approximately 6-8 feet above the bottom of the slope. The slope is heavily landscaped with evergreen trees. The deficiency in berm height requires a deviation that may be supported by staff if satisfactory evidence of the berm's screening is provided.
4. The plan also shows two 8 foot masonry walls planted north of Residential Buildings 5 and 6 with evergreen trees planted along the adjacent parking lot perimeter**. It would be preferable to have a line of densely planted narrow evergreen shrubs planted on the residential side of the walls to the evergreen trees planted along the parking lot perimeter. Please change that.**

**COMMERCIAL SECTION**

Adjacent to Public Rights-of-Way – Berm/Wall, Buffer and Street Trees (Zoning Sec. 5.5.3.B.ii, iii)

1. The required 3 foot tall berm is not proposed. **This would require a landscape deviation**. *It would not be supported by staff.*
2. **There is an option for fewer greenbelt plantings for projects in the B-1, B-2 and B-3 districts. If desired, the applicant may revise their calculations and plans per these requirements.**
3. The required street trees are proposed, but the utility conflict along Ten Mile road between the existing water main and the sidewalk prevents the required street trees from being planted. **Please do not show the trees as being planted (leave the calculation) and request a landscape deviation for them**. *It will be supported by staff.*

Parking Lot Landscaping (Zoning Sec. 5.5.3.C.)

1. It appears that the proposed interior and perimeter parking lot trees are provided but **some of the required perimeter trees should be added along the southwest boundary,**

**and canopy trees should be used along the perimeter south of Commercial Buildings A and B.**

2. **See the landscape chart for a more detailed discussion of the parking lot landscaping.**

Building Foundation Landscaping (Zoning Sec 5.5.3.D)

1. It appears that none of the buildings' foundation landscaping meets the requirements. **These deficiencies would require landscape deviations**. *They would not be supported by staff.*
2. **Please add the required foundation landscaping around all of the buildings.**

**RESIDENTIAL SECTION**

Adjacent to Public Rights-of-Way – Berm/Wall, Buffer and Street Trees (Zoning Sec. 5.5.3.B.ii, iii)

1. The required greenbelt berm and landscaping appear to be provided. The evergreen tree symbols used are not easily distinguished from the others. **Please clearly label what trees are greenbelt trees versus multi-family unit trees or woodland replacement trees.**
2. As with the Commercial section, the utility conflict along Ten Mile road prevents the required street trees from being planted. **Please do not show the trees as being planted (leave the calculation) and request a landscape deviation for them**. *It will be supported by staff.*

Multi-Family Residential/Attached Dwelling Unit Landscaping (Zoning Sec 5.5.3.F.iii)

1. Multi-family unit trees
   a. As 71 townhouse units are proposed, 213 trees are required, up to 25% of which can be subcanopy trees.
   b. 213 trees are proposed on the site, some of which are along the interior drive, many of which are on the berm between the residential portion of the development and the commercial section, and some of which are in the greenbelt. Until species are proposed, it's difficult to determine the makeup of the trees proposed.
2. Interior Drive Trees
   a. Based on the length of the interior drive, 35 interior drive trees are required. 35 trees, plus 5 multi-family unit trees are proposed along the streets.
   b. Please place one tree along the long edge of each of the parking bays to help shade them.
3. Building Foundation Landscaping
   a. A sample foundation detail shows that 40% of the building fronts will be landscaped, exceeding the 35% required.
   b. Please include plant labels on the Final Site Plans at the latest and add the plants to the plant list and cost estimate.

**GENERAL REQUIREMENTS APPLICABLE TO BOTH SECTIONS**

Plant List (LDM 4, 10)

1. Not provided.
2. Please add plant labels to the plan view and provide a plant list on the Preliminary Site Plans, or Final Site Plans at the latest.
3. The plants should meet the requirements detailed on the landscape chart.
4. Only 10% of the woodland replacement trees planted on the site can be evergreen trees. It appears that most of the proposed replacement trees are evergreen. **Please adhere to the requirement.**

Planting Notations and Details (LDM 10)

1. Provided for the Residential plans but not the Commercial Plans.
2. As the Commercial and Residential landscaping may well be done by different contractors, please include the planting notes and details with each set of plans.

Storm Basin Landscape (Zoning Sec 5.5.3.E.iv and LDM 3)

1. Conceptual landscaping indicates that all landscaping will be provided.
2. Woodland replacement trees may be used to meet the tree requirement, but they must be protected by an easement.

Irrigation (LDM 10)

Please provide the plans for an automatic irrigation system, or alternative plans for providing sufficient water for the plants' establishment and long-term survival on the Final Site Plans.

If the applicant has any questions concerning the above review or the process in general, do not hesitate to contact me at 248.735.5621 or rmeader@cityofnovi.org.

Rick Meader – Landscape Architect

## LANDSCAPE REVIEW SUMMARY CHART – Revised PRO Concept Plan

**Review Date:** January 9, 2024
**Project Name:** JZ23-09: Novi Ten
**Project Location:** Ten Mile Road east of Novi Road
**Plan Date:** January 2, 2024
**Prepared by:** Rick Meader, Landscape Architect E-mail: rmeader@cityofnovi.org; Phone: (248) 735-5621

Items in **Bold** need to be addressed by the applicant before approval of the PRO Concept Plan. Underlined items need to be addressed on Preliminary Site Plans. *Underlined and italicized* items need to be addressed for Final Site Plan.

**LANDSCAPE DEVIATIONS REQUIRED PER PLANS PROVIDED:**
**Residential:**

- No street trees along 10 Mile Road in residential section – *supported by staff due to utility conflicts (would also be supported for Commercial section if utility conflicts were there too)*
- Deficiency in greenbelt canopy trees – *supported by staff due to provision of publicly accessible pickleball courts in greenbelt.*

**Commercial:**

- No street trees can be planted along 10 Mile Road due to a conflict with the existing water main – *supported by staff*
- Lack of greenbelt berm along 10 Mile Road in the Commercial section – *not supported by staff*
- Deficiency in foundation landscaping for every building – *not supported by staff*

**General Notes:**

- **Please put the City's Project Number, JZ23-0009, on the STA cover sheet as well.**
- The residential building layout is different between the civil drawings and the residential landscape plan (L-1). **Please correct this inconsistency.**
- **Please use different sheet numbers for the Commercial and MF Residential properties (so there aren't 2 L-1s, eg).**
- **Please add building numbers or letters to each of the buildings shown on the Residential and Commercial landscape plans**.

| Item | Required | Proposed | Meets Code | Comments |
|---|---|---|---|---|
| **Landscape Plan Requirements – Basic Information (LDM (2))** | | | | |
| **Landscape Plan** *(Zoning Sec 5.5.2, LDM 2.e)* | • New commercial or residential developments<br>• Addition to existing building greater than 25% increase in overall footage or 400 SF whichever is less.<br>• 1"-20' minimum with proper North. Variations from this scale can be approved by LA | • Residential Landscape Plan is 1"=50'<br>• Residential greenbelt, detention pond and foundation plans are 1"=30'<br>• Commercial Landscape Plan is 1"=40'<br>• No Commercial Foundation plans are provided | • Yes<br>• Yes<br>• Yes<br>• TBD | When they are provided, the commercial foundation landscape plans should be no smaller than 1"=20' |

| Item | Required | Proposed | Meets Code | Comments |
|---|---|---|---|---|
| **Project Name/Address** *(LDM 2.a.)* | Name and location of the project | • Yes<br>• Location map is provided | Yes | |
| **Owner/Developer Contact Information** *(LDM 2.a.)* | Name, address and telephone number of the owner and developer or association | Toll Brothers | Yes | |
| **Landscape Architect contact information** *(LDM 2.b.)* | Name, Address and telephone number of RLA/PLA/LLA who created the plan | **Commercial:** James Gray – Vert Verde<br>**Residential:** Jim Allen – Allen Design | Yes | |
| **Sealed by LA**. *(LDM 2.g.)* | Requires original signature | Yes | | Live signature is required on final stamping sets |
| **Survey information** *(LDM 2.c.)* | Legal description or boundary line survey | Civil Sheets 2 and 3 | Yes | |
| **Miss Dig Note** (800) 482-7171 *(LDM.3.a.(8))* | Show on all plan sheets | Yes | Yes | |
| **EXISTING CONDITIONS** | | | | |
| **Existing plant material Existing woodlands or wetlands** *(LDM 2.e.(2))* | • Show location type and size.<br>• Label to be saved or removed.<br>• Plan shall state if none exists. | • Wetlands are delineated<br>• Residential Tree survey and removals are on the Residential Landscape Plans Sheets L-3 and L-5<br>• Commercial tree survey and removals are on the Commercial Landscape Plans Sheets L-1 and L-2<br>• Residential tree replacement calculations on L-5.<br>• Commercial tree replacement calculations on L-1 | • Yes<br>• Yes<br>• Yes<br>• Yes<br>• Yes | |
| **Natural Features protection** | | 25-foot environmental setbacks are shown on both the Commercial and Residential | Yes | |

| Item | Required | Proposed | Meets Code | Comments |
|---|---|---|---|---|
| | | Landscape Plans | | |
| **Soil type** *(LDM.2.r.)* | As determined by Soils survey of Oakland county | Civil Cover Sheet | Yes | |
| **Zoning** *(LDM 2.f.)* | Site: I-1 and OS-1<br>Proposed: RM and B3<br>North: I-1 and I-2<br>East: I-1; West: OS-1<br>South: RM-1 | <u>Shown on Civil Cover Sheet</u><br>• Site: I-1<br>• Proposed RM-1 for Residential, B-3 for Commercial<br>• East: I-1<br>• South: RM-1 PRO<br>• West: OS-1<br>• North: I-1 & I-2 | Yes | |
| **PROPOSED IMPROVEMENTS** | | | | |
| **Existing and proposed improvements** *(LDM 2.e.(4))* | Existing and proposed buildings, easements, parking spaces, vehicular use areas, and R.O.W | • Detailed residential plan and conceptual commercial plans are shown on PRO Concept Plan.<br>• All Residential and Commercial elements are shown on the landscape plans.<br>• The residential building layout is different on the civil plans from the layout on Residential Sheet L-1. | • Yes<br>• Yes<br>• No | **Please make the civil and landscape plans' layouts consistent.** |
| **Existing and proposed utilities** *(LDM 2.e.(4))* | • Overhead and underground utilities, including hydrants, water, sanitary and storm lines and structures.<br>• Light posts should also be shown. | • Utility structures and lines are shown faintly on the Residential plans<br>• No utilities are shown on the Commercial plans<br>• No light posts are shown on any of the landscape plans. | • Yes<br>• No | **1. Please add all proposed utility lines and structures to the Commercial landscape plans and resolve conflicts such that all of the required trees can be planted.**<br>**2. Please add all proposed light posts to both Residential and Commercial Landscape Plans and resolve all conflicts** |
| **Proposed topography - 2' contour minimum** | Provide proposed contours at 2' interval | • Proposed contours are | • Yes<br>• No | **1. Please show all required berms on a** |

| Item | Required | Proposed | Meets Code | Comments |
|---|---|---|---|---|
| *(LDM 2.e.(1))* | | shown on P3 and Civil Sheet 6<br>• Contours don't always work with catch basin rim elevations.<br>• Contours aren't consistent across all sheets | • No | **grading plan.**<br>**2. Please make contours work with adjacent catch basin rim elevations.**<br>**3. Please show grading consistently between plans throughout the set (contours on P3 and Civil Sheet 6 and Landscape plan are not the same).**<br>**4. Please label the contours with their elevations.** |
| **Clear Zones**<br>*(LDM 2.e.(5))* | RCOC clear vision zones for 10 Mile Road entry points | • RCOC clear vision zone is shown on the Residential Landscape Plan.<br>• No clear vision zone is shown on the Commercial Landscape Plan. | • Yes<br>• No | **1.** *Please provide RCOC clear vision zones for all entry points to 10 Mile Road on landscape plan.*<br>**2.** *Keep all trees and shrubs over 30" out of clear zones.* |
| **LANDSCAPING REQUIREMENTS** | | | | |
| **Berms and ROW Planting** | | | | |
| • All berms shall have a maximum slope of 33%. Gradual slopes are encouraged. Show 1ft. contours<br>• Berm should be located on lot line except in conflict with utilities.<br>• Berms should be constructed with 6" of topsoil. | | | | |
| **Residential Adjacent to Non-residential (Sec 5.5.3.A) & (LDM 1.a)** | | | | |
| **Berm requirements**<br>*(Zoning Sec 5.5.A)* | Residential adjacent to Commercial requires:<br>• 6-8 foot high landscaped berm or wall<br>• 10-15 foot high wall or berm for drive-in restaurants.<br>• 10-15 foot high wall or berm for industrial<br>• Opacity 80% winter, 90% summer.<br><br>Residential adjacent to Industrial requires:<br>• 10-15 foot high wall or berm for industrial<br>• Opacity 80% winter, 90% summer.<br>• As the development does not directly abut | • A landscaped berm approximately 3-4 feet tall is proposed between the Residential Buildings 1 and 2 and Commercial Building A (the crest is approximately 3 feet higher than the commercial parking lot and 6-8 feet higher than the bottom of the slope).<br>• An 8-foot high masonry wall is provided | • No<br>• Yes | **1. A landscape waiver will be required for the masonry wall.**<br>**2. While it will provide solid screening from ground level, narrow, tall evergreen shrubs that will provide better screening for the second floor of the residential units facing the walls should be added in front of the wall.**<br>*3. If additional screening is provided in sufficient density to provide 80-90% blockage, the waiver could be supported by staff.* |

| Item | Required | Proposed | Meets Code | Comments |
|---|---|---|---|---|
| | the industrial property to the east, no screening berm is required. | between the commercial section and the north side of the westernmost residential buildings. Evergreen plantings are indicated behind the wall, on the Commercial section.<br>• No berm is provided along the east side of the property. | | 4. No berm is required along the east side of the property as the adjoining industrial property there is on the other side of the railroad.<br>**5. Please provide cross sections for the areas between and including Residential Buildings 1 and 2 and Commercial Building A and Residential Building 5 and Commercial Building A that shows the proposed blocking of the commercial from the residential since the required berm is not provided in either situation. Landscape deviations are required for both so this will help to garner support for that request.** |
| **Planting requirements** *(LDM 1.a.)* | LDM Novi Street Tree List | • Dense plantings are proposed on berm<br>• No plantings are proposed in front of the 8-foot masonry walls but evergreen trees are shown along the adjacent parking lot perimeter. | • Yes<br>• No | **Please add dense narrow evergreen shrubs in front of the walls to add additional screening between the residential buildings and the commercial property. This would be preferable to the evergreen trees shown along the parking lot perimeter.** |
| **Adjacent to Public Rights-of-Way (Sec 5.5.B) and (LDM 1.b)** | | | | |
| **ROW Landscape Screening Requirements Chart** *(Sec 5.5.3.B. ii)* | | | | |
| **Greenbelt width** (2)(3) (5) | • **Commercial (B3) adj to pkg:** 20 ft<br>• **MF Residential:** Not adj to pkg: 34 ft | • **Commercial:** 20 ft<br>• **MF Residential:** 75 ft | • Yes<br>• Yes | |
| **Min. berm crest width** | • **Commercial (B3) adj to pkg:** 2 ft<br>• **MF Residential:** 2 ft | • **Commercial:** 0 ft<br>• **MF Residential:** 2 ft | • No<br>• Yes | **1. Please provide the required berms in the commercial section.**<br>**2.** *Lack of a required berm is a deficiency* |

| Item | Required | Proposed | Meets Code | Comments |
|---|---|---|---|---|
| | | | | *that would not be supported by staff.* |
| **Min. berm height** (9) | • **Commercial (B3) adj to pkg:** 2 ft<br>• **MF Residential:** 2 ft | • **Commercial:** 0 ft<br>• **MF Residential:** unclear | • Yes<br>• TBD | **1. See above**<br>**2. Please add contour labels so the provided berms' heights can be determined.** |
| 3' wall | (4)(7) | None proposed | | |
| **Canopy deciduous or large evergreen trees** Notes (10)(12) | **Commercial: (B3) adj to pkg:**<br>• 1 tree per 70 lf<br>• (1020-30-30-30)/70 = 13 trees<br><br>**MF Residential (not adj to pkg):**<br>• 1 tree per 35 lf<br>• (570-56)/35 = 15 trees | • Commercial: 27 trees<br>• MF Residential: 13 trees | • Yes<br>• No | 1. The calculations for the commercial section may be corrected to use the third Commercial option in Table 5.5.3.B.ii.f to increase the visibility of the site from 10 Mile Road if desired.<br>2. **Please clearly label the greenbelt trees on Residential Sheet L-2.** Multi-family unit trees or replacement trees cannot be used to meet that requirement.<br>**2. The deficiency in trees provided in the MF residential greenbelt would require a landscape deviation.** *As the deficiency is due to the tennis courts offered as a public amenity, the waiver for 2 missing trees would be supported by staff.* |
| **Sub-canopy deciduous trees** Notes (10)(12) | **Commercial: (B3) adj to pkg:**<br>• 1 tree per 40 lf<br>• (1020-30-30-30)/40 = 23 trees<br><br>**MF Residential (not adj to pkg):**<br>• 1 tree per 35 lf<br>• (570-56)/25 = 21 trees | • Commercial: 47 trees<br>• MF Residential trees: Unclear | • Yes<br>• TBD | **See above** |
| **Shrubs** Notes (10)(12) | **Commercial: (B3) adj to pkg:** | • None | TBD | **If the applicant desires to use the third option in** |

| Item | Required | Proposed | Meets Code | Comments |
|---|---|---|---|---|
| | • 3 shrubs per 40 lf<br>• 3*(1020-30-30-30)/40 = 70 shrubs | | | **Table 5.5.3.B.ii.f, please add the calculations for the required shrubs and add the required shrubs to the greenbelt, on top of or in front of the berm.** |
| **Canopy deciduous trees in area between sidewalk and curb** | **Commercial: (B3) adj to pkg:**<br>• 1 tree per 40 lf<br>• (1020-30-30-30)/40 = 23 trees<br><br>**MF Residential:**<br>• 1 tree per 35 lf<br>• (570-56)/25 = 21 trees | • No trees are proposed in the right-of-way in front of the MF residential section due to conflicts with existing utilities in the right-of-way.<br>• Street trees are shown in front of the Commercial section, but the water main there doesn't leave enough room for the trees. | • No<br>• Yes | 1. Please add calculations for the trees required based on the Commercial 10 Mile Road frontage.<br>2. *As the existing 12" water main along 10 Mile Road does not allow room for the street trees, the requested deviation is supported by staff.* |
| **Multi-Family Residential (Sec 5.5.3.F.ii)** | | | | |
| **Building Landscaping** *(Zoning Sec 5.5.3.E.ii.)* | • 3 deciduous canopy trees or large evergreen trees per dwelling unit on the first floor.<br>• 71 units * 3 = 213 trees<br>• 25% can be subcanopy trees. | • Calculations are provided.<br>• It appears that 213 trees are provided | Yes | Please use an evergreen tree symbol more easily distinguished from the replacement tree evergreen symbols on the Residential plans so the counts can be verified. |
| **Interior Street Landscaping** | • 1 deciduous canopy tree along interior roads for every 35 lf (both sides), excluding driveways, interior roads adjacent to public rights-of-way and parking entry drives.<br>• Trees in boulevard islands do not count toward street tree requirement<br>• (2368-1136)/35=35 trees | • Calculations are provided.<br>• 35 trees plus 5 multi-family unit trees | Yes | |

| Item | Required | Proposed | Meets Code | Comments |
|---|---|---|---|---|
| **Foundation Landscaping** | 35% of building façades facing road should be landscaped | A standard unit landscaping detail is provided on Sheet L-2 that shows 40% of the units façade will be landscaped | Yes | *Please add detailed landscaping on the Final Site Plans.* |
| **Woodland Replacements (Section 37-8) – Both Commercial and Residential** | | | | |
| **Woodland Replacement Trees** | Requirements per Section 37<br><br>**Commercial:**<br>180 replacements are required<br><br>**MF Residential:**<br>697 replacements are required | **Commercial:**<br>• 41 trees<br>• Contribution to tree fund for 139 credits<br><br>**MF Residential:**<br>• 181 trees – most appear to be evergreen trees<br>• Contribution to tree fund for 516 credits | TBD | **1. Woodland replacement trees must be located in areas where they can be protected by a conservation easement.**<br>**2. Woodland replacement trees may be used to meet the detention basin tree requirement if they will be protected by an easement.**<br>**3. No more than 10% of the credits planted may be evergreens.**<br>**4. Evergreen replacements receive 0.67 credits per tree. Please show the calculation that includes this. A greater contribution to the tree fund may be necessary.**<br>5. **Please use evergreen symbols more easily distinguished from the evergreen symbols used for multi-family unit trees to make counting them easier.**<br>6. **Please clearly indicate what trees on the Commercial section are replacements.** |
| **Parking Area Landscape Requirements** (Zoning Sec 5.5.3.C & LDM 5) – Commercial only | | | | |
| **General requirements** | • Clear sight distance | It does not appear | TBD | |

| Item | Required | Proposed | Meets Code | Comments |
|---|---|---|---|---|
| *(LDM 1.c)* | within parking islands<br>• No evergreen trees | that any plantings will block visibility across islands in the Commercial section but not all plantings are shown at this time. | | |
| **Name, type and number of ground cover** (LDM 1.c.(5)) | As proposed on planting islands | Not indicated | TBD | |
| **General** *(Zoning Sec 5.5.3.C)* | | | | |
| **Parking lot Islands** *(a, b. i)* | • A minimum of 200 SF to qualify<br>• 200sf landscape space per tree planted in island.<br>• 6" curbs<br>• Islands minimum width 10' BOC to BOC | **Commercial:**<br>• Island areas are not indicated.<br>• Some islands may be too small.<br>**MF Residential:**<br>No islands are proposed | TBD | **1. Please show the SF of each island/corner intended to serve as landscape islands.**<br>**2. Any undersized island should be enlarged to at least the minimum area.** |
| **Curbs and Parking stall reduction** *(c)* | Parking stall can be reduced to 17' with 4" curb adjacent to a sidewalk of minimum 7 ft. | **Commercial:**<br>All spaces are 19 feet long<br>**MF Residential:**<br>All spaces are 17 feet long with a 7 foot adjacent walk | • Yes<br>• Yes | **If desired, the spaces abutting open space or walks could be shortened to 17 feet to reduce the amount of paving if 2 feet of overhang is provided.** |
| **Contiguous space limit** *(i)* | Maximum of 15 contiguous spaces | No bay is longer than 15 spaces. | Yes | |
| **Category 1: For OS-1, OS-2, OSC, OST, B-1, B-2, B-3, NCC, EXPO, FS, TC, TC-1, RC, Special Land Use or non-residential use in any R district** *(Zoning Sec 5.5.3.C.iii)* | | | | |
| **A = Total square footage of vehicular use areas x 7.5%** | • A = x SF x 7.5%<br>• A = 50,000 sf * 7.5% = 3750 sf | Calculation provided | Yes | |
| **B = Total square footage of additional paved vehicular use areas over 50,000 SF x 1 %** | • B = x SF x 1%<br>• B = (155,186-50,000)sf * 1% = 1,052 sf | Calculation provided | Yes | |
| **All Categories** | | | | |
| C = A+B<br>Total square footage of landscaped islands | • C = A + B<br>• C = 3750+1052 = 4802sf | • 11,928 sf<br>• Island areas are not labeled | TBD | **Please label each island's area in SF so the area provided can be verified.** |
| D = C/200<br>Number of canopy trees required | • D = C/200 = x trees<br>• D = 4802/200 = 24 trees | 24 trees | Yes | |
| **Parking Lot Perimeter Trees** | • 1 Canopy tree per 35 lf<br>• Interior drive trees should be used as perimeter trees along | 71 trees | TBD | **1. Please add a line showing the perimeter line used for the calculation.** |

| Item | Required | Proposed | Meets Code | Comments |
|---|---|---|---|---|
| | the two bays (1 per bay, based on their length)<br>• 2489/35 = 71 trees<br><br>If the reduced requirement allowed by Table 5.5.3.2.ii.f is used, the perimeter tree requirement along the north edge of the Commercial parking lot can be reduced to just 1 per 70 lf. | | | **2. Perimeter trees need to be added along the southwest corner of the commercial section. If they are native species, they may be planted in the wetland buffer.**<br>**3.** Greenbelt canopy trees may be double-counted as parking lot perimeter trees if they are within 15 feet of the parking lot.<br>**4.** A line of evergreens is shown as perimeter trees between the 8 foot walls and the parking lot. **This is not acceptable as perimeter trees should be canopy trees.** |
| **Building Foundation Landscaping Requirements - for Commercial only (*Sec 5.5.3.D)*** | | | | |
| **Interior Site Landscaping SF** | • Equal to entire perimeter of the building (less entrances) x 8<br>• Landscape areas may be no less than 4 feet wide/deep<br>• No less than 75% of a building's perimeter should be landscaped, but ideally all but entries should be landscaped<br>• Landscaping does not count lawn areas | • No calculations are provided<br>• Some foundation landscape areas are indicated as blank areas<br>• Planters are shown behind the curb in front of the commercial buildings | No | **1. Please provide calculations for each building**<br>**2. Each building should meet the requirements.**<br>**3. Please provide more information about the planters – in-ground or elevated, and their area in SF.**<br>**4. Label the SF of each foundation landscape provided.**<br>**5. Any deficiency in landscaping provided would require a landscape waiver.** *It would not be supported by staff.* |
| **Frontage landscaping** *(Sec 5.5.3.D.d)* | No less than 60% of a façade facing a public road shall be landscaped with a mix of trees, shrubs, perennials, annuals | • None of the building foundations has landscaping at the building front<br>• It appears that 4' | TBD | Provide planting plans for the buildings' foundation landscaping in the Final Site Plans. |

| Item | Required | Proposed | Meets Code | Comments |
|---|---|---|---|---|
| | and/or ornamental grasses | wide planters are proposed in front of the buildings, near the parking lot but it isn't clear whether they will be sufficient | | |
| **Parking land banked** | NA | None | | |
| **Miscellaneous Landscaping Requirements** | | | | |
| **Plantings around Fire Hydrant** *(d)* | • No plantings with matured height greater than 12' within 10 ft. of fire hydrants, manholes, catch basins or other utility structures.<br>• Trees may also not be planted within 10 feet of an underground sanitary sewer line. | **Commercial:** No utilities are shown on the landscape plan<br><br>**MF Residential:** Correct spacing appears to have been provided | • TBD<br>• Yes | **1. Please add the utility lines and structures to the Commercial Landscape Plan.**<br>**2. If the proposed utility layout prevents the planting of required trees, the utility layout may need to be corrected.** |
| **Landscaped area** *(g)* | Areas not dedicated to parking use or driveways exceeding 100 sq. ft. shall be landscaped | No groundcovers or detailed landscaping is shown on the Commercial landscape plan | TBD | 1. Please indicate groundcovers or areas of other landscaping with hatching at a minimum.<br>2. Detailed plans can be provided on the Final Site Plans. |
| **Name, type and number of ground cover** (LDM 1.c.(5)) | As proposed on planting islands | Not indicated on either plan except for the detention pond | No | **See above** |
| **Snow deposit** *(LDM.2.q.)* | Show snow deposit areas on plan in locations where landscaping won't be damaged | **Commercial:** Not indicated<br><br>**MF Residential:** A note indicates that snow will be deposited along the street in the curb lawn | • No<br>• Yes | Please show at least 2 potential snow deposit areas on the Commercial section. |
| **Transformers/Utility boxes** *(LDM 1.e from 1 through 5)* | • A minimum of 2 ft. separation between box and the plants<br>• Ground cover below 4" is allowed up to pad.<br>• No plant materials within 8 ft. from the doors | • City screening detail is included on Sheet L-4<br>• A note on L-1 indicates that all transformer boxes shall be screened per that detail.<br>• No transformers | TBD | **1.** Please show transformers and other utility boxes when their locations are determined.<br>**2.** Add an estimated number of shrubs for each transformer's screening to the |

| Item | Required | Proposed | Meets Code | Comments |
|---|---|---|---|---|
| | | are shown on either landscape plan | | plant list per the city utility landscape detail. |
| **Detention/Retention Basin Planting requirements** *(Sec. 5.5.3.E.iv)* | • Clusters of large native shrubs shall cover 70-75% of the basin rim area, 10 feet above the permanent water level.<br>• Canopy trees shall be placed along east, west and south sides of the pond to help shade the pond. Woodland replacement trees may be used to meet this requirement if a conservation easement protecting them is provided.<br>• 10" to 14" tall grass along sides of basin<br>• Refer to wetland for basin mix<br>• Include seed mix details on landscape plan | • Conceptual shrubs are shown that meet the requirement.<br>• Woodland replacement trees are shown meeting the requirement for the canopy trees. This is allowed.<br>• A seed mix is shown on Sheet L-2. | • Yes<br>• Yes<br>• Yes | |
| **Phragmites and Japanese Knotweed Control** | Any populations of Phragmites australis or Invasive Knotweed found on the site must be eliminated | A note indicates that no Phragmites or Japanese Knotweed were found on the site | Yes | If any is found during construction, it must be chemically treated to completely eliminate it from the site. |
| **Plant List (LDM 2.h. and 4) – Include all cost estimates** | | | | |
| Quantities and sizes | | No plant list is provided. | | Provide a plant list on the landscape plans for each section (separate plant lists) |
| Root type | | No | No | See above |
| Botanical and common names | • At least 50% of the species used shall be native to Michigan<br>• Non-woodland replacement tree diversity must follow guidelines of Landscape Design Manual Section 4.<br>• Species on the City's Prohibited Species List (LDM Table 11.b(2)b | No plant list is provided | TBD | 1. See above<br>2. Please label all plantings on the plan view on the Final Site Plans, at the latest. |

| Item | Required | Proposed | Meets Code | Comments |
|---|---|---|---|---|
| | may not be used | | | |
| Type and amount of lawn | | Not indicated | TBD | Need for final site plan |
| Cost estimate (LDM 2.t) | For all new plantings, mulch and sod as listed on the plan | Not provided | TBD | Need for final site plan |
| **Landscape Notes and Details– Utilize City of Novi Standard Notes – as the areas are likely to be built by different contractors, please include the below information with both the Residential and Commercial sets of plans.** | | | | |
| **Planting Details/Info (LDM 2.i) – Utilize City of Novi Standard Details** | | | | |
| Canopy Deciduous Tree | Refer to LDM for detail drawings | Sheet L-4 | Yes | |
| Evergreen Tree | | Sheet L-4 | Yes | |
| Shrub | | Sheet L-4 | Yes | |
| Multi-stem tree | | Sheet L-4 | Yes | |
| Perennial/ Ground Cover | | Sheet L-4 | Yes | |
| Tree stakes and guys | Wood stakes, fabric guys. | Sheet L-4 | Yes | |
| **Cross-Section of Berms (LDM 2.j)** | | | | |
| Slope, height and width | • Label contour lines<br>• Maximum 33% slope<br>• Constructed of loam<br>• 6" top layer of topsoil | No | No | Provide details on landscape plans for all berms |
| Type of Ground Cover | | No | No | Indicate on cross section |
| Setbacks from Utilities | Overhead utility lines and 15 ft. setback from edge of utility or 20 ft. setback from closest pole, 10 feet from structures, hydrants | No overhead utilities exist on the site or along 10 Mile Road. | NA | |
| **Walls (LDM 2.k & Zoning Sec 5.5.3.vi)** | | | | |
| **Material, height and type of construction footing** | Freestanding walls should have brick or stone exterior with masonry or concrete interior | • Two 8-foot screening walls are proposed between the westernmost residential buildings and the Commercial sections<br>• Several retaining walls are indicated, but none in the right-of-way | TBD | Please add TW/BW elevations for retaining walls. |
| **Walls greater than 3 ½** | | Detailed wall plans | TBD | |

| Item | Required | Proposed | Meets Code | Comments |
|---|---|---|---|---|
| **ft. should be designed and sealed by an Engineer** | | for screening walls and retaining walls taller than 3.5 feet should be submitted for review with building drawings. | | |
| **Notes (LDM 2.i) – Utilize City of Novi Standard Details** | | | | |
| **Installation date** *(LDM 2.l. & Zoning Sec 5.5.5.B)* | • Provide intended date<br>• Between Mar 15 – Nov 15 | • Sheet L-4<br>• Between Mar 15-Nov 15 2024 or 2025 | Yes | |
| **Maintenance & Statement of intent** *(LDM 2.m & Zoning Sec 5.5.6)* | • Include statement of intent to install and guarantee all materials for 2 years.<br>• Include a minimum one cultivation in June, July and August for the 2-year warranty period. | Notes included on Sheet L-4 | Yes | |
| **Plant source** *(LDM 2.n & LDM 3.a.(2))* | Shall be northern nursery grown, No.1 grade. | Note included on Sheet L-4 | | |
| **Establishment period** *(Zoning Sec 5.5.6.B)* | **2 yr. Guarantee** | Note included on Sheet L-4 | | |
| **Approval of substitutions.** *(Zoning Sec 5.5.5.E)* | City must approve any substitutions in writing prior to installation. | Note included on Sheet L-4 | | |
| **General Landscape Requirements (LDM 3)** | | | | |
| **General Conditions** *(LDM 3.a)* | Plant materials shall not be planted within 4 ft. of property line | No | No | Please add a callout stating this on the west end of the Commercial landscape plan. |
| **Irrigation plan** *(LDM 2.s.)* | A method of providing water for establishment and long-term survival must be provided | No | | **1.** Please add the irrigation plan or information as to how plants will be watered sufficiently for establishment and long- term survival on the Final Site Plans.<br>**2.** If xeriscaping is used, please provide information about plantings included.<br>**3.** This information is required on the Final Site Plans.<br>**4.** If an irrigation system |

| Item | Required | Proposed | Meets Code | Comments |
|---|---|---|---|---|
| | | | | will be used, it should meet the requirements stated at the bottom of this chart. |
| **Other information** *(LDM 2.u)* | Required by Planning Commission | NA | | |
| **Landscape tree credit** *(LDM3.b.(d))* | • Substitutions to landscape standards for preserved canopy trees outside woodlands and wetlands should be approved by LA.<br>• Refer to Landscape tree Credit Chart in LDM | None taken | | |
| **Plant Sizes for ROW, Woodland replacement and others** *(LDM 3.c)* | Canopy Deciduous shall be 3" and sub-canopy deciduous shall be 2.5" caliper. Refer to section for more details | No plant list is provided | TBD | Include correct sizes on plant list. |
| **Plant size credit** *(LDM3.c.(2))* | NA | No | | |
| **Prohibited Plants** *(LDM 3.d)* | | No | | |
| **Recommended trees for planting under overhead utilities** *(LDM 3.e)* | Label the distance from the overhead utilities | A note indicates that there are no overhead utilities on the site. | Yes | A site visit confirms that overhead wires along 10 Mile Road are on the north side of the road. |
| **Collected or Transplanted trees** *(LDM 3.f)* | | None proposed | | |
| **Nonliving Durable Material: Mulch** *(LDM 4)* | • Trees shall be mulched to 3" depth and shrubs, groundcovers to 2" depth<br>• Specify natural color, finely shredded hardwood bark mulch.<br>• Include in cost estimate. | Indicated on details on Sheet L-3 | Yes | |

**NOTES:**
1. This table is a working summary chart and not intended to substitute for any Ordinance or City of Novi requirements or standards.
2. The section of the applicable ordinance or standard is indicated in parenthesis. For the landscape requirements, please see the Zoning Ordinance landscape section 5.5 and the Landscape Design Manual for the appropriate items under the applicable zoning classification.
3. Please include a written response to any points requiring clarification or for any corresponding site plan modifications to the City of Novi Planning Department with future submittals.

Irrigation System Requirements

1. Any booster pump installed to connect the project's irrigation system to an existing irrigation system must be downstream of the RPZ.
2. The RPZ must be installed in accordance with the 2015 Michigan Plumbing Code.
3. The RPZ must be installed in accordance with the manufacture installation instructions for winterization that includes drain ports and blowout ports.
4. The RPZ must be installed a minimum of 12-inches above FINISHED grade.
5. Attached is a handout that addresses winterization installation requirements to assist with this.
6. A plumbing permit is required.
7. The assembly must be tested after installation with results recorded on the City of Novi test report form.

**WOODLAND REVIEW**
**October 27, 2023**

October 27, 2023

Lindsay Bell
City Planner
Department of Community Development
City of Novi
45175 W. Ten Mile Road
Novi, Michigan 48375

RE: Novi Ten Associates PRO Concept; PRZ23-001
Woodland Review of Revised PRO Concept Plan; Revised
MSG Project No. 2300772

Dear Ms. Bell:

The Mannik & Smith Group, Inc. (MSG) completed a project site evaluation relative to the *Novi Ten Associates Proposed Re-Zoning and PRO Concept Plan* prepared by Siegal/Tuomaala Associates dated October 4, 2023, stamped received October 10, 2023 by the City of Novi (Plan). The subject parcels are located south of Ten Mile Road and east of Novi Road in Section 26 and total approximately 42.9 acres (subject property). The tax parcel numbers associated with the subject property are 50-22-26-101-024 and -028 (Figure 1). The "PRO Line" (as depicted in the Plan) is reported to encompass 19.55 acres of the subject property. The proposed development area is generally defined by the "PRO Line" and is referenced as the Site in this letter (Figure 2). The Plan depicts construction of townhomes, commercial buildings, and other improvements at the Site.

MSG reviewed the pre-submittal plan set for conformance with the City of Novi's Woodland Protection Ordinance, Chapter 37. Based on review of the Pro Concept Plan, the City of Novi Official Regulated Woodlands Map, and a site visit the proposed development site contains City-Regulated Woodlands (Figure 1).

**The following Woodland Regulations apply to this site:**

| Woodland Regulation | Required |
|---|---|
| Woodland Permit (Chapter 37, Section 37-26) | YES |
| Tree Replacement (Chapter 37, Section 37-8) & Financial Guarantee (Chapter 26.5-5) | YES |
| Tree Protection (Fence) (Chapter 37, Section 37-9) & Financial Guarantee (Chapter 26.5-5) | YES |
| Woodland Conservation Easement (Chapter 37-30 (e)) | YES |

**Woodland Impacts**

Davey Resource Group (DRG) conducted a site visit on behalf of MSG on March 14, 2023, to review the regulated woodlands on the site (refer to DRG's March 15, 2023 letter). Trees regulated by Chapter 37 include those that are 8-inches or greater DBH (diameter at breast height, 4.5-feet above existing grade) located within a regulated woodland and any tree 36-inches or greater DBH, irrespective of whether it is located in a regulated woodland.


2365 Haggerty Road South, Canton, Michigan 48188 Tel: 734.397.3100 Fax: 734.397.3131 www.MannikSmithGroup.com

DRG noted that the site has patches of woodland, open areas, and wetlands. Portions of the site appear to have been previously disturbed and many of the tree species growing on the site are considered pioneer species, or species that would naturally grow on a site following disturbance. The woodlands are considered low to moderate quality with a mix of bottomland and upland tree species including, American elm, black cherry, cottonwood, silver maple, black walnut, and box elder. Trees range in 8" -33" in diameter with most trees between 10" and 20" in diameter.

There are reportedly 646 regulated woodland trees 8" or greater in diameter (DBH) on the site in the areas proposed for zoning RM-1 and B-3. The plan proposes the removal of 464 regulated woodland trees.

**It is anticipated that the following review comments will be addressed in the site plan approval process.**

**Woodland Review Comments**

1. A Woodland Use Permit is required to perform construction on any site containing regulated woodlands. The Woodland Use Permit for this project requires Planning Commission approval.

   To determine woodland fence inspection fees for the Woodland Use Permit - the applicant shall provide the cost (labor and supplies) for installation (including the initial location staking) and removal of tree protection fencing.

   The tree protection fence is to be installed outside the dripline of the trees to be protected. Current depiction of the placement of the tree protection fence may impact trees 4186 and 5830.

2. Tree Removals and Replacements. The plan proposes the removal of 464 regulated woodland trees, which requires 877 woodland replacement credits.

| Tree Size (DBH) | Number of Trees | | Ratio Replacement/ Removed Tree | Replacements Required | | Total Replacements Required |
|---|---|---|---|---|---|---|
| | RM-1 | B-3 | | RM-1 | B-3 | |
| 8-11" | 140 | 26 | 1 | 140 | 26 | 166 |
| >11-20" | 179 | 38 | 2 | 358 | 76 | 434 |
| >20-29" | 21 | 7 | 3 | 63 | 21 | 84 |
| >29+" | 1 | 2 | 4 | 4 | 8 | 12 |
| Multi-Stem | 34 | 12 | Add Stems/8 | 132 | 49 | 181 |
| Regulated Woodland Trees Removed | 375 | 89 | | | | |
| Total Regulated Woodland Trees Removed | 464 | | | | | |
| **Total Replacement Credits Required** | | | | 697 | 180 | **877** |

3. Woodland Replacements. Woodland replacement credits can be provided by:
   a. Planting the woodland tree replacement credits on-site.

   b. Payment to the City of Novi Tree Fund at a rate of $400/woodland replacement credit.

   c. Combination of on-site tree planting and payment into the City of Novi Tree Fund ($400/woodland replacement credit).

Sheet L-1 of the Plan, *Conceptual Landscape Plan*, prepared by Allen Design, proposes the planting of the 171 woodland replacement credits on-site in zone RM-1 and payment into the Tree Fund for the remaining 526 woodland replacement credits.

Sheet L-1 and L-3 of the Plan, *Tree Removal and Protection Plan* and *B3 Zoning Landscape Plan (Conceptual)* respectively, prepared by Vert Verde Landscape Architecture, proposes the planting of the 106 woodland replacement credits on-site in zone B-3. It is assumed that the remaining 74 woodland replacement credits will be paid into the Tree Fund, though not stated on the plans.

In total, 277 woodland replacement credits are to be planted on-site in zones RM-1 and B-3 and 600 woodland replacement credits are to be paid into the Tree Fund.

The Landscape Plans prepared by Allen Design and Vert Verde Landscape Architecture need to be revised to include the size and species of the woodland replacement trees to be planted on site.

4. Financial Guarantees
    a. A woodland fence guarantee of $6,000 ($5,000 x 120%) is required per Chapter 26.5-37. The financial guarantee shall be paid prior to issuance of the City of Novi Woodland Use Permit.

    b. Woodland Replacement Financial Guarantee of $110,800 (277 required woodland replacement credits x $400 per woodland replacement credit) is required as part of the Woodland Use Permit fees to ensure planting of the on-site Woodland Replacement tree credits.

        Based on inspection of the installed on-site Woodland Replacement trees, the Woodland Replacement Financial Guarantee shall be returned to the Applicant. The Applicant is responsible for requesting this inspection. Following acceptance of the planted woodland replacement trees, a 2-year performance bond must be paid to ensure the continued health and survival of the replacement trees (see Comment 6).

    c. Tree Fund Payment. The applicant is required to pay $240,000 (600 woodland replacement credits x $400 per woodland replacement credit) into the City of Novi Tree Fund. This fee is not refundable.

    d. The applicant shall guarantee trees for two growing seasons after installation and the City's acceptance, per The City's Performance Guarantees Ordinance. A two-year maintenance bond in the amount of $27,700 (25 percent of the value of the trees but in no case less than $1,000.00), shall be required to ensure the continued health of the trees following acceptance (Chapter 26.5, Section 26.5-37).

        Based on a successful inspection 2 years after installation of the on-site Woodland Replacement trees, the Woodland Replacement Performance Guarantee shall be returned to the Applicant. The Applicant is responsible for requesting this inspection.

5. Woodland Guarantee Inspection.
    If the woodland replacements, street trees or landscaping guarantee period is scheduled to end during the period of time when inspections are not conducted (November 15th – April 15th) the Applicant is responsible for contacting the Bond Coordinator and Woodland/Landscape Inspector in late summer/early fall prior to the 2 year expiration to schedule an inspection. The Applicant is responsible for walking the entire site to confirm that all of the material has survived and is healthy. If any material is missing, dead or dying, replacements should be made prior to requesting the inspection. Once this occurs the Applicant should contact the Bond Coordinator to schedule the

inspection (Angie Sosnowski at asosnowski@cityofnovi.org / 248-347- 0441) and complete the inspection request form. If additional inspections are needed, then additional inspection fees will be required to be paid by the applicant. Based upon a successful inspection for the 2 year warranty the Landscape/Woodland/Street trees financial guarantee will be returned to the Applicant.

6. Conservation Easement.

   The Applicant may be required to provide preservation/conservation easements as directed by the City of Novi Community Development Department for any areas of woodland replacement trees. The applicant shall demonstrate that all proposed woodland replacement trees and existing regulated woodland trees to remain will be guaranteed to be preserved as planted with a conservation easement or landscape easement to be granted to the city. This language shall be submitted to the City Attorney for review. The executed easement must be returned to the City Attorney within 60 days of the issuance of the City of Novi Woodland permit. Any associated easement boundaries shall be indicated on the Plan.

Please contact the undersigned if you have any questions regarding the matters addressed in this letter.

Sincerely,

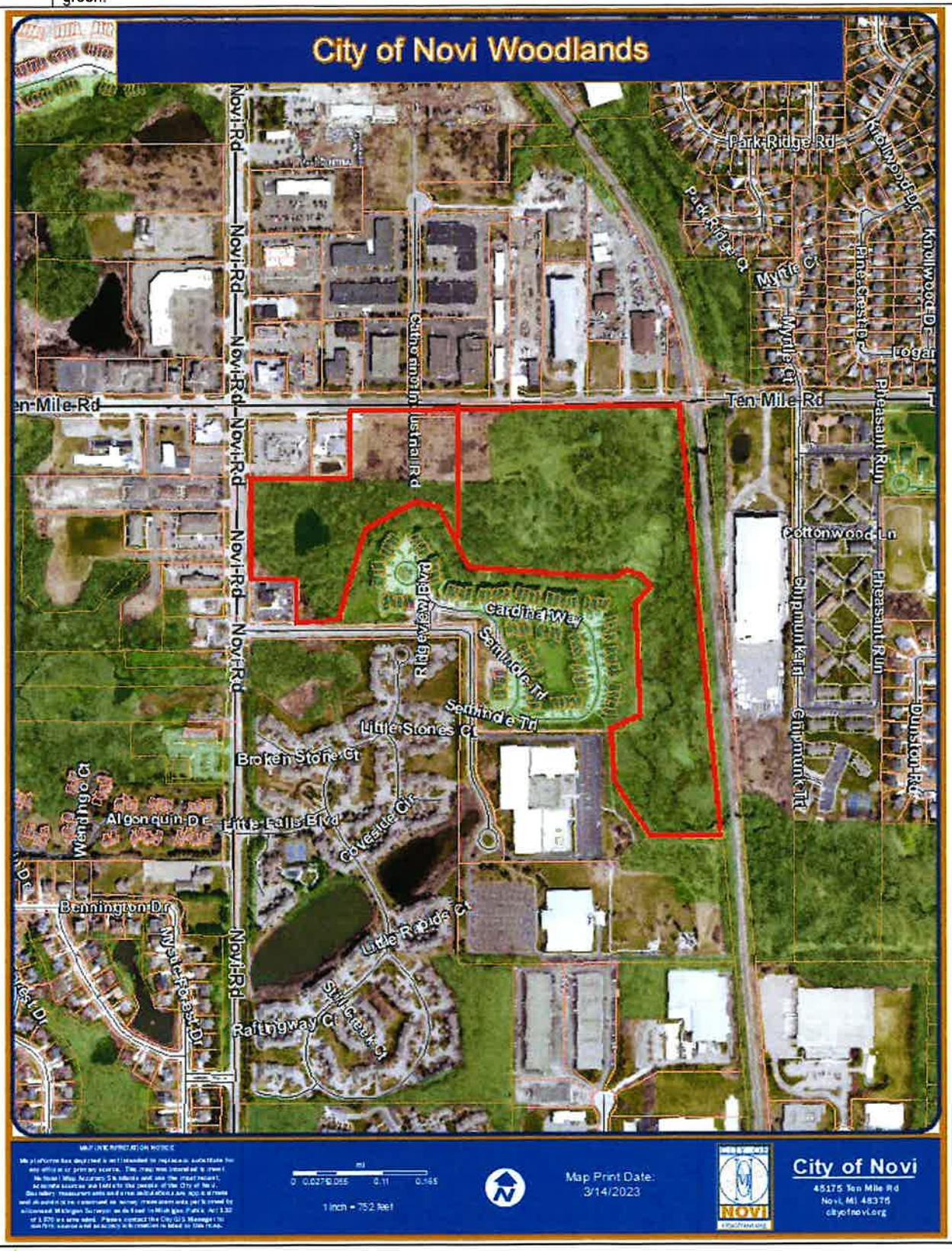
**The Mannik & Smith Group, Inc.**

Keegan Mackin
*Environmental Scientist*

Douglas Repen, CDT
*Project Manager*
*Certified Storm Water Management Operator*

CC: Barbara McBeth, City of Novi Planner
James Hill, City of Novi Planner
Ian Hogg, City of Novi Planner
Sarah Marchioni, City of Novi Project Coordinator
Rick Meader, City of Novi Landscape Architect
Diana Shanahan, City of Novi Planning Assistant
Heather Zeigler, City of Novi Planner

| Figure 1 | City of Novi Regulated Woodland Map. Approximate tax parcel limits are shown in red. Regulated Woodland areas are shown in green. |
|---|---|





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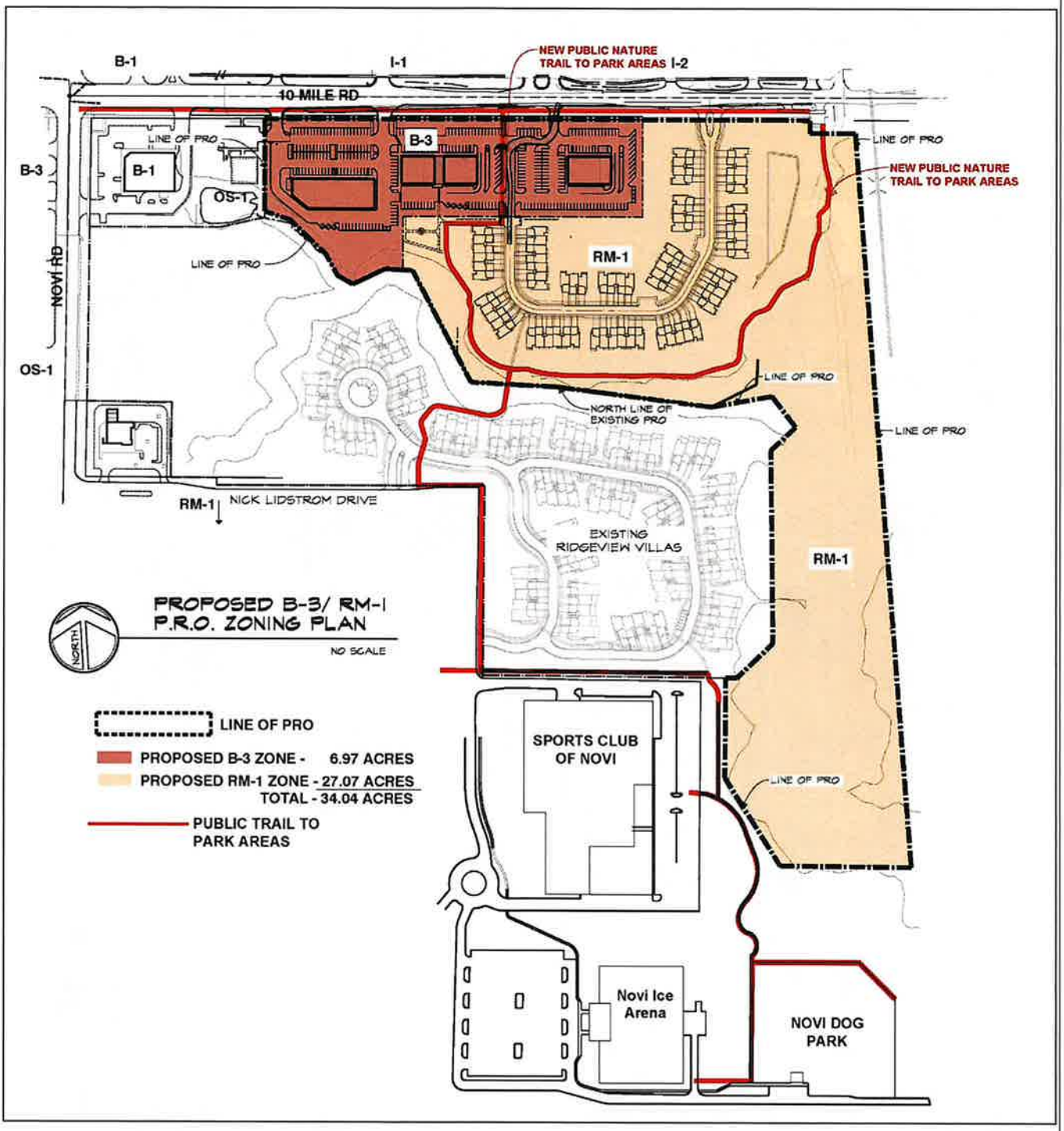
**Novi Ten Associates PRO Revised Concept; PRZ23-001**
**Woodland Review of Revised PRO Concept Plan, Revised**
MSG Project No. 2300772

**Figure 2** | Excerpt from the Plan. The "Site" is shaded areas.



**WETLAND REVIEW**
**October 27, 2023**

October 27, 2023

Lindsay Bell
City Planner
Department of Community Development
City of Novi
45175 W. Ten Mile Road
Novi, Michigan 48375

RE: Novi Ten Associates PRO Concept; JZ23-09
Wetland Review of Revised PRO Concept Plan; Revised
MSG Project No. 2300772

Dear Ms. Bell:

The Mannik & Smith Group, Inc. (MSG) completed a project site evaluation relative to:

- *Novi Ten Associates Proposed Re-Zoning and PRO Concept Plan* prepared by Siegal/Tuomaala Associates dated October 4, 2023 and stamped received October 10, 2023 by the City of Novi (Plan);
- *Wetland Delineation Report (v.2), West 10 Mile Road – Parcel # 22-26-101-024* prepared by Niswander Environmental (Niswander) dated February 2021; and
- *Wetland Delineation Report, West 10 Mile Road* prepared by Niswander dated June 2023.

The subject parcels are located south of Ten Mile Road and East of Novi Road in Section 26 and total approximately 42.9 acres (subject property). The tax parcel numbers associated with the subject property are 50-22-26-101-024 and -028 (Figure 1). The "PRO Line" (as depicted in the Plan) is reported to encompass 34.04 acres of the subject property. The proposed development area is generally defined by the "PRO Line" and is referenced as the Site in this letter (Figure 2). The Plan depicts construction of townhomes, commercial buildings, and other improvements at the Site. The Plan divides the Site into two areas: zone RM-1 (residential use) and zone B-3 (commercial use).

**Published Data**

Upon review of published resources, the subject property appears to contain or immediately borders:

- ☒ City-regulated wetlands, as identified on the City of Novi Wetlands interactive map website. Note that both wetland and subject property limits depicted on the City's map are considered approximations (Figure 1).
- ☒ Wetlands that are regulated by the Michigan Department of Environment, Great Lakes, and Energy (EGLE). The Walled Lake Branch of the Middle Rouge River and Chapman Creek bisect the subject property. EGLE typically regulates wetlands that are located within 500 feet of an inland lake, pond, stream, or river, and/or isolated wetlands of an area of 5 acres or more.
- ☒ Wetlands as identified on National Wetland Inventory (NWI) and Michigan Resource Inventory System (MIRIS) maps, as identified on the EGLE Wetlands Viewer interactive map website (Figure 3). NWI and MIRIS wetlands are identified through interpretation of topographic data and aerial photographs by the associated governmental bodies.
- ☒ Hydric (wetland) soil as mapped by the U.S. Department of Agriculture, Natural Resource Conservation Service, as identified on the EGLE Wetlands Viewer interactive map website (Figure 3).

**MSG Wetland Boundary Verification**
The Plan depicts the locations of five wetlands in zone RM-1 of the Site that were designated Wetlands A through E, with Wetlands C and D extending beyond the Site limits. Four wetlands were found in zone B-3 (Wetlands 1 through 4), but no wetlands are depicted in zone B-3 of the Site on the Plan. The *Application for Site Plan and Land Use Approval* form submitted with the Plan proposes to disturb/fill 0.09 acres of wetland in zone RM-1 and 0.05 acres of wetland in zone B-3.

**Proposed Impacts**
The proposed impacts to Site wetlands as described in the Plan and Niswander's reports are summarized below.

| | Wetland | Area within Site | Wetland Impact Area | Wetland Fill Volume (CF) | Type | Buffer Area within Site | Buffer Impact Area | Regulated by City? | Regulated by EGLE? |
|---|---|---|---|---|---|---|---|---|---|
| Northern Portion of Zone RM-1 | A | 0.05 Acre | 0.05 Acre | 4356 | Emergent | 0.189 Acre | 0.189 Acre | Yes | Yes |
| | B | 0.04 Acre* | 0.029 Acre | 3790 | Emergent | 0.111 Acre | 0.111 Acre | Yes | Yes |
| | C | 0.101 Acre** | 0.00 Acre | 0 | Emergent/ Scrub-Shrub | Not provided | 0.045 Acre | Yes | Yes |
| | D | 0.45 Acre*** | 0.00 Acre | 0 | Emergent/ Scrub-Shrub | Not provided | 0.082 | Yes | Yes |
| | E | 0.012 Acre**** | 0.012 Acre | 523 | Emergent | 0.101 Acre | 0.101 Acre | Yes | Yes |
| Zone B-3 | 1 | 0.02 Acre | Not provided | Not provided | Emergent | Not provided | Not provided | Yes | Yes |
| | 2 | 0.01 Acre | Not provided | Not provided | Emergent/Forested | Not provided | Not provided | Yes | Yes |
| | 3 | 0.01 Acre | Not provided | Not provided | Forested | Not provided | Not provided | Yes | Yes |
| | 4 | 0.53 Acre | Not provided | Not provided | Emergent/Forested | Not provided | Not provided | Yes | Yes |

* The Plan depicts Wetland B as 0.03 acre, but Niswander identified 0.04 acre.
** The Plan depicts Wetland C as 0.101 acre, but Niswander identified 0.27 acre.
*** The Plan depicts Wetland D as 0.012 acre, but Niswander identified 0.45 acre.
**** The Plan depicts Wetland E as 0.012 acre, but Niswander identified 0.1 acre.

Based on the Plan, it appears Wetlands A, B, and E are proposed to be filled. Wetlands C and D are depicted to be outside the proposed construction area, but impact(s) to their associated natural resource setback (buffer) are quantified on the Plan. A full impact assessment cannot be made because the proposed wetland and wetland buffer impact areas in zone B-3 and the southern portion of zone RM-1 have not been accurately depicted and quantified. For example, in addition to previously mentioned inconsistencies, the impact associated with pedestrian walk through Wetland D and its buffer have not been included on the Plan.

**Permits and Regulatory Status**
Based on available information, the following wetland-related items appear to be required for this project:

| Item | Required / Not Required |
|---|---|
| City Wetland Permit | Required; Non-Minor |
| Wetland Mitigation | To be determined: may be required according to Novi Ordinance (less than 0.25 acre of impact total with current delineation data); however an EGLE permit may require mitigation by purchasing approved wetland credits or other means. |
| Environmental Enhancement Plan | Required |
| Wetland Buffer Authorization | Required |
| EGLE Wetland Permit | To be determined by EGLE |

| Item | Required / Not Required |
|---|---|
| Wetland Conservation Easement | Not required unless mitigation is constructed within Novi |

MSG concurs with Niswander's opinion that each of the delineated wetlands would be regulated by EGLE due to their proximity to (i.e. within 500 feet of) Chapman Creek and/or the Walled Lake Branch of the Middle Rouge River.

The City of Novi Code of Ordinances, Chapter 12, Article V defines an essential wetland as meeting one or more of the criteria listed in subsections 12-174(b)(1) through (10) . It is MSG's opinion that wetlands A through E provide the functional characteristics of storm water storage capacity and wildlife habitat, and accordingly meet the criteria for an essential wetland. The boundaries and functional characteristics of Wetlands 1 through 4 have not yet been verified onsite.

Mitigation is required per Section 12-176 of the Novi Code of Ordinances when an activity results in 0.25 acre or greater of impairment or destruction of wetland areas that are determined to be essential wetland area, two acres in size or greater, or contiguous to a lake, pond, river, or stream. The Novi Code of Ordinances, Section 12-176 – Mitigation, states "Where an activity results in the impairment or destruction of wetland areas of less than one-quarter (¼) acre that are determined to be essential under subsection 12-174(b), are two (2) acres in size or greater or are contiguous to a lake, pond, river or stream, additional planting or other environmental enhancement shall be required onsite within the wetlands or wetland and watercourse setback where the same can be done within the wetland and without disturbing further areas of the site."

Additionally, conditions set forth within a required EGLE wetland use permit must be incorporated into the Site Plan, as follows: "If a permit granted by the department of natural resources and environment allows activities not allowed by the use permit granted under this article, the restrictions of the permit granted under this article shall govern. If a permit granted by the department of natural resources and environment imposes additional restrictions upon the activities, such restrictions shall be conditions of the permit granted under this article (Novi Code of Ordinances, Section 12-173(f))."

According to the *Application for Site Plan and Land Use Approval* form, the total proposed impact to City and EGLE regulated wetlands is 0.14 acre. Based on the total being less than 0.25 acre, mitigation is not required by the City but an environmental enhancement plan will be required. An environmental enhancement plan typically includes the removal of non-native species and/or planting of native wetland species within affected wetland(s) to compensate for lost wildlife habitat. Planting of native species with subsequent protection from mowing around a detention basin has also been approved as an enhancement plan.

EGLE is the final authority of the location and regulatory status of wetlands in Michigan. MSG recommends the client request a pre-application meeting with EGLE to determine the State jurisdictional status and mitigation requirements if work affecting the potentially State-regulated wetlands is proposed.

Given that a City Wetland permit cannot be issued for EGLE-regulated wetlands until EGLE has issued a wetland use permit, the applicant is advised both City and EGLE requirements would apply to a mitigation plan, if applicable.

In addition to wetlands, the City of Novi regulates wetland and watercourse buffers/setbacks. Article 24, Schedule of Regulations, of the Zoning Ordinance states: "There shall be maintained in all districts a wetland and watercourse setback, as provided herein, unless and to the extent, it is determined to be in the public interest not to maintain such a setback. The intent of this provision is to require a minimum setback from wetlands and watercourses". The established wetland and watercourse buffers/setback limit is 25 feet horizontal feet, regardless of grade change.

**Comments**

1. **All inconsistencies between the Plans and other associated Site documents regarding wetland/buffer size, location, impact, fill, etc. must be corrected.**

2. The City of Novi *Site Plan and Development Manual* requires the boundary lines of any watercourses or wetlands on the Site be clearly flagged or staked and such flagging or staking shall remain in place throughout the conduct of permit activity. MSG recommends the wetland delineation markers be maintained for reference for the duration of the project.

Please contact the undersigned if you have any questions regarding the matters addressed in this letter.

Sincerely,
**The Mannik & Smith Group, Inc.**

Keegan Mackin
*Environmental Scientist*

Douglas Repen, CDT
*Project Manager*
*Certified Storm Water Management Operator*

CC: Barbara McBeth, City of Novi Planner
Lindsay Bell, City of Novi Planner
James Hill, City of Novi Planner
Ian Hogg, City of Novi Planner
Sarah Marchioni, City of Novi Project Coordinator
Rick Meader, City of Novi Landscape Architect
Diana Shanahan, City of Novi Planning Assistant
Heather Zeigler, City of Novi Planner

# FIGURES

| Figure 1 | City of Novi Regulated Wetland Map. Approximate tax parcel limits are shown in teal. Regulated Wetland areas are shown in blue. |
|---|---|

Mannik Smith Group

2365 Haggerty Road South, Canton, Michigan 48188
Tel: 734.397.3100 Fax: 734.397.3131


**Novi Ten Associates PRO Concept; JZ23-09**
**Wetland Review of Revised PRO Concept Plan, Revised**
MSG Project No. 2300772

**Figure 2** | Excerpt from the Plan. The "Site" is shaded areas.

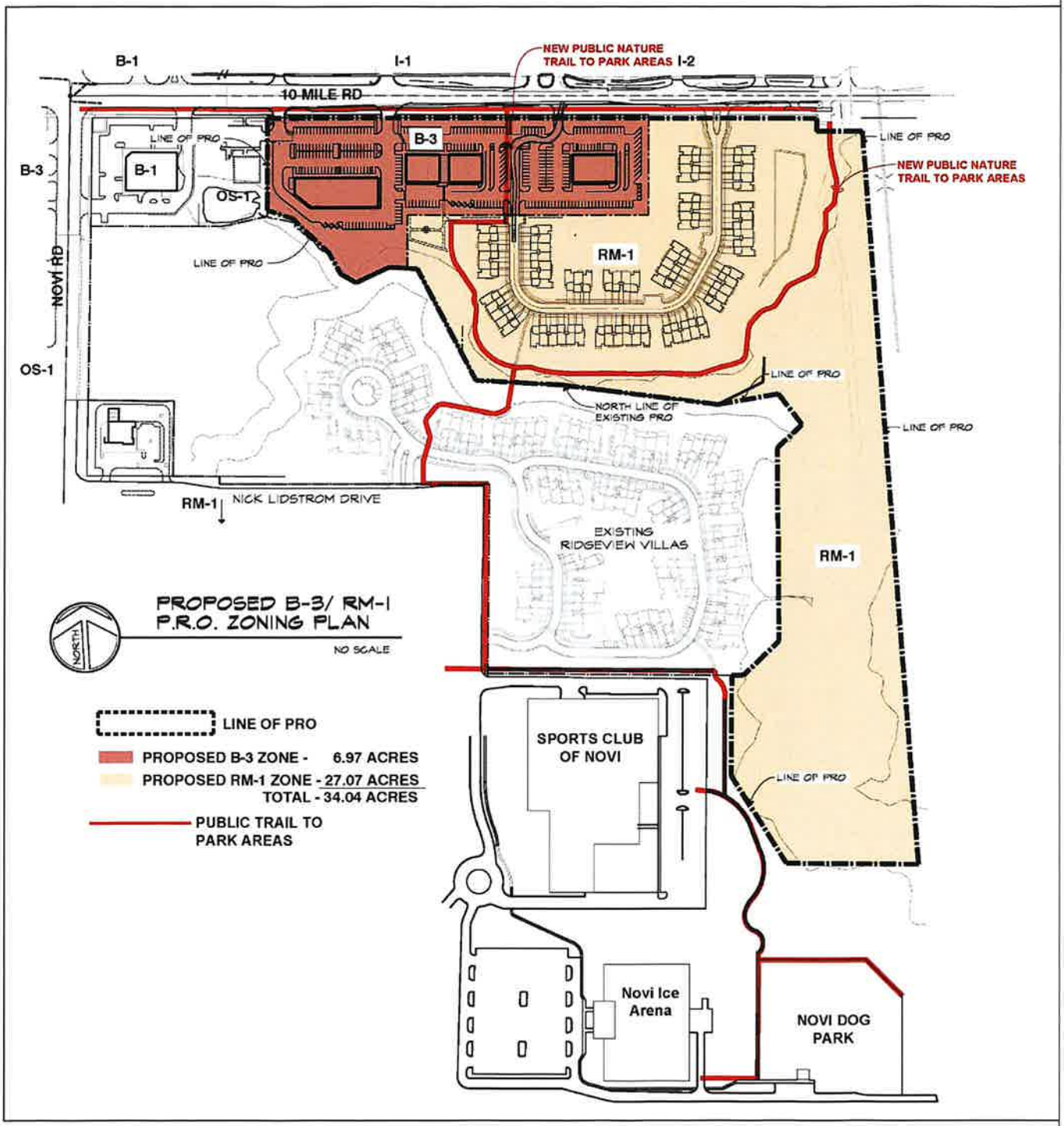


**Figure 3** | EGLE Wetlands Viewer Map. Approximate subject property boundary is shown in red.

## Wetlands Map Viewer

March 9, 2023

Part 303 Final Wetlands Inventory

- Wetlands as identified on NWI and MIRIS maps
- Soil areas which include wetland soils
- Wetlands as identified on NWI and MIRIS maps and soil areas which include wetland soils

1:9,572

0 0.07 0.15 0.3 mi

0 0.13 0.25 0.5 km

Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC (c) OpenStreetMap contributors, and the GIS User Community, Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

Disclaimer. This map is not intended to be used to determine the specific

**TRAFFIC REVIEW**
**January 25, 2024**

AECOM
27777 Franklin Road
Southfield
MI, 48034
USA
aecom.com

**Project name:**
JZ23-09 – Novi Ten PRO 2nd Revised Concept Traffic Review

**To:**
Barbara McBeth, AICP
City of Novi
45175 10 Mile Road
Novi, Michigan 48375

**From:**
AECOM

**Date:**
January 25, 2024

**CC:**
Lindsay Bell, James Hill, Heather Zeigler, Humna Anjum, Diana Shanahan, Adam Yako

# Memo

**Subject:** JZ23-09 – Novi Ten PRO 2nd Revised Concept Traffic Review

The PRO second revised concept site plan was reviewed to the level of detail provided and AECOM recommends **denial** for the applicant to move forward until the comments below are addressed to the satisfaction of the City.

## GENERAL COMMENTS

1. The applicant, Novi Ten Associates, is proposing a residential and commercial development consisting of 71 housing units, as of this time 39,500 SF total of retail/restaurants, and park area. An architectural plan for the commercial phase was provided and the comments for that phase are *italicized* below.
2. The development is located on 10 Mile Road, east of Novi Road. 10 Mile Road is under the jurisdiction of Oakland County.
3. The site is zoned OS-1 and I-1. The applicant is seeking to rezone the commercial area to B-3 and the residential to RM through a PRO Agreement.
4. The following traffic-related deviations are being requested by the applicant:
    a. Perpendicular parking on a major drive.
    b. Major drive curve of radius less than 100'.
5. The following traffic-related deviations will be required if plans are not changed and required to be obtained at the PRO stage:
    a. Opposite and same-side driveway spacing.

## TRAFFIC IMPACTS

1. AECOM performed an initial trip generation based on the ITE Trip Generation Manual, 10th Edition, as follows. This does not include the business area, due to lack of information from the applicant.

    ITE Code: 220 – Multifamily Housing (Low-Rise) and Strip Retail Plaza <40K (822), High Turnover (Sit-Down) Restaurant (932)
    Development-specific 71 Dwelling Units and 35,900 SF (26,700 SF assumed retail, 9,200 SF assumed restaurant)
    Zoning Change: OS-1 and I-1 to RM-1 and B-3

| Trip Generation Summary | Estimated Trips | Estimated Peak-Direction Trips | City of Novi Threshold | Above Threshold? |
|---|---|---|---|---|
| **AM Peak-Hour Trips** | 196 (45+63+88) | 120 (34+38+48) | 100 | Yes |
| **PM Peak-Hour Trips** | 310 (51+176+83) | 171 (32+88+51) | 100 | Yes |
| **Daily (One-Directional) Trips** | 2,970 (530+1454+986) | N/A | 750 | Yes |

2. The City of Novi generally requires a traffic impact study/statement if the number of trips generated by the proposed development exceeds the City's threshold of more than 750 trips per day or 100 trips per either the AM or PM peak hour, or if the project meets other specified criteria.

| Trip Impact Study Recommendation | |
|---|---|
| **Type of Study:** | **Justification** |
| **RTIS** | Zoning change for OS-1 and I-1 to RM and B-3. RTIS portions of the provided TIS have been reviewed in a separate letter. Conclusion of the RTIS review: the daily trips (6,560) are **significantly higher for the proposed land uses** under the new zoning vs daily trips (2,566) under the existing zoning.<br><br>However, the applicant is proposing to reduce the gross floor area to 35,900 SFT from 60,000 SFT as part of the second revised PRO concept plan since the RTIS study was submitted. The applicant could revise the RTIS to show the changes in the net impact. |
| **TIS** | A TIS review was previously provided under a separate letter.<br><br>The TIS study indicates a large number of trips from this proposed development on the surrounding road networks and driveways. The study concluded with a list of **significant roadway improvements** including the addition of through lanes and a central left turn lane on 10 Mile Road within the study area in support of the shopping plaza. However, we do not agree with the widening of 10 Mile Road only tied to the site driveways as suggested in the report rather it should be tied to the major intersection movements for the safety and drivers' expectancy. **The commercial part of this project is dependent on these mitigations/improvements being implemented.** |

# TRAFFIC REVIEW

The following table identifies the aspects of the plan that were reviewed. Items marked O are listed in the City's Code of Ordinances. Items marked with ZO are listed in the City's Zoning Ordinance. Items marked with ADA are listed in the Americans with Disabilities Act. Items marked with MMUTCD are listed in the Michigan Manual on Uniform Traffic Control Devices.

The values in the 'Compliance' column read as 'met' for plan provision meeting the standard it refers to, 'not met' stands for provision not meeting the standard and 'inconclusive' indicates applicant to provide data or information for review and 'NA' stands for not applicable for subject Project. The 'remarks' column covers any comments reviewer has and/or 'requested/required variance' and 'potential variance'. A potential variance indicates a variance that will be required if modifications are not made or further information provided to show compliance with the standards and ordinances. The applicant should put effort into complying with the standards; the variances should be the last resort after all avenues for complying have been exhausted. Indication of a potential variance does not imply support unless explicitly stated.

| EXTERNAL SITE ACCESS AND OPERATIONS | | | | |
|---|---|---|---|---|
| **No.** | **Item** | **Proposed** | **Compliance** | **Remarks** |
| 1 | Driveway Radii \| O Figure IX.3 | 35' and *not indicated* | **Partially Met** | Could reduce to meet standard of 25' for local street. *Provide dimension for commercial phase driveways in future submittal.* |
| 2 | Driveway Width \| O Figure IX.3 | 22' and *30' and not indicated* | **Partially Met** | Indicate the length of island. *Provide dimension for all commercial phase driveways in future submittal to ensure there is adequate space for separate left-turn and right-turn lanes.* |
| 3 | Driveway Taper \| O Figure IX.11 | | | |
| 3a | Taper length | 100' | Met | |
| 3b | Tangent | 50' | Met | |
| 4 | Emergency Access \| O 11-194.a.19 | 2 access points | Met | Applicant has indicated commercial property not to be developed at this time. The access for the 2nd entrance for the residential section must be built at the same time as the residential section. **Details of the gate and applicable signs should be provided in future submittals.** |
| 5 | Driveway sight distance \| O Figure VIII-E | 500+ and *not indicated* | **Partially Met** | *Provide dimensions for commercial phase driveways in future submittal.* |
| 6 | Driveway spacing | | | |
| 6a | Same-side \| O 11.216.d.1.d | Not indicated | **Inconclusive** | **45 mph speed limit dictates 230' spacing**. The applicant indicated they have preliminary approval from RCOC on the driveway locations. |
| 6b | Opposite side \| O 11.216.d.1.e | 105' and 118', *Directly across from existing driveways* | **Partially Met** | Applicant should consider moving the driveway to be across from one of the two existing driveways near it. The applicant indicated they have preliminary approval from RCOC on the driveway locations. **A deviation would be required if City standards are not met.** |
| 7 | External coordination (Road agency) | Applicant indicated permit required | **Partially Met** | Include details of what work is to occur in the RCOC right of way and maintenance of traffic plans for the work. |
| 8 | External Sidewalk \| Master Plan & EDM | 8' | Met | |

| EXTERNAL SITE ACCESS AND OPERATIONS | | | | |
|---|---|---|---|---|
| **No.** | **Item** | **Proposed** | **Compliance** | **Remarks** |
| 9 | Sidewalk Ramps \| EDM 7.4 & R-28-K | Indicated and *not indicated* | **Partially Met** | ADA ramps labeled at residential entrance only, include sidewalk ramp detail in future submittals. |
| 10 | Any Other Comments: | | | |

| INTERNAL SITE OPERATIONS | | | | |
|---|---|---|---|---|
| **No.** | **Item** | **Proposed** | **Compliance** | **Remarks** |
| 11 | Loading zone \| ZO 5.4 | N/A and *170' x 10', 170' x 10', 60' x 10', and 70' x 10'* | Met | |
| 12 | Trash receptacle \| ZO 5.4.4 | Individual trash collection and *provided for each of the 4 buildings* | Met | |
| 13 | Emergency Vehicle Access | Turning movements provided | Met | |
| 14 | Maneuvering Lane \| ZO 5.3.2 | N/A and *24'* | Met | |
| 15 | End islands \| ZO 5.3.12 | | | |
| 15a | Adjacent to a travel way | N/A and *partially dimensioned* | **Inconclusive** | *Provide radii dimensions for commercial phase end islands in future submittal. Note end islands adjacent to travel way are to be 3' shorter than adjacent space.* |
| 15b | Internal to parking bays | N/A and *partially dimensioned* | **Inconclusive** | *Provide dimensions for commercial phase end islands in future submittal.* |
| 16 | Parking spaces \| ZO 5.2.12 | 10 backing onto street | **Not Met** | Perpendicular parking on major drive, see No.30. See Planning review letter for number of parking spaces required. |
| 17 | Adjacent parking spaces \| ZO 5.5.3.C.ii.i | <15 spaces without an island | Met | |
| 18 | Parking space length \| ZO 5.3.2 | 19' typical and *17' and 19'* | Met | |
| 19 | Parking space Width \| ZO 5.3.2 | 9' typical and *9'* | Met | |
| 20 | Parking space front curb height \| ZO 5.3.2 | 6" and *not indicated* | **Partially Met** | *Provide for commercial phase in future submittal. Note 4" curb required in front of 17' parking space and 6" everywhere else.* |
| 21 | Accessible parking – number \| ADA | 1 and *16* | Met | |

| INTERNAL SITE OPERATIONS | | | | |
|---|---|---|---|---|
| **No.** | **Item** | **Proposed** | **Compliance** | **Remarks** |
| 22 | Accessible parking – size \| ADA | 8' with 8' aisle | Met | Applicant could consider providing the aisle on the passenger side of the space. |
| 23 | Number of Van-accessible space \| ADA | 1 and *not indicated* | **Partially Met** | One (1) space is required to be van accessible. *Label which spaces are van accessible in future submittal.* |
| 24 | Bicycle parking | | | |
| 24a | Requirement \| ZO 5.16.1 | 16 spaces *and not indicated* | **Partially Met** | One (1) space for every 5 dwellings, total of 15 spaces required. *5% of required automobile spaces, minimum two (2) spaces.* |
| 24b | Location \| ZO 5.16.1 | 2 locations and *not indicated* | **Partially Met** | Applicant could consider providing 4 locations with 4 spaces each instead of 2 locations with 8 spaces each. *Label in commercial phase in future submittal.* |
| 24c | Clear path from Street \| ZO 5.16.1 | 6' clear path and *not indicated* | **Partially Met** | *Dimension in commercial phase in future submittal.* |
| 24d | Height of rack \| ZO 5.16.5.B | 3' | Met | |
| 24e | Other (Covered / Layout) \| ZO 5.16.1 | Layout provided | **Not Met** | **Refer to Text Amendment 18.301 for revised standard layout details.** |
| 25 | Sidewalk – min 5' wide \| Master Plan | 5' wide minimum and *4' and 7'* | **Partially Met** | *4' does not meet 5' minimum requirement at building A. Dimension all sidewalk widths in commercial phase.* |
| 26 | Sidewalk ramps \| EDM 7.4 & R-28-J | Detectable warning strip indicated and *not indicated* | **Partially Met** | Applicant should provide details for proposed ramps. *Label ramps in commercial phase in future submittal.* |
| 27 | Sidewalk – distance back of curb \| EDM 7.4 | 6' and *0'* | Met | |
| 28 | Cul-De-Sac \| O Figure VIII-F | N/A | - | - |
| 29 | Drive-Thru \| ZO 5.3.11.I | *Not dimensioned* | **Inconclusive** | *Dimension stacking spaces and centerline radius in future submittal. Indicate board location.* |
| 30 | Minor/Major Drives \| ZO 5.10 | Private road qualifies as major drive. 10 perpendicular spaces and 85', 100', and 120' curves | **Not Met** | Major drives are not permitted perpendicular parking. Minimum curve radius allowed for major drives is 100', applicant is proposing 85' curve. **Applicant has indicated they are requesting both deviations.** |
| 31 | Any Other Comments: | **Add radius in future submittals for the T-turnaround to ensure compliance with Figure VIII-I.** | | |

| SIGNING AND STRIPING | | | | |
|---|---|---|---|---|
| **No.** | **Item** | **Proposed** | **Compliance** | **Remarks** |
| 32 | Signing: Sizes \| MMUTCD | Included and *not included* | **Partially Met** | *Provide for commercial phase in future submittal.* |
| 33 | Signing table: quantities and sizes | Included and *not included* | **Partially Met** | *Provide for commercial phase in future submittal.* |
| 34 | Signs 12” x 18” or smaller in size shall be mounted on a galvanized 2 lb. U-channel post \| MMUTCD | Included and *not included* | **Partially Met** | *Provide for commercial phase in future submittal.* |
| 35 | Signs greater than 12” x 18” shall be mounted on a galvanized 3 lb. or greater U-channel post \| MMUTCD | Included and *not included* | **Partially Met** | *Provide for commercial phase in future submittal.* |
| 36 | Sign bottom height of 7’ from final grade \| MMUTCD | Included and *not included* | **Partially Met** | *Provide for commercial phase in future submittal.* |
| 37 | Signing shall be placed 2’ from the face of the curb or edge of the nearest sidewalk to the near edge of the sign \| MMUTCD | Included and *not included* | **Partially Met** | *Provide for commercial phase in future submittal.* |
| 38 | FHWA Standard Alphabet series used for all sign language \| MMUTCD | Included and *not included* | **Partially Met** | *Provide for commercial phase in future submittal.* |
| 39 | High-Intensity Prismatic (HIP) sheeting to meet FHWA retro-reflectivity \| MMUTCD | Included and *not included* | **Partially Met** | *Provide for commercial phase in future submittal.* |
| 40 | Parking space striping notes | Included and *not included* | **Partially Met** | *Provide for commercial phase in future submittal.* |
| 41 | The international symbol for accessibility pavement markings \| ADA | Included and *not included* | **Partially Met** | *Provide for commercial phase in future submittal.* |
| 42 | Crosswalk pavement marking detail | Included and *not included* | **Partially Met** | *Provide for commercial phase in future submittal.* |
| 43 | Any Other Comments: | Applicant could provide crosswalk signs at the mid-block crossing. | | |

Note: Hyperlinks to the standards and Ordinances are for reference purposes only, the applicant and City of Novi to ensure referring to the latest standards and Ordinances in its entirety.

Should the City or applicant have questions regarding this review, they should contact AECOM for further clarification.

Sincerely,

**AECOM**

Paula K. Johnson, PE
Senior Transportation Engineer

Saumil Shah, PMP
Project Manager

**TRAFFIC IMPACT STUDY REVIEW**
**December 20, 2023**

AECOM
27777 Franklin Road
Southfield
MI, 48034
USA
aecom.com

**Project name:**
**JSP23-09 – Novi Ten TIS Traffic Review**

**From:**
AECOM

**Date:**
December 20, 2023

**To:**
Barbara McBeth, AICP
City of Novi
45175 10 Mile Road
Novi, Michigan 48375

**CC:**
Lindsay Bell, James Hill, Ian Hogg, Heather Zeigler, Diana Shanahan

# Memo

**Subject:** JSP23-09 – Novi Ten TIS Traffic Review

The Traffic Impact Study was reviewed to the level of detail provided and AECOM recommends **approval of the Traffic Impact Study with the mitigations/improvements**.

## GENERAL COMMENTS

1. The memo will provide comments on a section-by-section basis following the format of the submitted report.
2. The project is located on the south side of 10 Mile Road between Novi Road and the Railroad tracks.
3. The development consists of 71 townhouse residential units (low rise) and approximately 60,000 SF of neighborhood retail.
4. The development is a PRO plan, and the site would need to be rezoned from its existing mix of I-1 and OS-1.

## BACKGROUND DATA

1. The following roadways were included in the study:
    a. 10 Mile Road: East/West, 45 mph, 2 lanes divided
    b. The intersections and site driveways were included in the study.
        - 10 Mile Road & Novi Road
        - 10 Mile Road & Meadowbrook Road
        - Site Driveways (4 shown in concept plan)
        - Other Existing Driveways

2. Applicant collected turning movements that occurred between the hours of 6:00 AM-7:00 PM on March 16th, 2022 at 2 intersections (10 Mile Road and Novi Road and Meadowbrook Road) and 4 driveways.

## EXISTING CONDITIONS

1. The overall Level of Service (LOS) at the major road intersections is D or better while following movement experiencing higher delay LOS E or F at:
    a. Northbound and southbound movements at 10 Mile and Meadowbrook Road (LOS E)
    b. Eastbound left at 10 Mile and Novi Road (LOS F)
    c. Southbound Third Driveway/Double Driveway at 10 Mile Road (LOS E)

# BACKGROUND (NO BUILD) CONDITIONS 2024

1. A conservative 0.2% annual growth rate was used to determine the build year five years from 2022, based on the SEMCOG traffic volume forecasts.
2. Overall operations at the intersections are not expected to change significantly compared to existing conditions.

# SITE TRIP GENERATION

1. A total of 6560 daily trips are anticipated based on the ITE trip generation codes.
2. A total of 40% of trips are considered as pass-by trips during the afternoon peak hours and a relevant reference is provided in the Appendix from the ITE manual. And a net increase of approx. 250 trips during the morning peak hour and approx. 400 trips during the evening peak hour are considered for a traffic impact study on the surrounding road network.

# SITE TRAFFIC ASSIGNMENT

1. Adjacent street volumes were used to calculate site trip distribution.
    a. The largest portion of the traffic is assumed to be coming from/going to Novi Road followed by 10 Mile Road and Meadowbrook Road.

# FUTURE CONDITIONS

1. Operations at the signalized intersections are not expected to deteriorate at the following movements:
    a. Westbound 10 Mile Road (LOS E)
    b. Eastbound left at 10 Mile and Novi (LOS F in both existing and build conditions)
    c. LOS F for 3rd Site Driveway with the significantly excessive delay of approx. 2500 sec.
    d. Movements at Northbound and Southbound approaches at Meadowbrook continue to experience higher delays at LOS E.
2. Excessive delay at 3rd site driveway will lead ultimately to the driveway not being utilized by the commuters of this proposed development and will end up adding more traffic on other driveways and circulation within the development. This might start a cascade of effects on other driveways also failing especially when all the driveways are on 10 Mile Road.

# CONCLUSIONS

1. The study concluded with a list of recommendations that will improve the failing level of service and traffic conditions as per the following:
    - Widen eastbound 10 Mile Road to two through lanes, ending with a right-turn lane at the site's easternmost residential driveway.
    - Widen westbound 10 Mile Road to two through lanes west from the 3rd site driveway to help provide additional capacity for outbound site traffic.
    - Provide a continuous center lane turn lane to serve the 1st, 2nd, and 3rd commercial driveways.
    - Provide separate outbound left-turn / right-turn lanes for the site's 2nd and 3rd commercial driveways to allow right-turning traffic to exit the site when vehicles are waiting to turn left.

    However, we do not agree with the widening of 10 Mile Road tied to the site driveways as suggested in the report rather it should be tied to the major intersection movements for the safety and drivers' expectancy.

2. The study indicates a large number of trips from this proposed development on the surrounding road networks and driveways. The study concluded with a list of significant roadway improvements including the addition of through lanes and a central left turn lane on 10 Mile Road within the study area in support of the shopping plaza. **The commercial part of this project is dependent on these mitigations/improvements being implemented.**

Should the City or applicant have questions regarding this review, they should contact AECOM for further clarification.

Sincerely,

**AECOM**

Saumil Shah, PMP
Project Manager

Jeff Wood, PE, PTOE
Senior Traffic Engineer

**FAÇADE REVIEW**
**January 22, 2024**

DRN & ASSOCIATES, ARCHITECTS, PC
Phone: (248) 880-6523
E-Mail: dnecci@drnarchitects.com
Web: drnarchitects.com
50850 Applebrooke Dr., Northville, MI 48167

January 22, 2024

City of Novi Planning Department
45175 W. 10 Mile Rd.
Novi, MI 48375-3024

Façade Review Status:
Residential Units – Section 9 Waiver Recommended.
Commercial Buildings – Full Compliance

Attn: Ms. Barb McBeth – Director of Community Development

Re: FACADE ORDINANCE REVIEW
**Novi-Ten PRO, JSP23-09 Second Revised Concept**
Façade Region: 1, Zoning District: RA

Dear Ms. McBeth:
The drawings provided by Toll Architecture dated 6/30/2023 for 4 typical residential townhome units have not changed since our prior review. The drawings for the commercial buildings by Siegal Tuomaala Architects dated 1/2/2024 have been significantly revised since our prior review.

| **Residential Unit 1**<br>Howe, Newhaven<br>(Drawings Dated 6/30/23) | Front | Rear | Left | Right | Ordinance Maximum (Minimum) |
|---|---|---|---|---|---|
| Brick | 34% | **27%** | 43% | 43% | 100% (30% Min) |
| Horizontal Siding | 1% | 21% | 45% | 45% | 50% (Note 10) |
| Asphalt Shingles | **58%** | 49% | 7% | 7% | 50% (Note 14) |
| Wood Trim | 7% | 3% | 5% | 5% | 15% |

| **Residential Unit 2**<br>Howe, Weatherby<br>(Drawings Dated 6/30/23) | Front | Rear | Left | Right | Ordinance Maximum (Minimum) |
|---|---|---|---|---|---|
| Brick | **26%** | **27%** | 43% | 43% | 100% (30% Min) |
| Horizontal Siding | 1% | 21% | 45% | 45% | 50% (Note 10) |
| Vertical Siding | 16% | 0% | 7% | 7% | 25% |
| Asphalt Shingles | 47% | 49% | 5% | 5% | 50% (Note 14) |
| Wood Trim | 10% | 3% | 5% | 5% | 15% |

| **Residential Unit 3** Sanders, Newhaven (Drawings Dated 6/30/23) | Front | Rear | Left | Right | Ordinance Maximum (Minimum) |
|---|---|---|---|---|---|
| Brick | 34% | **27%** | 43% | 43% | 100% (30% Min) |
| Horizontal Siding | 3% | 21% | 45% | 45% | 50% (Note 10) |
| Asphalt Shingles | **56%** | 49% | 7% | 7% | 50% (Note 14) |
| Wood Trim | 7% | 3% | 5% | 5% | 15% |

| **Residential Unit 4** Sanders, Weatherby (Drawings Dated 6/30/23) | Front | Rear | Left | Right | Ordinance Maximum (Minimum) |
|---|---|---|---|---|---|
| Brick | **26%** | **27%** | 43% | 43% | 100% (30% Min) |
| Horizontal Siding | 1% | 21% | 45% | 45% | 50% (Note 10) |
| Vertical Siding | 18% | 0% | 7% | 7% | 25% |
| Asphalt Shingles | 45% | 49% | 5% | 5% | 50% (Note 14) |
| Wood Trim | 10% | 3% | 5% | 5% | 15% |

Residential Units - Our prior recommendation for a Section 9 Waiver for the deviations highlighted above remains unchanged. As shown above the percentage of Brick is below the minimum amount required by the Ordinance and the percentage of Asphalt Shingles exceeds the maximum amount allowed by the Ordinance on several elevations. In this case the deviations are minor in nature and do not adversely affect the aesthetic quality of the facades. A Section 9 Waiver is therefore recommended for the underage of Brick (3%) and overage of Asphalt Shingles (8%) on the front and rear facades. The precise type of tongue and groove (T&G) and Batten Wood Siding in not clearly indicated on the drawings. It is recommended that a sample board as required by Section 5.15.4.D of the Ordinance and/or a colored rendering be provided to indicate the colors and type of all façade materials.

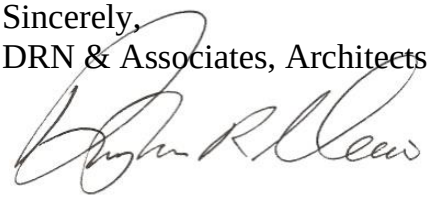
| Commercial Bldg. A & B (Drawings Dated 1/2/24) | North Front | South Rear | East | West | Ordinance Maximum (Minimum) |
|---|---|---|---|---|---|
| Brick | 57% | 83% | 72% | 72% | 100% (30% Min) |
| C-Brick | 0% | 12% | 12% | 12% | 25% |
| EIFS | 18% | 0% | 7% | 7% | 25% |
| Cast Stone | 18% | 0% | 7% | 7% | 50% |
| Awning | 0% | 0% | 0% | 2% | 10% |
| Flat Metal Panel | 7% | 5% | 2% | 0% | 50% |

| Commercial Bldg. C (Drawings Dated 1/2/24) | North Front | South Rear | East | West | Ordinance Maximum (Minimum) |
|---|---|---|---|---|---|
| Brick | 60% | 83% | 73% | 73% | 100% (30% Min) |
| C-Brick | 0% | 12% | 12% | 12% | 25% |
| EIFS | 0% | 0% | 6% | 6% | 25% |
| Cast Stone | 31% | 0% | 7% | 7% | 50% |
| Awning | 0% | 0% | 0% | 0% | 10% |
| Flat Metal Panel | 9% | 5% | 2% | 2% | 50% |

| Commercial Bldg. D (Drawings Dated 1/2/24) | North Front | South Rear | East | West | Ordinance Maximum (Minimum) |
|---|---|---|---|---|---|
| Brick | 60% | 82% | 79% | 62% | 100% (30% Min) |
| C-Brick | 0% | 12% | 14% | 12% | 25% |
| EIFS | 0% | 0% | 0% | 15% | 25% |
| Cast Stone | 34% | 0% | 4% | 9% | 50% |
| Awning | 0% | 0% | 0% | 0% | 10% |
| Flat Metal Panel | 6% | 6% | 3% | 2% | 50% |

Commercial Buildings – The revisions made to the commercial buildings generally represent improvements with respect to Façade Ordinance compliance. All facades remain in full compliance with the Façade Ordinance. The drawings indicate “all roof mounted mechanical equipment to be screened”. The applicant should specify the material to be used for the roof screens; the screen’s material must comply with the Façade Ordinance. A dumpster enclosure detail is not provided. The dumpster enclosure should have Brick to match the primary buildings on 3 sides.

Sincerely,
DRN & Associates, Architects PC



Douglas R. Necci, AIA

**FIRE REVIEW**
**January 22, 2024**

**CITY COUNCIL**

**Mayor**
Justin Fischer

**Mayor Pro Tem**
Laura Marie Casey

Dave Staudt

Brian Smith

Ericka Thomas

Matt Heintz

**City Manager**
Victor Cardenas

**Director of Public Safety**
**Chief of Police**
Erick W. Zinser

**Fire Chief**
John B. Martin

**Assistant Chief of Police**
Scott R. Baetens

**Assistant Fire Chief**
Todd Seog

**Novi Public Safety Administration**
45125 Ten Mile Road
Novi, Michigan 48375
248.348.7100
248.347.0590 fax

cityofnovi.org

January 22, 2024

TO: Barbara McBeth - City Planner
Lindsay Bell - Plan Review Center
James Hill – Plan Review Center
Heather Zeigler – Plan Review Center
Diana Shanahan – Planning Assistant

RE: Novi Ten PRO Concept

**PRZ23-0001**

**Project Description:**
Build 13 multi-tenant structures and 3 commercial buildings.

**Comments:**

- **All** fire hydrants **MUST** be installed and operational prior to any combustible material is brought on site. **IFC 2015 3312.1**
- For new buildings and existing buildings, you **MUST** comply with the International Fire Code Section 510 for Emergency Radio Coverage. This shall be completed by the time the final inspection of the fire alarm and fire suppression permits.
- Fire lanes will be designated by the Fire Chief or his designee when it is deemed necessary and shall comply with the Fire Prevention Ordinances adopted by the City of Novi. The location of all "fire lane – no parking" signs are to be shown on the site plans. ***(Fire Prevention Ord.)***
- The minimum width of a posted fire lane is 20 feet. The minimum height of a posted fire lane is 14 feet. ***(D.C.S Sec. 158-99(a).)***
- All new multi-residential buildings shall be numbered. Each number shall be a minimum 10 inches high, 1 inch wide and be posted at least 15 feet above the ground on the building where readily visible from the street. ***(Fire Prevention Ord.).***
- The distribution system in all developments requiring more than eight hundred (800) feet of water main shall have a minimum of two (2) connections to a source of supply and shall be a looped system. ***(D.C.S. Sec. 11-68(a))***
- The ability to serve at least two thousand (2,000) gallons per minute in single-family detached residential; three thousand (3,000) gallons per school areas; and at least four thousand (4,000) gallons per minute in office, industrial and shopping centers is essential. ***(D.C.S. Sec.11-68(a))***
- Water mains shall be put on the plans for review.

- Water mains greater than 25', shall be at least 8" in diameter. Shall be put on plans for review. ***(D.S.C. Sec.11-68(C)(1)(c)***
- Fire hydrant spacing shall be measured as "hose laying distance" from fire apparatus. Hose laying distance is the distance the fire apparatus travels along improved access routes between hydrants or from a hydrant to a structure.
- Hydrants shall be spaced approximately three hundred (300) feet apart online in commercial, industrial, and multiple-residential areas. In cases where the buildings within developments are fully fire suppressed, hydrants shall be no more than five hundred (500) feet apart. The spacing of hydrants around commercial and/or industrial developments shall be considered as individual cases where special circumstances exist upon consultation with the fire chief. ***(D.C.S. Sec. 11-68 (f)(1)c)***
- Fire department connections shall be located on the street side of buildings, fully visible and recognizable from the street or nearest point of fire department vehicle access or as otherwise approved by the code official. ***(International Fire Code 912.2.1)***
- With respect to hydrants, driveways, buildings and landscaping, fire department connections shall be so located that fire apparatus and hose connected to supply the system will not obstruct access to the buildings for other fire apparatus. The location of fire department connections shall be approved. ***(International Fire Code 912.2)***
- Proximity to hydrant: In any building or structure required to be equipped with a fire department connection, the connection shall be located within one hundred (100) feet of a fire hydrant. ***(Fire Prevention Ord. Sec. 15-17 912.2.3)***
- A hazardous chemical survey is required to be submitted to the Planning & Community Development Department for distribution to the Fire Department at the time any Preliminary Site Plan is submitted for review and approval. Definitions of chemical types can be obtained from the Fire Department at (248) 735-5674.
- Water mains and fire hydrants shall be installed prior to construction above the foundation. Note this on all plans.
- Site plan shall provide more than one point of external access to the site. A boulevard entranceway shall not be considered as providing multiple points of access. Multiple access points shall be as remote from one another as is feasible. The requirement for secondary access may be satisfied by access through adjacent property where an easement for such access is provided. Secondary access shall not be required under the following circumstances:
- Secondary access road for residential development cannot have a temporary topping on the road. Road shall be finished with grass pavers, asphalt, or cement.

- Fire apparatus access drives to and from buildings through parking lots shall have a minimum fifty (50) feet outside turning radius and designed to support a minimum of thirty-five (35) tons. ***(D.C.S. Sec 11-239(b)(5))***

**Recommendation:**

Approved with Conditions

Sincerely,

Kevin S. Pierce-Fire Marshal
City of Novi – Fire Dept.

cc: file

**APPLICANT RESPONSE LETTERS**

February 15, 2024
Ms. Lindsay Bell, AICP, Senior Planner
Community Development- Planning Division
City of Novi
45175 Ten Mile Road
Novi, MI 48375

Response Letter: JZ23-09 Novi-10 PRO 2nd Review Initial PRO Plan

Dear Ms. Bell,

As requested, we are submitting this response letter for inclusion in the Planning Commission packet for the February 21, 2024 Planning Commission meeting. Rezoning signs were installed on the site on January 30. Team members expected to attend the Planning Commission meeting:

| | |
|---|---|
| Daniel Weiss, | Novi-10 Associates, LLC |
| Scott Hansen | Toll Brothers |
| Jason Iacoangeli | Toll Brothers |
| Lonny Zimmerman, AIA | Siegal Tuomaala Associates Architects & Planners, Inc. |
| Jason Rickard, PE, | Seiber, Keast, Lehner Engineering, Surveying |
| Michael Cool | Midwestern Consulting, LLC (Traffic Consulting) |

This letter incorporates the responses from the civil engineer (SKL Engineering) and the residential landscape architect (Allen Design), however their individual response letters are attached for reference. Responses are as follows:

## PLANNING REVIEW

**PROJECT SUMMARY:**
**Recommendation**:
Our responses will address in detail the staff concerns regarding, "residential use's compatibility with heavy industrial to the north, inconsistency with the recommendations of the Master Plan for Land Use Future Land Use Map, and the estimated increase in traffic", all of which are ameliorated by the responses that follow in this letter.

**REVIEW COMMENTS:** (Only items requiring a response are indicated below)
**1b. Community Impact Statement:**
All statements are being revised to reflect the current plans and all data is being updated. It should be noted that updated data does not change the ability of the municipal services to support the proposed PRO.

**1c. Rezoning Traffic Impact Study:**
Our traffic consultant has been working with AECOM for traffic coordination. The site (even with more commercial space that was assumed for the traffic impact study) is not expected to significantly degrade the level of service at the major intersections in the area. The owners have expressed a willingness to provide our traffic consultant's recommended road improvements along 10 Mile Road and at the site driveways and will be coordinating with the Road Commission of Oakland County, since the road is their jurisdiction. Discussions have taken place between the civil engineering team and the RCOC regarding the placement of the residential drive onto Ten Mile Road, which they approved in June of 2022, if a passing lane is added, which is shown on the drawings. All other improvements will be coordinated and adjusted as the County requires.

**1d. Commercial Market Analysis:**
As the market study recommends, most vehicle oriented uses will not be permitted, as explained in the narrative that accompanied the submission. The pedestrian linkages recommended by the market analysis for the retail portion of the PRO are clearly implemented with the Walkable Community Plan (Drawing P.4) that is an integral part of the project. This plan links the proposed townhouses, the existing townhouses to the south and the other surrounding residential developments with the proposed PRO retail development along Ten Mile Road, with the Novi Athletic Club and the Ice Arena to the south, with the park to the west, and with the large natural conservation easement area to the east. This linkage also connects with the proposed new public tennis/ pickleball courts built as part of this project.

**1f. Sign Location Plan:**
The public hearing notification signs were posted on site prior to the required February 1, 2024 date.

**2. Intent of The Commercial District:**
The commercial district is committed to being a Village Center for the community. The 3 nearby corners of 10 Mile Road and Novi Road are all zoned B-3, so that is the most consistent choice we have made, with certain use exclusions. Additional use exclusions as suggested by the staff for car dealerships, oil change facilities, and hotels/ motels which are detrimental to a walkable neighborhood center. However, the B-3 offers special use options such as a drive-thru restaurant and a neighborhood gym, which are not present in the B-2 district and are compatible with a "Village Center" environment.

**3. Drive-Through and Fast Food Restaurants:**
As indicated the drawings show one drive-thru for a restaurant which exceeds all of the setback requirements. The drive thru has been located at the farthest building on the proposed commercial plan from the proposed residential parcel. We are not

opposed to limiting the number of drive-thru restaurants to one, as shown and the type of restaurant desired is a neighborhood type (such as Panera Bread) rather than a typical "fast food" restaurant.

**4. Land Division:**
As indicated in the review, the two larger parcels will need to be split as part of this PRO. If a City Council deviation is required, it will be pursued.

**5. Density:**
As indicated in the review, the RM-1 density complies with the ordinance.

**6. Adjacent Industrial Uses:**
The proposed PRO project is seeking a rezoning from I-1 Light Industrial to a Planned Rezoning Overlay (PRO) to achieve RM-1 Zoning for a portion of the PRO, which is consistent with the RM-1 rezoning of the PRO project to the south, Ridgeview Villas which was approved in 2015. The townhouse developer, Toll Brothers, has built hundreds of residential developments around the country, and from their experience and detailed site analysis, the separation distance and the berms with dense landscaping will provide the necessary separation to mitigate concerns regarding the viability of this townhouse community. If Toll Brothers felt this to be a problem, they would not have become invested in this location.
The heavy industrial zoning district is located on the north side of Ten Mile Road, which has a 120 ft. right-of-way. Although the current uses in this district are generally not heavy industry, it is recognized that it may be heavy industry in the future. The proposed townhouses begin 75 feet away from the south right-of-way line with 6 to 10 foot high berm in most of the 75 feet which will be planted with 10 ft. to 12 ft. high evergreens. This dense landscaping and berms will mitigate the visual and acoustical effects of the industrial area to the north and the traffic on Ten Mile Road.
This neighborhood block that is bound to the north by 10 Mile Road, to the east by the railroad line, to the south by 9 Mile Road, and to the West by Novi Road has largely developed as a residential area. This proposed development would ensure that the last remaining area of undeveloped I-1 zoned property is re-zoned to RM-1 zoning. This will have the impact of protecting those adjacent residential users from future industrial development on the south side of Ten Mile Road.
Regarding the east side of the property abutting I-1 Industrial zoning along the rail line, the closest unit will be approximately 360' feet away from the rail line with the existing vegetation remaining in place. This will provide ample screening to industrial building that is in place.
Overall, the impact to the site from an environmental standpoint will be minimal as the housing is clustered to the north outside of the wetland area and flood plain keeping the 15.87-acre area intact and untouched by development. This design leaves most of the site in its natural state and works to limit the amount of impervious surface. The developer is willing to place the wetland and floodplain area on the residential parcel

into a conservation easement per the City's request.
The Novi-10 project will preserve the overall character of the neighborhood and will build upon the past community planning efforts that have created this very walkable and connected residential neighborhood where retaining the I-1 Industrial zoning in place could lead to other less community friendly outcomes.
In summary the rezoning request for the RM-1 zoning utilizing the PRO process will provide the City of Novi the assurance that the Novi-10 project will preserve the overall character of the neighborhood and will build upon the past community planning efforts that have created this very walkable and connected residential neighborhood

**7. Usable Open Space:**
As indicated in the review, the residential portion of this PRO proposes 6.5 times the amount of usable open space as required by the ordinance. As suggested in the review, a playground amenity can be added to the small park area west of the townhouses.

**9. Non-Motorized Access:**
As indicated in the review the public will be permitted (and in fact encouraged) to use the new trail system provided. Public access to the trail system can be included in the PRO agreement as well as the two access points to River Oaks West.

**10. Plan Review Chart:**
Responses to these items will follow.

**11. Other Reviews:**
**a. Engineering:** New stormwater management standards will be followed as adapted by the city.
**b. Landscape:** Corrections will be made to the landscape plans to comply.
**c. Traffic:** As indicated in the response above, our traffic consultant has been working with the city's traffic consultant. An additional center lane has been added and the necessary tapers. Improvements proposed will be coordinated with Oakland County since Ten Mile Road is their jurisdiction.
**d. Woodlands:** No issues
**e. Wetlands:** No issues
**f. Façade:** A residential façade waiver would be supported. A commercial façade complies.
**g. Fire:** All comments will be complied with.

**LAND USE AND ZONING: SUBJECT PROPERTY AND ADJACENT PROPERTIES:**
(Only items requiring a response are indicated below)
**Compatibility with Surrounding Land Use:**
The traffic study and the follow up discussions with AECOM led to the additional

center land being added to Ten Mile Road. Discussions with the RCOC are planned for their input.

**Comparison of Zoning Districts:**
Principal Uses Permitted in the proposed B-3 zoning district will be modified by the prohibition of certain specified uses.

**Development Potential:**
Our market study indicates that there is a current and projected commercial demand and the residential demand is present based on Toll's market analysis for this location. This compares with a very weak office and industrial demand as exemplified by the fact that this area has not developed as zoned.
All feedback and additional comments from the Planning Commission and City Council will be addressed as requested.

**2016 MASTER PLAN FOR LAND USE: GOALS AND OBJECTIVES**
The submitted PRO plan is consistent with the five listed goals and objectives. We have responses to several of the comments.
As indicated in **Goal 3c Environmental Stewardship**, this development will encourage energy efficient design and where applicable using LEED strategies such as energy efficiency, sustainably produced materials, high indoor air quality and insulation materials for the commercial development. EV charging stations will be located in the commercial area.
For the residential area Toll Brothers will be providing following:

- EV Charging Infrastructure
  - 240-volt Outlet, Prewired in Every Garage
- Sustainable Building Materials
  - Energy Star Rated Appliances
  - Low Maintenance Exterior Materials
    - Brick
    - Cement Board Siding
    - 30-Year Architectural Shingles
  - Low-e, Energy Star Rated Windows
  - High-Efficiency Insulation
    - 2x6 Walls – R19 Insulation
    - Blown-in Attic Insulation
    - Spray Sealed Ducts
    - R11 Blanket Insulation – Basement Walls

The commentary in **Goal 4b Infrastructure** indicates that the road network may not accommodate the resulting increase in traffic. Working with the city's traffic consultant and the Road Commission of Oakland County, the road system is proposed to be upgraded to accommodate the increased traffic.
The comment **Goal 5a Economic Development/ Community Identity** appears to express a concern about the compatibility of this development. This concern is

mitigated by this entire project. The proposed townhouse portion is consistent with the townhouses directly to its south and west. The proposed commercial portion, with the use restrictions proposed create a neighborhood "Village Center" environment which is all tied together with a connecting walkway system which also connects this PRO to the ice arena, athletic club and dog park to the south.

## MAJOR CONDITIONS OF PLANNED REZONING OVERLAY AGREEMENT

**Additional conditions to be included in the PRO agreement:**

There are 12 items listed, and all are acceptable as part of the agreement. Most are already shown on the drawings or included in the accompanying written documents. The balance is in the process of being developed and finalized.

## ORDINANCE DEVIATIONS

The review indicates "No detailed plans are provided for the portion to be rezoned to B-3…". This is incorrect. The submission package included site plans (Drawing P.3-P.5), floor plans (Drawing P.6), and building elevations (Drawings P.7-P.9) as well as photometric lighting layout and details (Drawings P.10-P.11). No specific deviations for the commercial, only, are requested because as of now there are none.

List deviations with responses:

1. **Building Foundation Landscaping**
   This information will be added to the drawings for the commercial buildings. No deviation is requested.

2. **Section 9 Waiver**
   This deviation is only for the residential buildings and is supported by the staff. No commercial Section 9 waiver is requested.

## IDENTIFYING BENEFITS TO PUBLIC RESULTING FROM THE REZONING AND THE PROPOSED DEVIATIONS:

1. As the review indicates, there is agreement with the conservation easement proposed for the 15.87 acre natural marshland area.
2. Off-site improvements proposed in the PRO will be paid for by the PRO ownership.
3. The two new tennis/ pickleball courts accessible from Ten Mile Road will be paid for and constructed by the PRO ownership and then donated to the city of Novi. The city will then assume control and care for the courts.
4. The previous land donation to the city of Novi was acknowledged.

The review indicates that some benefits can be clarified and has offered suggestions in the specific reviews that follow, the clarifications will be done, and additional benefits added as applicable.

**NEXT STEP; PLANNING COMMISSION CONSIDERATION OF ELIGIBILITY:**

As stated in the newly amended PRO Ordinance,

*In order to be eligible for the proposal and review of a rezoning with PRO, an applicant must propose a rezoning of property to a new zoning district classification, and must, as part of such proposal, propose clearly-identified site-specific conditions relating to the proposed improvements that,*

*(1) are in material respects, more strict or limiting than the regulations that would apply to the land under the proposed new zoning district…":*

The PRO proposes uses which will not be permitted in the commercial portion of the PRO, substantially less residential lot coverage than permitted by the ordinance, additional commercial building setbacks from Ten Mile Road and the other sides, less residential and commercial building heights than the ordinance

*(2) constitute an overall benefit to the public that outweighs any material detriments or that could not otherwise be accomplished without the proposed rezoning.*

The public benefits of the PRO include a conservation easement over a large 15.87 acre portion of the site, so it will remain a natural marshland in perpetuity; a public trail system connecting the commercial and residential portions of the PRO with surrounding residential and municipal areas and with the natural marshland area and overlooks; Tennis/ Pickleball courts that will be donated to the city for public use; a small park on the west side of the new townhouses; and 6.5 times the required usable open space for the new townhouse area.

**PLANNING REVIEW CHART:**

**Master Plan:** The 2016 master plan does not reflect current market condition. This PRO does.
**Zoning:** The proposed PRO changes the zoning.
**Uses Permitted:** The PRO proposes exclusions for the B-3 uses.
**Written Statement:** Provided in the narrative, as indicated.
**B-3 Limitations:** Limitations shown will be included in the final conditions.
**B-3 Off-Street Parking:** Parking front yard setbacks Ok. Landscape to be corrected.
**B-3 Wetland Setbacks:** Any required authorizations will be obtained.
**B-3 Parking Setback Screening:** Will update to comply.
**B-3 Parking Space Dimensions:** Will update parking space lengths at sidewalks.
**B-3 Barrier Free Spaces:** Quantity shown is correct for future site plan review.
**B-3 Bicycle Parking:** This will be shown for future site plan review.

**Residential:**
Parking on Major and Minor Drives: We are asking for a deviation for parking on a Major drive because our site layout only has one drive access. The alternative would be to have no visitor parking, so we believe this is a warranted deviation. We are asking for a deviation for a minimum centerline radius of 100 feet to 85 feet. The fire truck access route is not affected by this reduction on radius, so we believe this is a warranted deviation.

**Permits and Approvals:** Signage will be added.
**Building Lighting & Photometrics:** Building lighting and photometrics were included in the submittal. These will be updated as necessary, including adding hours of operation, proper color spectrum management and missing illumination levels.

## LANDSCAPE REVIEW CENTER REPORT:

**Commercial:**
- A greenbelt berm will be added along Ten Mile Road.
- Foundation Landscape will be added with the necessary area calculations. Sufficient space exists.

**General Notes:**
- City's project number will be added to cover sheet.
- Residential building layout between civil and residential landscape drawings will be coordinated.
- Landscape sheet numbers will be changed for the commercial landscape.

**Commercial Section:**
- Adjacent to Right-of Way: Berm and landscaping will be revised. A deviation is indicated for utility conflicts along Ten Mile Road.
- Parking Lot Landscaping: Perimeter trees will be modified as required.
- Building Foundation Landscaping: The planting has not been shown on the drawings. There is sufficient area for it and it will be added along with the necessary calculations.

**General Requirements applicable to both sections:**
- Plant lists will be added.
- Planting notes and details will be added for the commercial portion.
- Irrigation plans will be provided.

## LANDSCAPE REVIEW SUMMARY CHART

**General Notes:**
- Project number to be put on title sheet.
- Different landscape sheet numbers to be used between residential and commercial sheets.
- Building numbers or letters to be put on landscape plans.

**Landscape Plan:**

- Commercial foundation landscaping will be added.

**Existing and Proposed Improvements:**

- Residential civil and landscape plan layouts will be coordinated.
- Adjacent to Residential - Buffer (Zoning Sec. 5.5.3.A.ii and iii) (Both sections)
  Evergreen plantings will be added to 8' masonry walls north of buildings 5 and 6.

**Existing and Proposed Utilities:**

- Utility lines and structures will be added to the commercial sheets.
- Light posts will be shown on residential and commercial, and conflicts resolved.
- Civil contours will be made to work with catch basin rims and labeled.

**Berm Requirements:**

- A landscape waiver will be obtained for the wall, as required.
- Evergreen shrubs will be added at residential areas where required.
- Screening shrub density will be verified.
- Cross sections will be added to show the blocking of the commercial from the residential and berms added if possible.
- Dense narrow evergreens will be substituted for screening in front of walls as requested.
- Adjacent to Public Rights-of-Way – Berm/Wall, Buffer and Street Trees (Zoning Sec. 5.5.3.B.ii, iii)
  The greenbelt trees will be uniquely labeled when a detailed landscape plan is required. Greenbelt trees are shown as dark symbols while all others plantings are half-toned.
- Additional evergreens will be shown adjacent to the masonry walls.
- While the berm west of buildings 1 and 2 is approximately 3' higher from the commercial property, it is approximately 10' higher than the finished floors of the residential units. This achieves the intent of the required berms.
- A berm cross sections will be shown on the next submission.

**Min. Berm Crest Width:**

- Berms at parking will be added.

**Min. Berm Height:**

- Berms will be added at commercial, and contours added as required.
- ROW Landscape Screening Chart (Sec 5.5.3.B.ii)
  Berm contours are currently shown but half toned. They will be darkened for the next submission.

**Shrubs:**

- Will show calculations.

**Canopy Deciduous Trees Btw. Sidewalk and Curb:**

- Commercial calculations will be added.

**Woodland Replacement Trees:**

- As stated above, a new evergreen tree symbol will be used. Currently, 181 replacement trees are shown to be planted. 18 trees are evergreen (10%) and 163 trees are deciduous (90%). The remaining trees are the required multi-family trees. The proposed mix of evergreen and deciduous trees meets the woodland replacement requirements.
- Commercial site will indicate which are replacement trees.

**Parking Lot Islands:**

- Parking lot islands will comply and will be at least the minimum required size.

**Curbs and Parking Stall Reduction:**

- Parking spaces abutting sidewalks in the commercial lot will be made 17 feet long and sidewalks 7 feet wide.

**Landscape Island Square Footage:**

- Each island will be labeled in the commercial lot.

**Parking Lot Perimeter Trees:**

- Calculation line will be added.
- Commercial Southwest perimeter trees will be verified.
- Evergreen perimeter trees 8 ft walls will be modified.

**Interior Site Landscaping SF:**

- Required commercial interior site landscaping information will be added and calculations provided.

**Planting Around Fire Hydrant;**

- Utility lines will be shown added to the commercial landscape plan.

**Name, Type, and Number of Ground Cover:**

- This information will be added to drawings.

**Transformers/ Utility Boxes:**

- Thie transformers will be shown, and screening information provided.

**Botanical and Common Plant Names:**

- This will be added as required.

**Cross Section of Berms:**

- Details of berms will be added.

**Walls:**

- Screen wall and retaining wall material and height will be indicated.
- Engineer's seal to be provided where required.

**General Conditions:**

- No planting within 4 ft. of property line in commercial will be noted and shown.

**Irrigation Plan:**

- Information will be shown.

## AECOM REVIEW MEMO- TRAFFIC:

Pages 1 and 2 of this response letter indicate the discussions that occurred between the PRO traffic consultant and AECOM and the addition of a center turn lane and tapers. RCOC, which has jurisdiction over Ten Mile Road, is being consulted for their input.

The offset of the residential driveway from the driveway across ten Mile Road has been approved by the RCOC.

**External Site Operations:**

- 4. Emergency Access. We will add details of the gate and applicable signs on future submittal.
- 9. Sidewalk Ramps. We will include sidewalk ramp details in future submittal.

**Internal Site Operations:**

- 24. Bicycle parking will be indicated
- 25. 4 ft. sidewalks indicated at the loading areas of commercial buildings are not required and have been eliminated.
- 31. We will add radius in future submittals will ad a radius for the T-turnaround
- 32.-43. Signage and missing striping for parking and drives will be included in future submittal.

## FAÇADE REVIEW:

- A color rendering of residential buildings will be provided as required.
- Commercial building roof screen materials will comply with the ordinance and be shown if required. It is possible that roof mounted mechanical equipment will be completely concealed by the building parapet in which case there will be no visible roof units and no additional screening required. This is still being evaluated.
- The dumpster enclosure will be brick and match the brick of the buildings.

## FIRE DEPARTMENT

- All fire department requirements listed will be complied with.

END

This completes the applicant's response to the PRO 2nd submittal City of Novi reviews received on January 26, 2024. We will be prepared to discuss this proposed PRO with the Planning Commission at the February 21, 2024 Planning Commission meeting.

Respectfully submitted,

Lonny S. Zimmerman, AIA, NCARB
President

**SIEGAL TUOMAALA ASSOCIATES**
**ARCHITECTS AND PLANNERS, INC.**

attachments:- SKL Response Letter
-Allen Design response Letter

cc. Daniel Weiss, Novi-10 Associates
Scott Hanson, Toll Brothers
Jason Iacoangeli Toll Brothers
Jason Ermine, PE SKL Engineers, Surveyors
Jason Rickard, PE SKL Engineers, Surveyors

SEIBER KEAST LEHNER
ENGINEERING | SURVEYING

JASON M. EMERINE, PE
ROBERT J. EMERINE, PE
ROBERT R. DROUILLARD, PS

February 9, 2024

**City of Novi**
45175 Ten Mile Road
Novi, Michigan 48375

**Attention:** **Lindsay Bell, Senior Planner**

**Regarding:** **JZ23-09 NOVI-TEN PRO**
**PRO – Rev3**

In accordance with the Plan ***PRO Review January 24, 2024***, below are the required responses pertaining to issues noted in the various review letters. For your reference, comments requiring corrective action from each review are listed below with Seiber Keast Lehner's ("SKL") responses shown in **blue**.

**Planning Review** - Dated January 24, 2024

**Review Concerns**

6. Adjacent Industrial Uses: The proposed PRO project is seeking a rezoning from I-1 Light Industrial to a Planned Rezoning Overlay (PRO) to achieve RM-1 Zoning which is consistent with the RM-1 rezoning with PRO project to the south, Ridgeview Villas approved in 2015. This neighborhood block that is bound to the north by 10 Mile Road, to the east by the railroad line, to the south by 9 Mile Road, and to the West by Novi Road has largely developed as a residential area. This proposed development would ensure that the last remaining area of undeveloped I-1 zoned property is re-zoned to RM-1 zoning. This will have the impact of protecting those adjacent residential users from future industrial development on the south side of Ten Mile Road.

Further, it is understood that the area north of 10 Mile Road is zoned I-2 Industrial which is a more intense form of industrial zoning. However, based on a survey of the current businesses many of the industrial buildings have transited away from heavy industrial uses and are now occupied by offices and other businesses such as dance studios and gymnastics facilities. To further protect the future residents of the Towns at Novi Station from changes in use across 10 Mile Road, the development will provide additional screening at the 10 Mile Road boundary to include 6-10'-foot-high landscaped berms that will be planted with 10-12' tall evergreens. Regarding the east side of the property with abutting I-1 Industrial zoning along the rail line, the closest unit will be approximately 360' feet away from the rail line with the existing vegetation remaining in place. This will provide ample screening to industrial building that is in place.
Overall, the impact to the site from an environmental standpoint will be minimal as the housing is clustered to the north outside of the wetland area and flood plain keeping the 15.87-acre area intact and untouched by development. This design leaves most of the site in its natural state and works to limit the amount of impervious surface. The developer is willing to place the wetland and floodplain area on the residential parcel into a conservation easement per the City's request.

In summary the rezoning request for the RM-1 zoning utilizing the PRO process will provide the City of Novi the assurance that the Novi-10 project will preserve the overall character of the neighborhood and will build upon the past community planning efforts that have created this very walkable and connected residential neighborhood where retaining the I-1 Industrial zoning in place could lead to other less community friendly outcomes.

11. Other Reviews: a) Engineering. We will follow the Oakland County stormwater management standards if the City of Novi adopts their standards.

**2016 Master Plan for Land Use: Goals and Objectives**

3. c. Sustainable, energy-efficient and best-practice design. Toll Brothers for the residential portion of the project are providing the following:

- EV Charging Infrastructure
  - 240-volt Outlet, Prewired in Every Garage
- Sustainable Building Materials
  - Energy Star Rated Appliances
  - Low Maintenance Exterior Materials
    - Brick
    - Cement Board Siding
    - 30-Year Architectural Shingles
  - Low-e, Energy Star Rated Windows
  - High-Efficiency Insulation
    - 2x6 Walls – R19 Insulation
    - Blown-in Attic Insulation
    - Spray Sealed Ducts
    - R11 Blanket Insulation – Basement Walls

4. b. Adequate transportation facilities: We will work with RCOC and the City for the improvements needed for 10 Mile Road.

**Identifying benefits to public resulting from the rezoning and the Proposed Deviations**

1. Added benefit: The developer has agreed to permanently protect with a conservation easement the floodplain associated with the Walled Lake Branch of the Middle Rouge River and Chapman Creek as a part of this residential development.

**Traffic Review** - Dated January 25, 2024

**General Comments**

5. Opposite and same-side driveway spacing. We have a Preliminary Plan Review from the RCOC allowing the location of the proposed driveway with the addition of a WB passing lane be added.

**Traffic Review**

4. Emergency Access. We will add details of the gate and applicable signs on future submittal.
9. Sidewalk Ramps. We will include sidewalk ramp details in future submittal.
31. Any Other Comments. We will add radius in future submittals for the T-turnaround.

Sincerely,
Seiber Keast Lehner, Inc.

Ms. Lindsay Bell
NOVI-TEN PRO
February 9, 2024

SEIBER KEAST LEHNER
ENGINEERING | SURVEYING

Jason M. Emerine, PE, CFM
Partner

ALLENDESIGN
LAND PLANNING / LANDSCAPE ARCHITECTURE

557 Carpenter · Northville, MI 48167
**e.** jca@wideopenwest.com
**t.** (248) 467-4668

February 7, 2024

Mr. Rick Meader, Landscape Architect
**City of Novi Community Development**
45175 West 10 Mile
Novi, MI 48375

**RE: The Townes at Novi Station**

Dear Mr. Meader:

Below are our responses to your review dated January 9, 2024.

Landscape Comments:

- The City's Project Number will be added to the plans.
- The latest site plan will be used in the next submission.
- Sheet numbers will be updated to differentiate between the residential and commercial plans.
- Building numbers will be shown for the residential units.
- Evergreen plantings will be added to 8' masonry walls north of buildings 5 and 6.
- The greenbelt trees will be uniquely labeled when a detailed landscape plan is required.
- Proposed lighting will be added to the plans.
- A berm cross sections will be shown on the next submission. It should be noted that while the berms are not 10' tall from the property line, they are 10' tall from finished floor to top of berm.

If you have any questions or comments regarding this response, please contact me at your convenience.

Sincerely,

James C. Allen
**Allen Design L.L.C.**

## Lonny Zimmerman

**From:** Michael R. Cool <MRC@midwesternconsulting.com>
**Sent:** Tuesday, December 26, 2023 11:30 AM
**To:** Lonny Zimmerman
**Cc:** Daniel Weiss
**Subject:** RE: JSP23-08 Novi Ten TIS Traffic Review
**Attachments:** Driveway Geo.JPG; Standard Approach.JPG; 5 Lane CS.JPG

**CAUTION: EXTERNAL SENDER**
This is from an external sender.
Be careful opening any attachments, clicking on links, or replying to the message.

I added some jpgs with some rough geometrics and the county driveway standards.

The geometrics per the traffic study is as follows:

Carry 5-Lane cross section to just past double driveway.

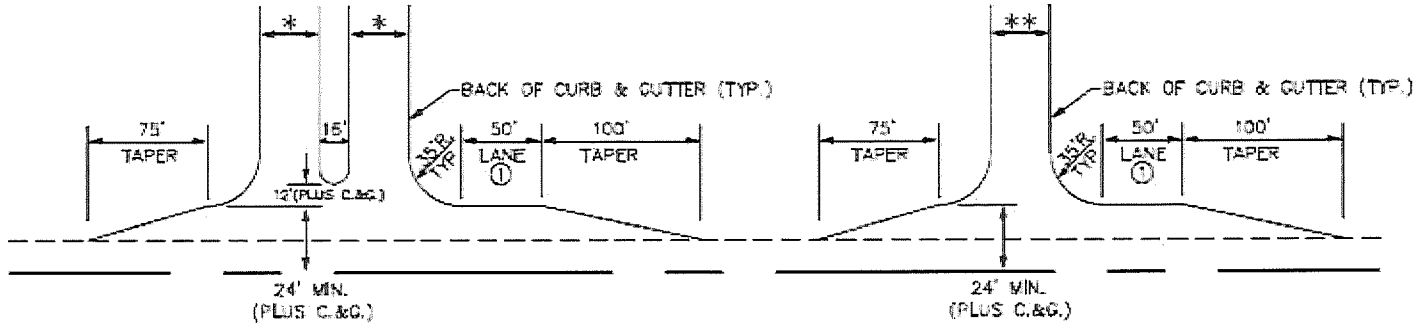
WB Lane begins just east of that 2nd driveway with the driveway radius 35', 50' lane, and 100' taper.

Center Left Turn Lane (CLTL) extends past that driveway further with radius (35') + 50 lane + 550' taper (calculated by width (12*45) and speed = 540' rounded to 550'.)

EB lane carries down to residential driveway and ends as a RT only lane.

Then that would all need to be reviewed and approved/adjusted by the RCOC.

Sincerely,
Michael R. Cool, P.E.
Midwestern Consulting
248-321-9662



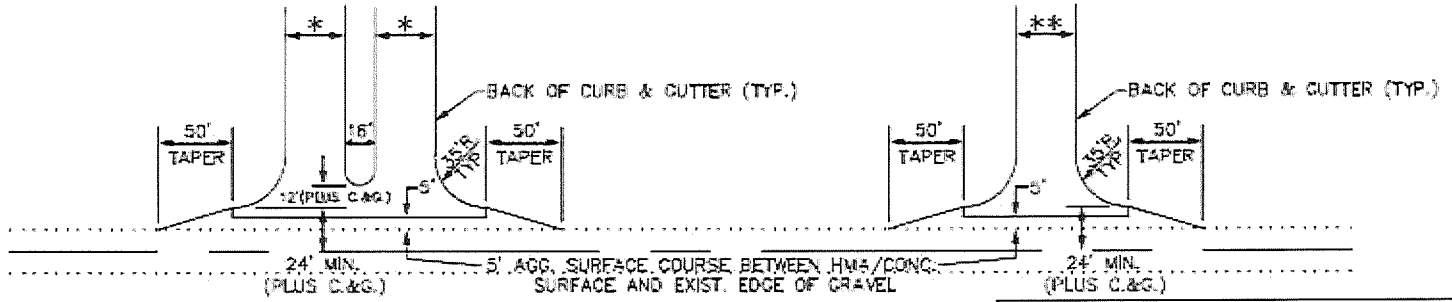

① MAY BE REDUCED TO 25' ON EXISTING ROADS WITH POSTED SPEED LIMITS OF 40 MPH OR LESS

## STANDARD & BOULEVARD APPROACH TO PAVED ROADS

* BOULEVARD WIDTH B.C. TO B.C.:
21' – IN SINGLE FAMILY RESIDENTAL DEVELOPMENTS.
27' – IN INDUSTRIAL DEVELOPMENTS.

– GEOMETRICS MAY BE ALTERED BY THE R.C.O.C. BASED UPON TRAFFIC ENGINEERING REQUIREMENTS OR SPECIFIC NEED.
– ACCEL./DECEL. LANES AND TAPERS MAY OR MAY NOT BE REQUIRED ALONG 5 LANE, BLVD., OR CURBED ROADS BASED ON TRAFFIC ENGINEERING REQUIREMENTS AND THE CORRIDOR.

** PER ROAD CROSS SECTION




## STANDARD & BOULEVARD APPROACH TO GRAVEL ROADS

ROAD COMMISSION FOR OAKLAND COUNTY
SUBDIVISION STANDARD PLAN
FOR
TYPICAL APPROACH GEOMETRICS

FIGURE 2-4

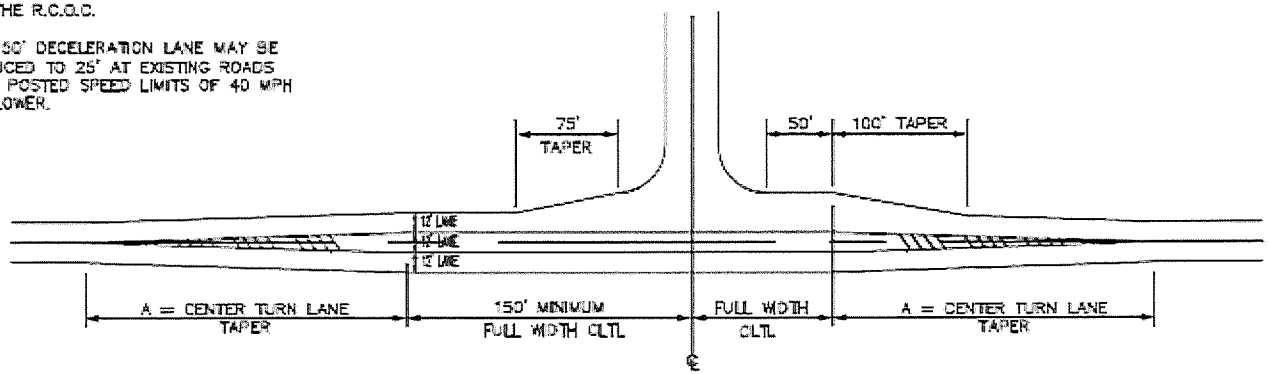
NOTES:

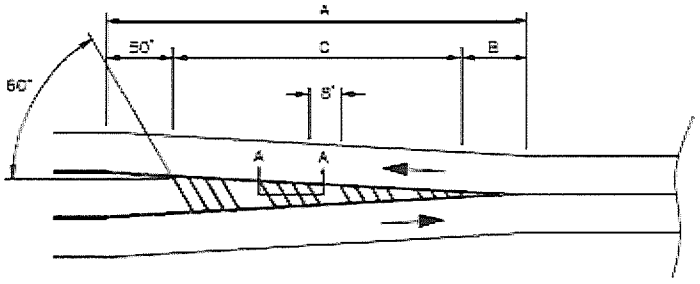
ON CURVED ROADS THE LENGTH AND ALIGNMENT OF LANE TAPERS AND FULL WIDENINGS MAY VARY AS DIRECTED BY THE R.C.O.C.

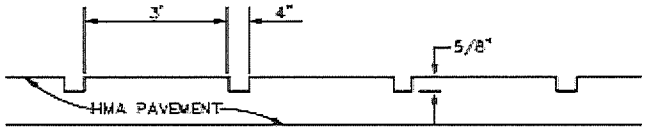
THE 50' DECELERATION LANE MAY BE REDUCED TO 25' AT EXISTING ROADS WITH POSTED SPEED LIMITS OF 40 MPH OR LOWER.

NOTES:

GEOMETRICS MAY BE ALTERED BY THE R.C.O.C. BASED ON TRAFFIC ENGINEERING REQUIREMENTS.




SECTION A—A
CORRUGATED HMA DIVIDER – DEPRESSED

W = LANE SHIFT
S = POSTED OR DESIGN SPEED

| | | | |
|---|---|---|---|
| $A =$ | $\frac{W \times S^2}{60}$ ≤40 M.P.H. | $W \times S$ ≥45 M.P.H. | ROUNDED TO NEXT 25' |
| $B =$ | $2.25 / (\frac{W}{A})$ | | ROUNDED TO NEAREST FOOT |
| $C =$ | $A - (50 + B)$ | | ROUNDED TO NEAREST FOOT |

ROAD COMMISSION FOR OAKLAND COUNTY
SUBDIVISION STANDARD PLAN
FOR
CENTER LEFT TURN GEOMETRICS
WITH A STANDARD APPROACH

FIGURE 2-6

AECOM
27777 Franklin Road
Southfield
MI, 48034
USA
aecom.com

**Project name:**
**JSP23-09 – Novi Ten TIS Traffic Review**

**From:**
AECOM

**Date:**
December 19, 2023

**To:**
Barbara McBeth, AICP
City of Novi
45175 10 Mile Road
Novi, Michigan 48375

**CC:**
Lindsay Bell, James Hill, Ian Hogg, Heather Zeigler, Diana Shanahan

# Memo

**Subject:** JSP23-09 – Novi Ten TIS Traffic Review

The Traffic Impact Study was reviewed to the level of detail provided and AECOM recommends **approval of the Traffic Impact Study with the mitigations/improvements;** the applicant should review the comments provided below and provide a revised study to the City.

Condition: Improvements/mitigations with comments are

## GENERAL COMMENTS

1. The memo will provide comments on a section-by-section basis following the format of the submitted report.
2. The project is located on the south side of 10 Mile Road between Novi Road and the Railroad tracks.
3. The development consists of 71 townhouse residential units (low rise) and approximately 60,000 SF of neighborhood retail.
4. The development is a PRO plan, and the site would need to be rezoned from its existing mix of I-1 and OS-1.

## BACKGROUND DATA

1. The following roadways were included in the study:
    a. 10 Mile Road: East/West, 45 mph, 2 lanes divided
    b. The intersections and site driveways were included in the study.
        - 10 Mile Road & Novi Road
        - 10 Mile Road & Meadowbrook Road
        - Site Driveways (4 shown in concept plan)
        - Other Existing Driveways

2. Applicant collected turning movements that occurred between the hours of 6:00 AM-7:00 PM on March 16th, 2022 at 2 intersections (10 Mile Road and Novi Road and Meadowbrook Road) and 4 driveways.

## EXISTING CONDITIONS

1. The overall Level of Service (LOS) at the major road intersections is D or better while following movement experiencing higher delay LOS E or F at:
    a. Northbound and southbound movements at 10 Mile and Meadowbrook Road (LOS E)
    b. Eastbound left at 10 Mile and Novi Road (LOS F)
    c. Southbound Third Driveway/Double Driveway at 10 Mile Road (LOS E)

# BACKGROUND (NO BUILD) CONDITIONS 2024

1. A conservative 0.2% annual growth rate was used to determine the build year five years from 2022, based on the SEMCOG traffic volume forecasts.
2. Overall operations at the intersections are not expected to change significantly compared to existing conditions.

# SITE TRIP GENERATION

1. A total of 6560 daily trips are anticipated based on the ITE trip generation codes.
2. A total of 40% of trips are considered as pass-by trips during the afternoon peak hours and a relevant reference is provided in the Appendix from the ITE manual. And a net increase of approx. 250 trips during the morning peak hour and approx. 400 trips during the evening peak hour are considered for a traffic impact study on the surrounding road network.

# SITE TRAFFIC ASSIGNMENT

1. Adjacent street volumes were used to calculate site trip distribution.
    a. The largest portion of the traffic is assumed to be coming from/going to Novi Road followed by 10 Mile Road and Meadowbrook Road.

# FUTURE CONDITIONS

1. Operations at the signalized intersections are not expected to deteriorate at the following movements:
    a. Westbound 10 Mile Road (LOS E)
    b. Eastbound left at 10 Mile and Novi (LOS F in both existing and build conditions)
    c. LOS F for 3rd Site Driveway with the significantly excessive delay of approx. 2500 sec.
    d. Movements at Northbound and Southbound approaches at Meadowbrook continue to experience higher delays at LOS E.
2. Excessive delay at 3rd site driveway will lead ultimately to the driveway not being utilized by the commuters of this proposed development and will end up adding more traffic on other driveways and circulation within the development. This might start a cascade of effects on other driveways also failing especially when all the driveways are on 10 Mile Road.

# CONCLUSIONS

1. The study concluded with a list of recommendations that will improve the failing level of service and traffic conditions as per the following:
    - Widen eastbound 10 Mile Road to two through lanes, ending with a right-turn lane at the site's easternmost residential driveway.
    - Widen westbound 10 Mile Road to two through lanes west from the 3rd site driveway to help provide additional capacity for outbound site traffic.
    - Provide a continuous center lane turn lane to serve the 1st, 2nd, and 3rd commercial driveways.
    - Provide separate outbound left-turn / right-turn lanes for the site's 2nd and 3rd commercial driveways to allow right-turning traffic to exit the site when vehicles are waiting to turn left.

    However, we do not agree with the widening of 10 Mile Road tied to the site driveways as suggested in the report rather it should be tied to the major intersection movements for the safety and drivers' expectancy.

2. The study indicates a large number of trips from this proposed development on the surrounding road networks and driveways. The study concluded with a list of significant roadway improvements including the addition of through lanes and a central left turn lane on 10 Mile Road within the study area in support of the shopping plaza. **The commercial part of this project is dependent on these mitigations/improvements being implemented.**

Should the City or applicant have questions regarding this review, they should contact AECOM for further clarification.

Sincerely,

**AECOM**

Saumil Shah, PMP
Project Manager

Jeff Wood, PE, PTOE
Senior Traffic Engineer

**PLANNING COMMISSION MINUTES - EXCERPT**

**FEBRUARY 21, 2024**

# PLANNING COMMISSION MINUTES

CITY OF NOVI
Regular Meeting
**February 21, 2024 7:00 PM**

Council Chambers | Novi Civic Center
45175 Ten Mile Road, Novi, MI 48375 (248) 347-0475

**CALL TO ORDER**

The meeting was called to order at 7:00 PM.

**ROLL CALL**

| | |
|---|---|
| Present: | Member Becker, Member Dismondy, Member Lynch, Chair Pehrson, Member Roney |
| Absent Excused: | Member Avdoulos, Member Verma |
| Staff: | Barb McBeth, City Planner; Beth Saarela, City Attorney; Lindsay Bell, Senior Planner; Adam Yako, Plan Review Engineer; Saumil Shah, Traffic Consultant |

**PLEDGE OF ALLEGIANCE**

Chair Pehrson led the meeting attendees in the recitation of the Pledge of Allegiance.

**APPROVAL OF AGENDA**

Motion made by Member Lynch and seconded by Member Roney to approve the February 21, 2024 Planning Commission Agenda.

**VOICE VOTE ON MOTION TO APPROVE THE FEBRUARY 21, 2024 PLANNING COMMISSION AGENDA MOVED BY MEMBER LYNCH AND SECONDED BY MEMBER RONEY. *Motion carried 5-0.***

**AUDIENCE PARTICIPATION**

Chair Pehrson invited members of the audience who wished to address the Planning Commission during the first audience participation to come forward. Seeing no one, Chair Pehrson closed the first public audience participation.

**CORRESPONDENCE**

There was not any correspondence.

**COMMITTEE REPORTS**

There were no Committee reports.

**CITY PLANNER REPORT**

There was no City Planner report.

**CONSENT AGENDA - REMOVALS AND APPROVALS**

There were no Consent Agenda – Removals and Approvals.

**PUBLIC HEARINGS**

1. **NOVI-TEN PRO JZ23-09 WITH REZONING 18.740**
   Public hearing at the request of Novi-Ten Associates for initial submittal and eligibility discussion for a Zoning Map Amendment from Light Industrial (I-1) and Office Service (OS-1) to Low Density Multiple Family (RM-1) and General Business (B-3) with a Planned Rezoning Overlay. The subject site is approximately 34-acres and is located east of Novi Road, south of Ten Mile Road (Section 26). The applicant is proposing to develop a 71-unit multiple-family townhome development on the RM-1 portion, and approximately 35,900 square feet of commercial space on the B-3 portion.

Planner Lindsay Bell relayed the applicant is proposing to rezone about 34 acres south of Ten Mile Road, to the east of Novi Road, utilizing the Planned Rezoning Overlay option. The site is currently vacant and was historically part of the original Erwin Orchard, which operated in Novi from 1920-1983. The Ridgeview of Novi development is to the south, along with the Novi Athletic Club and Novi Ice Arena & Dog Park. The railroad tracks border the eastern property line. North of Ten Mile Road are industrial uses, and commercial uses are to the west.

The current zoning of the property is I-1 Light Industrial on the eastern side, and OS-1 Office Service on the western side. The adjacent parcels on the west are also OS-1. The Ridgeview development to the south is zoned RM-1 with a PRO, while the Athletic Club and Ice Arena area is I-1, as is the area east of the railroad tracks. North of 10 Mile Road is zoned I-2 and I-1.

The Future Land Use Map identifies this property as Community Office on the west and Industrial Research Development Technology on the east. To the south and east is planned for Industrial, north of the site is planned for industrial and heavy industrial, and on the western side is community office.

There is floodplain area associated with Chapman Creek and Walled Lake Branch of the Middle Rouge along the southern property boundary and along the eastern side of the site extending down toward the dog park. The natural features map also indicates extensive wetland area within the floodplain, and regulated woodlands are present in most areas of the site.

The applicant is proposing to utilize the Planned Rezoning Overlay to rezone about 7 acres of the property to B-3 General Business, and about 27 acres to RM-1 Low Density Multiple Family. The initial PRO plan shows a total of 71 attached 2-story townhome units on the site. The RM-1 residential portion is accessed by one entrance off Ten Mile Road, with a secondary emergency access drive to commercial portion of the project. Parking is provided in garages, on garage aprons, and in a few small bays of surface parking for visitors.

For the B-3 commercial portion, the current concept plan shows a total of 35,900 square feet in four separate buildings. Access to the B-3 site would be from three curb cuts on Ten Mile Road – one is the existing shared driveway with Maly Dental office, and the other two are new. The plan notes retail and restaurant uses within the commercial buildings but generally other uses permitted in the B-3 district could be tenants in those spaces. However, the applicant does offer to prohibit certain uses as a condition of the PRO Agreement, including a gas station, auto repair, car wash, marijuana sales, check cashing and pawn shops.

The applicant describes the project as creating a walkable community, with links to the existing paved trail in Ridgeview, which would connect to Nick Lidstrom Drive and to the nature trail behind the Novi Sports Club and dog park area. They also propose a paved path around the proposed townhouses that would be available to the public and two new overlook areas in the marshland area. A park area with seating is proposed between the commercial and residential area, and two pickleball/tennis courts are proposed in the northeast corner of the site, which are proposed to be donated to the City for public use.

Staff notes some concern that the pickleball courts may create a noise disturbance to the closest residential units, and that the associated parking area requires another curb cut on Ten Mile Road. Grading required for this area may also impact the flood zone. Therefore, the applicant may want to reconsider the pickleball courts, and instead provide a more low-impact nature park that would fit with City Council's goal to develop more walkable pocket parks, and even connect to the dog park to the south.

Staff and consultants have identified some issues with the proposed rezoning and PRO Plan. First, the proposed zoning districts indicated do not match the Future Land Use map guidance. Staff has concerns with the proposed residential use's compatibility with the adjacent I-2 Heavy Industrial to the north. However, it is adjacent to similar multiple family communities on the south side, and there are also similar commercial uses in this area to the west.

One of the biggest issues with the proposal is the traffic impacts. The applicant's traffic study notes that a significant increase in the number of vehicle trips are expected. A number of road improvements to Ten Mile could help accommodate this increase, including extending the 5-lane cross-section further east to at least the residential driveway. Also note that the traffic study assumed the commercial development size was 60,000 square feet, while the current proposal for 35,900 square feet could lessen those impacts. Driveway spacing and major drive deviations are also likely to be required with the current proposal.

The Engineering review notes there is capacity for the water and sewer demands for the proposed use in the public utilities, and stormwater detention is to be provided in a single storm sewer detention system on the east side of the site, with controlled outlet into the floodplain to the east.

The proposed landscaping is generally in conformance with the ordinance. The applicant has added screening between the residential and commercial portions of the property and have indicated that the deficiencies in foundation landscaping and greenbelt berm in the commercial portion will be corrected in the site plan submittal stage if this project moves forward. Landscaping waivers for street trees and greenbelt canopy trees along Ten Mile Road are supported by staff due to conflicts with existing underground utilities.

The Façade review notes that the commercial buildings are in full compliance with the Ordinance. For the residential buildings, Section 9 façade waivers would be required for an underage of brick on the rear and some front facades of the townhomes, and an overage of asphalt shingles on some front facades. These waivers are supported as they are minor in nature and do not adversely affect the overall aesthetic quality of the homes.

Wetland impacts have been minimized, with approximately 0.1 acre (or less than 0.9% of the total wetland area) of permanent impact to a few small pockets of wetlands in the upland area. A large portion of the site, 15.87 acres of wetland, woodlands, and floodplain area, is proposed to be protected in a conservation easement to ensure permanent preservation. This could be considered a public benefit.

This initial public hearing is an opportunity for the members of the Planning Commission to hear public comment, and to review and comment on whether the project meets the requirements of eligibility for Planned Rezoning Overlay proposal. Following the Planning Commission public hearing, the project would then go to the City Council for its review and comment on the eligibility.

After this initial round of comments by the public bodies, the applicant may choose to make any changes, additions, or deletions to the proposal based on feedback received. The subsequent submittal would then be reviewed by City staff and consultants, and then the project would be scheduled for another public hearing before the Planning Commission. Following the second public hearing on the formal PRO Plan the Planning Commission would make a recommendation for approval or denial to City Council.

Tonight the Planning Commission is asked to hold the public hearing, and to review and comment on the proposed rezoning. Members may offer feedback for the applicant to consider that would be an enhancement to the project and surrounding area, including suggesting site-specific conditions, revisions to the plans or the deviations requested, and other impressions.

The applicant, Dan Weiss from Novi-10 Associates, along with Scott Hansen from Toll Brothers, architect Lonny Zimmerman, as well as other members of their team, are here representing the project tonight. Staff and our traffic consultant are also available to answer any questions.

Chair Pehrson invited the applicant to address the Planning Commission.

Lonnie Zimmerman, Siegal Tuomaala Architects, relayed property owner Dan Weiss, Scott Hansen with Toll Brothers, Jason Iacoangeli with Toll Brothers, Mike Cool, traffic consultant with AECOM, and Jason Rickard with SKL Engineering are with him tonight.

Originally, about 120 acres were owned by Dan Weiss's family, partially sold off over a period of years. Mr. Weiss' family has been in Novi as residents and businesses owners for years, and he still has a business in Novi. In addition to selling off a lot of his property, Mr. Weiss donated 18 acres to the City for the Ice Arena, Sports Club, and Dog Park. Mr. Weiss' OS-1 and I-1 parcel have been on the market for many years with no interest.

The Novi-10 team looked at the Future Land Use plan, the current zoning, and market conditions. The Future Land Use plan shows these parcels as I-1 and OS-1. The market has changed, and everybody knows that lifestyles have changed since COVID, there is much less demand for office space. We see that represented with this parcel. We've also looked at the industrial aspect and found statistics from 2023 for the City of Novi by CoStar Realty Information Services which show a significant drop in industrial demand in Novi. That set the basis for what is the logical change of direction for the property.

Mr. Zimmerman has a market study which shows that commercial is a very viable option and local commercial, which is the type of use proposed, is going to be a significant and acceptable use for the property. It's basically a family friendly retail type of environment. In the proposed agreement for the PRO the uses will be limited, there will be no gas stations, auto repair, car washes, pawn shops, check cashing or that sort of thing.

The townhouses are a very logical extension of what is there now. To the south is Ridgeview Villas, which was also developed by Toll Brothers, to the southwest are River Oaks and Saddle Creek apartments.

Mr. Zimmerman feels that the proposal complies with the Master Plan even though the zoning doesn't match the Future Land Use plan. In looking at elements in the Master Plan, this is right on target. First is the walkable community as listed in the Master Plan, which is the reason for the trail system. The trail runs all the way from Ten Mile Road, connecting adjacent retail and residential through the site, continuing south all the way to a final connection with the dog park, the Novi Ice Arena, and the Sports Club. The connectivity through this whole area links the new retail with a lot of residential in the area.

Secondly, a conservation easement to preserve wetlands, woodlands, and animal habitats has been designated on 15.87 acres west along the railroad tracks from the dog park up to Ten Mile Road. That's in perpetuity so nothing will be developed there. Just as the Master Plan calls for connectivity, it also calls for environmental stewardship and this is a representation of that.

As was also mentioned, there are two proposed tennis/pickleball courts on Ten Mile Road along with parking spaces being donated to the City and this is an important part of making this a whole usable area for the community.

As far as the traffic is concerned, Mr. Zimmerman has been working with AECOM. Traffic consultant Mike Cool is here. The level of service is not changed by this project. A widening for Ten Mile Road is proposed by adding a center left turn lane, that with the proper tapers, will go all the way across the Ten Mile Road portion of the site including the residential area. The commercial drives will have three lanes, a left turn exit, a right turn exit, and an entry line.

The Novi-10 team has been talking to engineers with the Oakland County Road Commission. The proposed residential entrance, which doesn't align with the driveway across the street, has been approved by the Road Commission as an acceptable situation. The two new drives proposed at the commercial portion do align with the driveways across the street and engineers will be working with the Oakland County Road Commission to firm up design plans for Ten Mile Road to accommodate traffic.

The commercial portion has been reduced to 35,900 square feet from the original proposal of 60,000

square feet to help with the process as well.

Regarding the separation between the RM-1 and the I-2, Mr. Zimmerman displayed renderings produced by Toll Brothers. Scott Hansen relayed that the renderings show the residential area in summer and winter, a view from the entrance that reflects how berms and trees will help screen the first two units, and a view from the units looking out to Ten Mile at first floor level. Mr. Zimmerman added that there is almost 300 feet from the setback line of the I-2 to the setback line of the RM-1, so 120 feet right of way, then 100 feet and 75 feet. The berm at the residential is 6-10 feet high and the evergreens are upsized to be 10-12 feet high.

Mr. Zimmerman stated in conclusion that the proposed residential connects with the Toll Brothers development to the south. They really know residential and wouldn't be building it here if they felt it wasn't going to be a success. It ties in with the commercial and is a good fit for Novi along with the walkable system. It has a very family friendly vibe.

Chair Pehrson opened the Public Hearing and invited members of the audience who wished to participate to approach the podium.

Elena Wayne, 42776 Cardinal Way, relayed that she is new to Novi having recently moved back to the area from Arizona. This proposal is somewhat shocking. There are strip malls already here that are empty, this proposed strip mall is not necessary. Seeing that wetlands and areas that have beautiful mature trees will be destroyed to build more homes that probably aren't necessary is a little shocking as well, and disheartening.

Ms. Wayne moved here to be in an area that is family friendly. She would like to point out that driving around Novi, especially this Ten Mile area, there is strip mall after strip mall. Why do we need another strip mall. Why would we destroy an area to have a strip mall for businesses that could move into a strip mall that's already empty.

Ms. Wayne would also like to point out that although this is being referred to as a walkable area, when the train is going through there is a backup on Ten Mile. What are we accounting for here? Do we really need strip malls? Do we really need more homes? Let's keep Novi family friendly and have a beautiful habitat for animals and trees.

Linda Tyza, 23987 Seminole Court, referred to the floodplain map showing the stripes which are zone AE, a special hazard. Ms. Tyza has a map from 2006, a lot has happened since then. There has been a lot of fill. The map shows there are lines shown going right through houses in Ridgeview which can't be because there is a house there, which proves that it is not an up-to-date map, and that is up to FEMA to correct.

What happens is when an area gets filled in the developer files a LOMA, a letter of map amendment due to the fill process. Around Ridgeview where there is fill, there is a wall with rocks that bring the property up so it is not in the flood zone, except for Ms. Tyza's house. Houses in the flood zone, with these walls around them, have water that runs from west to east. Zooming out a little bit further on the map, farther west has a huge area that's designated a flood zone. Driving around that area you see a lot of standing water.

The water moves from west to east and goes around Ms. Tyza's house. She is located on the far west side. If a flood were to happen and the flood zone needed more area, it could spread out to the trees in the habitant and that wall would stop it from going to the homes. But if was free to expand out further, if Toll Brothers puts that the group of homes in there, the northernmost part of her subdivision there would have a wall and a retainer wall on the other side to make sure that that was not in the flood zone.

Chair Pehrson informed Ms. Tyza her 3 minutes were up and asked her to summarize. She inquired if she could use her husband's 3 minutes. Chair Pehrson replied she could get back in line.
A resident (no name given), on Seminole Court, relayed she lives in Ridgeview of Novi, backing up to where the property in this rezoning area is being discussed. She is very concerned and a little bit frustrated, her comments mirror some of the first comments that were raised. She is happy to be able to connect with the Planning Commission and thanked them for the opportunity.

When the resident purchased her condo, she was told by Toll Brothers that this back area was protected wetlands, and it would never be developed or destroyed. Now she is hearing a different story which is a bit frustrating. She paid a premium for a back lot that would be butting up to this beautiful nature and wetlands area. Now based on this, there's potential that she will be looking at condos, traffic, and commercial property, it is frustrating in that it is really going to create a lack of privacy for her home.

From a Ten Mile perspective, the road is already overwhelmed by the current traffic that we have. The resident understands there are proposed plans in place to put a left-hand turn lane there, which is great for the overwhelming amount of current traffic, but Ten Mile is just not equipped to be able to handle a massive establishment like this. The resident has some very serious concerns about the traffic impact.

To mirror the first comments that were made, the City has so many unoccupied commercial buildings and so many new residential developments, particularly townhomes. It is a little disconcerting that the Commission or the City would entertain adding another one on to the list when we have some really beautiful nature that we can preserve at this time and really allow our city to flourish in other areas.

Tammy Spangler, 42908 Cardinal Way, thanked the Planning Commission for the opportunity for residents to be able to share their opinions and perspectives. In 2017, when she and her husband made plans to purchase a home in the Detroit metro area, they decided on Novi for two reasons. They were looking for a location where there would be woodlands and wetlands and an area with lots of pocket parks and other park areas. They saw the Toll Brothers development at Ridgeview, and decided they liked the area. They purchased a premium lot so they could enjoy the wildlife. Now she is learning that this prized green space, along with the wetlands of the creek basin, are going to be spoiled by this development.

For every inch of concrete or square foot that goes into the new development, it is going to be impacting the drainage and the capacity of that area with storm runoff and flooding. It is going to impact so much and that's a huge concern. They will be cutting down 460+ trees. Sadly, what happens in a lot of cities is that we cut down trees, and then plant ornamental trees that are not even native species to our state, as Ms. Spangler saw from her time on a Planning Commission up north for a bike trail through the city. That is unfortunate because cities throughout the United States are all homogeneous and generic, then the developments all look the same.

While researching, Ms. Spangler found that the City of Novi has a Code of Ordinances and City Charter that includes two ordinances. One focuses specifically on wetlands protection and the other focuses on woodlands protection. The information says the City finds that rapid growth, the spread of development, and increasing demands upon natural resources have had the effect of encroaching upon, despoiling, or eliminating many of the trees and other forms of vegetation. The most important part stated is woodland growth protects public health through the absorption of air pollutants and contamination, through buffering in the reduction of excessive noise, wind, storms and visual screening, and through its cooling effect in the summer months. Woodlands provide for public safety through the prevention of erosion, siltation, and flooding. Trees and woodland growth are an essential component of the general welfare of the city. Protecting woodlands, including trees and other forms of vegetation, of the city for their economic support of local property values when allowed to remain uncleared or unharvested and for their natural beauty, wilderness character of geological, ecological or historical significance.

Ms. Spangler does not have time to share the details of the wetlands ordinance but requested that copies she brought with excerpts from the woodlands and wetlands ordinance be filed with meeting record.

Paula Guhlke, 23884 Seminole Trail, has lived in her home for almost five years. To her right is a pond that freezes in the winter, drains pretty slowly in the summer, but fills back up in the winter, fall and spring. After the last four or five days of rain that we had, it was at least three times as big, and you could hear the water cascading through a trickle. It's not a trickle when that pond empties, you can hear it running from Ms. Guhlke's deck.

When Ms. Guhlke moved in, she had turkeys at her window wall pecking, thinking they had met a new friend. Now there are coyotes, which Ms. Guhlke wouldn't mind if they moved on. There are deer, rabbits, and a mama duck that decided to nest on her deck and who successfully introduced seven more

ducklings to the environment. Looking out at that and enjoying four seasons is wonderful and Ms. Guhlke would hate to lose that. Toll Brothers will do a beautiful job, as they did with Ridgeview. It will be aesthetic, but it's not what Ms. Guhlke wants to look at from her deck all year.

Safety issues are another concern. Ridgeview is a subdivision that is private, with no trespassing posted at both entries. If there is a walkway from Ten Mile all the way through, 24 hours a day, right back by Ms. Guhlke's window wall, she is not sure what can be back there at any time of the day. It will be a straight throughway to get from Ten Mile to wherever and not have to be seen from the outside.

Ms. Guhlke asked the Planning Commission to think about all the aspects and how much residents care about where they live. Developers deserve to develop, and people who own land deserve to sell it, but please consider all aspects.

Karen Chopjian, 23991 Seminole Court, would like to speak about the plans, including building additional strip malls and 70 three-story townhouses by Toll Brothers. To do this, 34 acres would be excavated, including the destruction of nearly 400 trees. This would have a significant impact to her neighborhood as well as the woodlands and wildlife that are presently there.

Looking at the FEMA flood zone map, it looks like they are turning Ridgeview into a watershed. It's an idea that Toll Brothers has now that doesn't need to be here in this location. It looks like original owners were told a perceived myth by Toll brothers that the adjacent land was considered wetlands and not able to be developed. It looks like those who live by the proposed development, after paying a lot premium to back into woods, now will have the builder wipe out the woodlands a few years later. Ms. Chopjian is worried that her property will be devalued.

Charles Bates, 42876 Cardinal Way, was a homeowner in Novi in 1976. He moved around a little bit, but when it came time to retire and get comfortable, he moved back to Novi. Toll Brothers was a great company, they were very well respected. Mr. Bates paid a premium for his lot, which he thought would always look on the wildlife area. He is slowly finding the wildlife leaving. He has water right now behind his house, where it's a floodplain. He sees water every time it rains, every time it snows, that's where the water is going to flow.

Mr. Bates has some big, beautiful trees near him. He did not know turkeys could nest in trees, he thought they were so big that they could only walk on the ground, but they nest in the trees. He has had ducks jump up onto his patio railing, and a deer walk up to his window to stare back at him. It is something that he really loves and appreciates.

One thing that is proposed that drives Mr. Bates crazy is pickleball courts, you don't want them in a suburban area. You hear them bang and bang and bang, other communities have really been up in arms over them. Mr. Bates is not sure why it is part of this proposal to put pickleball courts in.

Mr. Bates has always been in favor of what has been done in Novi, but is not in favor of tearing down trees in his backyard to put in new trees that his grandchildren will have to wait to see a turkey sitting in.

Mark Alafita, 42844 Cardinal Way, stated there are a lot of things on his list that have already been addressed. There is no need for more strip malls. There are concerns about traffic on Ten Mile Road. There are concerns about adhering to the Novi Code of Ordinances relating to woodlands protection. There are big concerns about flooding. Since the new development goes so close to Ridgeview, that water is going to have nowhere else to go. It's going to affect Ridgeview residents as the FEMA maps already show, and as you've already heard, it affects quite a few people.
Mr. Alafita would like to share a story because he thinks it's powerful. By coincidence, the Ridgeview HOA had an annual meeting last week. Residents along the property line that would be bordering this proposed development all relayed the same story that Mr. Alafita had. He remembers it like it was yesterday, sitting with his Toll Brothers Rep expressing concern over what could happen in the adjacent space because he loved the beauty as it is now. The answer he got back was there is no need to worry, that is wetlands. Nothing will be built on that. It is zoned for industrial, but if anything is built, it's going to be further to the front by Ten Mile. It is certainly not going to be coming close to Ridgeview. Mr. Alafita

understands Toll Brothers can say one thing, and then another developer can come in and say what they'd like to do. But when the very developer who told him that is the one who is proposing this, that's when he calls foul play on that.

Mr. Alafita agrees with Mr. Zimmerman's comments about the post COVID environment needs being different. However, we've also learned post COVID that people have really learned to appreciate their woodlands, their water lands, nature, protecting the animals around us, and the green space. Mr. Alafita requests that the Planning Commission reject the proposal on rezoning this area, because if anything were to be developed there, he doesn't know what that would be, but he would rather deal with the devil he doesn't know than the devil he does know.

Linda Tyza, 23987 Seminole Court, relayed she spoke earlier about the two fill areas and the letter of map amendments due to the fill process, already on the Ridgeview side. That is why nobody is in the flood zone, but the same thing will happen on the other side. The people will have a retainer wall, so they won't be in the flood zone. When you look at the flood plain, you can see that the part between the two plans is going to be narrower than it is. You can already see that because the areas to the left are so much wider and bigger, that if we were to have a big storm there could be a bottleneck. When that bottlenecks, it will back up.

Ms. Tyza lives in building #2, lot #6, and when she closed on her home, she was told that her house was in the flood zone, which she did not know. Another letter of map amendments (LOMA) was done, and it came back that her structure is in X500, but the land associated with her is in the flood zone. There is no barrier there, there's no fill, so if there is flooding, it'll just go right between the two houses, Ms. Tyza's and her neighbor's house and the other side.

Rob Fridenberg, 23844 Winnsborough Drive, lives In the Mystic Forest subdivision. His concern is more about the traffic. There have been many times independent of a train coming through that westbound Ten Mile is backed up almost to Busch's during rush hour. Mr. Fridenberg assumes that the Planning Commission has reviewed the traffic study data and the assumptions that were put into it. He inquired if it is possible for residents to review the document as well, to understand how many vehicles are assumed by the residents, what is the impact on traffic during different times of day and also when the train is coming through. He assumes there is data on how long a train typically closes that intersection.

Chris Friedenberg, 23844 Winnsborough Drive, in the Mystic Forest subdivision is further removed from the residents in the Ridgewood sub but feels really bad for them being told that there wasn't going to be development behind them. She would be very upset if that was her house and agrees with everybody who spoke before her regarding traffic and taking down the woodlands.

Ms. Fridenberg understands the developer needs to make a profit, but if there could be something less invasive, with no residential development, that would be best. Or alternately build detached condos, something that's one story. Ms. Fridenberg works with senior citizens, and they can't do stairs. She doesn't know of any single level developments anywhere in Novi. She does not think we need two-story condos, we have enough of them. There are a lot of senior citizens, the population is aging, think about their needs. Ms. Fridenberg thanked the Planning Commission for listening.

Joy Carter, 23951 Seminole Court, is concerned about the type of housing that's being proposed. Typically, three-story homes are bought by people who are trying to rent them, not live in them, so there is often a lot of turnover in those areas. Ms. Carter has a concern about that because the homeowners are absentee owners.
Ms. Carter knows that the developer is purporting the development will be walkable. She has six grandchildren and there is no way she would walk anywhere around Ten Mile with that traffic. No way. She does not know what this walkable idea is, but it doesn't sound like it can be achieved.

Ms. Carter expressed concern that residents are here talking about their concerns, but that minds have already been made up. That is one thing she is unappreciative of if that is the case. She is hoping that this is an open forum where Planning Commissioners are actually listening to the residents in the community.

The flood zone is just another crazy thing where, like the person before said, lines are going through and stopping at homes which Ms. Carter is smack dab in the middle of. She is unappreciative of all the casualness with which this is being approached. It's not about the developer, there is plenty of land. It's not about the opportunity at this site, they would just move forward. It's about the people that have chosen to live here. Ms. Carter has been here for 20 years; she has chosen to live here. She does not want it to become the same place she left, where a lot of people don't live there, with a lot of vacant buildings, it is an eyesore. Ms. Carter asked the Planning Commission to think about that and about their positions of stewardship to make sure to do the right thing and look out for the people that are supporting them.

Beth Mier, 42764 Cardinal Way, wanted to echo what the last two ladies spoke about, the first floor or ranch style homes. Ms. Mier spent a lot of time trying to find a ranch or something with a first-floor bedroom in Novi. Her mother is 83 years old and is moving in with her, so it would be great to find something without three stories where an older person could live.

Ms. Mier relayed she has video of the whole flood zone from the last couple of weeks when we had the big snowstorm, followed by the massive rain. She took it before she received notice of this proposal because it was so beautiful back there and she wanted to show people how great her backyard looked with the stream moving. She can email it to anyone who would like to see it. It shows all the flooding that goes on behind Ridgeview, although she is at the end of the sub where it doesn't affect her as much.

Ms. Mier also has concerns about the walkability. She has a seven year old living with her. She has seen strange people coming out from the woods near the Sports Club and the dog park. When she takes her dog out at 11:00 PM there are people coming out of the woods. It concerns her as to what kind of traffic there might be if there is a walk from Ten Mile all the way to the dog park. Due to concerns about what is going on in the woods at night, Ms. Mier put a camera on her condo.

Ken Mac, 42787 Cardinal Way, already submitted his objection in writing, his wife did as well. He has more of a technical comment or question for Toll Brothers on the renderings. Mr. Mac is confused because the documents he saw at the City indicated three-story townhomes without basements. He has heard both three-story and two-story proposed.

Mr. Mac lives in Ridgeview in two-story villas with basements and was told the proposed residential units will be three-story townhomes, which have more transient residents. As for the other points made, people can't age in place in a three-story home because it's nothing but stairs. Chair Pehrson clarified the renderings shown are two-story. Mr. Mac stated that there was documentation on the website that indicated three stories and asked for accurate renderings to be shown. If the reality is three-story homes, they would tower over the two-story homes that are only about 200 feet apart.

Mr. Mac stated Ridgeview units are quality. Toll Brothers does nice work in terms of stone and brick. The renderings shown a little bit ago, especially from the Ten Mile view, appeared to be nothing but Hardy board siding. It will look pretty bad and cheap from Ten Mile to see siding and no stone or brick. Mr. Mac would like to see more technical details added to the renderings.

Ravi Jasti, 42808 Cardinal Way, has two concerns. First, about four weeks ago, there was a day all the snow melted. Near Mr. Jasti's house there was almost one and half feet of water on the land behind his home flowing on the wetlands. He would welcome anyone anytime they would like to look at that area. If something is constructed on the adjacent parcel and if there is a lot of snow, Mr. Jasti imagines there is a chance it could go to three or four feet, and a chance water will get into his basement.
Mr. Jasti's second concern is about the connecting walkway to Ten Mile Road. If it is connected to the Ridgeview community, it is disturbing the privacy for the Ridgeview residents. There is a chance people will come into the community from Ten Mile Road. A lot of times, Mr. Jasti will see people providing internet, or providing something else such as security service, come and knock on his door to talk about something, so the connecting walkway is going to give access to people to come directly into Ridgeview and is going to be a big concern security wise.

Barbara Vanderhoff, 24323 Hampton Hill Road in Meadowbrook Glens, stated as it currently stands, there are a number of times during the day that it is very difficult to get out on to Ten Mile from where she lives.

The traffic is backed up from Novi Road to Meadowbrook Road. When someone else mentioned Busch's, Ms. Vanderhoff wanted to emphasize that is not an exaggeration, it takes some work to get out of the subdivision.

In addition, a number of years ago, right across from the Meadowbrook Glens entrance and exit onto Ten Mile, new homes were built. They pleasantly overlook the playground at Orchard Hills Elementary School and then come up to what were beautiful wetlands right across Ten Mile from the end of Ms. Vanderhoff's street. It was lovely to leave the subdivision or come home to all the animals and wildlife in the neighboring subdivision. Ms. Vanderhoff had been so proud prior to that to be part of a City that protected its woodlands. The builder agreed to reconfigure the area for animals, birds, and other wildlife. In the past Ms. Vanderhoff saw a doe with her fawn drinking at the pond there, there were always a great number of birds and there were nesting turtles. The homes were built and to this day, there's never been another deer. There hasn't even been another bird return to the small pond that's across from the entrance to her subdivision. It's a huge disappointment. Ms. Vanderhoff hopes the Planning Commission will take into consideration everything that everybody is saying and keep the loveliness of our city.

Saurabh Mall, 23880 Seminole Trail, relayed most of the issues he has have already been covered but wanted to emphasize that he basically moved from Northville to Novi to the Ridgeview community because he liked that there was no adjacent development taking place. He has also lived in many, many communities, east side, north side, all around the Metro area. He has seen what overdevelopment does to a city. It cuts out the city, takes all the things out, and basically the property values go to nothing. Now the question is, with all the things that are happening in Novi with malls and everything else, do we need another development like this? What does it do long term for the city? That is for the Planning Commission to decide.

Limin Chen, 23924 Seminole Trail, agrees with the prior speakers. She was the first resident to purchase a condo in Ridgeview of Novi in 2017. She had just moved to Michigan in 2016 and lived in Novi while they waited for the new Toll Brothers development to be built in this area. She strongly remembers she and her husband confirmed with the sales agents whether any development in the future would be in the backyard of the home they preferred to purchase. The answer was no, there were no future plans to develop that area, it is a conservation area to protect the environment. So, they decided to sign the contract and were the first to move in.

When they first moved in, every morning and night the deer came to Ms. Chen's front door and there were turkeys walking along. But now, almost seven years later, she does not see the turkeys and the deer are coming less and less. She can see the wildlife is disappearing in her area. So, as the gentleman before Ms. Chen asked, what is the long-term plan for Novi? Is it just building and developing more, or do we need more concern for the balance of people and wildlife?

Chris Fridenberg, 23844 Winnsborough, added to her prior statement to say she does not believe Novi needs any more pickleball courts. She recently read online that there is one being added on Meadowbrook by the Novi Senior Center. We just don't need it. Less cement is better. Leave the trees.

Lisa Jacquin, 42795 Cardinal Way, wanted to echo all the comments of her neighbors, but also give her voice to hopefully reject this proposal for a couple reasons. She has lived in Novi for 25 years. She raised her kids here primarily because of the schools, which are top notch in the state, but the broader city honestly could use a little help around city planning. We don't need any more strip malls. We do not need any more fast-food restaurants. Ms. Jacquin is single, and her kids are grown. When she goes out, she heads to Northville, to a community with character. Honestly, as was said earlier, Novi is losing that character. We just don't need any more development and the roads can't handle the population as it is. Again, Ms. Jacquin is echoing most of the sentiment already heard, but wanted to add her voice as well.

Seeing no other audience members who wished to speak, Chair Pehrson asked Member Lynch to read into the record correspondence received. Member Lynch relayed that 18 responses were received, all opposed, and two of the people who sent in a response also spoke this evening. All the objections stated in the responses received were similar to what was expressed in the public hearing.

Chair Pehrson closed the public hearing and turned the matter over to the Planning Commission for consideration.

Member Lynch stated he went out to the Ridgeview subdivision to take a look. He recalls when Ridgeview was approved. He was a little concerned about it since it was an industrial site and next to the dog park and Sports Club. It is really nicely developed; Toll Brothers did a nice job. Member Lynch walked towards the back to see what is there and saw water flowing, like a stream. He did not go all the way back as his hiking days are long gone.

Member Lynch clarified his understanding of current zoning on the site, which is OS-1 and I-1, and that the site includes a fair amount of wetland area. He heard comments that residents were told there would be nothing built on the wetland area and can see that this proposal does not include development in the wetland conservation area.

Since there is no two-way communication with the public during the public hearing portion of the meeting by Commission rules, Member Lynch will try to address some of the questions he heard.

The traffic study is available in the Planning Commission packet on the website if anyone wants to read it. Member Lynch expressed concern with the railroad tracks and traffic, which have been a problem for the past 25 years he's lived here.

The developer mentioned the installation of a center turn lane. Member Lynch drove down Ten Mile for better understanding and inquired to Mr. Zimmerman whether the tennis courts are proposed to be located in the vicinity just west of the railroad tracks near Ten Mile. Mr. Zimmerman confirmed this is correct. Member Lynch initially thought that trying to back out on to Ten Mile from the proposed parking for the courts wasn't a good idea, but saw the way it is set up, granted it wasn't in peak rush hour, that it may work due to the lane the developer is proposing to install. Member Lynch suggested that instead of two proposed tennis courts, that the developer think about proposing four pickleball courts, the parking and some benches when they go before City Council, it would be cheaper. Member Lynch knows the cost since his subdivision decided to install pickleball courts. The public indicated in a survey that they would like to see more pickleball courts in Novi. The City would like to get pickleball courts on this side of the City but ran out of money with Meadowbrook Commons, only four courts were able to be installed there. Mr. Zimmerman responded that the thought was to have two courts that can be multipurpose as two tennis courts or four pickleball courts, but whatever the City wants, they would be happy to do.

Member Lynch inquired what the walking trail would be made of. Mr. Zimmerman responded that the material has not been determined yet, but it will be a hard surface material.

Member Lynch inquired if the residential units are basically the same as Ridgeview. Mr. Hansen responded that they are two-story townhomes, with 2 car front entry garages similar to Ridgeview, but with a different floor plan and elevation from Ridgeview. Ridgeview's product is a villa, so a wider, deeper, bigger unit. This is similar but not the same. Member Lynch inquired as to the target price. Mr. Hansen indicated that pricing is not yet set at this stage, it adjusts a lot, but will be priced based on new comparable construction in the area at the time it is built.
Member Lynch inquired about another proposal Toll Brothers has in conjunction with Singh. Mr. Hansen responded that Toll Brothers currently has another application in with the City for a PRO called Elm Creek. Member Lynch inquired if any consideration has been given to having an elevator option in any of the units. Mr. Hansen responded that Elm Creek does have first floor primary bedrooms but not an elevator option. Member Lynch indicated he was asking the question to try to help when the applicant goes before Council since there is an aging population and there are people that would pay for an elevator.

Member Lynch also suggested that the applicant show City Council a comparison between what could be built with the current I-1 zoning versus the residential proposal in terms of environmental impact and how much of the habitat will be saved. It goes without saying, that just like Ridgeview, it survives the 100-year flood plain with the runoff from the new development going right to the detention basins. Member Lynch suggested that the developer clearly demonstrate that since any time new development comes

in there are a lot of concerns from nearby residents as to how it might affect them. Member Lynch inquired if the one detention basin takes care of the whole site and where the discharge is. Mr. Hansen responded that it does take care of the entire site and discharges on the west side of the railroad tracks.

Relating to the landscape, Member Lynch is always a proponent of not putting money into the tree fund by trying to plant as much as possible back on site. The area has some nice typography. Member Lynch suggested that more trees be considered between the new residential area and Ridgeview to help buffer.

As far as the walking trails are concerned, 40,000 voters want to see a walkable Novi. Member Lynch is not that concerned about the migration from Ten Mile. There are no roads connecting the two subdivisions so there is really only one way in and out of Ridgeview and two ways out for the new proposal. Mr. Hansen clarified that the second new residential access dead ends where it meets the commercial area and will be gated for fire access only.

Member Lynch suggested that the little park on the northwest could probably be a private amenity for the proposed residential area since it is such a small park, he does not see any benefit to the City.

Member Becker inquired through the Chair that the Planning Commission is only providing comments at this point. Chair Pehrson confirmed the Planning Commission is not approving the proposal at this point, only providing comments.

Member Becker thinks that an important point made was that so many residents in Ridgeview we told something by their builder regarding the wetland areas. What we've heard tonight is that no more than 0.1 acre of the wetlands on the total property are going to be impacted by the actual construction. Of the total site, there is a total of 15.87 acres that are going to remain a conservation easement.

We hear a lot about stormwater. Where the townhouses are going to be built now, there is unmanaged stormwater. With a development like this, it infers that stormwater has to be managed. According to where the detention basin is and how that is going to be focused there, Member Becker does not have concerns about the stormwater heading south. It looks like it is going to be managed and taken away from Ridgeview.

Member Becker wanted to relay that the Planning Commissioners have been listening and showed his notes written from all the public comments made tonight and the 18 letters received. They have been listening but won't always agree with the opinions expressed.

Another interesting thing to consider is that Ridgeview would not exist without a PRO. It would be an industrial development since that is what zoning indicated at the time, but now there are lovely villas to live in because the PRO was approved. Change is happening and people don't want 4,000 square foot homes on one acre lots anymore. Our diversity as a community means we need diverse residential options.

Keep in mind that there is a lot of Novi that was Future Land Use planned or zoned for something, and it was changed for a better option. Member Becker looks at this proposal and thinks it is a good use. It is 71 units and is a type of residence that we may find a lot more attractive, and 15.87 acres won't be touched. The alternative is that a developer comes in and puts a huge industrial complex north of Ridgeview because that is what it is currently zoned for, and we could not stop it. This is our chance to consider something that may be a lot more favorable.

Regarding the proposed trail, Member Becker recommends that the developer meet with the Ridgeview HOA and talk about how the walkway could be restructured a little. He sees the concerns about how the walkway funnels people through. Mr. Hansen noted that there is a public sidewalk easement that is built right up to the property line. That was incorporated into Ridgeview Villas and is something dedicated for public use. It runs basically from the property line of Ridgeview out to Nick Lidstrom Drive. That is the only section that is considered public, the rest of the sidewalks in Ridgeview are considered private.

Member Dismondy inquired to clarify that the new development is just connecting walkway into what already exists. Mr. Hansen replied that the easement already exists.

Member Dismondy can totally understand how residents feel disappointed that they were told that nothing would be built behind them and then come to find out there will be. The industrial zoning was approved long ago and would be much more invasive to have to look at through the trees than some hopefully similar type of townhomes, though neither is ideal for the residents of Ridgeview. Member Dismondy would like to make sure that the developer works with the neighbors on reassuring them that drainage will be properly handled, and even though there is a traffic study, make sure it is explained to residents in layman's terms and make sure that the county is endorsing it.

Regarding more strip malls, Member Dismondy agrees there are already a lot in Novi. It makes sense to get the site approved for retail versus office since no one is going to put an office building there. Nobody will put retail there until it is leased. It won't be built and sit vacant since you probably couldn't even get a loan to do that anyway. If tenants want to be there, then the building will be built, so that could be some reassurance for the neighbors.

Member Roney stated it is hard to add much to what fellow Commissioners have already said. One thing he did want to address is that the question before the Planning Commission tonight is whether this proposal is eligible for a PRO. Member Roney thinks it could be, but it is not there yet. Going through the packet there are a lot of details that still need to be resolved.

Member Roney shares concerns on the retail area if it looks like a strip mall, but it doesn't necessarily have to look that way. If it did that would be a no go for Member Roney.

In terms of the pickleball courts, Member Roney loves them, he plays pickleball. The Director of Parks and Rec may have concerns about noise from the courts. Member Roney has had conversations with the Director as to where to put more pickleball courts, that is the biggest thing he deals with is location.

To the west of this property, there is another small parcel. To enhance that conservation easement, maybe add that parcel in as well. It looks to be mostly wetlands; it'd be difficult to develop anyways.

Mr. Hansen added that if you look at the grading plan, the pickleball court was set down about six feet from the top of the pond. Not only are the units on that side of the community walkouts, but then the pickleball courts are down even further. So that wall will help kind of buffer the sound from the pickleball court.

Chair Pehrson stated he agrees with Member Roney, a PRO is the only way this is going to be approved going forward for whatever it is going to be. Whatever its final course, we are not there yet. We don't have all the right information based upon some of the comments from the residents and fellow Commissioners.
Chair Pehrson inquired whether the pickleball courts would be lit to manage the usage of that to only daytime hours. Mr. Zimmerman responded that they would be donated to the City. Chair Pehrson suggested they remain unlit and that additional berm be added in the area to help suppress noise.

Every time a development comes forward with any kind of walking path, there is concern about security. Rather than talk about it in terms of everybody's opinion, Chair Pehrson would like to have the petitioner to look at the walking path in terms of security. Data is needed from the police department to understand other developments that have walking paths through their neighborhoods as to what the increase or decrease was of any kind of security issue.

Relative to the water flow and the water management plan, in addition to the water retention area, there needs to be additional swales or a different plan for the topography between the two developments to assure the folks that are there now that they are not going to be in any additional threat of water flow into that area, and that can be done very easily on whatever plan comes eventually forward to the

Planning Commission.

For both the townhome occupancy rate and the business occupancy rate, Chair Pehrson would like to see what data suggests now relative to where we are in today's time frame, not data from two or three, or four or five, years ago. What are the occupancy rates for both of those businesses? Chair Pehrson doesn't consider the retail area a strip mall. This really seems to be two outbuildings that are going to have multiple tenants. It's not a strip mall like what is at Ten Mile and Meadowbrook Road, but Chair Pehrson would like to see what the occupancy rates really are so that the Planning Commission can make an assessment and have an understanding as to viability of the project. There is a whole other business side that we are not going to get into.

The biggest problem that Chair Pehrson has with the plan right now is the traffic. He does not know if the applicant has ever driven up and down Ten Mile and seen the traffic backed up from Meadowbrook Road all the way to Novi Road. It's not infrequent, it happens multiple times during the week. Add a train in there and that might be something that helps the traffic flow just because people are turning around and they're tired of waiting for the train to go by. Chair Pehrson does not know, even with the applicant's generous offer to add a turn and the deceleration lane, how that's really going to improve that area for the number of traffic trips that are estimated, especially if the added outbuildings in the B-3 area have any kind of drive thru.

We have seen the utter failure of a development that we all agreed to, which is Starbucks at Beck Road and Grand River. The traffic flow for that particular business is ridiculous because it does back up at times on to Beck Road. We have to put some forward thinking into what the potential might be for that kind of drive-through so that we don't end up with anything that's going to include traffic further on to Ten Mile.

When the Planning Commission started looking at this piece of property, way back when, before anything was there before, after maybe Annie's Donuts and the apple orchard and things of that nature, it was going to be a Kroger. We all had heartburn with the Kroger going there just because of the size, the scale, and what it was going to do to the surrounding area. That would have been ten times worse than what this is, but again, we are not at a point where Chair Pehrson would be comfortable at all approving anything relative to the PRO from what we see here. He thinks there is a need to understand some of the comments made, so there are some real hard facts to work with, then incorporate those into the PRO.

**This agenda item was discussed, but a motion on the item was not required.**

**MATTERS FOR CONSIDERATION**

1. **JSP22-19 SAKURA NOVI ARTWORK APPROVAL**
   Approval at the request of Sakura Novi, LLC for artwork to be permanently displayed on Building C. The subject property is located north of Grand River Avenue and east of Town Center Drive. A condition of the PRO Agreement for the project was for the artwork proposed for Building C to be approved by the City with site plan approval for Phase 1 but was deferred by the Planning Commission in July.

The Sakura Novi PRO Agreement includes the condition that the "Developer shall include high-quality Japanese-themed artwork as part of the design of Building C, to be approved by the City at the time of site plan approval for Phase 1". The elevations indicated a window area on the south-facing façade of Building C, which faces Grand River, as the location for an "Illuminated Spandrel Glass Art Mural Panel."

On July 27, 2023, the Planning Commission approved an extension of the necessary approval for the artwork piece in order to not delay the construction of the overall project. In approving the extension, the Planning Commission motion included the following conditions:

1. The applicant shall provide a model, drawings and/or high-quality rendering of the proposed artwork before the first Temporary Certificate of Occupancy will be issued for Sakura Novi, and not later than 12 months from the date of Final Stamping Set approval.
2. The artwork will be placed on a Planning Commission agenda for review and approval.

The applicant has opted to present a surface-applied 3D image, or sculpture, as opposed to the

# COMMERCIAL MARKET ANALYSIS

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THE CHESAPEAKE GROUP, INC

BUILDING A FOUNDATION FOR THE FUTURE

# MARKET FEASIBILITY ANALYSIS FOR COMMERCIAL DEVELOPMENT NEAR THE INTERSECTION OF TEN AND NOVI ROADS IN NOVI

**JULY, 2022**

**PREPARED BY**

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# Market Assessment

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THE CHESAPEAKE GROUP, INC
BUILDING A FOUNDATION FOR THE FUTURE

The following is a market feasibility assessment for the development of commercial development just east of the intersection of Ten Mile and Novi Roads in Novi, Michigan. The proposed development consists of about 60,000 square feet of mixed-use retail and service space on approximately ten acres of land fronting on Ten Mile Road.

The assessment was prepared by The Chesapeake Group (TCG). TCG is the premier economic analysis and development firm in the United States, having prepared more than 1,500 analyses and plans since its inception. TCG has established a national reputation with all commercial, residential, industrial, entrepreneurial, entertainment, arts, technology, and institutional development in established and emerging communities.

The Chesapeake Group's mission is to facilitate sustainable land use, business development, redevelopment, and expansion in rural, suburban, and urban settings. TCG has been involved in numerous projects in Michigan for more than twenty-five years and maintains an office in the state. Current public sector client efforts in Michigan are located in White Lake Township, Novi, and the City of Cadillac. TCG project areas during Covid include those in Adrian, Cadillac, Chesterfield Township, Novi, Genoa Township, Hillsdale, Laingsburg, Madison Heights, Meridian, Orion Township, and Sparta.

Before Covid, additional project areas in Michigan include Ada Township, Allendale Township, Canadian Lakes, Fennville, Grand Rapids, Hastings, Holt-Delhi Township, Hudsonville, Huron County, Kalamazoo, Lathrup Village, Mackinaw, Manton, Muskegon, Muskegon Heights, Northville, Norton Shores, Prot Huron, Shelby Township, Spring Lake, Troy, Walker-Standale, Wixom, and Zeeland.

TCG has previously been involved with several efforts in Novi. TCG is also the only consultant involved with the State of Michigan's Redevelopment Ready Community Certification Program for recent administrations and the former "Cool Cities Neighborhood Program" during previous administrations.

## CONTEXT

Novi is one of the most dynamic cities within the growing households in Oakland County. Growth in homes or rooftops creates new demand for commercial activity through increased spending and need for more services.

Oakland County has seen substantial household growth since 2011, or the close of the Great Recession. More than 29,000 new housing units were permitted in Oakland County between 2011 and 2021. Of these units, about 23,000 were single-family, detached homes, and roughly 6,000 were attached multi-household units.

*Table 1 - New Housing Units Permitted in Oakland County for Select 2011 through 2021 Time Period**

| Oakland County | Total | Annual Average |
|---|---|---|
| Total Units | 29,022 | 2638 |
| Units in Single-Family Structures | 23,060 | 2096 |
| Units in All Multi-Family Structures | 5,962 | 542 |
| Units in 2-unit Multi-Family Structures | 208 | 19 |
| Units in 3- and 4-unit Multi-Family Structures | 725 | 66 |
| Units in 5+ Unit Multi-Family Structures | 5,029 | 457 |

*Developed by The Chesapeake Group, Inc., 2022. Based on HUD's permit database.

Novi reported growth in housing units permitted between 2011 and 2021. A total of just over 2,750 new homes were permitted during those years. The increase represents about 9.5 percent of the Oakland County total.

*Table 2 - New Housing Units Permitted in Novi for Select Periods from 2011 through 2021**

| Total 2011 through 2021 | Annual Average 2011 - 2021 | 2018-2021 | Annual Average 2018-2921 |
|---|---|---|---|
| 2758 | 251 | 772 | 193 |

*Developed by The Chesapeake Group, Inc., 2022. Based on HUD's permit database.

Future growth in rooftops can be based on recent history. Utilization of the historical patterns indicates a range for new units for Oakland County and Novi. For Oakland County, the range in annual average units permitted range is from about 2,640 to 2,780. Utilization of the lower estimate for future projects results in the potential growth by 2030 of about 23,750 new permitted units. Utilizing the lower units contributes to a lower estimation of demand for commercial goods and services. It allows for short-term downturns due to fluctuating national and regional economic conditions.

For Novi, the average annual permits issued for 2011 through 2021 was 251, and the yearly average number permitted between 2018 and 2021 was 193. Employing the smaller number results in the potential for about an additional 1,740 units by 2030.

*Table 3 - New Housing Units Permitted in Novi for Select Periods from 2011 through 2021 and Low Estimate for 2030**

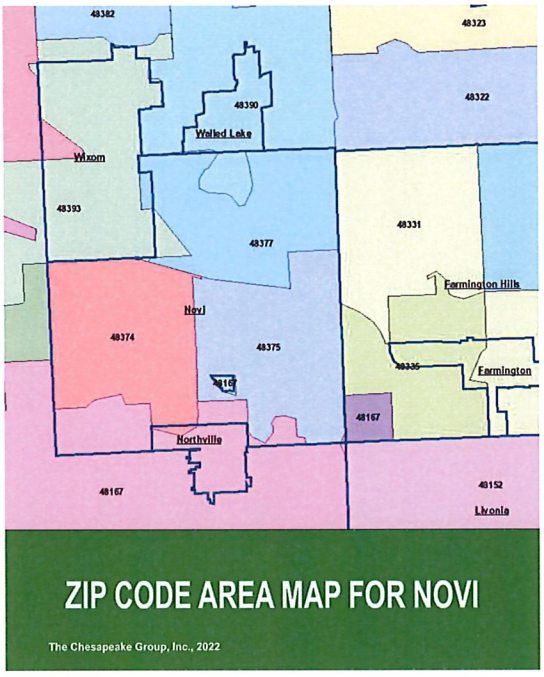
| Total 2011-2021 | Annual Average 2011-2021 | Annual Average 2018-2021 | Units added 2030 (low estimate) |
|---|---|---|---|
| 2758 | 251 | 193 | 1737 |

*Developed by The Chesapeake Group, Inc., 2022. Based on HUD's permit database.

Household incomes are the primary source of spending in a community for commercial goods and services. According to the United States Census, the population for 2021 in Novi was estimated at about 66,500. The number of households was 24,130, and the median average household income was estimated at around $93,940.

The median household income is generally well below, often forty to sixty percent below the mean household income, with the latter income a better reflection of actual purchasing ability.

There are three zip code areas in which residents of Novi reside. These three zip codes are 48375, 48377, and 48374. Surveys conducted by TCG in the past two years in other communities near Novi contained a significant number of residents of those zip codes. The compilation of those responses indicates that the mean average income is over $120,000. Yet, to provide the most conservative estimate of current and future demand for commercial goods and services, the Census's median average income is used to define the demand.




SURROUNDINGS

The site is within walking distance of both residential and non-residential activity. Most demand for commercial results from household spending often near homes but also near employment or other activity generators.

One significant facility within walking distance is the Novi Ice Arena. The Arena opened over twenty years ago. The Arena offers two NHL-regulation-sized ice sheets, heated viewing areas with capacities of 200 and 750, skate rentals, and meeting space. The Arena hosts numerous programs, including the Novi Youth Hockey Association, Figure Skating Club of Novi, Novi High School, Northville High School, and the City of Novi after-school programs. Its offerings include adult hockey, tournaments, instructional programs for hockey and skating, drop-in open hockey and skating, and private lessons attracting people throughout the year.

Adjacent to the Novi Ice Arena and closer to the site is the Novi Athletic Club. West of the site within a reasonable walk is the Novi Civic Center, including municipal offices, meeting and event spaces for lease for a range of activities, and sports fields at the Ella Mae Power Park. Within a few block radius is also multi and single-family housing developments.

RETAIL GOODS AND RELATED SERVICES DEMAND FORECASTS

Existing rooftops in municipal areas like Novi drive spending on retail goods and related services. New rooftops also increases spending and demand for retail goods and related supportable space. It is noted that no jurisdiction can be expected to capture all demand created by any market, including its residents. Spending will occur in many places, including operations near home and work. Online purchases, vacation spending, and other activity diminish local sales. On the other hand, people living nearby, working within the area, employed nearby, and those coming to the site for various purposes will spend money in Novi and the specific location, as proven by the existing Walgreens and other adjacent or near non-residential activity. Some dollars are exported, while others are imported.

The estimates of demand for retail goods and related services are based on the existing households, the growth in rooftops, and an assumed modest income growth after 2022 (average annual rate of less than one-half percent) over and beyond inflation. The noted sales are inconstant dollars, excluding inflation.

Three market areas are defined, providing different estimates of opportunities but all reaching similar conclusions as to the viability of retail goods and related services space on the site at Ten Mile and Novi Roads.

The first market area is the smallest of the three based on rooftops, including only those within the municipal boundaries of the City of Novi.

- Novi resident-generated retail goods and related services sales are estimated at $2.3 billion at the beginning of 2022.
- The sales are expected to grow to about $2.4 billion, or $94 million by 2027, based on the anticipated growth in rooftops and a very modest increase in real income,

*Table 4 – Novi Resident Generated Retail Goods and Related Services Sales for 2022 and 2027 and the Change from 2022 to 2027**

| Category | 2021 | 2027 | change 2021-27 |
|---|---|---|---|
| Food | 204,479,000 | 212,909,000 | 8,430,000 |
| Eat/Drink | 330,715,000 | 344,349,000 | 13,634,000 |
| General Merchandise | 292,731,000 | 304,799,000 | 12,068,000 |
| Furniture | 70,510,000 | 73,417,000 | 2,907,000 |
| Transportation | 273,170,000 | 284,432,000 | 11,262,000 |
| Drugstore | 166,040,000 | 172,885,000 | 6,845,000 |
| Apparel | 176,958,000 | 184,253,000 | 7,295,000 |
| Hardware | 179,005,000 | 186,384,000 | 7,380,000 |
| Vehicle Service | 232,683,000 | 242,276,000 | 9,593,000 |
| Miscellaneous | 348,229,000 | 362,585,000 | 14,356,000 |
| TOTAL | $2,274,520,000 | $2,368,290,000 | $93,770,000 |

*Developed by The Chesapeake Group, Inc., 2022. Further breakdown of retail goods and related services demand is found in the appendix.

- Novi residents are expected to support 7.25 million square feet of space at any and all locations at the beginning of 2022.
- An additional 229,000 square feet of retail goods and services space will be supportable by 2027.
- There is also the potential to capture exported space in "Eat/Drink" or food services, "General Merchandise," and "Miscellaneous" retail.

*Table 5 – Novi Resident Generated Retail Goods and Related Services Space in Square Feet for 2022 and 2027 and the Change from 2022 to 2027**

| Category | 2021 | 2027 | 2021-27 |
|---|---|---|---|
| Food | 325,270 | 338,679 | 13,409 |
| Eat/Drink | 787,417 | 819,879 | 32,462 |
| General Merchandise | 1,737,439 | 1,809,064 | 71,627 |
| Furniture | 162,289 | 168,979 | 6,691 |
| Transportation | 895,278 | 932,188 | 36,909 |
| Drugstore | 162,784 | 169,495 | 6,711 |
| Apparel | 490,979 | 511,221 | 20,241 |
| Hardware | 729,441 | 759,510 | 30,073 |
| Vehicle Service | 566,463 | 589,817 | 23,354 |
| Miscellaneous | 1,390,669 | 1,448,000 | 57,331 |
| TOTAL | 7,248,029 | 7,546,832 | 298,808 |

*Developed by The Chesapeake Group, Inc., 2022. Further breakdown of retail goods and related services demand is found in the appendix.

- Most commercial opportunities are appropriate for the site. However, to enhance walkability with surrounding housing and non-residential anchors, vehicle-oriented purchase and services activity is eliminated from future growth opportunities. Therefore, Novi residents will support about 6 million square feet of non-vehicle space by 2027, increasing space by about 240,000 square feet over 2022.
- Retail and entertainment are today and will continue to be linked in the future linked so that one creates an experience, not merely a shopping trip or a trip to a restaurant. The catalytic activity and focus would be food service establishments as Covid-19's impact diminishes.

*Table 6 – Novi Resident Generated Retail Goods and Related Services Space in Square Feet for 2022 and 2027 and the Change from 2022 to 2027, Excluding Vehicle Service and Purchase Space**

| Category | 2021 | 2027 | 2021-27 |
|---|---|---|---|
| Food | 325,270 | 338,679 | 13,409 |
| Eat/Drink | 787,417 | 819,879 | 32,462 |
| General Merchandise | 1,737,439 | 1,809,064 | 71,627 |
| Furniture | 162,289 | 168,979 | 6,691 |
| Drugstore | 162,784 | 169,495 | 6,711 |
| Apparel | 490,979 | 511,221 | 20,241 |
| Hardware | 729,441 | 759,510 | 30,073 |
| Miscellaneous | 1,390,669 | 1,448,000 | 57,331 |
| TOTAL | 5,788,309 | 6,026,854 | 238,545 |

*Developed by The Chesapeake Group, Inc., 2022. Further breakdown of retail goods and related services demand is found in the appendix.

The second market area is a three-mile radius. In this case, it closely resembles the first market area in scale and resident households.

- Novi and very nearby residents generate retail goods and related services sales of about $3.3 billion at the beginning of 2022.
- The sales are expected to grow to $3.4 billion, or by $108 million by 2027, based on the anticipated growth in rooftops and a very modest increase in real income,

*Table 7 – Residents of a Three-Mile Radius Generated Retail Goods and Related Services Sales for 2022 and 2027 and the Change from 2022 to 2027**

| Category | 2021 | 2027 | change 2021-27 |
|---|---|---|---|
| Food | 295,029,000 | 304,736,000 | 9,707,000 |
| Eat/Drink | 477,166,000 | 492,865,000 | 15,699,000 |
| General Merchandise | 422,361,000 | 436,257,000 | 13,896,000 |
| Furniture | 101,734,000 | 105,081,000 | 3,347,000 |
| Transportation | 394,138,000 | 407,105,000 | 12,967,000 |
| Drugstore | 239,568,000 | 247,450,000 | 7,882,000 |
| Apparel | 255,320,000 | 263,720,000 | 8,400,000 |
| Hardware | 258,274,000 | 266,771,000 | 8,497,000 |
| Vehicle Service | 335,723,000 | 346,768,000 | 11,045,000 |
| Miscellaneous | 502,436,000 | 518,966,000 | 16,530,000 |
| TOTAL | $3,281,750,000 | $3,389,721,000 | $107,971,000 |

*Developed by The Chesapeake Group, Inc., 2022. Further breakdown of retail goods and related services demand is found in the appendix.

- Residents with a three-mile radius are expected to support about 10.5 million square feet of space at any and all locations at the beginning of 2022.
- An additional 344,000 square feet of retail goods and related services space will be supportable by 2027.

*Table 8 – Residents of a Three-Mile Radius Supportable Retail Goods and Related Services Space in Square Feet for 2022 and 2027 and the Change from 2022 to 2027**

| Category | 2021 | 2027 | 2021-27 |
|---|---|---|---|
| Food | 469,310 | 484,750 | 15,442 |
| Eat/Drink | 1,136,110 | 1,173,488 | 37,379 |
| General Merchandise | 2,506,825 | 2,589,304 | 82,477 |
| Furniture | 234,154 | 241,858 | 7,704 |
| Drugstore | 234,871 | 242,598 | 7,727 |
| Apparel | 708,399 | 731,705 | 23,306 |
| Hardware | 1,052,459 | 1,087,085 | 34,625 |
| Vehicle Service | 817,312 | 844,201 | 26,889 |
| Miscellaneous | 2,006,500 | 2,072,514 | 66,012 |
| TOTAL | 10,457,675 | 10,801,734 | 344,058 |

*Developed by The Chesapeake Group, Inc., 2022. Further breakdown of retail goods and related services demand is found in the appendix.

- Suppose vehicle-oriented activity is eliminated from the future growth opportunities. N that case, residents within the three-mile radius will support about 8.6 million square feet of non-vehicle space by 2027, increasing space by about 275,000 square feet over the beginning of 2022.

*Table 9 – Residents of a Three-Mile Radius Supportable Retail Goods and Related Services Space in Square Feet for 2022 and 2027 and the Change from 2022 to 2027, Excluding Vehicle Purchase and Service Space**

| Category | 2021 | 2027 | 2021-27 |
|---|---|---|---|
| Food | 469,310 | 484,750 | 15,442 |
| Eat/Drink | 1,136,110 | 1,173,488 | 37,379 |
| General Merchandise | 2,506,825 | 2,589,304 | 82,477 |
| Furniture | 234,154 | 241,858 | 7,704 |
| Drugstore | 234,871 | 242,598 | 7,727 |
| Apparel | 708,399 | 731,705 | 23,306 |
| Hardware | 1,052,459 | 1,087,085 | 34,625 |
| Miscellaneous | 2,006,500 | 2,072,514 | 66,012 |
| TOTAL | 8,350,649 | 8,625,329 | 274,672 |

*Developed by The Chesapeake Group, Inc., 2022. Further breakdown of retail goods and related services demand is found in the appendix.

The third is the largest in terms of both geographic area and rooftops. The five-mile radius associated with this market is the typical or normal area served by neighborhood and community scale retail goods and related services associated with the roughly ten-acre scale of the site.

- Residents within a five-mile radius generate an estimated $7.2 billion in retail goods and related services sales at the beginning of 2022.
- The sales are expected to grow to about $7.3 billion, or $133 million by 2027, based on the anticipated growth in rooftops and a very modest increase in real income,

*Table 10 – Residents of a Five-Mile Radius Generated Retail Goods and Related Services Sales for 2022 and 2027 and the Change from 2022 to 2027**

| Category | 2021 | 2027 | change 2021-27 |
|---|---|---|---|
| Food | 645,160,000 | 657,181,000 | 12,021,000 |
| Eat/Drink | 1,043,451,000 | 1,062,894,000 | 19,443,000 |
| General Merchandise | 923,605,000 | 940,814,000 | 17,210,000 |
| Furniture | 222,469,000 | 226,614,000 | 4,145,000 |
| Transportation | 861,888,000 | 877,947,000 | 16,060,000 |
| Drugstore | 523,878,000 | 533,640,000 | 9,761,000 |
| Apparel | 558,325,000 | 568,729,000 | 10,403,000 |
| Hardware | 564,784,000 | 575,308,000 | 10,524,000 |
| Vehicle Service | 734,147,000 | 747,827,000 | 13,679,000 |
| Miscellaneous | 1,098,709,000 | 1,119,182,000 | 20,472,000 |
| TOTAL | $7,176,417,000 | $7,310,135,000 | $133,718,000 |

*Developed by The Chesapeake Group, Inc., 2022. Further breakdown of retail goods and related services demand is found in the appendix.

- Residents with a five-mile radius are expected to support about 22.9 million square feet of space at any and all locations at the beginning of 2022.
- An additional 426,000 square feet of retail goods and related services space will be supportable by 2027.

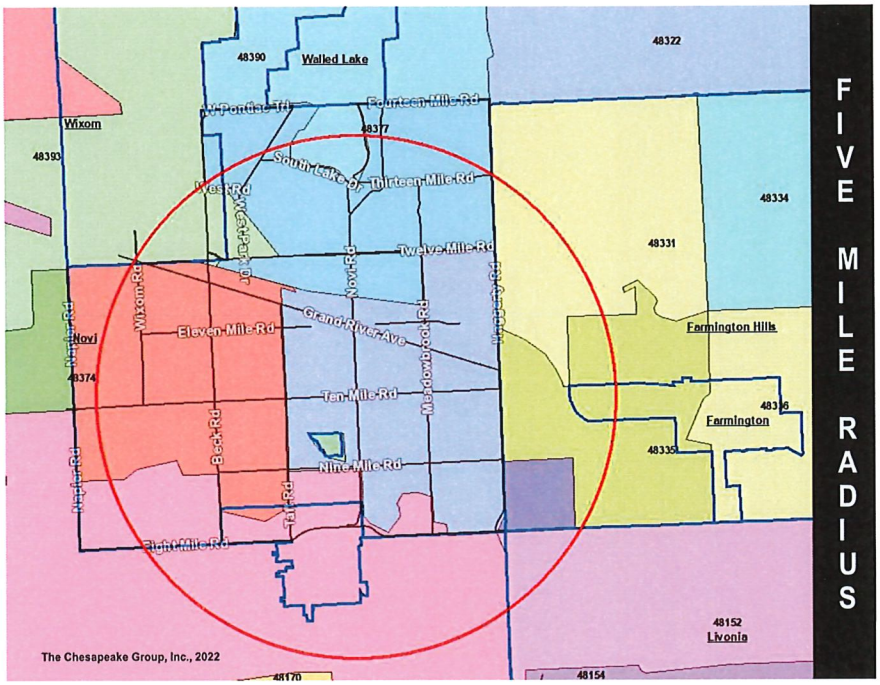



*Table 11 – Residents of a Five-Mile Radius Supportable Retail Goods and Related Services Space in Square Feet for 2022 and 2027 and the Change from 2022 to 2027**

| Category | 2021 | 2027 | 2021-27 |
|---|---|---|---|
| Food | 1,026,272 | 1,045,395 | 19,122 |
| Eat/Drink | 2,484,407 | 2,530,700 | 46,293 |
| General Merchandise | 5,481,844 | 5,583,984 | 102,147 |
| Furniture | 512,043 | 521,583 | 9,540 |
| Transportation | 2,824,722 | 2,877,353 | 52,634 |
| Drugstore | 513,606 | 523,176 | 9,570 |
| Apparel | 1,549,102 | 1,577,970 | 28,864 |
| Hardware | 2,301,479 | 2,344,365 | 42,885 |
| Vehicle Service | 1,787,268 | 1,820,572 | 33,301 |
| Miscellaneous | 4,387,743 | 4,469,505 | 81,758 |
| TOTAL | 22,868,486 | 23,294,603 | 426,114 |

*Developed by The Chesapeake Group, Inc., 2022. Further breakdown of retail goods and related services demand is found in the appendix.

- Suppose vehicle-oriented purchase and service activity is eliminated from the future growth opportunities. Residents within the five-mile radius will support about 18.3 million square feet of non-vehicle space by 2027, increasing space by about 340,000 square feet over the beginning of 2022.

*Table 12 – Residents of a Five-Mile Radius Supportable Retail Goods and Related Services Space in Square Feet for 2022 and 2027 and the Change from 2022 to 2027, Excluding Vehicle Purchase and Service Space**

| Category | 2021 | 2027 | 2021-27 |
|---|---|---|---|
| Food | 1,026,272 | 1,045,395 | 19,122 |
| Eat/Drink | 2,484,407 | 2,530,700 | 46,293 |
| General Merchandise | 5,481,844 | 5,583,984 | 102,147 |
| Furniture | 512,043 | 521,583 | 9,540 |
| Drugstore | 513,606 | 523,176 | 9,570 |
| Apparel | 1,549,102 | 1,577,970 | 28,864 |
| Hardware | 2,301,479 | 2,344,365 | 42,885 |
| Miscellaneous | 4,387,743 | 4,469,505 | 81,758 |
| TOTAL | 18,258,517 | 18,598,705 | 340,179 |

*Developed by The Chesapeake Group, Inc., 2022. Further breakdown of retail goods and related services demand is found in the appendix.

**Site Development Potential**

As previously defined, the proposed development consists of about 60,000 square feet of mixed-use retail and service space on approximately ten acres of land fronting on Ten Mile Road. While the specific tenant mix is currently unknown now, food and food services are likely to be a significant component of the development. Tenants may include a small market, sidewalk cafes, a bakery, and "Panera Breads-type" operations mixed with other miscellaneous retail and services. The proposed development is viable given current and anticipated growth in supportable space based on the three defined markets.

Novi Residents Only

- The site's development would represent only 0.8 percent of the space supported by Novi residents alone.
- The site's development would represent slightly less than one percent of the space supported by Novi residents alone, excluding vehicle sales and services space.
- The site's development would represent about twenty percent of the anticipated growth space supported by Novi residents alone by 2027.

Three-mile Area Residents

- The site's development would represent only 0.6 percent of the space supported by residents within three miles.
- The site's development would represent slightly less than 0.7 percent of the space supported by three-mile area residents alone, excluding vehicle sales and services space.
- The site's development would represent about fourteen percent of the anticipated growth space supported by three-mile area residents by 2027.

Five-mile Area Residents or the Traditional Market Area for Neighborhood and Community Commercial

- The site's development would represent only 0.26 percent of the space supported by residents within five-miles or the traditional neighborhood and community-scaled commercial centers.
- The site's development would represent slightly more than 0.3 percent of the space supported by five-mile area residents alone, excluding vehicle sales and services space.
- The site's development would represent about seventeen percent of the anticipated growth space supported by three-mile area residents by 2027.

The following is also noted for the above three market estimates.

- Amounts less than three percent are considered insignificant from a statistical perspective. Therefore and in all cases, the proposed development does not adversely impact demand for existing commercial. The development does not hinder and affords the opportunity for further growth in retail space on other sites.
- From the smallest to the largest market, space supported by growth should have no adverse impact on any existing businesses that maintain their competitiveness since the sales and space are derived from new households and income that does not presently exist.
- As part of the effort, TCG conducted a survey of available retail spaces in Novi that indicates the following.

    - The retail space market is viable based on achievable rent levels.
    - Rent levels for spaces built between 2010 and the present, rents range generally range from $30 to $40 per square foot. Most spaces built since 2010 lease for $35 to $40 per square foot.
    - Even those built before 2010 most often lease for $20 to $30 per square foot, with some exceeding $30 per square foot.

COMPATIBILITY AND WALKABILITY

The site has significant potential to enhance the walkable nature of this area of Novi.

1. The development will generally consist of non-big box operations that, by nature, impede walking to and through development.

2. Several operations are expected to be in the food and food services arena, enhancing the potential to serve the noted anchors in the area for lunch, dinner, and other times without having to get in and out of a vehicle.

3. Adjacent to the site on the east and south is an additional fourteen acres of new housing. The development will likely contain about seventy-three-bedroom condominiums and will have walking and driving access to the commercial site.

4. This additional housing will also create the opportunity for enhanced pedestrian linkage to some of the area's anchors, like the ice arena and Novi Athletic Club. It also provides the opportunity for improved connections to other existing residential neighborhoods to the east and south.

5. Collectively, with the enhanced linkages to existing anchors, the food and food service composition of much of the activity on the site, and the proposed adjacent other housing development with direct pedestrian linkages to the site, the commercial will act as a "village center" serving the neighboring residential and anchor activity.

# Appendix

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*Permits Issued for New Housing Units for Oakland County from 2011 through 2021**

| Oakland County | 2021 | 2020 | 2019 | 2018 | 2017 | 2016 | 2015 | 2014 | 2013 | 2012 | 2011 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Total Units | 3,174 | 2,475 | 2,842 | 2,642 | 3,707 | 3,196 | 2,645 | 2,458 | 2,705 | 1,901 | 1,277 |
| Units in Single-Family Structures | 2,044 | 1,935 | 1,976 | 2,482 | 2,744 | 2,143 | 2,180 | 2,114 | 2,296 | 1,880 | 1,266 |
| Units in All Multi-Family Structures | 1,130 | 540 | 866 | 160 | 963 | 1,053 | 465 | 344 | 409 | 21 | 11 |
| Units in 2-unit Multi-Family Structures | 20 | 14 | 0 | 16 | 4 | 60 | 58 | 16 | 14 | 6 | 0 |
| Units in 3 & 4-unit Multi-Fam Structures | 127 | 111 | 83 | 71 | 105 | 49 | 44 | 49 | 60 | 15 | 11 |
| Units in 5+ Unit Multi-Family Structures | 983 | 415 | 783 | 73 | 854 | 944 | 363 | 279 | 335 | 0 | 0 |

*Developed by The Chesapeake Group, Inc., 2022, based on HUD data.

*Permits Issued for New Housing Units for Novi from 2011 through 2021**

| Novi | 2021 | 2020 | 2019 | 2018 | 2017 | 2016 | 2015 | 2014 | 2013 | 2012 | 2011 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Total Units | 114 | 321 | 190 | 147 | 516 | 184 | 289 | 203 | 197 | 322 | 275 |
| Units in Single-Family Structures | 114 | 218 | 190 | 147 | 181 | 184 | 173 | 198 | 197 | 316 | 275 |
| Units in All Multi-Family Structures | 0 | 103 | 0 | 0 | 335 | 0 | 116 | 5 | 0 | 6 | 0 |
| Units in 2-unit Multi-Family Structures | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 |
| Units in 3 & 4-unit Multi-Fam Structures | 0 | 0 | 0 | 0 | 32 | 0 | 0 | 0 | 0 | 0 | 0 |
| Units in 5+ Unit Multi-Family Structures | 0 | 103 | 0 | 0 | 303 | 0 | 116 | 5 | 0 | 0 | 0 |

*Developed by The Chesapeake Group, Inc., 2022, based on HUD data.

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*Novi Resident Generated Retail Goods and Related Services Sales and Space in Square Feet for 2022 and 2027 and the Change from 2022 to 2027, Excluding Vehicle Service and Purchase Space**

| Sub-category | 2021 Sales | 2027 Sales | 2021-27 Sales | 2021 Space | 2027 Space | 2021-27 Space |
|---|---|---|---|---|---|---|
| Food | 204,479,000 | 212,909,000 | 8,430,000 | 325,270 | 338,679 | 13,409 |
| Supermarkets | 170,739,965 | 177,779,015 | 7,039,050 | 258,697 | 269,362 | 10,665 |
| Independents | 16,358,320 | 17,032,720 | 674,400 | 40,896 | 42,582 | 1,686 |
| Bakeries | 4,498,538 | 4,683,998 | 185,460 | 14,995 | 15,613 | 618 |
| Dairies | 2,658,227 | 2,767,817 | 109,590 | 7,384 | 7,688 | 304 |
| Others | 10,223,950 | 10,645,450 | 421,500 | 3,298 | 3,434 | 136 |
| Eat/Drink | 330,715,000 | 344,349,000 | 13,634,000 | 787,417 | 819,879 | 32,462 |
| General Merchandise | 292,731,000 | 304,799,000 | 12,068,000 | 1,737,439 | 1,809,064 | 71,627 |
| Dept. Stores | 103,626,774 | 107,898,846 | 4,272,072 | 431,778 | 449,579 | 17,800 |
| Variety Stores | 21,076,632 | 21,945,528 | 868,896 | 123,980 | 129,091 | 5,111 |
| Jewelry | 20,198,439 | 21,031,131 | 832,692 | 28,449 | 29,621 | 1,173 |
| Sporting Goods/Toys | 31,907,679 | 33,223,091 | 1,315,412 | 127,631 | 132,892 | 5,262 |
| Discount Dept. | 109,774,125 | 114,299,625 | 4,525,500 | 997,947 | 1,039,088 | 41,141 |
| Antiques, etc. | 1,463,655 | 1,523,995 | 60,340 | 6,364 | 6,626 | 262 |
| Others | 4,683,696 | 4,876,784 | 193,088 | 21,290 | 22,167 | 878 |
| Furniture | 70,510,000 | 73,417,000 | 2,907,000 | 162,289 | 168,979 | 6,691 |
| Furniture | 10,647,010 | 11,085,967 | 438,957 | 34,345 | 35,761 | 1,416 |
| Home Furnishings | 14,666,080 | 15,270,736 | 604,656 | 54,319 | 56,558 | 2,239 |
| Store/Office Equip. | 11,140,580 | 11,599,886 | 459,306 | 23,210 | 24,166 | 957 |
| Music Instr./Suppl. | 3,031,930 | 3,156,931 | 125,001 | 15,160 | 15,785 | 625 |
| Radios,TV, etc. | 31,024,400 | 32,303,480 | 1,279,080 | 35,255 | 36,709 | 1,454 |
| Transportation | 273,170,000 | 284,432,000 | 11,262,000 | 895,278 | 932,188 | 36,909 |
| New/Used Vehicles | 95,609,500 | 99,551,200 | 3,941,700 | 239,024 | 248,878 | 9,854 |
| Tires, Batt., Prts. | 120,467,970 | 125,434,512 | 4,966,542 | 501,950 | 522,644 | 20,694 |
| Marine Sales/Rentals | 14,478,010 | 15,074,896 | 596,886 | 39,130 | 40,743 | 1,613 |
| Auto/Truck Rentals | 42,614,520 | 44,371,392 | 1,756,872 | 115,174 | 119,923 | 4,748 |
| Drugstore | 166,040,000 | 172,885,000 | 6,845,000 | 162,784 | 169,495 | 6,711 |
| Apparel | 176,958,000 | 184,253,000 | 7,295,000 | 490,979 | 511,221 | 20,241 |
| Men's and Boy's | 23,181,498 | 24,137,143 | 955,645 | 57,954 | 60,343 | 2,389 |
| Women's and Girl's | 58,750,056 | 61,171,996 | 2,421,940 | 158,784 | 165,330 | 6,546 |
| Infants | 3,716,118 | 3,869,313 | 153,195 | 12,387 | 12,898 | 511 |
| Family | 49,194,324 | 51,222,334 | 2,028,010 | 196,777 | 204,889 | 8,112 |
| Shoes | 36,984,222 | 38,508,877 | 1,524,655 | 42,028 | 43,760 | 1,733 |
| Jeans/Leather | 707,832 | 737,012 | 29,180 | 2,359 | 2,457 | 97 |
| Tailors/Uniforms | 3,185,244 | 3,316,554 | 131,310 | 15,926 | 16,583 | 657 |
| Others | 1,238,706 | 1,289,771 | 51,065 | 4,764 | 4,961 | 196 |
| Hardware | 179,005,000 | 186,384,000 | 7,380,000 | 729,441 | 759,510 | 30,073 |
| Hardware | 86,638,420 | 90,209,856 | 3,571,920 | 315,049 | 328,036 | 12,989 |
| Lawn/Seed/Fertil. | 3,401,095 | 3,541,296 | 140,220 | 10,003 | 10,416 | 412 |
| Others | 88,965,485 | 92,632,848 | 3,667,860 | 404,389 | 421,058 | 16,672 |
| Vehicle Service | 232,683,000 | 242,276,000 | 9,593,000 | 566,463 | 589,817 | 23,354 |
| Gasoline | 79,112,220 | 82,373,840 | 3,261,620 | 54,560 | 56,810 | 2,249 |
| Garage, Repairs | 153,570,780 | 159,902,160 | 6,331,380 | 511,903 | 533,007 | 21,105 |
| Miscellaneous | 348,229,000 | 362,585,000 | 14,356,000 | 1,390,669 | 1,448,000 | 57,331 |
| Advert. Signs, etc. | 5,571,664 | 5,801,360 | 229,696 | 20,261 | 21,096 | 835 |
| Barber/Beauty shop | 21,241,969 | 22,117,685 | 875,716 | 106,210 | 110,588 | 4,379 |
| Book Stores | 16,018,534 | 16,678,910 | 660,376 | 88,992 | 92,661 | 3,669 |
| Bowling | 8,009,267 | 8,339,455 | 330,188 | 80,093 | 83,395 | 3,302 |
| Cig./Tobacco Dealer | 2,437,603 | 2,538,095 | 100,492 | 4,875 | 5,076 | 201 |
| Dent./Physician Lab | 13,929,160 | 14,503,400 | 574,240 | 42,859 | 44,626 | 1,767 |
| Florist/Nurseries | 26,117,175 | 27,193,875 | 1,076,700 | 61,452 | 63,986 | 2,533 |
| Laundry, Dry Clean | 11,839,786 | 12,327,890 | 488,104 | 39,466 | 41,093 | 1,627 |
| Optical Goods/Opt. | 8,357,496 | 8,702,040 | 344,544 | 23,879 | 24,863 | 984 |
| Photo Sup./Photog. | 24,027,801 | 25,018,365 | 990,564 | 68,651 | 71,481 | 2,830 |
| Printing | 28,206,549 | 29,369,385 | 1,162,836 | 102,569 | 106,798 | 4,228 |
| Paper/Paper Prod. | 14,973,847 | 15,591,155 | 617,308 | 74,869 | 77,956 | 3,087 |
| Gifts/Cards/Novel. | 49,796,747 | 51,849,655 | 2,052,908 | 165,989 | 172,832 | 6,843 |
| Newsstands | 2,785,832 | 2,900,680 | 114,848 | 5,572 | 5,801 | 230 |
| Video Rent/Sales | 45,269,770 | 47,136,050 | 1,866,280 | 226,349 | 235,680 | 9,331 |
| Others | 69,645,800 | 72,517,000 | 2,871,200 | 278,583 | 290,068 | 11,485 |
| TOTAL | 2,274,520,000 | 2,368,289,000 | 93,770,000 | 7,248,029 | 7,546,832 | 298,808 |

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*Residents of a Three-Mile Radius Sales and Supportable Retail Goods and Related Services Space in Square Feet for 2022 and 2027 and the Change from 2022 to 2027, Excluding Vehicle Purchase and Service Space**

| Sub-category | 2021 Sales | 2027 Sales | 2021-27 Sales | 2021 Space | 2027 Space | 2021-27 Space |
|---|---|---|---|---|---|---|
| Food | 295,029,000 | 304,736,000 | 9,707,000 | 469,310 | 484,750 | 15,442 |
| Supermarkets | 246,349,215 | 254,454,560 | 8,105,345 | 373,256 | 385,537 | 12,281 |
| Independents | 23,602,320 | 24,378,880 | 776,560 | 59,006 | 60,947 | 1,941 |
| Bakeries | 6,490,638 | 6,704,192 | 213,554 | 21,635 | 22,347 | 712 |
| Dairies | 3,835,377 | 3,961,568 | 126,191 | 10,654 | 11,004 | 351 |
| Others | 14,751,450 | 15,236,800 | 485,350 | 4,759 | 4,915 | 157 |
| Eat/Drink | 477,166,000 | 492,865,000 | 15,699,000 | 1,136,110 | 1,173,488 | 37,379 |
| General Merchandise | 422,361,000 | 436,257,000 | 13,896,000 | 2,506,825 | 2,589,304 | 82,477 |
| Dept. Stores | 149,515,794 | 154,434,978 | 4,919,184 | 622,982 | 643,479 | 20,497 |
| Variety Stores | 30,409,992 | 31,410,504 | 1,000,512 | 178,882 | 184,768 | 5,885 |
| Jewelry | 29,142,909 | 30,101,733 | 958,824 | 41,046 | 42,397 | 1,350 |
| Sporting Goods/Toys | 46,037,349 | 47,552,013 | 1,514,664 | 184,149 | 190,208 | 6,059 |
| Discount Dept. | 158,385,375 | 163,596,375 | 5,211,000 | 1,439,867 | 1,487,240 | 47,373 |
| Antiques, etc. | 2,111,805 | 2,181,285 | 69,480 | 9,182 | 9,484 | 302 |
| Others | 6,757,776 | 6,980,112 | 222,336 | 30,717 | 31,728 | 1,011 |
| Furniture | 101,734,000 | 105,081,000 | 3,347,000 | 234,154 | 241,858 | 7,704 |
| Furniture | 15,361,834 | 15,867,231 | 505,397 | 49,554 | 51,185 | 1,630 |
| Home Furnishings | 21,160,672 | 21,856,848 | 696,176 | 78,373 | 80,951 | 2,578 |
| Store/Office Equip. | 16,073,972 | 16,602,798 | 528,826 | 33,487 | 34,589 | 1,102 |
| Music Instr./Suppl. | 4,374,562 | 4,518,483 | 143,921 | 21,873 | 22,592 | 720 |
| Radios,TV, etc. | 44,762,960 | 46,235,640 | 1,472,680 | 50,867 | 52,541 | 1,674 |
| Transportation | 394,138,000 | 407,105,000 | 12,967,000 | 1,291,735 | 1,334,231 | 42,497 |
| New/Used Vehicles | 137,948,300 | 142,486,750 | 4,538,450 | 344,871 | 356,217 | 11,346 |
| Tires, Batt., Prts. | 173,814,858 | 179,533,305 | 5,718,447 | 724,229 | 748,055 | 23,827 |
| Marine Sales/Rentals | 20,889,314 | 21,576,565 | 687,251 | 56,458 | 58,315 | 1,857 |
| Auto/Truck Rentals | 61,485,528 | 63,508,380 | 2,022,852 | 166,177 | 171,644 | 5,467 |
| Drugstore | 239,568,000 | 247,450,000 | 7,882,000 | 234,871 | 242,598 | 7,727 |
| Apparel | 255,320,000 | 263,720,000 | 8,400,000 | 708,399 | 731,705 | 23,306 |
| Men's and Boy's | 33,446,920 | 34,547,320 | 1,100,400 | 83,617 | 86,368 | 2,751 |
| Women's and Girl's | 84,766,240 | 87,555,040 | 2,788,800 | 229,098 | 236,635 | 7,537 |
| Infants | 5,361,720 | 5,538,120 | 176,400 | 17,872 | 18,460 | 588 |
| Family | 70,978,960 | 73,314,160 | 2,335,200 | 283,916 | 293,257 | 9,341 |
| Shoes | 53,361,880 | 55,117,480 | 1,755,600 | 60,639 | 62,634 | 1,995 |
| Jeans/Leather | 1,021,280 | 1,054,880 | 33,600 | 3,404 | 3,516 | 112 |
| Tailors/Uniforms | 4,595,760 | 4,746,960 | 151,200 | 22,979 | 23,735 | 756 |
| Others | 1,787,240 | 1,846,040 | 58,800 | 6,874 | 7,100 | 226 |
| Hardware | 258,274,000 | 266,771,000 | 8,497,000 | 1,052,459 | 1,087,085 | 34,625 |
| Hardware | 125,004,616 | 129,117,164 | 4,112,548 | 454,562 | 469,517 | 14,955 |
| Lawn/Seed/Fertil. | 4,907,206 | 5,068,649 | 161,443 | 14,433 | 14,908 | 475 |
| Others | 128,362,178 | 132,585,187 | 4,223,009 | 583,464 | 602,660 | 19,195 |
| Vehicle Service | 335,723,000 | 346,768,000 | 11,045,000 | 817,312 | 844,201 | 26,889 |
| Gasoline | 114,145,820 | 117,901,120 | 3,755,300 | 78,721 | 81,311 | 2,590 |
| Garage, Repairs | 221,577,180 | 228,866,880 | 7,289,700 | 738,591 | 762,890 | 24,299 |
| Miscellaneous | 502,436,000 | 518,966,000 | 16,530,000 | 2,006,500 | 2,072,514 | 66,012 |
| Advert. Signs, etc. | 8,038,976 | 8,303,456 | 264,480 | 29,233 | 30,194 | 962 |
| Barber/Beauty shop | 30,648,596 | 31,656,926 | 1,008,330 | 153,243 | 158,285 | 5,042 |
| Book Stores | 23,112,056 | 23,872,436 | 760,380 | 128,400 | 132,625 | 4,224 |
| Bowling | 11,556,028 | 11,936,218 | 380,190 | 115,560 | 119,362 | 3,802 |
| Cig./Tobacco Dealer | 3,517,052 | 3,632,762 | 115,710 | 7,034 | 7,266 | 231 |
| Dent./Physician Lab | 20,097,440 | 20,758,640 | 661,200 | 61,838 | 63,873 | 2,034 |
| Florist/Nurseries | 37,682,700 | 38,922,450 | 1,239,750 | 88,665 | 91,582 | 2,917 |
| Laundry, Dry Clean | 17,082,824 | 17,644,844 | 562,020 | 56,943 | 58,816 | 1,873 |
| Optical Goods/Opt. | 12,058,464 | 12,455,184 | 396,720 | 34,453 | 35,586 | 1,133 |
| Photo Sup./Photog. | 34,668,084 | 35,808,654 | 1,140,570 | 99,052 | 102,310 | 3,259 |
| Printing | 40,697,316 | 42,036,246 | 1,338,930 | 147,990 | 152,859 | 4,869 |
| Paper/Paper Prod. | 21,604,748 | 22,315,538 | 710,790 | 108,024 | 111,578 | 3,554 |
| Gifts/Cards/Novel. | 71,848,348 | 74,212,138 | 2,363,790 | 239,494 | 247,374 | 7,879 |
| Newsstands | 4,019,488 | 4,151,728 | 132,240 | 8,039 | 8,303 | 264 |
| Video Rent/Sales | 65,316,680 | 67,465,580 | 2,148,900 | 326,583 | 337,328 | 10,745 |
| Others | 100,487,200 | 103,793,200 | 3,306,000 | 401,949 | 415,173 | 13,224 |
| TOTAL | 3,281,749,000 | 3,389,719,000 | 107,970,000 | 10,457,675 | 10,801,734 | 344,058 |

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*Residents of a Five-Mile Radius Sales and Supportable Retail Goods and Related Services Space in Square Feet for 2022 and 2027 and the Change from 2022 to 2027, Excluding Vehicle Purchase and Service Space**

| Sub-category | 2021 Sales | 2027 Sales | 2021-27 Sales | 2021 Space | 2027 Space | 2021-27 Space |
|---|---|---|---|---|---|---|
| Food | 645,160,000 | 657,181,000 | 12,021,000 | 1,026,272 | 1,045,395 | 19,122 |
| Supermarkets | 538,708,600 | 548,746,135 | 10,037,535 | 816,225 | 831,434 | 15,208 |
| Independents | 51,612,800 | 52,574,480 | 961,680 | 129,032 | 131,436 | 2,404 |
| Bakeries | 14,193,520 | 14,457,982 | 264,462 | 47,312 | 48,193 | 882 |
| Dairies | 8,387,080 | 8,543,353 | 156,273 | 23,297 | 23,732 | 434 |
| Others | 32,258,000 | 32,859,050 | 601,050 | 10,406 | 10,600 | 194 |
| Eat/Drink | 1,043,451,000 | 1,062,894,000 | 19,443,000 | 2,484,407 | 2,530,700 | 46,293 |
| General Merchandise | 923,605,000 | 940,814,000 | 17,210,000 | 5,481,844 | 5,583,984 | 102,147 |
| Dept. Stores | 326,956,170 | 333,048,156 | 6,092,340 | 1,362,317 | 1,387,701 | 25,385 |
| Variety Stores | 66,499,560 | 67,738,608 | 1,239,120 | 391,174 | 398,462 | 7,289 |
| Jewelry | 63,728,745 | 64,916,166 | 1,187,490 | 89,759 | 91,431 | 1,673 |
| Sporting Goods/Toys | 100,672,945 | 102,548,726 | 1,875,890 | 402,692 | 410,195 | 7,504 |
| Discount Dept. | 346,351,875 | 352,805,250 | 6,453,750 | 3,148,653 | 3,207,320 | 58,670 |
| Antiques, etc. | 4,618,025 | 4,704,070 | 86,050 | 20,078 | 20,452 | 374 |
| Others | 14,777,680 | 15,053,024 | 275,360 | 67,171 | 68,423 | 1,252 |
| Furniture | 222,469,000 | 226,614,000 | 4,145,000 | 512,043 | 521,583 | 9,540 |
| Furniture | 33,592,819 | 34,218,714 | 625,895 | 108,364 | 110,383 | 2,019 |
| Home Furnishings | 46,273,552 | 47,135,712 | 862,160 | 171,384 | 174,577 | 3,193 |
| Store/Office Equip. | 35,150,102 | 35,805,012 | 654,910 | 73,229 | 74,594 | 1,364 |
| Music Instr./Suppl. | 9,566,167 | 9,744,402 | 178,235 | 47,831 | 48,722 | 891 |
| Radios,TV, etc. | 97,886,360 | 99,710,160 | 1,823,800 | 111,235 | 113,307 | 2,073 |
| Transportation | 861,888,000 | 877,947,000 | 16,060,000 | 2,824,722 | 2,877,353 | 52,634 |
| New/Used Vehicles | 301,660,800 | 307,281,450 | 5,621,000 | 754,152 | 768,204 | 14,053 |
| Tires, Batt., Prts. | 380,092,608 | 387,174,627 | 7,082,460 | 1,583,719 | 1,613,228 | 29,510 |
| Marine Sales/Rentals | 45,680,064 | 46,531,191 | 851,180 | 123,460 | 125,760 | 2,300 |
| Auto/Truck Rentals | 134,454,528 | 136,959,732 | 2,505,360 | 363,391 | 370,161 | 6,771 |
| Drugstore | 523,878,000 | 533,640,000 | 9,761,000 | 513,606 | 523,176 | 9,570 |
| Apparel | 558,325,000 | 568,729,000 | 10,403,000 | 1,549,102 | 1,577,970 | 28,864 |
| Men's and Boy's | 73,140,575 | 74,503,499 | 1,362,793 | 182,851 | 186,259 | 3,407 |
| Women's and Girl's | 185,363,900 | 188,818,028 | 3,453,796 | 500,984 | 510,319 | 9,335 |
| Infants | 11,724,825 | 11,943,309 | 218,463 | 39,083 | 39,811 | 728 |
| Family | 155,214,350 | 158,106,662 | 2,892,034 | 620,857 | 632,427 | 11,568 |
| Shoes | 116,689,925 | 118,864,361 | 2,174,227 | 132,602 | 135,073 | 2,471 |
| Jeans/Leather | 2,233,300 | 2,274,916 | 41,612 | 7,444 | 7,583 | 139 |
| Tailors/Uniforms | 10,049,850 | 10,237,122 | 187,254 | 50,249 | 51,186 | 936 |
| Others | 3,908,275 | 3,981,103 | 72,821 | 15,032 | 15,312 | 280 |
| Hardware | 564,784,000 | 575,308,000 | 10,524,000 | 2,301,479 | 2,344,365 | 42,885 |
| Hardware | 273,355,456 | 278,449,072 | 5,093,616 | 994,020 | 1,012,542 | 18,522 |
| Lawn/Seed/Fertil. | 10,730,896 | 10,930,852 | 199,956 | 31,561 | 32,150 | 588 |
| Others | 280,697,648 | 285,928,076 | 5,230,428 | 1,275,898 | 1,299,673 | 23,775 |
| Vehicle Service | 734,147,000 | 747,827,000 | 13,679,000 | 1,787,268 | 1,820,572 | 33,301 |
| Gasoline | 249,609,980 | 254,261,180 | 4,650,860 | 172,145 | 175,353 | 3,207 |
| Garage, Repairs | 484,537,020 | 493,565,820 | 9,028,140 | 1,615,123 | 1,645,219 | 30,094 |
| Miscellaneous | 1,098,709,000 | 1,119,182,000 | 20,472,000 | 4,387,743 | 4,469,505 | 81,758 |
| Advert. Signs, etc. | 17,579,344 | 17,906,912 | 327,552 | 63,925 | 65,116 | 1,191 |
| Barber/Beauty shop | 67,021,249 | 68,270,102 | 1,248,792 | 335,106 | 341,351 | 6,244 |
| Book Stores | 50,540,614 | 51,482,372 | 941,712 | 280,781 | 286,013 | 5,232 |
| Bowling | 25,270,307 | 25,741,186 | 470,856 | 252,703 | 257,412 | 4,709 |
| Cig./Tobacco Dealer | 7,690,963 | 7,834,274 | 143,304 | 15,382 | 15,669 | 287 |
| Dent./Physician Lab | 43,948,360 | 44,767,280 | 818,880 | 135,226 | 137,745 | 2,520 |
| Florist/Nurseries | 82,403,175 | 83,938,650 | 1,535,400 | 193,890 | 197,503 | 3,613 |
| Laundry, Dry Clean | 37,356,106 | 38,052,188 | 696,048 | 124,520 | 126,841 | 2,320 |
| Optical Goods/Opt. | 26,369,016 | 26,860,368 | 491,328 | 75,340 | 76,744 | 1,404 |
| Photo Sup./Photog. | 75,810,921 | 77,223,558 | 1,412,568 | 216,603 | 220,639 | 4,036 |
| Printing | 88,995,429 | 90,653,742 | 1,658,232 | 323,620 | 329,650 | 6,030 |
| Paper/Paper Prod. | 47,244,487 | 48,124,826 | 880,296 | 236,222 | 240,624 | 4,401 |
| Gifts/Cards/Novel. | 157,115,387 | 160,043,026 | 2,927,496 | 523,718 | 533,477 | 9,758 |
| Newsstands | 8,789,672 | 8,953,456 | 163,776 | 17,579 | 17,907 | 328 |
| Video Rent/Sales | 142,832,170 | 145,493,660 | 2,661,360 | 714,161 | 727,468 | 13,307 |
| Others | 219,741,800 | 223,836,400 | 4,094,400 | 878,967 | 895,346 | 16,378 |
| TOTAL | 7,176,416,000 | 7,310,136,000 | 133,718,000 | 22,868,486 | 23,294,603 | 426,114 |

*Developed by The Chesapeake Group, Inc., 2022,

**TRAFFIC IMPACT STUDY**

# Traffic Impact Study
## Novi / Ten Project

Novi, Michigan

(Version 02, November 28, 2022)

Prepared For:

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CONSULTING

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- Turning Movement Count Data
- ITE Trip Generation Information
- Signal Timing Plans
- HCM Output


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# 1.0 Executive Summary

The proposed Novi-Ten development, which consists of a conceptual neighborhood shopping plaza and 71 townhouse residential units, is located on the south side of 10 Mile Road between Novi Road and the Railroad tracks. It is not expected to have a significant traffic impact on the overall level of service at the major intersections of Ten Mile Road with Novi Road and with Meadowbrook Road.

The level of service at Novi Road and Ten Mile Road is currently a D and will remain a D during both morning and afternoon peak hours for all scenarios.

The level of service at Ten Mile Road and Meadowbrook Road is currently a C during the morning peak hour and a D during the afternoon peak hour and the level of service does not change in the background and forecast scenarios.

The client has prepared a parallel plan with light industrial and office space under the existing zoning, which is currently OS-1 and I-1. The proposed PRO plan would generate slightly less traffic during the morning peak hour and slightly more traffic during the afternoon peak hour compared to the existing zoning. Given the similar trip generation, the PRO plan and the parallel plan would likely have similar traffic impacts during the peak hours of the day on the surrounding intersections of 10 Mile Road with Novi Road and Meadowbrook Road.

When the commercial portion of the site is developed, Ten Mile Road may need the following improvements to address the various concerns at the site driveways:

- In lieu of separate right-turn deceleration lanes at each driveway, widen eastbound 10 Mile Road to two-through lanes ending at a right-turn deceleration lane at the residential driveway.
- Extend the center left-turn lane along 10 Mile Road from where it currently ends at Catherine Industrial to service all commercial driveways.
- Widen westbound 10 Mile Road to two through lanes west from the 3rd commercial site driveway to help improve capacity.
- Provide separate left-turn and right-turn outbound lanes at the 2nd (middle) and 3rd (east) commercial driveways, to help facilitate right-turns out of the site, when a left-turning vehicle is waiting for a gap in traffic.

# 2.0 Introduction

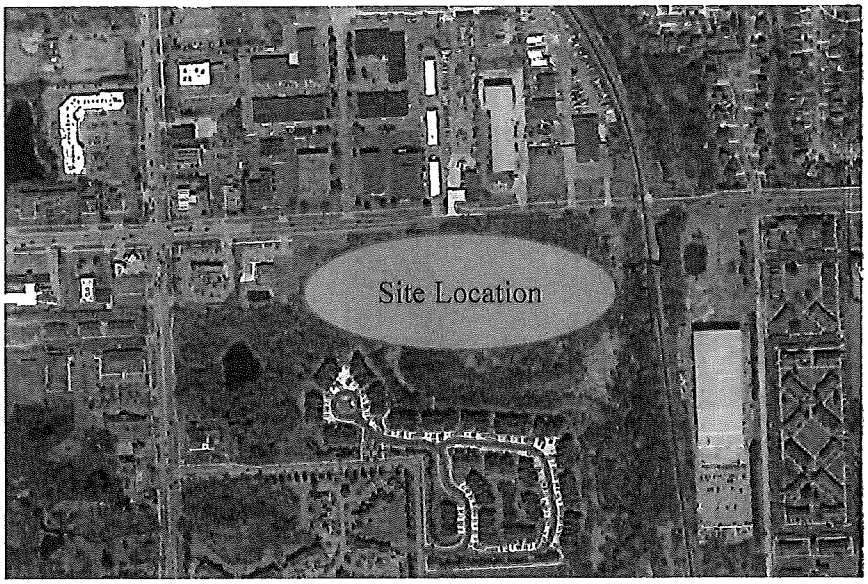
A development consisting of 71 townhouse residential units (low rise) and approximately 60,000 SF of neighborhood retail is planned for a site located on the south side of 10 Mile Road between Novi Road and the railroad tracks. The development is a PRO plan and the site would need to be rezoned from its existing mix of I-1 and OS-1. A concept plan for the site indicates that there may be a total four driveways that access the site from 10 Mile Road, one of which is already exists and currently provides access to a small business located at 43025 10 Mile Road.

This traffic study will focus on the site traffic impacts on the study area of this project which includes the major intersections of 10 Mile Road with Novi Road and Meadowbrook Road as well as the four proposed site driveways and the relevant commercial driveways on the north side of 10 Mile Road, such as Catherine Industrial, the driveway pair near the 3rd commercial site driveway, the Tremar driveway, and the western Wrenchers' driveway down near the railroad.

# 3.0 Area Description & Site Plan

## 3.1 Proposed Site Location and Surroundings

The Novi/Ten site is located on the south side of 10 Mile Road, east of Novi Road, west of the railroad crossing (and Meadowbrook Road. The site is surrounded by residential areas to the south, east, and further west beyond Novi Road. To the north of the site are light industrial type uses and a small amount of commercial to the west.



### 3.2 Existing Zoning

The site is currently zoned for OS-1 and I-1 for which there is a parallel plan with 103,300 SF of office space, and 281,700 SF of light industrial space, allowable under the current zoning. The trip generation for this parallel plan is included later in the report.

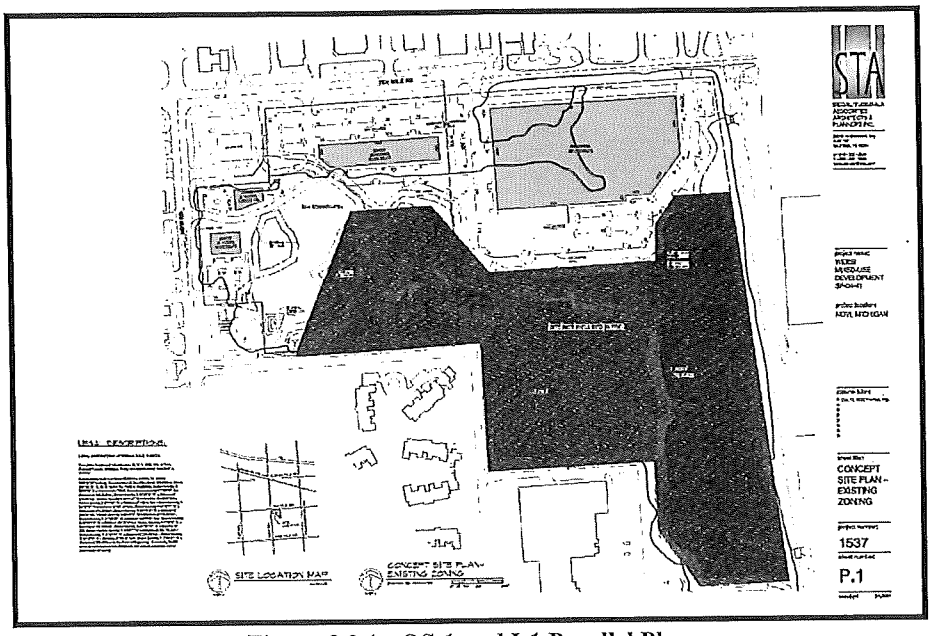



**Figure 3.2.1 - OS-1 and I-1 Parallel Plan**

### 3.3 Proposed Zoning and Site Plan

The proposed development is a PRO project with 71 townhouse residential units and conceptual retail space. The exact size, layout, and use of the proposed commercial space is unknown at this point. Because of this, this study conservatively assumes that the neighborhood style shopping plaza will be 60,000 SF.

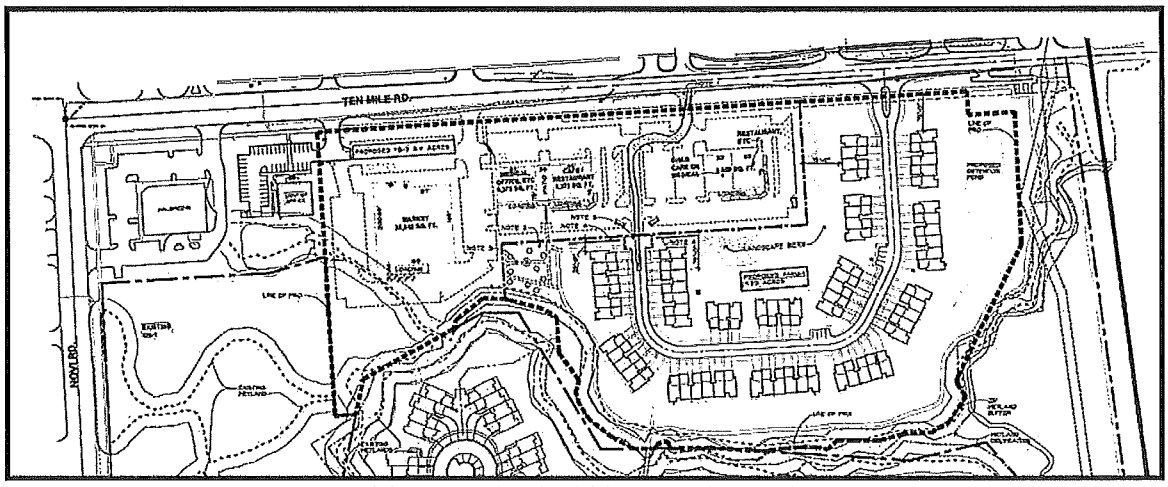



**Figure 3.3.1 – Novi / 10 PRO Concept Plan**

### 3.4 Project Scope and Study Intersections

The intersections, numbered from west to east, that are considered within the traffic influence area of this development and that are analyzed in this traffic study are as follows:

- Major Intersections
  - 10 Mile Road & Novi Road
  - 10 Mile Road & Meadowbrook Road
- Site Driveways (4 shown in concept plan)
  - 10 Mile Road & Shared 1st Commercial Driveway
  - 10 Mile Road & Catherine Industrial Drive / 2nd Commercial Driveway
  - 10 Mile Road & 3rd Commercial Driveway / Double Driveways
  - 10 Mile Road & 4th Proposed Residential Driveway
- Other Relevant Driveways
  - 10 Mile Road & Tremar's Driveway
  - 10 Mile Road & Wrenchers' Driveway

The traffic study scope is limited to just the aforementioned intersections as the residential portion is relatively small, and the conceptual retail portion, which can be categorized as a neighborhood shopping plaza, is meant to service the local area and is not expected to pull traffic from I-96 to the North.

Both Novi Road and 10 Mile Roads are under the jurisdiction of the Road Commission for Oakland County and are classified as other principal arterials.

Novi Road, at 10 Mile Road, is five-lanes wide with a speed limit of 45 MPH. The intersection is controlled with a traffic signal that includes permitted/protected style left-turn phasing in either direction.

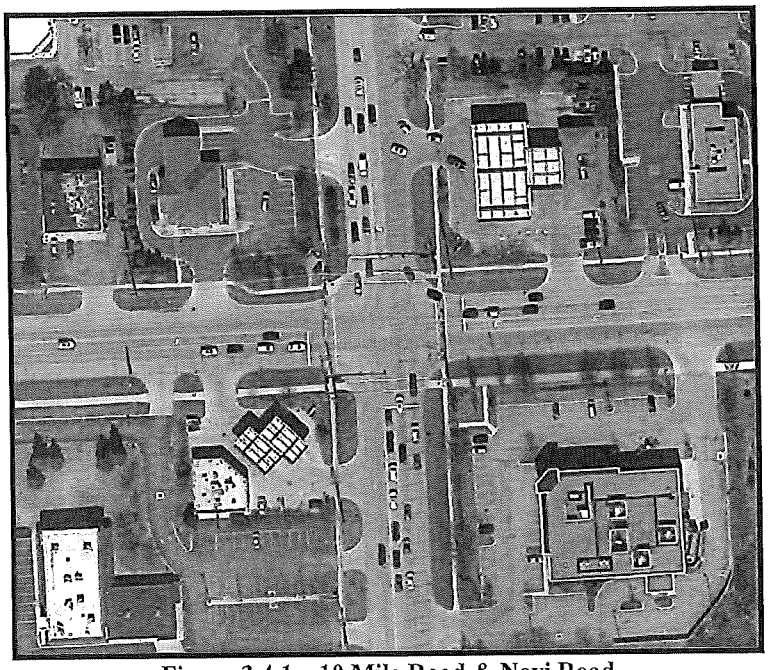


**Figure 3.4.1 – 10 Mile Road & Novi Road**

10 Mile Road is five-lanes wide near the intersection with Novi Road, however it narrows down to three-lanes just east of Catherine Industrial Drive, and narrows again down to two-lanes wide, with deceleration lanes for a few businesses on the north side of the road and one left-turn passing lane at the Tremar Driveway. East of the railroad tracks, 10 Mile Road eventually widens back to a four-lane and then a five-lane cross section as it approaches Meadowbrook Road. The speed limit on 10 Mile Road is 45 MPH.

Meadowbrook Road is a City of Novi roadway and classified as a minor arterial. At its intersection with 10 Mile Road, Meadowbrook Road is 4 lanes wide, with a separate left-turn, through-lane, and right-turn lane on the northbound and southbound approaches. The speed limit on Meadowbrook Road is 40 MPH to the north, and 30 MPH to the south.

**Figure 3.4.2 – 10 Mile Road & Meadowbrook Road**

The 1st commercial site driveway (1002) will share access with a dental business at an existing driveway which is aligned across from another business on the north side of 10 Mile Road. The 2nd commercial site driveway (1003) is located directly across from Catherine Industrial Drive.

**Figure 3.4.3 – Driveways at 1002 and 1003.**

The other two driveways are approximately located at the red arrows illustrated in Figure 3.4.4. The 3rd commercial driveway will also serve as the emergency access route for the residential portion of the site. The 4th driveway will only serve the residential portion of the site and will not carry any commercial traffic.

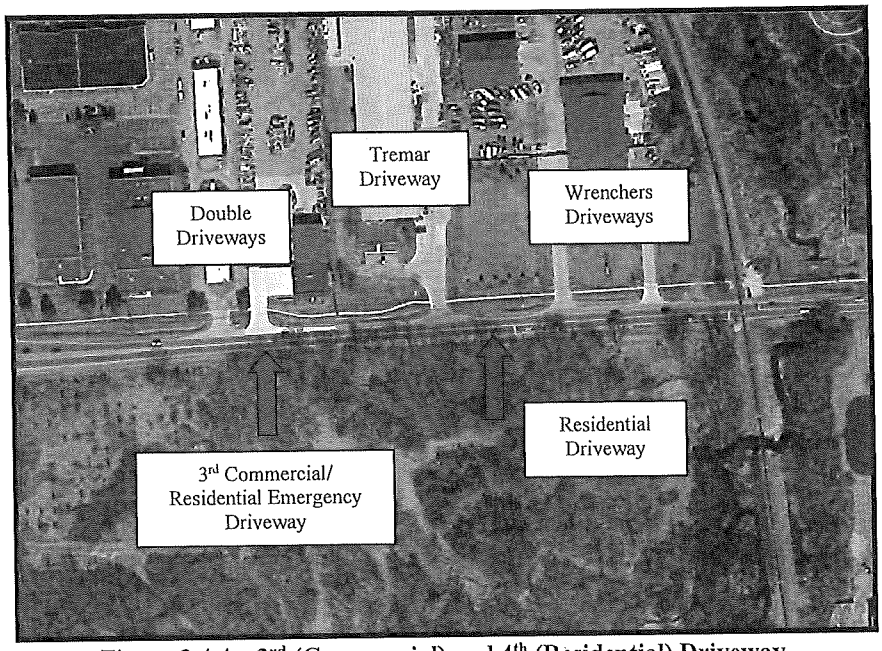



**Figure 3.4.4 – 3rd (Commercial) and 4th (Residential) Driveway.**

# 4.0 Data Collection & Existing Traffic Volumes

## 4.1 Twenty-Four Hour Traffic Volumes

Historical 24-hr volume data for this traffic study have been acquired from the Southeast Michigan Council of Governments (SEMCOG) traffic count database (TCDS). The traffic cameras at Novi Road and Meadowbrook Road have accumulated a significant data set of the yearly AADT's for each intersection's approach which is summarized in Tables 4.1.1 and 4.1.2.

Table 4.1.1 – 24-Hr AADT Volumes at 10 Mile Road & Novi Road

| Year | EB | WB | NB | SB | Total |
|---|---|---|---|---|---|
| **2022*** | **9793** | **8282** | **9695** | **10552** | **38322** |
| 2019 | 8355 | 7391 | 9890 | 10385 | 36021 |
| 2018 | 7765 | 7697 | 10045 | 10608 | 36115 |
| 2017 | 8445 | 7859 | 10532 | 10698 | 37534 |
| 2016 | 9456 | 8118 | 10328 | 10800 | 38702 |
| 2015 | 9746 | 8376 | 10487 | 11010 | 39619 |
| 2014 | 9308 | 7754 | 9645 | 10131 | 36838 |
| 2013 | 9864 | 8568 | 10178 | 10532 | 39142 |
| 2012 | 9825 | 8687 | 9844 | 10232 | 38588 |
| 2010 | 9543 | 8468 | 9655 | 9569 | 37235 |

Table 4.1.2 – 24-Hr AADT Volumes at 10 Mile Road & Meadowbrook Road

| Year | EB | WB | NB | SB | Total |
|---|---|---|---|---|---|
| 2022 | 7687 | 7488 | 3645 | 4706 | 23526 |
| 2019 | 7620 | 8223 | 3586 | 5016 | 24445 |
| 2018 | 7321 | 8135 | 3867 | 4820 | 24143 |
| 2017 | 8359 | 7707 | 4082 | 4456 | 24604 |
| 2016 | 10938 | 7162 | 3762 | 4182 | 26044 |
| 2015 | 7340 | 8032 | 4151 | 4755 | 24278 |
| 2014 | 7102 | 7508 | 4106 | 4329 | 23045 |

*The 2022 entries are a quick estimate based on our 13 hour traffic count at the intersections, factored by 1.225 to bring the 13 hour count to a 24 hour count. The factor was derived from a February 27th 2018 traffic count at 10 Mile/Novi using the same 13 hours relative to its 24 hour volume. The 2018 count summary is included in the Appendix.

### 4.2 Turning Movement Counts

Video cameras were installed at each of the study intersections in order to record the various turning movements that occurred between the hours of 6:00 AM-7:00 PM on March 16th, 2022. The video files were uploaded to www.spacksolutions.com 's counting service, then downloaded and processed. The intersections are listed below:

- 1001 – 10 Mile Road and Novi Road
- 1002 – 10 Mile Road and Shared Driveway
- 1003 – 10 Mile Road and Catherine Industrial Drive
- 1004 – 10 Mile Road and existing driveway pair across from 3rd site driveway.
    - Counts at this location were limited to just 7-9 AM, 4-6 PM.
- 1006 – 10 Mile Road & Tremar's Driveway
- 1008 – 10 Mile Road & Wrenchers' Driveway
- 1009 – 10 Mile Road & Meadowbrook Road

These morning and afternoon peak hour counts include all personal vehicles, commercial truck traffic, pedestrians, and bicycle traffic. A summary of these turning movement counts is included in the Appendix.

Figure 4.2.1 shows the existing morning and afternoon peak hour traffic volumes.

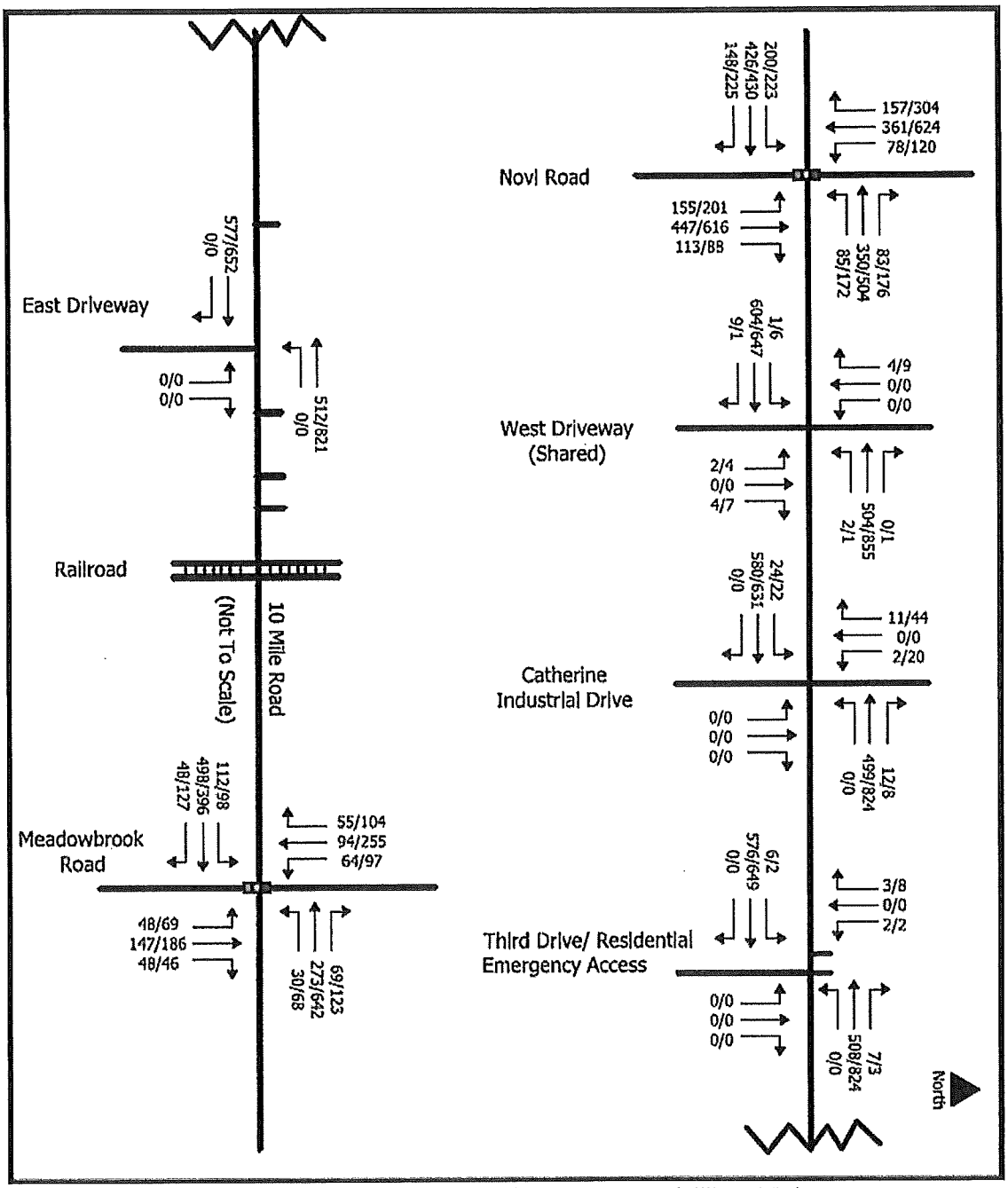



Figure 4.2.1 – Existing Morning/Afternoon Peak Hour Volumes

# 5.0 Background Growth

Typically traffic volumes may grow over time due to development in the surrounding area. The existing traffic volumes are increased by a background growth rate to estimate the background traffic conditions that will be present when the proposed site has reached its build-out.

Based on the historical AADT data contained in Tables 4.1.1-2, traffic volumes in the area have been in a slight decline, even when ignoring all of 2020 and 2021 due to the effects of COVID, and even excluding the current 2022 count.

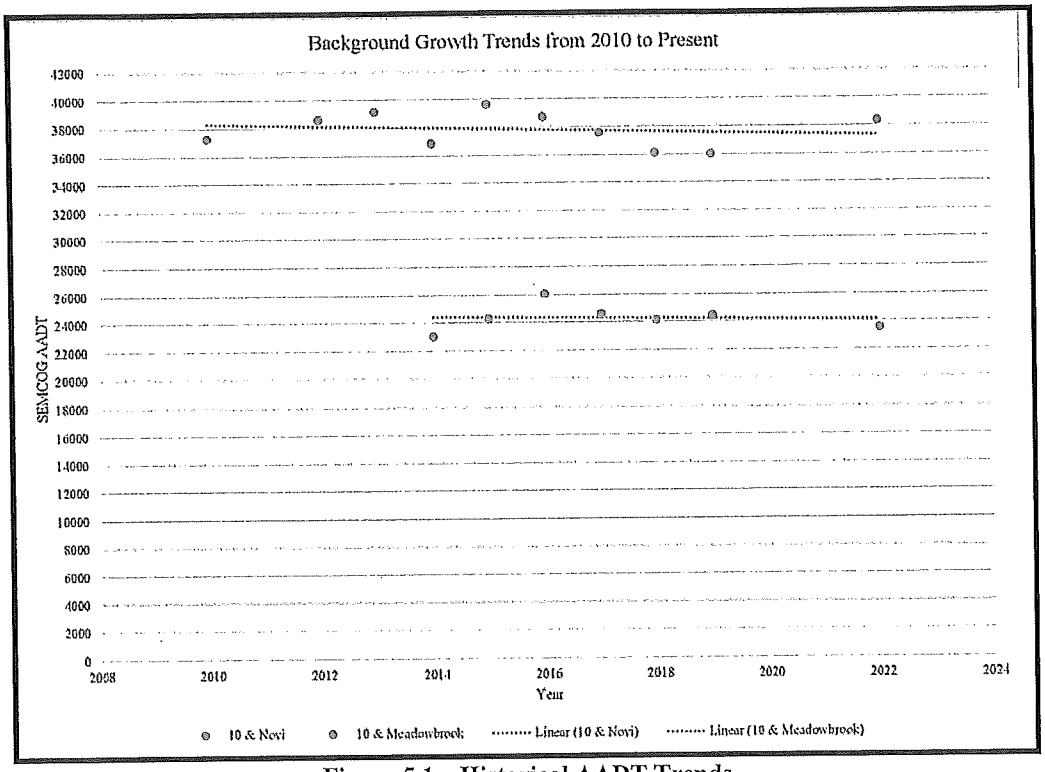



**Figure 5.1 – Historical AADT Trends**

Despite the downward trend in traffic volumes, this study will conservatively assume a background growth rate of 0.2% / year for five years to estimate the traffic conditions that might be present at buildout of the site. That growth estimate was based on a comparison of the 2022 counts with a 2018 traffic count, which is attached in the Appendix.

Figure 5.2 shows the background volumes for the morning and afternoon peak hours.

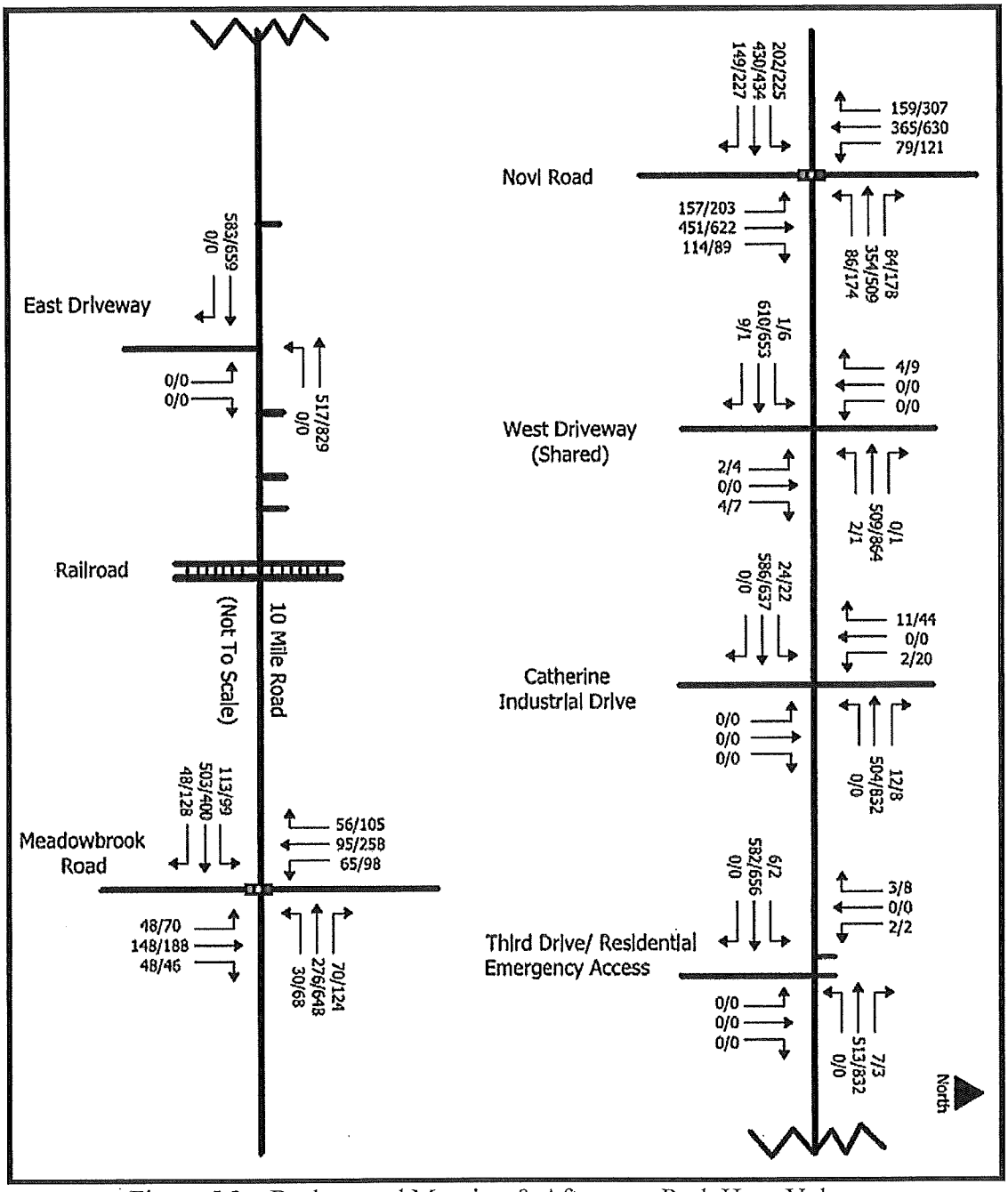



Figure 5.2 – Background Morning & Afternoon Peak Hour Volumes

# 6.0 Trip Generation

## 6.1 Methodology

Trip generation for this traffic study is based upon the rates and equations contained in the Institute of Transportation Engineer's (ITE) **Trip Generation Manual**, 11th Edition. The **Trip Generation Manual** is a publication that contains a wealth of traffic data on a wide variety of land uses that fall within the categories of residential, lodging, recreational, institutional, industrial, medical, office, retail, and services. The **Trip Generation Manual** is typically used if no local data for a specific land use is readily available.

## 6.2 Trip Generation Summary – Proposed Development

The eventual configuration of buildings, sizes, and land uses within the retail portion of the site is unknown at this point in time. So instead of performing an analysis on the concept plan's particular land use mix, this study will use the broader and encompassing Shopping Plaza category in the ITE Trip Generation Manual. As mentioned previously in this study, the size of the shopping plaza was raised to 60,000 to conservatively accommodate for various possible reconfigurations of building sizes and uses. The residential portion of the site is considered Multifamily (Low Rise). The trip generation for the proposed development is summarized in Table 6.2.1.

Table 6.2.1 Trip Generation – Proposed Development

Proposed Trip Generation Table

| | ITE | Size | Weekday | Morning Peak Hour | | | Afternoon Peak Hour | | |
|---|---|---|---|---|---|---|---|---|---|
| Land Use | Code | SF/Units | 24-Hr | Enter | Exit | Total | Enter | Exit | Total |
| Base Vehicular Trips | | | | | | | | | |
| Shopping Plaza | 821 | 60,000 | 6030 | 131 | 81 | 212 | 278 | 301 | 579 |
| Multi Family LR | 220 | 71 | 530 | 11 | 34 | 45 | 32 | 19 | 51 |
| Trips present at site driveways | | | 6560 | 142 | 115 | 257 | 310 | 320 | 630 |
| Applied Pass By Reduction (Shopping Plaza Only, PM Peak Hour) | | | | | | | | | |
| Pass by Rate | 40% | | | 0 | 0 | 0 | -111 | -120 | -231 |
| Net New Trips to Area | | | | 142 | 115 | 257 | 199 | 200 | 399 |

The ITE Trip Generation Manual 11th edition web app has pass-by data for the Shopping Plaza category. The data covers 15 shopping plazas of various sizes that range from 45,000 to 145,000 SF. The average pass-by rate for those plazas was and average of 40% in the afternoon peak hour. Therefore this study assumes that 40% of the commercial traffic at this development will come from existing traffic on Ten Mile Road and not add new trips to the area during the afternoon peak hour.

### 6.3 Trip Generation Summary – Parallel Plan

The client has estimated that a total of 385,000 square feet of office and light industrial space could be built on this site if developed under the existing I-1 and OS-1 zoning instead of the proposed PRO plan. Comparing the findings in tables 6.2.1 and 6.3.1, the parallel plan would generate similar new traffic to the area, with more traffic in the morning peak hour and less traffic in the afternoon peak hour.

Table 6.3.1 - Trip Generation Parallel Plan

| | ITE | Size | Weekday | Morning Peak Hour | | | Afternoon Peak Hour | | |
|---|---|---|---|---|---|---|---|---|---|
| Land Use | Code | SF/Units | 24-Hr | Enter | Exit | Total | Enter | Exit | Total |
| Office | 710 | 103,300 | 1,194 | 151 | 21 | 172 | 29 | 142 | 171 |
| Light Industrial | 110 | 281,700 | 1,372 | 183 | 25 | 208 | 26 | 157 | 183 |
| | | 385,000 | 2,566 | 334 | 46 | 380 | 55 | 299 | 354 |

# 7.0 Trip Distribution

Trip Distribution for both the proposed development and the other background developments are based upon the existing traffic patterns in the area. The uses within the retail portion of the site are expected to service the local neighborhoods and isn't expected to draw any significant amounts of traffic from outside of the local area such as from traffic on the I-96 freeway.

However, comments raised by the City's Traffic consultant and the RCOC, indicated that they believed more traffic may come to/from the north on Novi Road than what was previously assumed in our preliminary methodology memorandum which was based on existing travel patterns. Therefore, an additional 4% percent of the site's traffic is assigned to and from the north on Novi Road, pulling 2% each from the west on 10 Mile Road and from the south on Novi Road. The percentages are shown below in Table 7.1.

Table 7.1 – Trip Distribution – Novi/Ten Development (New Trips)

| Inbound From | % | AMIN | % | PMIN | | % | AMOUT | % | PMOUT |
|---|---|---|---|---|---|---|---|---|---|
| North on Novi Road | 24% | 34 | 28% | 56 | | 27% | 31 | 27% | 54 |
| South on Novi Road | 23% | 33 | 18% | 36 | | 17% | 20 | 21% | 42 |
| West on 10 Mile Road | 25% | 36 | 18% | 36 | | 19% | 22 | 21% | 42 |
| East on 10 Mile Road | 13% | 18 | 19% | 38 | | 20% | 23 | 12% | 24 |
| North on Meadowbrook | 7% | 10 | 10% | 20 | | 11% | 13 | 9% | 18 |
| South on Meadowbrook | 8% | 11 | 7% | 14 | | 6% | 6 | 10% | 20 |
| | 100% | 142 | 100% | 200 | | 100% | 115 | 100% | 200 |

Pass by trips are taken from existing traffic on 10 Mile Road during the afternoon peak hour with an assumed 55% westbound / 45% eastbound split. Westbound pass-by trips that enter the site are assumed to exit the site to the west, and vice versa for eastbound traffic. Pass by traffic is only assigned to the three commercial driveways.

Figures 7.1 and 7.2 show the generated traffic volumes for the morning and afternoon peak hours and Figure 7.3 shows the forecast traffic volumes for the morning and afternoon peak hours which is the summation of the background and generated traffic volumes.

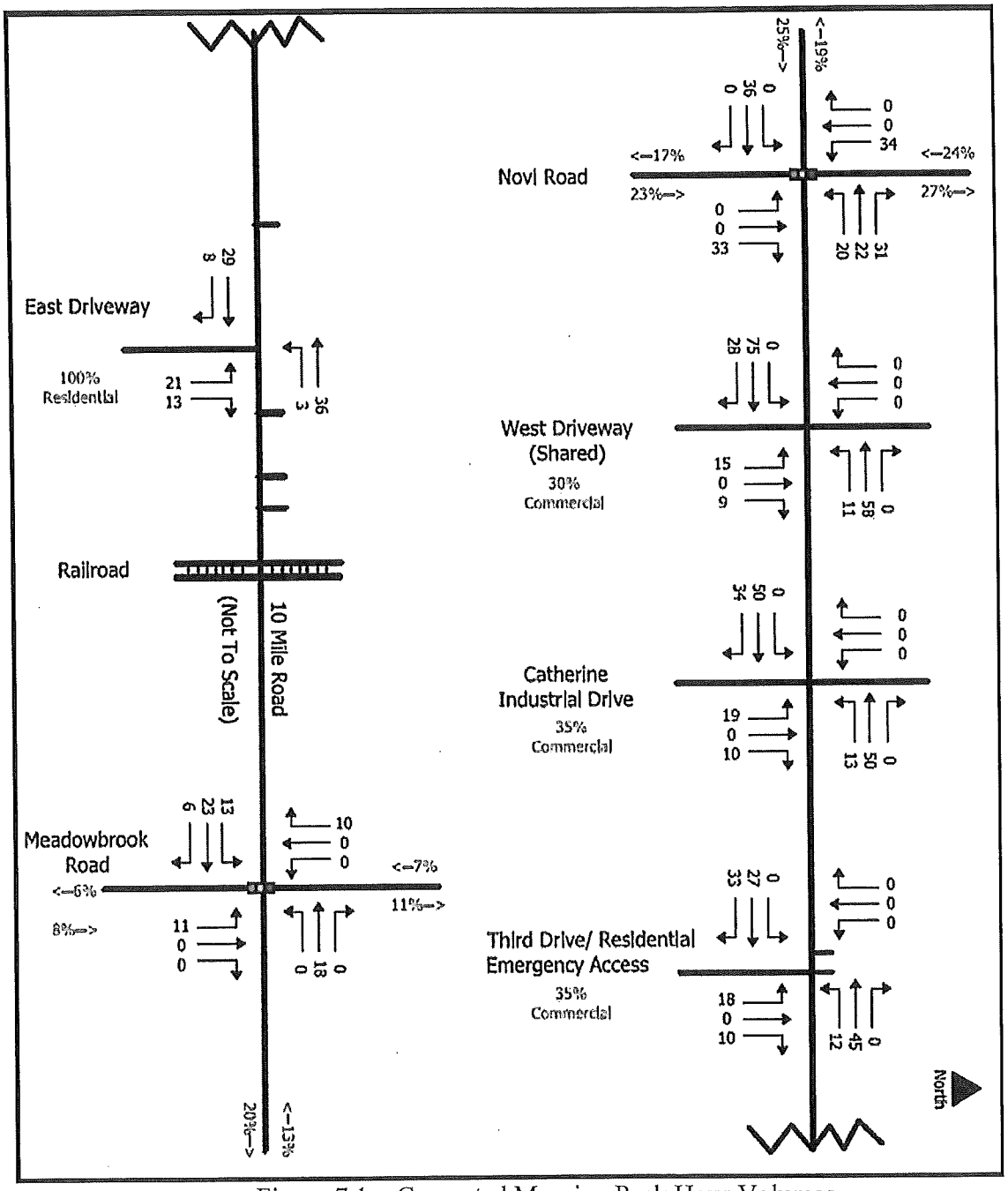



Figure 7.1 – Generated Morning Peak Hour Volumes

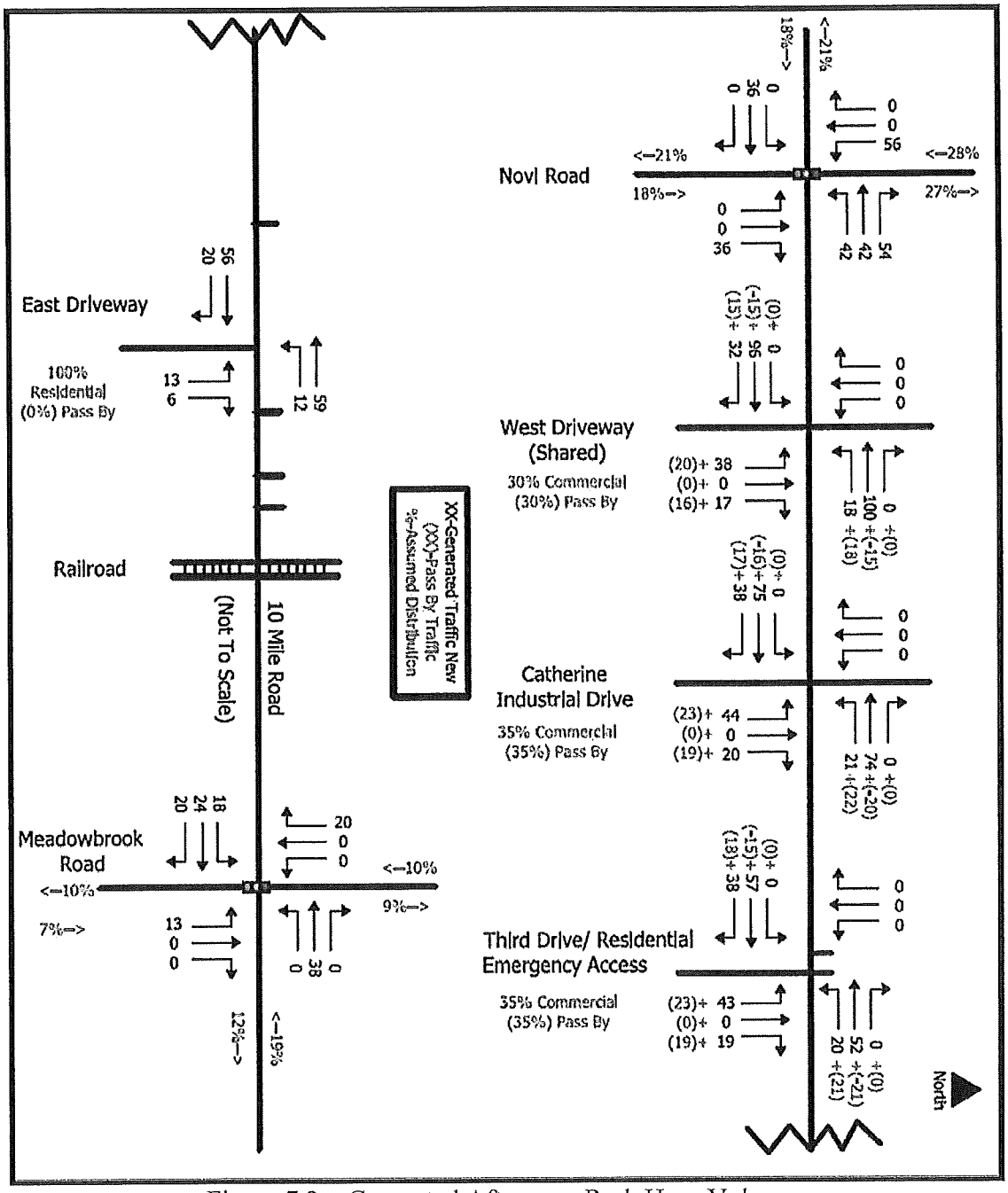



Figure 7.2 – Generated Afternoon Peak Hour Volumes

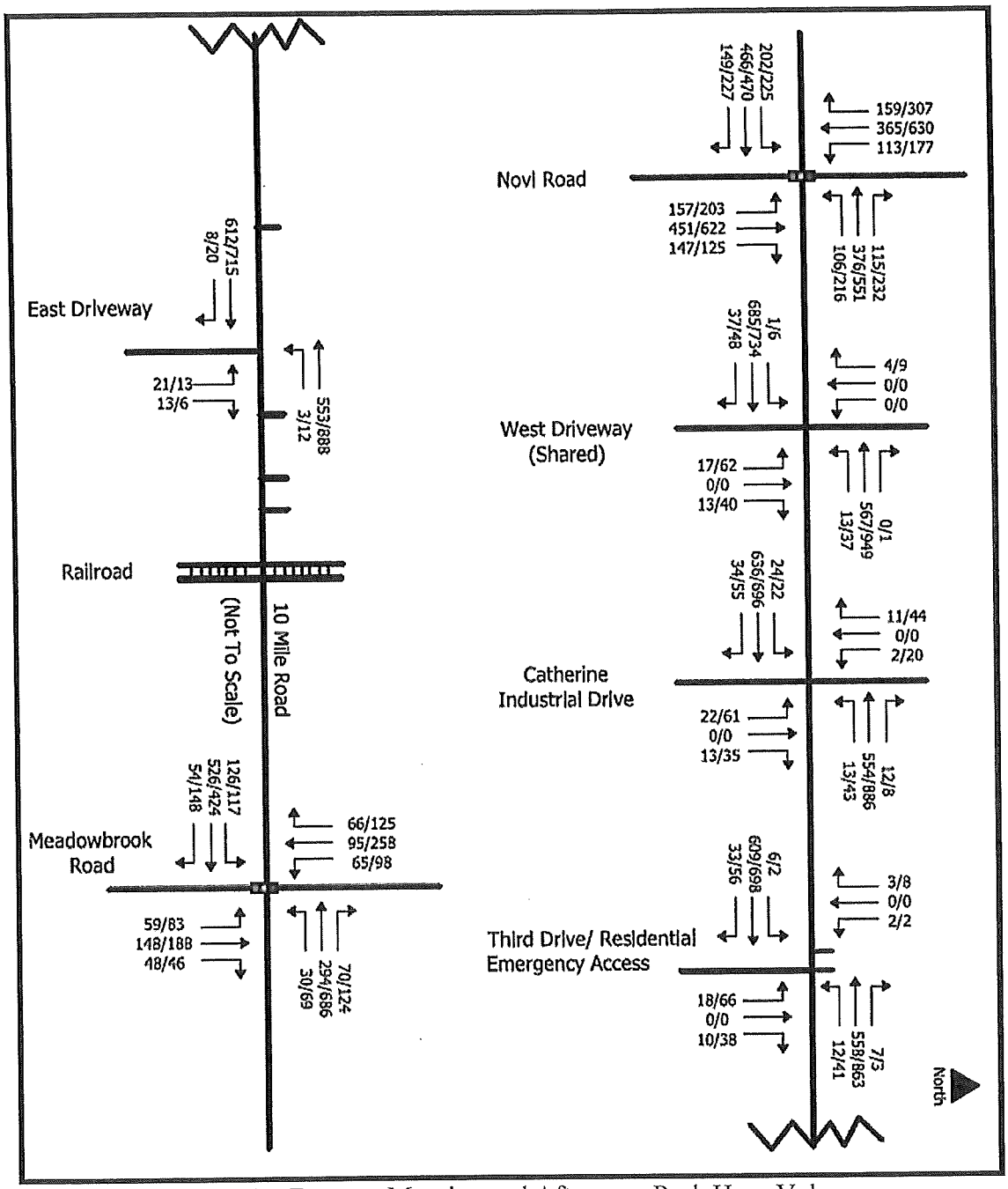



Figure 7.3 – Forecast Morning and Afternoon Peak Hour Volumes

# 8.0 Capacity Analysis

## 8.1 Methodology and Analysis Tools

Capacity analysis for this traffic study utilizes the Synchro/SimTraffic (Version 11) program to create a traffic model of the existing, background growth (if needed), and forecast traffic scenarios. Synchro provides the **Highway Capacity Manual**'s (HCM) level of service for each study intersection, while the SimTraffic model provides an alternative and sometimes more realistic analysis of traffic conditions and impacts where queuing at intersections may impact other driveways, or delays for other turning movements at the same or other nearby intersections.

Neither analysis method is perfect as the equations within the **Highway Capacity Manual** may result in unrealistically long delays at busy unsignalized intersections. Sometimes the vehicle behavior within the SimTraffic model does not always match reality, such as where human drivers would more easily change lanes to avoid a blockage, or instances where more drivers in reality "sneak" through an intersection at the end of a signal phase to turn left.

Synchro - HCM Level-of-service (LOS)

The Highway Capacity Manual assigns the following level-of-service grades to the ranges of control delay in seconds for unsignalized and signalized intersections. Generally LOS D is considered the limit of acceptable delay, although there are many situations where providing road improvements needed to improve a failing intersection LOS grade may be realistically unattainable for a sole developer or even undesirable to a community:

Table 8.1 – Highway Capacity Manual
Level of Service Delay Ranges and Grades

| Unsignalized Level-of-service Grades | | | | | | |
|---|---|---|---|---|---|---|
| Delay (sec.) | 0-10 | 10-15 | 15-25 | 25-35 | 35-50 | 50+ |
| LOS | A | B | C | D | E | F |

| Signalized Level-of-service Grades | | | | | | |
|---|---|---|---|---|---|---|
| Delay (sec.) | 0-10 | 10-20 | 20-35 | 35-55 | 55-80 | 80+ |
| LOS | A | B | C | D | E | F |

The HCM Level of Service grades for each scenario and study intersection is the basis upon which improvements are recommended in this traffic impact study. Any turning movement with a HCM level of service E or F is highlighted and improvements are recommended to mitigate those poor level of service grades.

## 8.2 Capacity Analysis: Intersection 1001 - 10 Mile Road & Novi Road

Table 8.2.1 shows the capacity analysis results for the 10 Mile Road and Novi Road intersection for the morning and afternoon peak hours of the day. Background growth and the proposed development traffic is not anticipated to significantly impact the average LOS of the intersection, which is currently a D and will remain a D. Future adjustments to the signal, such as providing slightly more green time to the EB/WB left-turn phase, could be considered which may improve the average intersection delay slightly to 45.9 seconds/vehicle during the afternoon peak hour.

Table 8.2.1 – Capacity Analysis – 10 Mile Road & Novi Road

| Scenario | EB 10 Mile Road | | | WB 10 Mile Road | | | NB Novi Road | | | SB Novi Road | | | Int. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| AM Peak Hour | LT | TH | RT | LT | TH | RT | LT | TH | RT | LT | TH | RT | Total |
| Existing, Background, Generated, and Forecast Traffic Volumes | | | | | | | | | | | | | |
| Existing Vol. | 200 | 426 | 148 | 85 | 350 | 83 | 155 | 447 | 113 | 78 | 361 | 157 | 2603 |
| Background Vol. | 202 | 430 | 149 | 86 | 354 | 84 | 157 | 451 | 114 | 79 | 365 | 159 | 2630 |
| Generated Vol. | 0 | 36 | 0 | 20 | 22 | 31 | 0 | 0 | 33 | 34 | 0 | 0 | 176 |
| Forecast Vol. | 202 | 466 | 149 | 106 | 376 | 115 | 157 | 451 | 147 | 113 | 365 | 159 | 2806 |
| Existing, Background, and Forecast Highway Capacity Manual (HCM) average delay (seconds) | | | | | | | | | | | | | |
| Existing Delay | 48.9 | 46.2 | 46.7 | 36.7 | 53.9 | 54.6 | 19.3 | 24.3 | 24.4 | 18.9 | 25.3 | 25.5 | 36.5 |
| Background Delay | 49.6 | 46.2 | 46.7 | 36.5 | 54.0 | 54.7 | 19.5 | 24.6 | 24.7 | 19.1 | 25.6 | 25.8 | 36.7 |
| Forecast Delay | 49.0 | 46.1 | 46.5 | 35.1 | 55.6 | 56.4 | 21.2 | 28.6 | 28.8 | 21.1 | 27.6 | 27.8 | 38.4 |
| Traffic Impact = Change in Average Delay from Background to Forecast | | | | | | | | | | | | | |
| Traffic Impact | -0.6 | -0.1 | -0.2 | -1.4 | 1.6 | 1.7 | 1.7 | 4.0 | 4.1 | 2.0 | 2.0 | 2.0 | 1.7 |
| Highway Capacity Manual (HCM) Level of Service Grades (LOS) | | | | | | | | | | | | | |
| Existing LOS | D | D | D | D | D | D | B | C | C | B | C | C | D |
| Background LOS | D | D | D | D | D | D | B | C | C | B | C | C | D |
| Forecast LOS | D | D | D | D | **E** | **E** | C | C | C | C | C | C | D |

| Scenario | EB 10 Mile Road | | | WB 10 Mile Road | | | NB Novi Road | | | SB Novi Road | | | Int. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PM Peak Hour | LT | TH | RT | LT | TH | RT | LT | TH | RT | LT | TH | RT | Total |
| Existing, Background, Generated, and Forecast Traffic Volumes | | | | | | | | | | | | | |
| Existing Vol. | 223 | 430 | 225 | 172 | 504 | 176 | 201 | 616 | 88 | 120 | 624 | 304 | 3683 |
| Background Vol. | 225 | 434 | 227 | 174 | 509 | 178 | 203 | 622 | 89 | 121 | 630 | 307 | 3719 |
| Generated Vol. | 0 | 36 | 0 | 42 | 42 | 54 | 0 | 0 | 36 | 56 | 0 | 0 | 266 |
| Forecast Vol. | 225 | 470 | 227 | 216 | 551 | 232 | 203 | 622 | 125 | 177 | 630 | 307 | 3985 |
| Existing, Background, and Forecast Highway Capacity Manual (HCM) average delay (seconds) | | | | | | | | | | | | | |
| Existing Delay | 87.0 | 45.1 | 45.7 | 43.5 | 49.0 | 49.6 | 32.5 | 29.3 | 29.3 | 22.4 | 38.0 | 38.3 | 42.4 |
| Background Delay | 90.6 | 45.0 | 45.6 | 43.9 | 49.1 | 49.6 | 34.1 | 29.7 | 29.7 | 22.6 | 38.7 | 39.1 | 43.0 |
| Forecast Delay | 91.6 | 41.5 | 41.8 | 59.2 | 49.8 | 50.4 | 42.9 | 37.0 | 37.1 | 26.9 | 45.0 | 45.6 | 46.7 |
| Traffic Impact = Change in Average Delay from Background to Forecast | | | | | | | | | | | | | |
| Traffic Impact | 1.0 | -3.5 | -3.8 | 15.3 | 0.7 | 0.8 | 8.8 | 7.3 | 7.4 | 4.3 | 6.3 | 6.5 | 3.7 |
| Highway Capacity Manual (HCM) Level of Service Grades (LOS) | | | | | | | | | | | | | |
| Existing LOS | **F** | D | D | D | D | D | C | C | C | C | D | D | D |
| Background LOS | **F** | D | D | D | D | D | C | C | C | C | D | D | D |
| Forecast LOS | **F** | D | D | **E** | D | D | D | D | D | C | D | D | D |

### 8.3 Capacity Analysis: Intersection 1002 - 10 Mile Road & Shared 1st Driveway

Table 8.3.1 shows the capacity analysis results for the 1st site driveway, located on the western end of the site, if no improvements are made to the intersection.

Table 8.3.1 – Capacity Analysis – 10 Mile Road & Shared 1st Driveway

| Scenario | EB 10 Mile Road | | | WB 10 Mile Road | | | NB 1st Driveway | | | SB Driveway | | | Int. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| AM Peak Hour | LT | TH | RT | LT | TH | RT | LT | TH | RT | LT | TH | RT | Total |
| Existing, Background, Generated, and Forecast Traffic Volumes | | | | | | | | | | | | | |
| Existing Vol. | 1 | 604 | 9 | 2 | 504 | 0 | 2 | 0 | 4 | 0 | 0 | 4 | 1130 |
| Background Vol. | 1 | 610 | 9 | 2 | 509 | 0 | 2 | 0 | 4 | 0 | 0 | 4 | 1141 |
| Generated Vol. | 0 | 75 | 28 | 11 | 58 | 0 | 15 | 0 | 9 | 0 | 0 | 0 | 196 |
| Forecast Vol. | 1 | 685 | 37 | 13 | 567 | 0 | 17 | 0 | 13 | 0 | 0 | 4 | 1337 |
| Existing, Background, and Forecast Highway Capacity Manual (HCM) average delay (seconds) | | | | | | | | | | | | | |
| Existing Delay | 9.1 | 0.0 | 0.0 | 9.1 | 0.0 | 0.0 | 11.3 | 11.3 | 11.3 | 11.0 | 11.0 | 11.0 | 0.1 |
| Background Delay | 9.2 | 0.0 | 0.0 | 9.1 | 0.0 | 0.0 | 11.3 | 11.3 | 11.3 | 11.1 | 11.1 | 11.1 | 0.1 |
| Forecast Delay | 9.5 | 0.0 | 0.0 | 9.8 | 0.0 | 0.0 | 13.2 | 13.2 | 13.2 | 11.5 | 11.5 | 11.5 | 0.5 |
| Traffic Impact = Change in Average Delay from Background to Forecast | | | | | | | | | | | | | |
| Traffic Impact | 0.3 | 0.0 | 0.0 | 0.7 | 0.0 | 0.0 | 1.9 | 1.9 | 1.9 | 0.4 | 0.4 | 0.4 | 0.4 |
| Highway Capacity Manual (HCM) Level of Service Grades (LOS) | | | | | | | | | | | | | |
| Existing LOS | A | A | A | A | A | A | B | B | B | B | B | B | A |
| Background LOS | A | A | A | A | A | A | B | B | B | B | B | B | A |
| Forecast LOS | A | A | A | A | A | A | B | B | B | B | B | B | A |

| Scenario | EB 10 Mile Road | | | WB 10 Mile Road | | | NB 1st Driveway | | | SB Driveway | | | Int. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PM Peak Hour | LT | TH | RT | LT | TH | RT | LT | TH | RT | LT | TH | RT | Total |
| Existing, Background, Generated, and Forecast Traffic Volumes | | | | | | | | | | | | | |
| Existing Vol. | 6 | 647 | 1 | 1 | 855 | 1 | 4 | 0 | 7 | 0 | 0 | 9 | 1531 |
| Background Vol. | 6 | 653 | 1 | 1 | 864 | 1 | 4 | 0 | 7 | 0 | 0 | 9 | 1546 |
| Generated Vol. | 0 | 96 | 32 | 18 | 100 | 0 | 38 | 0 | 17 | 0 | 0 | 0 | 301 |
| Forecast Vol. | 6 | 749 | 33 | 19 | 964 | 1 | 42 | 0 | 24 | 0 | 0 | 9 | 1847 |
| Existing, Background, and Forecast Highway Capacity Manual (HCM) average delay (seconds) | | | | | | | | | | | | | |
| Existing Delay | 9.9 | 0.0 | 0.0 | 9.4 | 0.0 | 0.0 | 12.1 | 12.1 | 12.1 | 11.7 | 11.7 | 11.7 | 0.3 |
| Background Delay | 9.9 | 0.0 | 0.0 | 9.4 | 0.0 | 0.0 | 12.1 | 12.1 | 12.1 | 11.8 | 11.8 | 11.8 | 0.3 |
| Forecast Delay | 10.3 | 0.0 | 0.0 | 10.2 | 0.0 | 0.0 | 17.6 | 17.6 | 17.6 | 12.2 | 12.2 | 12.2 | 1.7 |
| Traffic Impact = Change in Average Delay from Background to Forecast | | | | | | | | | | | | | |
| Traffic Impact | 0.4 | 0.0 | 0.0 | 0.8 | 0.0 | 0.0 | 5.5 | 5.5 | 5.5 | 0.4 | 0.4 | 0.4 | 1.4 |
| Highway Capacity Manual (HCM) Level of Service Grades (LOS) | | | | | | | | | | | | | |
| Existing LOS | A | A | A | A | A | A | B | B | B | B | B | B | A |
| Background LOS | A | A | A | A | A | A | B | B | B | B | B | B | A |
| Forecast LOS | B | A | A | B | A | A | C | C | C | B | B | B | A |

## 8.4 Capacity Analysis: Intersection 1003 - 10 Mile Road & Catherine / 2nd Driveway

Table 8.4.1 shows the capacity analysis results for the intersection of 10 Mile Road and Catherine/2nd Site Driveway assuming no improvements are made to the intersection.

Table 8.4.1 – Capacity Analysis – 10 Mile Road & Catherine / 2nd Driveway

| Scenario | EB 10 Mile Road | | | WB 10 Mile Road | | | NB 2nd Driveway | | | SB Catherine Industrial | | | Int. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| AM Peak Hour | LT | TH | RT | LT | TH | RT | LT | TH | RT | LT | TH | RT | Total |
| Existing, Background, Generated, and Forecast Traffic Volumes | | | | | | | | | | | | | |
| Existing Vol. | 24 | 580 | 0 | 0 | 499 | 12 | 0 | 0 | 0 | 2 | 0 | 11 | 1128 |
| Background Vol. | 24 | 586 | 0 | 0 | 504 | 12 | 0 | 0 | 0 | 2 | 0 | 11 | 1139 |
| Generated Vol. | 0 | 50 | 34 | 13 | 50 | 0 | 19 | 0 | 10 | 0 | 0 | 0 | 176 |
| Forecast Vol. | 24 | 636 | 34 | 13 | 554 | 12 | 19 | 0 | 10 | 2 | 0 | 11 | 1315 |
| Existing, Background, and Forecast Highway Capacity Manual (HCM) average delay (seconds) | | | | | | | | | | | | | |
| Existing Delay | 9.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 12.0 | 12.0 | 12.0 | 0.3 |
| Background Delay | 9.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 11.9 | 11.9 | 11.9 | 0.3 |
| Forecast Delay | 9.7 | 0.0 | 0.0 | 9.3 | 0.0 | 0.0 | 12.4 | 12.4 | 12.4 | 13.2 | 13.2 | 13.2 | 0.6 |
| Traffic Impact = Change in Average Delay from Background to Forecast | | | | | | | | | | | | | |
| Traffic Impact | 0.3 | 0.0 | 0.0 | 9.3 | 0.0 | 0.0 | 12.4 | 12.4 | 12.4 | 1.3 | 1.3 | 1.3 | 0.3 |
| Highway Capacity Manual (HCM) Level of Service Grades (LOS) | | | | | | | | | | | | | |
| Existing LOS | A | A | A | A | A | A | A | A | A | B | B | B | A |
| Background LOS | A | A | A | A | A | A | A | A | A | B | B | B | A |
| Forecast LOS | A | A | A | A | A | A | B | B | B | B | B | B | A |

| Scenario | EB 10 Mile Road | | | WB 10 Mile Road | | | NB 2nd Driveway | | | SB Catherine Industrial | | | Int. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PM Peak Hour | LT | TH | RT | LT | TH | RT | LT | TH | RT | LT | TH | RT | Total |
| Existing, Background, Generated, and Forecast Traffic Volumes | | | | | | | | | | | | | |
| Existing Vol. | 22 | 631 | 0 | 0 | 824 | 8 | 0 | 0 | 0 | 20 | 0 | 44 | 1549 |
| Background Vol. | 22 | 637 | 0 | 0 | 832 | 8 | 0 | 0 | 0 | 20 | 0 | 44 | 1563 |
| Generated Vol. | 0 | 75 | 38 | 21 | 74 | 0 | 44 | 0 | 20 | 0 | 0 | 0 | 272 |
| Forecast Vol. | 22 | 712 | 38 | 21 | 906 | 8 | 44 | 0 | 20 | 20 | 0 | 44 | 1835 |
| Existing, Background, and Forecast Highway Capacity Manual (HCM) average delay (seconds) | | | | | | | | | | | | | |
| Existing Delay | 9.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 16.3 | 16.3 | 16.3 | 1.0 |
| Background Delay | 9.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 16.7 | 16.7 | 16.7 | 1.0 |
| Forecast Delay | 10.2 | 0.0 | 0.0 | 9.9 | 0.0 | 0.0 | 16.2 | 16.2 | 16.2 | 26.7 | 26.7 | 26.7 | 2.4 |
| Traffic Impact = Change in Average Delay from Background to Forecast | | | | | | | | | | | | | |
| Traffic Impact | 0.3 | 0.0 | 0.0 | 9.9 | 0.0 | 0.0 | 16.2 | 16.2 | 16.2 | 10.0 | 10.0 | 10.0 | 1.4 |
| Highway Capacity Manual (HCM) Level of Service Grades (LOS) | | | | | | | | | | | | | |
| Existing LOS | A | A | A | A | A | A | A | A | A | C | C | C | A |
| Background LOS | A | A | A | A | A | A | A | A | A | C | C | C | A |
| Forecast LOS | B | A | A | A | A | A | C | C | C | D | D | D | A |

## 8.5 Capacity Analysis: Intersection 1004 - 10 Mile Road & 3rd Driveway

Table 8.5.1 shows the capacity analysis results for the intersection of 10 Mile Road and the 3rd site driveway assuming no improvements at this intersection. Eastbound and westbound 10 Mile Road is a single thru lane at this driveway which has a dramatic effect on the unsignalized LOS for the northbound and southbound approaches to the intersection.

Table 8.5.1 – Capacity Analysis – 10 Mile Road & 3rd Driveway

| Scenario | EB 10 Mile Road | | | WB 10 Mile Road | | | NB 3rd Driveway | | | Double Driveway | | | Int. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| AM Peak Hour | LT | TH | RT | LT | TH | RT | LT | TH | RT | LT | TH | RT | Total |
| Existing, Background, Generated, and Forecast Traffic Volumes | | | | | | | | | | | | | |
| Existing Vol. | 6 | 576 | 0 | 0 | 508 | 7 | 0 | 0 | 0 | 2 | 0 | 3 | 1102 |
| Background Vol. | 6 | 582 | 0 | 0 | 513 | 7 | 0 | 0 | 0 | 2 | 0 | 3 | 1113 |
| Generated Vol. | 0 | 27 | 33 | 12 | 45 | 0 | 18 | 0 | 10 | 0 | 0 | 0 | 145 |
| Forecast Vol. | 6 | 609 | 33 | 12 | 558 | 7 | 18 | 0 | 10 | 2 | 0 | 3 | 1258 |
| Existing, Background, and Forecast Highway Capacity Manual (HCM) average delay (seconds) | | | | | | | | | | | | | |
| Existing Delay | 9.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 32.8 | 32.8 | 32.8 | 0.2 |
| Background Delay | 9.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 33.4 | 33.4 | 33.4 | 0.2 |
| Forecast Delay | 9.5 | 0.0 | 0.0 | 9.6 | 0.0 | 0.0 | 125.1 | 125.1 | 125.1 | 53.2 | 53.2 | 53.2 | 2.7 |
| Traffic Impact = Change in Average Delay from Background to Forecast | | | | | | | | | | | | | |
| Traffic Impact | 0.2 | 0.0 | 0.0 | 9.6 | 0.0 | 0.0 | 125.1 | 125.1 | 125.1 | 19.8 | 19.8 | 19.8 | 2.5 |
| Highway Capacity Manual (HCM) Level of Service Grades (LOS) | | | | | | | | | | | | | |
| Existing LOS | A | A | A | A | A | A | A | A | A | D | D | D | A |
| Background LOS | A | A | A | A | A | A | A | A | A | D | D | D | A |
| Forecast LOS | A | A | A | A | A | A | **F** | **F** | **F** | **F** | **F** | **F** | A |

| Scenario | EB 10 Mile Road | | | WB 10 Mile Road | | | NB 3rd Driveway | | | Double Driveway | | | Int. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PM Peak Hour | LT | TH | RT | LT | TH | RT | LT | TH | RT | LT | TH | RT | Total |
| Existing, Background, Generated, and Forecast Traffic Volumes | | | | | | | | | | | | | |
| Existing Vol. | 2 | 649 | 0 | 0 | 824 | 3 | 0 | 0 | 0 | 2 | 0 | 8 | 1488 |
| Background Vol. | 2 | 656 | 0 | 0 | 832 | 3 | 0 | 0 | 0 | 2 | 0 | 8 | 1503 |
| Generated Vol. | 0 | 57 | 38 | 20 | 52 | 0 | 43 | 0 | 19 | 0 | 0 | 0 | 229 |
| Forecast Vol. | 2 | 713 | 38 | 20 | 884 | 3 | 43 | 0 | 19 | 2 | 0 | 8 | 1732 |
| Existing, Background, and Forecast Highway Capacity Manual (HCM) average delay (seconds) | | | | | | | | | | | | | |
| Existing Delay | 9.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 39.8 | 39.8 | 39.8 | 0.4 |
| Background Delay | 9.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 41.9 | 41.9 | 41.9 | 0.4 |
| Forecast Delay | 9.9 | 0.0 | 0.0 | 10.8 | 0.0 | 0.0 | 2478.0 | 2478.0 | 2478.0 | 112.5 | 112.5 | 112.5 | 143.9 |
| Traffic Impact = Change in Average Delay from Background to Forecast | | | | | | | | | | | | | |
| Traffic Impact | 0.2 | 0.0 | 0.0 | 10.8 | 0.0 | 0.0 | 2478.0 | 2478.0 | 2478.0 | 70.6 | 70.6 | 70.6 | 143.5 |
| Highway Capacity Manual (HCM) Level of Service Grades (LOS) | | | | | | | | | | | | | |
| Existing LOS | A | A | A | A | A | A | A | A | A | **E** | **E** | **E** | A |
| Background LOS | A | A | A | A | A | A | A | A | A | **E** | **E** | **E** | A |
| Forecast LOS | A | A | A | B | A | A | **F** | **F** | **F** | **F** | **F** | **F** | **F** |

## 8.6 Capacity Analysis: Intersection 1007 - 10 Mile Road & Residential Driveway

Table 8.6.1 shows the capacity analysis results for the intersection of 10 Mile Road and the Residential Site Driveway.

Table 8.6.1 – Capacity Analysis – 10 Mile Road & Residential Driveway

| Scenario | EB 10 Mile Road | | | WB 10 Mile Road | | | NB Residential Drive | | | (None) | | | Int. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| AM Peak Hour | LT | TH | RT | LT | TH | RT | LT | TH | RT | LT | TH | RT | Total |
| Existing, Background, Generated, and Forecast Traffic Volumes | | | | | | | | | | | | | |
| Existing Vol. | 0 | 577 | 0 | 0 | 512 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1089 |
| Background Vol. | 0 | 583 | 0 | 0 | 517 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1100 |
| Generated Vol. | 0 | 29 | 8 | 3 | 36 | 0 | 21 | 0 | 13 | 0 | 0 | 0 | 110 |
| Forecast Vol. | 0 | 612 | 8 | 3 | 553 | 0 | 21 | 0 | 13 | 0 | 0 | 0 | 1210 |
| Existing, Background, and Forecast Highway Capacity Manual (HCM) average delay (seconds) | | | | | | | | | | | | | |
| Existing Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Background Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Forecast Delay | 0.0 | 0.0 | 0.0 | 9.1 | 0.0 | 0.0 | 11.8 | 0.0 | 11.2 | 0.0 | 0.0 | 0.0 | 0.3 |
| Traffic Impact = Change in Average Delay from Background to Forecast | | | | | | | | | | | | | |
| Traffic Impact | 0.0 | 0.0 | 0.0 | 9.1 | 0.0 | 0.0 | 11.8 | 0.0 | 11.2 | 0.0 | 0.0 | 0.0 | 0.3 |
| Highway Capacity Manual (HCM) Level of Service Grades (LOS) | | | | | | | | | | | | | |
| Existing LOS | A | A | A | A | A | A | A | A | A | A | A | A | A |
| Background LOS | A | A | A | A | A | A | A | A | A | A | A | A | A |
| Forecast LOS | A | A | A | A | A | A | B | A | B | A | A | A | A |

| Scenario | EB 10 Mile Road | | | WB 10 Mile Road | | | NB Residential Drive | | | (None) | | | Int. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PM Peak Hour | LT | TH | RT | LT | TH | RT | LT | TH | RT | LT | TH | RT | Total |
| Existing, Background, Generated, and Forecast Traffic Volumes | | | | | | | | | | | | | |
| Existing Vol. | 0 | 652 | 0 | 0 | 821 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1473 |
| Background Vol. | 0 | 659 | 0 | 0 | 829 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1488 |
| Generated Vol. | 0 | 29 | 8 | 3 | 36 | 0 | 21 | 0 | 13 | 0 | 0 | 0 | 110 |
| Forecast Vol. | 0 | 688 | 8 | 3 | 865 | 0 | 21 | 0 | 13 | 0 | 0 | 0 | 1598 |
| Existing, Background, and Forecast Highway Capacity Manual (HCM) average delay (seconds) | | | | | | | | | | | | | |
| Existing Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Background Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Forecast Delay | 0.0 | 0.0 | 0.0 | 9.8 | 0.2 | 0.0 | 31.7 | 0.0 | 15.2 | 0.0 | 0.0 | 0.0 | 0.5 |
| Traffic Impact = Change in Average Delay from Background to Forecast | | | | | | | | | | | | | |
| Traffic Impact | 0.0 | 0.0 | 0.0 | 9.8 | 0.2 | 0.0 | 31.7 | 0.0 | 15.2 | 0.0 | 0.0 | 0.0 | 0.5 |
| Highway Capacity Manual (HCM) Level of Service Grades (LOS) | | | | | | | | | | | | | |
| Existing LOS | A | A | A | A | A | A | A | A | A | A | A | A | A |
| Background LOS | A | A | A | A | A | A | A | A | A | A | A | A | A |
| Forecast LOS | A | A | A | A | A | A | D | A | C | A | A | A | A |

## 8.7 Capacity Analysis: Intersection 1009 - 10 Mile Road & Meadowbrook Road

Table 8.7.1 shows the capacity analysis result for the intersection of 10 Mile Road and Meadowbrook Road. Overall, the proposed development isn't expected to significantly impact the intersections of 10 Mile Road and Meadowbrook Road. The intersection's level of service isn't expected to change from a C during the morning peak hour and a D during the afternoon peak hour.

Table 8.7.1 – Capacity Analysis – 10 Mile Road & Meadowbrook Road

| Scenario | EB 10 Mile Road | | | WB 10 Mile Road | | | NB Meadowbrook | | | SB Meadowbrook | | | Int. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| AM Peak Hour | LT | TH | RT | LT | TH | RT | LT | TH | RT | LT | TH | RT | Total |
| Existing, Background, Generated, and Forecast Traffic Volumes | | | | | | | | | | | | | |
| Existing Vol. | 112 | 498 | 48 | 30 | 273 | 69 | 48 | 147 | 48 | 64 | 94 | 55 | 1486 |
| Background Vol. | 113 | 503 | 48 | 30 | 276 | 70 | 48 | 148 | 48 | 65 | 95 | 56 | 1500 |
| Generated Vol. | 13 | 23 | 6 | 0 | 18 | 0 | 11 | 0 | 0 | 0 | 0 | 10 | 81 |
| Forecast Vol. | 126 | 526 | 54 | 30 | 294 | 70 | 59 | 148 | 48 | 65 | 95 | 66 | 1581 |
| Existing, Background, and Forecast Highway Capacity Manual (HCM) average delay (seconds) | | | | | | | | | | | | | |
| Existing Delay | 13.3 | 26.6 | 26.6 | 14.8 | 24.2 | 24.3 | 50.6 | 57.8 | 49.0 | 58.7 | 58.7 | 55.1 | 34.6 |
| Background Delay | 13.5 | 26.7 | 26.7 | 14.9 | 24.2 | 24.4 | 50.6 | 57.8 | 48.9 | 58.8 | 58.8 | 55.2 | 34.6 |
| Forecast Delay | 14.0 | 27.1 | 27.1 | 15.4 | 24.4 | 24.5 | 51.0 | 57.8 | 48.9 | 58.8 | 58.9 | 56.8 | 34.8 |
| Traffic Impact = Change in Average Delay from Background to Forecast | | | | | | | | | | | | | |
| Traffic Impact | 0.5 | 0.4 | 0.4 | 0.5 | 0.2 | 0.1 | 0.4 | 0.0 | 0.0 | 0.0 | 0.1 | 1.6 | 0.2 |
| Highway Capacity Manual (HCM) Level of Service Grades (LOS) | | | | | | | | | | | | | |
| Existing LOS | B | C | C | B | C | C | D | **E** | D | **E** | **E** | **E** | C |
| Background LOS | B | C | C | B | C | C | D | **E** | D | **E** | **E** | **E** | C |
| Forecast LOS | B | C | C | B | C | C | D | **E** | D | **E** | **E** | **E** | C |

| Scenario | EB 10 Mile Road | | | WB 10 Mile Road | | | NB Meadowbrook | | | SB Meadowbrook | | | Int. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PM Peak Hour | LT | TH | RT | LT | TH | RT | LT | TH | RT | LT | TH | RT | Total |
| Existing, Background, Generated, and Forecast Traffic Volumes | | | | | | | | | | | | | |
| Existing Vol. | 98 | 396 | 127 | 68 | 642 | 123 | 69 | 186 | 46 | 97 | 255 | 104 | 2211 |
| Background Vol. | 99 | 400 | 128 | 69 | 648 | 124 | 70 | 188 | 46 | 98 | 258 | 105 | 2233 |
| Generated Vol. | 18 | 24 | 20 | 0 | 38 | 0 | 14 | 0 | 0 | 0 | 0 | 20 | 134 |
| Forecast Vol. | 117 | 424 | 148 | 69 | 686 | 124 | 84 | 188 | 46 | 98 | 258 | 125 | 2367 |
| Existing, Background, and Forecast Highway Capacity Manual (HCM) average delay (seconds) | | | | | | | | | | | | | |
| Existing Delay | 26.3 | 34.1 | 34.3 | 19.4 | 39.4 | 39.5 | 58.6 | 55.7 | 47.1 | 51.6 | 54.0 | 45.5 | 41.7 |
| Background Delay | 26.8 | 34.2 | 34.4 | 19.7 | 39.7 | 39.7 | 58.7 | 55.7 | 47.0 | 51.6 | 53.9 | 45.3 | 41.8 |
| Forecast Delay | 29.1 | 35.1 | 35.4 | 20.8 | 40.9 | 41.0 | 60.9 | 55.7 | 47.0 | 51.5 | 53.7 | 46.2 | 42.6 |
| Traffic Impact = Change in Average Delay from Background to Forecast | | | | | | | | | | | | | |
| Traffic Impact | 2.3 | 0.9 | 1.0 | 1.1 | 1.2 | 1.3 | 2.2 | 0.0 | 0.0 | -0.1 | -0.2 | 0.9 | 0.8 |
| Highway Capacity Manual (HCM) Level of Service Grades (LOS) | | | | | | | | | | | | | |
| Existing LOS | C | C | C | B | D | D | **E** | **E** | D | D | D | D | D |
| Background LOS | C | C | C | B | D | D | **E** | **E** | D | D | D | D | D |
| Forecast LOS | C | D | D | C | D | D | **E** | **E** | D | D | D | D | D |

# 9.0 Site Access & Circulation

**Driveway Spacing and Access Management**

The concept plane shows 4 driveways along 10 Mile Road which are located as follows:

- 1st Driveway, aligned from existing commercial driveway.
- 2nd Driveway, aligned from Catherine Industrial Drive
- 3rd Driveway, aligned across from a pair of commercial driveways.
- Residential Driveway, positioned roughly 120' between the Tremar Driveway and the western Wrencher's driveway.

Per the RCOC (200') and Novi spacing standards (150' upstream, 200' downstream), the residential driveway does not meet the standard spacing requirements, however we understand that the RCOC has tentatively agreed (by emails) that the residential driveway can remain in its proposed location provided that a right-turn deceleration lane and left-turn passing lane is provided as shown on the concept site plan. All other site driveways are aligned across from driveways on the north side of 10 Mile Road.

The 3rd site driveway will also serve as the emergency access route for the residential portion of the development.

**Sight Distance**

The recommended intersection sight distance for a 45 MPH Road per RCOC standards is 500' for a 2-3 lane roadway and 530' for a 4-5 lane roadway.

All site driveway locations were found to have adequate sight distance.

**Right-Turn Lanes**

According to the RCOC rules and regulations for street development and their associated geometric guides a standard driveway should have a right-turn deceleration lane unless it's on a 5-lane roadway and isn't justified by anticipated traffic volumes. Since the 1st driveway is located on a five-lane cross-section, we reviewed the driveway with respect to the Michigan Department of Transportation's (MDOT) Right-Turn Warrant Graph. Notes in the RCOC geometric guide states that a taper or lane may or may not be required based on engineering needs for the corridor at the discretion of RCOC:

- 1st Driveway (Qualifies for a Right Turn Taper, per MDOT standards)
  - AM 29 right turns, 722 approach.
  - PM 42 right turns, 782 approach

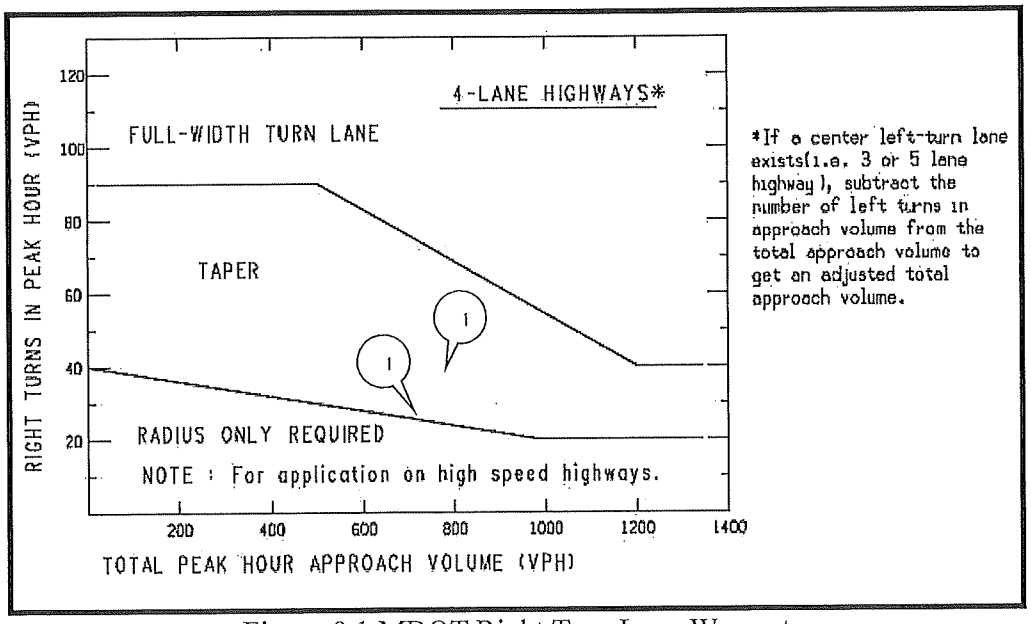



Figure 9.1 MDOT Right Turn Lane Warrant

The remaining four driveways all are located where there is only a single eastbound lane on 10 Mile Road, therefore each other site driveway should include a right-turn deceleration lane as recommended by RCOC standard driveway designs.

**Left-Turn Lanes**

Similarly, a passing lane or center-left turn lane should be installed at a driveway when warranted per the following graph.

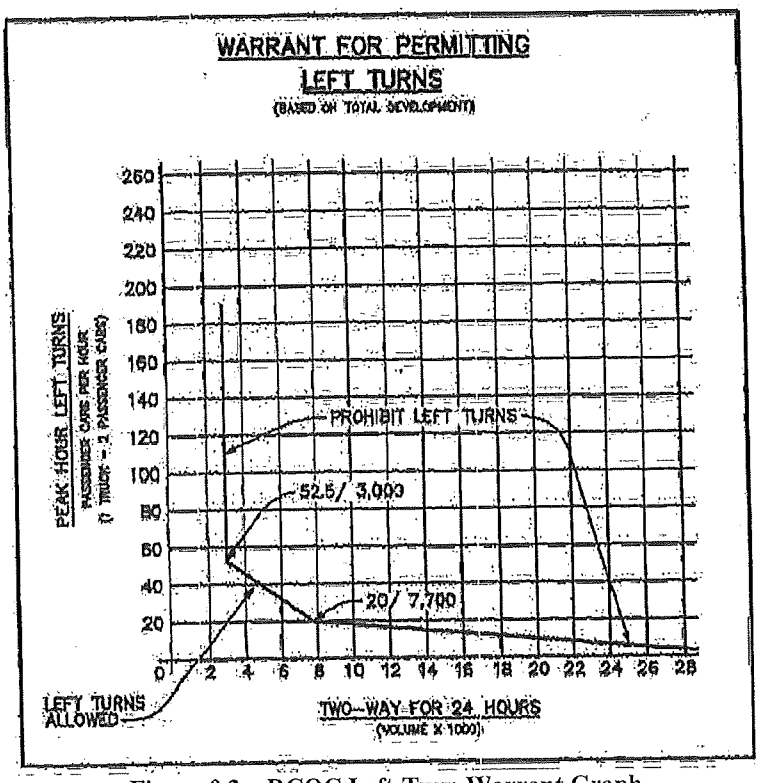



Figure 9.2 – RCOC Left-Turn Warrant Graph

Our 2022 counts at the Tremar and Wrencher's Driveways near the eastern end of the site indicated that there were about 13,000 vehicles in a 13-hour window from 6:00 AM to 7:00 PM. Based on a 2018 count at 10 Mile Road and Novi Road, the ratio of the same 13 hours versus the full 24-hours creates a factor of about 1.225. Therefore, it is reasonable to assume that the current 24-hour volume at this eastern end of the site is about 16,000 (15,925 rounded up). Conservatively assuming, with no reductions for pass-by traffic, that 35% of the proposed 6573 weekday trips will travel to and from the east on 10 Mile Road, then the forecast traffic volumes would be around 2,300 trips higher or around 18,300 vehicles per day near the eastern end of the site. Therefore, 10-11 left-turns into a driveway would justify a center left turn lane.

The projected number of left-turns into each of the site driveways during the busier PM peak hour is 37, 43, 41, and 12 from west to east. Therefore all site driveways warrant a center left-turn lane or left-turn passing lane. The RCOC has indicated that a left-turn passing lane should be provided at the residential driveway in lieu of realignment and a center left-turn lane, as shown on the site plan.

**Conceptual Recommendations**
When the conceptual neighborhood retail portion of the site is developed, the following improvements may be needed:

- Widen eastbound 10 Mile Road to two through lanes, ending with a right-turn lane at the site's easternmost residential driveway.
- Widen westbound 10 Mile Road to two through lanes west from the 3rd site driveway to help provide additional capacity for outbound site traffic.
- Provide a continuous center lane turn lane to serve the 1st, 2nd and 3rd commercial driveways.
- Provide a separate outbound left-turn / right-turn lanes for the site's 2nd and 3rd commercial driveways to allow right-turning traffic to exit the site when vehicles are waiting to turn left.

The following table briefly summarizes the average delays for outbound left turning and right-turning traffic, and the corresponding queues for outbound traffic at each of the site driveways if all of the recommendations are implemented.

Table 9.1 Forecast conditions at the site driveways if mitigated.

| | Mitigated Forecast AM | | | | Mitigated Forecast PM | | | |
|---|---|---|---|---|---|---|---|---|
| Intersection | Vol L/R | Delay L/R | LOS | Q95% | Vol L/R | Delay L/R | LOS | Q95% |
| 1002 - 1st Driveway | 17/13 | 13.2 | B | 0.0 | 62/40 | 17.6 | C | 1.7 |
| 1003 - 2nd Driveway | 19/10 | 22.4/9.4 | C/A | 0.3/0 | 67/39 | 52.6/9.8 | F/A | 2.4/0.2 |
| 1004 - 3rd Driveway | 18/10 | 20.4/9.3 | C/A | 0.2/0 | 66/38 | 35.0/9.7 | E/A | 1.6/0.2 |
| 1007 - Residential Drive | 21/13 | 11.8/11.2 | B/B | 0.1/0.1 | 13/6 | 31.7/15.2 | D/C | 0.3/0.1 |

Delays are still expected to be long for outbound traffic, however the additional laneage on 10 Mile Road and separate left and right turn lanes on the 2nd and 3rd site driveways will help reduce queues on site.

# 10.0 Historical Crash Data

The Michigan Traffic Crash Facts (www.michigantrafficcrashfacts.org) website database has crash data at the intersections of 10 Mile Road with Novi Road, Catherine Industrial, and Meadowbrook Road. According to SEMCOG's database the ranking of the Novi, Catherine, and Meadowbrook intersections are 11th, 93rd, and 27th, respectively in comparison with crashes at other Novi intersections in the last 5 years.

The intersection of 10 Mile Road and Novi Road has about 18.8 crashes per year based on crash data from 2011 to 2020. Out of those 188 crashes, 2 involved serious injury, 12 involved minor injury, 30 had possible injury, and the remaining 144 crashes involved property damage only.

Table 10.1 – Crash History (2011-2020) - 10 Mile Road and Novi Road

| Crash Year | Head-On | Head-On - Left Turn | Angle | Rear-End | Rear-End - Left | Rear-End - Right | Sideswipe - Same | Sideswipe - Opposite | Backing | Other/Un known | Other | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2011 | 0 | 2 | 2 | 5 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 11 |
| 2012 | 0 | 3 | 4 | 6 | 0 | 0 | 1 | 2 | 0 | 1 | 0 | 17 |
| 2013 | 0 | 1 | 4 | 8 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 16 |
| 2014 | 0 | 2 | 7 | 10 | 0 | 1 | 6 | 0 | 0 | 0 | 0 | 26 |
| 2015 | 0 | 2 | 6 | 3 | 0 | 0 | 1 | 0 | 0 | 3 | 0 | 15 |
| 2016 | 0 | 2 | 7 | 10 | 0 | 0 | 2 | 0 | 0 | 0 | 2 | 23 |
| 2017 | 0 | 1 | 9 | 13 | 0 | 0 | 2 | 1 | 0 | 0 | 1 | 27 |
| 2018 | 0 | 1 | 9 | 7 | 0 | 0 | 3 | 0 | 1 | 0 | 2 | 23 |
| 2019 | 1 | 1 | 5 | 12 | 0 | 0 | 3 | 0 | 1 | 0 | 0 | 23 |
| 2020 | 0 | 0 | 2 | 3 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 7 |
| **Totals** | **1** | **15** | **55** | **77** | **1** | **1** | **21** | **3** | **2** | **6** | **6** | **188** |

| Worst Injury | Head-On | Head-On - Left Turn | Angle | Rear-End | Rear-End - Left | Rear-End - Right | Sideswipe - Same | Sideswipe - Opposite | Backing | Other/Un known | Other | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Suspected Serious Injury (A) | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| Suspected Minor Injury (B) | 1 | 2 | 5 | 2 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 12 |
| Possible Injury (C) | 0 | 3 | 7 | 14 | 1 | 0 | 1 | 0 | 0 | 2 | 2 | 30 |
| No Injury (O) | 0 | 9 | 43 | 60 | 0 | 1 | 20 | 3 | 2 | 2 | 4 | 144 |
| **Total Crash Count** | **1** | **15** | **55** | **77** | **1** | **1** | **21** | **3** | **2** | **6** | **6** | **188** |

The intersection of 10 Mile Road and Catherine Industrial has about 1.1 crashes per year based on crash data from 2011 to 2020. Out of those 11 crashes, 1 involved minor injury, 2 had possible injury, and the remaining 8 crashes involved property damage only.

Table 10.2 – Crash History (2011-2020) - 10 Mile Road and Catherine Industrial

| Crash Year | Head-On - Left Turn | Angle | Rear-End | Rear-End - Right Turn | Sideswipe - Same Direction | Other | Total |
|---|---|---|---|---|---|---|---|
| 2012 | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| 2013 | 0 | 1 | 0 | 1 | 0 | 0 | 2 |
| 2014 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| 2018 | 0 | 1 | 2 | 0 | 0 | 0 | 3 |
| 2019 | 1 | 2 | 0 | 0 | 0 | 1 | 4 |
| **Totals** | **1** | **5** | **2** | **1** | **1** | **1** | **11** |

| Worst Injury in Crash | Head-On - Left Turn | Angle | Rear-End | Rear-End - Right Turn | Sideswipe - Same Direction | Other | Total |
|---|---|---|---|---|---|---|---|
| Suspected Minor Injury (B) | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| Possible Injury (C) | 0 | 2 | 0 | 0 | 0 | 0 | 2 |
| No Injury (O) | 0 | 3 | 2 | 1 | 1 | 1 | 8 |
| **Totals** | **1** | **5** | **2** | **1** | **1** | **1** | **11** |

The intersection of 10 Mile Road and Meadowbrook has about 8.4 crashes per year based on crash data from 2011 to 2020. Out of those 84 crashes, 1 involved serious injury, 5 involved minor injury, 12 had possible injury, and the remaining 66 crashes involved property damage only.

Table 10.3 – Crash History (2011-2020) - 10 Mile Road and Meadowbrook Road

| Crash Year | Single Motor Vehicle | Head-On - Left Turn | Angle | Rear-End | Sideswipe - Same Direction | Backing | Other/Un known | Total |
|---|---|---|---|---|---|---|---|---|
| 2011 | 0 | 2 | 3 | 4 | 1 | 0 | 1 | 11 |
| 2012 | 0 | 0 | 3 | 4 | 0 | 0 | 1 | 8 |
| 2013 | 0 | 0 | 4 | 1 | 0 | 0 | 0 | 5 |
| 2014 | 0 | 0 | 0 | 1 | 1 | 0 | 2 | 4 |
| 2015 | 1 | 1 | 1 | 3 | 0 | 0 | 0 | 6 |
| 2016 | 0 | 1 | 3 | 5 | 2 | 1 | 0 | 12 |
| 2017 | 0 | 1 | 3 | 9 | 2 | 0 | 0 | 15 |
| 2018 | 0 | 1 | 6 | 3 | 0 | 0 | 0 | 10 |
| 2019 | 1 | 1 | 1 | 4 | 1 | 0 | 0 | 8 |
| 2020 | 1 | 0 | 2 | 2 | 0 | 0 | 0 | 5 |
| **Total Crash Count** | **3** | **7** | **26** | **36** | **7** | **1** | **4** | **84** |

| Worst Injury in Crash | Single Motor Vehicle | Head-On - Left Turn | Angle | Rear-End | Sideswipe - Same Direction | Backing | Other/Un known | Total |
|---|---|---|---|---|---|---|---|---|
| Suspected Serious Injury (A) | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| Suspected Minor Injury (B) | 0 | 0 | 3 | 0 | 0 | 0 | 2 | 5 |
| Possible Injury (C) | 2 | 0 | 6 | 4 | 0 | 0 | 0 | 12 |
| No Injury (O) | 1 | 7 | 16 | 32 | 7 | 1 | 2 | 66 |
| **Total Crash Count** | **3** | **7** | **26** | **36** | **7** | **1** | **4** | **84** |

## 11.0 Summary

The proposed Novi-Ten development, which consists of a conceptual neighborhood shopping plaza and 71 townhouse residential units, is located on the south side of 10 Mile Road between Novi Road and the Railroad tracks. It is not expected to have a significant traffic impact on the overall level of service at the major intersections of Ten Mile Road with Novi Road and with Meadowbrook Road.

The level of service at Novi Road and Ten Mile Road is currently a D and will remain a D during both morning and afternoon peak hours for all scenarios.

The level of service at Ten Mile Road and Meadowbrook Road is currently a C during the morning peak hour and a D during the afternoon peak hour and the level of service does not change in the background and forecast scenarios.

The client has prepared a parallel plan with light industrial and office space under the existing zoning, which is currently OS-1 and I-1. The proposed PRO plan would generate slightly less traffic during the morning peak hour and slightly more traffic during the afternoon peak hour compared to the existing zoning. Given the similar trip generation, the PRO plan and the parallel plan would likely have similar traffic impacts during the peak hours of the day on the surrounding intersections of 10 Mile Road with Novi Road and Meadowbrook Road.

When the commercial portion of the site is developed, Ten Mile Road may need the following improvements to address the various concerns at the site driveways:

- In lieu of separate right-turn deceleration lanes at each driveway, widen eastbound 10 Mile Road to two-through lanes ending at a right-turn deceleration lane at the residential driveway.
- Extend the center left-turn lane along 10 Mile Road from where it currently ends at Catherine Industrial to service all commercial driveways.
- Widen westbound 10 Mile Road to two through lanes west from the 3rd commercial site driveway to help improve capacity.
- Provide separate left-turn and right-turn outbound lanes at the 2nd (middle) and 3rd (east) commercial driveways, to help facilitate right-turns out of the site, when a left-turning vehicle is waiting for a gap in traffic.

# Appendix

# Midwestern Consulting

3815 Plaza Drive
Ann Arbor, MI, 48108
(734) 995-0200

Intersection
E/W: 10 Mile Road
N/S: Novi Road
Weather:

File Name : TMC_1001_10 Mile & Novi_Mar-16-2022
Site Code : 1001
Start Date : 3/16/2022
Page No : 1

Groups Printed- Cars & Peds - H.V. & Bikes - Bikes on Street

| | 10 Mile Road Eastbound | | | | 10 Mile Road Westbound | | | | Novi Road Northbound | | | | Novi Road Southbound | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | Left | Thru | Right | Peds | Left | Thru | Right | Peds | Left | Thru | Right | Peds | Left | Thru | Right | Peds | Int. Total |
| *** BREAK *** | | | | | | | | | | | | | | | | | |
| 06:00 AM | 12 | 23 | 4 | 0 | 11 | 10 | 11 | 1 | 2 | 27 | 6 | 0 | 3 | 18 | 5 | 0 | 133 |
| 06:15 AM | 24 | 25 | 7 | 0 | 11 | 15 | 9 | 0 | 3 | 35 | 2 | 0 | 5 | 29 | 10 | 0 | 175 |
| 06:30 AM | 16 | 43 | 6 | 0 | 9 | 25 | 9 | 0 | 6 | 33 | 10 | 0 | 9 | 34 | 13 | 0 | 213 |
| 06:45 AM | 34 | 57 | 16 | 0 | 5 | 51 | 3 | 0 | 6 | 56 | 16 | 0 | 14 | 52 | 8 | 0 | 318 |
| Total | 86 | 148 | 33 | 0 | 36 | 101 | 32 | 1 | 17 | 151 | 34 | 0 | 31 | 133 | 36 | 0 | 839 |
| 07:00 AM | 34 | 53 | 12 | 0 | 11 | 58 | 12 | 0 | 22 | 64 | 12 | 0 | 11 | 49 | 26 | 0 | 364 |
| 07:15 AM | 50 | 92 | 31 | 0 | 6 | 56 | 9 | 0 | 29 | 69 | 20 | 0 | 14 | 80 | 28 | 0 | 484 |
| 07:30 AM | 59 | 103 | 30 | 0 | 14 | 89 | 19 | 0 | 32 | 98 | 26 | 0 | 10 | 82 | 43 | 0 | 605 |
| 07:45 AM | 44 | 96 | 50 | 0 | 25 | 133 | 29 | 0 | 62 | 127 | 33 | 0 | 24 | 96 | 56 | 0 | 775 |
| Total | 187 | 344 | 123 | 0 | 56 | 336 | 69 | 0 | 145 | 358 | 91 | 0 | 59 | 307 | 153 | 0 | 2228 |
| 08:00 AM | 59 | 108 | 42 | 0 | 26 | 78 | 15 | 0 | 29 | 106 | 23 | 0 | 21 | 95 | 27 | 1 | 630 |
| 08:15 AM | 38 | 119 | 26 | 0 | 20 | 50 | 20 | 0 | 32 | 116 | 31 | 0 | 23 | 88 | 31 | 0 | 594 |
| 08:30 AM | 51 | 111 | 17 | 0 | 20 | 62 | 14 | 0 | 24 | 96 | 24 | 0 | 25 | 59 | 26 | 0 | 529 |
| 08:45 AM | 50 | 138 | 44 | 0 | 11 | 71 | 26 | 0 | 34 | 112 | 42 | 0 | 17 | 102 | 43 | 0 | 690 |
| Total | 198 | 476 | 129 | 0 | 77 | 261 | 75 | 0 | 119 | 430 | 120 | 0 | 86 | 344 | 127 | 1 | 2443 |
| 09:00 AM | 68 | 100 | 32 | 0 | 24 | 72 | 24 | 1 | 21 | 69 | 26 | 0 | 18 | 71 | 32 | 0 | 558 |
| 09:15 AM | 39 | 83 | 21 | 0 | 20 | 47 | 18 | 0 | 16 | 99 | 27 | 0 | 17 | 62 | 33 | 0 | 482 |
| 09:30 AM | 43 | 83 | 27 | 0 | 15 | 61 | 25 | 0 | 19 | 76 | 19 | 0 | 18 | 62 | 24 | 0 | 472 |
| 09:45 AM | 45 | 70 | 14 | 0 | 22 | 61 | 32 | 0 | 21 | 100 | 19 | 0 | 26 | 79 | 40 | 0 | 529 |
| Total | 195 | 336 | 94 | 0 | 81 | 241 | 99 | 1 | 77 | 344 | 91 | 0 | 79 | 274 | 129 | 0 | 2041 |
| 10:00 AM | 39 | 54 | 17 | 1 | 17 | 51 | 38 | 0 | 16 | 66 | 20 | 0 | 21 | 71 | 33 | 1 | 445 |
| 10:15 AM | 37 | 55 | 15 | 0 | 20 | 60 | 28 | 0 | 15 | 101 | 16 | 0 | 25 | 67 | 22 | 0 | 461 |
| 10:30 AM | 34 | 73 | 11 | 0 | 15 | 54 | 30 | 0 | 17 | 76 | 12 | 0 | 14 | 76 | 25 | 0 | 437 |
| 10:45 AM | 35 | 56 | 13 | 0 | 21 | 53 | 21 | 0 | 27 | 83 | 15 | 0 | 25 | 83 | 36 | 0 | 468 |
| Total | 145 | 238 | 56 | 1 | 73 | 218 | 117 | 0 | 75 | 326 | 63 | 0 | 85 | 297 | 116 | 1 | 1811 |
| 11:00 AM | 46 | 58 | 14 | 0 | 25 | 58 | 32 | 0 | 14 | 78 | 14 | 0 | 19 | 48 | 43 | 0 | 449 |
| 11:15 AM | 50 | 63 | 19 | 0 | 21 | 54 | 32 | 0 | 18 | 113 | 19 | 0 | 21 | 104 | 29 | 0 | 543 |
| 11:30 AM | 49 | 76 | 17 | 0 | 22 | 53 | 30 | 0 | 14 | 115 | 27 | 0 | 27 | 80 | 34 | 0 | 544 |
| 11:45 AM | 44 | 75 | 29 | 0 | 30 | 64 | 35 | 0 | 17 | 111 | 12 | 0 | 28 | 95 | 44 | 0 | 584 |
| Total | 189 | 272 | 79 | 0 | 98 | 229 | 129 | 0 | 63 | 417 | 72 | 0 | 95 | 327 | 150 | 0 | 2120 |
| 12:00 PM | 60 | 74 | 22 | 0 | 25 | 78 | 40 | 0 | 25 | 114 | 20 | 0 | 24 | 80 | 55 | 0 | 617 |
| 12:15 PM | 52 | 47 | 17 | 0 | 30 | 68 | 41 | 0 | 18 | 129 | 26 | 0 | 29 | 90 | 60 | 0 | 607 |
| 12:30 PM | 57 | 83 | 14 | 0 | 27 | 73 | 33 | 0 | 17 | 95 | 20 | 0 | 23 | 93 | 58 | 0 | 593 |
| 12:45 PM | 54 | 66 | 12 | 0 | 31 | 80 | 30 | 0 | 20 | 106 | 20 | 0 | 30 | 108 | 47 | 0 | 604 |
| Total | 223 | 270 | 65 | 0 | 113 | 299 | 144 | 0 | 80 | 444 | 86 | 0 | 106 | 371 | 220 | 0 | 2421 |
| 01:00 PM | 48 | 54 | 14 | 0 | 36 | 63 | 41 | 0 | 17 | 104 | 20 | 0 | 35 | 100 | 42 | 0 | 574 |
| 01:15 PM | 49 | 52 | 18 | 0 | 27 | 64 | 26 | 0 | 18 | 105 | 27 | 0 | 36 | 101 | 43 | 0 | 566 |
| 01:30 PM | 43 | 53 | 23 | 0 | 21 | 79 | 31 | 0 | 23 | 93 | 16 | 0 | 20 | 84 | 59 | 0 | 545 |
| 01:45 PM | 49 | 50 | 25 | 0 | 32 | 72 | 24 | 1 | 26 | 118 | 16 | 0 | 34 | 109 | 52 | 0 | 608 |
| Total | 189 | 209 | 80 | 0 | 116 | 278 | 122 | 1 | 84 | 420 | 79 | 0 | 125 | 394 | 196 | 0 | 2293 |
| 02:00 PM | 44 | 70 | 17 | 0 | 16 | 88 | 37 | 0 | 20 | 98 | 22 | 0 | 33 | 90 | 53 | 0 | 588 |
| 02:15 PM | 40 | 63 | 29 | 0 | 20 | 77 | 19 | 0 | 35 | 108 | 23 | 0 | 36 | 90 | 52 | 1 | 593 |
| 02:30 PM | 42 | 98 | 37 | 1 | 24 | 102 | 34 | 0 | 31 | 108 | 24 | 0 | 35 | 95 | 66 | 0 | 697 |
| 02:45 PM | 61 | 113 | 55 | 0 | 26 | 77 | 34 | 0 | 44 | 111 | 34 | 0 | 26 | 121 | 57 | 0 | 759 |
| Total | 187 | 344 | 138 | 1 | 86 | 344 | 124 | 0 | 130 | 425 | 103 | 0 | 130 | 396 | 228 | 1 | 2637 |
| 03:00 PM | 67 | 98 | 50 | 0 | 38 | 93 | 49 | 0 | 20 | 123 | 24 | 0 | 40 | 116 | 39 | 0 | 757 |
| 03:15 PM | 51 | 90 | 33 | 0 | 30 | 80 | 29 | 0 | 35 | 133 | 26 | 0 | 24 | 145 | 64 | 0 | 740 |
| 03:30 PM | 55 | 111 | 35 | 0 | 29 | 101 | 47 | 2 | 29 | 127 | 13 | 0 | 24 | 103 | 58 | 2 | 736 |

# Midwestern Consulting

3815 Plaza Drive
Ann Arbor, MI, 48108
(734) 995-0200

Intersection
E/W: 10 Mile Road
N/S: Novi Road
Weather:

File Name : TMC_1001_10 Mile & Novi_Mar-16-2022
Site Code : 1001
Start Date : 3/16/2022


Groups Printed- Cars & Peds - H.V. & Bikes - Bikes on Street

| | 10 Mile Road Eastbound | | | | 10 Mile Road Westbound | | | | Novi Road Northbound | | | | Novi Road Southbound | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | Left | Thru | Right | Peds | Left | Thru | Right | Peds | Left | Thru | Right | Peds | Left | Thru | Right | Peds | Int. Total |
| 03:45 PM | 65 | 63 | 37 | 0 | 25 | 91 | 35 | 0 | 39 | 159 | 28 | 0 | 29 | 123 | 74 | 0 | 768 |
| Total | 238 | 362 | 155 | 0 | 122 | 365 | 160 | 2 | 123 | 542 | 91 | 0 | 117 | 487 | 235 | 2 | 3001 |
| 04:00 PM | 63 | 76 | 39 | 0 | 37 | 118 | 38 | 1 | 35 | 158 | 22 | 0 | 33 | 122 | 52 | 1 | 795 |
| 04:15 PM | 55 | 75 | 51 | 0 | 28 | 93 | 28 | 0 | 31 | 144 | 16 | 1 | 40 | 136 | 74 | 0 | 772 |
| 04:30 PM | 58 | 91 | 56 | 0 | 51 | 129 | 40 | 0 | 34 | 146 | 21 | 2 | 23 | 112 | 78 | 0 | 841 |
| 04:45 PM | 57 | 92 | 46 | 0 | 43 | 127 | 37 | 0 | 38 | 136 | 34 | 0 | 29 | 149 | 69 | 2 | 859 |
| Total | 233 | 334 | 192 | 0 | 159 | 467 | 143 | 1 | 138 | 584 | 93 | 3 | 125 | 519 | 273 | 3 | 3267 |
| 05:00 PM | 52 | 103 | 54 | 0 | 39 | 142 | 48 | 0 | 49 | 159 | 22 | 0 | 23 | 159 | 83 | 0 | 933 |
| 05:15 PM | 56 | 124 | 59 | 1 | 34 | 114 | 34 | 0 | 51 | 164 | 20 | 0 | 42 | 148 | 70 | 2 | 919 |
| 05:30 PM | 54 | 104 | 66 | 0 | 65 | 139 | 42 | 0 | 43 | 136 | 22 | 0 | 27 | 159 | 66 | 0 | 923 |
| 05:45 PM | 61 | 99 | 46 | 0 | 34 | 109 | 52 | 0 | 58 | 157 | 24 | 0 | 28 | 158 | 85 | 1 | 912 |
| Total | 223 | 430 | 225 | 1 | 172 | 504 | 176 | 0 | 201 | 616 | 88 | 0 | 120 | 624 | 304 | 3 | 3687 |
| 06:00 PM | 61 | 104 | 42 | 1 | 41 | 122 | 31 | 3 | 48 | 144 | 26 | 1 | 22 | 117 | 70 | 2 | 835 |
| 06:15 PM | 52 | 70 | 39 | 1 | 20 | 93 | 29 | 3 | 32 | 125 | 22 | 0 | 36 | 124 | 88 | 0 | 734 |
| 06:30 PM | 55 | 82 | 42 | 0 | 28 | 97 | 30 | 0 | 36 | 119 | 15 | 0 | 33 | 116 | 88 | 0 | 741 |
| 06:45 PM | 41 | 52 | 40 | 0 | 37 | 96 | 32 | 0 | 47 | 125 | 22 | 0 | 35 | 140 | 107 | 0 | 774 |
| Total | 209 | 308 | 163 | 2 | 126 | 408 | 122 | 6 | 163 | 513 | 85 | 1 | 126 | 497 | 353 | 2 | 3084 |
| *** BREAK *** | | | | | | | | | | | | | | | | | |
| Grand Total | 2502 | 4071 | 1532 | 5 | 1315 | 4051 | 1512 | 12 | 1415 | 5570 | 1096 | 4 | 1284 | 4970 | 2520 | 13 | 31872 |
| Apprch % | 30.9 | 50.2 | 18.9 | 0.1 | 19.1 | 58.8 | 21.9 | 0.2 | 17.5 | 68.9 | 13.6 | 0 | 14.6 | 56.6 | 28.7 | 0.1 | |
| Total % | 7.9 | 12.8 | 4.8 | 0 | 4.1 | 12.7 | 4.7 | 0 | 4.4 | 17.5 | 3.4 | 0 | 4 | 15.6 | 7.9 | 0 | |
| Cars & Peds | 2477 | 4016 | 1502 | 5 | 1298 | 3987 | 1476 | 9 | 1391 | 5442 | 1082 | 3 | 1263 | 4867 | 2485 | 9 | 31312 |
| % Cars & Peds | 99 | 98.6 | 98 | 100 | 98.7 | 98.4 | 97.6 | 75 | 98.3 | 97.7 | 98.7 | 75 | 98.4 | 97.9 | 98.6 | 69.2 | 98.2 |
| H.V. & Bikes | 25 | 55 | 30 | 0 | 17 | 64 | 36 | 3 | 24 | 128 | 14 | 1 | 21 | 103 | 35 | 4 | 560 |
| % H.V. & Bikes | 1 | 1.4 | 2 | 0 | 1.3 | 1.6 | 2.4 | 25 | 1.7 | 2.3 | 1.3 | 25 | 1.6 | 2.1 | 1.4 | 30.8 | 1.8 |
| Bikes on Street | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| % Bikes on Street | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

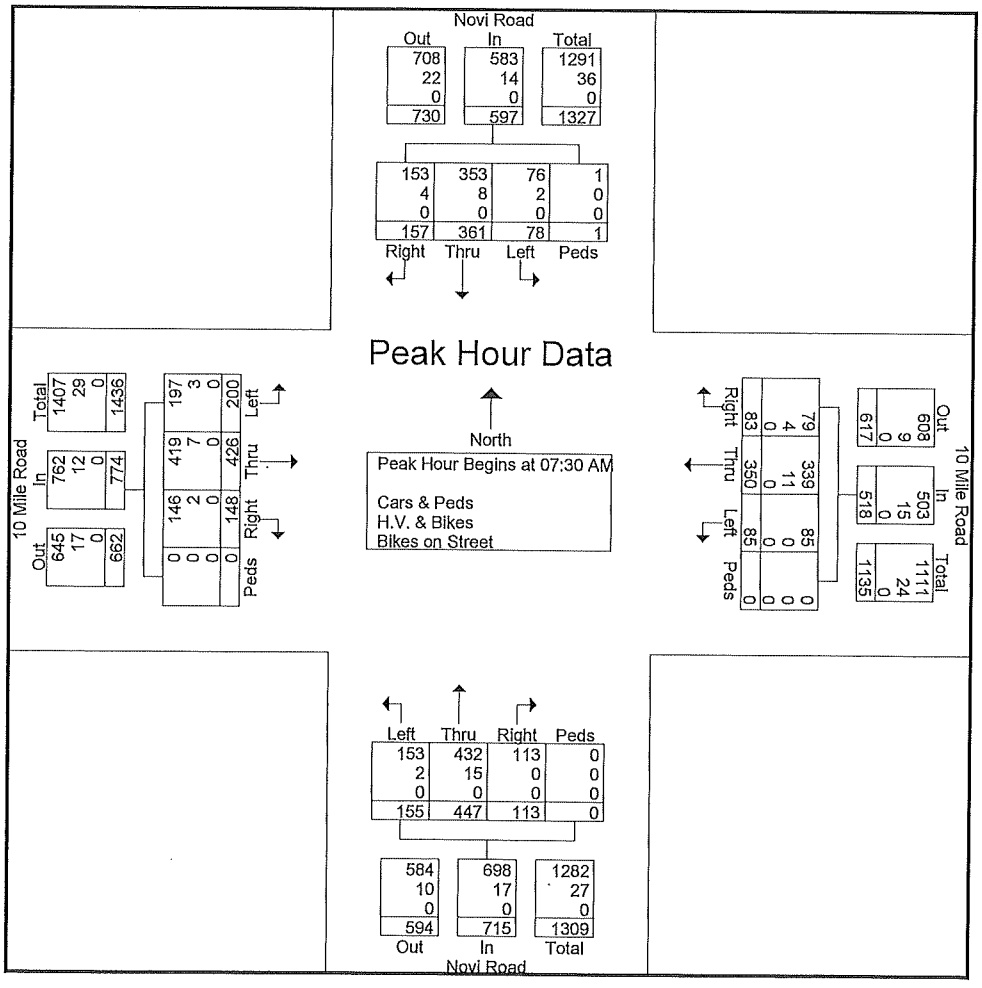
# Midwestern Consulting

3815 Plaza Drive
Ann Arbor, MI, 48108
(734) 995-0200

Intersection
E/W: 10 Mile Road
N/S: Novi Road
Weather:

File Name : TMC_1001_10 Mile & Novi_Mar-16-2022
Site Code : 1001
Start Date : 3/16/2022
Page No : 3

| | 10 Mile Road Eastbound | | | | | 10 Mile Road Westbound | | | | | Novi Road Northbound | | | | | Novi Road Southbound | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | Left | Thru | Right | Peds | App. Total | Left | Thru | Right | Peds | App. Total | Left | Thru | Right | Peds | App. Total | Left | Thru | Right | Peds | App. Total | Int. Total |
| Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1 | | | | | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 07:30 AM | | | | | | | | | | | | | | | | | | | | | |
| 07:30 AM | 59 | 103 | 30 | 0 | 192 | 14 | 89 | 19 | 0 | 122 | 32 | 98 | 26 | 0 | 156 | 10 | 82 | 43 | 0 | 135 | 605 |
| 07:45 AM | 44 | 96 | 50 | 0 | 190 | 25 | 133 | 29 | 0 | 187 | 62 | 127 | 33 | 0 | 222 | 24 | 96 | 56 | 0 | 176 | 775 |
| 08:00 AM | 59 | 108 | 42 | 0 | 209 | 26 | 78 | 15 | 0 | 119 | 29 | 106 | 23 | 0 | 158 | 21 | 95 | 27 | 1 | 144 | 630 |
| 08:15 AM | 38 | 119 | 26 | 0 | 183 | 20 | 50 | 20 | 0 | 90 | 32 | 116 | 31 | 0 | 179 | 23 | 88 | 31 | 0 | 142 | 594 |
| Total Volume | 200 | 426 | 148 | 0 | 774 | 85 | 350 | 83 | 0 | 518 | 155 | 447 | 113 | 0 | 715 | 78 | 361 | 157 | 1 | 597 | 2604 |
| % App. Total | 25.8 | 55 | 19.1 | 0 | | 16.4 | 67.6 | 16 | 0 | | 21.7 | 62.5 | 15.8 | 0 | | 13.1 | 60.5 | 26.3 | 0.2 | | |
| PHF | .847 | .895 | .740 | .000 | .926 | .817 | .658 | .716 | .000 | .693 | .625 | .880 | .856 | .000 | .805 | .813 | .940 | .701 | .250 | .848 | .840 |
| Cars & Peds | 197 | 419 | 146 | 0 | 762 | 85 | 339 | 79 | 0 | 503 | 153 | 432 | 113 | 0 | 698 | 76 | 353 | 153 | 1 | 583 | 2546 |
| % Cars & Peds | 98.5 | 98.4 | 98.6 | 0 | 98.4 | 100 | 96.9 | 95.2 | 0 | 97.1 | 98.7 | 96.6 | 100 | 0 | 97.6 | 97.4 | 97.8 | 97.5 | 100 | 97.7 | 97.8 |
| H.V. & Bikes | 3 | 7 | 2 | 0 | 12 | 0 | 11 | 4 | 0 | 15 | 2 | 15 | 0 | 0 | 17 | 2 | 8 | 4 | 0 | 14 | 58 |
| % H.V. & Bikes | 1.5 | 1.6 | 1.4 | 0 | 1.6 | 0 | 3.1 | 4.8 | 0 | 2.9 | 1.3 | 3.4 | 0 | 0 | 2.4 | 2.6 | 2.2 | 2.5 | 0 | 2.3 | 2.2 |
| Bikes on Street | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| % Bikes on Street | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |



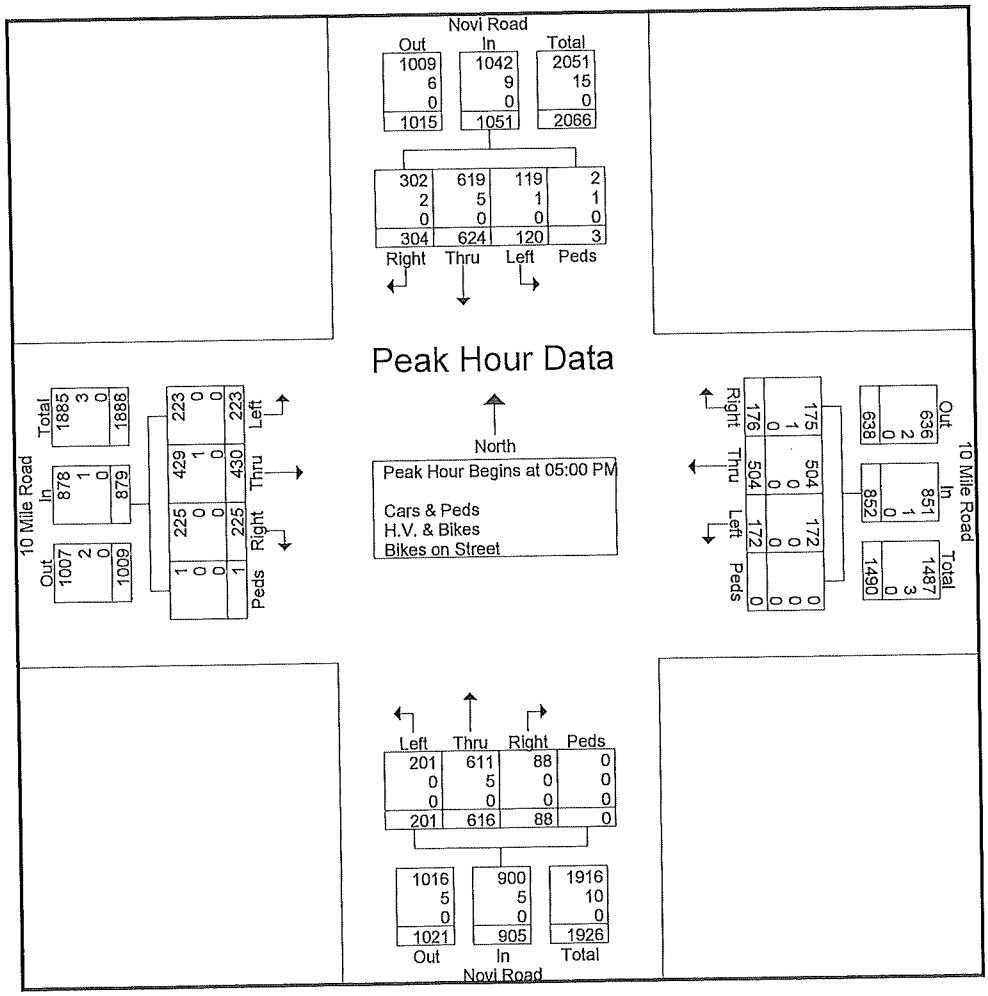
# Midwestern Consulting

3815 Plaza Drive
Ann Arbor, MI, 48108
(734) 995-0200

Intersection
E/W: 10 Mile Road
N/S: Novi Road
Weather:

File Name : TMC_1001_10 Mile & Novi_Mar-16-2022
Site Code : 1001
Start Date : 3/16/2022
Page No : 4

| | 10 Mile Road Eastbound | | | | | 10 Mile Road Westbound | | | | | Novi Road Northbound | | | | | Novi Road Southbound | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | Left | Thru | Right | Peds | App. Total | Left | Thru | Right | Peds | App. Total | Left | Thru | Right | Peds | App. Total | Left | Thru | Right | Peds | App. Total | Int. Total |
| Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1 | | | | | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 05:00 PM | | | | | | | | | | | | | | | | | | | | | |
| 05:00 PM | 52 | 103 | 54 | 0 | 209 | 39 | 142 | 48 | 0 | 229 | 49 | 159 | 22 | 0 | 230 | 23 | 159 | 83 | 0 | 265 | 933 |
| 05:15 PM | 56 | 124 | 59 | 1 | 240 | 34 | 114 | 34 | 0 | 182 | 51 | 164 | 20 | 0 | 235 | 42 | 148 | 70 | 2 | 262 | 919 |
| 05:30 PM | 54 | 104 | 66 | 0 | 224 | 65 | 139 | 42 | 0 | 246 | 43 | 136 | 22 | 0 | 201 | 27 | 159 | 66 | 0 | 252 | 923 |
| 05:45 PM | 61 | 99 | 46 | 0 | 206 | 34 | 109 | 52 | 0 | 195 | 58 | 157 | 24 | 0 | 239 | 28 | 158 | 85 | 1 | 272 | 912 |
| Total Volume | 223 | 430 | 225 | 1 | 879 | 172 | 504 | 176 | 0 | 852 | 201 | 616 | 88 | 0 | 905 | 120 | 624 | 304 | 3 | 1051 | 3687 |
| % App. Total | 25.4 | 48.9 | 25.6 | 0.1 | | 20.2 | 59.2 | 20.7 | 0 | | 22.2 | 68.1 | 9.7 | 0 | | 11.4 | 59.4 | 28.9 | 0.3 | | |
| PHF | .914 | .867 | .852 | .250 | .916 | .662 | .887 | .846 | .000 | .866 | .866 | .939 | .917 | .000 | .947 | .714 | .981 | .894 | .375 | .966 | .988 |
| Cars & Peds | 223 | 429 | 225 | 1 | 878 | 172 | 504 | 175 | 0 | 851 | 201 | 611 | 88 | 0 | 900 | 119 | 619 | 302 | 2 | 1042 | 3671 |
| % Cars & Peds | 100 | 99.8 | 100 | 100 | 99.9 | 100 | 100 | 99.4 | 0 | 99.9 | 100 | 99.2 | 100 | 0 | 99.4 | 99.2 | 99.2 | 99.3 | 66.7 | 99.1 | 99.6 |
| H.V. & Bikes | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 5 | 0 | 0 | 5 | 1 | 5 | 2 | 1 | 9 | 16 |
| % H.V. & Bikes | 0 | 0.2 | 0 | 0 | 0.1 | 0 | 0 | 0.6 | 0 | 0.1 | 0 | 0.8 | 0 | 0 | 0.6 | 0.8 | 0.8 | 0.7 | 33.3 | 0.9 | 0.4 |
| Bikes on Street | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| % Bikes on Street | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |



# Midwestern Consulting

3815 Plaza Drive
Ann Arbor, MI, 48108
(734) 995-0200

Intersection
E/W: 10 Mile Road
N/S: Shared Driveway
Weather:

File Name : TMC_1002_10 Mile & Shared_Mar-16-2022
Site Code : 1002
Start Date : 3/16/2022
Page No : 1

Groups Printed- Cars & Peds - H.V. & Bikes - Bikes on Street

| | 10 Mile Road Eastbound | | | | 10 Mile Road Westbound | | | | Shared Driveway Northbound | | | | Existing Driveway Southbound | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | Left | Thru | Right | Peds | Left | Thru | Right | Peds | Left | Thru | Right | Peds | Left | Thru | Right | Peds | Int. Total |
| *** BREAK *** | | | | | | | | | | | | | | | | | |
| 06:00 AM | 1 | 33 | 0 | 0 | 0 | 33 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 68 |
| 06:15 AM | 0 | 33 | 1 | 0 | 1 | 25 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 60 |
| 06:30 AM | 2 | 63 | 0 | 0 | 0 | 44 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 109 |
| 06:45 AM | 3 | 79 | 2 | 0 | 0 | 57 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 142 |
| Total | 6 | 208 | 3 | 0 | 1 | 159 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 379 |
| 07:00 AM | 3 | 80 | 1 | 0 | 0 | 75 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 160 |
| 07:15 AM | 0 | 126 | 2 | 0 | 0 | 70 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 198 |
| 07:30 AM | 1 | 136 | 2 | 0 | 0 | 120 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 262 |
| 07:45 AM | 0 | 144 | 6 | 0 | 2 | 182 | 0 | 0 | 1 | 0 | 2 | 0 | 0 | 0 | 1 | 1 | 339 |
| Total | 4 | 486 | 11 | 0 | 2 | 447 | 1 | 0 | 1 | 0 | 2 | 0 | 0 | 0 | 2 | 3 | 959 |
| 08:00 AM | 0 | 151 | 0 | 0 | 0 | 105 | 0 | 0 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 259 |
| 08:15 AM | 0 | 173 | 1 | 0 | 0 | 97 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 273 |
| 08:30 AM | 1 | 155 | 1 | 0 | 0 | 83 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 2 | 1 | 245 |
| 08:45 AM | 2 | 207 | 3 | 0 | 2 | 106 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 323 |
| Total | 3 | 686 | 5 | 0 | 2 | 391 | 0 | 0 | 1 | 0 | 3 | 1 | 0 | 0 | 7 | 1 | 1100 |
| 09:00 AM | 0 | 143 | 1 | 0 | 1 | 112 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 2 | 0 | 263 |
| 09:15 AM | 1 | 129 | 1 | 0 | 0 | 92 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 225 |
| 09:30 AM | 1 | 121 | 1 | 0 | 1 | 92 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 219 |
| 09:45 AM | 0 | 117 | 1 | 0 | 0 | 113 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 233 |
| Total | 2 | 510 | 4 | 0 | 2 | 409 | 2 | 1 | 1 | 0 | 2 | 1 | 0 | 0 | 5 | 1 | 940 |
| 10:00 AM | 2 | 90 | 1 | 0 | 0 | 101 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 195 |
| 10:15 AM | 0 | 94 | 1 | 0 | 0 | 111 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 207 |
| 10:30 AM | 1 | 99 | 1 | 0 | 0 | 89 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 191 |
| 10:45 AM | 0 | 99 | 2 | 0 | 1 | 91 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 196 |
| Total | 3 | 382 | 5 | 0 | 1 | 392 | 0 | 0 | 3 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 789 |
| 11:00 AM | 1 | 89 | 1 | 0 | 1 | 107 | 0 | 0 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 202 |
| 11:15 AM | 1 | 112 | 0 | 0 | 1 | 107 | 1 | 0 | 2 | 0 | 1 | 0 | 1 | 0 | 2 | 0 | 228 |
| 11:30 AM | 0 | 127 | 2 | 0 | 0 | 99 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 2 | 0 | 233 |
| 11:45 AM | 0 | 120 | 3 | 0 | 0 | 144 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 269 |
| Total | 2 | 448 | 6 | 0 | 2 | 457 | 3 | 0 | 3 | 0 | 4 | 0 | 2 | 0 | 5 | 0 | 932 |
| 12:00 PM | 1 | 118 | 0 | 0 | 0 | 135 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 259 |
| 12:15 PM | 1 | 100 | 0 | 0 | 0 | 146 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 0 | 1 | 0 | 251 |
| 12:30 PM | 1 | 128 | 1 | 0 | 0 | 123 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 256 |
| 12:45 PM | 1 | 125 | 0 | 0 | 1 | 148 | 1 | 0 | 2 | 0 | 1 | 0 | 0 | 0 | 1 | 2 | 282 |
| Total | 4 | 471 | 1 | 0 | 1 | 552 | 3 | 0 | 5 | 0 | 2 | 0 | 2 | 0 | 3 | 4 | 1048 |
| 01:00 PM | 1 | 115 | 0 | 0 | 1 | 123 | 0 | 0 | 5 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 247 |
| 01:15 PM | 0 | 117 | 2 | 0 | 0 | 127 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 251 |
| 01:30 PM | 0 | 94 | 0 | 0 | 0 | 116 | 2 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 2 | 216 |
| 01:45 PM | 0 | 99 | 3 | 0 | 1 | 136 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 2 | 243 |
| Total | 1 | 425 | 5 | 0 | 2 | 502 | 3 | 1 | 6 | 0 | 1 | 1 | 3 | 0 | 3 | 4 | 957 |
| 02:00 PM | 0 | 126 | 2 | 0 | 0 | 133 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 265 |
| 02:15 PM | 2 | 116 | 1 | 0 | 0 | 128 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 250 |
| 02:30 PM | 1 | 160 | 0 | 0 | 1 | 148 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 314 |
| 02:45 PM | 1 | 169 | 2 | 0 | 0 | 136 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 314 |
| Total | 4 | 571 | 5 | 0 | 1 | 545 | 0 | 1 | 5 | 0 | 0 | 1 | 0 | 0 | 4 | 6 | 1143 |
| 03:00 PM | 0 | 146 | 0 | 0 | 1 | 165 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 314 |
| 03:15 PM | 0 | 151 | 1 | 0 | 1 | 155 | 0 | 0 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 1 | 312 |
| 03:30 PM | 2 | 144 | 0 | 0 | 0 | 156 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 2 | 307 |

# Midwestern Consulting

3815 Plaza Drive
Ann Arbor, MI, 48108
(734) 995-0200

Intersection
E/W: 10 Mile Road
N/S: Shared Driveway
Weather:

File Name : TMC_1002_10 Mile & Shared_Mar-16-2022
Site Code : 1002
Start Date : 3/16/2022
Page No : 2

Groups Printed- Cars & Peds - H.V. & Bikes - Bikes on Street

| | 10 Mile Road Eastbound | | | | 10 Mile Road Westbound | | | | Shared Driveway Northbound | | | | Existing Driveway Southbound | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | Left | Thru | Right | Peds | Left | Thru | Right | Peds | Left | Thru | Right | Peds | Left | Thru | Right | Peds | Int. Total |
| 03:45 PM | 0 | 121 | 1 | 0 | 0 | 162 | 1 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 293 |
| Total | 2 | 562 | 2 | 0 | 2 | 638 | 2 | 0 | 7 | 0 | 3 | 0 | 0 | 0 | 3 | 5 | 1226 |
| 04:00 PM | 0 | 129 | 2 | 0 | 1 | 177 | 0 | 0 | 1 | 0 | 3 | 0 | 0 | 0 | 0 | 4 | 317 |
| 04:15 PM | 1 | 134 | 0 | 0 | 0 | 156 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 292 |
| 04:30 PM | 1 | 133 | 0 | 0 | 0 | 212 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 3 | 351 |
| 04:45 PM | 0 | 162 | 0 | 0 | 1 | 218 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 1 | 386 |
| Total | 2 | 558 | 2 | 0 | 2 | 763 | 0 | 0 | 3 | 0 | 5 | 0 | 0 | 0 | 3 | 8 | 1346 |
| 05:00 PM | 2 | 141 | 1 | 0 | 0 | 219 | 0 | 0 | 2 | 0 | 5 | 0 | 0 | 0 | 3 | 4 | 377 |
| 05:15 PM | 1 | 190 | 0 | 0 | 0 | 206 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 4 | 406 |
| 05:30 PM | 3 | 154 | 0 | 0 | 0 | 212 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 3 | 374 |
| 05:45 PM | 0 | 146 | 0 | 0 | 0 | 190 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 337 |
| Total | 6 | 631 | 1 | 0 | 0 | 827 | 1 | 0 | 2 | 0 | 5 | 0 | 0 | 0 | 9 | 12 | 1494 |
| 06:00 PM | 0 | 146 | 0 | 0 | 0 | 171 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 323 |
| 06:15 PM | 2 | 135 | 0 | 0 | 0 | 141 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 3 | 283 |
| 06:30 PM | 2 | 134 | 0 | 1 | 0 | 138 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 278 |
| 06:45 PM | 0 | 107 | 0 | 0 | 0 | 179 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 287 |
| Total | 4 | 522 | 0 | 1 | 0 | 629 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 11 | 1171 |
| *** BREAK *** | | | | | | | | | | | | | | | | | |
| Grand Total | 43 | 6460 | 50 | 1 | 18 | 6711 | 17 | 3 | 37 | 0 | 28 | 4 | 7 | 0 | 49 | 56 | 13484 |
| Apprch % | 0.7 | 98.6 | 0.8 | 0 | 0.3 | 99.4 | 0.3 | 0 | 53.6 | 0 | 40.6 | 5.8 | 6.2 | 0 | 43.8 | 50 | |
| Total % | 0.3 | 47.9 | 0.4 | 0 | 0.1 | 49.8 | 0.1 | 0 | 0.3 | 0 | 0.2 | 0 | 0.1 | 0 | 0.4 | 0.4 | |
| Cars & Peds | 41 | 6370 | 50 | 0 | 18 | 6609 | 17 | 3 | 37 | 0 | 28 | 3 | 7 | 0 | 47 | 39 | 13269 |
| % Cars & Peds | 95.3 | 98.6 | 100 | 0 | 100 | 98.5 | 100 | 100 | 100 | 0 | 100 | 75 | 100 | 0 | 95.9 | 69.6 | 98.4 |
| H.V. & Bikes | 2 | 89 | 0 | 1 | 0 | 102 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 2 | 17 | 214 |
| % H.V. & Bikes | 4.7 | 1.4 | 0 | 100 | 0 | 1.5 | 0 | 0 | 0 | 0 | 0 | 25 | 0 | 0 | 4.1 | 30.4 | 1.6 |
| Bikes on Street | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| % Bikes on Street | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Midwestern Consulting

3815 Plaza Drive
Ann Arbor, MI, 48108
(734) 995-0200

Intersection
E/W: 10 Mile Road
N/S: Shared Driveway
Weather:

File Name : TMC_1002_10 Mile & Shared_Mar-16-2022
Site Code : 1002
Start Date : 3/16/2022
Page No : 3

| | 10 Mile Road Eastbound | | | | | 10 Mile Road Westbound | | | | | Shared Driveway Northbound | | | | | Existing Driveway Southbound | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | Left | Thru | Right | Peds | App. Total | Left | Thru | Right | Peds | App. Total | Left | Thru | Right | Peds | App. Total | Left | Thru | Right | Peds | App. Total | Int. Total |
| Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1 | | | | | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 07:30 AM | | | | | | | | | | | | | | | | | | | | | |
| 07:30 AM | 1 | 136 | 2 | 0 | 139 | 0 | 120 | 0 | 0 | 120 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 3 | 262 |
| 07:45 AM | 0 | 144 | 6 | 0 | 150 | 2 | 182 | 0 | 0 | 184 | 1 | 0 | 2 | 0 | 3 | 0 | 0 | 1 | 1 | 2 | 339 |
| 08:00 AM | 0 | 151 | 0 | 0 | 151 | 0 | 105 | 0 | 0 | 105 | 1 | 0 | 2 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 259 |
| 08:15 AM | 0 | 173 | 1 | 0 | 174 | 0 | 97 | 0 | 0 | 97 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 273 |
| Total Volume | 1 | 604 | 9 | 0 | 614 | 2 | 504 | 0 | 0 | 506 | 2 | 0 | 4 | 0 | 6 | 0 | 0 | 4 | 3 | 7 | 1133 |
| % App. Total | 0.2 | 98.4 | 1.5 | 0 | | 0.4 | 99.6 | 0 | 0 | | 33.3 | 0 | 66.7 | 0 | | 0 | 0 | 57.1 | 42.9 | | |
| PHF | .250 | .873 | .375 | .000 | .882 | .250 | .692 | .000 | .000 | .688 | .500 | .000 | .500 | .000 | .500 | .000 | .000 | .500 | .375 | .583 | .836 |
| Cars & Peds | 1 | 593 | 9 | 0 | 603 | 2 | 492 | 0 | 0 | 494 | 2 | 0 | 4 | 0 | 6 | 0 | 0 | 4 | 2 | 6 | 1109 |
| % Cars & Peds | 100 | 98.2 | 100 | 0 | 98.2 | 100 | 97.6 | 0 | 0 | 97.6 | 100 | 0 | 100 | 0 | 100 | 0 | 0 | 100 | 66.7 | 85.7 | 97.9 |
| H.V. & Bikes | 0 | 10 | 0 | 0 | 10 | 0 | 12 | 0 | 0 | 12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 23 |
| % H.V. & Bikes | 0 | 1.7 | 0 | 0 | 1.6 | 0 | 2.4 | 0 | 0 | 2.4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 33.3 | 14.3 | 2.0 |
| Bikes on Street | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| % Bikes on Street | 0 | 0.2 | 0 | 0 | 0.2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.1 |

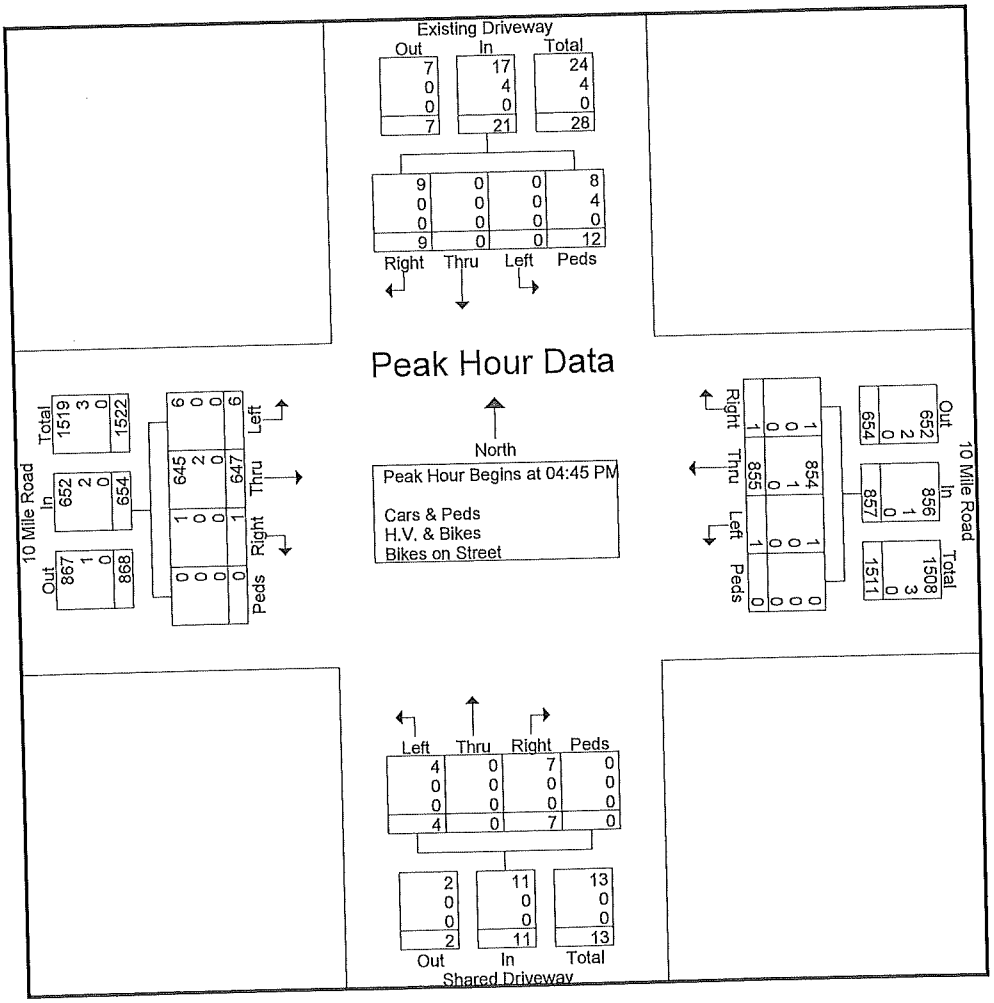
# Midwestern Consulting

3815 Plaza Drive
Ann Arbor, MI, 48108
(734) 995-0200

Intersection
E/W: 10 Mile Road
N/S: Shared Driveway
Weather:

File Name : TMC_1002_10 Mile & Shared_Mar-16-2022
Site Code : 1002
Start Date : 3/16/2022
Page No : 4

| | 10 Mile Road Eastbound | | | | | 10 Mile Road Westbound | | | | | Shared Driveway Northbound | | | | | Existing Driveway Southbound | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | Left | Thru | Right | Peds | App. Total | Left | Thru | Right | Peds | App. Total | Left | Thru | Right | Peds | App. Total | Left | Thru | Right | Peds | App. Total | Int. Total |
| Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1 | | | | | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 04:45 PM | | | | | | | | | | | | | | | | | | | | | |
| 04:45 PM | 0 | 162 | 0 | 0 | 162 | 1 | 218 | 0 | 0 | 219 | 2 | 0 | 2 | 0 | 4 | 0 | 0 | 0 | 1 | 1 | 386 |
| 05:00 PM | 2 | 141 | 1 | 0 | 144 | 0 | 219 | 0 | 0 | 219 | 2 | 0 | 5 | 0 | 7 | 0 | 0 | 3 | 4 | 7 | 377 |
| 05:15 PM | 1 | 190 | 0 | 0 | 191 | 0 | 206 | 1 | 0 | 207 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 4 | 8 | 406 |
| 05:30 PM | 3 | 154 | 0 | 0 | 157 | 0 | 212 | 0 | 0 | 212 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 3 | 5 | 374 |
| Total Volume | 6 | 647 | 1 | 0 | 654 | 1 | 855 | 1 | 0 | 857 | 4 | 0 | 7 | 0 | 11 | 0 | 0 | 9 | 12 | 21 | 1543 |
| % App. Total | 0.9 | 98.9 | 0.2 | 0 | | 0.1 | 99.8 | 0.1 | 0 | | 36.4 | 0 | 63.6 | 0 | | 0 | 0 | 42.9 | 57.1 | | |
| PHF | .500 | .851 | .250 | .000 | .856 | .250 | .976 | .250 | .000 | .978 | .500 | .000 | .350 | .000 | .393 | .000 | .000 | .563 | .750 | .656 | .950 |
| Cars & Peds | 6 | 645 | 1 | 0 | 652 | 1 | 854 | 1 | 0 | 856 | 4 | 0 | 7 | 0 | 11 | 0 | 0 | 9 | 8 | 17 | 1536 |
| % Cars & Peds | 100 | 99.7 | 100 | 0 | 99.7 | 100 | 99.9 | 100 | 0 | 99.9 | 100 | 0 | 100 | 0 | 100 | 0 | 0 | 100 | 66.7 | 81.0 | 99.5 |
| H.V. & Bikes | 0 | 2 | 0 | 0 | 2 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 4 | 7 |
| % H.V. & Bikes | 0 | 0.3 | 0 | 0 | 0.3 | 0 | 0.1 | 0 | 0 | 0.1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 33.3 | 19.0 | 0.5 |
| Bikes on Street | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| % Bikes on Street | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |



# Midwestern Consulting

3815 Plaza Drive
Ann Arbor, MI, 48108
(734) 995-0200

Intersection
E/W: 10 Mile Road
N/S: Catherine
Weather:

File Name : TMC_1003_10 Mile & Catherine_Mar-16-2022
Site Code : 1003
Start Date : 3/16/2022
Page No : 1

Groups Printed- Cars & Peds - H.V. & Bikes - Bikes on Street

| | 10 Mile Road Eastbound | | | | 10 Mile Road Westbound | | | | Site Driveway #2 Northbound | | | | Catherine Southbound | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | Left | Thru | Right | Peds | Left | Thru | Right | Peds | Left | Thru | Right | Peds | Left | Thru | Right | Peds | Int. Total |
| *** BREAK *** | | | | | | | | | | | | | | | | | |
| 06:00 AM | 0 | 34 | 0 | 0 | 0 | 34 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 68 |
| 06:15 AM | 1 | 32 | 0 | 0 | 0 | 28 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 62 |
| 06:30 AM | 2 | 60 | 0 | 0 | 0 | 45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 107 |
| 06:45 AM | 5 | 73 | 0 | 0 | 0 | 56 | 9 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 145 |
| Total | 8 | 199 | 0 | 0 | 0 | 163 | 10 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 382 |
| 07:00 AM | 1 | 80 | 0 | 0 | 0 | 78 | 4 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 1 | 0 | 167 |
| 07:15 AM | 8 | 117 | 0 | 0 | 0 | 72 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 3 | 0 | 202 |
| 07:30 AM | 5 | 129 | 0 | 0 | 0 | 118 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 257 |
| 07:45 AM | 2 | 144 | 0 | 0 | 0 | 185 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 1 | 338 |
| Total | 16 | 470 | 0 | 0 | 0 | 453 | 8 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 10 | 3 | 964 |
| 08:00 AM | 9 | 140 | 0 | 0 | 0 | 104 | 7 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 264 |
| 08:15 AM | 8 | 167 | 0 | 0 | 0 | 92 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 272 |
| 08:30 AM | 9 | 142 | 0 | 0 | 0 | 81 | 4 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 2 | 2 | 243 |
| 08:45 AM | 5 | 202 | 0 | 0 | 0 | 108 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 317 |
| Total | 31 | 651 | 0 | 0 | 0 | 385 | 13 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 7 | 2 | 1096 |
| 09:00 AM | 7 | 135 | 0 | 0 | 0 | 109 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 1 | 263 |
| 09:15 AM | 6 | 125 | 0 | 0 | 0 | 87 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 227 |
| 09:30 AM | 8 | 112 | 0 | 0 | 0 | 95 | 2 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 4 | 0 | 223 |
| 09:45 AM | 9 | 108 | 0 | 0 | 0 | 108 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 230 |
| Total | 30 | 480 | 0 | 0 | 0 | 399 | 14 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 16 | 2 | 943 |
| 10:00 AM | 5 | 85 | 0 | 0 | 0 | 95 | 5 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 8 | 1 | 200 |
| 10:15 AM | 7 | 86 | 0 | 0 | 0 | 111 | 1 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 1 | 0 | 208 |
| 10:30 AM | 0 | 96 | 0 | 0 | 0 | 89 | 3 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 2 | 0 | 191 |
| 10:45 AM | 8 | 91 | 0 | 0 | 0 | 88 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 1 | 197 |
| Total | 20 | 358 | 0 | 0 | 0 | 383 | 13 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 16 | 2 | 796 |
| 11:00 AM | 2 | 88 | 0 | 0 | 0 | 106 | 3 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 3 | 0 | 204 |
| 11:15 AM | 3 | 110 | 0 | 0 | 0 | 103 | 4 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 5 | 0 | 226 |
| 11:30 AM | 9 | 115 | 0 | 0 | 0 | 99 | 2 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 3 | 1 | 230 |
| 11:45 AM | 4 | 120 | 0 | 0 | 0 | 139 | 1 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 5 | 0 | 274 |
| Total | 18 | 433 | 0 | 0 | 0 | 447 | 10 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 16 | 1 | 934 |
| 12:00 PM | 2 | 116 | 0 | 0 | 0 | 131 | 6 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 8 | 1 | 265 |
| 12:15 PM | 3 | 98 | 0 | 0 | 0 | 135 | 2 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 9 | 0 | 250 |
| 12:30 PM | 3 | 124 | 0 | 0 | 0 | 123 | 9 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 2 | 0 | 265 |
| 12:45 PM | 2 | 125 | 0 | 0 | 0 | 148 | 2 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 3 | 2 | 284 |
| Total | 10 | 463 | 0 | 0 | 0 | 537 | 19 | 0 | 0 | 0 | 0 | 0 | 10 | 0 | 22 | 3 | 1064 |
| 01:00 PM | 4 | 112 | 0 | 0 | 0 | 119 | 3 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 5 | 0 | 245 |
| 01:15 PM | 6 | 111 | 0 | 0 | 0 | 122 | 5 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 4 | 1 | 252 |
| 01:30 PM | 3 | 93 | 0 | 0 | 0 | 115 | 4 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 8 | 0 | 226 |
| 01:45 PM | 2 | 98 | 0 | 0 | 0 | 134 | 2 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 2 | 242 |
| Total | 15 | 414 | 0 | 0 | 0 | 490 | 14 | 0 | 0 | 0 | 0 | 0 | 10 | 0 | 19 | 3 | 965 |
| 02:00 PM | 4 | 122 | 0 | 0 | 0 | 124 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 7 | 2 | 262 |
| 02:15 PM | 0 | 114 | 0 | 0 | 0 | 125 | 1 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 6 | 2 | 253 |
| 02:30 PM | 5 | 155 | 0 | 0 | 0 | 147 | 2 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 3 | 1 | 316 |
| 02:45 PM | 5 | 153 | 0 | 0 | 0 | 127 | 3 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 6 | 2 | 299 |
| Total | 14 | 544 | 0 | 0 | 0 | 523 | 6 | 0 | 0 | 0 | 0 | 0 | 14 | 0 | 22 | 7 | 1130 |
| 03:00 PM | 8 | 145 | 0 | 0 | 0 | 161 | 2 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 15 | 0 | 334 |
| 03:15 PM | 4 | 148 | 0 | 0 | 0 | 146 | 4 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 9 | 1 | 317 |
| 03:30 PM | 3 | 143 | 0 | 0 | 0 | 147 | 7 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 16 | 2 | 320 |

# Midwestern Consulting

3815 Plaza Drive
Ann Arbor, MI, 48108
(734) 995-0200

Intersection
E/W: 10 Mile Road
N/S: Catherine
Weather:

File Name : TMC_1003_10 Mile & Catherine_Mar-16-2022
Site Code : 1003
Start Date : 3/16/2022
Page No : 2

Groups Printed- Cars & Peds - H.V. & Bikes - Bikes on Street

| | 10 Mile Road Eastbound | | | | 10 Mile Road Westbound | | | | Site Driveway #2 Northbound | | | | Catherine Southbound | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | Left | Thru | Right | Peds | Left | Thru | Right | Peds | Left | Thru | Right | Peds | Left | Thru | Right | Peds | Int. Total |
| 03:45 PM | 7 | 113 | 0 | 0 | 0 | 154 | 4 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 6 | 3 | 292 |
| Total | 22 | 549 | 0 | 0 | 0 | 608 | 17 | 0 | 0 | 0 | 0 | 0 | 15 | 0 | 46 | 6 | 1263 |
| 04:00 PM | 5 | 126 | 0 | 0 | 0 | 164 | 3 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 12 | 3 | 315 |
| 04:15 PM | 5 | 124 | 0 | 0 | 0 | 153 | 4 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 7 | 0 | 296 |
| 04:30 PM | 4 | 127 | 0 | 0 | 0 | 206 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 9 | 3 | 352 |
| 04:45 PM | 11 | 155 | 0 | 0 | 0 | 214 | 2 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 8 | 1 | 397 |
| Total | 25 | 532 | 0 | 0 | 0 | 737 | 12 | 0 | 0 | 0 | 0 | 0 | 11 | 0 | 36 | 7 | 1360 |
| 05:00 PM | 4 | 140 | 0 | 0 | 0 | 205 | 2 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 17 | 5 | 378 |
| 05:15 PM | 3 | 187 | 0 | 0 | 0 | 205 | 4 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 7 | 4 | 412 |
| 05:30 PM | 4 | 149 | 0 | 0 | 0 | 200 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 12 | 2 | 374 |
| 05:45 PM | 8 | 138 | 0 | 0 | 0 | 180 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 12 | 2 | 341 |
| Total | 19 | 614 | 0 | 0 | 0 | 790 | 7 | 0 | 0 | 0 | 0 | 0 | 14 | 0 | 48 | 13 | 1505 |
| 06:00 PM | 2 | 141 | 0 | 0 | 0 | 164 | 1 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 7 | 7 | 325 |
| 06:15 PM | 0 | 136 | 0 | 0 | 0 | 141 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 280 |
| 06:30 PM | 3 | 129 | 0 | 0 | 0 | 136 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 3 | 4 | 277 |
| 06:45 PM | 1 | 108 | 0 | 0 | 0 | 173 | 1 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 4 | 0 | 289 |
| Total | 6 | 514 | 0 | 0 | 0 | 614 | 3 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 15 | 12 | 1171 |
| *** BREAK *** | | | | | | | | | | | | | | | | | |
| Grand Total | 234 | 6221 | 0 | 0 | 0 | 6529 | 146 | 0 | 0 | 0 | 0 | 0 | 108 | 0 | 274 | 61 | 13573 |
| Apprch % | 3.6 | 96.4 | 0 | 0 | 0 | 97.8 | 2.2 | 0 | 0 | 0 | 0 | 0 | 24.4 | 0 | 61.9 | 13.8 | |
| Total % | 1.7 | 45.8 | 0 | 0 | 0 | 48.1 | 1.1 | 0 | 0 | 0 | 0 | 0 | 0.8 | 0 | 2 | 0.4 | |
| Cars & Peds | 226 | 6134 | 0 | 0 | 0 | 6426 | 145 | 0 | 0 | 0 | 0 | 0 | 106 | 0 | 266 | 46 | 13349 |
| % Cars & Peds | 96.6 | 98.6 | 0 | 0 | 0 | 98.4 | 99.3 | 0 | 0 | 0 | 0 | 0 | 98.1 | 0 | 97.1 | 75.4 | 98.3 |
| H.V. & Bikes | 8 | 87 | 0 | 0 | 0 | 102 | 1 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 8 | 15 | 223 |
| % H.V. & Bikes | 3.4 | 1.4 | 0 | 0 | 0 | 1.6 | 0.7 | 0 | 0 | 0 | 0 | 0 | 1.9 | 0 | 2.9 | 24.6 | 1.6 |
| Bikes on Street | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| % Bikes on Street | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

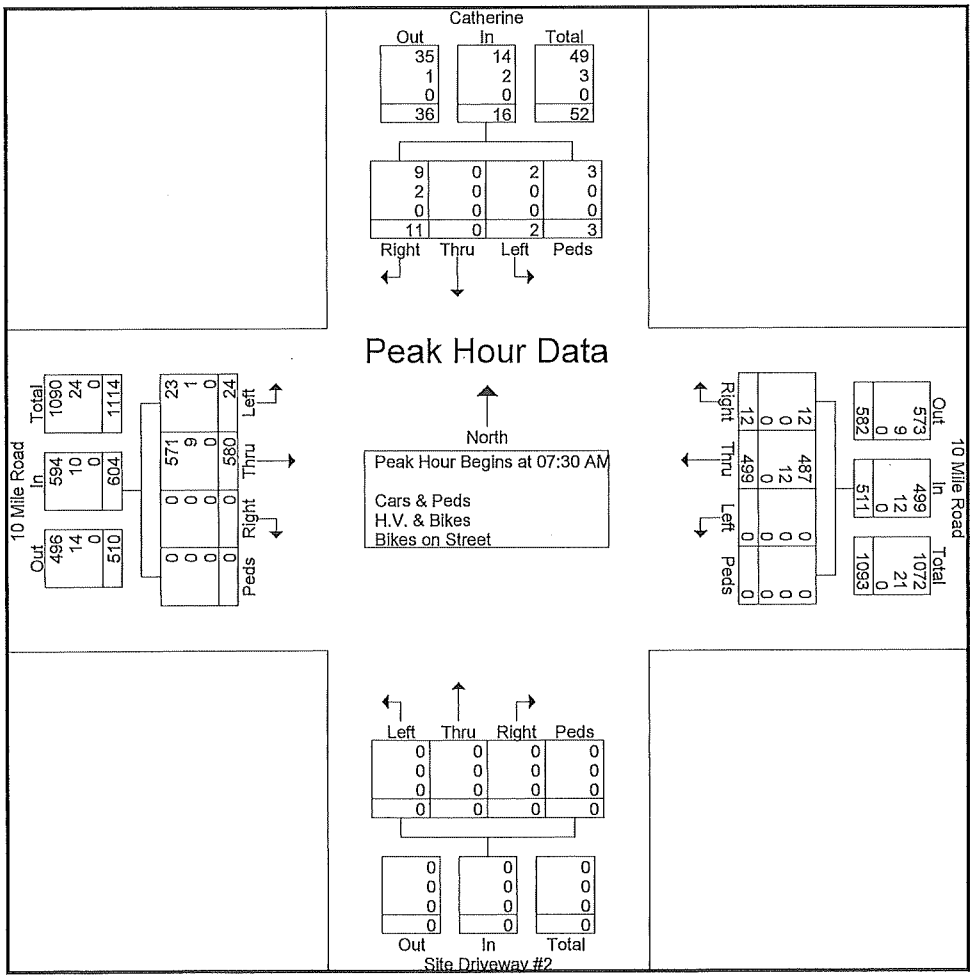
# Midwestern Consulting

3815 Plaza Drive
Ann Arbor, MI, 48108
(734) 995-0200

Intersection
E/W: 10 Mile Road
N/S: Catherine
Weather:

File Name : TMC_1003_10 Mile & Catherine_Mar-16-2022
Site Code : 1003
Start Date : 3/16/2022
Page No : 3

| | 10 Mile Road Eastbound | | | | | 10 Mile Road Westbound | | | | | Site Driveway #2 Northbound | | | | | Catherine Southbound | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | Left | Thru | Right | Peds | App. Total | Left | Thru | Right | Peds | App. Total | Left | Thru | Right | Peds | App. Total | Left | Thru | Right | Peds | App. Total | Int. Total |
| Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1 | | | | | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 07:30 AM | | | | | | | | | | | | | | | | | | | | | |
| 07:30 AM | 5 | 129 | 0 | 0 | 134 | 0 | 118 | 1 | 0 | 119 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 4 | 257 |
| 07:45 AM | 2 | 144 | 0 | 0 | 146 | 0 | 185 | 2 | 0 | 187 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 1 | 5 | 338 |
| 08:00 AM | 9 | 140 | 0 | 0 | 149 | 0 | 104 | 7 | 0 | 111 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 4 | 264 |
| 08:15 AM | 8 | 167 | 0 | 0 | 175 | 0 | 92 | 2 | 0 | 94 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 3 | 272 |
| Total Volume | 24 | 580 | 0 | 0 | 604 | 0 | 499 | 12 | 0 | 511 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 11 | 3 | 16 | 1131 |
| % App. Total | 4 | 96 | 0 | 0 | | 0 | 97.7 | 2.3 | 0 | | 0 | 0 | 0 | 0 | | 12.5 | 0 | 68.8 | 18.8 | | |
| PHF | .667 | .868 | .000 | .000 | .863 | .000 | .674 | .429 | .000 | .683 | .000 | .000 | .000 | .000 | .000 | .250 | .000 | .688 | .375 | .800 | .837 |
| Cars & Peds | 23 | 571 | 0 | 0 | 594 | 0 | 487 | 12 | 0 | 499 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 9 | 3 | 14 | 1107 |
| % Cars & Peds | 95.8 | 98.4 | 0 | 0 | 98.3 | 0 | 97.6 | 100 | 0 | 97.7 | 0 | 0 | 0 | 0 | 0 | 100 | 0 | 81.8 | 100 | 87.5 | 97.9 |
| H.V. & Bikes | 1 | 9 | 0 | 0 | 10 | 0 | 12 | 0 | 0 | 12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 24 |
| % H.V. & Bikes | 4.2 | 1.6 | 0 | 0 | 1.7 | 0 | 2.4 | 0 | 0 | 2.3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 18.2 | 0 | 12.5 | 2.1 |
| Bikes on Street | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| % Bikes on Street | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |



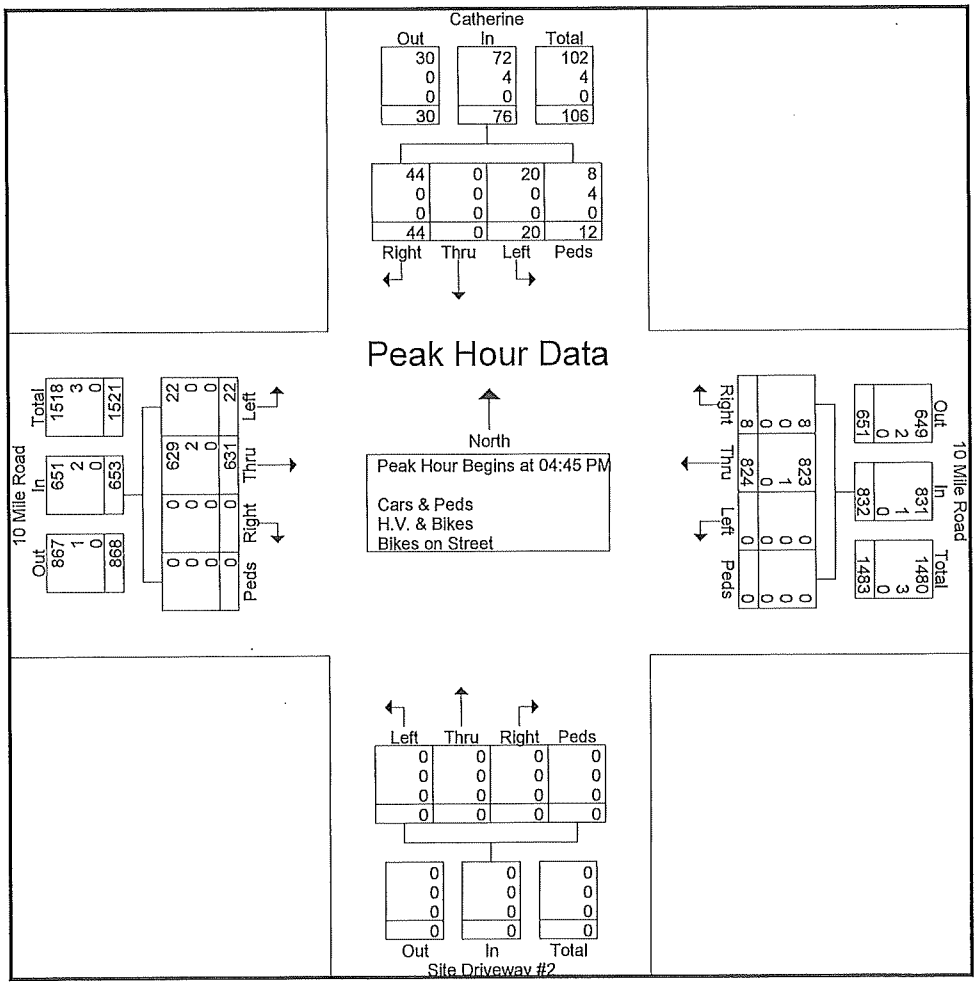
# Midwestern Consulting

3815 Plaza Drive
Ann Arbor, MI, 48108
(734) 995-0200

Intersection
E/W: 10 Mile Road
N/S: Catherine
Weather:

File Name : TMC_1003_10 Mile & Catherine_Mar-16-2022
Site Code : 1003
Start Date : 3/16/2022
Page No : 4

| | 10 Mile Road Eastbound | | | | | 10 Mile Road Westbound | | | | | Site Driveway #2 Northbound | | | | | Catherine Southbound | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | Left | Thru | Right | Peds | App. Total | Left | Thru | Right | Peds | App. Total | Left | Thru | Right | Peds | App. Total | Left | Thru | Right | Peds | App. Total | Int. Total |
| Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1 | | | | | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 04:45 PM | | | | | | | | | | | | | | | | | | | | | |
| 04:45 PM | 11 | 155 | 0 | 0 | 166 | 0 | 214 | 2 | 0 | 216 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 8 | 1 | 15 | 397 |
| 05:00 PM | 4 | 140 | 0 | 0 | 144 | 0 | 205 | 2 | 0 | 207 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 17 | 5 | 27 | 378 |
| 05:15 PM | 3 | 187 | 0 | 0 | 190 | 0 | 205 | 4 | 0 | 209 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 7 | 4 | 13 | 412 |
| 05:30 PM | 4 | 149 | 0 | 0 | 153 | 0 | 200 | 0 | 0 | 200 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 12 | 2 | 21 | 374 |
| Total Volume | 22 | 631 | 0 | 0 | 653 | 0 | 824 | 8 | 0 | 832 | 0 | 0 | 0 | 0 | 0 | 20 | 0 | 44 | 12 | 76 | 1561 |
| % App. Total | 3.4 | 96.6 | 0 | 0 | | 0 | 99 | 1 | 0 | | 0 | 0 | 0 | 0 | | 26.3 | 0 | 57.9 | 15.8 | | |
| PHF | .500 | .844 | .000 | .000 | .859 | .000 | .963 | .500 | .000 | .963 | .000 | .000 | .000 | .000 | .000 | .714 | .000 | .647 | .600 | .704 | .947 |
| Cars & Peds | 22 | 629 | 0 | 0 | 651 | 0 | 823 | 8 | 0 | 831 | 0 | 0 | 0 | 0 | 0 | 20 | 0 | 44 | 8 | 72 | 1554 |
| % Cars & Peds | 100 | 99.7 | 0 | 0 | 99.7 | 0 | 99.9 | 100 | 0 | 99.9 | 0 | 0 | 0 | 0 | 0 | 100 | 0 | 100 | 66.7 | 94.7 | 99.6 |
| H.V. & Bikes | 0 | 2 | 0 | 0 | 2 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 4 | 7 |
| % H.V. & Bikes | 0 | 0.3 | 0 | 0 | 0.3 | 0 | 0.1 | 0 | 0 | 0.1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 33.3 | 5.3 | 0.4 |
| Bikes on Street | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| % Bikes on Street | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |



# Midwestern Consulting

3815 Plaza Drive
Ann Arbor, MI, 48108
(734) 995-0200

Intersection
E/W: 10 Mile Road
N/S: 42900-42916 Driveways
Weather:

File Name : TMC_1004_10 Mile & DD_Mar-16-2022
Site Code : 1004
Start Date : 3/16/2022
Page No : 1

Groups Printed- Cars & Peds - H.V. & Bikes - Bikes on Street

| | 10 Mile Road Eastbound | | | | 10 Mile Road Westbound | | | | Site Driveway #3 Northbound | | | | 42900-42916 Driveways Southbound | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | Left | Thru | Right | Peds | Left | Thru | Right | Peds | Left | Thru | Right | Peds | Left | Thru | Right | Peds | Int. Total |
| *** BREAK *** | | | | | | | | | | | | | | | | | |
| 07:00 AM | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 |
| 07:15 AM | 1 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 2 | 9 |
| 07:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 4 |
| 07:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 1 | 4 |
| Total | 6 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 3 | 4 | 22 |
| 08:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| 08:15 AM | 1 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 7 |
| 08:30 AM | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 08:45 AM | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 2 |
| Total | 3 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 12 |
| *** BREAK *** | | | | | | | | | | | | | | | | | |
| 04:00 PM | 2 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 5 |
| 04:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 |
| 04:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 2 | 3 |
| 04:45 PM | 1 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 7 |
| Total | 3 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 6 | 3 | 17 |
| 05:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 5 | 4 | 10 |
| 05:15 PM | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 3 | 5 |
| 05:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 3 |
| 05:45 PM | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 3 |
| Total | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 7 | 11 | 21 |
| *** BREAK *** | | | | | | | | | | | | | | | | | |
| Grand Total | 14 | 0 | 0 | 0 | 0 | 0 | 15 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 21 | 18 | 72 |
| Apprch % | 100 | 0 | 0 | 0 | 0 | 0 | 100 | 0 | 0 | 0 | 0 | 0 | 9.3 | 0 | 48.8 | 41.9 | |
| Total % | 19.4 | 0 | 0 | 0 | 0 | 0 | 20.8 | 0 | 0 | 0 | 0 | 0 | 5.6 | 0 | 29.2 | 25 | |
| Cars & Peds | 13 | 0 | 0 | 0 | 0 | 0 | 15 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 21 | 11 | 64 |
| % Cars & Peds | 92.9 | 0 | 0 | 0 | 0 | 0 | 100 | 0 | 0 | 0 | 0 | 0 | 100 | 0 | 100 | 61.1 | 88.9 |
| H.V. & Bikes | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 8 |
| % H.V. & Bikes | 7.1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 38.9 | 11.1 |
| Bikes on Street | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| % Bikes on Street | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

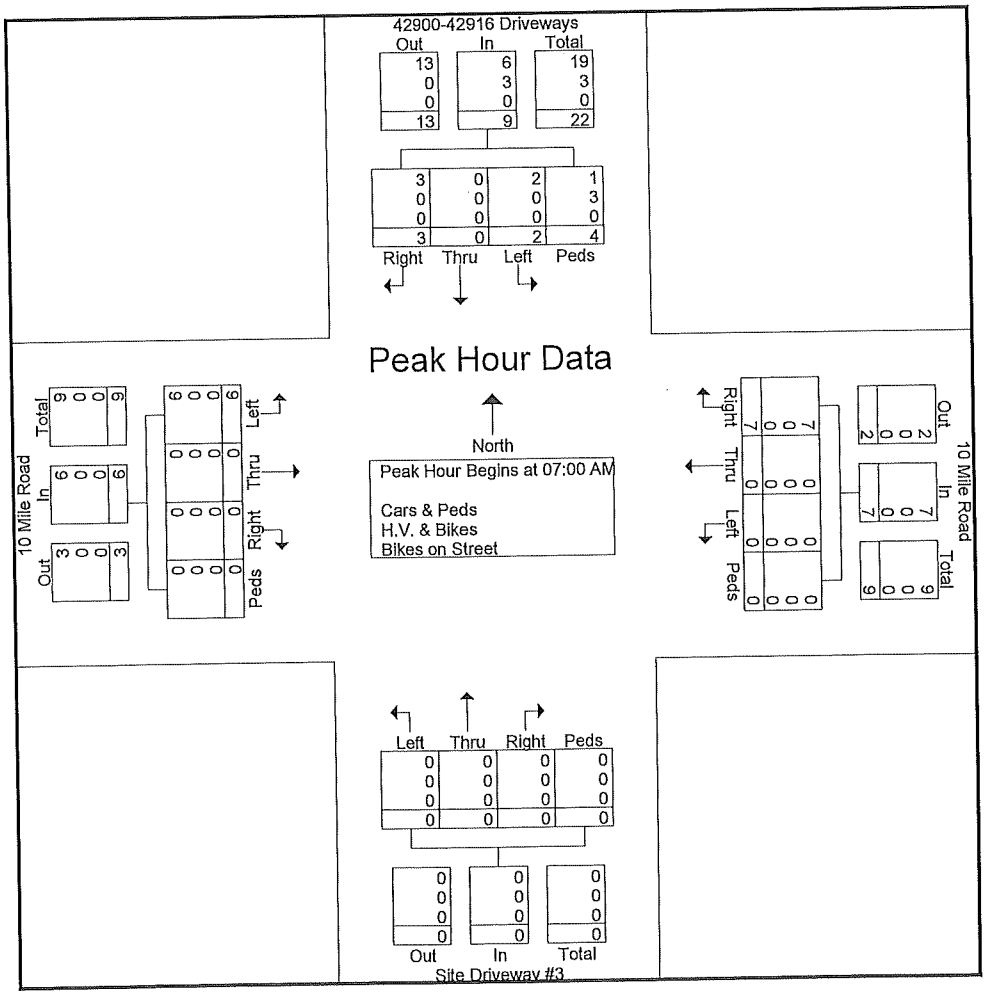
# Midwestern Consulting

3815 Plaza Drive
Ann Arbor, MI, 48108
(734) 995-0200

Intersection
E/W: 10 Mile Road
N/S: 42900-42916 Driveways
Weather:

File Name : TMC_1004_10 Mile & DD_Mar-16-2022
Site Code : 1004
Start Date : 3/16/2022
Page No : 2

| | 10 Mile Road Eastbound | | | | | 10 Mile Road Westbound | | | | | Site Driveway #3 Northbound | | | | | 42900-42916 Driveways Southbound | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | Left | Thru | Right | Peds | App. Total | Left | Thru | Right | Peds | App. Total | Left | Thru | Right | Peds | App. Total | Left | Thru | Right | Peds | App. Total | Int. Total |
| Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1 | | | | | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 07:00 AM | | | | | | | | | | | | | | | | | | | | | |
| 07:00 AM | 5 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 |
| 07:15 AM | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 4 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 2 | 4 | 9 |
| 07:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 4 |
| 07:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 1 | 4 | 4 |
| Total Volume | 6 | 0 | 0 | 0 | 6 | 0 | 0 | 7 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 3 | 4 | 9 | 22 |
| % App. Total | 100 | 0 | 0 | 0 | | 0 | 0 | 100 | 0 | | 0 | 0 | 0 | 0 | | 22.2 | 0 | 33.3 | 44.4 | | |
| PHF | .300 | .000 | .000 | .000 | .300 | .000 | .000 | .438 | .000 | .438 | .000 | .000 | .000 | .000 | .000 | .250 | .000 | .250 | .500 | .563 | .611 |
| Cars & Peds | 6 | 0 | 0 | 0 | 6 | 0 | 0 | 7 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 3 | 1 | 6 | 19 |
| % Cars & Peds | 100 | 0 | 0 | 0 | 100 | 0 | 0 | 100 | 0 | 100 | 0 | 0 | 0 | 0 | 0 | 100 | 0 | 100 | 25.0 | 66.7 | 86.4 |
| H.V. & Bikes | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 3 | 3 |
| % H.V. & Bikes | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 75.0 | 33.3 | 13.6 |
| Bikes on Street | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| % Bikes on Street | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |



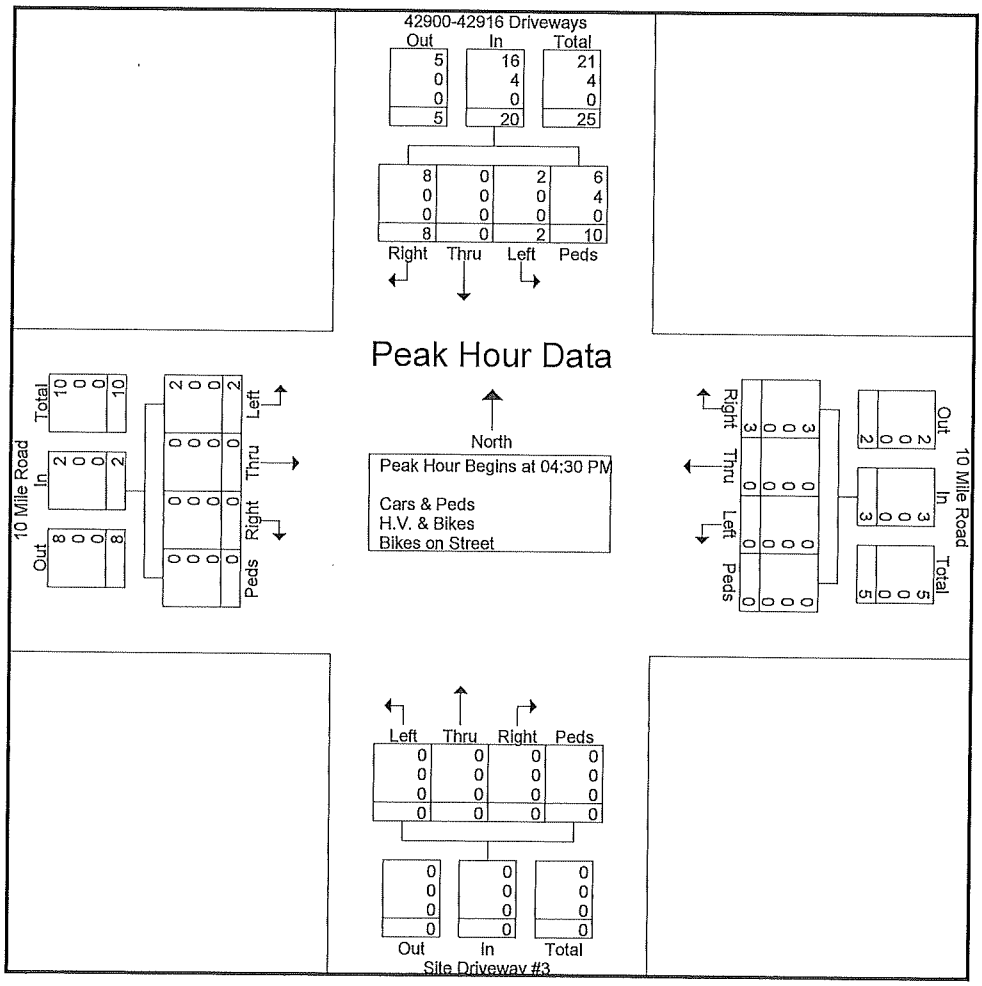
# Midwestern Consulting

3815 Plaza Drive
Ann Arbor, MI, 48108
(734) 995-0200

Intersection
E/W: 10 Mile Road
N/S: 42900-42916 Driveways
Weather:

File Name : TMC_1004_10 Mile & DD_Mar-16-2022
Site Code : 1004
Start Date : 3/16/2022
Page No : 3

| | 10 Mile Road Eastbound | | | | | 10 Mile Road Westbound | | | | | Site Driveway #3 Northbound | | | | | 42900-42916 Driveways Southbound | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | Left | Thru | Right | Peds | App. Total | Left | Thru | Right | Peds | App. Total | Left | Thru | Right | Peds | App. Total | Left | Thru | Right | Peds | App. Total | Int. Total |
| Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1 | | | | | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 04:30 PM | | | | | | | | | | | | | | | | | | | | | |
| 04:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 2 | 3 | 3 |
| 04:45 PM | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 3 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 3 | 7 |
| 05:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 5 | 4 | 10 | 10 |
| 05:15 PM | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 3 | 4 | 5 |
| Total Volume | 2 | 0 | 0 | 0 | 2 | 0 | 0 | 3 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 8 | 10 | 20 | 25 |
| % App. Total | 100 | 0 | 0 | 0 | | 0 | 0 | 100 | 0 | | 0 | 0 | 0 | 0 | | 10 | 0 | 40 | 50 | | |
| PHF | .500 | .000 | .000 | .000 | .500 | .000 | .000 | .250 | .000 | .250 | .000 | .000 | .000 | .000 | .000 | .500 | .000 | .400 | .625 | .500 | .625 |
| Cars & Peds | 2 | 0 | 0 | 0 | 2 | 0 | 0 | 3 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 8 | 6 | 16 | 21 |
| % Cars & Peds | 100 | 0 | 0 | 0 | 100 | 0 | 0 | 100 | 0 | 100 | 0 | 0 | 0 | 0 | 0 | 100 | 0 | 100 | 60.0 | 80.0 | 84.0 |
| H.V. & Bikes | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 4 | 4 |
| % H.V. & Bikes | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 40.0 | 20.0 | 16.0 |
| Bikes on Street | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| % Bikes on Street | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |



# Midwestern Consulting

3815 Plaza Drive
Ann Arbor, MI, 48108
(734) 995-0200

Intersection
E/W: 10 Mile Road
N/S: Tremar
Weather:

File Name : TMC_1006_10 Mile & Tremar_Mar-16-2022
Site Code : 1006
Start Date : 3/16/2022
Page No : 1

Groups Printed- Cars & Peds - H.V. & Bikes - Bikes on Street

| | 10 Mile Road Eastbound | | | | 10 Mile Road Westbound | | | | None Northbound | | | | Tremar Driveway Southbound | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | Left | Thru | Right | Peds | Left | Thru | Right | Peds | Left | Thru | Right | Peds | Left | Thru | Right | Peds | Int. Total |
| *** BREAK *** | | | | | | | | | | | | | | | | | |
| 06:00 AM | 0 | 35 | 0 | 0 | 0 | 34 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 69 |
| 06:15 AM | 0 | 31 | 0 | 0 | 0 | 28 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 59 |
| 06:30 AM | 0 | 58 | 0 | 0 | 0 | 47 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 105 |
| 06:45 AM | 0 | 70 | 0 | 0 | 0 | 67 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 137 |
| Total | 0 | 194 | 0 | 0 | 0 | 176 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 370 |
| 07:00 AM | 0 | 79 | 0 | 0 | 0 | 81 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 160 |
| 07:15 AM | 0 | 120 | 0 | 0 | 0 | 73 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 195 |
| 07:30 AM | 1 | 122 | 0 | 0 | 0 | 120 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 248 |
| 07:45 AM | 0 | 151 | 0 | 0 | 0 | 189 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 341 |
| Total | 1 | 472 | 0 | 0 | 0 | 463 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 944 |
| 08:00 AM | 0 | 135 | 0 | 0 | 0 | 111 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 247 |
| 08:15 AM | 1 | 169 | 0 | 0 | 0 | 88 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 259 |
| 08:30 AM | 1 | 143 | 0 | 0 | 0 | 85 | 2 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 2 | 234 |
| 08:45 AM | 0 | 210 | 0 | 0 | 0 | 110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 320 |
| Total | 2 | 657 | 0 | 0 | 0 | 394 | 3 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 2 | 1060 |
| 09:00 AM | 1 | 127 | 0 | 0 | 0 | 115 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 245 |
| 09:15 AM | 0 | 128 | 0 | 0 | 0 | 89 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 217 |
| 09:30 AM | 2 | 108 | 0 | 0 | 0 | 96 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 206 |
| 09:45 AM | 1 | 116 | 0 | 0 | 0 | 109 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 229 |
| Total | 4 | 479 | 0 | 0 | 0 | 409 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 2 | 2 | 897 |
| 10:00 AM | 0 | 83 | 0 | 0 | 0 | 98 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 183 |
| 10:15 AM | 0 | 90 | 0 | 0 | 0 | 111 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 203 |
| 10:30 AM | 0 | 95 | 0 | 0 | 0 | 92 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 188 |
| 10:45 AM | 0 | 97 | 0 | 0 | 0 | 92 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 190 |
| Total | 0 | 365 | 0 | 0 | 0 | 393 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 4 | 764 |
| 11:00 AM | 0 | 86 | 0 | 0 | 0 | 110 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 200 |
| 11:15 AM | 0 | 114 | 0 | 0 | 0 | 105 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 220 |
| 11:30 AM | 0 | 110 | 0 | 0 | 0 | 101 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 213 |
| 11:45 AM | 1 | 130 | 0 | 0 | 0 | 136 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 268 |
| Total | 1 | 440 | 0 | 0 | 0 | 452 | 3 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 3 | 1 | 901 |
| 12:00 PM | 0 | 111 | 0 | 0 | 0 | 135 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 248 |
| 12:15 PM | 0 | 104 | 0 | 0 | 0 | 131 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 235 |
| 12:30 PM | 0 | 124 | 0 | 0 | 0 | 133 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 258 |
| 12:45 PM | 1 | 130 | 0 | 0 | 0 | 147 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 2 | 281 |
| Total | 1 | 469 | 0 | 0 | 0 | 546 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 3 | 1022 |
| 01:00 PM | 1 | 107 | 0 | 0 | 0 | 121 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 230 |
| 01:15 PM | 0 | 120 | 0 | 0 | 0 | 123 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 245 |
| 01:30 PM | 0 | 93 | 0 | 0 | 0 | 122 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 215 |
| 01:45 PM | 0 | 100 | 0 | 0 | 0 | 129 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 3 | 234 |
| Total | 1 | 420 | 0 | 0 | 0 | 495 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 4 | 924 |
| 02:00 PM | 0 | 119 | 0 | 0 | 0 | 126 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 245 |
| 02:15 PM | 1 | 124 | 0 | 0 | 0 | 121 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 2 | 249 |
| 02:30 PM | 0 | 155 | 0 | 0 | 0 | 153 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 309 |
| 02:45 PM | 2 | 137 | 0 | 0 | 0 | 122 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 2 | 265 |
| Total | 3 | 535 | 0 | 0 | 0 | 522 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 1 | 5 | 1068 |
| 03:00 PM | 0 | 163 | 0 | 0 | 0 | 163 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 326 |
| 03:15 PM | 0 | 158 | 0 | 0 | 0 | 148 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 309 |
| 03:30 PM | 1 | 137 | 0 | 0 | 0 | 153 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 294 |

# Midwestern Consulting

3815 Plaza Drive
Ann Arbor, MI, 48108
(734) 995-0200

Intersection
E/W: 10 Mile Road
N/S: Tremar
Weather:

File Name : TMC_1006_10 Mile & Tremar_Mar-16-2022
Site Code : 1006
Start Date : 3/16/2022
Page No : 2

Groups Printed- Cars & Peds - H.V. & Bikes - Bikes on Street

| | 10 Mile Road Eastbound | | | | 10 Mile Road Westbound | | | | None Northbound | | | | Tremar Driveway Southbound | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | Left | Thru | Right | Peds | Left | Thru | Right | Peds | Left | Thru | Right | Peds | Left | Thru | Right | Peds | Int. Total |
| 03:45 PM | 0 | 121 | 0 | 0 | 0 | 153 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 279 |
| Total | 1 | 579 | 0 | 0 | 0 | 617 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 8 | 1208 |
| 04:00 PM | 1 | 129 | 0 | 0 | 0 | 166 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 299 |
| 04:15 PM | 0 | 131 | 0 | 0 | 0 | 155 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 288 |
| 04:30 PM | 1 | 122 | 0 | 0 | 0 | 211 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 1 | 1 | 339 |
| 04:45 PM | 0 | 164 | 0 | 0 | 0 | 213 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 379 |
| Total | 2 | 546 | 0 | 0 | 0 | 745 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 2 | 6 | 1305 |
| 05:00 PM | 0 | 142 | 0 | 0 | 0 | 201 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 2 | 347 |
| 05:15 PM | 0 | 194 | 0 | 0 | 0 | 206 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 4 | 405 |
| 05:30 PM | 0 | 150 | 0 | 0 | 0 | 201 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 354 |
| 05:45 PM | 0 | 143 | 0 | 0 | 0 | 179 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 2 | 325 |
| Total | 0 | 629 | 0 | 0 | 0 | 787 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 3 | 10 | 1431 |
| 06:00 PM | 0 | 142 | 0 | 0 | 0 | 163 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 311 |
| 06:15 PM | 0 | 137 | 0 | 0 | 0 | 142 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 279 |
| 06:30 PM | 0 | 127 | 0 | 0 | 0 | 138 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 267 |
| 06:45 PM | 0 | 115 | 0 | 0 | 0 | 172 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 287 |
| Total | 0 | 521 | 0 | 0 | 0 | 615 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 1144 |
| *** BREAK *** | | | | | | | | | | | | | | | | | |
| Grand Total | 16 | 6306 | 0 | 0 | 0 | 6614 | 15 | 0 | 0 | 0 | 0 | 0 | 13 | 0 | 19 | 55 | 13038 |
| Apprch % | 0.3 | 99.7 | 0 | 0 | 0 | 99.8 | 0.2 | 0 | 0 | 0 | 0 | 0 | 14.9 | 0 | 21.8 | 63.2 | |
| Total % | 0.1 | 48.4 | 0 | 0 | 0 | 50.7 | 0.1 | 0 | 0 | 0 | 0 | 0 | 0.1 | 0 | 0.1 | 0.4 | |
| Cars & Peds | 15 | 6221 | 0 | 0 | 0 | 6513 | 14 | 0 | 0 | 0 | 0 | 0 | 13 | 0 | 16 | 39 | 12831 |
| % Cars & Peds | 93.8 | 98.7 | 0 | 0 | 0 | 98.5 | 93.3 | 0 | 0 | 0 | 0 | 0 | 100 | 0 | 84.2 | 70.9 | 98.4 |
| H.V. & Bikes | 1 | 85 | 0 | 0 | 0 | 100 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 16 | 206 |
| % H.V. & Bikes | 6.2 | 1.3 | 0 | 0 | 0 | 1.5 | 6.7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 15.8 | 29.1 | 1.6 |
| Bikes on Street | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| % Bikes on Street | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

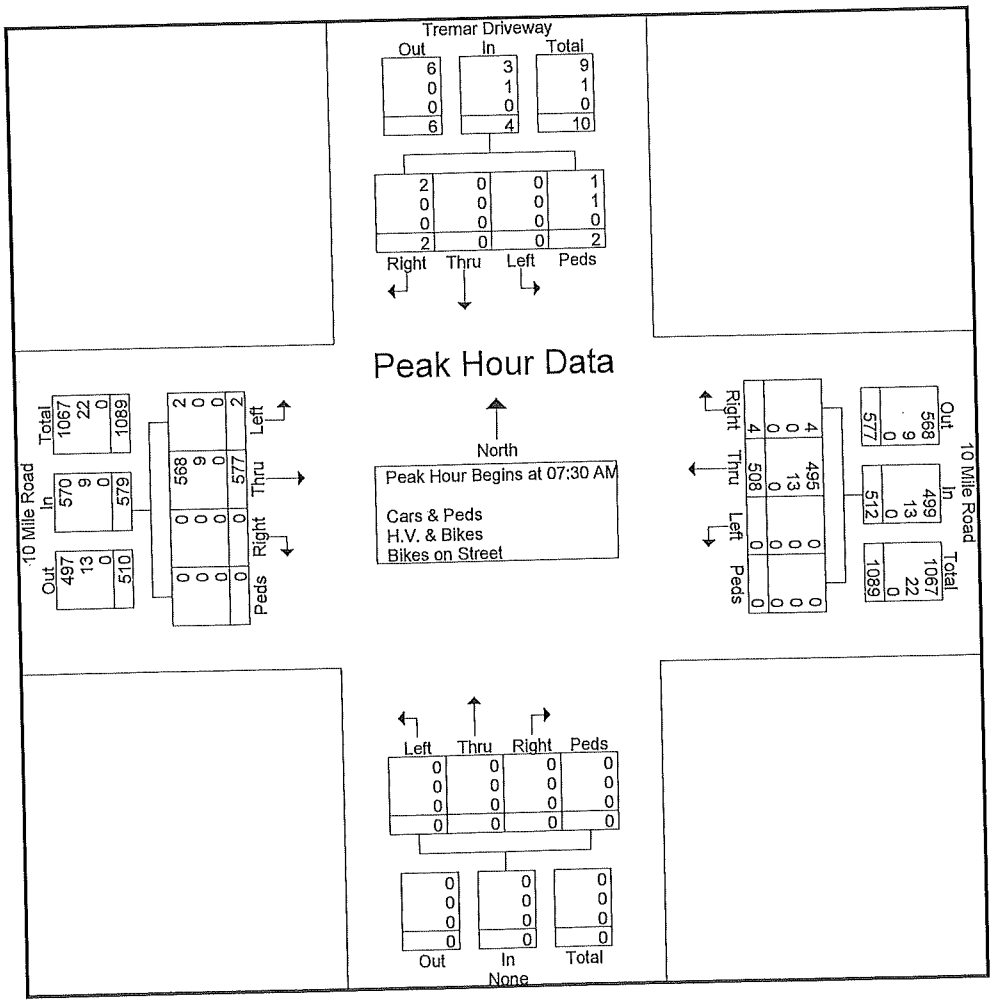
# Midwestern Consulting

3815 Plaza Drive
Ann Arbor, MI, 48108
(734) 995-0200

Intersection
E/W: 10 Mile Road
N/S: Tremar
Weather:

File Name : TMC_1006_10 Mile & Tremar_Mar-16-2022
Site Code : 1006
Start Date : 3/16/2022
Page No : 3

| | 10 Mile Road Eastbound | | | | | 10 Mile Road Westbound | | | | | None Northbound | | | | | Tremar Driveway Southbound | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | Left | Thru | Right | Peds | App. Total | Left | Thru | Right | Peds | App. Total | Left | Thru | Right | Peds | App. Total | Left | Thru | Right | Peds | App. Total | Int. Total |
| Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1 | | | | | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 07:30 AM | | | | | | | | | | | | | | | | | | | | | |
| 07:30 AM | 1 | 122 | 0 | 0 | 123 | 0 | 120 | 3 | 0 | 123 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 2 | 248 |
| 07:45 AM | 0 | 151 | 0 | 0 | 151 | 0 | 189 | 0 | 0 | 189 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 341 |
| 08:00 AM | 0 | 135 | 0 | 0 | 135 | 0 | 111 | 1 | 0 | 112 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 247 |
| 08:15 AM | 1 | 169 | 0 | 0 | 170 | 0 | 88 | 0 | 0 | 88 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 259 |
| Total Volume | 2 | 577 | 0 | 0 | 579 | 0 | 508 | 4 | 0 | 512 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 4 | 1095 |
| % App. Total | 0.3 | 99.7 | 0 | 0 | | 0 | 99.2 | 0.8 | 0 | | 0 | 0 | 0 | 0 | | 0 | 0 | 50 | 50 | | |
| PHF | .500 | .854 | .000 | .000 | .851 | .000 | .672 | .333 | .000 | .677 | .000 | .000 | .000 | .000 | .000 | .000 | .000 | .500 | .500 | .500 | .803 |
| Cars & Peds | 2 | 568 | 0 | 0 | 570 | 0 | 495 | 4 | 0 | 499 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 3 | 1072 |
| % Cars & Peds | 100 | 98.4 | 0 | 0 | 98.4 | 0 | 97.4 | 100 | 0 | 97.5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 100 | 50.0 | 75.0 | 97.9 |
| H.V. & Bikes | 0 | 9 | 0 | 0 | 9 | 0 | 13 | 0 | 0 | 13 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 23 |
| % H.V. & Bikes | 0 | 1.6 | 0 | 0 | 1.6 | 0 | 2.6 | 0 | 0 | 2.5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 50.0 | 25.0 | 2.1 |
| Bikes on Street | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| % Bikes on Street | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |



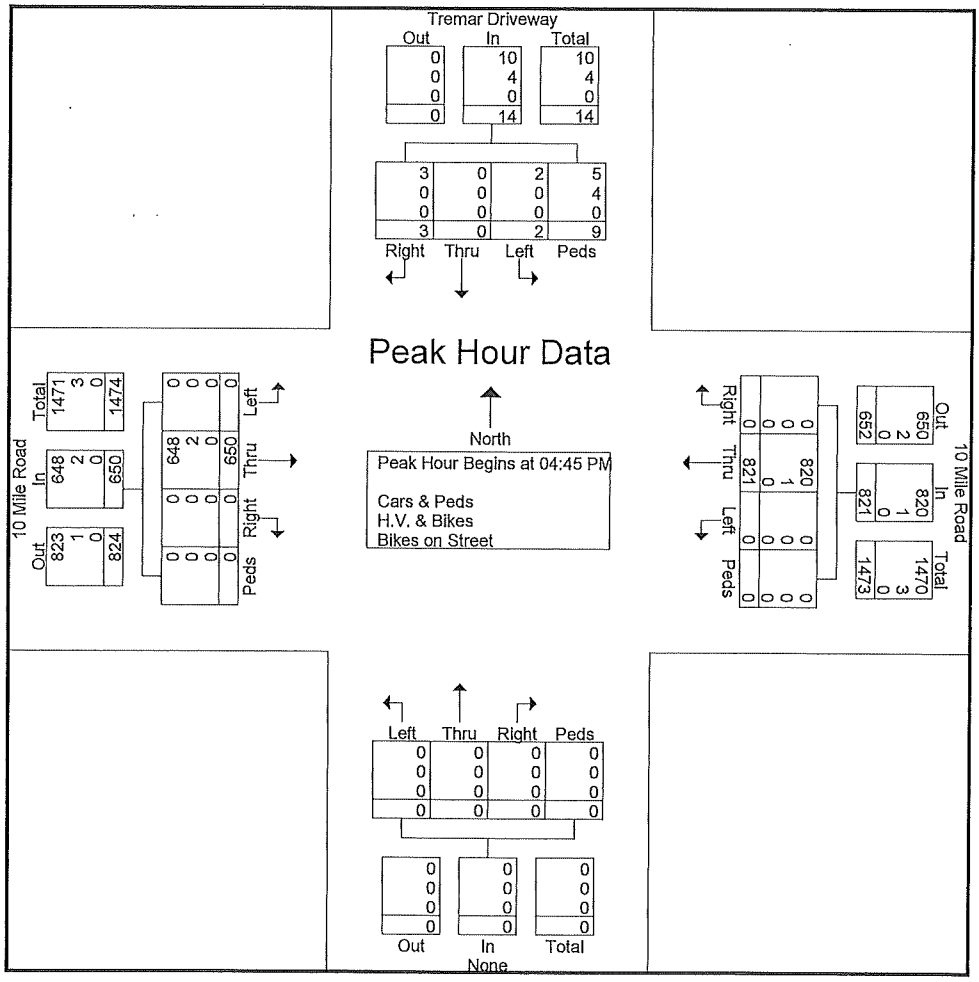
# Midwestern Consulting

3815 Plaza Drive
Ann Arbor, MI, 48108
(734) 995-0200

Intersection
E/W: 10 Mile Road
N/S: Tremar
Weather:

File Name : TMC_1006_10 Mile & Tremar_Mar-16-2022
Site Code : 1006
Start Date : 3/16/2022
Page No : 4

| | 10 Mile Road Eastbound | | | | | 10 Mile Road Westbound | | | | | None Northbound | | | | | Tremar Driveway Southbound | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | Left | Thru | Right | Peds | App. Total | Left | Thru | Right | Peds | App. Total | Left | Thru | Right | Peds | App. Total | Left | Thru | Right | Peds | App. Total | Int. Total |
| Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1 | | | | | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 04:45 PM | | | | | | | | | | | | | | | | | | | | | |
| 04:45 PM | 0 | 164 | 0 | 0 | 164 | 0 | 213 | 0 | 0 | 213 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 2 | 379 |
| 05:00 PM | 0 | 142 | 0 | 0 | 142 | 0 | 201 | 0 | 0 | 201 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 2 | 4 | 347 |
| 05:15 PM | 0 | 194 | 0 | 0 | 194 | 0 | 206 | 0 | 0 | 206 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 4 | 5 | 405 |
| 05:30 PM | 0 | 150 | 0 | 0 | 150 | 0 | 201 | 0 | 0 | 201 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 3 | 354 |
| Total Volume | 0 | 650 | 0 | 0 | 650 | 0 | 821 | 0 | 0 | 821 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 3 | 9 | 14 | 1485 |
| % App. Total | 0 | 100 | 0 | 0 | | 0 | 100 | 0 | 0 | | 0 | 0 | 0 | 0 | | 14.3 | 0 | 21.4 | 64.3 | | |
| PHF | .000 | .838 | .000 | .000 | .838 | .000 | .964 | .000 | .000 | .964 | .000 | .000 | .000 | .000 | .000 | .500 | .000 | .750 | .563 | .700 | .917 |
| Cars & Peds | 0 | 648 | 0 | 0 | 648 | 0 | 820 | 0 | 0 | 820 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 3 | 5 | 10 | 1478 |
| % Cars & Peds | 0 | 99.7 | 0 | 0 | 99.7 | 0 | 99.9 | 0 | 0 | 99.9 | 0 | 0 | 0 | 0 | 0 | 100 | 0 | 100 | 55.6 | 71.4 | 99.5 |
| H.V. & Bikes | 0 | 2 | 0 | 0 | 2 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 4 | 7 |
| % H.V. & Bikes | 0 | 0.3 | 0 | 0 | 0.3 | 0 | 0.1 | 0 | 0 | 0.1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 44.4 | 28.6 | 0.5 |
| Bikes on Street | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| % Bikes on Street | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |



# Midwestern Consulting

3815 Plaza Drive
Ann Arbor, MI, 48108
(734) 995-0200

Intersection
E/W: 10 Mile Road
N/S: Wrenchers Driveway
Weather:

File Name : TMC_1008_10 Mile & Wrenchers_Mar-16-2022
Site Code : 1008
Start Date : 3/16/2022
Page No : 1

Groups Printed- Cars & Peds - H.V. & Bikes - Bikes on Street

| | 10 Mile Road Eastbound | | | | 10 Mile Road Westbound | | | | None Northbound | | | | Wrenchers Driveway Southbound | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | Left | Thru | Right | Peds | Left | Thru | Right | Peds | Left | Thru | Right | Peds | Left | Thru | Right | Peds | Int. Total |
| *** BREAK *** | | | | | | | | | | | | | | | | | |
| 06:00 AM | 0 | 35 | 0 | 0 | 0 | 34 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 69 |
| 06:15 AM | 0 | 31 | 0 | 0 | 0 | 28 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 59 |
| 06:30 AM | 1 | 57 | 0 | 0 | 0 | 47 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 105 |
| 06:45 AM | 0 | 70 | 0 | 0 | 0 | 68 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 138 |
| Total | 1 | 193 | 0 | 0 | 0 | 177 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 371 |
| 07:00 AM | 0 | 78 | 0 | 0 | 0 | 82 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 160 |
| 07:15 AM | 0 | 119 | 0 | 0 | 0 | 74 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 193 |
| 07:30 AM | 0 | 121 | 0 | 0 | 0 | 123 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 247 |
| 07:45 AM | 0 | 151 | 0 | 0 | 0 | 186 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 341 |
| Total | 0 | 469 | 0 | 0 | 0 | 465 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 941 |
| 08:00 AM | 2 | 133 | 0 | 0 | 0 | 111 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 250 |
| 08:15 AM | 0 | 169 | 0 | 0 | 0 | 88 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 257 |
| 08:30 AM | 0 | 145 | 0 | 0 | 0 | 88 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 236 |
| 08:45 AM | 0 | 210 | 0 | 0 | 0 | 109 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 319 |
| Total | 2 | 657 | 0 | 0 | 0 | 396 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 1062 |
| 09:00 AM | 2 | 125 | 0 | 0 | 0 | 115 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 243 |
| 09:15 AM | 0 | 127 | 0 | 0 | 0 | 89 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 216 |
| 09:30 AM | 0 | 107 | 0 | 0 | 0 | 95 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 203 |
| 09:45 AM | 0 | 117 | 0 | 0 | 0 | 108 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 228 |
| Total | 2 | 476 | 0 | 0 | 0 | 407 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 2 | 890 |
| 10:00 AM | 0 | 82 | 0 | 0 | 0 | 98 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 180 |
| 10:15 AM | 1 | 90 | 0 | 0 | 0 | 112 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 206 |
| 10:30 AM | 0 | 95 | 0 | 0 | 0 | 92 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 188 |
| 10:45 AM | 0 | 97 | 0 | 0 | 0 | 93 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 191 |
| Total | 1 | 364 | 0 | 0 | 0 | 395 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 765 |
| 11:00 AM | 0 | 85 | 0 | 0 | 0 | 108 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 196 |
| 11:15 AM | 0 | 116 | 0 | 0 | 0 | 104 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 221 |
| 11:30 AM | 0 | 108 | 0 | 0 | 0 | 104 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 214 |
| 11:45 AM | 0 | 132 | 0 | 0 | 0 | 135 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 267 |
| Total | 0 | 441 | 0 | 0 | 0 | 451 | 2 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 3 | 0 | 898 |
| 12:00 PM | 0 | 112 | 0 | 0 | 0 | 135 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 3 | 1 | 252 |
| 12:15 PM | 0 | 104 | 0 | 0 | 0 | 129 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 234 |
| 12:30 PM | 0 | 122 | 0 | 0 | 0 | 132 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 256 |
| 12:45 PM | 1 | 131 | 0 | 0 | 0 | 146 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 2 | 281 |
| Total | 1 | 469 | 0 | 0 | 0 | 542 | 1 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 5 | 3 | 1023 |
| 01:00 PM | 0 | 107 | 0 | 0 | 0 | 125 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 233 |
| 01:15 PM | 2 | 118 | 0 | 0 | 0 | 125 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 247 |
| 01:30 PM | 0 | 90 | 0 | 0 | 0 | 123 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 214 |
| 01:45 PM | 0 | 103 | 0 | 0 | 0 | 128 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 234 |
| Total | 2 | 418 | 0 | 0 | 0 | 501 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 4 | 928 |
| 02:00 PM | 1 | 116 | 0 | 0 | 0 | 126 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 243 |
| 02:15 PM | 0 | 128 | 0 | 0 | 0 | 121 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 3 | 254 |
| 02:30 PM | 0 | 155 | 0 | 0 | 0 | 154 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 310 |
| 02:45 PM | 3 | 130 | 0 | 0 | 0 | 122 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 3 | 259 |
| Total | 4 | 529 | 0 | 0 | 0 | 523 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 7 | 1066 |
| 03:00 PM | 1 | 164 | 0 | 0 | 0 | 163 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 328 |
| 03:15 PM | 0 | 162 | 0 | 0 | 0 | 149 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 313 |
| 03:30 PM | 0 | 137 | 0 | 0 | 0 | 155 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 293 |

# Midwestern Consulting

3815 Plaza Drive
Ann Arbor, MI, 48108
(734) 995-0200

Intersection
E/W: 10 Mile Road
N/S: Wrenchers Driveway
Weather:

File Name : TMC_1008_10 Mile & Wrenchers_Mar-16-2022
Site Code : 1008
Start Date : 3/16/2022
Page No : 2

Groups Printed- Cars & Peds - H.V. & Bikes - Bikes on Street

| | 10 Mile Road Eastbound | | | | 10 Mile Road Westbound | | | | None Northbound | | | | Wrenchers Driveway Southbound | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | Left | Thru | Right | Peds | Left | Thru | Right | Peds | Left | Thru | Right | Peds | Left | Thru | Right | Peds | Int. Total |
| 03:45 PM | 0 | 122 | 0 | 0 | 0 | 153 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 280 |
| Total | 1 | 585 | 0 | 0 | 0 | 620 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 7 | 1214 |
| 04:00 PM | 1 | 126 | 0 | 0 | 0 | 164 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 3 | 296 |
| 04:15 PM | 0 | 131 | 0 | 0 | 0 | 155 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 287 |
| 04:30 PM | 0 | 124 | 0 | 0 | 0 | 212 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 339 |
| 04:45 PM | 0 | 167 | 0 | 0 | 0 | 213 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 381 |
| Total | 1 | 548 | 0 | 0 | 0 | 744 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 8 | 1303 |
| 05:00 PM | 0 | 141 | 0 | 0 | 0 | 200 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 5 | 347 |
| 05:15 PM | 0 | 195 | 0 | 0 | 0 | 205 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 2 | 4 | 407 |
| 05:30 PM | 0 | 148 | 0 | 0 | 0 | 204 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 354 |
| 05:45 PM | 0 | 145 | 0 | 0 | 0 | 177 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 324 |
| Total | 0 | 629 | 0 | 0 | 0 | 786 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 3 | 13 | 1432 |
| 06:00 PM | 0 | 139 | 0 | 0 | 0 | 164 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 8 | 313 |
| 06:15 PM | 0 | 139 | 0 | 0 | 0 | 140 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 282 |
| 06:30 PM | 0 | 127 | 0 | 0 | 0 | 139 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 266 |
| 06:45 PM | 0 | 114 | 0 | 0 | 0 | 172 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 287 |
| Total | 0 | 519 | 0 | 0 | 0 | 615 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 3 | 10 | 1148 |
| *** BREAK *** | | | | | | | | | | | | | | | | | |
| Grand Total | 15 | 6297 | 0 | 0 | 0 | 6622 | 13 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 26 | 62 | 13041 |
| Apprch % | 0.2 | 99.8 | 0 | 0 | 0 | 99.8 | 0.2 | 0 | 0 | 0 | 0 | 0 | 6.4 | 0 | 27.7 | 66 | |
| Total % | 0.1 | 48.3 | 0 | 0 | 0 | 50.8 | 0.1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.2 | 0.5 | |
| Cars & Peds | 14 | 6210 | 0 | 0 | 0 | 6524 | 12 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 22 | 46 | 12834 |
| % Cars & Peds | 93.3 | 98.6 | 0 | 0 | 0 | 98.5 | 92.3 | 0 | 0 | 0 | 0 | 0 | 100 | 0 | 84.6 | 74.2 | 98.4 |
| H.V. & Bikes | 1 | 86 | 0 | 0 | 0 | 97 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 16 | 205 |
| % H.V. & Bikes | 6.7 | 1.4 | 0 | 0 | 0 | 1.5 | 7.7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 15.4 | 25.8 | 1.6 |
| Bikes on Street | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| % Bikes on Street | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Midwestern Consulting

3815 Plaza Drive
Ann Arbor, MI, 48108
(734) 995-0200

Intersection
E/W: 10 Mile Road
N/S: Wrenchers Driveway
Weather:

File Name : TMC_1008_10 Mile & Wrenchers_Mar-16-2022
Site Code : 1008
Start Date : 3/16/2022


| | 10 Mile Road Eastbound | | | | | 10 Mile Road Westbound | | | | | None Northbound | | | | | Wrenchers Driveway Southbound | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | Left | Thru | Right | Peds | App. Total | Left | Thru | Right | Peds | App. Total | Left | Thru | Right | Peds | App. Total | Left | Thru | Right | Peds | App. Total | Int. Total |
| Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1 | | | | | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 07:30 AM | | | | | | | | | | | | | | | | | | | | | |
| 07:30 AM | 0 | 121 | 0 | 0 | 121 | 0 | 123 | 2 | 0 | 125 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 247 |
| 07:45 AM | 0 | 151 | 0 | 0 | 151 | 0 | 186 | 2 | 0 | 188 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 2 | 341 |
| 08:00 AM | 2 | 133 | 0 | 0 | 135 | 0 | 111 | 3 | 0 | 114 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 250 |
| 08:15 AM | 0 | 169 | 0 | 0 | 169 | 0 | 88 | 0 | 0 | 88 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 257 |
| Total Volume | 2 | 574 | 0 | 0 | 576 | 0 | 508 | 7 | 0 | 515 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 4 | 1095 |
| % App. Total | 0.3 | 99.7 | 0 | 0 | | 0 | 98.6 | 1.4 | 0 | | 0 | 0 | 0 | 0 | | 0 | 0 | 50 | 50 | | |
| PHF | .250 | .849 | .000 | .000 | .852 | .000 | .683 | .583 | .000 | .685 | .000 | .000 | .000 | .000 | .000 | .000 | .000 | .500 | .500 | .500 | .803 |
| Cars & Peds | 2 | 564 | 0 | 0 | 566 | 0 | 496 | 6 | 0 | 502 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 2 | 1070 |
| % Cars & Peds | 100 | 98.3 | 0 | 0 | 98.3 | 0 | 97.6 | 85.7 | 0 | 97.5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 50.0 | 50.0 | 50.0 | 97.7 |
| H.V. & Bikes | 0 | 9 | 0 | 0 | 9 | 0 | 12 | 1 | 0 | 13 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 2 | 24 |
| % H.V. & Bikes | 0 | 1.6 | 0 | 0 | 1.6 | 0 | 2.4 | 14.3 | 0 | 2.5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 50.0 | 50.0 | 50.0 | 2.2 |
| Bikes on Street | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| % Bikes on Street | 0 | 0.2 | 0 | 0 | 0.2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.1 |

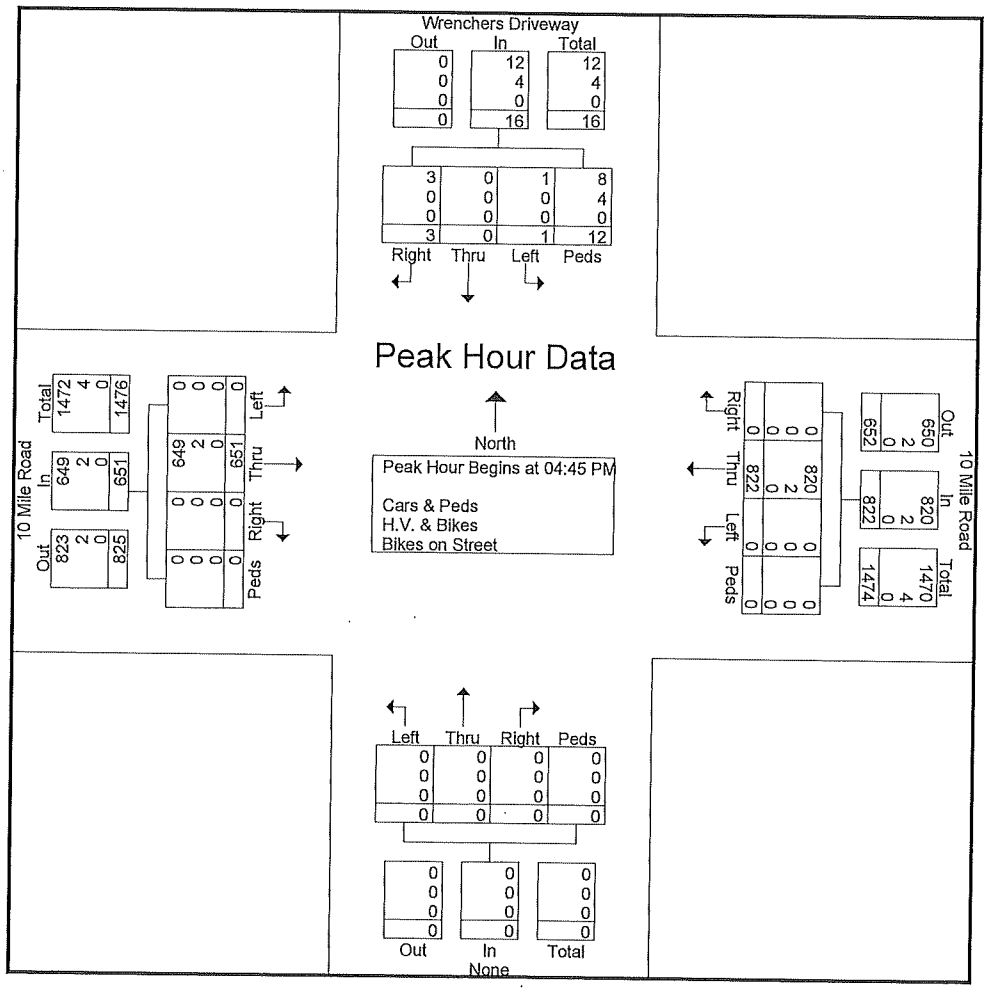
# Midwestern Consulting

3815 Plaza Drive
Ann Arbor, MI, 48108
(734) 995-0200

Intersection
E/W: 10 Mile Road
N/S: Wrenchers Driveway
Weather:

File Name : TMC_1008_10 Mile & Wrenchers_Mar-16-2022
Site Code : 1008
Start Date : 3/16/2022
Page No : 4

| | 10 Mile Road Eastbound | | | | | 10 Mile Road Westbound | | | | | None Northbound | | | | | Wrenchers Driveway Southbound | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | Left | Thru | Right | Peds | App. Total | Left | Thru | Right | Peds | App. Total | Left | Thru | Right | Peds | App. Total | Left | Thru | Right | Peds | App. Total | Int. Total |
| Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1 | | | | | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 04:45 PM | | | | | | | | | | | | | | | | | | | | | |
| 04:45 PM | 0 | 167 | 0 | 0 | 167 | 0 | 213 | 0 | 0 | 213 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 381 |
| 05:00 PM | 0 | 141 | 0 | 0 | 141 | 0 | 200 | 0 | 0 | 200 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 5 | 6 | 347 |
| 05:15 PM | 0 | 195 | 0 | 0 | 195 | 0 | 205 | 0 | 0 | 205 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 2 | 4 | 7 | 407 |
| 05:30 PM | 0 | 148 | 0 | 0 | 148 | 0 | 204 | 0 | 0 | 204 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 354 |
| Total Volume | 0 | 651 | 0 | 0 | 651 | 0 | 822 | 0 | 0 | 822 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 3 | 12 | 16 | 1489 |
| % App. Total | 0 | 100 | 0 | 0 | | 0 | 100 | 0 | 0 | | 0 | 0 | 0 | 0 | | 6.2 | 0 | 18.8 | 75 | | |
| PHF | .000 | .835 | .000 | .000 | .835 | .000 | .965 | .000 | .000 | .965 | .000 | .000 | .000 | .000 | .000 | .250 | .000 | .375 | .600 | .571 | .915 |
| Cars & Peds | 0 | 649 | 0 | 0 | 649 | 0 | 820 | 0 | 0 | 820 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 3 | 8 | 12 | 1481 |
| % Cars & Peds | 0 | 99.7 | 0 | 0 | 99.7 | 0 | 99.8 | 0 | 0 | 99.8 | 0 | 0 | 0 | 0 | 0 | 100 | 0 | 100 | 66.7 | 75.0 | 99.5 |
| H.V. & Bikes | 0 | 2 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 4 | 8 |
| % H.V. & Bikes | 0 | 0.3 | 0 | 0 | 0.3 | 0 | 0.2 | 0 | 0 | 0.2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 33.3 | 25.0 | 0.5 |
| Bikes on Street | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| % Bikes on Street | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |



# Midwestern Consulting

3815 Plaza Drive
Ann Arbor, MI, 48108
(734) 995-0200

Intersection
E/W: 10 Mile Road
N/S: Meadowbrook Road
Weather:

File Name : tmc_1009_10 mile & meadowbrook_mar-16-2022
Site Code : 1009
Start Date : 3/16/2022
Page No : 1

Groups Printed- Cars & Peds - H.V. & Bikes - Bikes on Street

| | 10 Mile Road Eastbound | | | | 10 Mile Road Westbound | | | | Meadowbrook Road Northbound | | | | Meadowbrook Road Southbound | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | Left | Thru | Right | Peds | Left | Thru | Right | Peds | Left | Thru | Right | Peds | Left | Thru | Right | Peds | Int. Total |
| *** BREAK *** | | | | | | | | | | | | | | | | | |
| 06:00 AM | 1 | 33 | 3 | 0 | 3 | 24 | 4 | 0 | 3 | 9 | 2 | 0 | 3 | 1 | 2 | 0 | 88 |
| 06:15 AM | 2 | 25 | 1 | 0 | 3 | 19 | 5 | 0 | 5 | 11 | 6 | 0 | 3 | 4 | 1 | 0 | 85 |
| 06:30 AM | 7 | 56 | 1 | 0 | 5 | 34 | 7 | 0 | 2 | 14 | 6 | 0 | 3 | 2 | 9 | 0 | 146 |
| 06:45 AM | 6 | 70 | 5 | 0 | 10 | 47 | 9 | 0 | 3 | 12 | 5 | 0 | 5 | 10 | 8 | 0 | 190 |
| Total | 16 | 184 | 10 | 0 | 21 | 124 | 25 | 0 | 13 | 46 | 19 | 0 | 14 | 17 | 20 | 0 | 509 |
| 07:00 AM | 13 | 62 | 5 | 0 | 1 | 43 | 12 | 0 | 12 | 20 | 8 | 0 | 6 | 8 | 4 | 0 | 194 |
| 07:15 AM | 16 | 85 | 9 | 0 | 6 | 40 | 10 | 0 | 11 | 38 | 10 | 0 | 8 | 22 | 6 | 0 | 261 |
| 07:30 AM | 14 | 116 | 5 | 0 | 6 | 71 | 9 | 0 | 20 | 18 | 7 | 0 | 14 | 16 | 16 | 1 | 313 |
| 07:45 AM | 17 | 95 | 11 | 0 | 11 | 93 | 10 | 0 | 34 | 38 | 12 | 0 | 11 | 19 | 33 | 0 | 384 |
| Total | 60 | 358 | 30 | 0 | 24 | 247 | 41 | 0 | 77 | 114 | 37 | 0 | 39 | 65 | 59 | 1 | 1152 |
| 08:00 AM | 33 | 112 | 13 | 0 | 8 | 77 | 21 | 0 | 12 | 30 | 9 | 0 | 13 | 19 | 9 | 0 | 356 |
| 08:15 AM | 19 | 138 | 11 | 0 | 8 | 55 | 17 | 0 | 10 | 33 | 7 | 0 | 16 | 23 | 7 | 0 | 344 |
| 08:30 AM | 17 | 117 | 11 | 0 | 5 | 65 | 17 | 0 | 14 | 36 | 12 | 0 | 18 | 29 | 15 | 0 | 356 |
| 08:45 AM | 43 | 131 | 13 | 0 | 9 | 76 | 14 | 0 | 12 | 48 | 20 | 0 | 17 | 23 | 24 | 0 | 430 |
| Total | 112 | 498 | 48 | 0 | 30 | 273 | 69 | 0 | 48 | 147 | 48 | 0 | 64 | 94 | 55 | 0 | 1486 |
| 09:00 AM | 38 | 112 | 20 | 0 | 15 | 67 | 22 | 0 | 14 | 23 | 13 | 0 | 17 | 16 | 17 | 0 | 374 |
| 09:15 AM | 31 | 80 | 12 | 0 | 5 | 69 | 18 | 0 | 12 | 28 | 5 | 0 | 7 | 18 | 16 | 0 | 301 |
| 09:30 AM | 18 | 77 | 5 | 0 | 8 | 59 | 16 | 0 | 7 | 32 | 6 | 0 | 14 | 34 | 18 | 0 | 294 |
| 09:45 AM | 26 | 76 | 7 | 0 | 7 | 59 | 12 | 0 | 18 | 34 | 7 | 0 | 22 | 25 | 22 | 0 | 315 |
| Total | 113 | 345 | 44 | 0 | 35 | 254 | 68 | 0 | 51 | 117 | 31 | 0 | 60 | 93 | 73 | 0 | 1284 |
| 10:00 AM | 15 | 65 | 8 | 1 | 6 | 68 | 12 | 0 | 11 | 21 | 6 | 0 | 13 | 27 | 25 | 0 | 278 |
| 10:15 AM | 10 | 61 | 14 | 0 | 7 | 68 | 15 | 0 | 10 | 21 | 10 | 0 | 13 | 27 | 11 | 0 | 267 |
| 10:30 AM | 19 | 78 | 9 | 2 | 3 | 58 | 12 | 0 | 8 | 27 | 6 | 0 | 13 | 16 | 16 | 1 | 268 |
| 10:45 AM | 17 | 64 | 12 | 0 | 12 | 69 | 14 | 0 | 19 | 23 | 5 | 0 | 14 | 28 | 16 | 1 | 294 |
| Total | 61 | 268 | 43 | 3 | 28 | 263 | 53 | 0 | 48 | 92 | 27 | 0 | 53 | 98 | 68 | 2 | 1107 |
| 11:00 AM | 19 | 54 | 13 | 0 | 4 | 68 | 14 | 0 | 14 | 22 | 7 | 0 | 8 | 28 | 20 | 0 | 271 |
| 11:15 AM | 18 | 81 | 9 | 0 | 6 | 73 | 13 | 0 | 19 | 24 | 9 | 0 | 22 | 19 | 17 | 0 | 310 |
| 11:30 AM | 26 | 66 | 14 | 0 | 7 | 79 | 17 | 0 | 15 | 28 | 8 | 0 | 16 | 26 | 18 | 0 | 320 |
| 11:45 AM | 19 | 94 | 19 | 0 | 6 | 105 | 19 | 0 | 25 | 29 | 7 | 0 | 24 | 31 | 29 | 0 | 407 |
| Total | 82 | 295 | 55 | 0 | 23 | 325 | 63 | 0 | 73 | 103 | 31 | 0 | 70 | 104 | 84 | 0 | 1308 |
| 12:00 PM | 16 | 83 | 18 | 0 | 11 | 78 | 25 | 0 | 21 | 32 | 13 | 0 | 23 | 35 | 24 | 1 | 380 |
| 12:15 PM | 18 | 83 | 13 | 0 | 17 | 82 | 19 | 0 | 17 | 26 | 12 | 0 | 22 | 38 | 21 | 0 | 368 |
| 12:30 PM | 20 | 78 | 18 | 0 | 12 | 94 | 32 | 0 | 12 | 32 | 7 | 0 | 20 | 43 | 21 | 0 | 389 |
| 12:45 PM | 26 | 89 | 21 | 0 | 12 | 104 | 19 | 0 | 20 | 39 | 11 | 0 | 29 | 43 | 22 | 0 | 435 |
| Total | 80 | 333 | 70 | 0 | 52 | 358 | 95 | 0 | 70 | 129 | 43 | 0 | 94 | 159 | 88 | 1 | 1572 |
| 01:00 PM | 26 | 64 | 16 | 0 | 14 | 101 | 17 | 0 | 17 | 42 | 14 | 0 | 26 | 27 | 22 | 0 | 386 |
| 01:15 PM | 21 | 83 | 16 | 0 | 10 | 86 | 20 | 0 | 15 | 26 | 6 | 0 | 18 | 40 | 19 | 0 | 360 |
| 01:30 PM | 12 | 51 | 5 | 0 | 4 | 67 | 13 | 0 | 11 | 32 | 7 | 0 | 19 | 42 | 25 | 0 | 288 |
| 01:45 PM | 13 | 80 | 15 | 0 | 7 | 90 | 18 | 0 | 15 | 25 | 15 | 0 | 16 | 36 | 18 | 1 | 349 |
| Total | 72 | 278 | 52 | 0 | 35 | 344 | 68 | 0 | 58 | 125 | 42 | 0 | 79 | 145 | 84 | 1 | 1383 |
| 02:00 PM | 15 | 82 | 13 | 0 | 13 | 95 | 17 | 0 | 10 | 24 | 11 | 0 | 26 | 40 | 26 | 1 | 373 |
| 02:15 PM | 19 | 76 | 17 | 0 | 6 | 79 | 24 | 0 | 18 | 30 | 13 | 0 | 24 | 41 | 20 | 0 | 367 |
| 02:30 PM | 27 | 85 | 22 | 0 | 12 | 92 | 32 | 1 | 21 | 37 | 11 | 1 | 22 | 41 | 31 | 1 | 436 |
| 02:45 PM | 23 | 92 | 20 | 0 | 19 | 100 | 22 | 0 | 17 | 35 | 11 | 0 | 23 | 52 | 25 | 0 | 439 |
| Total | 84 | 335 | 72 | 0 | 50 | 366 | 95 | 1 | 66 | 126 | 46 | 1 | 95 | 174 | 102 | 2 | 1615 |
| 03:00 PM | 30 | 96 | 28 | 0 | 15 | 99 | 21 | 0 | 23 | 42 | 13 | 0 | 43 | 53 | 34 | 0 | 497 |
| 03:15 PM | 26 | 90 | 27 | 0 | 10 | 116 | 14 | 0 | 23 | 49 | 8 | 0 | 40 | 33 | 23 | 1 | 460 |
| 03:30 PM | 23 | 94 | 28 | 0 | 17 | 129 | 20 | 2 | 17 | 29 | 16 | 2 | 27 | 46 | 29 | 1 | 480 |

# Midwestern Consulting

3815 Plaza Drive
Ann Arbor, MI, 48108
(734) 995-0200

Intersection
E/W: 10 Mile Road
N/S: Meadowbrook Road
Weather:

File Name : tmc_1009_10 mile & meadowbrook_mar-16-2022
Site Code : 1009
Start Date : 3/16/2022
Page No : 2

Groups Printed- Cars & Peds - H.V. & Bikes - Bikes on Street

| | 10 Mile Road Eastbound | | | | 10 Mile Road Westbound | | | | Meadowbrook Road Northbound | | | | Meadowbrook Road Southbound | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | Left | Thru | Right | Peds | Left | Thru | Right | Peds | Left | Thru | Right | Peds | Left | Thru | Right | Peds | Int. Total |
| 03:45 PM | 21 | 92 | 33 | 0 | 16 | 110 | 21 | 0 | 26 | 39 | 12 | 0 | 24 | 60 | 27 | 1 | 482 |
| Total | 100 | 372 | 116 | 0 | 58 | 454 | 76 | 2 | 89 | 159 | 49 | 2 | 134 | 192 | 113 | 3 | 1919 |
| 04:00 PM | 20 | 93 | 25 | 0 | 22 | 132 | 26 | 0 | 18 | 39 | 15 | 0 | 28 | 45 | 22 | 0 | 485 |
| 04:15 PM | 17 | 80 | 20 | 2 | 15 | 120 | 25 | 0 | 21 | 48 | 8 | 0 | 29 | 68 | 25 | 3 | 481 |
| 04:30 PM | 21 | 108 | 29 | 1 | 15 | 148 | 19 | 0 | 22 | 53 | 11 | 0 | 15 | 65 | 28 | 0 | 535 |
| 04:45 PM | 26 | 95 | 40 | 2 | 21 | 170 | 23 | 0 | 14 | 41 | 11 | 1 | 26 | 55 | 26 | 0 | 551 |
| Total | 84 | 376 | 114 | 5 | 73 | 570 | 93 | 0 | 75 | 181 | 45 | 1 | 98 | 233 | 101 | 3 | 2052 |
| 05:00 PM | 17 | 96 | 26 | 1 | 18 | 153 | 25 | 0 | 17 | 53 | 9 | 1 | 19 | 59 | 27 | 2 | 523 |
| 05:15 PM | 32 | 91 | 26 | 0 | 15 | 169 | 39 | 1 | 23 | 46 | 15 | 0 | 30 | 75 | 20 | 3 | 585 |
| 05:30 PM | 23 | 114 | 35 | 2 | 14 | 150 | 36 | 0 | 15 | 46 | 11 | 0 | 22 | 66 | 31 | 2 | 567 |
| 05:45 PM | 20 | 98 | 28 | 3 | 16 | 144 | 25 | 0 | 20 | 44 | 15 | 0 | 18 | 65 | 24 | 1 | 521 |
| Total | 92 | 399 | 115 | 6 | 63 | 616 | 125 | 1 | 75 | 189 | 50 | 1 | 89 | 265 | 102 | 8 | 2196 |
| 06:00 PM | 25 | 103 | 15 | 2 | 15 | 116 | 12 | 0 | 17 | 38 | 9 | 0 | 24 | 53 | 23 | 0 | 452 |
| 06:15 PM | 15 | 101 | 19 | 0 | 7 | 108 | 16 | 0 | 12 | 30 | 13 | 0 | 17 | 38 | 20 | 0 | 396 |
| 06:30 PM | 23 | 77 | 23 | 0 | 11 | 102 | 21 | 0 | 11 | 47 | 2 | 2 | 15 | 46 | 26 | 2 | 408 |
| 06:45 PM | 22 | 69 | 18 | 0 | 12 | 113 | 23 | 1 | 17 | 32 | 9 | 0 | 27 | 47 | 29 | 1 | 420 |
| Total | 85 | 350 | 75 | 2 | 45 | 439 | 72 | 1 | 57 | 147 | 33 | 2 | 83 | 184 | 98 | 3 | 1676 |

*** BREAK ***

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Grand Total | 1041 | 4391 | 844 | 16 | 537 | 4633 | 943 | 5 | 800 | 1675 | 501 | 7 | 972 | 1823 | 1047 | 24 | 19259 |
| Apprch % | 16.5 | 69.8 | 13.4 | 0.3 | 8.8 | 75.7 | 15.4 | 0.1 | 26.8 | 56.2 | 16.8 | 0.2 | 25.1 | 47.2 | 27.1 | 0.6 | |
| Total % | 5.4 | 22.8 | 4.4 | 0.1 | 2.8 | 24.1 | 4.9 | 0 | 4.2 | 8.7 | 2.6 | 0 | 5 | 9.5 | 5.4 | 0.1 | |
| Cars & Peds | 1027 | 4336 | 836 | 15 | 526 | 4579 | 936 | 3 | 791 | 1665 | 491 | 5 | 950 | 1806 | 1021 | 23 | 19010 |
| % Cars & Peds | 98.7 | 98.7 | 99.1 | 93.8 | 98 | 98.8 | 99.3 | 60 | 98.9 | 99.4 | 98 | 71.4 | 97.7 | 99.1 | 97.5 | 95.8 | 98.7 |
| H.V. & Bikes | 14 | 55 | 8 | 1 | 11 | 54 | 7 | 2 | 9 | 10 | 10 | 2 | 22 | 17 | 26 | 1 | 249 |
| % H.V. & Bikes | 1.3 | 1.3 | 0.9 | 6.2 | 2 | 1.2 | 0.7 | 40 | 1.1 | 0.6 | 2 | 28.6 | 2.3 | 0.9 | 2.5 | 4.2 | 1.3 |
| Bikes on Street | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| % Bikes on Street | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

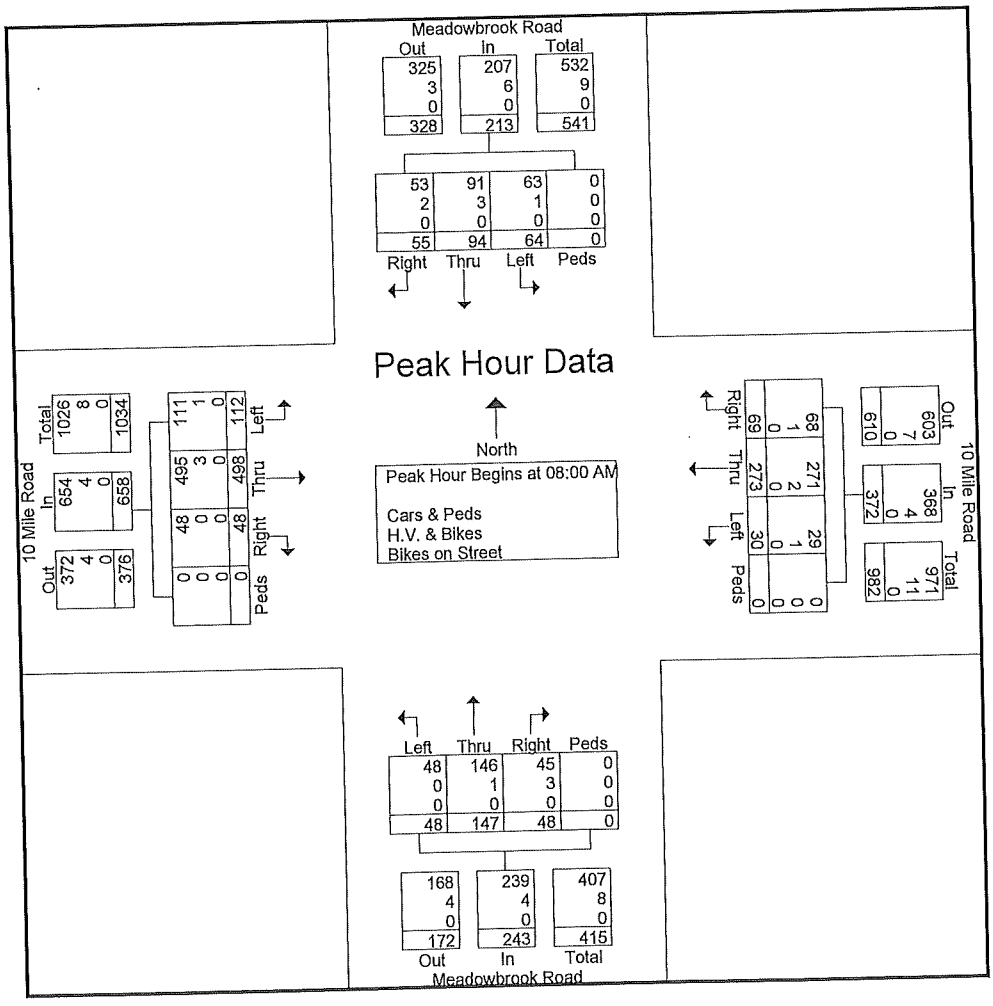
# Midwestern Consulting

3815 Plaza Drive
Ann Arbor, MI, 48108
(734) 995-0200

Intersection
E/W: 10 Mile Road
N/S: Meadowbrook Road
Weather:

File Name : tmc_1009_10 mile & meadowbrook_mar-16-2022
Site Code : 1009
Start Date : 3/16/2022
Page No : 3

| | 10 Mile Road Eastbound | | | | | 10 Mile Road Westbound | | | | | Meadowbrook Road Northbound | | | | | Meadowbrook Road Southbound | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | Left | Thru | Right | Peds | App. Total | Left | Thru | Right | Peds | App. Total | Left | Thru | Right | Peds | App. Total | Left | Thru | Right | Peds | App. Total | Int. Total |
| Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1 | | | | | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 08:00 AM | | | | | | | | | | | | | | | | | | | | | |
| 08:00 AM | 33 | 112 | 13 | 0 | 158 | 8 | 77 | 21 | 0 | 106 | 12 | 30 | 9 | 0 | 51 | 13 | 19 | 9 | 0 | 41 | 356 |
| 08:15 AM | 19 | 138 | 11 | 0 | 168 | 8 | 55 | 17 | 0 | 80 | 10 | 33 | 7 | 0 | 50 | 16 | 23 | 7 | 0 | 46 | 344 |
| 08:30 AM | 17 | 117 | 11 | 0 | 145 | 5 | 65 | 17 | 0 | 87 | 14 | 36 | 12 | 0 | 62 | 18 | 29 | 15 | 0 | 62 | 356 |
| 08:45 AM | 43 | 131 | 13 | 0 | 187 | 9 | 76 | 14 | 0 | 99 | 12 | 48 | 20 | 0 | 80 | 17 | 23 | 24 | 0 | 64 | 430 |
| Total Volume | 112 | 498 | 48 | 0 | 658 | 30 | 273 | 69 | 0 | 372 | 48 | 147 | 48 | 0 | 243 | 64 | 94 | 55 | 0 | 213 | 1486 |
| % App. Total | 17 | 75.7 | 7.3 | 0 | | 8.1 | 73.4 | 18.5 | 0 | | 19.8 | 60.5 | 19.8 | 0 | | 30 | 44.1 | 25.8 | 0 | | |
| PHF | .651 | .902 | .923 | .000 | .880 | .833 | .886 | .821 | .000 | .877 | .857 | .766 | .600 | .000 | .759 | .889 | .810 | .573 | .000 | .832 | .864 |
| Cars & Peds | 111 | 495 | 48 | 0 | 654 | 29 | 271 | 68 | 0 | 368 | 48 | 146 | 45 | 0 | 239 | 63 | 91 | 53 | 0 | 207 | 1468 |
| % Cars & Peds | 99.1 | 99.4 | 100 | 0 | 99.4 | 96.7 | 99.3 | 98.6 | 0 | 98.9 | 100 | 99.3 | 93.8 | 0 | 98.4 | 98.4 | 96.8 | 96.4 | 0 | 97.2 | 98.8 |
| H.V. & Bikes | 1 | 3 | 0 | 0 | 4 | 1 | 2 | 1 | 0 | 4 | 0 | 1 | 3 | 0 | 4 | 1 | 3 | 2 | 0 | 6 | 18 |
| % H.V. & Bikes | 0.9 | 0.6 | 0 | 0 | 0.6 | 3.3 | 0.7 | 1.4 | 0 | 1.1 | 0 | 0.7 | 6.3 | 0 | 1.6 | 1.6 | 3.2 | 3.6 | 0 | 2.8 | 1.2 |
| Bikes on Street | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| % Bikes on Street | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |



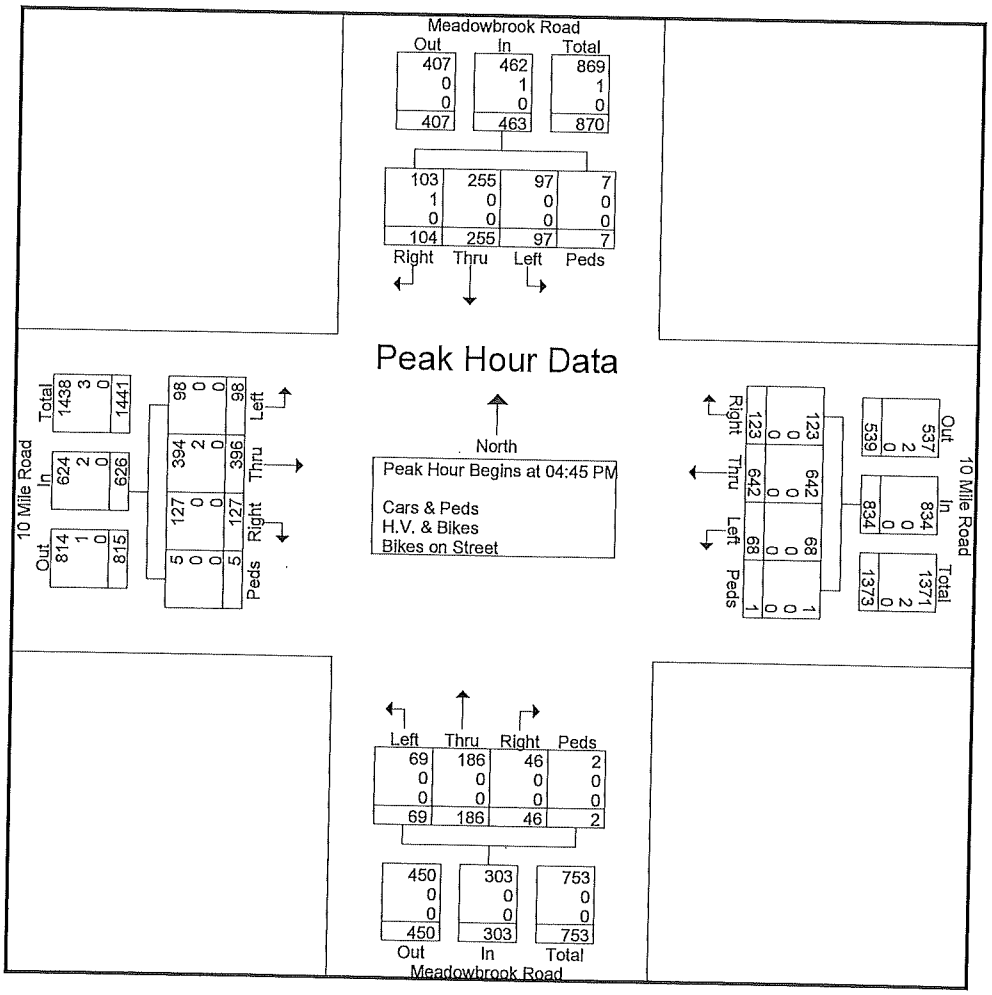
# Midwestern Consulting

3815 Plaza Drive
Ann Arbor, MI, 48108
(734) 995-0200

Intersection
E/W: 10 Mile Road
N/S: Meadowbrook Road
Weather:

File Name : tmc_1009_10 mile & meadowbrook_mar-16-2022
Site Code : 1009
Start Date : 3/16/2022
Page No : 4

| | 10 Mile Road Eastbound | | | | | 10 Mile Road Westbound | | | | | Meadowbrook Road Northbound | | | | | Meadowbrook Road Southbound | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | Left | Thru | Right | Peds | App. Total | Left | Thru | Right | Peds | App. Total | Left | Thru | Right | Peds | App. Total | Left | Thru | Right | Peds | App. Total | Int. Total |
| Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1 | | | | | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 04:45 PM | | | | | | | | | | | | | | | | | | | | | |
| 04:45 PM | 26 | 95 | 40 | 2 | 163 | 21 | 170 | 23 | 0 | 214 | 14 | 41 | 11 | 1 | 67 | 26 | 55 | 26 | 0 | 107 | 551 |
| 05:00 PM | 17 | 96 | 26 | 1 | 140 | 18 | 153 | 25 | 0 | 196 | 17 | 53 | 9 | 1 | 80 | 19 | 59 | 27 | 2 | 107 | 523 |
| 05:15 PM | 32 | 91 | 26 | 0 | 149 | 15 | 169 | 39 | 1 | 224 | 23 | 46 | 15 | 0 | 84 | 30 | 75 | 20 | 3 | 128 | 585 |
| 05:30 PM | 23 | 114 | 35 | 2 | 174 | 14 | 150 | 36 | 0 | 200 | 15 | 46 | 11 | 0 | 72 | 22 | 66 | 31 | 2 | 121 | 567 |
| Total Volume | 98 | 396 | 127 | 5 | 626 | 68 | 642 | 123 | 1 | 834 | 69 | 186 | 46 | 2 | 303 | 97 | 255 | 104 | 7 | 463 | 2226 |
| % App. Total | 15.7 | 63.3 | 20.3 | 0.8 | | 8.2 | 77 | 14.7 | 0.1 | | 22.8 | 61.4 | 15.2 | 0.7 | | 21 | 55.1 | 22.5 | 1.5 | | |
| PHF | .766 | .868 | .794 | .625 | .899 | .810 | .944 | .788 | .250 | .931 | .750 | .877 | .767 | .500 | .902 | .808 | .850 | .839 | .583 | .904 | .951 |
| Cars & Peds | 98 | 394 | 127 | 5 | 624 | 68 | 642 | 123 | 1 | 834 | 69 | 186 | 46 | 2 | 303 | 97 | 255 | 103 | 7 | 462 | 2223 |
| % Cars & Peds | 100 | 99.5 | 100 | 100 | 99.7 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 99.0 | 100 | 99.8 | 99.9 |
| H.V. & Bikes | 0 | 2 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 3 |
| % H.V. & Bikes | 0 | 0.5 | 0 | 0 | 0.3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1.0 | 0 | 0.2 | 0.1 |
| Bikes on Street | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| % Bikes on Street | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |



# Land Use: 710
# General Office Building

## Description

A general office building is a location where affairs of businesses, commercial or industrial organizations, or professional persons or firms are conducted. An office building houses multiple tenants that can include, as examples, professional services, insurance companies, investment brokers, a banking institution, a restaurant, or other service retailers. A general office building with a gross floor area of 10,000 square feet or less is classified as a small office building (Land Use 712). Corporate headquarters building (Land Use 714), single tenant office building (Land Use 715), medical-dental office building (Land Use 720), office park (Land Use 750), research and development center (Land Use 760), and business park (Land Use 770) are additional related uses.

## Additional Data

If two or more general office buildings are in close physical proximity (within a close walk) and function as a unit (perhaps with a shared parking facility and common or complementary tenants), the total gross floor area or employment of the paired office buildings can be used for calculating the site trip generation. If the individual buildings are isolated or not functionally related to one another, trip generation should be calculated for each building separately.

For study sites with reported gross floor area and employees, an average employee density of 3.3 employees per 1,000 square feet GFA (or roughly 300 square feet per employee) has been consistent through the 1980s, 1990s, and 2000s. No sites counted in the 2010s reported both GFA and employees.

The average building occupancy varies considerably within the studies for which occupancy data were provided. The reported occupied gross floor area was 88 percent for general urban/suburban sites and 96 percent for the center city core and dense multi-use urban sites.

The technical appendices provide supporting information on time-of-day distributions for this land use. The appendices can be accessed through either the ITETripGen web app or the trip generation resource page on the ITE website (https://www.ite.org/technical-resources/topics/trip-and-parking-generation/).

The average numbers of person trips per vehicle trip at the eight center city core sites at which both person trip and vehicle trip data were collected are as follows:

- 2.8 during Weekday, Peak Hour of Adjacent Street Traffic, one hour between 7 and 9 a.m.
- 2.9 during Weekday, AM Peak Hour of Generator
- 2.9 during Weekday, Peak Hour of Adjacent Street Traffic, one hour between 4 and 6 p.m.
- 3.0 during Weekday, PM Peak Hour of Generator

The average numbers of person trips per vehicle trip at the 18 dense multi-use urban sites at which both person trip and vehicle trip data were collected are as follows:

- 1.5 during Weekday, Peak Hour of Adjacent Street Traffic, one hour between 7 and 9 a.m.
- 1.5 during Weekday, AM Peak Hour of Generator
- 1.5 during Weekday, Peak Hour of Adjacent Street Traffic, one hour between 4 and 6 p.m.
- 1.5 during Weekday, PM Peak Hour of Generator

The average numbers of person trips per vehicle trip at the 23 general urban/suburban sites at which both person trip and vehicle trip data were collected are as follows:

- 1.3 during Weekday, Peak Hour of Adjacent Street Traffic, one hour between 7 and 9 a.m.
- 1.3 during Weekday, AM Peak Hour of Generator
- 1.3 during Weekday, Peak Hour of Adjacent Street Traffic, one hour between 4 and 6 p.m.
- 1.4 during Weekday, PM Peak Hour of Generator

The sites were surveyed in the 1980s, the 1990s, the 2000s, the 2010s, and the 2020s in Alberta (CAN), California, Colorado, Connecticut, Georgia, Illinois, Indiana, Kansas, Kentucky, Maine, Maryland, Michigan, Minnesota, Missouri, Montana, New Hampshire, New Jersey, New York, Ontario (CAN)Pennsylvania, Texas, Utah, Virginia, and Washington.

## Source Numbers

161, 175, 183, 184, 185, 207, 212, 217, 247, 253, 257, 260, 262, 273, 279, 297, 298, 300, 301, 302, 303, 304, 321, 322, 323, 324, 327, 404, 407, 408, 419, 423, 562, 734, 850, 859, 862, 867, 869, 883, 884, 890, 891, 904, 940, 944, 946, 964, 965, 972, 1009, 1030, 1058, 1061

# General Office Building
# (710)

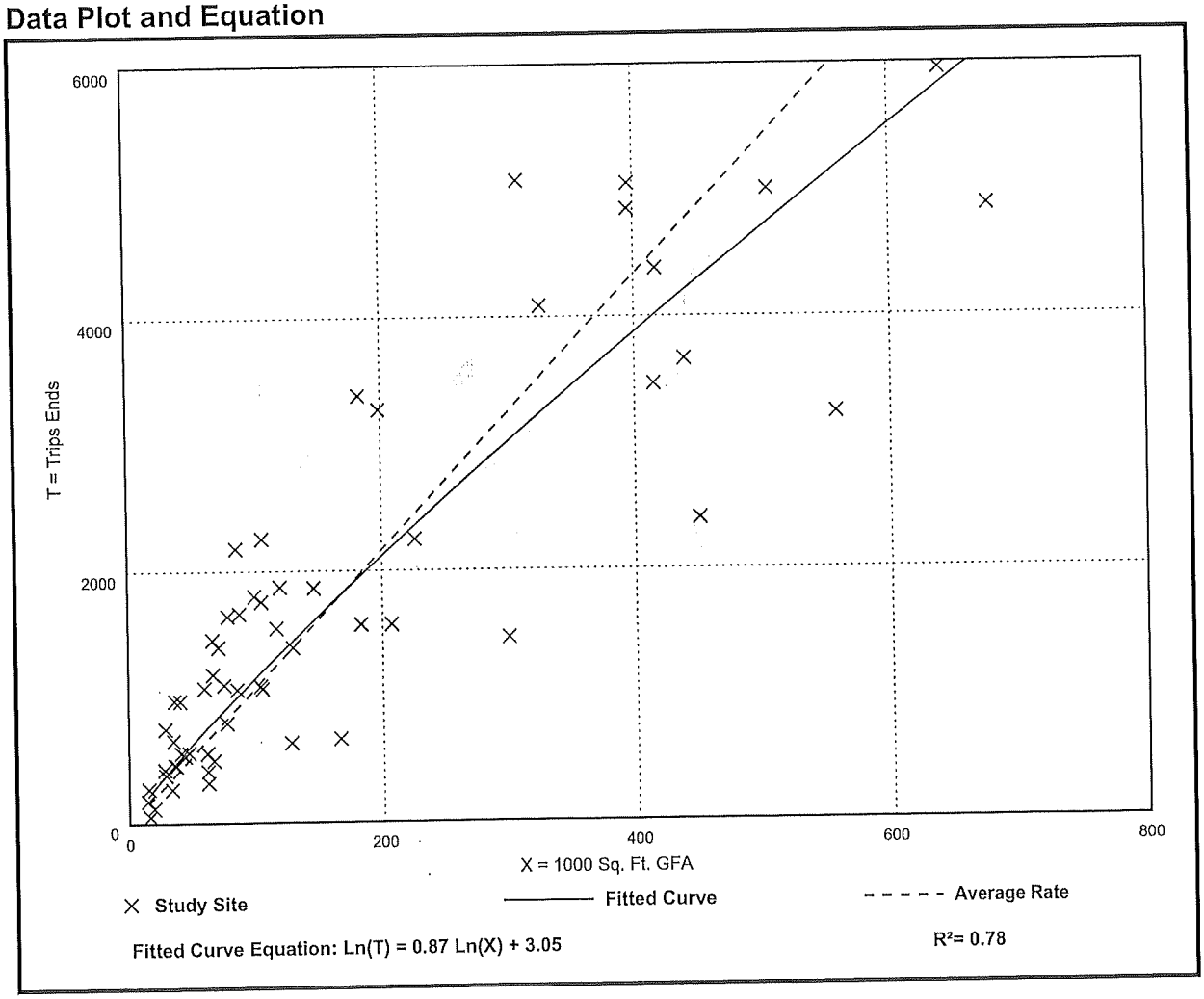
**Vehicle Trip Ends vs: 1000 Sq. Ft. GFA**
**On a: Weekday**

**Setting/Location: General Urban/Suburban**
Number of Studies: 59
Avg. 1000 Sq. Ft. GFA: 163
Directional Distribution: 50% entering, 50% exiting

## Vehicle Trip Generation per 1000 Sq. Ft. GFA

| Average Rate | Range of Rates | Standard Deviation |
|---|---|---|
| 10.84 | 3.27 - 27.56 | 4.76 |

## Data Plot and Equation




**Fitted Curve Equation: Ln(T) = 0.87 Ln(X) + 3.05**

**$R^2$= 0.78**

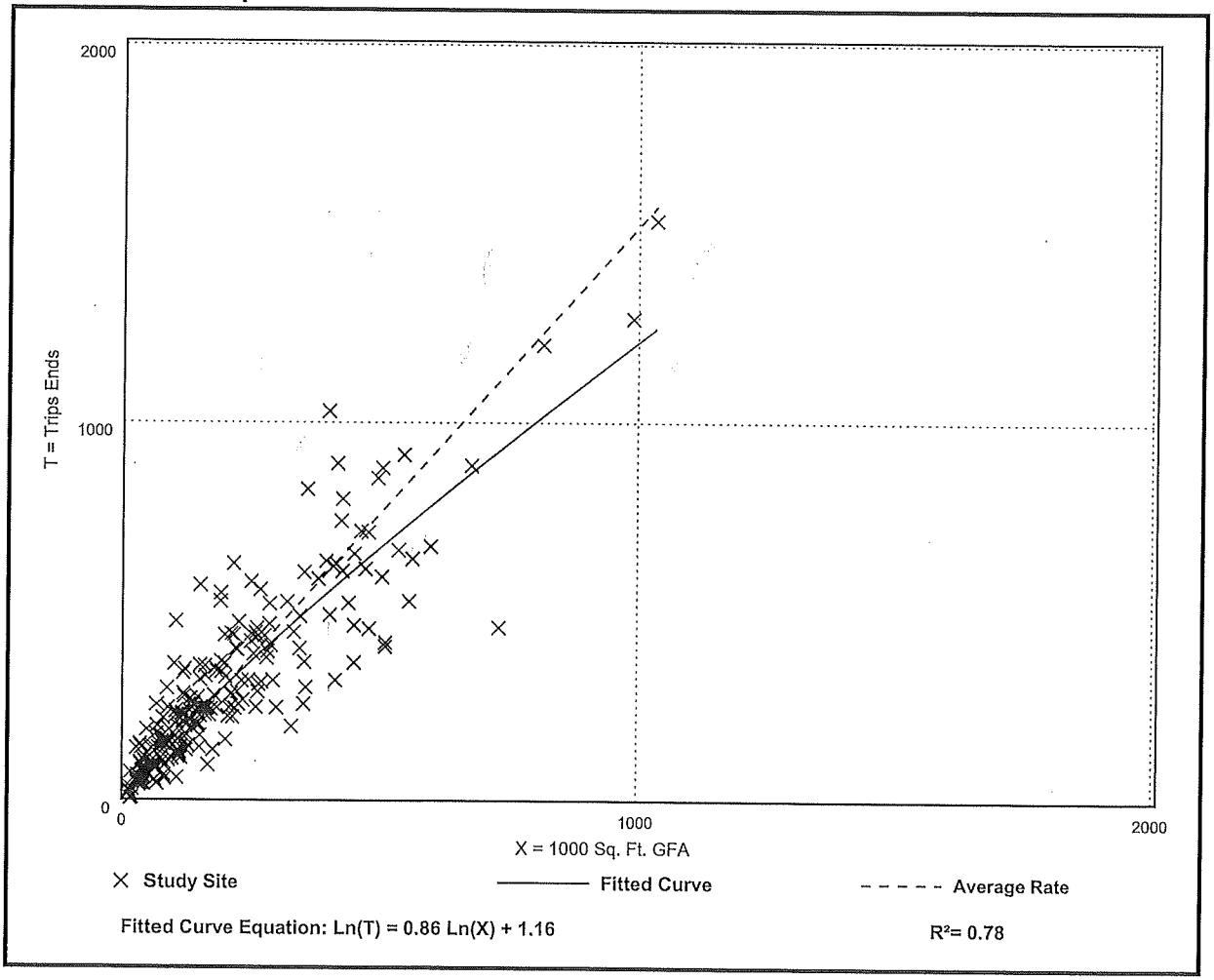
# General Office Building
# (710)

**Vehicle Trip Ends vs: 1000 Sq. Ft. GFA**
**On a: Weekday,**
**Peak Hour of Adjacent Street Traffic,**
**One Hour Between 7 and 9 a.m.**
**Setting/Location: General Urban/Suburban**
Number of Studies: 221
Avg. 1000 Sq. Ft. GFA: 201
Directional Distribution: 88% entering, 12% exiting

## Vehicle Trip Generation per 1000 Sq. Ft. GFA

| Average Rate | Range of Rates | Standard Deviation |
|---|---|---|
| 1.52 | 0.32 - 4.93 | 0.58 |

## Data Plot and Equation




**Fitted Curve Equation: Ln(T) = 0.86 Ln(X) + 1.16**

**$R^2$= 0.78**

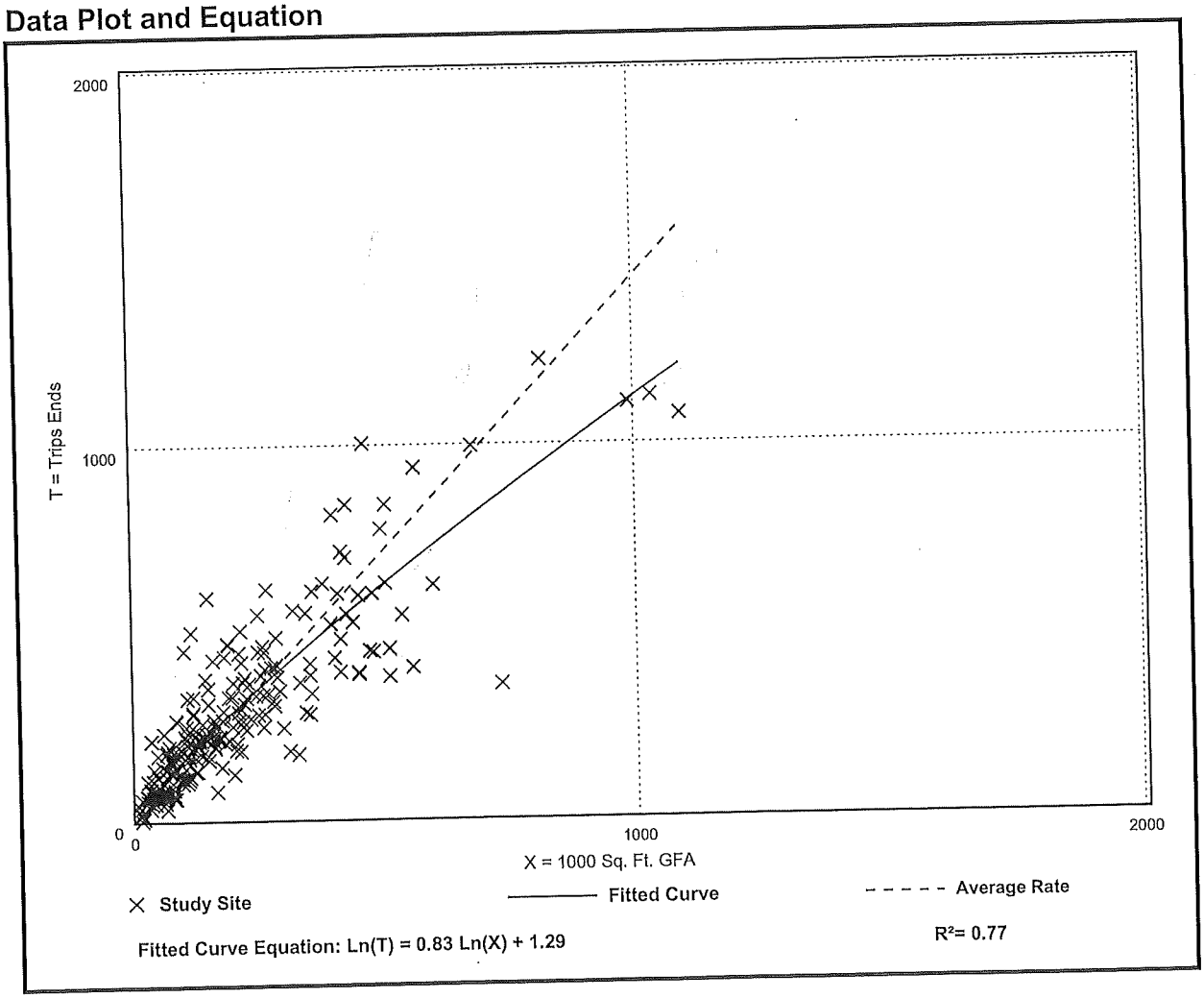
# General Office Building
# (710)

**Vehicle Trip Ends vs: 1000 Sq. Ft. GFA**
**On a: Weekday,**
**Peak Hour of Adjacent Street Traffic,**
**One Hour Between 4 and 6 p.m.**
**Setting/Location: General Urban/Suburban**
Number of Studies: 232
Avg. 1000 Sq. Ft. GFA: 199
Directional Distribution: 17% entering, 83% exiting

## Vehicle Trip Generation per 1000 Sq. Ft. GFA

| Average Rate | Range of Rates | Standard Deviation |
|---|---|---|
| 1.44 | 0.26 - 6.20 | 0.60 |

## Data Plot and Equation




**Fitted Curve Equation: Ln(T) = 0.83 Ln(X) + 1.29**

**$R^2$= 0.77**

# Land Use: 110
# General Light Industrial

## Description

A light industrial facility is a free-standing facility devoted to a single use. The facility has an emphasis on activities other than manufacturing and typically has minimal office space. Typical light industrial activities include printing, material testing, and assembly of data processing equipment. Industrial park (Land Use 130) and manufacturing (Land Use 140) are related uses.

## Additional Data

The technical appendices provide supporting information on time-of-day distributions for this land use. The appendices can be accessed through either the ITETripGen web app or the trip generation resource page on the ITE website (https://www.ite.org/technical-resources/topics/trip-and-parking-generation/).

The sites were surveyed in the 1980s, the 2000s, and the 2010s in Colorado, Connecticut, Indiana, New Jersey, New York, Oregon, Pennsylvania, and Texas.

## Source Numbers

106, 157, 174, 177, 179, 184, 191, 251, 253, 286, 300, 611, 874, 875, 912

# General Light Industrial
# (110)

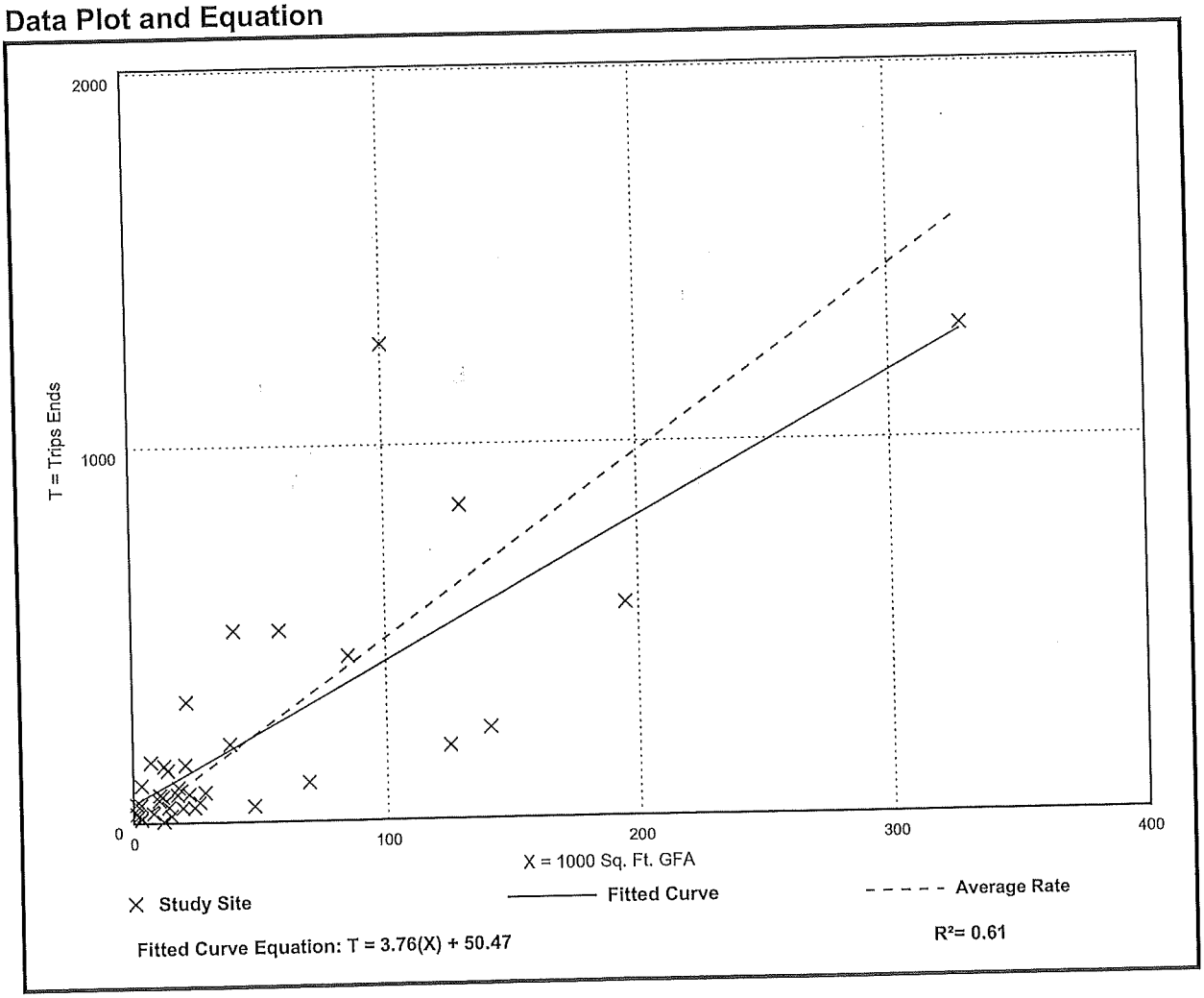
**Vehicle Trip Ends vs: 1000 Sq. Ft. GFA**
**On a: Weekday**

**Setting/Location: General Urban/Suburban**
Number of Studies: 37
Avg. 1000 Sq. Ft. GFA: 45
Directional Distribution: 50% entering, 50% exiting

## Vehicle Trip Generation per 1000 Sq. Ft. GFA

| Average Rate | Range of Rates | Standard Deviation |
|---|---|---|
| 4.87 | 0.34 - 43.86 | 4.08 |

## Data Plot and Equation



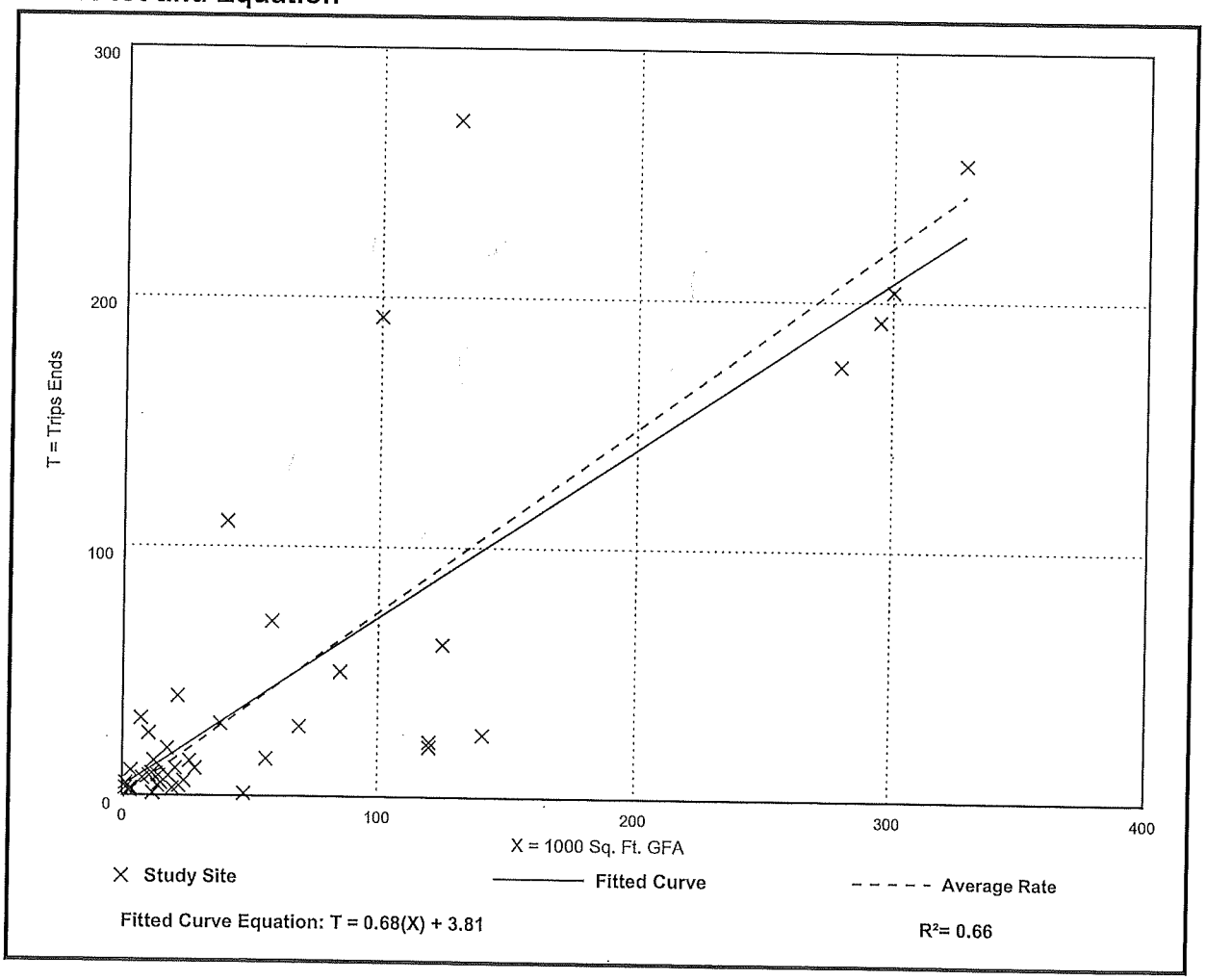
# General Light Industrial
# (110)

**Vehicle Trip Ends vs: 1000 Sq. Ft. GFA**
**On a: Weekday,**
**Peak Hour of Adjacent Street Traffic,**
**One Hour Between 7 and 9 a.m.**
**Setting/Location: General Urban/Suburban**
Number of Studies: 41
Avg. 1000 Sq. Ft. GFA: 65
Directional Distribution: 88% entering, 12% exiting

## Vehicle Trip Generation per 1000 Sq. Ft. GFA

| Average Rate | Range of Rates | Standard Deviation |
|---|---|---|
| 0.74 | 0.02 - 4.46 | 0.61 |

## Data Plot and Equation




**Fitted Curve Equation: T = 0.68(X) + 3.81**

**$R^2$= 0.66**

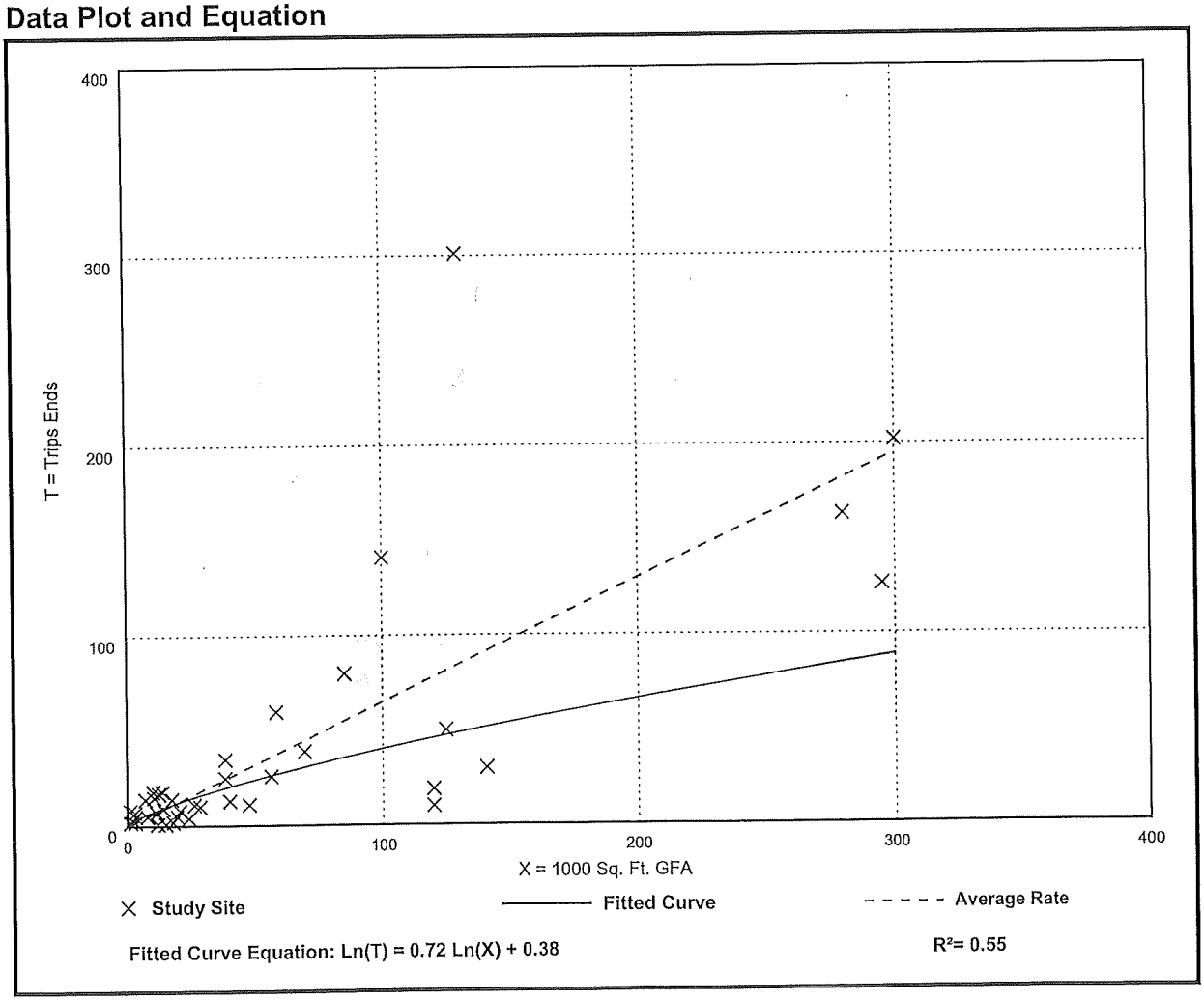
# General Light Industrial
# (110)

**Vehicle Trip Ends vs: 1000 Sq. Ft. GFA**
**On a: Weekday,**
**Peak Hour of Adjacent Street Traffic,**
**One Hour Between 4 and 6 p.m.**
**Setting/Location: General Urban/Suburban**
Number of Studies: 40
Avg. 1000 Sq. Ft. GFA: 58
Directional Distribution: 14% entering, 86% exiting

## Vehicle Trip Generation per 1000 Sq. Ft. GFA

| Average Rate | Range of Rates | Standard Deviation |
|---|---|---|
| 0.65 | 0.07 - 7.02 | 0.56 |

## Data Plot and Equation




**Fitted Curve Equation: Ln(T) = 0.72 Ln(X) + 0.38**

**$R^2$= 0.55**

# Land Use: 821
# Shopping Plaza (40-150k)

## Description

A shopping plaza is an integrated group of commercial establishments that is planned, developed, owned, and managed as a unit. Each study site in this land use has between 40,000 and 150,000 square feet of gross leasable area (GLA). The term "plaza" in the land use name rather than "center" is simply a means of distinction between the different shopping center size ranges. Various other names are commonly used to categorize a shopping plaza within this size range, depending on its specific size and tenants, such as neighborhood center, community center, and fashion center.

Its major tenant is often a supermarket but many sites are anchored by home improvement, discount, or other stores. A shopping plaza typically contains more than retail merchandising facilities. Office space, a movie theater, restaurants, a post office, banks, a health club, and recreational facilities are common tenants. A shopping plaza is almost always open-air and the GLA is the same as the gross floor area of the building.

The 150,000 square feet GLA threshold value between shopping plaza and shopping center (Land Use 820) is based on an examination of trip generation data. For a shopping plaza that is smaller than the threshold value, the presence or absence of a supermarket within the plaza has a measurable effect on site trip generation. For a shopping center that is larger than the threshold value, the trips generated by its other major tenants mask any effects of the presence or absence of an on-site supermarket.

The 40,000 square feet GFA threshold between shopping plaza and strip retail plaza (Land Use 822) was selected based on an examination of the overall shopping center/plaza database. No shopping plaza with a supermarket as its anchor is smaller than 40,000 square feet GLA.

Shopping center (>150k) (Land Use 820), strip retail plaza (<40k) (Land Use 822), and factory outlet center (Land Use 823) are related uses.

## Land Use Subcategory

The presence or absence of a supermarket in a shopping plaza has been determined to have a measurable effect on site trip generation. Therefore, data are presented for two subcategories for this land use: sites with a supermarket anchor and sites without a supermarket.

## Additional Data

The technical appendices provide supporting information on time-of-day distributions for this land use. The appendices can be accessed through either the ITETripGen web app or the trip generation resource page on the ITE website (https://www.ite.org/technical-resources/topics/trip-and-parking-generation/).

The sites were surveyed in the 1980s, the 1990s, the 2000s, and the 2010s in Alberta (CAN), British Columbia (CAN), California, Connecticut, District of Columbia, Florida, Georgia, Illinois, Indiana, Iowa, Kansas, Kentucky, Maine, Maryland, Massachusetts, Minnesota, Nevada, New Jersey, New York, Ontario (CAN), Oregon, Pennsylvania, South Dakota, Texas, Vermont, Virginia, Washington, and Wisconsin.

### Source Numbers

105, 110, 156, 159, 186, 198, 204, 211, 213, 239, 259, 260, 295, 301, 304, 305, 307, 317, 319, 358, 376, 390, 400, 404, 437, 444, 446, 507, 580, 598, 658, 728, 908, 926, 944, 946, 960, 973, 974, 1004, 1009, 1025, 1069

# Shopping Plaza (40-150k) - Supermarket - Yes (821)

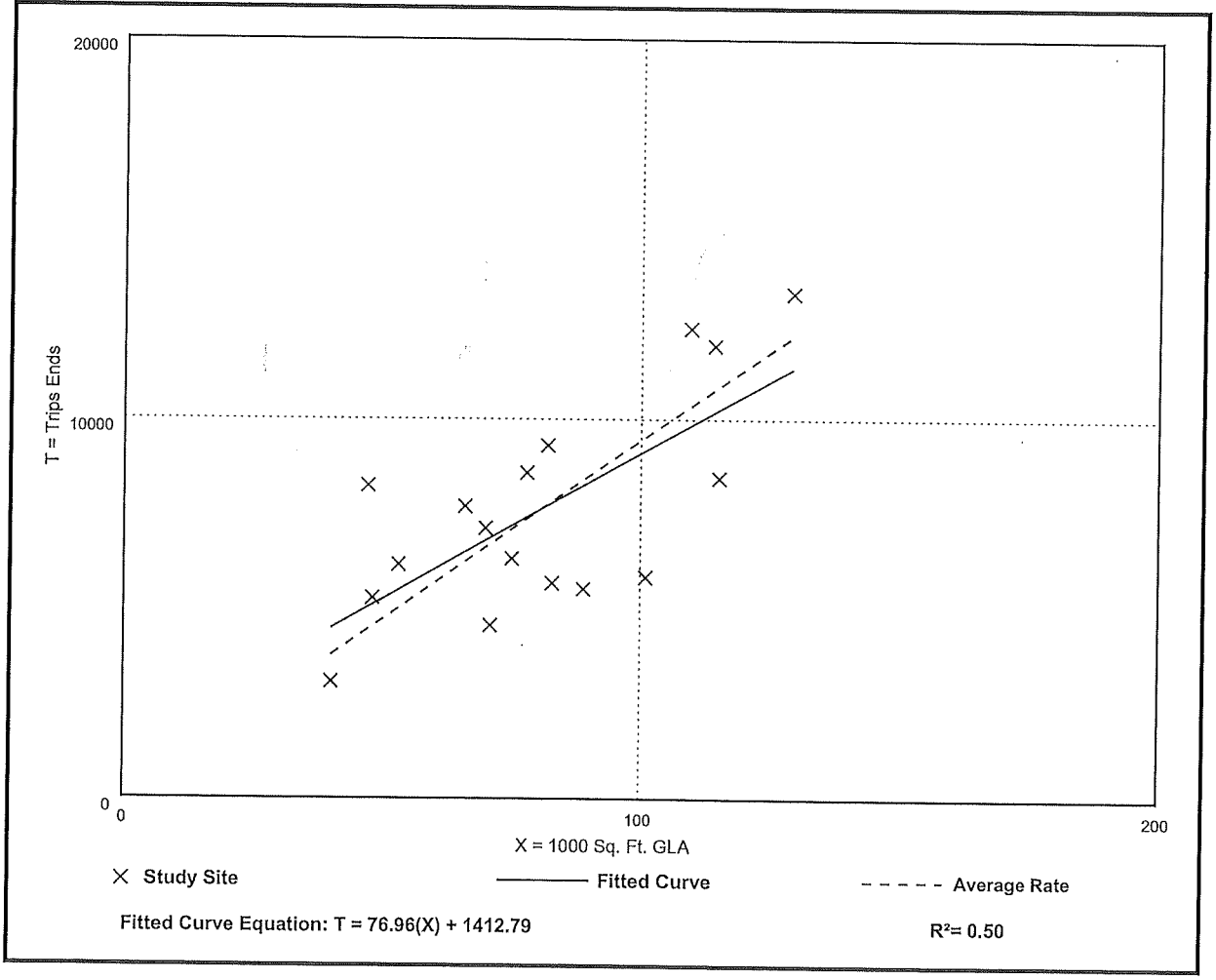
**Vehicle Trip Ends vs: 1000 Sq. Ft. GLA**
**On a: Weekday**

**Setting/Location: General Urban/Suburban**
Number of Studies: 17
Avg. 1000 Sq. Ft. GLA: 81
Directional Distribution: 50% entering, 50% exiting

## Vehicle Trip Generation per 1000 Sq. Ft. GLA

| Average Rate | Range of Rates | Standard Deviation |
|---|---|---|
| 94.49 | 57.86 - 175.32 | 26.55 |

## Data Plot and Equation




**Fitted Curve Equation: T = 76.96(X) + 1412.79**

**$R^2$= 0.50**

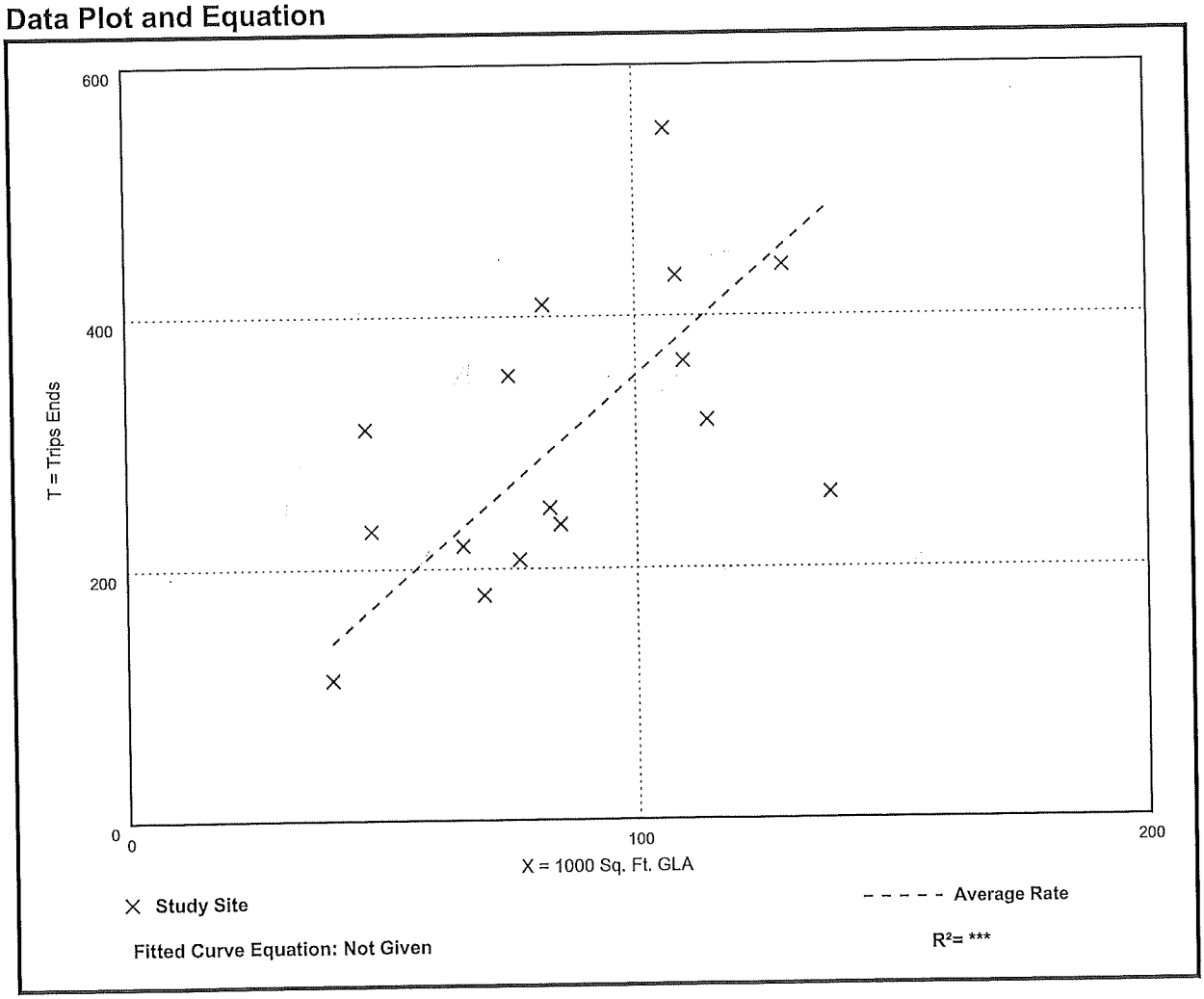
# Shopping Plaza (40-150k) - Supermarket - Yes (821)

**Vehicle Trip Ends vs: 1000 Sq. Ft. GLA**
**On a: Weekday,**
**Peak Hour of Adjacent Street Traffic,**
**One Hour Between 7 and 9 a.m.**
**Setting/Location: General Urban/Suburban**
Number of Studies: 16
Avg. 1000 Sq. Ft. GLA: 86
Directional Distribution: 62% entering, 38% exiting

## Vehicle Trip Generation per 1000 Sq. Ft. GLA

| Average Rate | Range of Rates | Standard Deviation |
|---|---|---|
| 3.53 | 1.88 - 6.62 | 1.17 |

## Data Plot and Equation



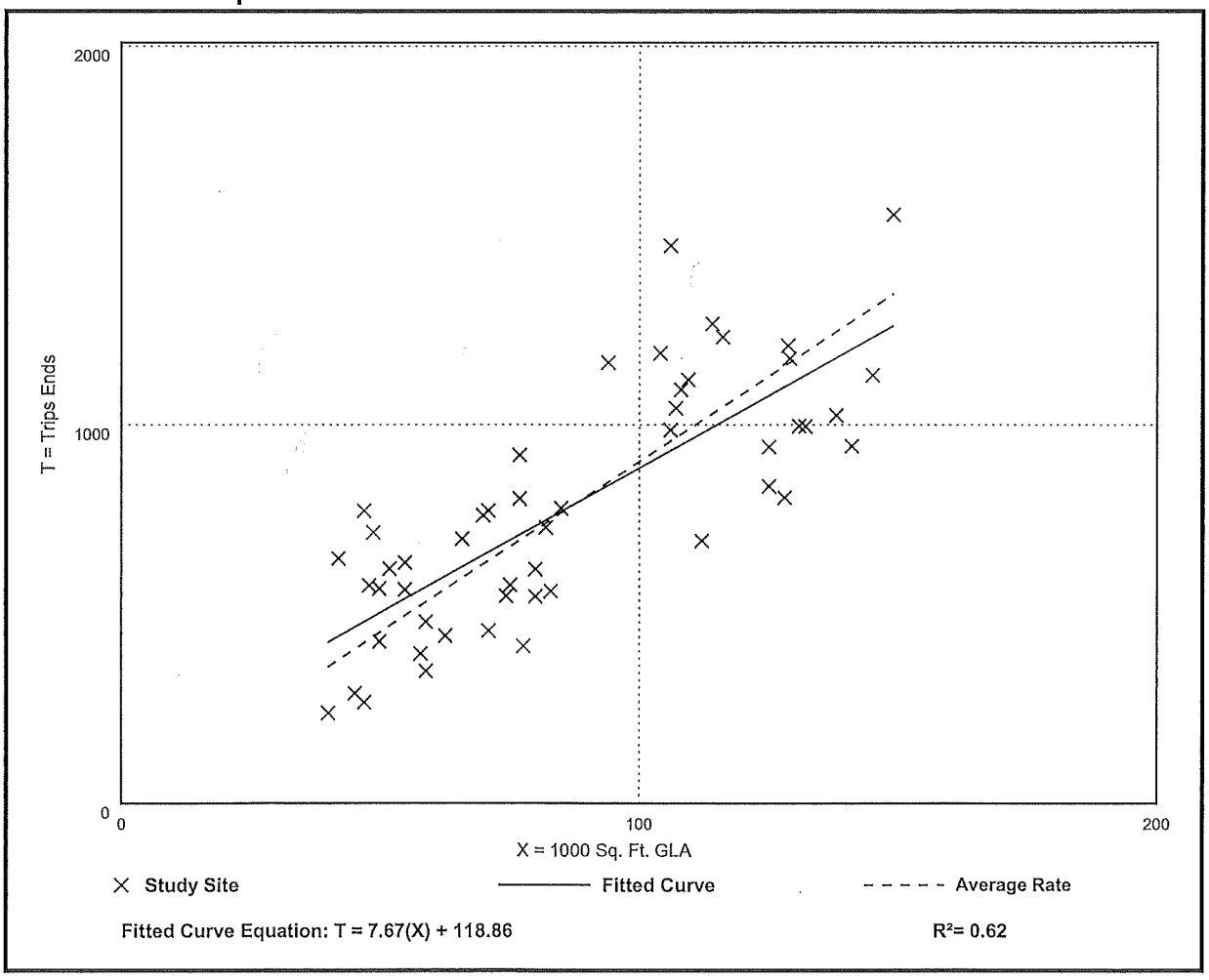
# Shopping Plaza (40-150k) - Supermarket - Yes (821)

**Vehicle Trip Ends vs: 1000 Sq. Ft. GLA**
**On a: Weekday,**
**Peak Hour of Adjacent Street Traffic,**
**One Hour Between 4 and 6 p.m.**
**Setting/Location: General Urban/Suburban**
Number of Studies: 51
Avg. 1000 Sq. Ft. GLA: 87
Directional Distribution: 48% entering, 52% exiting

## Vehicle Trip Generation per 1000 Sq. Ft. GLA

| Average Rate | Range of Rates | Standard Deviation |
|---|---|---|
| 9.03 | 5.35 - 16.45 | 2.37 |

## Data Plot and Equation




**Fitted Curve Equation: T = 7.67(X) + 118.86**

**$R^2$= 0.62**

## Vehicle Pass-By Rates by Land Use

Source: ITE *Trip Generation Manual*, 11th Edition

| | |
|---|---|
| Land Use Code | 821 |
| Land Use | Shopping Plaza (40 - 150k) |
| Setting | General Urban/Suburban |
| Time Period | Weekday PM Peak Period |
| # Data Sites | 15 |
| Average Pass-By Rate | 40% |

Pass-By Characteristics for Individual Sites

| GLA (000) | State or Province | Survey Year | # Interviews | Pass-By Trip (%) | Non-Pass-By Trips | | | Adj Street Peak Hour Volume | Source |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Primary (%) | Diverted (%) | Total (%) | | |
| 45 | Florida | 1992 | 844 | 56 | 24 | 20 | 44 | — | 30 |
| 50 | Florida | 1992 | 555 | 41 | 41 | 18 | 59 | — | 30 |
| 52 | Florida | 1995 | 665 | 42 | 33 | 25 | 58 | — | 30 |
| 53 | Florida | 1993 | 162 | 59 | — | — | 41 | — | 30 |
| 57.23 | Kentucky | 1993 | 247 | 31 | 53 | 16 | 69 | 2659 | 34 |
| 60 | Florida | 1995 | 1583 | 40 | 38 | 22 | 60 | — | 30 |
| 69.4 | Kentucky | 1993 | 109 | 25 | 42 | 33 | 75 | 1559 | 34 |
| 77 | Florida | 1992 | 365 | 46 | — | — | 54 | — | 30 |
| 78 | Florida | 1991 | 702 | 55 | 23 | 22 | 45 | — | 30 |
| 82 | Florida | 1992 | 336 | 34 | — | — | 66 | — | 30 |
| 92.857 | Kentucky | 1993 | 133 | 22 | 50 | 28 | 78 | 3555 | 34 |
| 100.888 | Kentucky | 1993 | 281 | 28 | 50 | 22 | 72 | 2111 | 34 |
| 121.54 | Kentucky | 1993 | 210 | 53 | 30 | 17 | 47 | 2636 | 34 |
| 144 | New Jersey | 1990 | 176 | 32 | 44 | 24 | 68 | — | 24 |
| 146.8 | Kentucky | 1993 | — | 36 | 39 | 25 | 64 | — | 34 |

OAKLAND COUNTY ROAD COMMISSION
TRAFFIC - SAFETY DEPARTMENT
SIGNAL WORK ORDER

LOCATION: Novi & 10 Mile DATE 6/22/21

CITY/TOWNSHIP: Novi BY: Dawn Bierlein

COUNTY#: 26 STATE#: _____ CHARGES: WO 00026 G

PLEASE PERFORM THE FOLLOWING:

_____ ELECTRICAL DEVICE: ____ INSTALL _____ MODERNIZE _____ MAINTENANCE

_____ UNDERGROUND: _____

_____ EDISON OK: _____ YES _____ NO JOB#: _____

_____ COORDINATE W/DISTRICT 7: _____

| | DIAL.. | 1 | 1 | 1 | 1 | | 2 | 2 | 2 | 2 | | 3 | 3 | 3 | 3 | | 4 | 4 | 4 | 4 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | SPLIT. | 1 | 2 | 3 | 4 | | 1 | 2 | 3 | 4 | | 1 | 2 | 3 | 4 | | 1 | 2 | 3 | 4 |
| _____ | CHANGE TIMING..... | | | | | | | | | | | | | | | | | | | |
| _____ | CHANGE OFFSET..... | | | | | | | | | | | | | | | | | | | |
| _____ | CHANGE CYCLE LENGTH..... | | | | | | | | | | | | | | | | | | | |
| _____ | ADD DIAL/SPLIT..... | | | | | | | | | | | | | | | | | | | |

_____ CHANGE BREAKOUT OR EPROM: _____

_____ CHANGE HOURS OF OPERATION:

OLD: _____

NEW: _____

_____ REPROGRAM TBC

_____ INSTALL INTERCONNECT: _____ TBC _____ MINITROL _____ TONE

_____ MBT OK: _____ YES _____ NO

_____ NO CHANGE - RECORD CORRECTION

__X__ OTHER: Build TS2 P cabinet for contractor with Mod 60 SCATS controller, Gridsmart camera, Opticom, and PCTEL antenna. (Use existing Digi – Inspector to install)

(Rev1)

APPROVED BY: _____ DATE: 10/24/21

DATE INSTALLED: _____

INSTALLED BY: _____

INTERSECTION :- 26  NOVI & 10 MILE
DESCRIPTION PROMS :- X00020R / F4808
CONTROLLER TYPE :- STANDARD PERSONALITY CONTROLLER
SOFTWARE TYPE :- MOD 60 SCATS S30 (TS2)
INPUTS :-

1. SB NOVI LT (NL)  NOTE: ALL DETECTION IS GRIDSMART
2. SB NOVI LT ADV (NL)
3. SB NOVI L (LK)
4. SB NOVI R (LK)
5. EB 10 MILE LT (NL)
6. EB 10 MILE LT ADV (NL)
7. EB 10 MILE L (LK)
8. EB 10 MILE R (LK)
9. NB NOVI LT (NL)
10. NB NOVI LT ADV (NL)
11. NB NOVI L (LK)
12. NB NOVI R (LK)
13. WB 10 MILE LT (NL)
14. WB 10 MILE LT ADV (NL)
15. WB 10 MILE L (LK)
16. WB 10 MILE R (LK)

Opticom 1: TB2 PREEMPT INPUT 3 (NB & SB NOVI)
Opticom 2: TB2 PREEMPT INPUT 4 (EB & WB 10 MILE)

PED 2: NB NOVI PED (EAST LEG) P.B. (WA)
PED 4: WB 10 MILE PED (NORTH LEG) P.B. (WB)
PED 6: SB NOVI PED (WEST LEG) P.B. (WC)
PED 8: EB 10 MILE PED (SOUTH LEG) P.B. (WD)

APPROACHES :-

| | |
|---|---|
| A APPR 1 : SB NOVI | A APPR 2 : NB NOVI |
| B APPR 1 : EB 10 MILE LT | B APPR 2 : WB 10 MILE LT |
| C APPR 1 : EB 10 MILE | C APPR 2 : WB 10 MILE |
| D APPR 1 : SB NOVI LT | D APPR 2 : NB NOVI LT |

FLEXIDATA:-

| SEQUENCE | A,B,C,D | A,B,C,D |
|---|---|---|
| AUTO REL | | |
| R- REL | A | A |
| R+ REL | B | B |
| Q- REL | C | C |
| Q+ REL | D | D |
| LOOKAHEAD | | |

PEDESTRIANS:-
2. NB NOVI PED (EAST LEG) P.B.
4. WB 10 MILE PED (NORTH LEG) P.B.
6. SB NOVI PED (WEST LEG) P.B.
8. EB 10 MILE PED (SOUTH LEG) P.B.

SPECIAL FEATURES :-
Controller Software must be 2070/M52 S30 or later (VC=5).
The personality revision number is currently 1 (=A).

Ped outputs mapped to phases as follows: ped 2 = 9, ped 4 = 10, ped 6 = 11 and ped 8 = 12. VC5 software reports them as mapped.

Left turns are permissive to NCHRP flashing yellow recommendation. Signal groups 13,14,15,16 provide flashing yellow (green aspect), yellow and red, i.e. upper aspects of 4 section turn display. Signal groups 1,3,5,7 provide the green (bottom) aspect, i.e. turn arrow.

A STAGE HAS A PERMANENT DEMAND. DEMAND FOR STAGES B, C, D IN FLEXI AND

ISOLATED. SET XSF8 (XL Value = 80) TO DISABLE.

Night Flash code: Set Y+ to activate the night flash in Flexilink
Signal Group 1 and 5 non-locked detectors will not call stage D directly.
If XSF7 is set signal Group 1 and 5 detectors will call stage C and then
stage D.

IN MASTERLINK AND FLEXILINK:
Z- ON CAUSES D1 TURN TO APPEAR AND HOLD IN D STAGE
Z+ ON CAUSES D2 TURN TO APPEAR AND HOLD IN D STAGE
Z- & Z+ ON CAUSES BOTH TURNS TO APPEAR AND HOLD IN D

The XSF bits below will call & extend or only call the LT phase.
XSF09 (XH Value = 01) sets MAX recall for SG1 left turn.
XSF10 (XH Value = 02) sets min recall for SG1 left turn.
XSF11 (XH Value = 04) sets MAX recall for SG3 left turn.
XSF12 (XH Value = 08) sets min recall for SG3 left turn.
XSF13 (XH Value = 10) sets MAX recall for SG5 left turn.
XSF14 (XH Value = 20) sets min recall for SG5 left turn.
XSF15 (XH Value = 40) sets MAX recall for SG7 left turn.
XSF16 (XH Value = 80) sets min recall for SG7 left turn.

B1-C O/L OR B2-C O/L MAY APPEAR IN B1 OR B2 RESPECTIVELY
HOWEVER IF THE OVERLAP TERMINATES IN B THEN THE C AMBER
AND C RED TIMES ARE USED FOR B STAGE

Set BT = nS in SCATS data to enable Z5 flag in B stage to C.
This allows termination of o/lap phase minimum timer if the
appropriate phase o/lap is to occur and C is next, otherwise
phase minimum is guaranteed by phase minimum timer.

Flash rate for FYA is set with Timesettings 28 and 29.
TSM28=0.6 (on rate), TSM29=0.4 (off rate)

BACKPANEL :- SIZE P44-16 TS2 CABINET

| | | | |
|---|---|---|---|
| LOAD SWITCH 1: | SB NOVI LT (G: green arrow) | CL | - |
| LOAD SWITCH 2: | NB NOVI | A | FLR |
| LOAD SWITCH 3: | EB 10 MILE LT (G: green arrow) | DL | - |
| LOAD SWITCH 4: | WB 10 MILE | B | FLR |
| LOAD SWITCH 5: | NB NOVI LT (G: green arrow) | AL | - |
| LOAD SWITCH 6: | SB NOVI | C | FLR |
| LOAD SWITCH 7: | WB 10 MILE LT (G: green arrow) | BL | - |
| LOAD SWITCH 8: | EB 10 MILE | D | FLR |
| LOAD SWITCH 9: | NB NOVI PED (EAST LEG) | WA | |
| LOAD SWITCH 10: | WB 10 MILE PED (NORTH LEG) | WB | |
| LOAD SWITCH 11: | SB NOVI PED (WEST LEG) | WC | |
| LOAD SWITCH 12: | EB 10 MILE PED (SOUTH LEG) | WD | |
| LOAD SWITCH 13(OLA): | SB NOVI LT | CL | FLR |
| | G: flashing yellow arrow, Y: yellow arrow, R: red arrow | | |
| LOAD SWITCH 14(OLB): | EB 10 MILE LT | DL | FLR |
| | G: flashing yellow arrow, Y: yellow arrow, R: red arrow | | |
| LOAD SWITCH 15(OLC): | NB NOVI LT | AL | FLR |
| | G: flashing yellow arrow, Y: yellow arrow, R: red arrow | | |
| LOAD SWITCH 16(OLD): | WB 10 MILE LT | BL | FLR |
| | G: flashing yellow arrow, Y: yellow arrow, R: red arrow | | |

MMU 2 :- (MENU : SET/VIEW CONFIG)

| | |
|---|---|
| Field Check Enable | Channel 1: G<br>Channel 2: G, Y, R<br>Channel 3: G<br>Channel 4: G, Y, R<br>Channel 5: G<br>Channel 6: G, Y, R<br>Channel 7: G<br>Channel 8: G, Y, R<br>Channel 13: G, Y, R<br>Channel 14: G, Y, R<br>Channel 15: G, Y, R<br>Channel 16: G, Y, R |
| Dual Indication Enable: | R+G: Channel 2,4,6,8,9,10,11,12,13,14,15,16<br>R+Y: Channel 2,4,6,8,13,14,15,16<br>G+Y: Channel 2,4,6,8,13,14,15,16 |
| Red Fail Enable: | Enable: Channel 2,4,6,8,13,14,15,16 |
| Y & R Clearance Disable: | Channel 2,4,6,8,13,14,15,16 Enabled |
| Flashing Yellow Arrow: | Select mode B<br>Enable: Channel Pair 1-13,3-14,5-15,7-16 |
| Unit Options: | All OFF except:<br>Recurrent pulse<br>LED Guard<br>Program Memory Card |
| Program Card: | Compatible Channels:<br>1-5, 1-6, 1-11, 1-13, 1-15, 2-5, 2-6, 2-9,<br>2-11, 2-13, 2-15, 3-7, 3-8, 3-12, 3-14, 3-16,<br>4-7, 4-8, 4-10, 4-12, 4-14, 4-16, 5-9, 5-13,<br>5-15, 6-9, 6-11, 6-13, 6-15, 7-10, 7-14, 7-16,<br>8-10, 8-12, 8-14, 8-16, 9-11, 9-13, 9-15,<br>10-12, 10-14, 10-16, 11-13, 11-15, 12-14,<br>12-16, 13-15, 14-16.<br><br>Min Flash Time: 4+2+1<br>Min Yellow Change Disable: 9,10,11,12<br>Voltage Monitor Latch: NONE |

Note :- Add Jumper 16 MMU Flash - 116 Monitor ST Out

```
*********************************
* CONTROLLER INFORMATION SHEET *
*      FOR SITE NO.  26        *
*     DAWN BIERLEIN            *
*          22-JUNE-2021        *
*********************************
```

CHECKSUMS
TIMES: AA/252
PERS: AC/254
TOTAL: 06/006

# FLEXILINK PLAN DATA

**Intersection #** 26 **State #** _____ **Date:** 06/22/21 **Prepared By:** Dawn Bierlein

**Intersection:** Novi & 10 Mile **City:** Novi

**Hours of Operation:** 7 Days: 24 Hours **Approved By:** Rachel Jones

**Hours of Flashing:** None

| | | PL0 | PL1 | PL2 | PL3 | PL4 | PL5 | PL6 | PL7 | PL8 |
|---|---|---|---|---|---|---|---|---|---|---|
| 0 | CL | | 100 | 120 | 120 | 80 | | | | |
| 1 | A | | 0 | 0 | 0 | 0 | | | | |
| 2 | B | | 40 | 48 | 39 | 29 | | | | |
| 3 | C | | 52 | 66 | 55 | 41 | | | | |
| 4 | D | | 88 | 106 | 104 | 68 | | | | |
| 5 | E | | | | | | | | | |
| 6 | F | | | | | | | | | |
| 7 | G | | | | | | | | | |
| 8 | R- | | | | | | | | | |
| 9 | R+ | | | | | | | | | |
| 10 | Of (Y-) | | 0 | 0 | 0 | 0 | | | | |
| 11 | Y+ | C | | | | | | | | |
| 12 | Z- | | | | | | | | | |
| 13 | Z+ | | | | | | | | | |
| 14 | Q- | | | | | | | | | |
| 15 | Q+ | | | | | | | | | |
| 16 | XH | | | | | | | | | |
| 17 | XL | | | | | | | | | |

**NOTE:** Stages with 1 second of phase time are skipped. Blank entries are default values equal to 0. Except for an AWA controller, entries #8 to #15 (=254) and 'C' entry means continuous (=255).

| | | | | | | | Timers | | |
|---|---|---|---|---|---|---|---|---|---|
| Phase | Direction | Min | Max | ECO | Amber | All Red | Gap | Hdwy | Waste |
| A | Novi | 10.0 | 50.0 | | 4.3 | 2.0 | 3.0 | 1.2 | 6.0 |
| B | 10 Mile LT | 4.0 | 15.0 | | 4.3 | 2.0 | 3.0 | 1.2 | 6.0 |
| C | 10 Mile | 10.0 | 50.0 | | 4.3 | 2.0 | 3.0 | 1.2 | 6.0 |
| D | Novi LT | 4.0 | 15.0 | | 4.3 | 2.0 | 3.0 | 1.2 | 6.0 |
| E | | | | | | | | | |
| F | | | | | | | | | |
| G | | | | | | | | | |

| | Day | Hours | Plan# |
|---|---|---|---|
| SC1 | 14 | 0:00 | 4 |
| SC2 | 8 | 6:00 | 2 |
| SC3 | 8 | 9:00 | 1 |
| SC4 | 8 | 15:00 | 3 |
| SC5 | 8 | 19:00 | 4 |
| SC6 | 13 | 18:00 | 4 |
| SC7 | | | |
| SC8 | | | |
| SC9 | | | |
| SC10 | | | |

**Pedestrian Crossing Times**

| | Direction | Walk | CL 1 | CL 2 |
|---|---|---|---|---|
| 2 | NB Novi Ped (East Leg) | 7.0 | 14.0 | 3.3 |
| 4 | WB 10 Mile Ped (Nort Leg) | 7.0 | 15.0 | 3.3 |
| 6 | SB Novi Ped (West Leg) | 7.0 | 14.0 | 3.3 |
| 8 | EB 10 Mile Ped (South Leg) | 7.0 | 15.0 | 3.3 |

TSM15 (Opticom Min Time) = 10
TSM16 (Opticom Alarm Time) = 200
Flash Rate Timesettings TSM28=0.6 (on rate); TSM29=0.4 (off rate)

**DAY OF WEEK CODE NUMBER**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 0 | End of Schedule | 4 | WED | 8 | MON-FRI | 12 | MON,FRI,SAT |
| 1 | SUN | 5 | THUR | 9 | MON-SAT | 13 | SAT,SUN |
| 2 | MON | 6 | FRI | 10 | TUE,WED,THU | 14 | EVERY DAY |
| 3 | TUE | 7 | SAT | 11 | MON,FRI | 15 | NEVER |

**Normal Operating Mode**

| | |
|---|---|
| Isolated | |
| Flexilink | |
| Masterlink | X |
| Master Isolated | |
| Flexi Isolated | |

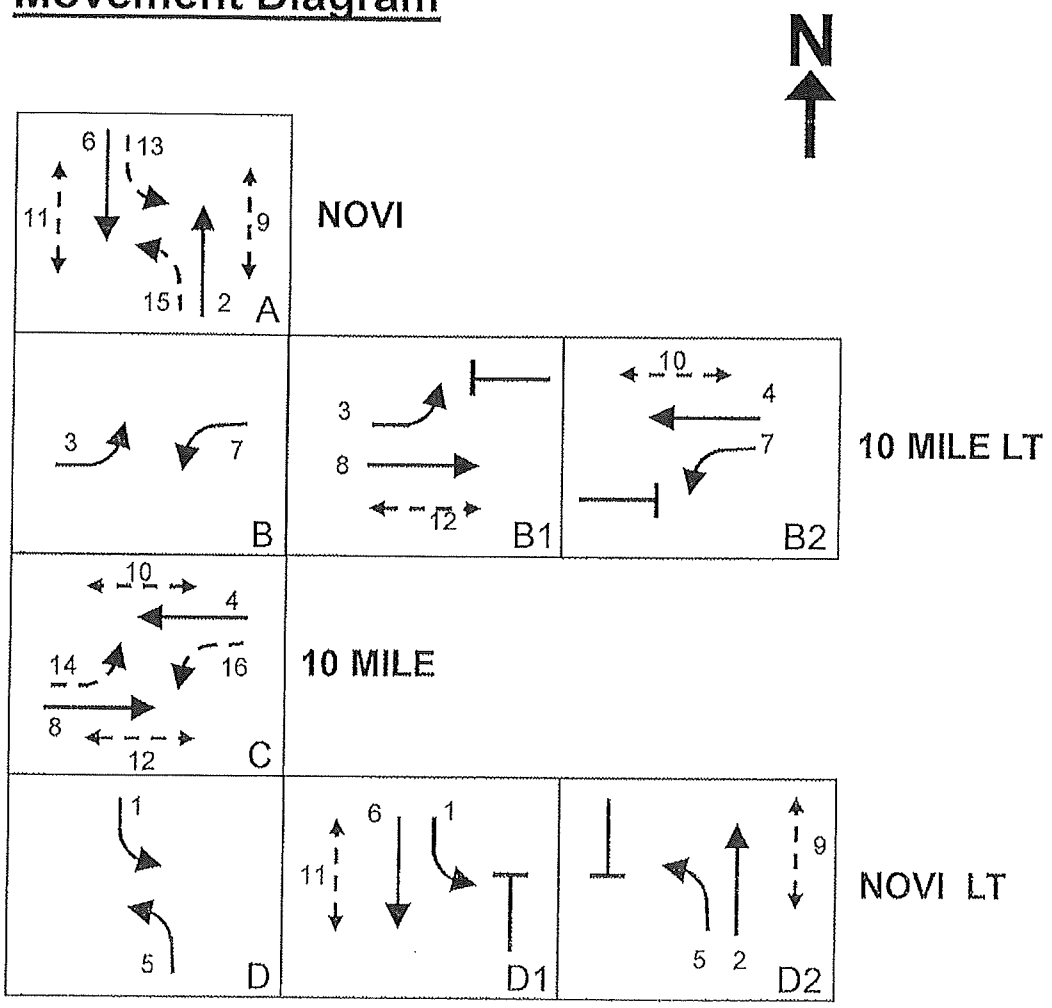
# TS2 Gridsmart Detectors BIU #1

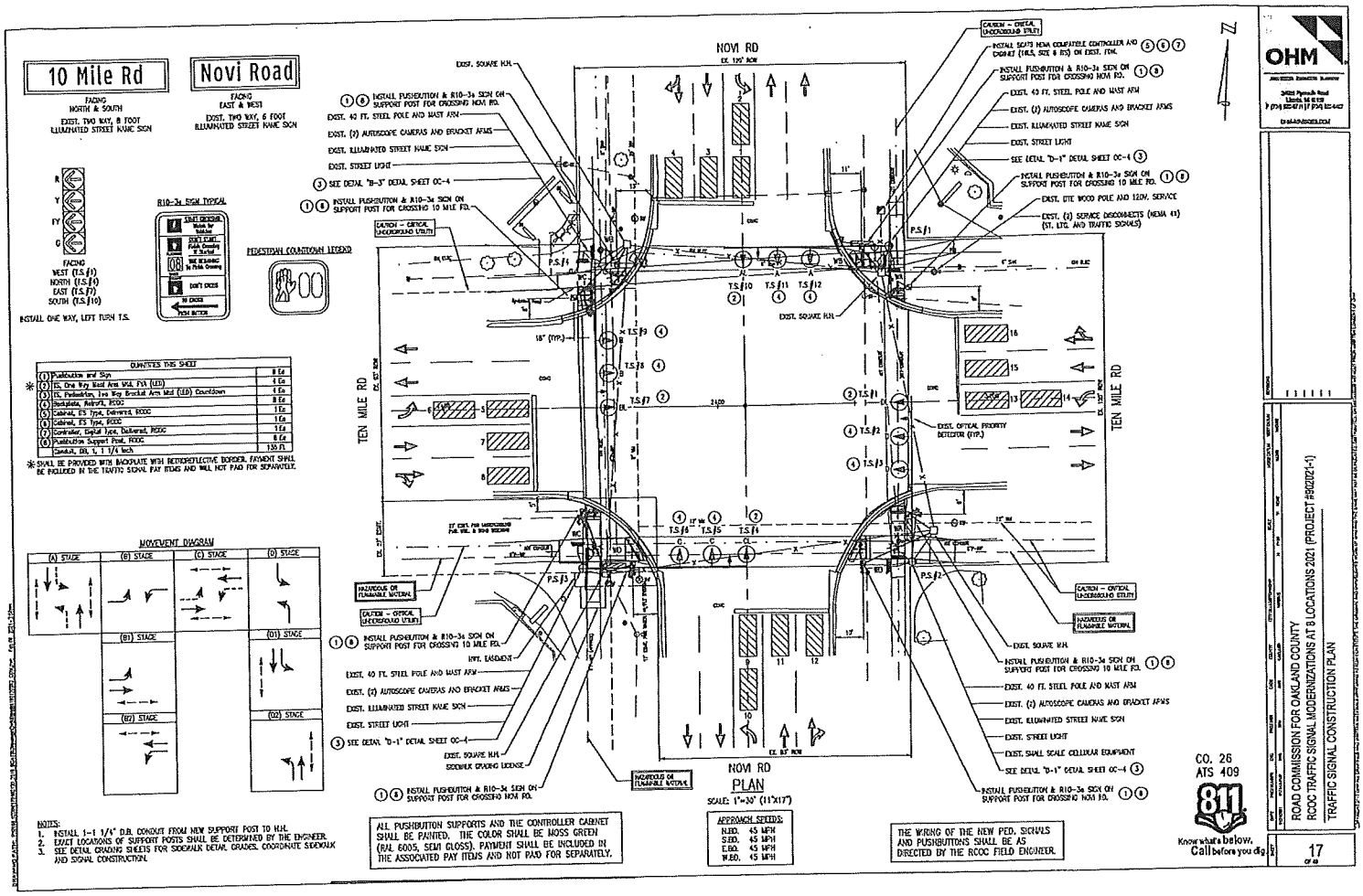
**CO# 26**

| Detector # on print | Description | Phase | Output |
|---|---|---|---|
| 1 | SB Novi LT | 1 | 1 |
| 2 | SB Novi LT Adv | 1 | 2 |
| 3 | SB Novi Thru L | 6 | 3 |
| 4 | SB Novi Thru R | 6 | 4 |
| 5 | EB 10 Mile LT | 3 | 5 |
| 6 | EB 10 Mile LT Adv | 3 | 6 |
| 7 | EB 10 Mile Thru L | 8 | 7 |
| 8 | EB 10 Mile Thru R | 8 | 8 |
| 9 | NB Novi LT | 5 | 9 |
| 10 | NB Novi LT Adv | 5 | 10 |
| 11 | NB Novi Thru L | 2 | 11 |
| 12 | NB Novi Thru R | 2 | 12 |
| 13 | WB 10 Mile LT | 7 | 13 |
| 14 | WB 10 Mile LT Adv | 7 | 14 |
| 15 | WB 10 Mile Thru L | 4 | 15 |
| 16 | WB 10 Mile Thru R | 4 | 16 |

# #26 – NOVI & 10 MILE

- **Movement Diagram**





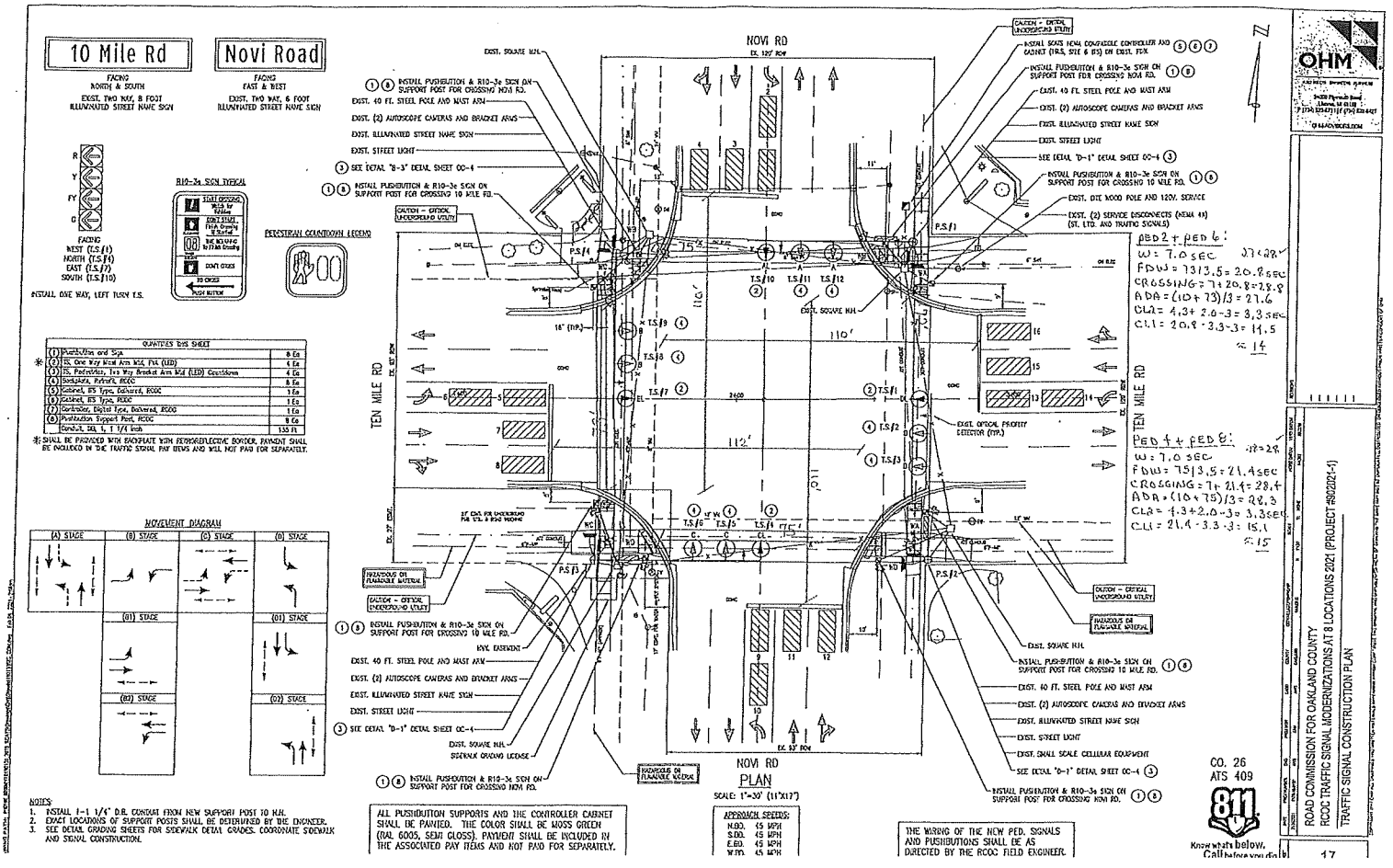

NOTES:
1. INSTALL 1-1 1/4" D.B. CONDUIT FROM NEW SUPPORT POST TO H.H.
2. EXACT LOCATIONS OF SUPPORT POSTS SHALL BE DETERMINED BY THE ENGINEER.
3. SEE DETAIL GRADING SHEETS FOR SIDEWALK DETAIL GRADES. COORDINATE SIDEWALK AND SIGNAL CONSTRUCTION.

NB NOVI: 45 @ 110'
Y = 4.3
R = 2.0

WB 10MILE: 45 @ 110'
Y = 4.3
R = 2.0

SB NOVI: 45 @ 110'
Y = 4.3
R = 2.0

EB 10MILE: 45 @ 112'
Y = 4.3
R = 2.0




NOTES:
1. INSTALL 1-1 1/4" O.D. CONDUIT FROM NEW SUPPORT POST TO H.H.
2. EXACT LOCATIONS OF SUPPORT POSTS SHALL BE DETERMINED BY THE ENGINEER.
3. SEE DETAIL GRADING SHEETS FOR SIDEWALK DETAIL GRADES. COORDINATE SIDEWALK AND SIGNAL CONSTRUCTION.

ALL PUSHBUTTON SUPPORTS AND THE CONTROLLER CABINET SHALL BE PAINTED. THE COLOR SHALL BE MOSS GREEN (RAL 6005, SEMI GLOSS). PAYMENT SHALL BE INCLUDED IN THE ASSOCIATED PAY ITEMS AND NOT PAID FOR SEPARATELY.

THE WIRING OF THE NEW PED. SIGNALS AND PUSHBUTTONS SHALL BE AS DIRECTED BY THE RCOC FIELD ENGINEER.

CO. 26
ATS 409

Know what's below. Call before you dig.

ROAD COMMISSION FOR OAKLAND COUNTY
RCOC TRAFFIC SIGNAL MODERNIZATIONS AT 8 LOCATIONS 2021 (PROJECT #SM2021-1)
TRAFFIC SIGNAL CONSTRUCTION PLAN

OAKLAND COUNTY ROAD COMMISSION
TRAFFIC - SAFETY DEPARTMENT
SIGNAL WORK ORDER

LOCATION: 10 Mile & Meadowbrook DATE: 8/7/18

CITY/TOWNSHIP: NOVI BY: E LABIANO

COUNTY#: 446 STATE#: - CHARGES: 53821.0981 (Labor & Materials)

PLEASE PERFORM THE FOLLOWING:

____ ELECTRICAL DEVICE: ____ INSTALL ____ MODERNIZE ____ MAINTENANCE

____ UNDERGROUND: _____

____ EDISON OK: ____ YES ____ NO JOB#: _____ SEP 10 2018

____ COORDINATE W/DISTRICT 7: _____

| | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DIAL.. | 1 | 1 | 1 | 1 | | 2 | 2 | 2 | 2 | | 3 | 3 | 3 | 3 | | 4 | 4 | 4 | 4 |
| SPLIT. | 1 | 2 | 3 | 4 | | 1 | 2 | 3 | 4 | | 1 | 2 | 3 | 4 | | 1 | 2 | 3 | 4 |
| ____ CHANGE TIMING..... | | | | | | | | | | | | | | | | | | | |
| ____ CHANGE OFFSET..... | | | | | | | | | | | | | | | | | | | |
| ____ CHANGE CYCLE LENGTH..... | | | | | | | | | | | | | | | | | | | |
| ____ ADD DIAL/SPLIT..... | | | | | | | | | | | | | | | | | | | |

____ CHANGE BREAKOUT OR EPROM: _____

____ CHANGE HOURS OF OPERATION:

OLD: _____

NEW: _____

____ REPROGRAM TBC

____ INSTALL INTERCONNECT: ____ TBC ____ MINITROL ____ TONE

____ MBT OK: ____ YES ____ NO

____ NO CHANGE - RECORD CORRECTION

__X__ OTHER: PLEASE SWAP OUT EXISTING FLIR CAMERAS WITH AIS-IV CAMERAS (8 CAMERAS) PLEASE CALL TOC TO CONFIRM CAMERAS AND COMMS.TURN ON LED GUARD IN MMU UNIT OPTIONS- CONFIRM: Jumper 16 MMU Flash - 116 Monitor ST Out

** Personality not changed, paperwork updated for AIS-IV cameras **

APPROVED BY: _____ DATE: 8/20/18

DATE INSTALLED: 9/6/18

INSTALLED BY: PRATHN LARSON

INTERSECTION :- 446  10 Mile & Meadowbrook
DESCRIPTION PROMS :- X00446 / F4808
CONTROLLER TYPE :- STANDARD PERSONALITY CONTROLLER
SOFTWARE :- MOD 52 SCATS S30
INPUTS :-

 1. NB Meadowbrook LT (LK)
 2. NB Meadowbrook LT Adv (LK)
 3. NB Meadowbrook Thru L (LK)
 4. NB Meadowbrook Thru R (LK)
 5. WB 10 Mile LT (NL)
 6. WB 10 Mile LT Adv (NL)
 7. WB 10 Mile Thru L (LK)
 8. WB 10 Mile Thru R (LK)
 9. SB Meadowbrook LT (LK)
10. SB Meadowbrook LT Adv (LK)
11. SB Meadowbrook Thru L (LK)
12. SB Meadowbrook Thru R (LK)
13. EB 10 Mile LT (NL)
14. EB 10 Mile LT Adv (NL)
15. EB 10 Mile Thru L (LK)
16. EB 10 Mile Thru R (LK)

NOTE: ALL DETECTORS ARE AUTOSCOPE (RACKVISION, AIS-IV CAMERAS).

Opticom 1: TB2 PREEMPT INPUT 3 (CALLS EB & WB 10 Mile).
Opticom 2: TB2 PREEMPT INPUT 4 (CALLS NB & SB Meadowbrook).

PED 2: WB 10 Mile (North Leg) P.B.
PED 4: SB Meadowbrook (West Leg) P.B.
PED 6: EB 10 Mile (South Leg) P.B.
PED 8: NB Meadowbrook (East Leg) P.B.

APPROACHES :-

| | |
|---|---|
| A APP 1 : EB 10 Mile Thru L,R | A APP 2 : WB 10 Mile Thru L,R |
| B APP 1 : EB 10 Mile LT,LT Adv | B APP 2 : WB 10 Mile LT,LT Adv |
| C APP 1 : NB Meadowbrook Thru L,R | C APP 2 : SB Meadowbrook Thru L,R |
| D APP 1 : NB Meadowbrook LT,LT Adv | D APP 2 : SB Meadowbrook LT,LT Adv |

FLEXIDATA :-

| SEQUENCE | A,B,C,D | A,B,C,D |
|---|---|---|
| AUTO REL | | |
| R- REL | A | A |
| R+ REL | B | B |
| Q- REL | C | C |
| Q+ REL | D | D |

PEDESTRIANS :-

2. WB 10 Mile (North Leg) (P-)
4. SB Meadowbrook (West Leg) (P-)
6. EB 10 Mile (South Leg) (P+)
8. NB Meadowbrook (East Leg) (P+)

SPECIAL FEATURES :-
Personality revision is 1 (=A).
A Stage has permanent demand. Demand for B,C and D stages in flexi and isol.
Set ZNEG to disable.
Pedestrians have automatic introduction using SCATS Y-.
EB 10 Mile LT has flashing red display (filter) in A stage(s).
NB Meadowbrook LT has flashing red display (filter) in C stage(s).
WB 10 Mile LT has flashing red display (filter) in A stage(s).
SB Meadowbrook LT has flashing red display (filter) in C stage(s).
Opticom 1 calls EB & WB 10 Mile.
Opticom 2 calls NB & SB Meadowbrook.

BACKPANEL :- SIZE P44-16 CABINET

| | | |
|---|---|---|
| LOAD SWITCH 1 - EB Ten Mile LT | CL | FLR |
| LOAD SWITCH 2 - WB Ten Mile | A | FLR |
| LOAD SWITCH 3 - NB Meadowbrook LT | DL | FLR |
| LOAD SWITCH 4 - SB Meadowbrook | B | FLR |
| LOAD SWITCH 5 - WB Ten Mile LT | AL | FLR |
| LOAD SWITCH 6 - EB Ten Mile | C | FLR |
| LOAD SWITCH 7 - SB Meadowbrook LT | BL | FLR |
| LOAD SWITCH 8 - NB Meadowbrook | D | FLR |
| LOAD SWITCH 9 - WB 10 Mile (North Leg) | WA | |
| LOAD SWITCH 10- SB Meadowbrook (West Leg) | WB | |
| LOAD SWITCH 11- EB 10 Mile (South Leg) | WC | |
| LOAD SWITCH 12- NB Meadowbrook (East Leg) | WD | |

MMU 2: (MENU : SET/VIEW CONFIG)

Field Check Enable:
Channel 1: G, Y, R
Channel 2: G, Y, R
Channel 3: G, Y, R
Channel 4: G, Y, R
Channel 5: G, Y, R
Channel 6: G, Y, R
Channel 7: G, Y, R
Channel 8: G, Y, R

Dual Indication Enable:
R+G: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12
R+Y: 1, 2, 3, 4, 5, 6, 7, 8
G+Y: 1, 2, 3, 4, 5, 6, 7, 8

Red Fail Enable: Enable: Channel 1,2,3,4,5,6,7,8

Y & R Clearance Disable: Channel 1,2,3,4,5,6,7,8 Enabled

Flashing Yellow Arrow: None

Unit Options:
All OFF except:
Recurrent pulse
LED Guard
Program Memory Card

Program Card:
Compatible Channels:
1-5,2-6,2-9,2-11,3-7,4-8,4-10,4-12,6-9,6-11,8-10,
8-12,9-11,10-12
Min Flash Time : 4+2+1
Min Yellow Change Disable: 9,10,11,12
Voltage Monitor Latch: None

Note :- Add Jumper 16 MMU Flash - 116 Monitor ST Out

```
*********************************
* CONTROLLER INFORMATION SHEET *
*      FOR SITE NO. 446        *
*      DAWN BIERLEIN           *
*        23-Sep-2013           *
*********************************
```

CHECKSUMS:
TIMES: 82 / 202
PERS: 0F / 017
TOTAL: 8D / 215

# FLEXILINK PLAN DATA

**Intersection #** 446 **State #** _____ **Date:** 09/23/13 **Prepared By:** Dawn Bierlein

**Intersection:** Meadowbrook & Ten Mile **City:** Novi

**Flash:** None **Approved By:** Rachel Jones

| | | PL0 | PL1 | PL2 | PL3 | PL4 | PL5 | PL6 | PL7 | PL8 |
|---|---|---|---|---|---|---|---|---|---|---|
| 0 | CL | | 80 | 120 | 120 | | | | | |
| 1 | A | | 0 | 0 | 0 | | | | | |
| 2 | B | | 28 | 55 | 46 | | | | | |
| 3 | C | | 40 | 67 | 58 | | | | | |
| 4 | D | | 68 | 102 | 100 | | | | | |
| 5 | E | | | | | | | | | |
| 6 | F | | | | | | | | | |
| 7 | G | | | | | | | | | |
| 8 | R- | | | | | | | | | |
| 9 | R+ | | | | | | | | | |
| 10 | Y- | | 44 | 17 | 92 | | | | | |
| 11 | Y+ | C | | | | | | | | |
| 12 | Z- | | | | | | | | | |
| 13 | Z+ | | | | | | | | | |
| 14 | Q- | | | | | | | | | |
| 15 | Q+ | | | | | | | | | |
| 16 | | | | | | | | | | |
| 17 | | | | | | | | | | |

**NOTE:** STAGES WITH ONE SECOND PHASE TIMES ARE SKIPPED
BLANK ENTRIES ARE DEFAULT VALUES = 0 FOR ENTRIES #0 - #7, #16 - #17
254 FOR ENTRIES #8 - #15 'C' ENTRY MEANS CONTINOUS = 255

| | | | | | | | Timers | | |
|---|---|---|---|---|---|---|---|---|---|
| Phase | Direction | Min | Max | ECO | Amber | All Red | Gap | Hdwy | Waste |
| A | EB & WB 10 Mile | 10.0 | 30.0 | | 4.3 | 1.7 | 3.0 | 1.2 | 6.0 |
| B | EB & WB 10 Mile LT | 5.0 | 15.0 | | 4.3 | 1.7 | 3.0 | 1.2 | 6.0 |
| C | NB & SB Meadowbrook | 10.0 | 20.0 | | 3.9 | 2.5 | 3.5 | 1.2 | 6.0 |
| D | NB & SB Meadowbrook LT | 5.0 | 15.0 | | 3.9 | 2.5 | 3.0 | 1.2 | 6.0 |
| E | | | | | | | | | |
| F | | | | | | | | | |
| G | | | | | | | | | |

TSM15 = Opticom Min Alarm Time = 10
TSM16 = Opticom Max Alarm Time = 200

| | Day | Hours | Plan# |
|---|---|---|---|
| SC1 | 8 | 6:00 | 2 |
| SC2 | 8 | 9:00 | 1 |
| SC3 | 8 | 15:00 | 3 |
| SC4 | 8 | 19:00 | 1 |
| SC5 | 14 | 0:00 | 1 |
| SC6 | | | |
| SC7 | | | |
| SC8 | | | |
| SC9 | | | |
| SC10 | | | |

**Pedestrian Crossing Times**

| Direction | Walk | CL 1 | CL 2 |
|---|---|---|---|
| WB 10 Mile (North Leg) | 7.0 | 12.0 | 3.0 |
| SB Meadowbrook (West Leg) | 7.0 | 13.0 | 3.4 |
| EB 10 Mile (South Leg) | 7.0 | 14.0 | 3.0 |
| NB Meadowbrook (East Leg) | 7.0 | 13.0 | 3.4 |

**Normal Operating Mode**

| Isolated | Flexilink | Masterlink | Master Isolated | Flexi Isolated |
|---|---|---|---|---|
| | | X | | |

**DAY OF WEEK CODE NUMBER**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 0 | End of Schedule | 4 | WED | 8 | MON-FRI | 12 | MON,FRI,SAT |
| 1 | SUN | 5 | THUR | 9 | MON-SAT | 13 | SAT,SUN |
| 2 | MON | 6 | FRI | 10 | TUE,WED,THU | 14 | EVERY DAY |
| 3 | TUE | 7 | SAT | 11 | MON,FRI | 15 | NEVER |

# TS2 Autoscope AIS-IV Cameras

**CO#446 - 10 MILE & MEADOWBROOK**

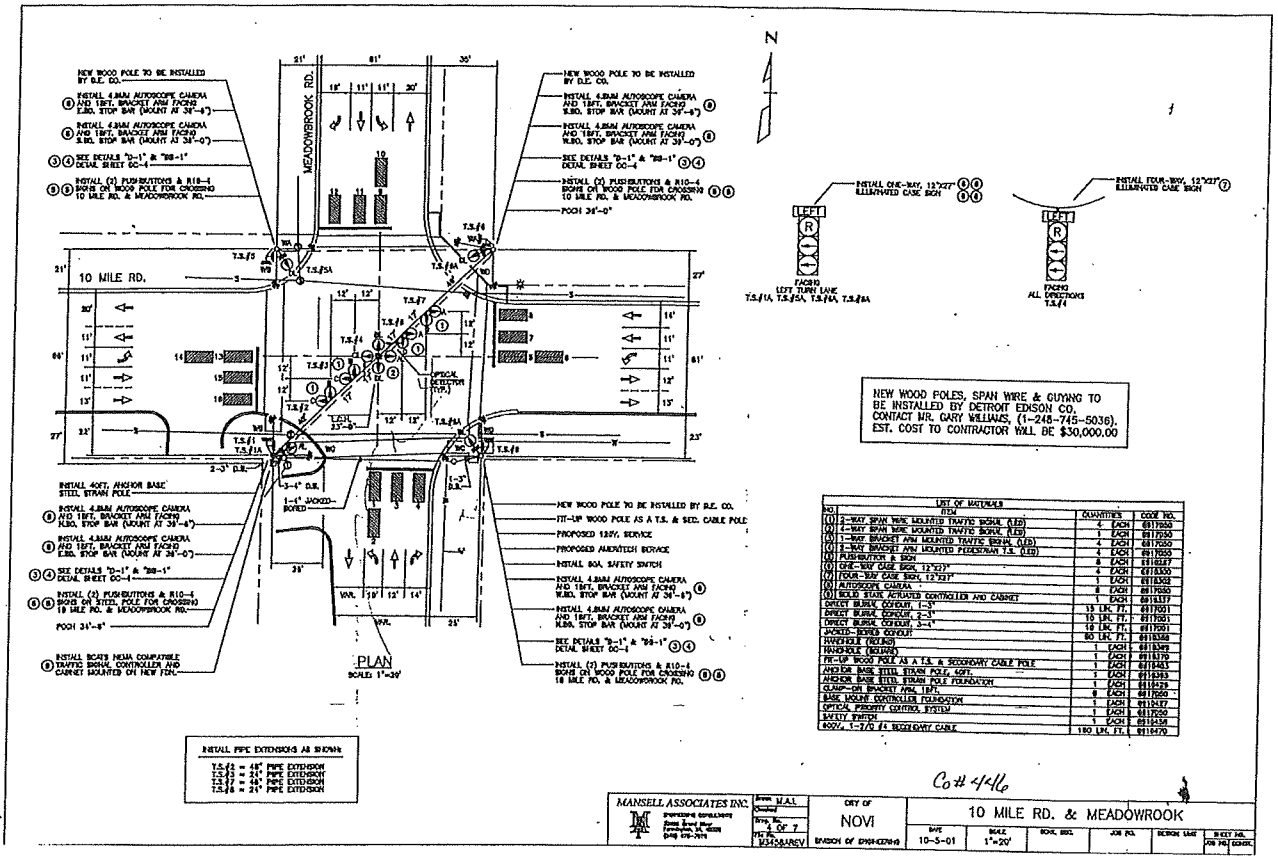
| Camera # | Rack Select Switch Position / Detector BIU | Input/Output LED | Description | Detector Number on Print | Phase |
|---|---|---|---|---|---|
| 1 | 1 | 1 | NB Meadowbrook LT | 1 | 3 |
| 1 | 1 | 2 | NB Meadowbrook LT Adv | 2 | 3 |
| 2 | 1 | 3 | NB Meadowbrook Thru L | 3 | 8 |
| 2 | 1 | 4 | NB Meadowbrook Thru R | 4 | 8 |
| 3 | 1 | 5 | WB Ten Mile LT | 5 | 5 |
| 3 | 1 | 6 | WB Ten Mile LT Adv | 6 | 5 |
| 4 | 1 | 7 | WB Ten Mile Thru L | 7 | 2 |
| 4 | 1 | 8 | WB Ten Mile Thru R | 8 | 2 |
| 5 | 1 | 9 | SB Meadowbrook LT | 9 | 7 |
| 5 | 1 | 10 | SB Meadowbrook LT Adv | 10 | 7 |
| 6 | 1 | 11 | SB Meadowbrook Thru L | 11 | 4 |
| 6 | 1 | 12 | SB Meadowbrook Thru R | 12 | 4 |
| 7 | 1 | 13 | EB Ten Mile LT | 13 | 1 |
| 7 | 1 | 14 | EB Ten Mile LT Adv | 14 | 1 |
| 8 | 1 | 15 | EB 10 Mile Thru L | 15 | 6 |
| 8 | 1 | 16 | EB 10 Mile Thru R | 16 | 6 |

**Input / Output Indicators**

TS2 Rack Select Switch Position 1 - Detectors 1-16
TS2 Rack Select Switch Position 2 - Detectors 17-32
TS2 Rack Select Switch Position 3 - Detectors 33-48
TS2 Rack Select Switch Position 4 - Detectors 49-64
TS2 Rack Select Switch Position 5 - Red Phases
TS2 Rack Select Switch Position 6 - Green Phases
TS2 Rack Select Switch Position 7-10 - All OFF

**MVP Status LEDs**

TS2 Rack Select Switch Position 1-7 - Cameras 1-4
TS2 Rack Select Switch Position 8 - Cameras 5-8
TS2 Rack Select Switch Position 9-10 - NOT USED




INSTALL PIPE EXTENSIONS AS SHOWN

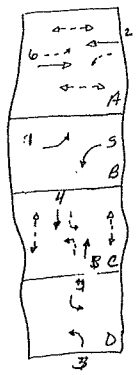
T.S.#3 = 18' PIPE EXTENSION
T.S.#5 = 21' PIPE EXTENSION
T.S.#7 = 24' PIPE EXTENSION
T.S.#8 = 24' PIPE EXTENSION

NEW WOOD POLES, SPAN WIRE & GUYING TO BE INSTALLED BY DETROIT EDISON CO. CONTACT MR. GARY WILLIAMS, (1-248-745-5036). EST. COST TO CONTRACTOR WILL BE $30,000.00

LIST OF MATERIALS

| NO. | ITEM | QUANTITIES | CODE NO. |
|---|---|---|---|
| (1) | 2-WAY, SPAN WIRE, MOUNTED TRAFFIC SIGNAL (LED) | 4 | EACH 6817650 |
| (2) | 4-WAY SPAN WIRE MOUNTED TRAFFIC SIGNAL (LED) | 1 | EACH 6817700 |
| (3) | 1-WAY BRACKET ARM MOUNTED TRAFFIC SIGNAL (LED) | 4 | EACH 6817050 |
| (4) | 2-WAY BRACKET ARM MOUNTED PEDESTRIAN T.S. (LED) | 4 | EACH 6817000 |
| (5) | PUSHBUTTON & SIGN | 8 | EACH 6818227 |
| (6) | ONE-WAY CASE SIGN, 12"x27" | 4 | EACH 6818300 |
| (7) | FOUR-WAY CASE SIGN, 12"x27" | 1 | EACH 6818302 |
| (8) | AUTOSCOPE CAMERA | 8 | EACH 6817650 |
| (9) | SOLID STATE ACTUATED CONTROLLER AND CABINET | 1 | EACH 6816117 |
| | DIRECT BURIAL CONDUIT, 1-3" | 15 | LIN. FT. 6817001 |
| | DIRECT BURIAL CONDUIT, 2-3" | 10 | LIN. FT. 6817001 |
| | DIRECT BURIAL CONDUIT, 3-4" | 10 | LIN. FT. 6817001 |
| | JACKED-BORED CONDUIT | 80 | LIN. FT. 6818368 |
| | HANDHOLE (SIGNAL) | 1 | EACH 6813349 |
| | HANDHOLE (LIGHTING) | 1 | EACH 6813370 |
| | FIT-UP WOOD POLE AS A T.S. & SECONDARY CABLE POLE | 1 | EACH 6818483 |
| | ANCHOR BASE STEEL STRAIN POLE, 40FT. | 1 | EACH 6818343 |
| | ANCHOR BASE STEEL STRAIN POLE FOUNDATION | 1 | EACH 6818429 |
| | CLAMP-ON BRACKET ARM, 18FT. | 1 | EACH 6817650 |
| | BASE MOUNT CONTROLLER FOUNDATION | 1 | EACH 6813477 |
| | OPTICAL PRIORITY CONTROL SYSTEM | 1 | EACH 6817050 |
| | SAFETY SWITCH | 1 | EACH 6818458 |
| | #6CV, 1-2/0 #4 SECONDARY CABLE | 180 | LIN. FT. 6816470 |

Movement Diagram




Co # 446

| | | | | | | |
|---|---|---|---|---|---|---|
| MANSELL ASSOCIATES INC. | Drawn M.A.L. | CITY OF NOVI | 10 MILE RD. & MEADOWBROOK | | | |
| | Checked | | | | | |
| | Dwg. No. 4 OF 7 | | | | | |
| | Ph. No. 834-348-4REV | DIVISION OF ENGINEERING | DATE 10-5-01 | SCALE 1"=20' | BOOK, PAGE | JOB NO. |

Sheet No. 7

# HCM 6th Signalized Intersection Summary
## 1001: Novi Road & 10 Mile Road

11/22/2022

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 200 | 426 | 148 | 85 | 350 | 83 | 155 | 447 | 113 | 78 | 361 | 157 |
| Future Volume (veh/h) | 200 | 426 | 148 | 85 | 350 | 83 | 155 | 447 | 113 | 78 | 361 | 157 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach | | No | | | No | | | No | | | No | |
| Adj Sat Flow, veh/h/ln | 1969 | 1969 | 1969 | 1953 | 1953 | 1953 | 1969 | 1969 | 1969 | 1969 | 1969 | 1969 |
| Adj Flow Rate, veh/h | 215 | 458 | 159 | 123 | 507 | 120 | 191 | 552 | 140 | 92 | 425 | 185 |
| Peak Hour Factor | 0.93 | 0.93 | 0.93 | 0.69 | 0.69 | 0.69 | 0.81 | 0.81 | 0.81 | 0.85 | 0.85 | 0.85 |
| Percent Heavy Veh, % | 2 | 2 | 2 | 3 | 3 | 3 | 2 | 2 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 274 | 635 | 219 | 249 | 608 | 143 | 430 | 1314 | 332 | 381 | 1080 | 465 |
| Arrive On Green | 0.10 | 0.23 | 0.23 | 0.07 | 0.20 | 0.20 | 0.06 | 0.44 | 0.44 | 0.04 | 0.42 | 0.42 |
| Sat Flow, veh/h | 1875 | 2729 | 940 | 1860 | 2980 | 702 | 1875 | 2957 | 747 | 1875 | 2545 | 1097 |
| Grp Volume(v), veh/h | 215 | 313 | 304 | 123 | 315 | 312 | 191 | 348 | 344 | 92 | 311 | 299 |
| Grp Sat Flow(s),veh/h/ln | 1875 | 1870 | 1798 | 1860 | 1856 | 1826 | 1875 | 1870 | 1834 | 1875 | 1870 | 1771 |
| Q Serve(g_s), s | 10.9 | 18.5 | 18.8 | 6.2 | 19.5 | 19.7 | 7.0 | 15.3 | 15.4 | 3.3 | 13.8 | 14.0 |
| Cycle Q Clear(g_c), s | 10.9 | 18.5 | 18.8 | 6.2 | 19.5 | 19.7 | 7.0 | 15.3 | 15.4 | 3.3 | 13.8 | 14.0 |
| Prop In Lane | 1.00 | | 0.52 | 1.00 | | 0.38 | 1.00 | | 0.41 | 1.00 | | 0.62 |
| Lane Grp Cap(c), veh/h | 274 | 435 | 418 | 249 | 378 | 372 | 430 | 831 | 815 | 381 | 794 | 752 |
| V/C Ratio(X) | 0.78 | 0.72 | 0.73 | 0.49 | 0.83 | 0.84 | 0.44 | 0.42 | 0.42 | 0.24 | 0.39 | 0.40 |
| Avail Cap(c_a), veh/h | 274 | 525 | 505 | 302 | 521 | 513 | 430 | 831 | 815 | 418 | 794 | 752 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Uniform Delay (d), s/veh | 35.2 | 42.4 | 42.5 | 35.1 | 45.8 | 45.9 | 18.5 | 22.8 | 22.8 | 18.6 | 23.8 | 23.9 |
| Incr Delay (d2), s/veh | 13.7 | 3.8 | 4.2 | 1.5 | 8.1 | 8.7 | 0.7 | 1.6 | 1.6 | 0.3 | 1.5 | 1.6 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(95%),veh/ln | 9.8 | 13.6 | 13.3 | 5.1 | 14.6 | 14.6 | 5.3 | 11.0 | 10.9 | 2.5 | 10.2 | 9.9 |
| Unsig. Movement Delay, s/veh | | | | | | | | | | | | |
| LnGrp Delay(d),s/veh | 48.9 | 46.2 | 46.7 | 36.7 | 53.9 | 54.6 | 19.3 | 24.3 | 24.4 | 18.9 | 25.3 | 25.5 |
| LnGrp LOS | D | D | D | D | D | D | B | C | C | B | C | C |
| Approach Vol, veh/h | | 832 | | | 750 | | | 883 | | | 702 | |
| Approach Delay, s/veh | | 47.1 | | | 51.3 | | | 23.3 | | | 24.5 | |
| Approach LOS | | D | | | D | | | C | | | C | |

| Timer - Assigned Phs | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Phs Duration (G+Y+Rc), s | 11.6 | 59.6 | 14.6 | 34.2 | 14.0 | 57.2 | 18.0 | 30.8 |
| Change Period (Y+Rc), s | 6.3 | 6.3 | 6.3 | 6.3 | 6.3 | 6.3 | 6.3 | 6.3 |
| Max Green Setting (Gmax), s | 7.7 | 41.7 | 11.7 | 33.7 | 7.7 | 41.7 | 11.7 | 33.7 |
| Max Q Clear Time (g_c+I1), s | 5.3 | 17.4 | 8.2 | 20.8 | 9.0 | 16.0 | 12.9 | 21.7 |
| Green Ext Time (p_c), s | 0.0 | 4.0 | 0.1 | 2.8 | 0.0 | 3.5 | 0.0 | 2.8 |

| Intersection Summary | |
|---|---|
| HCM 6th Ctrl Delay | 36.5 |
| HCM 6th LOS | D |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.1 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 1 | 604 | 9 | 2 | 504 | 0 | 2 | 0 | 4 | 0 | 0 | 4 |
| Future Vol, veh/h | 1 | 604 | 9 | 2 | 504 | 0 | 2 | 0 | 4 | 0 | 0 | 4 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | 100 | - | 0 | 75 | - | - | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 88 | 88 | 88 | 69 | 69 | 69 | 60 | 60 | 60 | 60 | 60 | 60 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 14 | 14 | 14 |
| Mvmt Flow | 1 | 686 | 10 | 3 | 730 | 0 | 3 | 0 | 7 | 0 | 0 | 7 |

| Major/Minor | Major1 | | | Major2 | | | Minor1 | | | Minor2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 730 | 0 | 0 | 696 | 0 | 0 | 1059 | 1424 | 686 | 1433 | 1434 | 365 |
| Stage 1 | - | - | - | - | - | - | 688 | 688 | - | 736 | 736 | - |
| Stage 2 | - | - | - | - | - | - | 371 | 736 | - | 697 | 698 | - |
| Critical Hdwy | 4.13 | - | - | 4.13 | - | - | 7.33 | 6.53 | 6.23 | 7.51 | 6.71 | 7.11 |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | 6.13 | 5.53 | - | 6.71 | 5.71 | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | 6.53 | 5.53 | - | 6.31 | 5.71 | - |
| Follow-up Hdwy | 2.219 | - | - | 2.219 | - | - | 3.519 | 4.019 | 3.319 | 3.633 | 4.133 | 3.433 |
| Pot Cap-1 Maneuver | 872 | - | - | *887 | - | - | *559 | *421 | *593 | *436 | *398 | 604 |
| Stage 1 | - | - | - | - | - | - | *560 | *490 | - | *356 | *402 | - |
| Stage 2 | - | - | - | - | - | - | *622 | *424 | - | *542 | *476 | - |
| Platoon blocked, % | | - | - | 1 | - | - | 1 | 1 | 1 | 1 | 1 | |
| Mov Cap-1 Maneuver | 872 | - | - | *887 | - | - | *551 | *419 | *593 | *429 | *396 | 604 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | *551 | *419 | - | *429 | *396 | - |
| Stage 1 | - | - | - | - | - | - | *559 | *489 | - | *356 | *401 | - |
| Stage 2 | - | - | - | - | - | - | *613 | *423 | - | *535 | *476 | - |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Control Delay, s | 0 | 0 | 11.3 | 11 |
| HCM LOS | | | B | B |

| Minor Lane/Major Mvmt | NBLn1 | EBL | EBT | EBR | WBL | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 578 | 872 | - | - | * 887 | - | - | 604 |
| HCM Lane V/C Ratio | 0.017 | 0.001 | - | - | 0.003 | - | - | 0.011 |
| HCM Control Delay (s) | 11.3 | 9.1 | - | - | 9.1 | - | - | 11 |
| HCM Lane LOS | B | A | - | - | A | - | - | B |
| HCM 95th %tile Q(veh) | 0.1 | 0 | - | - | 0 | - | - | 0 |

| Notes | | | |
|---|---|---|---|
| ~: Volume exceeds capacity | $: Delay exceeds 300s | +: Computation Not Defined | *: All major volume in platoon |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.3 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 24 | 580 | 0 | 0 | 499 | 12 | 0 | 0 | 0 | 2 | 0 | 11 |
| Future Vol, veh/h | 24 | 580 | 0 | 0 | 499 | 12 | 0 | 0 | 0 | 2 | 0 | 11 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | 75 | - | - | 75 | - | 25 | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 86 | 86 | 86 | 68 | 68 | 68 | 92 | 92 | 92 | 80 | 80 | 80 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 13 | 13 | 13 |
| Mvmt Flow | 28 | 674 | 0 | 0 | 734 | 18 | 0 | 0 | 0 | 3 | 0 | 14 |

| Major/Minor | Major1 | | | Major2 | | | Minor1 | | | Minor2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 752 | 0 | 0 | 674 | 0 | 0 | 1097 | 1482 | 674 | 1473 | 1473 | 376 |
| Stage 1 | - | - | - | - | - | - | 730 | 730 | - | 743 | 743 | - |
| Stage 2 | - | - | - | - | - | - | 367 | 752 | - | 730 | 730 | - |
| Critical Hdwy | 4.13 | - | - | 4.13 | - | - | 7.33 | 6.53 | 6.23 | 7.495 | 6.695 | 7.095 |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | 6.13 | 5.53 | - | 6.695 | 5.695 | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | 6.53 | 5.53 | - | 6.295 | 5.695 | - |
| Follow-up Hdwy | 2.219 | - | - | 2.219 | - | - | 3.519 | 4.019 | 3.319 | 3.6235 | 4.1235 | 3.4235 |
| Pot Cap-1 Maneuver | 856 | - | - | *926 | - | - | *583 | *331 | *618 | *337 | *326 | 596 |
| Stage 1 | - | - | - | - | - | - | *584 | *511 | - | *354 | *400 | - |
| Stage 2 | - | - | - | - | - | - | *626 | *417 | - | *566 | *498 | - |
| Platoon blocked, % | | - | - | 1 | - | - | 1 | 1 | 1 | 1 | 1 | |
| Mov Cap-1 Maneuver | 856 | - | - | *926 | - | - | *556 | *320 | *618 | *329 | *315 | 596 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | *556 | *320 | - | *329 | *315 | - |
| Stage 1 | - | - | - | - | - | - | *564 | *494 | - | *342 | *400 | - |
| Stage 2 | - | - | - | - | - | - | *612 | *417 | - | *548 | *482 | - |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Control Delay, s | 0.4 | 0 | 0 | 12 |
| HCM LOS | | | A | B |

| Minor Lane/Major Mvmt | NBLn1 | EBL | EBT | EBR | WBL | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | - | 856 | - | - | * 926 | - | - | 530 |
| HCM Lane V/C Ratio | - | 0.033 | - | - | - | - | - | 0.031 |
| HCM Control Delay (s) | 0 | 9.3 | - | - | 0 | - | - | 12 |
| HCM Lane LOS | A | A | - | - | A | - | - | B |
| HCM 95th %tile Q(veh) | - | 0.1 | - | - | 0 | - | - | 0.1 |

| Notes | | | |
|---|---|---|---|
| ~: Volume exceeds capacity | $: Delay exceeds 300s | +: Computation Not Defined | *: All major volume in platoon |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.2 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | ↔ | | | ↑ | ↱ | | ↔ | | | ↔ | |
| Traffic Vol, veh/h | 6 | 576 | 0 | 0 | 508 | 7 | 0 | 0 | 0 | 2 | 0 | 3 |
| Future Vol, veh/h | 6 | 576 | 0 | 0 | 508 | 7 | 0 | 0 | 0 | 2 | 0 | 3 |
| Conflicting Peds, #/hr | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | 150 | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 86 | 86 | 86 | 68 | 68 | 68 | 92 | 92 | 92 | 60 | 60 | 60 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 |
| Mvmt Flow | 7 | 670 | 0 | 0 | 747 | 10 | 0 | 0 | 0 | 3 | 0 | 5 |

| Major/Minor | Major1 | | | Major2 | | | Minor1 | | | Minor2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 758 | 0 | 0 | 670 | 0 | 0 | 1439 | 1442 | 670 | 1432 | 1432 | 748 |
| Stage 1 | - | - | - | - | - | - | 684 | 684 | - | 748 | 748 | - |
| Stage 2 | - | - | - | - | - | - | 755 | 758 | - | 684 | 684 | - |
| Critical Hdwy | 4.12 | - | - | 4.12 | - | - | 7.12 | 6.52 | 6.22 | 7.1 | 6.5 | 6.2 |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | 6.12 | 5.52 | - | 6.1 | 5.5 | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | 6.12 | 5.52 | - | 6.1 | 5.5 | - |
| Follow-up Hdwy | 2.218 | - | - | 2.218 | - | - | 3.518 | 4.018 | 3.318 | 3.5 | 4 | 3.3 |
| Pot Cap-1 Maneuver | 853 | - | - | 891 | - | - | 68 | 81 | 584 | 70 | 83 | 416 |
| Stage 1 | - | - | - | - | - | - | 536 | 477 | - | 408 | 423 | - |
| Stage 2 | - | - | - | - | - | - | 401 | 415 | - | 539 | 480 | - |
| Platoon blocked, % | | - | - | 1 | - | - | 1 | 1 | 1 | 1 | 1 | |
| Mov Cap-1 Maneuver | 852 | - | - | 891 | - | - | 66 | 79 | 584 | 69 | 82 | 416 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | 66 | 79 | - | 69 | 82 | - |
| Stage 1 | - | - | - | - | - | - | 529 | 471 | - | 402 | 423 | - |
| Stage 2 | - | - | - | - | - | - | 396 | 415 | - | 532 | 473 | - |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Control Delay, s | 0.1 | 0 | 0 | 32.8 |
| HCM LOS | | | A | D |

| Minor Lane/Major Mvmt | NBLn1 | EBL | EBT | EBR | WBL | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | - | 852 | - | - | 891 | - | - | 138 |
| HCM Lane V/C Ratio | - | 0.008 | - | - | - | - | - | 0.06 |
| HCM Control Delay (s) | 0 | 9.3 | 0 | - | 0 | - | - | 32.8 |
| HCM Lane LOS | A | A | A | - | A | - | - | D |
| HCM 95th %tile Q(veh) | - | 0 | - | - | 0 | - | - | 0.2 |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0 |

| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | ↰↑ | ↑ | ↱ | ⋎ | |
| Traffic Vol, veh/h | 2 | 577 | 508 | 4 | 0 | 2 |
| Future Vol, veh/h | 2 | 577 | 508 | 4 | 0 | 2 |
| Conflicting Peds, #/hr | 1 | 0 | 0 | 1 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | 0 | 0 | - |
| Veh in Median Storage, # | - | 0 | 0 | - | 0 | - |
| Grade, % | - | 0 | 0 | - | 0 | - |
| Peak Hour Factor | 85 | 85 | 68 | 68 | 60 | 60 |
| Heavy Vehicles, % | 2 | 2 | 3 | 3 | 0 | 0 |
| Mvmt Flow | 2 | 679 | 747 | 6 | 0 | 3 |

| Major/Minor | Major1 | | Major2 | | Minor2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 754 | 0 | - | 0 | 1092 | 748 |
| Stage 1 | - | - | - | - | 748 | - |
| Stage 2 | - | - | - | - | 344 | - |
| Critical Hdwy | 4.13 | - | - | - | 6.6 | 6.2 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.4 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.8 | - |
| Follow-up Hdwy | 2.219 | - | - | - | 3.5 | 3.3 |
| Pot Cap-1 Maneuver | 854 | - | - | - | *372 | 416 |
| Stage 1 | - | - | - | - | *471 | - |
| Stage 2 | - | - | - | - | *804 | - |
| Platoon blocked, % | | - | - | - | 1 | |
| Mov Cap-1 Maneuver | 853 | - | - | - | *370 | 416 |
| Mov Cap-2 Maneuver | - | - | - | - | *370 | - |
| Stage 1 | - | - | - | - | *469 | - |
| Stage 2 | - | - | - | - | *804 | - |

| Approach | EB | WB | SB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 0 | 13.7 |
| HCM LOS | | | B |

| Minor Lane/Major Mvmt | EBL | EBT | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|
| Capacity (veh/h) | 853 | - | - | - | 416 |
| HCM Lane V/C Ratio | 0.003 | - | - | - | 0.008 |
| HCM Control Delay (s) | 9.2 | 0 | - | - | 13.7 |
| HCM Lane LOS | A | A | - | - | B |
| HCM 95th %tile Q(veh) | 0 | - | - | - | 0 |

| Notes | | | |
|---|---|---|---|
| ~: Volume exceeds capacity | $: Delay exceeds 300s | +: Computation Not Defined | *: All major volume in platoon |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0 |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 577 | 0 | 0 | 512 | 0 | 0 |
| Future Vol, veh/h | 577 | 0 | 0 | 512 | 0 | 0 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | 0 | - | - | 0 | 0 |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 85 | 85 | 68 | 68 | 92 | 92 |
| Heavy Vehicles, % | 2 | 2 | 3 | 3 | 2 | 2 |
| Mvmt Flow | 679 | 0 | 0 | 753 | 0 | 0 |

| Major/Minor | Major1 | | Major2 | | Minor1 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 0 | 0 | 679 | 0 | 1056 | 679 |
| Stage 1 | - | - | - | - | 679 | - |
| Stage 2 | - | - | - | - | 377 | - |
| Critical Hdwy | - | - | 4.145 | - | 6.63 | 6.23 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.43 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.83 | - |
| Follow-up Hdwy | - | - | 2.2285 | - | 3.519 | 3.319 |
| Pot Cap-1 Maneuver | - | - | *922 | - | *584 | *618 |
| Stage 1 | - | - | - | - | *584 | - |
| Stage 2 | - | - | - | - | *664 | - |
| Platoon blocked, % | - | - | 1 | - | 1 | 1 |
| Mov Cap-1 Maneuver | - | - | *922 | - | *584 | *618 |
| Mov Cap-2 Maneuver | - | - | - | - | *584 | - |
| Stage 1 | - | - | - | - | *584 | - |
| Stage 2 | - | - | - | - | *664 | - |

| Approach | EB | WB | NB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 0 | 0 |
| HCM LOS | | | A |

| Minor Lane/Major Mvmt | NBLn1 | NBLn2 | EBT | EBR | WBL | WBT |
|---|---|---|---|---|---|---|
| Capacity (veh/h) | - | - | - | - | *922 | - |
| HCM Lane V/C Ratio | - | - | - | - | - | - |
| HCM Control Delay (s) | 0 | 0 | - | - | 0 | - |
| HCM Lane LOS | A | A | - | - | A | - |
| HCM 95th %tile Q(veh) | - | - | - | - | 0 | - |

| Notes | | | | |
|---|---|---|---|---|
| ~: Volume exceeds capacity | $: Delay exceeds 300s | +: Computation Not Defined | *: All major volume in platoon | |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0 |

| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | ↰ | ↑↱ | | ⅄ | |
| Traffic Vol, veh/h | 2 | 574 | 508 | 7 | 0 | 2 |
| Future Vol, veh/h | 2 | 574 | 508 | 7 | 0 | 2 |
| Conflicting Peds, #/hr | 1 | 0 | 0 | 1 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | 150 | 0 | - |
| Veh in Median Storage, # | - | 0 | 0 | - | 0 | - |
| Grade, % | - | 0 | 0 | - | 0 | - |
| Peak Hour Factor | 85 | 85 | 69 | 69 | 60 | 60 |
| Heavy Vehicles, % | 2 | 2 | 3 | 3 | 50 | 50 |
| Mvmt Flow | 2 | 675 | 736 | 10 | 0 | 3 |

| Major/Minor | Major1 | | Major2 | | Minor2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 747 | 0 | - | 0 | 1421 | 374 |
| Stage 1 | - | - | - | - | 742 | - |
| Stage 2 | - | - | - | - | 679 | - |
| Critical Hdwy | 4.13 | - | - | - | 7.35 | 7.65 |
| Critical Hdwy Stg 1 | - | - | - | - | 6.55 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 6.15 | - |
| Follow-up Hdwy | 2.219 | - | - | - | 3.975 | 3.775 |
| Pot Cap-1 Maneuver | 859 | - | - | - | *364 | 521 |
| Stage 1 | - | - | - | - | *344 | - |
| Stage 2 | - | - | - | - | *517 | - |
| Platoon blocked, % | | - | - | - | 1 | |
| Mov Cap-1 Maneuver | 858 | - | - | - | *362 | 521 |
| Mov Cap-2 Maneuver | - | - | - | - | *362 | - |
| Stage 1 | - | - | - | - | *342 | - |
| Stage 2 | - | - | - | - | *516 | - |

| Approach | EB | WB | SB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 0 | 12 |
| HCM LOS | | | B |

| Minor Lane/Major Mvmt | EBL | EBT | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|
| Capacity (veh/h) | 858 | - | - | - | 521 |
| HCM Lane V/C Ratio | 0.003 | - | - | - | 0.006 |
| HCM Control Delay (s) | 9.2 | 0 | - | - | 12 |
| HCM Lane LOS | A | A | - | - | B |
| HCM 95th %tile Q(veh) | 0 | - | - | - | 0 |

| Notes | | | |
|---|---|---|---|
| ~: Volume exceeds capacity | $: Delay exceeds 300s | +: Computation Not Defined | *: All major volume in platoon |

# HCM 6th Signalized Intersection Summary
## 1001: Novi Road & 10 Mile Road

11/22/2022

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 223 | 430 | 225 | 172 | 504 | 176 | 201 | 616 | 88 | 120 | 624 | 304 |
| Future Volume (veh/h) | 223 | 430 | 225 | 172 | 504 | 176 | 201 | 616 | 88 | 120 | 624 | 304 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 1.00 | | 1.00 | 1.00 | | 0.98 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach | | No | | | No | | | No | | | No | |
| Adj Sat Flow, veh/h/ln | 1984 | 1984 | 1984 | 1984 | 1984 | 1984 | 1984 | 1984 | 1984 | 1984 | 1984 | 1984 |
| Adj Flow Rate, veh/h | 242 | 467 | 245 | 198 | 579 | 202 | 212 | 648 | 93 | 126 | 657 | 320 |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.87 | 0.87 | 0.87 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Percent Heavy Veh, % | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Cap, veh/h | 248 | 605 | 316 | 265 | 691 | 240 | 298 | 1319 | 189 | 351 | 922 | 449 |
| Arrive On Green | 0.08 | 0.25 | 0.25 | 0.08 | 0.25 | 0.25 | 0.08 | 0.40 | 0.40 | 0.06 | 0.38 | 0.38 |
| Sat Flow, veh/h | 1890 | 2394 | 1248 | 1890 | 2731 | 950 | 1890 | 3310 | 474 | 1890 | 2457 | 1197 |
| Grp Volume(v), veh/h | 242 | 367 | 345 | 198 | 399 | 382 | 212 | 369 | 372 | 126 | 504 | 473 |
| Grp Sat Flow(s),veh/h/ln | 1890 | 1885 | 1756 | 1890 | 1885 | 1796 | 1890 | 1885 | 1899 | 1890 | 1885 | 1768 |
| Q Serve(g_s), s | 9.7 | 21.7 | 21.9 | 9.4 | 24.1 | 24.2 | 8.2 | 17.5 | 17.6 | 4.9 | 27.4 | 27.4 |
| Cycle Q Clear(g_c), s | 9.7 | 21.7 | 21.9 | 9.4 | 24.1 | 24.2 | 8.2 | 17.5 | 17.6 | 4.9 | 27.4 | 27.4 |
| Prop In Lane | 1.00 | | 0.71 | 1.00 | | 0.53 | 1.00 | | 0.25 | 1.00 | | 0.68 |
| Lane Grp Cap(c), veh/h | 248 | 477 | 444 | 265 | 477 | 454 | 298 | 751 | 757 | 351 | 708 | 664 |
| V/C Ratio(X) | 0.97 | 0.77 | 0.78 | 0.75 | 0.84 | 0.84 | 0.71 | 0.49 | 0.49 | 0.36 | 0.71 | 0.71 |
| Avail Cap(c_a), veh/h | 248 | 671 | 625 | 265 | 671 | 639 | 298 | 751 | 757 | 395 | 708 | 664 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Uniform Delay (d), s/veh | 37.3 | 41.6 | 41.7 | 32.5 | 42.5 | 42.5 | 24.9 | 27.0 | 27.0 | 21.8 | 31.9 | 31.9 |
| Incr Delay (d2), s/veh | 49.6 | 3.5 | 4.0 | 11.0 | 6.5 | 7.0 | 7.6 | 2.3 | 2.3 | 0.6 | 6.0 | 6.4 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(95%),veh/ln | 9.4 | 15.4 | 14.7 | 8.6 | 17.3 | 16.7 | 7.4 | 12.7 | 12.8 | 3.8 | 19.0 | 18.1 |
| Unsig. Movement Delay, s/veh | | | | | | | | | | | | |
| LnGrp Delay(d),s/veh | 87.0 | 45.1 | 45.7 | 43.5 | 49.0 | 49.6 | 32.5 | 29.3 | 29.3 | 22.4 | 38.0 | 38.3 |
| LnGrp LOS | F | D | D | D | D | D | C | C | C | C | D | D |
| Approach Vol, veh/h | | 954 | | | 979 | | | 953 | | | 1103 | |
| Approach Delay, s/veh | | 56.0 | | | 48.1 | | | 30.0 | | | 36.3 | |
| Approach LOS | | E | | | D | | | C | | | D | |

| Timer - Assigned Phs | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Phs Duration (G+Y+Rc), s | 13.2 | 54.1 | 16.0 | 36.6 | 16.0 | 51.4 | 16.0 | 36.6 |
| Change Period (Y+Rc), s | 6.3 | 6.3 | 6.3 | 6.3 | 6.3 | 6.3 | 6.3 | 6.3 |
| Max Green Setting (Gmax), s | 9.7 | 32.7 | 9.7 | 42.7 | 9.7 | 32.7 | 9.7 | 42.7 |
| Max Q Clear Time (g_c+I1), s | 6.9 | 19.6 | 11.4 | 23.9 | 10.2 | 29.4 | 11.7 | 26.2 |
| Green Ext Time (p_c), s | 0.1 | 3.5 | 0.0 | 3.9 | 0.0 | 1.8 | 0.0 | 4.1 |

| Intersection Summary | |
|---|---|
| HCM 6th Ctrl Delay | 42.4 |
| HCM 6th LOS | D |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.3 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 6 | 647 | 1 | 1 | 855 | 1 | 4 | 0 | 7 | 0 | 0 | 9 |
| Future Vol, veh/h | 6 | 647 | 1 | 1 | 855 | 1 | 4 | 0 | 7 | 0 | 0 | 9 |
| Conflicting Peds, #/hr | 8 | 0 | 0 | 0 | 0 | 8 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | 100 | - | 0 | 75 | - | - | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 86 | 86 | 86 | 95 | 95 | 95 | 60 | 60 | 60 | 66 | 66 | 66 |
| Heavy Vehicles, % | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| Mvmt Flow | 7 | 752 | 1 | 1 | 900 | 1 | 7 | 0 | 12 | 0 | 0 | 14 |

| Major/Minor | Major1 | | | Major2 | | | Minor1 | | | Minor2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 909 | 0 | 0 | 753 | 0 | 0 | 1218 | 1677 | 752 | 1684 | 1678 | 459 |
| Stage 1 | - | - | - | - | - | - | 766 | 766 | - | 911 | 911 | - |
| Stage 2 | - | - | - | - | - | - | 452 | 911 | - | 773 | 767 | - |
| Critical Hdwy | 4.115 | - | - | 4.115 | - | - | 7.3 | 6.5 | 6.2 | 7.3 | 6.5 | 6.9 |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | 6.1 | 5.5 | - | 6.5 | 5.5 | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | 6.5 | 5.5 | - | 6.1 | 5.5 | - |
| Follow-up Hdwy | 2.2095 | - | - | 2.2095 | - | - | 3.5 | 4 | 3.3 | 3.5 | 4 | 3.3 |
| Pot Cap-1 Maneuver | 752 | - | - | *815 | - | - | *514 | *287 | *545 | *290 | *286 | 554 |
| Stage 1 | - | - | - | - | - | - | *514 | *450 | - | *299 | *356 | - |
| Stage 2 | - | - | - | - | - | - | *562 | *356 | - | *514 | *450 | - |
| Platoon blocked, % | | - | - | 1 | - | - | 1 | 1 | 1 | 1 | 1 | |
| Mov Cap-1 Maneuver | 746 | - | - | *815 | - | - | *497 | *282 | *545 | *279 | *281 | 550 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | *497 | *282 | - | *279 | *281 | - |
| Stage 1 | - | - | - | - | - | - | *509 | *446 | - | *294 | *353 | - |
| Stage 2 | - | - | - | - | - | - | *547 | *353 | - | *498 | *446 | - |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Control Delay, s | 0.1 | 0 | 12.1 | 11.7 |
| HCM LOS | | | B | B |

| Minor Lane/Major Mvmt | NBLn1 | EBL | EBT | EBR | WBL | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 527 | 746 | - | - | * 815 | - | - | 550 |
| HCM Lane V/C Ratio | 0.035 | 0.009 | - | - | 0.001 | - | - | 0.025 |
| HCM Control Delay (s) | 12.1 | 9.9 | - | - | 9.4 | - | - | 11.7 |
| HCM Lane LOS | B | A | - | - | A | - | - | B |
| HCM 95th %tile Q(veh) | 0.1 | 0 | - | - | 0 | - | - | 0.1 |

| Notes | | | |
|---|---|---|---|
| ~: Volume exceeds capacity | $: Delay exceeds 300s | +: Computation Not Defined | *: All major volume in platoon |

| Intersection | |
|---|---|
| Int Delay, s/veh | 1 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 22 | 631 | 0 | 0 | 824 | 8 | 0 | 0 | 0 | 20 | 0 | 44 |
| Future Vol, veh/h | 22 | 631 | 0 | 0 | 824 | 8 | 0 | 0 | 0 | 20 | 0 | 44 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | 75 | - | - | 75 | - | 25 | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 86 | 86 | 86 | 95 | 95 | 95 | 92 | 92 | 92 | 70 | 70 | 70 |
| Heavy Vehicles, % | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 |
| Mvmt Flow | 26 | 734 | 0 | 0 | 867 | 8 | 0 | 0 | 0 | 29 | 0 | 63 |

| Major/Minor | Major1 | | | Major2 | | | Minor1 | | | Minor2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 883 | 0 | 0 | 734 | 0 | 0 | 1220 | 1669 | 734 | 1665 | 1665 | 446 |
| Stage 1 | - | - | - | - | - | - | 786 | 786 | - | 879 | 879 | - |
| Stage 2 | - | - | - | - | - | - | 434 | 883 | - | 786 | 786 | - |
| Critical Hdwy | 4.115 | - | - | 4.115 | - | - | 7.315 | 6.515 | 6.215 | 7.3 | 6.5 | 6.9 |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | 6.115 | 5.515 | - | 6.5 | 5.5 | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | 6.515 | 5.515 | - | 6.1 | 5.5 | - |
| Follow-up Hdwy | 2.2095 | - | - | 2.2095 | - | - | 3.5095 | 4.0095 | 3.3095 | 3.5 | 4 | 3.3 |
| Pot Cap-1 Maneuver | 769 | - | - | *853 | - | - | *536 | *261 | *569 | *266 | *265 | 565 |
| Stage 1 | - | - | - | - | - | - | *537 | *470 | - | *313 | *368 | - |
| Stage 2 | - | - | - | - | - | - | *574 | *365 | - | *538 | *471 | - |
| Platoon blocked, % | | - | - | 1 | - | - | 1 | 1 | 1 | 1 | 1 | |
| Mov Cap-1 Maneuver | 763 | - | - | *853 | - | - | *464 | *250 | *569 | *257 | *254 | 561 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | *464 | *250 | - | *257 | *254 | - |
| Stage 1 | - | - | - | - | - | - | *519 | *454 | - | *300 | *365 | - |
| Stage 2 | - | - | - | - | - | - | *510 | *362 | - | *520 | *455 | - |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Control Delay, s | 0.3 | 0 | 0 | 16.3 |
| HCM LOS | | | A | C |

| Minor Lane/Major Mvmt | NBLn1 | EBL | EBT | EBR | WBL | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | - | 763 | - | - | * 853 | - | - | 410 |
| HCM Lane V/C Ratio | - | 0.034 | - | - | - | - | - | 0.223 |
| HCM Control Delay (s) | 0 | 9.9 | - | - | 0 | - | - | 16.3 |
| HCM Lane LOS | A | A | - | - | A | - | - | C |
| HCM 95th %tile Q(veh) | - | 0.1 | - | - | 0 | - | - | 0.8 |

| Notes | | | |
|---|---|---|---|
| ~: Volume exceeds capacity | $: Delay exceeds 300s | +: Computation Not Defined | *: All major volume in platoon |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.4 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | ↕ | | | ↰ | ↱ | | ↕ | | | ↕ | |
| Traffic Vol, veh/h | 2 | 649 | 0 | 0 | 824 | 3 | 0 | 0 | 0 | 2 | 0 | 8 |
| Future Vol, veh/h | 2 | 649 | 0 | 0 | 824 | 3 | 0 | 0 | 0 | 2 | 0 | 8 |
| Conflicting Peds, #/hr | 1 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | 150 | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 86 | 86 | 86 | 95 | 95 | 95 | 92 | 92 | 92 | 60 | 60 | 60 |
| Heavy Vehicles, % | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| Mvmt Flow | 2 | 755 | 0 | 0 | 867 | 3 | 0 | 0 | 0 | 3 | 0 | 13 |

| Major/Minor | Major1 | | | Major2 | | | Minor1 | | | Minor2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 876 | 0 | 0 | 755 | 0 | 0 | 1634 | 1635 | 755 | 1632 | 1632 | 873 |
| Stage 1 | - | - | - | - | - | - | 759 | 759 | - | 873 | 873 | - |
| Stage 2 | - | - | - | - | - | - | 875 | 876 | - | 759 | 759 | - |
| Critical Hdwy | 4.11 | - | - | 4.11 | - | - | 7.1 | 6.5 | 6.2 | 7.1 | 6.5 | 6.2 |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | 6.1 | 5.5 | - | 6.1 | 5.5 | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | 6.1 | 5.5 | - | 6.1 | 5.5 | - |
| Follow-up Hdwy | 2.209 | - | - | 2.209 | - | - | 3.5 | 4 | 3.3 | 3.5 | 4 | 3.3 |
| Pot Cap-1 Maneuver | 775 | - | - | 808 | - | - | 33 | 42 | 538 | 33 | 43 | 352 |
| Stage 1 | - | - | - | - | - | - | 503 | 442 | - | 348 | 370 | - |
| Stage 2 | - | - | - | - | - | - | 347 | 369 | - | 503 | 442 | - |
| Platoon blocked, % | | - | - | 1 | - | - | 1 | 1 | 1 | 1 | 1 | |
| Mov Cap-1 Maneuver | 771 | - | - | 808 | - | - | 32 | 42 | 538 | 33 | 42 | 350 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | 32 | 42 | - | 33 | 42 | - |
| Stage 1 | - | - | - | - | - | - | 501 | 441 | - | 345 | 368 | - |
| Stage 2 | - | - | - | - | - | - | 334 | 367 | - | 501 | 441 | - |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Control Delay, s | 0 | 0 | 0 | 39.8 |
| HCM LOS | | | A | E |

| Minor Lane/Major Mvmt | NBLn1 | EBL | EBT | EBR | WBL | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | - | 771 | - | - | 808 | - | - | 120 |
| HCM Lane V/C Ratio | - | 0.003 | - | - | - | - | - | 0.139 |
| HCM Control Delay (s) | 0 | 9.7 | 0 | - | 0 | - | - | 39.8 |
| HCM Lane LOS | A | A | A | - | A | - | - | E |
| HCM 95th %tile Q(veh) | - | 0 | - | - | 0 | - | - | 0.5 |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.1 |

| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | ↕ | ↑ | ↱ | ↰ | |
| Traffic Vol, veh/h | 0 | 650 | 821 | 0 | 2 | 3 |
| Future Vol, veh/h | 0 | 650 | 821 | 0 | 2 | 3 |
| Conflicting Peds, #/hr | 5 | 0 | 0 | 5 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | 0 | 0 | - |
| Veh in Median Storage, # | - | 0 | 0 | - | 0 | - |
| Grade, % | - | 0 | 0 | - | 0 | - |
| Peak Hour Factor | 84 | 84 | 95 | 95 | 70 | 70 |
| Heavy Vehicles, % | 1 | 1 | 1 | 1 | 0 | 0 |
| Mvmt Flow | 0 | 774 | 864 | 0 | 3 | 4 |

| Major/Minor | Major1 | | Major2 | | Minor2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 869 | 0 | - | 0 | 1256 | 869 |
| Stage 1 | - | - | - | - | 869 | - |
| Stage 2 | - | - | - | - | 387 | - |
| Critical Hdwy | 4.115 | - | - | - | 6.6 | 6.2 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.4 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.8 | - |
| Follow-up Hdwy | 2.2095 | - | - | - | 3.5 | 3.3 |
| Pot Cap-1 Maneuver | 779 | - | - | - | *297 | 354 |
| Stage 1 | - | - | - | - | *414 | - |
| Stage 2 | - | - | - | - | *780 | - |
| Platoon blocked, % | | - | - | - | 1 | |
| Mov Cap-1 Maneuver | 775 | - | - | - | *294 | 352 |
| Mov Cap-2 Maneuver | - | - | - | - | *294 | - |
| Stage 1 | - | - | - | - | *412 | - |
| Stage 2 | - | - | - | - | *776 | - |

| Approach | EB | WB | SB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 0 | 16.3 |
| HCM LOS | | | C |

| Minor Lane/Major Mvmt | EBL | EBT | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|
| Capacity (veh/h) | 775 | - | - | - | 326 |
| HCM Lane V/C Ratio | - | - | - | - | 0.022 |
| HCM Control Delay (s) | 0 | - | - | - | 16.3 |
| HCM Lane LOS | A | - | - | - | C |
| HCM 95th %tile Q(veh) | 0 | - | - | - | 0.1 |

| Notes | | | |
|---|---|---|---|
| ~: Volume exceeds capacity | $: Delay exceeds 300s | +: Computation Not Defined | *: All major volume in platoon |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0 |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | ↑ | ↱ | | ↰↑↑ | ↰ | ↱ |
| Traffic Vol, veh/h | 652 | 0 | 0 | 821 | 0 | 0 |
| Future Vol, veh/h | 652 | 0 | 0 | 821 | 0 | 0 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | 0 | - | - | 0 | 0 |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 84 | 84 | 95 | 95 | 92 | 92 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 776 | 0 | 0 | 864 | 0 | 0 |

| Major/Minor | Major1 | | Major2 | | Minor1 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 0 | 0 | 776 | 0 | 1208 | 776 |
| Stage 1 | - | - | - | - | 776 | - |
| Stage 2 | - | - | - | - | 432 | - |
| Critical Hdwy | - | - | 4.13 | - | 6.63 | 6.23 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.43 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.83 | - |
| Follow-up Hdwy | - | - | 2.219 | - | 3.519 | 3.319 |
| Pot Cap-1 Maneuver | - | - | 838 | - | 188 | 396 |
| Stage 1 | - | - | - | - | 453 | - |
| Stage 2 | - | - | - | - | 623 | - |
| Platoon blocked, % | - | - | | - | | |
| Mov Cap-1 Maneuver | - | - | 838 | - | 188 | 396 |
| Mov Cap-2 Maneuver | - | - | - | - | 188 | - |
| Stage 1 | - | - | - | - | 453 | - |
| Stage 2 | - | - | - | - | 623 | - |

| Approach | EB | WB | NB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 0 | 0 |
| HCM LOS | | | A |

| Minor Lane/Major Mvmt | NBLn1 | NBLn2 | EBT | EBR | WBL | WBT |
|---|---|---|---|---|---|---|
| Capacity (veh/h) | - | - | - | - | 838 | - |
| HCM Lane V/C Ratio | - | - | - | - | - | - |
| HCM Control Delay (s) | 0 | 0 | - | - | 0 | - |
| HCM Lane LOS | A | A | - | - | A | - |
| HCM 95th %tile Q(veh) | - | - | - | - | 0 | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.1 |

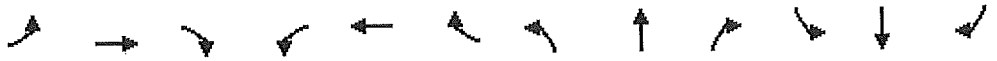
| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | ↰ | ↑↑↱ | | ⅄ | |
| Traffic Vol, veh/h | 0 | 651 | 822 | 0 | 1 | 3 |
| Future Vol, veh/h | 0 | 651 | 822 | 0 | 1 | 3 |
| Conflicting Peds, #/hr | 8 | 0 | 0 | 8 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | 150 | 0 | - |
| Veh in Median Storage, # | - | 0 | 0 | - | 0 | - |
| Grade, % | - | 0 | 0 | - | 0 | - |
| Peak Hour Factor | 84 | 84 | 95 | 95 | 60 | 60 |
| Heavy Vehicles, % | 1 | 1 | 1 | 1 | 0 | 0 |
| Mvmt Flow | 0 | 775 | 865 | 0 | 2 | 5 |

| Major/Minor | Major1 | | Major2 | | Minor2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 873 | 0 | - | 0 | 1648 | 441 |
| Stage 1 | - | - | - | - | 873 | - |
| Stage 2 | - | - | - | - | 775 | - |
| Critical Hdwy | 4.115 | - | - | - | 6.6 | 6.9 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.8 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.4 | - |
| Follow-up Hdwy | 2.2095 | - | - | - | 3.5 | 3.3 |
| Pot Cap-1 Maneuver | 776 | - | - | - | *343 | 570 |
| Stage 1 | - | - | - | - | *374 | - |
| Stage 2 | - | - | - | - | *514 | - |
| Platoon blocked, % | | - | - | - | 1 | |
| Mov Cap-1 Maneuver | 770 | - | - | - | *338 | 566 |
| Mov Cap-2 Maneuver | - | - | - | - | *338 | - |
| Stage 1 | - | - | - | - | *371 | - |
| Stage 2 | - | - | - | - | *510 | - |

| Approach | EB | WB | SB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 0 | 12.5 |
| HCM LOS | | | B |

| Minor Lane/Major Mvmt | EBL | EBT | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|
| Capacity (veh/h) | 770 | - | - | - | 484 |
| HCM Lane V/C Ratio | - | - | - | - | 0.014 |
| HCM Control Delay (s) | 0 | - | - | - | 12.5 |
| HCM Lane LOS | A | - | - | - | B |
| HCM 95th %tile Q(veh) | 0 | - | - | - | 0 |

| Notes | | | |
|---|---|---|---|
| ~: Volume exceeds capacity | $: Delay exceeds 300s | +: Computation Not Defined | *: All major volume in platoon |



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 98 | 396 | 127 | 68 | 642 | 123 | 69 | 186 | 46 | 97 | 255 | 104 |
| Future Volume (veh/h) | 98 | 396 | 127 | 68 | 642 | 123 | 69 | 186 | 46 | 97 | 255 | 104 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | | 1.00 | 1.00 | | 0.99 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach | | No | | | No | | | No | | | No | |
| Adj Sat Flow, veh/h/ln | 1984 | 1984 | 1984 | 1984 | 1984 | 1984 | 1984 | 1984 | 1984 | 1984 | 1984 | 1984 |
| Adj Flow Rate, veh/h | 109 | 440 | 141 | 73 | 690 | 132 | 77 | 207 | 51 | 108 | 283 | 116 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.93 | 0.93 | 0.93 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Percent Heavy Veh, % | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Cap, veh/h | 629 | 937 | 298 | 706 | 1050 | 201 | 139 | 262 | 222 | 243 | 336 | 282 |
| Arrive On Green | 0.25 | 0.33 | 0.33 | 0.25 | 0.33 | 0.33 | 0.04 | 0.13 | 0.13 | 0.08 | 0.17 | 0.17 |
| Sat Flow, veh/h | 1890 | 2812 | 893 | 1890 | 3151 | 602 | 1890 | 1984 | 1678 | 1890 | 1984 | 1667 |
| Grp Volume(v), veh/h | 109 | 294 | 287 | 73 | 413 | 409 | 77 | 207 | 51 | 108 | 283 | 116 |
| Grp Sat Flow(s),veh/h/ln | 1890 | 1885 | 1820 | 1890 | 1885 | 1868 | 1890 | 1984 | 1678 | 1890 | 1984 | 1667 |
| Q Serve(g_s), s | 0.0 | 14.8 | 15.0 | 0.0 | 22.4 | 22.5 | 0.9 | 12.1 | 3.3 | 0.3 | 16.6 | 7.5 |
| Cycle Q Clear(g_c), s | 0.0 | 14.8 | 15.0 | 0.0 | 22.4 | 22.5 | 0.9 | 12.1 | 3.3 | 0.3 | 16.6 | 7.5 |
| Prop In Lane | 1.00 | | 0.49 | 1.00 | | 0.32 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Lane Grp Cap(c), veh/h | 629 | 628 | 607 | 706 | 628 | 623 | 139 | 262 | 222 | 243 | 336 | 282 |
| V/C Ratio(X) | 0.17 | 0.47 | 0.47 | 0.10 | 0.66 | 0.66 | 0.55 | 0.79 | 0.23 | 0.44 | 0.84 | 0.41 |
| Avail Cap(c_a), veh/h | 629 | 628 | 607 | 706 | 628 | 623 | 274 | 589 | 498 | 309 | 589 | 494 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Uniform Delay (d), s/veh | 26.2 | 31.6 | 31.7 | 19.3 | 34.1 | 34.2 | 55.2 | 50.5 | 46.6 | 50.3 | 48.3 | 44.5 |
| Incr Delay (d2), s/veh | 0.1 | 2.5 | 2.6 | 0.1 | 5.3 | 5.4 | 3.4 | 5.3 | 0.5 | 1.3 | 5.7 | 1.0 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(95%),veh/ln | 3.9 | 11.2 | 11.1 | 2.1 | 16.1 | 16.1 | 4.3 | 10.6 | 2.5 | 5.5 | 13.4 | 5.7 |
| Unsig. Movement Delay, s/veh | | | | | | | | | | | | |
| LnGrp Delay(d),s/veh | 26.3 | 34.1 | 34.3 | 19.4 | 39.4 | 39.5 | 58.6 | 55.7 | 47.1 | 51.6 | 54.0 | 45.5 |
| LnGrp LOS | C | C | C | B | D | D | E | E | D | D | D | D |
| Approach Vol, veh/h | | 690 | | | 895 | | | 335 | | | 507 | |
| Approach Delay, s/veh | | 32.9 | | | 37.8 | | | 55.1 | | | 51.6 | |
| Approach LOS | | C | | | D | | | E | | | D | |

| Timer - Assigned Phs | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Phs Duration (G+Y+Rc), s | 35.9 | 46.0 | 11.4 | 26.7 | 35.9 | 46.0 | 15.9 | 22.2 |
| Change Period (Y+Rc), s | * 6 | * 6 | 6.4 | 6.4 | * 6 | * 6 | 6.4 | 6.4 |
| Max Green Setting (Gmax), s | * 6 | * 40 | 13.6 | 35.6 | * 6 | * 40 | 13.6 | 35.6 |
| Max Q Clear Time (g_c+I1), s | 2.0 | 17.0 | 2.9 | 18.6 | 2.0 | 24.5 | 2.3 | 14.1 |
| Green Ext Time (p_c), s | 0.0 | 3.2 | 0.1 | 1.7 | 0.1 | 4.2 | 0.2 | 1.3 |

| Intersection Summary | |
|---|---|
| HCM 6th Ctrl Delay | 41.7 |
| HCM 6th LOS | D |

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

# HCM 6th Signalized Intersection Summary
## 1001: Novi Road & 10 Mile Road

11/22/2022

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 202 | 430 | 149 | 86 | 354 | 84 | 157 | 451 | 114 | 79 | 365 | 159 |
| Future Volume (veh/h) | 202 | 430 | 149 | 86 | 354 | 84 | 157 | 451 | 114 | 79 | 365 | 159 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach | | No | | | No | | | No | | | No | |
| Adj Sat Flow, veh/h/ln | 1969 | 1969 | 1969 | 1953 | 1953 | 1953 | 1969 | 1969 | 1969 | 1969 | 1969 | 1969 |
| Adj Flow Rate, veh/h | 217 | 462 | 160 | 125 | 513 | 122 | 194 | 557 | 141 | 93 | 429 | 187 |
| Peak Hour Factor | 0.93 | 0.93 | 0.93 | 0.69 | 0.69 | 0.69 | 0.81 | 0.81 | 0.81 | 0.85 | 0.85 | 0.85 |
| Percent Heavy Veh, % | 2 | 2 | 2 | 3 | 3 | 3 | 2 | 2 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 274 | 639 | 220 | 250 | 613 | 145 | 425 | 1307 | 330 | 377 | 1074 | 464 |
| Arrive On Green | 0.10 | 0.23 | 0.23 | 0.07 | 0.21 | 0.21 | 0.06 | 0.44 | 0.44 | 0.04 | 0.42 | 0.42 |
| Sat Flow, veh/h | 1875 | 2731 | 938 | 1860 | 2976 | 704 | 1875 | 2958 | 746 | 1875 | 2544 | 1098 |
| Grp Volume(v), veh/h | 217 | 315 | 307 | 125 | 319 | 316 | 194 | 351 | 347 | 93 | 314 | 302 |
| Grp Sat Flow(s),veh/h/ln | 1875 | 1870 | 1798 | 1860 | 1856 | 1825 | 1875 | 1870 | 1834 | 1875 | 1870 | 1771 |
| Q Serve(g_s), s | 10.9 | 18.6 | 18.9 | 6.3 | 19.8 | 20.0 | 7.1 | 15.5 | 15.6 | 3.3 | 14.0 | 14.2 |
| Cycle Q Clear(g_c), s | 10.9 | 18.6 | 18.9 | 6.3 | 19.8 | 20.0 | 7.1 | 15.5 | 15.6 | 3.3 | 14.0 | 14.2 |
| Prop In Lane | 1.00 | | 0.52 | 1.00 | | 0.39 | 1.00 | | 0.41 | 1.00 | | 0.62 |
| Lane Grp Cap(c), veh/h | 274 | 438 | 421 | 250 | 382 | 376 | 425 | 826 | 810 | 377 | 790 | 748 |
| V/C Ratio(X) | 0.79 | 0.72 | 0.73 | 0.50 | 0.83 | 0.84 | 0.46 | 0.43 | 0.43 | 0.25 | 0.40 | 0.40 |
| Avail Cap(c_a), veh/h | 274 | 525 | 505 | 302 | 521 | 513 | 425 | 826 | 810 | 413 | 790 | 748 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Uniform Delay (d), s/veh | 35.1 | 42.3 | 42.4 | 34.9 | 45.7 | 45.7 | 18.8 | 23.0 | 23.1 | 18.8 | 24.1 | 24.1 |
| Incr Delay (d2), s/veh | 14.5 | 3.8 | 4.3 | 1.5 | 8.3 | 9.0 | 0.8 | 1.6 | 1.7 | 0.3 | 1.5 | 1.6 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(95%),veh/ln | 9.9 | 13.7 | 13.4 | 5.1 | 14.8 | 14.8 | 5.4 | 11.2 | 11.1 | 2.6 | 10.4 | 10.1 |
| Unsig. Movement Delay, s/veh | | | | | | | | | | | | |
| LnGrp Delay(d),s/veh | 49.6 | 46.2 | 46.7 | 36.5 | 54.0 | 54.7 | 19.5 | 24.6 | 24.7 | 19.1 | 25.6 | 25.8 |
| LnGrp LOS | D | D | D | D | D | D | B | C | C | B | C | C |
| Approach Vol, veh/h | | 839 | | | 760 | | | 892 | | | 709 | |
| Approach Delay, s/veh | | 47.3 | | | 51.4 | | | 23.6 | | | 24.8 | |
| Approach LOS | | D | | | D | | | C | | | C | |

| Timer - Assigned Phs | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Phs Duration (G+Y+Rc), s | 11.7 | 59.3 | 14.6 | 34.4 | 14.0 | 57.0 | 18.0 | 31.0 |
| Change Period (Y+Rc), s | 6.3 | 6.3 | 6.3 | 6.3 | 6.3 | 6.3 | 6.3 | 6.3 |
| Max Green Setting (Gmax), s | 7.7 | 41.7 | 11.7 | 33.7 | 7.7 | 41.7 | 11.7 | 33.7 |
| Max Q Clear Time (g_c+I1), s | 5.3 | 17.6 | 8.3 | 20.9 | 9.1 | 16.2 | 12.9 | 22.0 |
| Green Ext Time (p_c), s | 0.0 | 4.0 | 0.1 | 2.8 | 0.0 | 3.6 | 0.0 | 2.8 |

| Intersection Summary | |
|---|---|
| HCM 6th Ctrl Delay | 36.7 |
| HCM 6th LOS | D |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.1 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 1 | 610 | 9 | 2 | 509 | 0 | 2 | 0 | 4 | 0 | 0 | 4 |
| Future Vol, veh/h | 1 | 610 | 9 | 2 | 509 | 0 | 2 | 0 | 4 | 0 | 0 | 4 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | 100 | - | 0 | 75 | - | - | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 88 | 88 | 88 | 69 | 69 | 69 | 60 | 60 | 60 | 60 | 60 | 60 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 14 | 14 | 14 |
| Mvmt Flow | 1 | 693 | 10 | 3 | 738 | 0 | 3 | 0 | 7 | 0 | 0 | 7 |

| Major/Minor | Major1 | | | Major2 | | | Minor1 | | | Minor2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 738 | 0 | 0 | 703 | 0 | 0 | 1070 | 1439 | 693 | 1448 | 1449 | 369 |
| Stage 1 | - | - | - | - | - | - | 695 | 695 | - | 744 | 744 | - |
| Stage 2 | - | - | - | - | - | - | 375 | 744 | - | 704 | 705 | - |
| Critical Hdwy | 4.13 | - | - | 4.13 | - | - | 7.33 | 6.53 | 6.23 | 7.51 | 6.71 | 7.11 |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | 6.13 | 5.53 | - | 6.71 | 5.71 | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | 6.53 | 5.53 | - | 6.31 | 5.71 | - |
| Follow-up Hdwy | 2.219 | - | - | 2.219 | - | - | 3.519 | 4.019 | 3.319 | 3.633 | 4.133 | 3.433 |
| Pot Cap-1 Maneuver | 866 | - | - | *887 | - | - | *559 | *406 | *593 | *417 | *384 | 600 |
| Stage 1 | - | - | - | - | - | - | *560 | *490 | - | *352 | *398 | - |
| Stage 2 | - | - | - | - | - | - | *619 | *421 | - | *542 | *476 | - |
| Platoon blocked, % | | - | - | 1 | - | - | 1 | 1 | 1 | 1 | 1 | |
| Mov Cap-1 Maneuver | 866 | - | - | *887 | - | - | *551 | *405 | *593 | *411 | *382 | 600 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | *551 | *405 | - | *411 | *382 | - |
| Stage 1 | - | - | - | - | - | - | *559 | *489 | - | *352 | *397 | - |
| Stage 2 | - | - | - | - | - | - | *610 | *420 | - | *535 | *476 | - |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Control Delay, s | 0 | 0 | 11.3 | 11.1 |
| HCM LOS | | | B | B |

| Minor Lane/Major Mvmt | NBLn1 | EBL | EBT | EBR | WBL | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 578 | 866 | - | - | * 887 | - | - | 600 |
| HCM Lane V/C Ratio | 0.017 | 0.001 | - | - | 0.003 | - | - | 0.011 |
| HCM Control Delay (s) | 11.3 | 9.2 | - | - | 9.1 | - | - | 11.1 |
| HCM Lane LOS | B | A | - | - | A | - | - | B |
| HCM 95th %tile Q(veh) | 0.1 | 0 | - | - | 0 | - | - | 0 |

| Notes | | | |
|---|---|---|---|
| ~: Volume exceeds capacity | $: Delay exceeds 300s | +: Computation Not Defined | *: All major volume in platoon |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.3 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 24 | 586 | 0 | 0 | 504 | 12 | 0 | 0 | 0 | 2 | 0 | 11 |
| Future Vol, veh/h | 24 | 586 | 0 | 0 | 504 | 12 | 0 | 0 | 0 | 2 | 0 | 11 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | 75 | - | - | 75 | - | 25 | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 86 | 86 | 86 | 68 | 68 | 68 | 92 | 92 | 92 | 80 | 80 | 80 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 13 | 13 | 13 |
| Mvmt Flow | 28 | 681 | 0 | 0 | 741 | 18 | 0 | 0 | 0 | 3 | 0 | 14 |

| Major/Minor | Major1 | | | Major2 | | | Minor1 | | | Minor2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 759 | 0 | 0 | 681 | 0 | 0 | 1108 | 1496 | 681 | 1487 | 1487 | 380 |
| Stage 1 | - | - | - | - | - | - | 737 | 737 | - | 750 | 750 | - |
| Stage 2 | - | - | - | - | - | - | 371 | 759 | - | 737 | 737 | - |
| Critical Hdwy | 4.13 | - | - | 4.13 | - | - | 7.33 | 6.53 | 6.23 | 7.495 | 6.695 | 7.095 |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | 6.13 | 5.53 | - | 6.695 | 5.695 | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | 6.53 | 5.53 | - | 6.295 | 5.695 | - |
| Follow-up Hdwy | 2.219 | - | - | 2.219 | - | - | 3.519 | 4.019 | 3.319 | 3.6235 | 4.1235 | 3.4235 |
| Pot Cap-1 Maneuver | 850 | - | - | *887 | - | - | *559 | *356 | *593 | *374 | *351 | 593 |
| Stage 1 | - | - | - | - | - | - | *560 | *490 | - | *351 | *397 | - |
| Stage 2 | - | - | - | - | - | - | *622 | *414 | - | *543 | *477 | - |
| Platoon blocked, % | | - | - | 1 | - | - | 1 | 1 | 1 | 1 | 1 | |
| Mov Cap-1 Maneuver | 850 | - | - | *887 | - | - | *532 | *344 | *593 | *365 | *340 | 593 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | *532 | *344 | - | *365 | *340 | - |
| Stage 1 | - | - | - | - | - | - | *541 | *474 | - | *339 | *397 | - |
| Stage 2 | - | - | - | - | - | - | *608 | *414 | - | *525 | *462 | - |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Control Delay, s | 0.4 | 0 | 0 | 11.9 |
| HCM LOS | | | A | B |

| Minor Lane/Major Mvmt | NBLn1 | EBL | EBT | EBR | WBL | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | - | 850 | - | - | * 887 | - | - | 541 |
| HCM Lane V/C Ratio | - | 0.033 | - | - | - | - | - | 0.03 |
| HCM Control Delay (s) | 0 | 9.4 | - | - | 0 | - | - | 11.9 |
| HCM Lane LOS | A | A | - | - | A | - | - | B |
| HCM 95th %tile Q(veh) | - | 0.1 | - | - | 0 | - | - | 0.1 |

| Notes | | | |
|---|---|---|---|
| ~: Volume exceeds capacity | $: Delay exceeds 300s | +: Computation Not Defined | *: All major volume in platoon |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.2 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | ↕ | | | ↰ | ↱ | | ↕ | | | ↕ | |
| Traffic Vol, veh/h | 6 | 582 | 0 | 0 | 513 | 7 | 0 | 0 | 0 | 2 | 0 | 3 |
| Future Vol, veh/h | 6 | 582 | 0 | 0 | 513 | 7 | 0 | 0 | 0 | 2 | 0 | 3 |
| Conflicting Peds, #/hr | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | 150 | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 86 | 86 | 86 | 68 | 68 | 68 | 92 | 92 | 92 | 60 | 60 | 60 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 |
| Mvmt Flow | 7 | 677 | 0 | 0 | 754 | 10 | 0 | 0 | 0 | 3 | 0 | 5 |

| Major/Minor | Major1 | | | Major2 | | | Minor1 | | | Minor2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 765 | 0 | 0 | 677 | 0 | 0 | 1453 | 1456 | 677 | 1446 | 1446 | 755 |
| Stage 1 | - | - | - | - | - | - | 691 | 691 | - | 755 | 755 | - |
| Stage 2 | - | - | - | - | - | - | 762 | 765 | - | 691 | 691 | - |
| Critical Hdwy | 4.12 | - | - | 4.12 | - | - | 7.12 | 6.52 | 6.22 | 7.1 | 6.5 | 6.2 |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | 6.12 | 5.52 | - | 6.1 | 5.5 | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | 6.12 | 5.52 | - | 6.1 | 5.5 | - |
| Follow-up Hdwy | 2.218 | - | - | 2.218 | - | - | 3.518 | 4.018 | 3.318 | 3.5 | 4 | 3.3 |
| Pot Cap-1 Maneuver | 848 | - | - | 882 | - | - | 66 | 78 | 575 | 67 | 81 | 412 |
| Stage 1 | - | - | - | - | - | - | 528 | 472 | - | 404 | 420 | - |
| Stage 2 | - | - | - | - | - | - | 397 | 412 | - | 531 | 474 | - |
| Platoon blocked, % | | - | - | 1 | - | - | 1 | 1 | 1 | 1 | 1 | |
| Mov Cap-1 Maneuver | 847 | - | - | 882 | - | - | 64 | 77 | 575 | 67 | 79 | 412 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | 64 | 77 | - | 67 | 79 | - |
| Stage 1 | - | - | - | - | - | - | 521 | 466 | - | 398 | 420 | - |
| Stage 2 | - | - | - | - | - | - | 392 | 412 | - | 524 | 468 | - |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Control Delay, s | 0.1 | 0 | 0 | 33.4 |
| HCM LOS | | | A | D |

| Minor Lane/Major Mvmt | NBLn1 | EBL | EBT | EBR | WBL | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | - | 847 | - | - | 882 | - | - | 135 |
| HCM Lane V/C Ratio | - | 0.008 | - | - | - | - | - | 0.062 |
| HCM Control Delay (s) | 0 | 9.3 | 0 | - | 0 | - | - | 33.4 |
| HCM Lane LOS | A | A | A | - | A | - | - | D |
| HCM 95th %tile Q(veh) | - | 0 | - | - | 0 | - | - | 0.2 |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0 |

| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 2 | 583 | 513 | 4 | 0 | 2 |
| Future Vol, veh/h | 2 | 583 | 513 | 4 | 0 | 2 |
| Conflicting Peds, #/hr | 1 | 0 | 0 | 1 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | 0 | 0 | - |
| Veh in Median Storage, # | - | 0 | 0 | - | 0 | - |
| Grade, % | - | 0 | 0 | - | 0 | - |
| Peak Hour Factor | 85 | 85 | 68 | 68 | 60 | 60 |
| Heavy Vehicles, % | 2 | 2 | 3 | 3 | 0 | 0 |
| Mvmt Flow | 2 | 686 | 754 | 6 | 0 | 3 |

| Major/Minor | Major1 | | Major2 | | Minor2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 761 | 0 | - | 0 | 1102 | 755 |
| Stage 1 | - | - | - | - | 755 | - |
| Stage 2 | - | - | - | - | 347 | - |
| Critical Hdwy | 4.13 | - | - | - | 6.6 | 6.2 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.4 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.8 | - |
| Follow-up Hdwy | 2.219 | - | - | - | 3.5 | 3.3 |
| Pot Cap-1 Maneuver | 849 | - | - | - | *366 | 412 |
| Stage 1 | - | - | - | - | *468 | - |
| Stage 2 | - | - | - | - | *804 | - |
| Platoon blocked, % | | - | - | - | 1 | |
| Mov Cap-1 Maneuver | 848 | - | - | - | *364 | 412 |
| Mov Cap-2 Maneuver | - | - | - | - | *364 | - |
| Stage 1 | - | - | - | - | *466 | - |
| Stage 2 | - | - | - | - | *804 | - |

| Approach | EB | WB | SB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 0 | 13.8 |
| HCM LOS | | | B |

| Minor Lane/Major Mvmt | EBL | EBT | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|
| Capacity (veh/h) | 848 | - | - | - | 412 |
| HCM Lane V/C Ratio | 0.003 | - | - | - | 0.008 |
| HCM Control Delay (s) | 9.3 | 0 | - | - | 13.8 |
| HCM Lane LOS | A | A | - | - | B |
| HCM 95th %tile Q(veh) | 0 | - | - | - | 0 |

| Notes | | | |
|---|---|---|---|
| ~: Volume exceeds capacity | $: Delay exceeds 300s | +: Computation Not Defined | *: All major volume in platoon |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0 |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 583 | 0 | 0 | 517 | 0 | 0 |
| Future Vol, veh/h | 583 | 0 | 0 | 517 | 0 | 0 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | 0 | - | - | 0 | 0 |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 85 | 85 | 68 | 68 | 92 | 92 |
| Heavy Vehicles, % | 2 | 2 | 3 | 3 | 2 | 2 |
| Mvmt Flow | 686 | 0 | 0 | 760 | 0 | 0 |

| Major/Minor | Major1 | | Major2 | | Minor1 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 0 | 0 | 686 | 0 | 1066 | 686 |
| Stage 1 | - | - | - | - | 686 | - |
| Stage 2 | - | - | - | - | 380 | - |
| Critical Hdwy | - | - | 4.145 | - | 6.63 | 6.23 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.43 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.83 | - |
| Follow-up Hdwy | - | - | 2.2285 | - | 3.519 | 3.319 |
| Pot Cap-1 Maneuver | - | - | *922 | - | *584 | *618 |
| Stage 1 | - | - | - | - | *584 | - |
| Stage 2 | - | - | - | - | *662 | - |
| Platoon blocked, % | - | - | 1 | - | 1 | 1 |
| Mov Cap-1 Maneuver | - | - | *922 | - | *584 | *618 |
| Mov Cap-2 Maneuver | - | - | - | - | *584 | - |
| Stage 1 | - | - | - | - | *584 | - |
| Stage 2 | - | - | - | - | *662 | - |

| Approach | EB | WB | NB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 0 | 0 |
| HCM LOS | | | A |

| Minor Lane/Major Mvmt | NBLn1 | NBLn2 | EBT | EBR | WBL | WBT |
|---|---|---|---|---|---|---|
| Capacity (veh/h) | - | - | - | - | *922 | - |
| HCM Lane V/C Ratio | - | - | - | - | - | - |
| HCM Control Delay (s) | 0 | 0 | - | - | 0 | - |
| HCM Lane LOS | A | A | - | - | A | - |
| HCM 95th %tile Q(veh) | - | - | - | - | 0 | - |

| Notes | | | |
|---|---|---|---|
| ~: Volume exceeds capacity | $: Delay exceeds 300s | +: Computation Not Defined | *: All major volume in platoon |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0 |

| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | ↰ | ↑↑↱ | | ⅄ | |
| Traffic Vol, veh/h | 2 | 580 | 513 | 7 | 0 | 2 |
| Future Vol, veh/h | 2 | 580 | 513 | 7 | 0 | 2 |
| Conflicting Peds, #/hr | 1 | 0 | 0 | 1 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | 150 | 0 | - |
| Veh in Median Storage, # | - | 0 | 0 | - | 0 | - |
| Grade, % | - | 0 | 0 | - | 0 | - |
| Peak Hour Factor | 85 | 85 | 69 | 69 | 60 | 60 |
| Heavy Vehicles, % | 2 | 2 | 3 | 3 | 50 | 50 |
| Mvmt Flow | 2 | 682 | 743 | 10 | 0 | 3 |

| Major/Minor | Major1 | | Major2 | | Minor2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 754 | 0 | - | 0 | 1435 | 378 |
| Stage 1 | - | - | - | - | 749 | - |
| Stage 2 | - | - | - | - | 686 | - |
| Critical Hdwy | 4.13 | - | - | - | 7.35 | 7.65 |
| Critical Hdwy Stg 1 | - | - | - | - | 6.55 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 6.15 | - |
| Follow-up Hdwy | 2.219 | - | - | - | 3.975 | 3.775 |
| Pot Cap-1 Maneuver | 854 | - | - | - | *350 | 517 |
| Stage 1 | - | - | - | - | *341 | - |
| Stage 2 | - | - | - | - | *517 | - |
| Platoon blocked, % | | - | - | - | 1 | |
| Mov Cap-1 Maneuver | 853 | - | - | - | *348 | 517 |
| Mov Cap-2 Maneuver | - | - | - | - | *348 | - |
| Stage 1 | - | - | - | - | *339 | - |
| Stage 2 | - | - | - | - | *516 | - |

| Approach | EB | WB | SB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 0 | 12 |
| HCM LOS | | | B |

| Minor Lane/Major Mvmt | EBL | EBT | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|
| Capacity (veh/h) | 853 | - | - | - | 517 |
| HCM Lane V/C Ratio | 0.003 | - | - | - | 0.006 |
| HCM Control Delay (s) | 9.2 | 0 | - | - | 12 |
| HCM Lane LOS | A | A | - | - | B |
| HCM 95th %tile Q(veh) | 0 | - | - | - | 0 |

| Notes | | | |
|---|---|---|---|
| ~: Volume exceeds capacity | $: Delay exceeds 300s | +: Computation Not Defined | *: All major volume in platoon |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 113 | 503 | 48 | 30 | 276 | 70 | 48 | 148 | 48 | 65 | 95 | 56 |
| Future Volume (veh/h) | 113 | 503 | 48 | 30 | 276 | 70 | 48 | 148 | 48 | 65 | 95 | 56 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach | | No | | | No | | | No | | | No | |
| Adj Sat Flow, veh/h/ln | 1984 | 1984 | 1984 | 1984 | 1984 | 1984 | 1969 | 1969 | 1969 | 1953 | 1953 | 1953 |
| Adj Flow Rate, veh/h | 128 | 572 | 55 | 34 | 314 | 80 | 63 | 195 | 63 | 78 | 114 | 67 |
| Peak Hour Factor | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.76 | 0.76 | 0.76 | 0.83 | 0.83 | 0.83 |
| Percent Heavy Veh, % | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 3 | 3 | 3 |
| Cap, veh/h | 815 | 1419 | 136 | 713 | 1219 | 306 | 240 | 241 | 204 | 138 | 163 | 138 |
| Arrive On Green | 0.22 | 0.41 | 0.41 | 0.22 | 0.41 | 0.41 | 0.08 | 0.12 | 0.12 | 0.04 | 0.08 | 0.08 |
| Sat Flow, veh/h | 1890 | 3476 | 334 | 1890 | 2986 | 749 | 1875 | 1969 | 1668 | 1860 | 1953 | 1655 |
| Grp Volume(v), veh/h | 128 | 310 | 317 | 34 | 196 | 198 | 63 | 195 | 63 | 78 | 114 | 67 |
| Grp Sat Flow(s),veh/h/ln | 1890 | 1885 | 1924 | 1890 | 1885 | 1850 | 1875 | 1969 | 1668 | 1860 | 1953 | 1655 |
| Q Serve(g_s), s | 0.0 | 14.0 | 14.0 | 0.0 | 8.3 | 8.5 | 0.0 | 11.6 | 4.1 | 1.0 | 6.8 | 4.6 |
| Cycle Q Clear(g_c), s | 0.0 | 14.0 | 14.0 | 0.0 | 8.3 | 8.5 | 0.0 | 11.6 | 4.1 | 1.0 | 6.8 | 4.6 |
| Prop In Lane | 1.00 | | 0.17 | 1.00 | | 0.41 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Lane Grp Cap(c), veh/h | 815 | 770 | 786 | 713 | 770 | 755 | 240 | 241 | 204 | 138 | 163 | 138 |
| V/C Ratio(X) | 0.16 | 0.40 | 0.40 | 0.05 | 0.26 | 0.26 | 0.26 | 0.81 | 0.31 | 0.57 | 0.70 | 0.49 |
| Avail Cap(c_a), veh/h | 815 | 770 | 786 | 713 | 770 | 755 | 271 | 469 | 398 | 240 | 466 | 395 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Uniform Delay (d), s/veh | 13.4 | 25.1 | 25.2 | 14.9 | 23.4 | 23.5 | 50.0 | 51.3 | 48.0 | 55.2 | 53.5 | 52.5 |
| Incr Delay (d2), s/veh | 0.1 | 1.6 | 1.5 | 0.0 | 0.8 | 0.8 | 0.6 | 6.4 | 0.9 | 3.6 | 5.4 | 2.6 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(95%),veh/ln | 3.0 | 10.4 | 10.6 | 0.8 | 6.7 | 6.7 | 3.2 | 10.2 | 3.2 | 4.3 | 6.4 | 3.7 |
| Unsig. Movement Delay, s/veh | | | | | | | | | | | | |
| LnGrp Delay(d),s/veh | 13.5 | 26.7 | 26.7 | 14.9 | 24.2 | 24.4 | 50.6 | 57.8 | 48.9 | 58.8 | 58.9 | 55.2 |
| LnGrp LOS | B | C | C | B | C | C | D | E | D | E | E | E |
| Approach Vol, veh/h | | 755 | | | 428 | | | 321 | | | 259 | |
| Approach Delay, s/veh | | 24.5 | | | 23.6 | | | 54.6 | | | 57.9 | |
| Approach LOS | | C | | | C | | | D | | | E | |

| Timer - Assigned Phs | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Phs Duration (G+Y+Rc), s | 32.5 | 55.0 | 16.1 | 16.4 | 32.5 | 55.0 | 11.4 | 21.1 |
| Change Period (Y+Rc), s | * 6 | * 6 | 6.4 | 6.4 | * 6 | * 6 | 6.4 | 6.4 |
| Max Green Setting (Gmax), s | * 6 | * 49 | 11.6 | 28.6 | * 6 | * 49 | 11.6 | 28.6 |
| Max Q Clear Time (g_c+I1), s | 2.0 | 16.0 | 2.0 | 8.8 | 2.0 | 10.5 | 3.0 | 13.6 |
| Green Ext Time (p_c), s | 0.0 | 3.7 | 0.1 | 0.7 | 0.1 | 2.2 | 0.1 | 1.1 |

| Intersection Summary | |
|---|---|
| HCM 6th Ctrl Delay | 34.6 |
| HCM 6th LOS | C |

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

# HCM 6th Signalized Intersection Summary
## 1001: Novi Road & 10 Mile Road

11/22/2022

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 225 | 434 | 227 | 174 | 509 | 178 | 203 | 622 | 89 | 121 | 630 | 307 |
| Future Volume (veh/h) | 225 | 434 | 227 | 174 | 509 | 178 | 203 | 622 | 89 | 121 | 630 | 307 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 1.00 | | 1.00 | 1.00 | | 0.98 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach | | No | | | No | | | No | | | No | |
| Adj Sat Flow, veh/h/ln | 1984 | 1984 | 1984 | 1984 | 1984 | 1984 | 1984 | 1984 | 1984 | 1984 | 1984 | 1984 |
| Adj Flow Rate, veh/h | 245 | 472 | 247 | 200 | 585 | 205 | 214 | 655 | 94 | 127 | 663 | 323 |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.87 | 0.87 | 0.87 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Percent Heavy Veh, % | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Cap, veh/h | 248 | 612 | 318 | 265 | 696 | 243 | 294 | 1309 | 188 | 347 | 916 | 446 |
| Arrive On Green | 0.08 | 0.26 | 0.26 | 0.08 | 0.26 | 0.26 | 0.08 | 0.40 | 0.40 | 0.06 | 0.37 | 0.37 |
| Sat Flow, veh/h | 1890 | 2396 | 1246 | 1890 | 2727 | 953 | 1890 | 3310 | 474 | 1890 | 2456 | 1197 |
| Grp Volume(v), veh/h | 245 | 371 | 348 | 200 | 404 | 386 | 214 | 373 | 376 | 127 | 509 | 477 |
| Grp Sat Flow(s),veh/h/ln | 1890 | 1885 | 1757 | 1890 | 1885 | 1795 | 1890 | 1885 | 1899 | 1890 | 1885 | 1768 |
| Q Serve(g_s), s | 9.7 | 21.9 | 22.1 | 9.4 | 24.4 | 24.5 | 8.4 | 17.9 | 17.9 | 4.9 | 27.8 | 27.8 |
| Cycle Q Clear(g_c), s | 9.7 | 21.9 | 22.1 | 9.4 | 24.4 | 24.5 | 8.4 | 17.9 | 17.9 | 4.9 | 27.8 | 27.8 |
| Prop In Lane | 1.00 | | 0.71 | 1.00 | | 0.53 | 1.00 | | 0.25 | 1.00 | | 0.68 |
| Lane Grp Cap(c), veh/h | 248 | 481 | 449 | 265 | 481 | 459 | 294 | 746 | 751 | 347 | 703 | 659 |
| V/C Ratio(X) | 0.99 | 0.77 | 0.78 | 0.75 | 0.84 | 0.84 | 0.73 | 0.50 | 0.50 | 0.37 | 0.72 | 0.72 |
| Avail Cap(c_a), veh/h | 248 | 671 | 625 | 265 | 671 | 639 | 294 | 746 | 751 | 390 | 703 | 659 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Uniform Delay (d), s/veh | 37.4 | 41.4 | 41.5 | 32.4 | 42.3 | 42.4 | 25.3 | 27.3 | 27.3 | 22.0 | 32.3 | 32.3 |
| Incr Delay (d2), s/veh | 53.2 | 3.6 | 4.1 | 11.5 | 6.7 | 7.2 | 8.8 | 2.4 | 2.4 | 0.6 | 6.4 | 6.8 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(95%),veh/ln | 9.9 | 15.6 | 14.9 | 8.7 | 17.5 | 16.9 | 7.6 | 12.9 | 13.0 | 3.9 | 19.3 | 18.4 |
| Unsig. Movement Delay, s/veh | | | | | | | | | | | | |
| LnGrp Delay(d),s/veh | 90.6 | 45.0 | 45.6 | 43.9 | 49.1 | 49.6 | 34.1 | 29.7 | 29.7 | 22.6 | 38.7 | 39.1 |
| LnGrp LOS | F | D | D | D | D | D | C | C | C | C | D | D |
| Approach Vol, veh/h | | 964 | | | 990 | | | 963 | | | 1113 | |
| Approach Delay, s/veh | | 56.8 | | | 48.2 | | | 30.7 | | | 37.0 | |
| Approach LOS | | E | | | D | | | C | | | D | |

| Timer - Assigned Phs | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Phs Duration (G+Y+Rc), s | 13.3 | 53.8 | 16.0 | 36.9 | 16.0 | 51.1 | 16.0 | 36.9 |
| Change Period (Y+Rc), s | 6.3 | 6.3 | 6.3 | 6.3 | 6.3 | 6.3 | 6.3 | 6.3 |
| Max Green Setting (Gmax), s | 9.7 | 32.7 | 9.7 | 42.7 | 9.7 | 32.7 | 9.7 | 42.7 |
| Max Q Clear Time (g_c+I1), s | 6.9 | 19.9 | 11.4 | 24.1 | 10.4 | 29.8 | 11.7 | 26.5 |
| Green Ext Time (p_c), s | 0.1 | 3.5 | 0.0 | 4.0 | 0.0 | 1.6 | 0.0 | 4.2 |

| Intersection Summary | |
|---|---|
| HCM 6th Ctrl Delay | 43.0 |
| HCM 6th LOS | D |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.3 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 6 | 653 | 1 | 1 | 864 | 1 | 4 | 0 | 7 | 0 | 0 | 9 |
| Future Vol, veh/h | 6 | 653 | 1 | 1 | 864 | 1 | 4 | 0 | 7 | 0 | 0 | 9 |
| Conflicting Peds, #/hr | 8 | 0 | 0 | 0 | 0 | 8 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | 100 | - | 0 | 75 | - | - | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 86 | 86 | 86 | 95 | 95 | 95 | 60 | 60 | 60 | 66 | 66 | 66 |
| Heavy Vehicles, % | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| Mvmt Flow | 7 | 759 | 1 | 1 | 909 | 1 | 7 | 0 | 12 | 0 | 0 | 14 |

| Major/Minor | Major1 | | | Major2 | | | Minor1 | | | Minor2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 918 | 0 | 0 | 760 | 0 | 0 | 1230 | 1693 | 759 | 1700 | 1694 | 463 |
| Stage 1 | - | - | - | - | - | - | 773 | 773 | - | 920 | 920 | - |
| Stage 2 | - | - | - | - | - | - | 457 | 920 | - | 780 | 774 | - |
| Critical Hdwy | 4.115 | - | - | 4.115 | - | - | 7.3 | 6.5 | 6.2 | 7.3 | 6.5 | 6.9 |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | 6.1 | 5.5 | - | 6.5 | 5.5 | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | 6.5 | 5.5 | - | 6.1 | 5.5 | - |
| Follow-up Hdwy | 2.2095 | - | - | 2.2095 | - | - | 3.5 | 4 | 3.3 | 3.5 | 4 | 3.3 |
| Pot Cap-1 Maneuver | 746 | - | - | *815 | - | - | *514 | *275 | *545 | *275 | *275 | 551 |
| Stage 1 | - | - | - | - | - | - | *514 | *450 | - | *296 | *352 | - |
| Stage 2 | - | - | - | - | - | - | *558 | *352 | - | *514 | *450 | - |
| Platoon blocked, % | | - | - | 1 | - | - | 1 | 1 | 1 | 1 | 1 | |
| Mov Cap-1 Maneuver | 740 | - | - | *815 | - | - | *497 | *270 | *545 | *265 | *270 | 547 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | *497 | *270 | - | *265 | *270 | - |
| Stage 1 | - | - | - | - | - | - | *509 | *446 | - | *291 | *349 | - |
| Stage 2 | - | - | - | - | - | - | *543 | *349 | - | *498 | *446 | - |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Control Delay, s | 0.1 | 0 | 12.1 | 11.8 |
| HCM LOS | | | B | B |

| Minor Lane/Major Mvmt | NBLn1 | EBL | EBT | EBR | WBL | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 527 | 740 | - | - | *815 | - | - | 547 |
| HCM Lane V/C Ratio | 0.035 | 0.009 | - | - | 0.001 | - | - | 0.025 |
| HCM Control Delay (s) | 12.1 | 9.9 | - | - | 9.4 | - | - | 11.8 |
| HCM Lane LOS | B | A | - | - | A | - | - | B |
| HCM 95th %tile Q(veh) | 0.1 | 0 | - | - | 0 | - | - | 0.1 |

| Notes | | | |
|---|---|---|---|
| ~: Volume exceeds capacity | $: Delay exceeds 300s | +: Computation Not Defined | *: All major volume in platoon |

| Intersection | |
|---|---|
| Int Delay, s/veh | 1 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 22 | 637 | 0 | 0 | 832 | 8 | 0 | 0 | 0 | 20 | 0 | 44 |
| Future Vol, veh/h | 22 | 637 | 0 | 0 | 832 | 8 | 0 | 0 | 0 | 20 | 0 | 44 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | 75 | - | - | 75 | - | 25 | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 86 | 86 | 86 | 95 | 95 | 95 | 92 | 92 | 92 | 70 | 70 | 70 |
| Heavy Vehicles, % | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 |
| Mvmt Flow | 26 | 741 | 0 | 0 | 876 | 8 | 0 | 0 | 0 | 29 | 0 | 63 |

| Major/Minor | Major1 | | | Major2 | | | Minor1 | | | Minor2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 892 | 0 | 0 | 741 | 0 | 0 | 1231 | 1685 | 741 | 1681 | 1681 | 450 |
| Stage 1 | - | - | - | - | - | - | 793 | 793 | - | 888 | 888 | - |
| Stage 2 | - | - | - | - | - | - | 438 | 892 | - | 793 | 793 | - |
| Critical Hdwy | 4.115 | - | - | 4.115 | - | - | 7.315 | 6.515 | 6.215 | 7.3 | 6.5 | 6.9 |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | 6.115 | 5.515 | - | 6.5 | 5.5 | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | 6.515 | 5.515 | - | 6.1 | 5.5 | - |
| Follow-up Hdwy | 2.2095 | - | - | 2.2095 | - | - | 3.5095 | 4.0095 | 3.3095 | 3.5 | 4 | 3.3 |
| Pot Cap-1 Maneuver | 763 | - | - | *853 | - | - | *536 | *251 | *569 | *254 | *255 | 562 |
| Stage 1 | - | - | - | - | - | - | *537 | *470 | - | *309 | *365 | - |
| Stage 2 | - | - | - | - | - | - | *570 | *361 | - | *538 | *471 | - |
| Platoon blocked, % | | - | - | 1 | - | - | 1 | 1 | 1 | 1 | 1 | |
| Mov Cap-1 Maneuver | 757 | - | - | *853 | - | - | *464 | *241 | *569 | *245 | *244 | 558 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | *464 | *241 | - | *245 | *244 | - |
| Stage 1 | - | - | - | - | - | - | *519 | *454 | - | *296 | *362 | - |
| Stage 2 | - | - | - | - | - | - | *506 | *358 | - | *520 | *455 | - |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Control Delay, s | 0.3 | 0 | 0 | 16.7 |
| HCM LOS | | | A | C |

| Minor Lane/Major Mvmt | NBLn1 | EBL | EBT | EBR | WBL | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | - | 757 | - | - | * 853 | - | - | 399 |
| HCM Lane V/C Ratio | - | 0.034 | - | - | - | - | - | 0.229 |
| HCM Control Delay (s) | 0 | 9.9 | - | - | 0 | - | - | 16.7 |
| HCM Lane LOS | A | A | - | - | A | - | - | C |
| HCM 95th %tile Q(veh) | - | 0.1 | - | - | 0 | - | - | 0.9 |

| Notes | | | |
|---|---|---|---|
| ~: Volume exceeds capacity | $: Delay exceeds 300s | +: Computation Not Defined | *: All major volume in platoon |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.4 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | ↕ | | | ↰ | ↱ | | ↕ | | | ↕ | |
| Traffic Vol, veh/h | 2 | 656 | 0 | 0 | 832 | 3 | 0 | 0 | 0 | 2 | 0 | 8 |
| Future Vol, veh/h | 2 | 656 | 0 | 0 | 832 | 3 | 0 | 0 | 0 | 2 | 0 | 8 |
| Conflicting Peds, #/hr | 1 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | 150 | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 86 | 86 | 86 | 95 | 95 | 95 | 92 | 92 | 92 | 60 | 60 | 60 |
| Heavy Vehicles, % | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| Mvmt Flow | 2 | 763 | 0 | 0 | 876 | 3 | 0 | 0 | 0 | 3 | 0 | 13 |

| Major/Minor | Major1 | | | Major2 | | | Minor1 | | | Minor2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 885 | 0 | 0 | 763 | 0 | 0 | 1651 | 1652 | 763 | 1649 | 1649 | 882 |
| Stage 1 | - | - | - | - | - | - | 767 | 767 | - | 882 | 882 | - |
| Stage 2 | - | - | - | - | - | - | 884 | 885 | - | 767 | 767 | - |
| Critical Hdwy | 4.11 | - | - | 4.11 | - | - | 7.1 | 6.5 | 6.2 | 7.1 | 6.5 | 6.2 |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | 6.1 | 5.5 | - | 6.1 | 5.5 | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | 6.1 | 5.5 | - | 6.1 | 5.5 | - |
| Follow-up Hdwy | 2.209 | - | - | 2.209 | - | - | 3.5 | 4 | 3.3 | 3.5 | 4 | 3.3 |
| Pot Cap-1 Maneuver | 769 | - | - | 797 | - | - | 31 | 40 | 527 | 32 | 41 | 348 |
| Stage 1 | - | - | - | - | - | - | 493 | 435 | - | 344 | 367 | - |
| Stage 2 | - | - | - | - | - | - | 343 | 366 | - | 493 | 435 | - |
| Platoon blocked, % | | - | - | 1 | - | - | 1 | 1 | 1 | 1 | 1 | |
| Mov Cap-1 Maneuver | 765 | - | - | 797 | - | - | 30 | 40 | 527 | 31 | 40 | 346 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | 30 | 40 | - | 31 | 40 | - |
| Stage 1 | - | - | - | - | - | - | 491 | 433 | - | 340 | 365 | - |
| Stage 2 | - | - | - | - | - | - | 330 | 364 | - | 491 | 433 | - |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Control Delay, s | 0 | 0 | 0 | 41.9 |
| HCM LOS | | | A | E |

| Minor Lane/Major Mvmt | NBLn1 | EBL | EBT | EBR | WBL | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | - | 765 | - | - | 797 | - | - | 114 |
| HCM Lane V/C Ratio | - | 0.003 | - | - | - | - | - | 0.146 |
| HCM Control Delay (s) | 0 | 9.7 | 0 | - | 0 | - | - | 41.9 |
| HCM Lane LOS | A | A | A | - | A | - | - | E |
| HCM 95th %tile Q(veh) | - | 0 | - | - | 0 | - | - | 0.5 |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.1 |

| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 0 | 657 | 829 | 0 | 2 | 3 |
| Future Vol, veh/h | 0 | 657 | 829 | 0 | 2 | 3 |
| Conflicting Peds, #/hr | 5 | 0 | 0 | 5 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | 0 | 0 | - |
| Veh in Median Storage, # | - | 0 | 0 | - | 0 | - |
| Grade, % | - | 0 | 0 | - | 0 | - |
| Peak Hour Factor | 84 | 84 | 95 | 95 | 70 | 70 |
| Heavy Vehicles, % | 1 | 1 | 1 | 1 | 0 | 0 |
| Mvmt Flow | 0 | 782 | 873 | 0 | 3 | 4 |

| Major/Minor | Major1 | | Major2 | | Minor2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 878 | 0 | - | 0 | 1269 | 878 |
| Stage 1 | - | - | - | - | 878 | - |
| Stage 2 | - | - | - | - | 391 | - |
| Critical Hdwy | 4.115 | - | - | - | 6.6 | 6.2 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.4 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.8 | - |
| Follow-up Hdwy | 2.2095 | - | - | - | 3.5 | 3.3 |
| Pot Cap-1 Maneuver | 773 | - | - | - | *289 | 350 |
| Stage 1 | - | - | - | - | *410 | - |
| Stage 2 | - | - | - | - | *780 | - |
| Platoon blocked, % | | - | - | - | 1 | |
| Mov Cap-1 Maneuver | 769 | - | - | - | *287 | 348 |
| Mov Cap-2 Maneuver | - | - | - | - | *287 | - |
| Stage 1 | - | - | - | - | *408 | - |
| Stage 2 | - | - | - | - | *776 | - |

| Approach | EB | WB | SB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 0 | 16.5 |
| HCM LOS | | | C |

| Minor Lane/Major Mvmt | EBL | EBT | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|
| Capacity (veh/h) | 769 | - | - | - | 321 |
| HCM Lane V/C Ratio | - | - | - | - | 0.022 |
| HCM Control Delay (s) | 0 | - | - | - | 16.5 |
| HCM Lane LOS | A | - | - | - | C |
| HCM 95th %tile Q(veh) | 0 | - | - | - | 0.1 |

| Notes | | | |
|---|---|---|---|
| ~: Volume exceeds capacity | $: Delay exceeds 300s | +: Computation Not Defined | *: All major volume in platoon |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0 |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 659 | 0 | 0 | 829 | 0 | 0 |
| Future Vol, veh/h | 659 | 0 | 0 | 829 | 0 | 0 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | 0 | - | - | 0 | 0 |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 84 | 84 | 95 | 95 | 92 | 92 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 785 | 0 | 0 | 873 | 0 | 0 |

| Major/Minor | Major1 | | Major2 | | Minor1 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 0 | 0 | 785 | 0 | 1222 | 785 |
| Stage 1 | - | - | - | - | 785 | - |
| Stage 2 | - | - | - | - | 437 | - |
| Critical Hdwy | - | - | 4.13 | - | 6.63 | 6.23 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.43 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.83 | - |
| Follow-up Hdwy | - | - | 2.219 | - | 3.519 | 3.319 |
| Pot Cap-1 Maneuver | - | - | 832 | - | 185 | 392 |
| Stage 1 | - | - | - | - | 448 | - |
| Stage 2 | - | - | - | - | 619 | - |
| Platoon blocked, % | - | - | | - | | |
| Mov Cap-1 Maneuver | - | - | 832 | - | 185 | 392 |
| Mov Cap-2 Maneuver | - | - | - | - | 185 | - |
| Stage 1 | - | - | - | - | 448 | - |
| Stage 2 | - | - | - | - | 619 | - |

| Approach | EB | WB | NB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 0 | 0 |
| HCM LOS | | | A |

| Minor Lane/Major Mvmt | NBLn1 | NBLn2 | EBT | EBR | WBL | WBT |
|---|---|---|---|---|---|---|
| Capacity (veh/h) | - | - | - | - | 832 | - |
| HCM Lane V/C Ratio | - | - | - | - | - | - |
| HCM Control Delay (s) | 0 | 0 | - | - | 0 | - |
| HCM Lane LOS | A | A | - | - | A | - |
| HCM 95th %tile Q(veh) | - | - | - | - | 0 | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.1 |

| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | ↰ | ↑↑↱ | | ⅄ | |
| Traffic Vol, veh/h | 0 | 658 | 830 | 0 | 1 | 3 |
| Future Vol, veh/h | 0 | 658 | 830 | 0 | 1 | 3 |
| Conflicting Peds, #/hr | 8 | 0 | 0 | 8 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | 150 | 0 | - |
| Veh in Median Storage, # | - | 0 | 0 | - | 0 | - |
| Grade, % | - | 0 | 0 | - | 0 | - |
| Peak Hour Factor | 84 | 84 | 95 | 95 | 60 | 60 |
| Heavy Vehicles, % | 1 | 1 | 1 | 1 | 0 | 0 |
| Mvmt Flow | 0 | 783 | 874 | 0 | 2 | 5 |

| Major/Minor | Major1 | | Major2 | | Minor2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 882 | 0 | - | 0 | 1665 | 445 |
| Stage 1 | - | - | - | - | 882 | - |
| Stage 2 | - | - | - | - | 783 | - |
| Critical Hdwy | 4.115 | - | - | - | 6.6 | 6.9 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.8 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.4 | - |
| Follow-up Hdwy | 2.2095 | - | - | - | 3.5 | 3.3 |
| Pot Cap-1 Maneuver | 770 | - | - | - | *328 | 566 |
| Stage 1 | - | - | - | - | *370 | - |
| Stage 2 | - | - | - | - | *514 | - |
| Platoon blocked, % | | - | - | - | 1 | |
| Mov Cap-1 Maneuver | 764 | - | - | - | *322 | 562 |
| Mov Cap-2 Maneuver | - | - | - | - | *322 | - |
| Stage 1 | - | - | - | - | *367 | - |
| Stage 2 | - | - | - | - | *510 | - |

| Approach | EB | WB | SB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 0 | 12.7 |
| HCM LOS | | | B |

| Minor Lane/Major Mvmt | EBL | EBT | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|
| Capacity (veh/h) | 764 | - | - | - | 474 |
| HCM Lane V/C Ratio | - | - | - | - | 0.014 |
| HCM Control Delay (s) | 0 | - | - | - | 12.7 |
| HCM Lane LOS | A | - | - | - | B |
| HCM 95th %tile Q(veh) | 0 | - | - | - | 0 |

| Notes | | | |
|---|---|---|---|
| ~: Volume exceeds capacity | $: Delay exceeds 300s | +: Computation Not Defined | *: All major volume in platoon |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 99 | 400 | 128 | 69 | 648 | 124 | 70 | 188 | 46 | 98 | 258 | 105 |
| Future Volume (veh/h) | 99 | 400 | 128 | 69 | 648 | 124 | 70 | 188 | 46 | 98 | 258 | 105 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | | 1.00 | 1.00 | | 0.99 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach | | No | | | No | | | No | | | No | |
| Adj Sat Flow, veh/h/ln | 1984 | 1984 | 1984 | 1984 | 1984 | 1984 | 1984 | 1984 | 1984 | 1984 | 1984 | 1984 |
| Adj Flow Rate, veh/h | 110 | 444 | 142 | 74 | 697 | 133 | 78 | 209 | 51 | 109 | 287 | 117 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.93 | 0.93 | 0.93 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Percent Heavy Veh, % | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Cap, veh/h | 623 | 938 | 297 | 700 | 1051 | 200 | 139 | 264 | 223 | 244 | 340 | 286 |
| Arrive On Green | 0.25 | 0.33 | 0.33 | 0.25 | 0.33 | 0.33 | 0.04 | 0.13 | 0.13 | 0.08 | 0.17 | 0.17 |
| Sat Flow, veh/h | 1890 | 2814 | 892 | 1890 | 3153 | 601 | 1890 | 1984 | 1678 | 1890 | 1984 | 1667 |
| Grp Volume(v), veh/h | 110 | 296 | 290 | 74 | 417 | 413 | 78 | 209 | 51 | 109 | 287 | 117 |
| Grp Sat Flow(s),veh/h/ln | 1890 | 1885 | 1821 | 1890 | 1885 | 1869 | 1890 | 1984 | 1678 | 1890 | 1984 | 1667 |
| Q Serve(g_s), s | 0.0 | 14.9 | 15.1 | 0.0 | 22.7 | 22.7 | 1.0 | 12.2 | 3.3 | 0.5 | 16.8 | 7.5 |
| Cycle Q Clear(g_c), s | 0.0 | 14.9 | 15.1 | 0.0 | 22.7 | 22.7 | 1.0 | 12.2 | 3.3 | 0.5 | 16.8 | 7.5 |
| Prop In Lane | 1.00 | | 0.49 | 1.00 | | 0.32 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Lane Grp Cap(c), veh/h | 623 | 628 | 607 | 700 | 628 | 623 | 139 | 264 | 223 | 244 | 340 | 286 |
| V/C Ratio(X) | 0.18 | 0.47 | 0.48 | 0.11 | 0.66 | 0.66 | 0.56 | 0.79 | 0.23 | 0.45 | 0.84 | 0.41 |
| Avail Cap(c_a), veh/h | 623 | 628 | 607 | 700 | 628 | 623 | 274 | 589 | 498 | 307 | 589 | 495 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Uniform Delay (d), s/veh | 26.7 | 31.6 | 31.7 | 19.6 | 34.2 | 34.2 | 55.2 | 50.4 | 46.5 | 50.3 | 48.2 | 44.3 |
| Incr Delay (d2), s/veh | 0.1 | 2.5 | 2.7 | 0.1 | 5.4 | 5.5 | 3.5 | 5.3 | 0.5 | 1.3 | 5.7 | 0.9 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(95%),veh/ln | 4.0 | 11.3 | 11.2 | 2.2 | 16.3 | 16.2 | 4.3 | 10.6 | 2.5 | 5.5 | 13.5 | 5.7 |
| Unsig. Movement Delay, s/veh | | | | | | | | | | | | |
| LnGrp Delay(d),s/veh | 26.8 | 34.2 | 34.4 | 19.7 | 39.7 | 39.7 | 58.7 | 55.7 | 47.0 | 51.6 | 53.9 | 45.3 |
| LnGrp LOS | C | C | C | B | D | D | E | E | D | D | D | D |
| Approach Vol, veh/h | | 696 | | | 904 | | | 338 | | | 513 | |
| Approach Delay, s/veh | | 33.1 | | | 38.1 | | | 55.1 | | | 51.4 | |
| Approach LOS | | C | | | D | | | E | | | D | |

| Timer - Assigned Phs | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Phs Duration (G+Y+Rc), s | 35.6 | 46.0 | 11.4 | 27.0 | 35.6 | 46.0 | 16.0 | 22.4 |
| Change Period (Y+Rc), s | * 6 | * 6 | 6.4 | 6.4 | * 6 | * 6 | 6.4 | 6.4 |
| Max Green Setting (Gmax), s | * 6 | * 40 | 13.6 | 35.6 | * 6 | * 40 | 13.6 | 35.6 |
| Max Q Clear Time (g_c+I1), s | 2.0 | 17.1 | 3.0 | 18.8 | 2.0 | 24.7 | 2.5 | 14.2 |
| Green Ext Time (p_c), s | 0.0 | 3.3 | 0.1 | 1.7 | 0.1 | 4.3 | 0.2 | 1.3 |

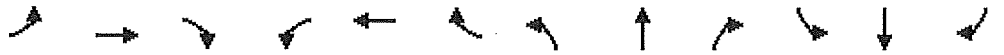
| Intersection Summary | |
|---|---|
| HCM 6th Ctrl Delay | 41.8 |
| HCM 6th LOS | D |

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

# HCM 6th Signalized Intersection Summary
## 1001: Novi Road & 10 Mile Road

11/22/2022



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 202 | 466 | 149 | 106 | 376 | 115 | 157 | 451 | 147 | 113 | 365 | 159 |
| Future Volume (veh/h) | 202 | 466 | 149 | 106 | 376 | 115 | 157 | 451 | 147 | 113 | 365 | 159 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach | | No | | | No | | | No | | | No | |
| Adj Sat Flow, veh/h/ln | 1969 | 1969 | 1969 | 1953 | 1953 | 1953 | 1969 | 1969 | 1969 | 1969 | 1969 | 1969 |
| Adj Flow Rate, veh/h | 217 | 501 | 160 | 154 | 545 | 167 | 194 | 557 | 181 | 133 | 429 | 187 |
| Peak Hour Factor | 0.93 | 0.93 | 0.93 | 0.69 | 0.69 | 0.69 | 0.81 | 0.81 | 0.81 | 0.85 | 0.85 | 0.85 |
| Percent Heavy Veh, % | 2 | 2 | 2 | 3 | 3 | 3 | 2 | 2 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 272 | 684 | 217 | 269 | 636 | 194 | 405 | 1131 | 366 | 355 | 1020 | 440 |
| Arrive On Green | 0.10 | 0.25 | 0.25 | 0.08 | 0.23 | 0.23 | 0.06 | 0.41 | 0.41 | 0.06 | 0.40 | 0.40 |
| Sat Flow, veh/h | 1875 | 2792 | 887 | 1860 | 2799 | 854 | 1875 | 2778 | 900 | 1875 | 2544 | 1098 |
| Grp Volume(v), veh/h | 217 | 335 | 326 | 154 | 361 | 351 | 194 | 374 | 364 | 133 | 314 | 302 |
| Grp Sat Flow(s),veh/h/ln | 1875 | 1870 | 1808 | 1860 | 1856 | 1798 | 1875 | 1870 | 1807 | 1875 | 1870 | 1771 |
| Q Serve(g_s), s | 10.6 | 19.7 | 20.0 | 7.5 | 22.4 | 22.5 | 7.4 | 17.8 | 17.9 | 5.0 | 14.5 | 14.8 |
| Cycle Q Clear(g_c), s | 10.6 | 19.7 | 20.0 | 7.5 | 22.4 | 22.5 | 7.4 | 17.8 | 17.9 | 5.0 | 14.5 | 14.8 |
| Prop In Lane | 1.00 | | 0.49 | 1.00 | | 0.48 | 1.00 | | 0.50 | 1.00 | | 0.62 |
| Lane Grp Cap(c), veh/h | 272 | 458 | 443 | 269 | 422 | 409 | 405 | 761 | 735 | 355 | 750 | 710 |
| V/C Ratio(X) | 0.80 | 0.73 | 0.74 | 0.57 | 0.85 | 0.86 | 0.48 | 0.49 | 0.49 | 0.38 | 0.42 | 0.42 |
| Avail Cap(c_a), veh/h | 272 | 525 | 508 | 302 | 521 | 505 | 405 | 761 | 735 | 366 | 750 | 710 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Uniform Delay (d), s/veh | 33.7 | 41.7 | 41.7 | 33.1 | 44.5 | 44.5 | 20.3 | 26.4 | 26.4 | 20.4 | 25.9 | 25.9 |
| Incr Delay (d2), s/veh | 15.2 | 4.4 | 4.8 | 2.1 | 11.1 | 11.9 | 0.9 | 2.3 | 2.4 | 0.7 | 1.7 | 1.9 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(95%),veh/ln | 9.7 | 14.4 | 14.2 | 6.2 | 16.7 | 16.5 | 5.7 | 12.7 | 12.5 | 3.8 | 10.7 | 10.5 |
| Unsig. Movement Delay, s/veh | | | | | | | | | | | | |
| LnGrp Delay(d),s/veh | 49.0 | 46.1 | 46.5 | 35.1 | 55.6 | 56.4 | 21.2 | 28.6 | 28.8 | 21.1 | 27.6 | 27.8 |
| LnGrp LOS | D | D | D | D | E | E | C | C | C | C | C | C |
| Approach Vol, veh/h | | 878 | | | 866 | | | 932 | | | 749 | |
| Approach Delay, s/veh | | 47.0 | | | 52.3 | | | 27.2 | | | 26.5 | |
| Approach LOS | | D | | | D | | | C | | | C | |

| Timer - Assigned Phs | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Phs Duration (G+Y+Rc), s | 13.3 | 55.1 | 15.9 | 35.7 | 14.0 | 54.4 | 18.0 | 33.6 |
| Change Period (Y+Rc), s | 6.3 | 6.3 | 6.3 | 6.3 | 6.3 | 6.3 | 6.3 | 6.3 |
| Max Green Setting (Gmax), s | 7.7 | 41.7 | 11.7 | 33.7 | 7.7 | 41.7 | 11.7 | 33.7 |
| Max Q Clear Time (g_c+I1), s | 7.0 | 19.9 | 9.5 | 22.0 | 9.4 | 16.8 | 12.6 | 24.5 |
| Green Ext Time (p_c), s | 0.0 | 4.2 | 0.1 | 2.9 | 0.0 | 3.6 | 0.0 | 2.8 |

| Intersection Summary | |
|---|---|
| HCM 6th Ctrl Delay | 38.4 |
| HCM 6th LOS | D |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.5 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 1 | 685 | 37 | 13 | 567 | 0 | 17 | 0 | 13 | 0 | 0 | 4 |
| Future Vol, veh/h | 1 | 685 | 37 | 13 | 567 | 0 | 17 | 0 | 13 | 0 | 0 | 4 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | 100 | - | 0 | 75 | - | - | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 88 | 88 | 88 | 69 | 69 | 69 | 60 | 60 | 60 | 60 | 60 | 60 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 14 | 14 | 14 |
| Mvmt Flow | 1 | 778 | 42 | 19 | 822 | 0 | 28 | 0 | 22 | 0 | 0 | 7 |

| Major/Minor | Major1 | | | Major2 | | | Minor1 | | | Minor2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 822 | 0 | 0 | 820 | 0 | 0 | 1229 | 1640 | 778 | 1672 | 1682 | 411 |
| Stage 1 | - | - | - | - | - | - | 780 | 780 | - | 860 | 860 | - |
| Stage 2 | - | - | - | - | - | - | 449 | 860 | - | 812 | 822 | - |
| Critical Hdwy | 4.13 | - | - | 4.13 | - | - | 7.33 | 6.53 | 6.23 | 7.51 | 6.71 | 7.11 |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | 6.13 | 5.53 | - | 6.71 | 5.71 | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | 6.53 | 5.53 | - | 6.31 | 5.71 | - |
| Follow-up Hdwy | 2.219 | - | - | 2.219 | - | - | 3.519 | 4.019 | 3.319 | 3.633 | 4.133 | 3.433 |
| Pot Cap-1 Maneuver | 805 | - | - | *773 | - | - | *487 | *355 | *516 | *336 | *306 | 563 |
| Stage 1 | - | - | - | - | - | - | *487 | *427 | - | *298 | *350 | - |
| Stage 2 | - | - | - | - | - | - | *560 | *372 | - | *472 | *415 | - |
| Platoon blocked, % | | - | - | 1 | - | - | 1 | 1 | 1 | 1 | 1 | |
| Mov Cap-1 Maneuver | 805 | - | - | *773 | - | - | *472 | *345 | *516 | *316 | *298 | 563 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | *472 | *345 | - | *316 | *298 | - |
| Stage 1 | - | - | - | - | - | - | *487 | *426 | - | *298 | *341 | - |
| Stage 2 | - | - | - | - | - | - | *540 | *363 | - | *452 | *414 | - |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Control Delay, s | 0 | 0.2 | 13.2 | 11.5 |
| HCM LOS | | | B | B |

| Minor Lane/Major Mvmt | NBLn1 | EBL | EBT | EBR | WBL | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 490 | 805 | - | - | *773 | - | - | 563 |
| HCM Lane V/C Ratio | 0.102 | 0.001 | - | - | 0.024 | - | - | 0.012 |
| HCM Control Delay (s) | 13.2 | 9.5 | - | - | 9.8 | - | - | 11.5 |
| HCM Lane LOS | B | A | - | - | A | - | - | B |
| HCM 95th %tile Q(veh) | 0.3 | 0 | - | - | 0.1 | - | - | 0 |

| Notes | | | |
|---|---|---|---|
| ~: Volume exceeds capacity | $: Delay exceeds 300s | +: Computation Not Defined | *: All major volume in platoon |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.6 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 24 | 636 | 34 | 13 | 554 | 12 | 19 | 0 | 10 | 2 | 0 | 11 |
| Future Vol, veh/h | 24 | 636 | 34 | 13 | 554 | 12 | 19 | 0 | 10 | 2 | 0 | 11 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | 75 | - | - | 75 | - | 25 | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 86 | 86 | 86 | 68 | 68 | 68 | 92 | 92 | 92 | 80 | 80 | 80 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 13 | 13 | 13 |
| Mvmt Flow | 28 | 740 | 40 | 19 | 815 | 18 | 21 | 0 | 11 | 3 | 0 | 14 |

| Major/Minor | Major1 | | | Major2 | | | Minor1 | | | Minor2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 833 | 0 | 0 | 780 | 0 | 0 | 1262 | 1687 | 760 | 1684 | 1698 | 417 |
| Stage 1 | - | - | - | - | - | - | 816 | 816 | - | 862 | 862 | - |
| Stage 2 | - | - | - | - | - | - | 446 | 871 | - | 822 | 836 | - |
| Critical Hdwy | 4.13 | - | - | 4.13 | - | - | 7.33 | 6.53 | 6.23 | 7.495 | 6.695 | 7.095 |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | 6.13 | 5.53 | - | 6.695 | 5.695 | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | 6.53 | 5.53 | - | 6.295 | 5.695 | - |
| Follow-up Hdwy | 2.219 | - | - | 2.219 | - | - | 3.519 | 4.019 | 3.319 | 3.6235 | 4.1235 | 3.4235 |
| Pot Cap-1 Maneuver | 798 | - | - | *849 | - | - | *535 | *249 | *567 | *238 | *233 | 560 |
| Stage 1 | - | - | - | - | - | - | *535 | *469 | - | *299 | *351 | - |
| Stage 2 | - | - | - | - | - | - | *562 | *368 | - | *520 | *457 | - |
| Platoon blocked, % | | - | - | 1 | - | - | 1 | 1 | 1 | 1 | 1 | |
| Mov Cap-1 Maneuver | 798 | - | - | *849 | - | - | *499 | *235 | *567 | *224 | *220 | 560 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | *499 | *235 | - | *224 | *220 | - |
| Stage 1 | - | - | - | - | - | - | *517 | *452 | - | *289 | *343 | - |
| Stage 2 | - | - | - | - | - | - | *536 | *360 | - | *492 | *441 | - |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Control Delay, s | 0.3 | 0.2 | 12.4 | 13.2 |
| HCM LOS | | | B | B |

| Minor Lane/Major Mvmt | NBLn1 | EBL | EBT | EBR | WBL | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 521 | 798 | - | - | * 849 | - | - | 455 |
| HCM Lane V/C Ratio | 0.061 | 0.035 | - | - | 0.023 | - | - | 0.036 |
| HCM Control Delay (s) | 12.4 | 9.7 | - | - | 9.3 | - | - | 13.2 |
| HCM Lane LOS | B | A | - | - | A | - | - | B |
| HCM 95th %tile Q(veh) | 0.2 | 0.1 | - | - | 0.1 | - | - | 0.1 |

| Notes | | | |
|---|---|---|---|
| ~: Volume exceeds capacity | $: Delay exceeds 300s | +: Computation Not Defined | *: All major volume in platoon |

| Intersection | |
|---|---|
| Int Delay, s/veh | 2.7 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | ↕ | | | ↰ | ↱ | | ↕ | | | ↕ | |
| Traffic Vol, veh/h | 6 | 609 | 33 | 12 | 558 | 7 | 18 | 0 | 10 | 2 | 0 | 3 |
| Future Vol, veh/h | 6 | 609 | 33 | 12 | 558 | 7 | 18 | 0 | 10 | 2 | 0 | 3 |
| Conflicting Peds, #/hr | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | 150 | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 86 | 86 | 86 | 68 | 68 | 68 | 92 | 92 | 92 | 60 | 60 | 60 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 |
| Mvmt Flow | 7 | 708 | 38 | 18 | 821 | 10 | 20 | 0 | 11 | 3 | 0 | 5 |

| Major/Minor | Major1 | | | Major2 | | | Minor1 | | | Minor2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 832 | 0 | 0 | 746 | 0 | 0 | 1606 | 1609 | 727 | 1605 | 1618 | 822 |
| Stage 1 | - | - | - | - | - | - | 741 | 741 | - | 858 | 858 | - |
| Stage 2 | - | - | - | - | - | - | 865 | 868 | - | 747 | 760 | - |
| Critical Hdwy | 4.12 | - | - | 4.12 | - | - | 7.12 | 6.52 | 6.22 | 7.1 | 6.5 | 6.2 |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | 6.12 | 5.52 | - | 6.1 | 5.5 | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | 6.12 | 5.52 | - | 6.1 | 5.5 | - |
| Follow-up Hdwy | 2.218 | - | - | 2.218 | - | - | 3.518 | 4.018 | 3.318 | 3.5 | 4 | 3.3 |
| Pot Cap-1 Maneuver | 801 | - | - | 801 | - | - | 40 | 50 | 531 | 41 | 50 | 377 |
| Stage 1 | - | - | - | - | - | - | 488 | 439 | - | 354 | 376 | - |
| Stage 2 | - | - | - | - | - | - | 348 | 370 | - | 484 | 426 | - |
| Platoon blocked, % | | - | - | 1 | - | - | 1 | 1 | 1 | 1 | 1 | |
| Mov Cap-1 Maneuver | 800 | - | - | 801 | - | - | 38 | 47 | 531 | 38 | 47 | 377 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | 38 | 47 | - | 38 | 47 | - |
| Stage 1 | - | - | - | - | - | - | 480 | 432 | - | 348 | 360 | - |
| Stage 2 | - | - | - | - | - | - | 329 | 354 | - | 467 | 420 | - |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Control Delay, s | 0.1 | 0.2 | 125.1 | 53.2 |
| HCM LOS | | | F | F |

| Minor Lane/Major Mvmt | NBLn1 | EBL | EBT | EBR | WBL | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 57 | 800 | - | - | 801 | - | - | 83 |
| HCM Lane V/C Ratio | 0.534 | 0.009 | - | - | 0.022 | - | - | 0.1 |
| HCM Control Delay (s) | 125.1 | 9.5 | 0 | - | 9.6 | 0 | - | 53.2 |
| HCM Lane LOS | F | A | A | - | A | A | - | F |
| HCM 95th %tile Q(veh) | 2.1 | 0 | - | - | 0.1 | - | - | 0.3 |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0 |

| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 2 | 620 | 570 | 4 | 0 | 2 |
| Future Vol, veh/h | 2 | 620 | 570 | 4 | 0 | 2 |
| Conflicting Peds, #/hr | 1 | 0 | 0 | 1 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | 0 | 0 | - |
| Veh in Median Storage, # | - | 0 | 0 | - | 0 | - |
| Grade, % | - | 0 | 0 | - | 0 | - |
| Peak Hour Factor | 85 | 85 | 68 | 68 | 60 | 60 |
| Heavy Vehicles, % | 2 | 2 | 3 | 3 | 0 | 0 |
| Mvmt Flow | 2 | 729 | 838 | 6 | 0 | 3 |

| Major/Minor | Major1 | | Major2 | | Minor2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 845 | 0 | - | 0 | 1208 | 839 |
| Stage 1 | - | - | - | - | 839 | - |
| Stage 2 | - | - | - | - | 369 | - |
| Critical Hdwy | 4.13 | - | - | - | 6.6 | 6.2 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.4 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.8 | - |
| Follow-up Hdwy | 2.219 | - | - | - | 3.5 | 3.3 |
| Pot Cap-1 Maneuver | 789 | - | - | - | *302 | 369 |
| Stage 1 | - | - | - | - | *427 | - |
| Stage 2 | - | - | - | - | *804 | - |
| Platoon blocked, % | | - | - | - | 1 | |
| Mov Cap-1 Maneuver | 788 | - | - | - | *301 | 369 |
| Mov Cap-2 Maneuver | - | - | - | - | *301 | - |
| Stage 1 | - | - | - | - | *425 | - |
| Stage 2 | - | - | - | - | *804 | - |

| Approach | EB | WB | SB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 0 | 14.8 |
| HCM LOS | | | B |

| Minor Lane/Major Mvmt | EBL | EBT | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|
| Capacity (veh/h) | 788 | - | - | - | 369 |
| HCM Lane V/C Ratio | 0.003 | - | - | - | 0.009 |
| HCM Control Delay (s) | 9.6 | 0 | - | - | 14.8 |
| HCM Lane LOS | A | A | - | - | B |
| HCM 95th %tile Q(veh) | 0 | - | - | - | 0 |

| Notes | | | |
|---|---|---|---|
| ~: Volume exceeds capacity | $: Delay exceeds 300s | +: Computation Not Defined | *: All major volume in platoon |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.3 |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 612 | 8 | 3 | 553 | 21 | 13 |
| Future Vol, veh/h | 612 | 8 | 3 | 553 | 21 | 13 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | 0 | - | - | 0 | 0 |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 85 | 85 | 68 | 68 | 92 | 92 |
| Heavy Vehicles, % | 2 | 2 | 3 | 3 | 2 | 2 |
| Mvmt Flow | 720 | 9 | 4 | 813 | 23 | 14 |

| Major/Minor | Major1 | | Major2 | | Minor1 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 0 | 0 | 729 | 0 | 1135 | 720 |
| Stage 1 | - | - | - | - | 720 | - |
| Stage 2 | - | - | - | - | 415 | - |
| Critical Hdwy | - | - | 4.145 | - | 6.63 | 6.23 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.43 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.83 | - |
| Follow-up Hdwy | - | - | 2.2285 | - | 3.519 | 3.319 |
| Pot Cap-1 Maneuver | - | - | *884 | - | *560 | *593 |
| Stage 1 | - | - | - | - | *560 | - |
| Stage 2 | - | - | - | - | *636 | - |
| Platoon blocked, % | - | - | 1 | - | 1 | 1 |
| Mov Cap-1 Maneuver | - | - | *884 | - | *555 | *593 |
| Mov Cap-2 Maneuver | - | - | - | - | *555 | - |
| Stage 1 | - | - | - | - | *560 | - |
| Stage 2 | - | - | - | - | *631 | - |

| Approach | EB | WB | NB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 0 | 11.6 |
| HCM LOS | | | B |

| Minor Lane/Major Mvmt | NBLn1 | NBLn2 | EBT | EBR | WBL | WBT |
|---|---|---|---|---|---|---|
| Capacity (veh/h) | 555 | 593 | - | - | * 884 | - |
| HCM Lane V/C Ratio | 0.041 | 0.024 | - | - | 0.005 | - |
| HCM Control Delay (s) | 11.8 | 11.2 | - | - | 9.1 | 0 |
| HCM Lane LOS | B | B | - | - | A | A |
| HCM 95th %tile Q(veh) | 0.1 | 0.1 | - | - | 0 | - |

| Notes | | | |
|---|---|---|---|
| ~: Volume exceeds capacity | $: Delay exceeds 300s | +: Computation Not Defined | *: All major volume in platoon |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0 |

| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | ↰ | ↑↑↱ | | ⅄ | |
| Traffic Vol, veh/h | 2 | 622 | 552 | 7 | 0 | 2 |
| Future Vol, veh/h | 2 | 622 | 552 | 7 | 0 | 2 |
| Conflicting Peds, #/hr | 1 | 0 | 0 | 1 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | 150 | 0 | - |
| Veh in Median Storage, # | - | 0 | 0 | - | 0 | - |
| Grade, % | - | 0 | 0 | - | 0 | - |
| Peak Hour Factor | 85 | 85 | 69 | 69 | 60 | 60 |
| Heavy Vehicles, % | 2 | 2 | 3 | 3 | 50 | 50 |
| Mvmt Flow | 2 | 732 | 800 | 10 | 0 | 3 |

| Major/Minor | Major1 | | Major2 | | Minor2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 811 | 0 | - | 0 | 1542 | 406 |
| Stage 1 | - | - | - | - | 806 | - |
| Stage 2 | - | - | - | - | 736 | - |
| Critical Hdwy | 4.13 | - | - | - | 7.35 | 7.65 |
| Critical Hdwy Stg 1 | - | - | - | - | 6.55 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 6.15 | - |
| Follow-up Hdwy | 2.219 | - | - | - | 3.975 | 3.775 |
| Pot Cap-1 Maneuver | 813 | - | - | - | *343 | 494 |
| Stage 1 | - | - | - | - | *316 | - |
| Stage 2 | - | - | - | - | *474 | - |
| Platoon blocked, % | | - | - | - | 1 | |
| Mov Cap-1 Maneuver | 812 | - | - | - | *341 | 494 |
| Mov Cap-2 Maneuver | - | - | - | - | *341 | - |
| Stage 1 | - | - | - | - | *314 | - |
| Stage 2 | - | - | - | - | *474 | - |

| Approach | EB | WB | SB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 0 | 12.3 |
| HCM LOS | | | B |

| Minor Lane/Major Mvmt | EBL | EBT | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|
| Capacity (veh/h) | 812 | - | - | - | 494 |
| HCM Lane V/C Ratio | 0.003 | - | - | - | 0.007 |
| HCM Control Delay (s) | 9.4 | 0 | - | - | 12.3 |
| HCM Lane LOS | A | A | - | - | B |
| HCM 95th %tile Q(veh) | 0 | - | - | - | 0 |

| Notes | | | |
|---|---|---|---|
| ~: Volume exceeds capacity | $: Delay exceeds 300s | +: Computation Not Defined | *: All major volume in platoon |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 126 | 526 | 54 | 30 | 294 | 70 | 59 | 148 | 48 | 65 | 95 | 66 |
| Future Volume (veh/h) | 126 | 526 | 54 | 30 | 294 | 70 | 59 | 148 | 48 | 65 | 95 | 66 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach | | No | | | No | | | No | | | No | |
| Adj Sat Flow, veh/h/ln | 1984 | 1984 | 1984 | 1984 | 1984 | 1984 | 1969 | 1969 | 1969 | 1953 | 1953 | 1953 |
| Adj Flow Rate, veh/h | 143 | 598 | 61 | 34 | 334 | 80 | 78 | 195 | 63 | 78 | 114 | 80 |
| Peak Hour Factor | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.76 | 0.76 | 0.76 | 0.83 | 0.83 | 0.83 |
| Percent Heavy Veh, % | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 3 | 3 | 3 |
| Cap, veh/h | 805 | 1411 | 144 | 700 | 1236 | 292 | 240 | 241 | 204 | 138 | 163 | 138 |
| Arrive On Green | 0.22 | 0.41 | 0.41 | 0.22 | 0.41 | 0.41 | 0.08 | 0.12 | 0.12 | 0.04 | 0.08 | 0.08 |
| Sat Flow, veh/h | 1890 | 3455 | 352 | 1890 | 3026 | 715 | 1875 | 1969 | 1668 | 1860 | 1953 | 1655 |
| Grp Volume(v), veh/h | 143 | 326 | 333 | 34 | 206 | 208 | 78 | 195 | 63 | 78 | 114 | 80 |
| Grp Sat Flow(s),veh/h/ln | 1890 | 1885 | 1921 | 1890 | 1885 | 1856 | 1875 | 1969 | 1668 | 1860 | 1953 | 1655 |
| Q Serve(g_s), s | 0.0 | 14.8 | 14.9 | 0.0 | 8.7 | 8.9 | 0.0 | 11.6 | 4.1 | 1.0 | 6.8 | 5.6 |
| Cycle Q Clear(g_c), s | 0.0 | 14.8 | 14.9 | 0.0 | 8.7 | 8.9 | 0.0 | 11.6 | 4.1 | 1.0 | 6.8 | 5.6 |
| Prop In Lane | 1.00 | | 0.18 | 1.00 | | 0.39 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Lane Grp Cap(c), veh/h | 805 | 770 | 784 | 700 | 770 | 758 | 240 | 241 | 204 | 138 | 163 | 138 |
| V/C Ratio(X) | 0.18 | 0.42 | 0.42 | 0.05 | 0.27 | 0.27 | 0.33 | 0.81 | 0.31 | 0.57 | 0.70 | 0.58 |
| Avail Cap(c_a), veh/h | 805 | 770 | 784 | 700 | 770 | 758 | 270 | 469 | 398 | 240 | 466 | 395 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Uniform Delay (d), s/veh | 13.9 | 25.4 | 25.4 | 15.3 | 23.6 | 23.7 | 50.2 | 51.3 | 48.0 | 55.2 | 53.5 | 53.0 |
| Incr Delay (d2), s/veh | 0.1 | 1.7 | 1.7 | 0.0 | 0.9 | 0.9 | 0.8 | 6.4 | 0.9 | 3.6 | 5.4 | 3.8 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(95%),veh/ln | 3.4 | 11.0 | 11.2 | 0.8 | 7.1 | 7.1 | 4.0 | 10.2 | 3.2 | 4.3 | 6.4 | 4.4 |
| Unsig. Movement Delay, s/veh | | | | | | | | | | | | |
| LnGrp Delay(d),s/veh | 14.0 | 27.1 | 27.1 | 15.4 | 24.4 | 24.5 | 51.0 | 57.8 | 48.9 | 58.8 | 58.9 | 56.8 |
| LnGrp LOS | B | C | C | B | C | C | D | E | D | E | E | E |
| Approach Vol, veh/h | | 802 | | | 448 | | | 336 | | | 272 | |
| Approach Delay, s/veh | | 24.8 | | | 23.8 | | | 54.5 | | | 58.3 | |
| Approach LOS | | C | | | C | | | D | | | E | |

| Timer - Assigned Phs | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Phs Duration (G+Y+Rc), s | 32.5 | 55.0 | 16.1 | 16.4 | 32.5 | 55.0 | 11.4 | 21.1 |
| Change Period (Y+Rc), s | * 6 | * 6 | 6.4 | 6.4 | * 6 | * 6 | 6.4 | 6.4 |
| Max Green Setting (Gmax), s | * 6 | * 49 | 11.6 | 28.6 | * 6 | * 49 | 11.6 | 28.6 |
| Max Q Clear Time (g_c+I1), s | 2.0 | 16.9 | 2.0 | 8.8 | 2.0 | 10.9 | 3.0 | 13.6 |
| Green Ext Time (p_c), s | 0.0 | 3.9 | 0.1 | 0.7 | 0.1 | 2.3 | 0.1 | 1.1 |

| Intersection Summary | |
|---|---|
| HCM 6th Ctrl Delay | 34.8 |
| HCM 6th LOS | C |

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

# HCM 6th Signalized Intersection Summary
## 1001: Novi Road & 10 Mile Road

11/22/2022

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 225 | 470 | 227 | 216 | 551 | 232 | 203 | 622 | 125 | 177 | 630 | 307 |
| Future Volume (veh/h) | 225 | 470 | 227 | 216 | 551 | 232 | 203 | 622 | 125 | 177 | 630 | 307 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach | | No | | | No | | | No | | | No | |
| Adj Sat Flow, veh/h/ln | 1984 | 1984 | 1984 | 1984 | 1984 | 1984 | 1984 | 1984 | 1984 | 1984 | 1984 | 1984 |
| Adj Flow Rate, veh/h | 245 | 511 | 247 | 248 | 633 | 267 | 214 | 655 | 132 | 186 | 663 | 323 |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.87 | 0.87 | 0.87 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Percent Heavy Veh, % | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Cap, veh/h | 246 | 706 | 340 | 283 | 736 | 310 | 270 | 1073 | 216 | 328 | 840 | 409 |
| Arrive On Green | 0.08 | 0.29 | 0.29 | 0.08 | 0.29 | 0.29 | 0.08 | 0.34 | 0.34 | 0.08 | 0.34 | 0.34 |
| Sat Flow, veh/h | 1890 | 2466 | 1187 | 1890 | 2571 | 1084 | 1890 | 3127 | 629 | 1890 | 2456 | 1197 |
| Grp Volume(v), veh/h | 245 | 390 | 368 | 248 | 464 | 436 | 214 | 395 | 392 | 186 | 509 | 477 |
| Grp Sat Flow(s),veh/h/ln | 1890 | 1885 | 1768 | 1890 | 1885 | 1770 | 1890 | 1885 | 1871 | 1890 | 1885 | 1768 |
| Q Serve(g_s), s | 9.7 | 22.4 | 22.5 | 9.7 | 28.0 | 28.0 | 8.8 | 20.9 | 20.9 | 7.6 | 29.2 | 29.2 |
| Cycle Q Clear(g_c), s | 9.7 | 22.4 | 22.5 | 9.7 | 28.0 | 28.0 | 8.8 | 20.9 | 20.9 | 7.6 | 29.2 | 29.2 |
| Prop In Lane | 1.00 | | 0.67 | 1.00 | | 0.61 | 1.00 | | 0.34 | 1.00 | | 0.68 |
| Lane Grp Cap(c), veh/h | 246 | 539 | 506 | 283 | 539 | 507 | 270 | 647 | 642 | 328 | 645 | 605 |
| V/C Ratio(X) | 1.00 | 0.72 | 0.73 | 0.88 | 0.86 | 0.86 | 0.79 | 0.61 | 0.61 | 0.57 | 0.79 | 0.79 |
| Avail Cap(c_a), veh/h | 246 | 671 | 629 | 283 | 671 | 630 | 270 | 647 | 642 | 330 | 645 | 605 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Uniform Delay (d), s/veh | 35.1 | 38.6 | 38.6 | 34.2 | 40.6 | 40.6 | 28.0 | 32.7 | 32.8 | 24.7 | 35.6 | 35.6 |
| Incr Delay (d2), s/veh | 56.5 | 2.9 | 3.2 | 25.0 | 9.2 | 9.8 | 14.9 | 4.2 | 4.3 | 2.2 | 9.5 | 10.1 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(95%),veh/ln | 13.6 | 15.7 | 15.0 | 11.3 | 19.9 | 19.0 | 8.5 | 15.1 | 15.0 | 6.2 | 20.7 | 19.8 |
| Unsig. Movement Delay, s/veh | | | | | | | | | | | | |
| LnGrp Delay(d),s/veh | 91.6 | 41.5 | 41.8 | 59.2 | 49.8 | 50.4 | 42.9 | 37.0 | 37.1 | 26.9 | 45.0 | 45.6 |
| LnGrp LOS | F | D | D | E | D | D | D | D | D | C | D | D |
| Approach Vol, veh/h | | 1003 | | | 1148 | | | 1001 | | | 1172 | |
| Approach Delay, s/veh | | 53.9 | | | 52.1 | | | 38.3 | | | 42.4 | |
| Approach LOS | | D | | | D | | | D | | | D | |

| Timer - Assigned Phs | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Phs Duration (G+Y+Rc), s | 15.9 | 47.5 | 16.0 | 40.6 | 16.0 | 47.4 | 16.0 | 40.6 |
| Change Period (Y+Rc), s | 6.3 | 6.3 | 6.3 | 6.3 | 6.3 | 6.3 | 6.3 | 6.3 |
| Max Green Setting (Gmax), s | 9.7 | 32.7 | 9.7 | 42.7 | 9.7 | 32.7 | 9.7 | 42.7 |
| Max Q Clear Time (g_c+I1), s | 9.6 | 22.9 | 11.7 | 24.5 | 10.8 | 31.2 | 11.7 | 30.0 |
| Green Ext Time (p_c), s | 0.0 | 3.2 | 0.0 | 4.2 | 0.0 | 0.9 | 0.0 | 4.3 |

| Intersection Summary | |
|---|---|
| HCM 6th Ctrl Delay | 46.7 |
| HCM 6th LOS | D |

| Intersection | |
|---|---|
| Int Delay, s/veh | 1.7 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 6 | 734 | 48 | 37 | 949 | 1 | 62 | 0 | 40 | 0 | 0 | 9 |
| Future Vol, veh/h | 6 | 734 | 48 | 37 | 949 | 1 | 62 | 0 | 40 | 0 | 0 | 9 |
| Conflicting Peds, #/hr | 8 | 0 | 0 | 0 | 0 | 8 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | 100 | - | 0 | 75 | - | - | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 86 | 86 | 86 | 95 | 95 | 95 | 60 | 60 | 60 | 66 | 66 | 66 |
| Heavy Vehicles, % | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| Mvmt Flow | 7 | 853 | 56 | 39 | 999 | 1 | 103 | 0 | 67 | 0 | 0 | 14 |

| Major/Minor | Major1 | | | Major2 | | | Minor1 | | | Minor2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 1008 | 0 | 0 | 909 | 0 | 0 | 1445 | 1953 | 853 | 2015 | 2009 | 508 |
| Stage 1 | - | - | - | - | - | - | 867 | 867 | - | 1086 | 1086 | - |
| Stage 2 | - | - | - | - | - | - | 578 | 1086 | - | 929 | 923 | - |
| Critical Hdwy | 4.115 | - | - | 4.115 | - | - | 7.3 | 6.5 | 6.2 | 7.3 | 6.5 | 6.9 |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | 6.1 | 5.5 | - | 6.5 | 5.5 | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | 6.5 | 5.5 | - | 6.1 | 5.5 | - |
| Follow-up Hdwy | 2.2095 | - | - | 2.2095 | - | - | 3.5 | 4 | 3.3 | 3.5 | 4 | 3.3 |
| Pot Cap-1 Maneuver | 690 | - | - | *738 | - | - | *465 | *168 | *494 | *127 | *143 | 515 |
| Stage 1 | - | - | - | - | - | - | *465 | *407 | - | *234 | *295 | - |
| Stage 2 | - | - | - | - | - | - | *474 | *295 | - | *465 | *407 | - |
| Platoon blocked, % | | - | - | 1 | - | - | 1 | 1 | 1 | 1 | 1 | |
| Mov Cap-1 Maneuver | 685 | - | - | *738 | - | - | *431 | *156 | *494 | *104 | *133 | 511 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | *431 | *156 | - | *104 | *133 | - |
| Stage 1 | - | - | - | - | - | - | *461 | *403 | - | *230 | *277 | - |
| Stage 2 | - | - | - | - | - | - | *437 | *277 | - | *398 | *403 | - |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Control Delay, s | 0.1 | 0.4 | 17.6 | 12.2 |
| HCM LOS | | | C | B |

| Minor Lane/Major Mvmt | NBLn1 | EBL | EBT | EBR | WBL | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 454 | 685 | - | - | *738 | - | - | 511 |
| HCM Lane V/C Ratio | 0.374 | 0.01 | - | - | 0.053 | - | - | 0.027 |
| HCM Control Delay (s) | 17.6 | 10.3 | - | - | 10.2 | - | - | 12.2 |
| HCM Lane LOS | C | B | - | - | B | - | - | B |
| HCM 95th %tile Q(veh) | 1.7 | 0 | - | - | 0.2 | - | - | 0.1 |

| Notes | | | |
|---|---|---|---|
| ~: Volume exceeds capacity | $: Delay exceeds 300s | +: Computation Not Defined | *: All major volume in platoon |

| Intersection | |
|---|---|
| Int Delay, s/veh | 2.4 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 22 | 696 | 55 | 43 | 886 | 8 | 67 | 0 | 39 | 20 | 0 | 44 |
| Future Vol, veh/h | 22 | 696 | 55 | 43 | 886 | 8 | 67 | 0 | 39 | 20 | 0 | 44 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | 75 | - | - | 75 | - | 25 | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 86 | 86 | 86 | 95 | 95 | 95 | 92 | 92 | 92 | 70 | 70 | 70 |
| Heavy Vehicles, % | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 |
| Mvmt Flow | 26 | 809 | 64 | 45 | 933 | 8 | 73 | 0 | 42 | 29 | 0 | 63 |

| Major/Minor | Major1 | | | Major2 | | | Minor1 | | | Minor2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 949 | 0 | 0 | 873 | 0 | 0 | 1450 | 1932 | 841 | 1949 | 1960 | 479 |
| Stage 1 | - | - | - | - | - | - | 893 | 893 | - | 1035 | 1035 | - |
| Stage 2 | - | - | - | - | - | - | 557 | 1039 | - | 914 | 925 | - |
| Critical Hdwy | 4.115 | - | - | 4.115 | - | - | 7.315 | 6.515 | 6.215 | 7.3 | 6.5 | 6.9 |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | 6.115 | 5.515 | - | 6.5 | 5.5 | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | 6.515 | 5.515 | - | 6.1 | 5.5 | - |
| Follow-up Hdwy | 2.2095 | - | - | 2.2095 | - | - | 3.5095 | 4.0095 | 3.3095 | 3.5 | 4 | 3.3 |
| Pot Cap-1 Maneuver | 727 | - | - | *776 | - | - | *488 | *160 | *518 | *140 | *149 | 538 |
| Stage 1 | - | - | - | - | - | - | *489 | *428 | - | *252 | *312 | - |
| Stage 2 | - | - | - | - | - | - | *485 | *309 | - | *490 | *429 | - |
| Platoon blocked, % | | - | - | 1 | - | - | 1 | 1 | 1 | 1 | 1 | |
| Mov Cap-1 Maneuver | 721 | - | - | *776 | - | - | *400 | *144 | *518 | *119 | *134 | 534 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | *400 | *144 | - | *119 | *134 | - |
| Stage 1 | - | - | - | - | - | - | *471 | *412 | - | *241 | *291 | - |
| Stage 2 | - | - | - | - | - | - | *403 | *289 | - | *433 | *413 | - |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Control Delay, s | 0.3 | 0.5 | 16.2 | 26.7 |
| HCM LOS | | | C | D |

| Minor Lane/Major Mvmt | NBLn1 | EBL | EBT | EBR | WBL | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 437 | 721 | - | - | *776 | - | - | 256 |
| HCM Lane V/C Ratio | 0.264 | 0.035 | - | - | 0.058 | - | - | 0.357 |
| HCM Control Delay (s) | 16.2 | 10.2 | - | - | 9.9 | - | - | 26.7 |
| HCM Lane LOS | C | B | - | - | A | - | - | D |
| HCM 95th %tile Q(veh) | 1 | 0.1 | - | - | 0.2 | - | - | 1.6 |

| Notes | | | |
|---|---|---|---|
| ~: Volume exceeds capacity | $: Delay exceeds 300s | +: Computation Not Defined | *: All major volume in platoon |

| Intersection | |
|---|---|
| Int Delay, s/veh | 143.9 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | ↕ | | | ↰ | ↱ | | ↕ | | | ↕ | |
| Traffic Vol, veh/h | 2 | 698 | 56 | 41 | 863 | 3 | 66 | 0 | 38 | 2 | 0 | 8 |
| Future Vol, veh/h | 2 | 698 | 56 | 41 | 863 | 3 | 66 | 0 | 38 | 2 | 0 | 8 |
| Conflicting Peds, #/hr | 1 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | 150 | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 86 | 86 | 86 | 95 | 95 | 95 | 92 | 92 | 92 | 60 | 60 | 60 |
| Heavy Vehicles, % | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| Mvmt Flow | 2 | 812 | 65 | 43 | 908 | 3 | 72 | 0 | 41 | 3 | 0 | 13 |

| Major/Minor | Major1 | | | Major2 | | | Minor1 | | | Minor2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 917 | 0 | 0 | 877 | 0 | 0 | 1851 | 1852 | 845 | 1869 | 1881 | 914 |
| Stage 1 | - | - | - | - | - | - | 849 | 849 | - | 1000 | 1000 | - |
| Stage 2 | - | - | - | - | - | - | 1002 | 1003 | - | 869 | 881 | - |
| Critical Hdwy | 4.11 | - | - | 4.11 | - | - | 7.1 | 6.5 | 6.2 | 7.1 | 6.5 | 6.2 |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | 6.1 | 5.5 | - | 6.1 | 5.5 | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | 6.1 | 5.5 | - | 6.1 | 5.5 | - |
| Follow-up Hdwy | 2.209 | - | - | 2.209 | - | - | 3.5 | 4 | 3.3 | 3.5 | 4 | 3.3 |
| Pot Cap-1 Maneuver | 748 | - | - | 661 | - | - | ~ 15 | 20 | 443 | 14 | 19 | 334 |
| Stage 1 | - | - | - | - | - | - | 417 | 376 | - | 295 | 324 | - |
| Stage 2 | - | - | - | - | - | - | 295 | 322 | - | 396 | 352 | - |
| Platoon blocked, % | | - | - | 1 | - | - | 1 | 1 | 1 | 1 | 1 | |
| Mov Cap-1 Maneuver | 744 | - | - | 661 | - | - | ~ 13 | 18 | 443 | 11 | 16 | 332 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | ~ 13 | 18 | - | 11 | 16 | - |
| Stage 1 | - | - | - | - | - | - | 415 | 374 | - | 292 | 280 | - |
| Stage 2 | - | - | - | - | - | - | 246 | 278 | - | 357 | 350 | - |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Control Delay, s | 0 | 0.5 | $ 2478.1 | 112.5 |
| HCM LOS | | | F | F |

| Minor Lane/Major Mvmt | NBLn1 | EBL | EBT | EBR | WBL | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 20 | 744 | - | - | 661 | - | - | 49 |
| HCM Lane V/C Ratio | 5.652 | 0.003 | - | - | 0.065 | - | - | 0.34 |
| HCM Control Delay (s) | $ 2478.1 | 9.9 | 0 | - | 10.8 | 0 | - | 112.5 |
| HCM Lane LOS | F | A | A | - | B | A | - | F |
| HCM 95th %tile Q(veh) | 14.5 | 0 | - | - | 0.2 | - | - | 1.2 |

| Notes | | | |
|---|---|---|---|
| ~: Volume exceeds capacity | $: Delay exceeds 300s | +: Computation Not Defined | *: All major volume in platoon |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.1 |

| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 0 | 733 | 901 | 0 | 2 | 3 |
| Future Vol, veh/h | 0 | 733 | 901 | 0 | 2 | 3 |
| Conflicting Peds, #/hr | 5 | 0 | 0 | 5 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | 0 | 0 | - |
| Veh in Median Storage, # | - | 0 | 0 | - | 0 | - |
| Grade, % | - | 0 | 0 | - | 0 | - |
| Peak Hour Factor | 84 | 84 | 95 | 95 | 70 | 70 |
| Heavy Vehicles, % | 1 | 1 | 1 | 1 | 0 | 0 |
| Mvmt Flow | 0 | 873 | 948 | 0 | 3 | 4 |

| Major/Minor | Major1 | | Major2 | | Minor2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 953 | 0 | - | 0 | 1390 | 953 |
| Stage 1 | - | - | - | - | 953 | - |
| Stage 2 | - | - | - | - | 437 | - |
| Critical Hdwy | 4.115 | - | - | - | 6.6 | 6.2 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.4 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.8 | - |
| Follow-up Hdwy | 2.2095 | - | - | - | 3.5 | 3.3 |
| Pot Cap-1 Maneuver | 724 | - | - | - | *247 | 317 |
| Stage 1 | - | - | - | - | *378 | - |
| Stage 2 | - | - | - | - | *756 | - |
| Platoon blocked, % | | - | - | - | 1 | |
| Mov Cap-1 Maneuver | 721 | - | - | - | *244 | 315 |
| Mov Cap-2 Maneuver | - | - | - | - | *244 | - |
| Stage 1 | - | - | - | - | *376 | - |
| Stage 2 | - | - | - | - | *752 | - |

| Approach | EB | WB | SB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 0 | 18.1 |
| HCM LOS | | | C |

| Minor Lane/Major Mvmt | EBL | EBT | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|
| Capacity (veh/h) | 721 | - | - | - | 282 |
| HCM Lane V/C Ratio | - | - | - | - | 0.025 |
| HCM Control Delay (s) | 0 | - | - | - | 18.1 |
| HCM Lane LOS | A | - | - | - | C |
| HCM 95th %tile Q(veh) | 0 | - | - | - | 0.1 |

| Notes | | | |
|---|---|---|---|
| ~: Volume exceeds capacity | $: Delay exceeds 300s | +: Computation Not Defined | *: All major volume in platoon |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.5 |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | ↑ | ↱ | | ↰↑↑ | ↰ | ↱ |
| Traffic Vol, veh/h | 715 | 20 | 12 | 888 | 13 | 6 |
| Future Vol, veh/h | 715 | 20 | 12 | 888 | 13 | 6 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | 0 | - | - | 0 | 0 |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 84 | 84 | 95 | 95 | 92 | 92 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 851 | 24 | 13 | 935 | 14 | 7 |

| Major/Minor | Major1 | | Major2 | | Minor1 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 0 | 0 | 875 | 0 | 1345 | 851 |
| Stage 1 | - | - | - | - | 851 | - |
| Stage 2 | - | - | - | - | 494 | - |
| Critical Hdwy | - | - | 4.13 | - | 6.63 | 6.23 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.43 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.83 | - |
| Follow-up Hdwy | - | - | 2.219 | - | 3.519 | 3.319 |
| Pot Cap-1 Maneuver | - | - | 769 | - | 154 | 359 |
| Stage 1 | - | - | - | - | 417 | - |
| Stage 2 | - | - | - | - | 580 | - |
| Platoon blocked, % | - | - | | - | | |
| Mov Cap-1 Maneuver | - | - | 769 | - | 149 | 359 |
| Mov Cap-2 Maneuver | - | - | - | - | 149 | - |
| Stage 1 | - | - | - | - | 417 | - |
| Stage 2 | - | - | - | - | 560 | - |

| Approach | EB | WB | NB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 0.3 | 26.5 |
| HCM LOS | | | D |

| Minor Lane/Major Mvmt | NBLn1 | NBLn2 | EBT | EBR | WBL | WBT |
|---|---|---|---|---|---|---|
| Capacity (veh/h) | 149 | 359 | - | - | 769 | - |
| HCM Lane V/C Ratio | 0.095 | 0.018 | - | - | 0.016 | - |
| HCM Control Delay (s) | 31.7 | 15.2 | - | - | 9.8 | 0.2 |
| HCM Lane LOS | D | C | - | - | A | A |
| HCM 95th %tile Q(veh) | 0.3 | 0.1 | - | - | 0.1 | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0 |

| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | ↰ | ↑↑↱ | | Y | |
| Traffic Vol, veh/h | 0 | 720 | 901 | 0 | 1 | 3 |
| Future Vol, veh/h | 0 | 720 | 901 | 0 | 1 | 3 |
| Conflicting Peds, #/hr | 8 | 0 | 0 | 8 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | 150 | 0 | - |
| Veh in Median Storage, # | - | 0 | 0 | - | 0 | - |
| Grade, % | - | 0 | 0 | - | 0 | - |
| Peak Hour Factor | 84 | 84 | 95 | 95 | 60 | 60 |
| Heavy Vehicles, % | 1 | 1 | 1 | 1 | 0 | 0 |
| Mvmt Flow | 0 | 857 | 948 | 0 | 2 | 5 |

| Major/Minor | Major1 | | Major2 | | Minor2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 956 | 0 | - | 0 | 1813 | 482 |
| Stage 1 | - | - | - | - | 956 | - |
| Stage 2 | - | - | - | - | 857 | - |
| Critical Hdwy | 4.115 | - | - | - | 6.6 | 6.9 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.8 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.4 | - |
| Follow-up Hdwy | 2.2095 | - | - | - | 3.5 | 3.3 |
| Pot Cap-1 Maneuver | 722 | - | - | - | *277 | 536 |
| Stage 1 | - | - | - | - | *339 | - |
| Stage 2 | - | - | - | - | *466 | - |
| Platoon blocked, % | | - | - | - | 1 | |
| Mov Cap-1 Maneuver | 716 | - | - | - | *273 | 532 |
| Mov Cap-2 Maneuver | - | - | - | - | *273 | - |
| Stage 1 | - | - | - | - | *336 | - |
| Stage 2 | - | - | - | - | *462 | - |

| Approach | EB | WB | SB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 0 | 13.5 |
| HCM LOS | | | B |

| Minor Lane/Major Mvmt | EBL | EBT | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|
| Capacity (veh/h) | 716 | - | - | - | 430 |
| HCM Lane V/C Ratio | - | - | - | - | 0.016 |
| HCM Control Delay (s) | 0 | - | - | - | 13.5 |
| HCM Lane LOS | A | - | - | - | B |
| HCM 95th %tile Q(veh) | 0 | - | - | - | 0 |

| Notes | | | |
|---|---|---|---|
| ~: Volume exceeds capacity | $: Delay exceeds 300s | +: Computation Not Defined | *: All major volume in platoon |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 117 | 424 | 148 | 69 | 686 | 124 | 83 | 188 | 46 | 98 | 258 | 125 |
| Future Volume (veh/h) | 117 | 424 | 148 | 69 | 686 | 124 | 83 | 188 | 46 | 98 | 258 | 125 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | | 1.00 | 1.00 | | 0.99 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach | | No | | | No | | | No | | | No | |
| Adj Sat Flow, veh/h/ln | 1984 | 1984 | 1984 | 1984 | 1984 | 1984 | 1984 | 1984 | 1984 | 1984 | 1984 | 1984 |
| Adj Flow Rate, veh/h | 130 | 471 | 164 | 74 | 738 | 133 | 92 | 209 | 51 | 109 | 287 | 139 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.93 | 0.93 | 0.93 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Percent Heavy Veh, % | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Cap, veh/h | 611 | 915 | 316 | 681 | 1062 | 191 | 139 | 264 | 223 | 245 | 341 | 286 |
| Arrive On Green | 0.25 | 0.33 | 0.33 | 0.25 | 0.33 | 0.33 | 0.04 | 0.13 | 0.13 | 0.08 | 0.17 | 0.17 |
| Sat Flow, veh/h | 1890 | 2746 | 949 | 1890 | 3185 | 574 | 1890 | 1984 | 1678 | 1890 | 1984 | 1667 |
| Grp Volume(v), veh/h | 130 | 322 | 313 | 74 | 437 | 434 | 92 | 209 | 51 | 109 | 287 | 139 |
| Grp Sat Flow(s),veh/h/ln | 1890 | 1885 | 1810 | 1890 | 1885 | 1874 | 1890 | 1984 | 1678 | 1890 | 1984 | 1667 |
| Q Serve(g_s), s | 0.0 | 16.5 | 16.7 | 0.0 | 24.1 | 24.1 | 1.9 | 12.2 | 3.3 | 0.5 | 16.8 | 9.0 |
| Cycle Q Clear(g_c), s | 0.0 | 16.5 | 16.7 | 0.0 | 24.1 | 24.1 | 1.9 | 12.2 | 3.3 | 0.5 | 16.8 | 9.0 |
| Prop In Lane | 1.00 | | 0.52 | 1.00 | | 0.31 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Lane Grp Cap(c), veh/h | 611 | 628 | 603 | 681 | 628 | 625 | 139 | 264 | 223 | 245 | 341 | 286 |
| V/C Ratio(X) | 0.21 | 0.51 | 0.52 | 0.11 | 0.69 | 0.70 | 0.66 | 0.79 | 0.23 | 0.45 | 0.84 | 0.49 |
| Avail Cap(c_a), veh/h | 611 | 628 | 603 | 681 | 628 | 625 | 274 | 589 | 498 | 307 | 589 | 495 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Uniform Delay (d), s/veh | 28.9 | 32.2 | 32.2 | 20.7 | 34.7 | 34.7 | 55.4 | 50.4 | 46.5 | 50.2 | 48.1 | 44.9 |
| Incr Delay (d2), s/veh | 0.2 | 3.0 | 3.2 | 0.1 | 6.2 | 6.3 | 5.3 | 5.3 | 0.5 | 1.3 | 5.6 | 1.3 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(95%),veh/ln | 5.1 | 12.3 | 12.1 | 2.2 | 17.3 | 17.2 | 5.2 | 10.6 | 2.5 | 5.5 | 13.5 | 6.9 |
| Unsig. Movement Delay, s/veh | | | | | | | | | | | | |
| LnGrp Delay(d),s/veh | 29.1 | 35.1 | 35.4 | 20.8 | 40.9 | 41.0 | 60.7 | 55.7 | 47.0 | 51.5 | 53.7 | 46.2 |
| LnGrp LOS | C | D | D | C | D | D | E | E | D | D | D | D |
| Approach Vol, veh/h | | 765 | | | 945 | | | 352 | | | 535 | |
| Approach Delay, s/veh | | 34.2 | | | 39.4 | | | 55.8 | | | 51.3 | |
| Approach LOS | | C | | | D | | | E | | | D | |

| Timer - Assigned Phs | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Phs Duration (G+Y+Rc), s | 35.6 | 46.0 | 11.4 | 27.0 | 35.6 | 46.0 | 16.1 | 22.4 |
| Change Period (Y+Rc), s | * 6 | * 6 | 6.4 | 6.4 | * 6 | * 6 | 6.4 | 6.4 |
| Max Green Setting (Gmax), s | * 6 | * 40 | 13.6 | 35.6 | * 6 | * 40 | 13.6 | 35.6 |
| Max Q Clear Time (g_c+I1), s | 2.0 | 18.7 | 3.9 | 18.8 | 2.0 | 26.1 | 2.5 | 14.2 |
| Green Ext Time (p_c), s | 0.0 | 3.5 | 0.1 | 1.8 | 0.1 | 4.3 | 0.2 | 1.3 |

| Intersection Summary | |
|---|---|
| HCM 6th Ctrl Delay | 42.5 |
| HCM 6th LOS | D |

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

# HCM 6th Signalized Intersection Summary
## 1001: Novi Road & 10 Mile Road

11/22/2022

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 202 | 466 | 149 | 106 | 376 | 115 | 157 | 451 | 147 | 113 | 365 | 159 |
| Future Volume (veh/h) | 202 | 466 | 149 | 106 | 376 | 115 | 157 | 451 | 147 | 113 | 365 | 159 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach | | No | | | No | | | No | | | No | |
| Adj Sat Flow, veh/h/ln | 1969 | 1969 | 1969 | 1953 | 1953 | 1953 | 1969 | 1969 | 1969 | 1969 | 1969 | 1969 |
| Adj Flow Rate, veh/h | 217 | 501 | 160 | 154 | 545 | 167 | 194 | 557 | 181 | 133 | 429 | 187 |
| Peak Hour Factor | 0.93 | 0.93 | 0.93 | 0.69 | 0.69 | 0.69 | 0.81 | 0.81 | 0.81 | 0.85 | 0.85 | 0.85 |
| Percent Heavy Veh, % | 2 | 2 | 2 | 3 | 3 | 3 | 2 | 2 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 272 | 684 | 217 | 269 | 636 | 194 | 405 | 1131 | 366 | 355 | 1020 | 440 |
| Arrive On Green | 0.10 | 0.25 | 0.25 | 0.08 | 0.23 | 0.23 | 0.06 | 0.41 | 0.41 | 0.06 | 0.40 | 0.40 |
| Sat Flow, veh/h | 1875 | 2792 | 887 | 1860 | 2799 | 854 | 1875 | 2778 | 900 | 1875 | 2544 | 1098 |
| Grp Volume(v), veh/h | 217 | 335 | 326 | 154 | 361 | 351 | 194 | 374 | 364 | 133 | 314 | 302 |
| Grp Sat Flow(s),veh/h/ln | 1875 | 1870 | 1808 | 1860 | 1856 | 1798 | 1875 | 1870 | 1807 | 1875 | 1870 | 1771 |
| Q Serve(g_s), s | 10.6 | 19.7 | 20.0 | 7.5 | 22.4 | 22.5 | 7.4 | 17.8 | 17.9 | 5.0 | 14.5 | 14.8 |
| Cycle Q Clear(g_c), s | 10.6 | 19.7 | 20.0 | 7.5 | 22.4 | 22.5 | 7.4 | 17.8 | 17.9 | 5.0 | 14.5 | 14.8 |
| Prop In Lane | 1.00 | | 0.49 | 1.00 | | 0.48 | 1.00 | | 0.50 | 1.00 | | 0.62 |
| Lane Grp Cap(c), veh/h | 272 | 458 | 443 | 269 | 422 | 409 | 405 | 761 | 735 | 355 | 750 | 710 |
| V/C Ratio(X) | 0.80 | 0.73 | 0.74 | 0.57 | 0.85 | 0.86 | 0.48 | 0.49 | 0.49 | 0.38 | 0.42 | 0.42 |
| Avail Cap(c_a), veh/h | 272 | 525 | 508 | 302 | 521 | 505 | 405 | 761 | 735 | 366 | 750 | 710 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Uniform Delay (d), s/veh | 33.7 | 41.7 | 41.7 | 33.1 | 44.5 | 44.5 | 20.3 | 26.4 | 26.4 | 20.4 | 25.9 | 25.9 |
| Incr Delay (d2), s/veh | 15.2 | 4.4 | 4.8 | 2.1 | 11.1 | 11.9 | 0.9 | 2.3 | 2.4 | 0.7 | 1.7 | 1.9 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(95%),veh/ln | 9.7 | 14.4 | 14.2 | 6.2 | 16.7 | 16.5 | 5.7 | 12.7 | 12.5 | 3.8 | 10.7 | 10.5 |
| Unsig. Movement Delay, s/veh | | | | | | | | | | | | |
| LnGrp Delay(d),s/veh | 49.0 | 46.1 | 46.5 | 35.1 | 55.6 | 56.4 | 21.2 | 28.6 | 28.8 | 21.1 | 27.6 | 27.8 |
| LnGrp LOS | D | D | D | D | E | E | C | C | C | C | C | C |
| Approach Vol, veh/h | | 878 | | | 866 | | | 932 | | | 749 | |
| Approach Delay, s/veh | | 47.0 | | | 52.3 | | | 27.2 | | | 26.5 | |
| Approach LOS | | D | | | D | | | C | | | C | |

| Timer - Assigned Phs | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Phs Duration (G+Y+Rc), s | 13.3 | 55.1 | 15.9 | 35.7 | 14.0 | 54.4 | 18.0 | 33.6 |
| Change Period (Y+Rc), s | 6.3 | 6.3 | 6.3 | 6.3 | 6.3 | 6.3 | 6.3 | 6.3 |
| Max Green Setting (Gmax), s | 7.7 | 41.7 | 11.7 | 33.7 | 7.7 | 41.7 | 11.7 | 33.7 |
| Max Q Clear Time (g_c+I1), s | 7.0 | 19.9 | 9.5 | 22.0 | 9.4 | 16.8 | 12.6 | 24.5 |
| Green Ext Time (p_c), s | 0.0 | 4.2 | 0.1 | 2.9 | 0.0 | 3.6 | 0.0 | 2.8 |

| Intersection Summary | |
|---|---|
| HCM 6th Ctrl Delay | 38.4 |
| HCM 6th LOS | D |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.5 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 1 | 685 | 37 | 13 | 567 | 0 | 17 | 0 | 13 | 0 | 0 | 4 |
| Future Vol, veh/h | 1 | 685 | 37 | 13 | 567 | 0 | 17 | 0 | 13 | 0 | 0 | 4 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | 100 | - | 0 | 75 | - | - | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 88 | 88 | 88 | 69 | 69 | 69 | 60 | 60 | 60 | 60 | 60 | 60 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 14 | 14 | 14 |
| Mvmt Flow | 1 | 778 | 42 | 19 | 822 | 0 | 28 | 0 | 22 | 0 | 0 | 7 |

| Major/Minor | Major1 | | | Major2 | | | Minor1 | | | Minor2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 822 | 0 | 0 | 820 | 0 | 0 | 1229 | 1640 | 778 | 1672 | 1682 | 411 |
| Stage 1 | - | - | - | - | - | - | 780 | 780 | - | 860 | 860 | - |
| Stage 2 | - | - | - | - | - | - | 449 | 860 | - | 812 | 822 | - |
| Critical Hdwy | 4.13 | - | - | 4.13 | - | - | 7.33 | 6.53 | 6.23 | 7.51 | 6.71 | 7.11 |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | 6.13 | 5.53 | - | 6.71 | 5.71 | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | 6.53 | 5.53 | - | 6.31 | 5.71 | - |
| Follow-up Hdwy | 2.219 | - | - | 2.219 | - | - | 3.519 | 4.019 | 3.319 | 3.633 | 4.133 | 3.433 |
| Pot Cap-1 Maneuver | 805 | - | - | *773 | - | - | *487 | *355 | *516 | *336 | *306 | 563 |
| Stage 1 | - | - | - | - | - | - | *487 | *427 | - | *298 | *350 | - |
| Stage 2 | - | - | - | - | - | - | *560 | *372 | - | *472 | *415 | - |
| Platoon blocked, % | | - | - | 1 | - | - | 1 | 1 | 1 | 1 | 1 | |
| Mov Cap-1 Maneuver | 805 | - | - | *773 | - | - | *472 | *345 | *516 | *316 | *298 | 563 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | *472 | *345 | - | *316 | *298 | - |
| Stage 1 | - | - | - | - | - | - | *487 | *426 | - | *298 | *341 | - |
| Stage 2 | - | - | - | - | - | - | *540 | *363 | - | *452 | *414 | - |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Control Delay, s | 0 | 0.2 | 13.2 | 11.5 |
| HCM LOS | | | B | B |

| Minor Lane/Major Mvmt | NBLn1 | EBL | EBT | EBR | WBL | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 490 | 805 | - | - | *773 | - | - | 563 |
| HCM Lane V/C Ratio | 0.102 | 0.001 | - | - | 0.024 | - | - | 0.012 |
| HCM Control Delay (s) | 13.2 | 9.5 | - | - | 9.8 | - | - | 11.5 |
| HCM Lane LOS | B | A | - | - | A | - | - | B |
| HCM 95th %tile Q(veh) | 0.3 | 0 | - | - | 0.1 | - | - | 0 |

| Notes | | | |
|---|---|---|---|
| ~: Volume exceeds capacity | $: Delay exceeds 300s | +: Computation Not Defined | *: All major volume in platoon |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.7 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 24 | 636 | 34 | 13 | 554 | 12 | 19 | 0 | 10 | 2 | 0 | 11 |
| Future Vol, veh/h | 24 | 636 | 34 | 13 | 554 | 12 | 19 | 0 | 10 | 2 | 0 | 11 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | 75 | - | - | 200 | - | - | 0 | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 86 | 86 | 86 | 68 | 68 | 68 | 92 | 92 | 92 | 80 | 80 | 80 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 13 | 13 | 13 |
| Mvmt Flow | 28 | 740 | 40 | 19 | 815 | 18 | 21 | 0 | 11 | 3 | 0 | 14 |

| Major/Minor | Major1 | | | Major2 | | | Minor1 | | | Minor2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 833 | 0 | 0 | 780 | 0 | 0 | 1262 | 1687 | 390 | 1288 | 1698 | 417 |
| Stage 1 | - | - | - | - | - | - | 816 | 816 | - | 862 | 862 | - |
| Stage 2 | - | - | - | - | - | - | 446 | 871 | - | 426 | 836 | - |
| Critical Hdwy | 4.14 | - | - | 4.14 | - | - | 7.54 | 6.54 | 6.94 | 7.76 | 6.76 | 7.16 |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | 6.54 | 5.54 | - | 6.76 | 5.76 | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | 6.54 | 5.54 | - | 6.76 | 5.76 | - |
| Follow-up Hdwy | 2.22 | - | - | 2.22 | - | - | 3.52 | 4.02 | 3.32 | 3.63 | 4.13 | 3.43 |
| Pot Cap-1 Maneuver | 796 | - | - | 1154 | - | - | 243 | 126 | *823 | *214 | 113 | 555 |
| Stage 1 | - | - | - | - | - | - | 658 | 602 | - | *294 | 346 | - |
| Stage 2 | - | - | - | - | - | - | 561 | 367 | - | *752 | 566 | - |
| Platoon blocked, % | | - | - | 1 | - | - | 1 | 1 | 1 | 1 | 1 | |
| Mov Cap-1 Maneuver | 796 | - | - | 1154 | - | - | 228 | 120 | *823 | *203 | 108 | 555 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | 228 | 120 | - | *203 | 108 | - |
| Stage 1 | - | - | - | - | - | - | 635 | 581 | - | *284 | 340 | - |
| Stage 2 | - | - | - | - | - | - | 538 | 361 | - | *716 | 546 | - |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Control Delay, s | 0.3 | 0.2 | 17.9 | 13.5 |
| HCM LOS | | | C | B |

| Minor Lane/Major Mvmt | NBLn1 | NBLn2 | EBL | EBT | EBR | WBL | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 228 | 823 | 796 | - | - | 1154 | - | - | 438 |
| HCM Lane V/C Ratio | 0.091 | 0.013 | 0.035 | - | - | 0.017 | - | - | 0.037 |
| HCM Control Delay (s) | 22.4 | 9.4 | 9.7 | - | - | 8.2 | - | - | 13.5 |
| HCM Lane LOS | C | A | A | - | - | A | - | - | B |
| HCM 95th %tile Q(veh) | 0.3 | 0 | 0.1 | - | - | 0.1 | - | - | 0.1 |

| Notes | | | |
|---|---|---|---|
| ~: Volume exceeds capacity | $: Delay exceeds 300s | +: Computation Not Defined | *: All major volume in platoon |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.5 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 6 | 609 | 33 | 12 | 558 | 7 | 18 | 0 | 10 | 2 | 0 | 3 |
| Future Vol, veh/h | 6 | 609 | 33 | 12 | 558 | 7 | 18 | 0 | 10 | 2 | 0 | 3 |
| Conflicting Peds, #/hr | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | 100 | - | - | 100 | - | - | 0 | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 86 | 86 | 86 | 68 | 68 | 68 | 92 | 92 | 92 | 60 | 60 | 60 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 |
| Mvmt Flow | 7 | 708 | 38 | 18 | 821 | 10 | 20 | 0 | 11 | 3 | 0 | 5 |

| Major/Minor | Major1 | | | Major2 | | | Minor1 | | | Minor2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 832 | 0 | 0 | 746 | 0 | 0 | 1188 | 1609 | 373 | 1231 | 1623 | 417 |
| Stage 1 | - | - | - | - | - | - | 741 | 741 | - | 863 | 863 | - |
| Stage 2 | - | - | - | - | - | - | 447 | 868 | - | 368 | 760 | - |
| Critical Hdwy | 4.14 | - | - | 4.14 | - | - | 7.54 | 6.54 | 6.94 | 7.5 | 6.5 | 6.9 |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | 6.54 | 5.54 | - | 6.5 | 5.5 | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | 6.54 | 5.54 | - | 6.5 | 5.5 | - |
| Follow-up Hdwy | 2.22 | - | - | 2.22 | - | - | 3.52 | 4.02 | 3.32 | 3.5 | 4 | 3.3 |
| Pot Cap-1 Maneuver | 796 | - | - | 1146 | - | - | 261 | 139 | *848 | *241 | 138 | 590 |
| Stage 1 | - | - | - | - | - | - | 687 | 626 | - | *320 | 374 | - |
| Stage 2 | - | - | - | - | - | - | 560 | 368 | - | *804 | 615 | - |
| Platoon blocked, % | | - | - | 1 | - | - | 1 | 1 | 1 | 1 | 1 | |
| Mov Cap-1 Maneuver | 795 | - | - | 1146 | - | - | 254 | 136 | *848 | *234 | 134 | 589 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | 254 | 136 | - | *234 | 134 | - |
| Stage 1 | - | - | - | - | - | - | 681 | 620 | - | *317 | 368 | - |
| Stage 2 | - | - | - | - | - | - | 547 | 362 | - | *787 | 609 | - |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Control Delay, s | 0.1 | 0.2 | 16.4 | 15 |
| HCM LOS | | | C | C |

| Minor Lane/Major Mvmt | NBLn1 | NBLn2 | EBL | EBT | EBR | WBL | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 254 | 848 | 795 | - | - | 1146 | - | - | 367 |
| HCM Lane V/C Ratio | 0.077 | 0.013 | 0.009 | - | - | 0.015 | - | - | 0.023 |
| HCM Control Delay (s) | 20.4 | 9.3 | 9.6 | - | - | 8.2 | - | - | 15 |
| HCM Lane LOS | C | A | A | - | - | A | - | - | C |
| HCM 95th %tile Q(veh) | 0.2 | 0 | 0 | - | - | 0 | - | - | 0.1 |

| Notes | | | |
|---|---|---|---|
| ~: Volume exceeds capacity | $: Delay exceeds 300s | +: Computation Not Defined | *: All major volume in platoon |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0 |

| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | ↑↑ | ↑↑ | | Y | |
| Traffic Vol, veh/h | 2 | 620 | 570 | 4 | 0 | 2 |
| Future Vol, veh/h | 2 | 620 | 570 | 4 | 0 | 2 |
| Conflicting Peds, #/hr | 1 | 0 | 0 | 1 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | - | 0 | - |
| Veh in Median Storage, # | - | 0 | 0 | - | 0 | - |
| Grade, % | - | 0 | 0 | - | 0 | - |
| Peak Hour Factor | 85 | 85 | 68 | 68 | 60 | 60 |
| Heavy Vehicles, % | 2 | 2 | 3 | 3 | 0 | 0 |
| Mvmt Flow | 2 | 729 | 838 | 6 | 0 | 3 |

| Major/Minor | Major1 | | Major2 | | Minor2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 845 | 0 | - | 0 | 1211 | 423 |
| Stage 1 | - | - | - | - | 842 | - |
| Stage 2 | - | - | - | - | 369 | - |
| Critical Hdwy | 4.14 | - | - | - | 6.8 | 6.9 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.8 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.8 | - |
| Follow-up Hdwy | 2.22 | - | - | - | 3.5 | 3.3 |
| Pot Cap-1 Maneuver | 787 | - | - | - | *289 | 585 |
| Stage 1 | - | - | - | - | *388 | - |
| Stage 2 | - | - | - | - | *804 | - |
| Platoon blocked, % | | - | - | - | 1 | |
| Mov Cap-1 Maneuver | 786 | - | - | - | *287 | 584 |
| Mov Cap-2 Maneuver | - | - | - | - | *287 | - |
| Stage 1 | - | - | - | - | *386 | - |
| Stage 2 | - | - | - | - | *804 | - |

| Approach | EB | WB | SB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 0 | 11.2 |
| HCM LOS | | | B |

| Minor Lane/Major Mvmt | EBL | EBT | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|
| Capacity (veh/h) | 786 | - | - | - | 584 |
| HCM Lane V/C Ratio | 0.003 | - | - | - | 0.006 |
| HCM Control Delay (s) | 9.6 | 0 | - | - | 11.2 |
| HCM Lane LOS | A | A | - | - | B |
| HCM 95th %tile Q(veh) | 0 | - | - | - | 0 |

| Notes | | | |
|---|---|---|---|
| ~: Volume exceeds capacity | $: Delay exceeds 300s | +: Computation Not Defined | *: All major volume in platoon |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.3 |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | ↑ | ↱ | | ↰↑ | ↰ | ↱ |
| Traffic Vol, veh/h | 612 | 8 | 3 | 553 | 21 | 13 |
| Future Vol, veh/h | 612 | 8 | 3 | 553 | 21 | 13 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | 0 | - | - | 0 | 0 |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 85 | 85 | 68 | 68 | 92 | 92 |
| Heavy Vehicles, % | 2 | 2 | 3 | 3 | 2 | 2 |
| Mvmt Flow | 720 | 9 | 4 | 813 | 23 | 14 |

| Major/Minor | Major1 | | Major2 | | Minor1 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 0 | 0 | 729 | 0 | 1135 | 720 |
| Stage 1 | - | - | - | - | 720 | - |
| Stage 2 | - | - | - | - | 415 | - |
| Critical Hdwy | - | - | 4.145 | - | 6.63 | 6.23 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.43 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.83 | - |
| Follow-up Hdwy | - | - | 2.2285 | - | 3.519 | 3.319 |
| Pot Cap-1 Maneuver | - | - | *884 | - | *560 | *593 |
| Stage 1 | - | - | - | - | *560 | - |
| Stage 2 | - | - | - | - | *636 | - |
| Platoon blocked, % | - | - | 1 | - | 1 | 1 |
| Mov Cap-1 Maneuver | - | - | *884 | - | *555 | *593 |
| Mov Cap-2 Maneuver | - | - | - | - | *555 | - |
| Stage 1 | - | - | - | - | *560 | - |
| Stage 2 | - | - | - | - | *631 | - |

| Approach | EB | WB | NB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 0 | 11.6 |
| HCM LOS | | | B |

| Minor Lane/Major Mvmt | NBLn1 | NBLn2 | EBT | EBR | WBL | WBT |
|---|---|---|---|---|---|---|
| Capacity (veh/h) | 555 | 593 | - | - | * 884 | - |
| HCM Lane V/C Ratio | 0.041 | 0.024 | - | - | 0.005 | - |
| HCM Control Delay (s) | 11.8 | 11.2 | - | - | 9.1 | 0 |
| HCM Lane LOS | B | B | - | - | A | A |
| HCM 95th %tile Q(veh) | 0.1 | 0.1 | - | - | 0 | - |

| Notes | | | | |
|---|---|---|---|---|
| ~: Volume exceeds capacity | $: Delay exceeds 300s | +: Computation Not Defined | *: All major volume in platoon |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0 |

| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | ↰ | ↑↑↱ | | ⅄ | |
| Traffic Vol, veh/h | 2 | 622 | 552 | 7 | 0 | 2 |
| Future Vol, veh/h | 2 | 622 | 552 | 7 | 0 | 2 |
| Conflicting Peds, #/hr | 1 | 0 | 0 | 1 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | 150 | 0 | - |
| Veh in Median Storage, # | - | 0 | 0 | - | 0 | - |
| Grade, % | - | 0 | 0 | - | 0 | - |
| Peak Hour Factor | 85 | 85 | 69 | 69 | 60 | 60 |
| Heavy Vehicles, % | 2 | 2 | 3 | 3 | 50 | 50 |
| Mvmt Flow | 2 | 732 | 800 | 10 | 0 | 3 |

| Major/Minor | Major1 | | Major2 | | Minor2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 811 | 0 | - | 0 | 1542 | 406 |
| Stage 1 | - | - | - | - | 806 | - |
| Stage 2 | - | - | - | - | 736 | - |
| Critical Hdwy | 4.13 | - | - | - | 7.35 | 7.65 |
| Critical Hdwy Stg 1 | - | - | - | - | 6.55 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 6.15 | - |
| Follow-up Hdwy | 2.219 | - | - | - | 3.975 | 3.775 |
| Pot Cap-1 Maneuver | 813 | - | - | - | *343 | 494 |
| Stage 1 | - | - | - | - | *316 | - |
| Stage 2 | - | - | - | - | *474 | - |
| Platoon blocked, % | | - | - | - | 1 | |
| Mov Cap-1 Maneuver | 812 | - | - | - | *341 | 494 |
| Mov Cap-2 Maneuver | - | - | - | - | *341 | - |
| Stage 1 | - | - | - | - | *314 | - |
| Stage 2 | - | - | - | - | *474 | - |

| Approach | EB | WB | SB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 0 | 12.3 |
| HCM LOS | | | B |

| Minor Lane/Major Mvmt | EBL | EBT | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|
| Capacity (veh/h) | 812 | - | - | - | 494 |
| HCM Lane V/C Ratio | 0.003 | - | - | - | 0.007 |
| HCM Control Delay (s) | 9.4 | 0 | - | - | 12.3 |
| HCM Lane LOS | A | A | - | - | B |
| HCM 95th %tile Q(veh) | 0 | - | - | - | 0 |

| Notes | | | |
|---|---|---|---|
| ~: Volume exceeds capacity | $: Delay exceeds 300s | +: Computation Not Defined | *: All major volume in platoon |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 126 | 526 | 54 | 30 | 294 | 70 | 59 | 148 | 48 | 65 | 95 | 66 |
| Future Volume (veh/h) | 126 | 526 | 54 | 30 | 294 | 70 | 59 | 148 | 48 | 65 | 95 | 66 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach | | No | | | No | | | No | | | No | |
| Adj Sat Flow, veh/h/ln | 1984 | 1984 | 1984 | 1984 | 1984 | 1984 | 1969 | 1969 | 1969 | 1953 | 1953 | 1953 |
| Adj Flow Rate, veh/h | 143 | 598 | 61 | 34 | 334 | 80 | 78 | 195 | 63 | 78 | 114 | 80 |
| Peak Hour Factor | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.76 | 0.76 | 0.76 | 0.83 | 0.83 | 0.83 |
| Percent Heavy Veh, % | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 3 | 3 | 3 |
| Cap, veh/h | 805 | 1411 | 144 | 700 | 1236 | 292 | 240 | 241 | 204 | 138 | 163 | 138 |
| Arrive On Green | 0.22 | 0.41 | 0.41 | 0.22 | 0.41 | 0.41 | 0.08 | 0.12 | 0.12 | 0.04 | 0.08 | 0.08 |
| Sat Flow, veh/h | 1890 | 3455 | 352 | 1890 | 3026 | 715 | 1875 | 1969 | 1668 | 1860 | 1953 | 1655 |
| Grp Volume(v), veh/h | 143 | 326 | 333 | 34 | 206 | 208 | 78 | 195 | 63 | 78 | 114 | 80 |
| Grp Sat Flow(s),veh/h/ln | 1890 | 1885 | 1921 | 1890 | 1885 | 1856 | 1875 | 1969 | 1668 | 1860 | 1953 | 1655 |
| Q Serve(g_s), s | 0.0 | 14.8 | 14.9 | 0.0 | 8.7 | 8.9 | 0.0 | 11.6 | 4.1 | 1.0 | 6.8 | 5.6 |
| Cycle Q Clear(g_c), s | 0.0 | 14.8 | 14.9 | 0.0 | 8.7 | 8.9 | 0.0 | 11.6 | 4.1 | 1.0 | 6.8 | 5.6 |
| Prop In Lane | 1.00 | | 0.18 | 1.00 | | 0.39 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Lane Grp Cap(c), veh/h | 805 | 770 | 784 | 700 | 770 | 758 | 240 | 241 | 204 | 138 | 163 | 138 |
| V/C Ratio(X) | 0.18 | 0.42 | 0.42 | 0.05 | 0.27 | 0.27 | 0.33 | 0.81 | 0.31 | 0.57 | 0.70 | 0.58 |
| Avail Cap(c_a), veh/h | 805 | 770 | 784 | 700 | 770 | 758 | 270 | 469 | 398 | 240 | 466 | 395 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Uniform Delay (d), s/veh | 13.9 | 25.4 | 25.4 | 15.3 | 23.6 | 23.7 | 50.2 | 51.3 | 48.0 | 55.2 | 53.5 | 53.0 |
| Incr Delay (d2), s/veh | 0.1 | 1.7 | 1.7 | 0.0 | 0.9 | 0.9 | 0.8 | 6.4 | 0.9 | 3.6 | 5.4 | 3.8 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(95%),veh/ln | 3.4 | 11.0 | 11.2 | 0.8 | 7.1 | 7.1 | 4.0 | 10.2 | 3.2 | 4.3 | 6.4 | 4.4 |
| Unsig. Movement Delay, s/veh | | | | | | | | | | | | |
| LnGrp Delay(d),s/veh | 14.0 | 27.1 | 27.1 | 15.4 | 24.4 | 24.5 | 51.0 | 57.8 | 48.9 | 58.8 | 58.9 | 56.8 |
| LnGrp LOS | B | C | C | B | C | C | D | E | D | E | E | E |
| Approach Vol, veh/h | | 802 | | | 448 | | | 336 | | | 272 | |
| Approach Delay, s/veh | | 24.8 | | | 23.8 | | | 54.5 | | | 58.3 | |
| Approach LOS | | C | | | C | | | D | | | E | |

| Timer - Assigned Phs | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Phs Duration (G+Y+Rc), s | 32.5 | 55.0 | 16.1 | 16.4 | 32.5 | 55.0 | 11.4 | 21.1 |
| Change Period (Y+Rc), s | * 6 | * 6 | 6.4 | 6.4 | * 6 | * 6 | 6.4 | 6.4 |
| Max Green Setting (Gmax), s | * 6 | * 49 | 11.6 | 28.6 | * 6 | * 49 | 11.6 | 28.6 |
| Max Q Clear Time (g_c+I1), s | 2.0 | 16.9 | 2.0 | 8.8 | 2.0 | 10.9 | 3.0 | 13.6 |
| Green Ext Time (p_c), s | 0.0 | 3.9 | 0.1 | 0.7 | 0.1 | 2.3 | 0.1 | 1.1 |

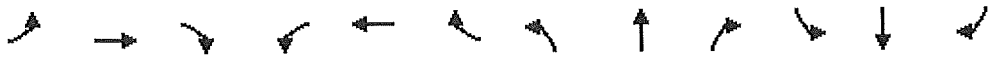
| Intersection Summary | |
|---|---|
| HCM 6th Ctrl Delay | 34.8 |
| HCM 6th LOS | C |

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

# HCM 6th Signalized Intersection Summary
## 1001: Novi Road & 10 Mile Road

11/22/2022



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 225 | 470 | 227 | 216 | 551 | 232 | 203 | 622 | 125 | 177 | 630 | 307 |
| Future Volume (veh/h) | 225 | 470 | 227 | 216 | 551 | 232 | 203 | 622 | 125 | 177 | 630 | 307 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach | | No | | | No | | | No | | | No | |
| Adj Sat Flow, veh/h/ln | 1984 | 1984 | 1984 | 1984 | 1984 | 1984 | 1984 | 1984 | 1984 | 1984 | 1984 | 1984 |
| Adj Flow Rate, veh/h | 245 | 511 | 247 | 248 | 633 | 267 | 214 | 655 | 132 | 186 | 663 | 323 |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.87 | 0.87 | 0.87 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Percent Heavy Veh, % | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Cap, veh/h | 276 | 703 | 338 | 313 | 733 | 309 | 258 | 1022 | 206 | 315 | 803 | 391 |
| Arrive On Green | 0.10 | 0.28 | 0.28 | 0.10 | 0.28 | 0.28 | 0.08 | 0.33 | 0.33 | 0.08 | 0.33 | 0.33 |
| Sat Flow, veh/h | 1890 | 2466 | 1187 | 1890 | 2571 | 1084 | 1890 | 3127 | 629 | 1890 | 2456 | 1197 |
| Grp Volume(v), veh/h | 245 | 390 | 368 | 248 | 464 | 436 | 214 | 395 | 392 | 186 | 509 | 477 |
| Grp Sat Flow(s),veh/h/ln | 1890 | 1885 | 1768 | 1890 | 1885 | 1770 | 1890 | 1885 | 1871 | 1890 | 1885 | 1768 |
| Q Serve(g_s), s | 11.0 | 22.4 | 22.5 | 11.2 | 28.0 | 28.0 | 9.1 | 21.4 | 21.4 | 7.8 | 29.9 | 29.9 |
| Cycle Q Clear(g_c), s | 11.0 | 22.4 | 22.5 | 11.2 | 28.0 | 28.0 | 9.1 | 21.4 | 21.4 | 7.8 | 29.9 | 29.9 |
| Prop In Lane | 1.00 | | 0.67 | 1.00 | | 0.61 | 1.00 | | 0.34 | 1.00 | | 0.68 |
| Lane Grp Cap(c), veh/h | 276 | 537 | 504 | 313 | 537 | 504 | 258 | 616 | 611 | 315 | 616 | 578 |
| V/C Ratio(X) | 0.89 | 0.73 | 0.73 | 0.79 | 0.86 | 0.86 | 0.83 | 0.64 | 0.64 | 0.59 | 0.83 | 0.83 |
| Avail Cap(c_a), veh/h | 276 | 655 | 614 | 313 | 655 | 615 | 258 | 616 | 611 | 315 | 616 | 578 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Uniform Delay (d), s/veh | 30.8 | 38.7 | 38.7 | 29.6 | 40.7 | 40.7 | 29.2 | 34.4 | 34.4 | 26.0 | 37.3 | 37.3 |
| Incr Delay (d2), s/veh | 27.4 | 3.2 | 3.5 | 12.9 | 9.9 | 10.5 | 20.0 | 5.0 | 5.1 | 2.9 | 12.0 | 12.7 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(95%),veh/ln | 11.2 | 15.8 | 15.1 | 10.0 | 20.1 | 19.2 | 9.1 | 15.5 | 15.5 | 6.4 | 21.6 | 20.6 |
| Unsig. Movement Delay, s/veh | | | | | | | | | | | | |
| LnGrp Delay(d),s/veh | 58.1 | 41.9 | 42.2 | 42.5 | 50.6 | 51.3 | 49.2 | 39.4 | 39.5 | 28.9 | 49.3 | 50.0 |
| LnGrp LOS | E | D | D | D | D | D | D | D | D | C | D | D |
| Approach Vol, veh/h | | 1003 | | | 1148 | | | 1001 | | | 1172 | |
| Approach Delay, s/veh | | 46.0 | | | 49.1 | | | 41.6 | | | 46.3 | |
| Approach LOS | | D | | | D | | | D | | | D | |

| Timer - Assigned Phs | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Phs Duration (G+Y+Rc), s | 16.0 | 45.5 | 18.0 | 40.5 | 16.0 | 45.5 | 18.0 | 40.5 |
| Change Period (Y+Rc), s | 6.3 | 6.3 | 6.3 | 6.3 | 6.3 | 6.3 | 6.3 | 6.3 |
| Max Green Setting (Gmax), s | 9.7 | 31.7 | 11.7 | 41.7 | 9.7 | 31.7 | 11.7 | 41.7 |
| Max Q Clear Time (g_c+I1), s | 9.8 | 23.4 | 13.2 | 24.5 | 11.1 | 31.9 | 13.0 | 30.0 |
| Green Ext Time (p_c), s | 0.0 | 2.9 | 0.0 | 4.1 | 0.0 | 0.0 | 0.0 | 4.1 |

| Intersection Summary | |
|---|---|
| HCM 6th Ctrl Delay | 45.9 |
| HCM 6th LOS | D |

| Intersection | |
|---|---|
| Int Delay, s/veh | 1.7 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 6 | 734 | 48 | 37 | 949 | 1 | 62 | 0 | 40 | 0 | 0 | 9 |
| Future Vol, veh/h | 6 | 734 | 48 | 37 | 949 | 1 | 62 | 0 | 40 | 0 | 0 | 9 |
| Conflicting Peds, #/hr | 8 | 0 | 0 | 0 | 0 | 8 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | 100 | - | 0 | 75 | - | - | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 86 | 86 | 86 | 95 | 95 | 95 | 60 | 60 | 60 | 66 | 66 | 66 |
| Heavy Vehicles, % | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| Mvmt Flow | 7 | 853 | 56 | 39 | 999 | 1 | 103 | 0 | 67 | 0 | 0 | 14 |

| Major/Minor | Major1 | | | Major2 | | | Minor1 | | | Minor2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 1008 | 0 | 0 | 909 | 0 | 0 | 1445 | 1953 | 853 | 2015 | 2009 | 508 |
| Stage 1 | - | - | - | - | - | - | 867 | 867 | - | 1086 | 1086 | - |
| Stage 2 | - | - | - | - | - | - | 578 | 1086 | - | 929 | 923 | - |
| Critical Hdwy | 4.115 | - | - | 4.115 | - | - | 7.3 | 6.5 | 6.2 | 7.3 | 6.5 | 6.9 |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | 6.1 | 5.5 | - | 6.5 | 5.5 | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | 6.5 | 5.5 | - | 6.1 | 5.5 | - |
| Follow-up Hdwy | 2.2095 | - | - | 2.2095 | - | - | 3.5 | 4 | 3.3 | 3.5 | 4 | 3.3 |
| Pot Cap-1 Maneuver | 690 | - | - | *738 | - | - | *465 | *168 | *494 | *127 | *143 | 515 |
| Stage 1 | - | - | - | - | - | - | *465 | *407 | - | *234 | *295 | - |
| Stage 2 | - | - | - | - | - | - | *474 | *295 | - | *465 | *407 | - |
| Platoon blocked, % | | - | - | 1 | - | - | 1 | 1 | 1 | 1 | 1 | |
| Mov Cap-1 Maneuver | 685 | - | - | *738 | - | - | *431 | *156 | *494 | *104 | *133 | 511 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | *431 | *156 | - | *104 | *133 | - |
| Stage 1 | - | - | - | - | - | - | *461 | *403 | - | *230 | *277 | - |
| Stage 2 | - | - | - | - | - | - | *437 | *277 | - | *398 | *403 | - |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Control Delay, s | 0.1 | 0.4 | 17.6 | 12.2 |
| HCM LOS | | | C | B |

| Minor Lane/Major Mvmt | NBLn1 | EBL | EBT | EBR | WBL | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 454 | 685 | - | - | *738 | - | - | 511 |
| HCM Lane V/C Ratio | 0.374 | 0.01 | - | - | 0.053 | - | - | 0.027 |
| HCM Control Delay (s) | 17.6 | 10.3 | - | - | 10.2 | - | - | 12.2 |
| HCM Lane LOS | C | B | - | - | B | - | - | B |
| HCM 95th %tile Q(veh) | 1.7 | 0 | - | - | 0.2 | - | - | 0.1 |

| Notes | | | |
|---|---|---|---|
| ~: Volume exceeds capacity | $: Delay exceeds 300s | +: Computation Not Defined | *: All major volume in platoon |

| Intersection | |
|---|---|
| Int Delay, s/veh | 3.4 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 22 | 696 | 55 | 43 | 886 | 8 | 67 | 0 | 39 | 20 | 0 | 44 |
| Future Vol, veh/h | 22 | 696 | 55 | 43 | 886 | 8 | 67 | 0 | 39 | 20 | 0 | 44 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | 75 | - | - | 200 | - | - | 0 | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 86 | 86 | 86 | 95 | 95 | 95 | 92 | 92 | 92 | 70 | 70 | 70 |
| Heavy Vehicles, % | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 |
| Mvmt Flow | 26 | 809 | 64 | 45 | 933 | 8 | 73 | 0 | 42 | 29 | 0 | 63 |

| Major/Minor | Major1 | | | Major2 | | | Minor1 | | | Minor2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 949 | 0 | 0 | 873 | 0 | 0 | 1450 | 1932 | 437 | 1492 | 1960 | 479 |
| Stage 1 | - | - | - | - | - | - | 893 | 893 | - | 1035 | 1035 | - |
| Stage 2 | - | - | - | - | - | - | 557 | 1039 | - | 457 | 925 | - |
| Critical Hdwy | 4.12 | - | - | 4.12 | - | - | 7.52 | 6.52 | 6.92 | 7.5 | 6.5 | 6.9 |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | 6.52 | 5.52 | - | 6.5 | 5.5 | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | 6.52 | 5.52 | - | 6.5 | 5.5 | - |
| Follow-up Hdwy | 2.21 | - | - | 2.21 | - | - | 3.51 | 4.01 | 3.31 | 3.5 | 4 | 3.3 |
| Pot Cap-1 Maneuver | 725 | - | - | 1093 | - | - | 174 | 84 | *799 | *160 | 80 | 538 |
| Stage 1 | - | - | - | - | - | - | 629 | 577 | - | *252 | 312 | - |
| Stage 2 | - | - | - | - | - | - | 485 | 308 | - | *756 | 555 | - |
| Platoon blocked, % | | - | - | 1 | - | - | 1 | 1 | 1 | 1 | 1 | |
| Mov Cap-1 Maneuver | 719 | - | - | 1093 | - | - | 145 | 77 | *799 | *141 | 74 | 534 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | 145 | 77 | - | *141 | 74 | - |
| Stage 1 | - | - | - | - | - | - | 606 | 556 | - | *241 | 297 | - |
| Stage 2 | - | - | - | - | - | - | 410 | 293 | - | *690 | 535 | - |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Control Delay, s | 0.3 | 0.4 | 36.9 | 23.5 |
| HCM LOS | | | E | C |

| Minor Lane/Major Mvmt | NBLn1 | NBLn2 | EBL | EBT | EBR | WBL | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 145 | 799 | 719 | - | - | 1093 | - | - | 285 |
| HCM Lane V/C Ratio | 0.502 | 0.053 | 0.036 | - | - | 0.041 | - | - | 0.321 |
| HCM Control Delay (s) | 52.6 | 9.8 | 10.2 | - | - | 8.4 | - | - | 23.5 |
| HCM Lane LOS | F | A | B | - | - | A | - | - | C |
| HCM 95th %tile Q(veh) | 2.4 | 0.2 | 0.1 | - | - | 0.1 | - | - | 1.3 |

| Notes | | | |
|---|---|---|---|
| ~: Volume exceeds capacity | $: Delay exceeds 300s | +: Computation Not Defined | *: All major volume in platoon |

| Intersection | |
|---|---|
| Int Delay, s/veh | 1.8 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 2 | 698 | 56 | 41 | 863 | 3 | 66 | 0 | 38 | 2 | 0 | 8 |
| Future Vol, veh/h | 2 | 698 | 56 | 41 | 863 | 3 | 66 | 0 | 38 | 2 | 0 | 8 |
| Conflicting Peds, #/hr | 1 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | 100 | - | - | 100 | - | - | 0 | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 86 | 86 | 86 | 95 | 95 | 95 | 92 | 92 | 92 | 60 | 60 | 60 |
| Heavy Vehicles, % | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| Mvmt Flow | 2 | 812 | 65 | 43 | 908 | 3 | 72 | 0 | 41 | 3 | 0 | 13 |

| Major/Minor | Major1 | | | Major2 | | | Minor1 | | | Minor2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 917 | 0 | 0 | 877 | 0 | 0 | 1389 | 1852 | 439 | 1412 | 1883 | 462 |
| Stage 1 | - | - | - | - | - | - | 849 | 849 | - | 1002 | 1002 | - |
| Stage 2 | - | - | - | - | - | - | 540 | 1003 | - | 410 | 881 | - |
| Critical Hdwy | 4.12 | - | - | 4.12 | - | - | 7.5 | 6.5 | 6.9 | 7.5 | 6.5 | 6.9 |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | 6.5 | 5.5 | - | 6.5 | 5.5 | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | 6.5 | 5.5 | - | 6.5 | 5.5 | - |
| Follow-up Hdwy | 2.21 | - | - | 2.21 | - | - | 3.5 | 4 | 3.3 | 3.5 | 4 | 3.3 |
| Pot Cap-1 Maneuver | 746 | - | - | 1088 | - | - | 202 | 99 | *802 | *191 | 93 | 552 |
| Stage 1 | - | - | - | - | - | - | 683 | 614 | - | *264 | 323 | - |
| Stage 2 | - | - | - | - | - | - | 499 | 322 | - | *756 | 588 | - |
| Platoon blocked, % | | - | - | 1 | - | - | 1 | 1 | 1 | 1 | 1 | |
| Mov Cap-1 Maneuver | 742 | - | - | 1088 | - | - | 190 | 94 | *802 | *175 | 88 | 549 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | 190 | 94 | - | *175 | 88 | - |
| Stage 1 | - | - | - | - | - | - | 681 | 612 | - | *262 | 308 | - |
| Stage 2 | - | - | - | - | - | - | 468 | 307 | - | *715 | 586 | - |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Control Delay, s | 0 | 0.4 | 25.8 | 14.8 |
| HCM LOS | | | D | B |

| Minor Lane/Major Mvmt | NBLn1 | NBLn2 | EBL | EBT | EBR | WBL | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 190 | 802 | 742 | - | - | 1088 | - | - | 385 |
| HCM Lane V/C Ratio | 0.378 | 0.052 | 0.003 | - | - | 0.04 | - | - | 0.043 |
| HCM Control Delay (s) | 35 | 9.7 | 9.9 | - | - | 8.4 | - | - | 14.8 |
| HCM Lane LOS | E | A | A | - | - | A | - | - | B |
| HCM 95th %tile Q(veh) | 1.6 | 0.2 | 0 | - | - | 0.1 | - | - | 0.1 |

| Notes | | | |
|---|---|---|---|
| ~: Volume exceeds capacity | $: Delay exceeds 300s | +: Computation Not Defined | *: All major volume in platoon |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.1 |

| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | ↰↑↑ | ↑↑↱ | | ⅄ | |
| Traffic Vol, veh/h | 0 | 733 | 901 | 0 | 2 | 3 |
| Future Vol, veh/h | 0 | 733 | 901 | 0 | 2 | 3 |
| Conflicting Peds, #/hr | 5 | 0 | 0 | 5 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | - | 0 | - |
| Veh in Median Storage, # | - | 0 | 0 | - | 0 | - |
| Grade, % | - | 0 | 0 | - | 0 | - |
| Peak Hour Factor | 84 | 84 | 95 | 95 | 70 | 70 |
| Heavy Vehicles, % | 1 | 1 | 1 | 1 | 0 | 0 |
| Mvmt Flow | 0 | 873 | 948 | 0 | 3 | 4 |

| Major/Minor | Major1 | | Major2 | | Minor2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 953 | 0 | - | 0 | 1390 | 479 |
| Stage 1 | - | - | - | - | 953 | - |
| Stage 2 | - | - | - | - | 437 | - |
| Critical Hdwy | 4.12 | - | - | - | 6.8 | 6.9 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.8 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.8 | - |
| Follow-up Hdwy | 2.21 | - | - | - | 3.5 | 3.3 |
| Pot Cap-1 Maneuver | 723 | - | - | - | *236 | 538 |
| Stage 1 | - | - | - | - | *340 | - |
| Stage 2 | - | - | - | - | *756 | - |
| Platoon blocked, % | | - | - | - | 1 | |
| Mov Cap-1 Maneuver | 720 | - | - | - | *234 | 535 |
| Mov Cap-2 Maneuver | - | - | - | - | *234 | - |
| Stage 1 | - | - | - | - | *338 | - |
| Stage 2 | - | - | - | - | *752 | - |

| Approach | EB | WB | SB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 0 | 15.4 |
| HCM LOS | | | C |

| Minor Lane/Major Mvmt | EBL | EBT | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|
| Capacity (veh/h) | 720 | - | - | - | 353 |
| HCM Lane V/C Ratio | - | - | - | - | 0.02 |
| HCM Control Delay (s) | 0 | - | - | - | 15.4 |
| HCM Lane LOS | A | - | - | - | C |
| HCM 95th %tile Q(veh) | 0 | - | - | - | 0.1 |

| Notes | | | |
|---|---|---|---|
| ~: Volume exceeds capacity | $: Delay exceeds 300s | +: Computation Not Defined | *: All major volume in platoon |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.5 |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 715 | 20 | 12 | 888 | 13 | 6 |
| Future Vol, veh/h | 715 | 20 | 12 | 888 | 13 | 6 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | 0 | - | - | 0 | 0 |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 84 | 84 | 95 | 95 | 92 | 92 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 851 | 24 | 13 | 935 | 14 | 7 |

| Major/Minor | Major1 | | Major2 | | Minor1 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 0 | 0 | 875 | 0 | 1345 | 851 |
| Stage 1 | - | - | - | - | 851 | - |
| Stage 2 | - | - | - | - | 494 | - |
| Critical Hdwy | - | - | 4.13 | - | 6.63 | 6.23 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.43 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.83 | - |
| Follow-up Hdwy | - | - | 2.219 | - | 3.519 | 3.319 |
| Pot Cap-1 Maneuver | - | - | 769 | - | 154 | 359 |
| Stage 1 | - | - | - | - | 417 | - |
| Stage 2 | - | - | - | - | 580 | - |
| Platoon blocked, % | - | - | | - | | |
| Mov Cap-1 Maneuver | - | - | 769 | - | 149 | 359 |
| Mov Cap-2 Maneuver | - | - | - | - | 149 | - |
| Stage 1 | - | - | - | - | 417 | - |
| Stage 2 | - | - | - | - | 560 | - |

| Approach | EB | WB | NB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 0.3 | 26.5 |
| HCM LOS | | | D |

| Minor Lane/Major Mvmt | NBLn1 | NBLn2 | EBT | EBR | WBL | WBT |
|---|---|---|---|---|---|---|
| Capacity (veh/h) | 149 | 359 | - | - | 769 | - |
| HCM Lane V/C Ratio | 0.095 | 0.018 | - | - | 0.016 | - |
| HCM Control Delay (s) | 31.7 | 15.2 | - | - | 9.8 | 0.2 |
| HCM Lane LOS | D | C | - | - | A | A |
| HCM 95th %tile Q(veh) | 0.3 | 0.1 | - | - | 0.1 | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0 |

| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 0 | 720 | 901 | 0 | 1 | 3 |
| Future Vol, veh/h | 0 | 720 | 901 | 0 | 1 | 3 |
| Conflicting Peds, #/hr | 8 | 0 | 0 | 8 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | 150 | 0 | - |
| Veh in Median Storage, # | - | 0 | 0 | - | 0 | - |
| Grade, % | - | 0 | 0 | - | 0 | - |
| Peak Hour Factor | 84 | 84 | 95 | 95 | 60 | 60 |
| Heavy Vehicles, % | 1 | 1 | 1 | 1 | 0 | 0 |
| Mvmt Flow | 0 | 857 | 948 | 0 | 2 | 5 |

| Major/Minor | Major1 | | Major2 | | Minor2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 956 | 0 | - | 0 | 1813 | 482 |
| Stage 1 | - | - | - | - | 956 | - |
| Stage 2 | - | - | - | - | 857 | - |
| Critical Hdwy | 4.115 | - | - | - | 6.6 | 6.9 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.8 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.4 | - |
| Follow-up Hdwy | 2.2095 | - | - | - | 3.5 | 3.3 |
| Pot Cap-1 Maneuver | 722 | - | - | - | *277 | 536 |
| Stage 1 | - | - | - | - | *339 | - |
| Stage 2 | - | - | - | - | *466 | - |
| Platoon blocked, % | | - | - | - | 1 | |
| Mov Cap-1 Maneuver | 716 | - | - | - | *273 | 532 |
| Mov Cap-2 Maneuver | - | - | - | - | *273 | - |
| Stage 1 | - | - | - | - | *336 | - |
| Stage 2 | - | - | - | - | *462 | - |

| Approach | EB | WB | SB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 0 | 13.5 |
| HCM LOS | | | B |

| Minor Lane/Major Mvmt | EBL | EBT | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|
| Capacity (veh/h) | 716 | - | - | - | 430 |
| HCM Lane V/C Ratio | - | - | - | - | 0.016 |
| HCM Control Delay (s) | 0 | - | - | - | 13.5 |
| HCM Lane LOS | A | - | - | - | B |
| HCM 95th %tile Q(veh) | 0 | - | - | - | 0 |

| Notes | | | |
|---|---|---|---|
| ~: Volume exceeds capacity | $: Delay exceeds 300s | +: Computation Not Defined | *: All major volume in platoon |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 117 | 424 | 148 | 69 | 686 | 124 | 83 | 188 | 46 | 98 | 258 | 125 |
| Future Volume (veh/h) | 117 | 424 | 148 | 69 | 686 | 124 | 83 | 188 | 46 | 98 | 258 | 125 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | | 1.00 | 1.00 | | 0.99 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach | | No | | | No | | | No | | | No | |
| Adj Sat Flow, veh/h/ln | 1984 | 1984 | 1984 | 1984 | 1984 | 1984 | 1984 | 1984 | 1984 | 1984 | 1984 | 1984 |
| Adj Flow Rate, veh/h | 130 | 471 | 164 | 74 | 738 | 133 | 92 | 209 | 51 | 109 | 287 | 139 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.93 | 0.93 | 0.93 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Percent Heavy Veh, % | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Cap, veh/h | 611 | 915 | 316 | 681 | 1062 | 191 | 139 | 264 | 223 | 245 | 341 | 286 |
| Arrive On Green | 0.25 | 0.33 | 0.33 | 0.25 | 0.33 | 0.33 | 0.04 | 0.13 | 0.13 | 0.08 | 0.17 | 0.17 |
| Sat Flow, veh/h | 1890 | 2746 | 949 | 1890 | 3185 | 574 | 1890 | 1984 | 1678 | 1890 | 1984 | 1667 |
| Grp Volume(v), veh/h | 130 | 322 | 313 | 74 | 437 | 434 | 92 | 209 | 51 | 109 | 287 | 139 |
| Grp Sat Flow(s),veh/h/ln | 1890 | 1885 | 1810 | 1890 | 1885 | 1874 | 1890 | 1984 | 1678 | 1890 | 1984 | 1667 |
| Q Serve(g_s), s | 0.0 | 16.5 | 16.7 | 0.0 | 24.1 | 24.1 | 1.9 | 12.2 | 3.3 | 0.5 | 16.8 | 9.0 |
| Cycle Q Clear(g_c), s | 0.0 | 16.5 | 16.7 | 0.0 | 24.1 | 24.1 | 1.9 | 12.2 | 3.3 | 0.5 | 16.8 | 9.0 |
| Prop In Lane | 1.00 | | 0.52 | 1.00 | | 0.31 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Lane Grp Cap(c), veh/h | 611 | 628 | 603 | 681 | 628 | 625 | 139 | 264 | 223 | 245 | 341 | 286 |
| V/C Ratio(X) | 0.21 | 0.51 | 0.52 | 0.11 | 0.69 | 0.70 | 0.66 | 0.79 | 0.23 | 0.45 | 0.84 | 0.49 |
| Avail Cap(c_a), veh/h | 611 | 628 | 603 | 681 | 628 | 625 | 274 | 589 | 498 | 307 | 589 | 495 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Uniform Delay (d), s/veh | 28.9 | 32.2 | 32.2 | 20.7 | 34.7 | 34.7 | 55.4 | 50.4 | 46.5 | 50.2 | 48.1 | 44.9 |
| Incr Delay (d2), s/veh | 0.2 | 3.0 | 3.2 | 0.1 | 6.2 | 6.3 | 5.3 | 5.3 | 0.5 | 1.3 | 5.6 | 1.3 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(95%),veh/ln | 5.1 | 12.3 | 12.1 | 2.2 | 17.3 | 17.2 | 5.2 | 10.6 | 2.5 | 5.5 | 13.5 | 6.9 |
| Unsig. Movement Delay, s/veh | | | | | | | | | | | | |
| LnGrp Delay(d),s/veh | 29.1 | 35.1 | 35.4 | 20.8 | 40.9 | 41.0 | 60.7 | 55.7 | 47.0 | 51.5 | 53.7 | 46.2 |
| LnGrp LOS | C | D | D | C | D | D | E | E | D | D | D | D |
| Approach Vol, veh/h | | 765 | | | 945 | | | 352 | | | 535 | |
| Approach Delay, s/veh | | 34.2 | | | 39.4 | | | 55.8 | | | 51.3 | |
| Approach LOS | | C | | | D | | | E | | | D | |

| Timer - Assigned Phs | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Phs Duration (G+Y+Rc), s | 35.6 | 46.0 | 11.4 | 27.0 | 35.6 | 46.0 | 16.1 | 22.4 |
| Change Period (Y+Rc), s | * 6 | * 6 | 6.4 | 6.4 | * 6 | * 6 | 6.4 | 6.4 |
| Max Green Setting (Gmax), s | * 6 | * 40 | 13.6 | 35.6 | * 6 | * 40 | 13.6 | 35.6 |
| Max Q Clear Time (g_c+I1), s | 2.0 | 18.7 | 3.9 | 18.8 | 2.0 | 26.1 | 2.5 | 14.2 |
| Green Ext Time (p_c), s | 0.0 | 3.5 | 0.1 | 1.8 | 0.1 | 4.3 | 0.2 | 1.3 |

| Intersection Summary | |
|---|---|
| HCM 6th Ctrl Delay | 42.5 |
| HCM 6th LOS | D |

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

city of novi
45175 west ten mile road / novi, michigan 48375-3024 / (248) 347-0460 general information
www.ci.novi.mi.us

CITY COUNCIL
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Edward F. Kriewall
City Clerk

January 28, 2000

Mr. Dan Weiss
Novi Ten Associates
400 Renaissance Center, Suite 2170
Detroit, Michigan 48243

**Re: Letter of Commendation**

Dear Mr. Weiss:

The City of Novi has been very fortunate to receive several gifts over the past thirty years that have made a difference in terms of providing community services that may otherwise not be available. In the instance of the Novi Ice Arena, the City of Novi was very fortunate to be able to work with Mr. Dan Weiss and others to assemble a recreational property that will benefit the residents for many generations.

The City of Novi extends it's sincere "Thanks" to the families of Dan Weiss, Al Weiss, Roland Redner, Ray Maedel and John Cassella for their generous gift. Their donation of 18 acres of land given here, to the whole community, and "especially for the kids", has made the Novi Ice Arena and Recreation Facilities a reality. They have donated this land in the spirit of giving, with this message to all:

> "May we each do whatever we can, something, however big or small, some charitable acts to make our world a better place in which to live, work or play."

This was a substantial donation having a documented value of $3.2 Million dollars. It has promoted the wholesome development of our children and our community. Be it known that this exemplary action by these contributors is highly commended by the City of Novi, as helping to make the world a better place.

For this great deed, on behalf of the residents of Novi, I, Mayor Richard Clark, extend our community appreciation for all that has been given to our City.

Sincerely,

Richard J. Clark

Richard Clark, Mayor
City of Novi

**REGULAR MEETING OF THE COUNCIL OF THE CITY OF NOVI**
**MONDAY, MARCH 18, 2024 AT 7:00 P.M.**

**Mayor Fischer called the meeting to order at 7:00 P.M.**

**PLEDGE OF ALLEGIANCE**

**ROLL CALL:** Mayor Fischer, Mayor Pro Tem Casey, Council Members Gurumurthy, Heintz, Smith, Staudt, Thomas

**ALSO PRESENT:** Victor Cardenas, City Manager
Tom Schultz, City Attorney

**APPROVAL OF AGENDA:**

Member Staudt added "Nine Mile Road" to Mayor and Council Issues.

**CM 24-03-32** **Moved by Staudt, seconded by Casey; MOTION CARRIED: 7-0**

**To approve the agenda as amended.**

**Roll call vote on CM 24-03-32** **Yeas: Casey, Gurumurthy, Heintz, Smith, Staudt, Thomas, Fischer**
**Nays: None**

**PUBLIC HEARINGS: None**

**PRESENTATIONS**: **None**

**ATTORNEY REPORT: None**

**AUDIENCE COMMENTS:**

Kazi Afzal, 48160 Andover Dr, said he has been a resident of Novi for five and a half years. He said that Novi has a diverse population and culture and has been a great city for his family to call home. He said he is a technical person and a problem solver. He explains he has led global teams and faced many challenges with members who were afraid to take responsibility, make the right calls, or take action He said that in the past few meetings, audience members have shown the Council what has been happening in Palestine. He said for 75 years Americans have been complicit in oppression, human rights violations, and destroying generations. He said it needs to stop, and the City of Novi needs to be on the right side. Mr. Afzal said he understands that many wars are happening around the world, but in no other way is the US as deeply involved as what is seen in the war carried out by the regime in Israel. He said as Americans, we bear a larger burden. He said the Council is probably hesitant to call for a ceasefire because they are worried about upsetting some individuals who would like to see the outrageous levels of casualty of human lives continue. He said it is similar to being a witness to mass murder, but you're told to not go and help the victims, let the murderer finish the job. He said that the demand to end the war was for both sides. The war is creating thousands of refugees and they have nowhere to go. He said to let the Palestinians live in their homeland with

security and dignity. He said a ceasefire resolution can be a part of avoiding a major refugee crisis. He said many Novi residents are victims of doxing by groups who want to suppress basic civil rights such as the freedom of speech and right to protest. He said these entities can be local or not local. He said a ceasefire resolution would show that Novi is against these violations and stands against hate. He said Novi residents have denounced hate and promoted peace. Novi is a global community and has shown global awareness and compassion as seen in support of Ukraine during time of need. He asked the Council if they were going to be a body that, despite being shown the truth with facts and reports, refuses to make the right call given the history of compassion and action. He said he urged the community and Council to consider a ceasefire resolution today.

A resident of Novi said that she is the co-founder and volunteer at the Novi Food Pantry at the Tawheed Center of Novi Association in collaboration with Forgotten Harvest Food Bank. She said she stood before the Council with a heavy heart and a plea for humanity. She said the Council has heard for over a week the comments about the seamless violence, important lives lost, and devastation of families torn apart in Gaza. She said she doesn't need to repeat the numbers and statistics of casualties and dead that have just shrunk to a mere number. She said as food supplies are being made available to the people of Palestine, planes and helicopters are waiting to bomb them, and hundreds and thousands of Palestinians are being massacred within a few seconds being labeled now as the 'Great Flower Massacre'. She said despite the cries of justice echoing around the world and in the Chamber, we remain silent. She said that we sit here unmoved as if the suffering of millions of Palestinians does not weigh heavily on our conscience as if we don't care for the plight. She explained it is the plight of people who look different than us, speak a different language, and believe in a different God. She said although our own Pledge of Allegiance talks about 'liberty and justice for all' the response from the Council is silence. She asked how we as a community can turn a blind eye to such injustice. She said she would like to applaud Member Heintz for his Facebook post, which was very brave, although he received backlash from other lobbyists, he stood on the right side of humanity. She said unfortunately that was just a Facebook post and not a resolution or action the Council took by invoking and passing a resolution for a ceasefire. She said we continue to be complicit in the bloodshed and violence plaguing Gaza. She said we must act now before it is too late and implores the Council to pass a ceasefire resolution; to send a clear message that we stand in solidarity with the people of Gaza and that we will not tolerate the continued loss of innocent lives. She reminded the Council that election day is judgment day and a day or reckoning where the Council's inaction and silence will be accounted for. She said history will judge you, not only by your actions but also by your failures to act in the face of injustice. She said that Muslims around the world are observing the holy month of Ramadan. She said in this blessed month of Ramadan when all prayers are answered, she will use the remainder of her time to pray for the victims of the genocide.

Phillip Kasper, a Novi resident, said he lives on Sunflower Road, on the south side of Nine Mile, between Meadowbrook and Haggerty. He said he is at the Council Meeting to protest the cutting of the trees along Nine Mile, and the widening or putting in the turn

lanes on Nine Mile called the Nine Mile Rehabilitation Project. He said he hopes there are some of his neighbors here, and that they only became aware of this when they saw big pink ribbons around historic trees that are hundreds of years old. He said they found out through a few calls that those trees would be cut down to put in a few turning lanes in a residential area of Novi. He said this subject is near and dear to his heart. One of the reasons that he was attracted to the area was because the trees make a tunnel of trees. He said it is reminiscent of being up north. He said if you cut down all of those trees, it will look like Ten Mile Road or Eight Mile Road. He said he drove up and down Nine Mile to see how many turning lanes there are in residential areas. He said there are none on Nine Mile. He said if you go to Beck Road, on Nine Mile the west portion turns into dirt. If you go after Haggerty, you go into Farmington Hills. So, he said, within Novi there are no turning lanes on Nine Mile Road. He said he doesn't know if there has been a traffic study done or something that causes the trees to be cut down and put in turning lanes on what is literally a residential street at almost its entire length. He added there is a turn lane from Chase Dr. to Novi Road where it is all businesses. He said there are no turn lanes in residential areas, not even at Center Rd. which turns into Northville from Nine Mile. He said he doesn't believe there is a need for a turn lane on Nine Mile between Haggerty and Meadowbrook in any way, shape, or form. He stated if this was Federal Money that was being used, he believed it would be better used somewhere else. He said it was not necessary in that area and asked the Council to please not cut down the ancient trees.

Zafar Salim, a Novi resident, said he was in attendance to talk about the Palestinian ceasefire, a matter that transcends global borders and touches the very essence of our shared humanity and community. He said the Ceasefire in Palestine was not merely a distant diplomatic term but represents a beacon of hope for the countless humans whose lives have been marred by conflict and loss. He said innocent lives are being lost, families torn apart, and generations are being eradicated. He said it was not just an issue for those living in the midst of the conflict, it echoes around the world affecting many people in Novi. He said Novi prides itself on being a community that stands for justice, compassion, and human dignity. He said we are a city of global citizens, where global issues find a local voice and the wealth and welfare of all people guides our actions. He said many residents with ties to Palestine share a deep concern for human rights. He said the principles that define us as a City, our vision, our inclusivity, our commitment to peace, and our dedication to the wellbeing of all calls upon us to acknowledge and act upon the global issues that align with these values by advocating for a ceasefire to support Novi citizens who have friends and families in Palestine, or to support those who simply advocate for humanitarian causes. He said that the people in the room were not overstepping their bounds, and neither would the City Council. He said we are just fulfilling our responsibility as global citizens and leaders in pursuit of a just world. He said the Novi City Council has the opportunity to set a precedent to show that they're not indifferent to the sufferings of others, no matter where it occurs. Zafar said by passing a ceasefire, we send a powerful message that Novi is a city that cares, leads, and stands on the right side of justice and history. He said he urges everyone to consider the profound impact our collective voice can have when joined together to support peace, to call for an end to the loss of innocent lives, and to affirm a city's role in the global community. He asked Councilman Heintz to raise his hand and officiate his call for a ceasefire.

A student from Novi High School said she is a proud resident of Novi. She said she stood before the Council to advocate for a ceasefire in Palestine. She said the city has long been a beacon of diversity and progress. She said that it's from this place of unity that she implores our leaders to heed the urgent pleas for peace in that region. She said that through her years as a resident of Novi, she has dedicated herself to the betterment of the city, working to uplift marginalized communities and foster a sense of belonging for all. She said she has served as a student representative of the Student Novi Library Board advocating for the DEI committee. She said she founded and currently directs a food pantry at the Tawheed Center of Novi, serving over 200 individuals a month. She said she has campaigned and volunteered for our elections. She said that she recognizes that our responsibilities extend far beyond our own borders. She said we cannot turn a blind eye to the injustices faced by our brothers and sisters in Palestine. A call for a ceasefire today is a testament to our humanity. She said to the Council that this was their affirmation and commitment to the voices of their constituents. She said this was a step towards building a more peaceful future where all people, regardless of their backgrounds, religion, race, or color of their skin can live in peace and security. She said as a diverse community of Novi, it is our obligation to speak up and keep speaking up for this issue. She told the Council that their constituents and members of the community have come up again for the past few weeks and will keep coming. She said she is there, while fasting, during the holy month of Ramadan to implore the Council to use their voices as community representatives and vote for a ceasefire. She said to please listen to their voices, and represent those who have brought the Council there, and whose power it is to keep bringing them here. She reiterated to please call for a ceasefire today.

Concetta Varana, 4035 Village Wood Rd., said she has lived in Novi for 30 years. She said she is saddened by the plight of the humans who are suffering in another country but is also saddened about what is going on here. She explained she has learned through Nextdoor.com what is going to happen to Nine Mile Rd. between Haggerty and Meadowbrook. She said she walks Nine Mile Rd. regularly. It distresses her mind and emotions. She said it was a wonderful thing that it was paved by the city to make it a walkable City. She said the trees and nature left on Nine Mile fill her heart with joy. She said we have the opportunity to use government money, and what we use it for is to tear down this beautiful part of Novi. She said a perfect example of a waste of government money is the roundabout by the Double Tree Hotel. She said this is the most pointless roundabout, and there is no traffic there. She explained she is disappointed that this project is even on the agenda to happen possibly within the next several months. She said to please not do that. She asked the Council to please not take away her refuge.

Farah Baig, 23169 Inverness Ct, said this is her third time coming to share her thoughts with the Council. She said she is a concerned resident of Novi, who is speaking at length but is not being heard. She said she feels like her words are falling on deaf ears, and it is very frustrating. She said she is confident that the City Council members have a deep concern for the wellness of Novi residents. She said she had the opportunity to sit in on a recent meeting of the Older Adults Committee, and it was really clear that the Council Members are very much concerned for the wellbeing of the community. She said the ceasefire

resolution sought speaks directly to the mental wellness of our Novi community atrocities that have been happening in Gaza, as many of her colleagues have spoken at length about in previous City Council meetings. She said she has asked others to come to the City Council meetings to voice their concerns. However, she said, she often hears responses that are disheartening and filled with frustration. She said she received a reply from a fellow educator who is going through some severe trauma and distress. She wrote "Beyond heartbroken over what has been happening as Palestine was my parent's homeland along with Jordan for many years. You can't know how painful it has been for us to see the images of many generations decimated to nothing. We still have family there. Unfortunately, my son-in-law lost eight members of his father's family when the churches were bombed. Very sad and disappointed that our government never took the initiative to intervene early on." Farah explained she is a resident and a mother of five, and this issue directly impacts her family. She said if you are wondering what a ceasefire resolution might do, it will directly address the pain she and her family are going through. She said the mental wellness of a community is key for a community to thrive. She said she is confident that each of the Councilmembers is deeply concerned for the well-being of all the community members. She said to pass a ceasefire resolution and stand with the community you represent.

Ferdi Gomes, a Novi resident, said he has lived here for 40 years. He said he had come to the Council meeting to address the Nine Mile Rehabilitation project and turn lanes. He said he doesn't believe it is necessary. He said considering the input from the other speaker, the money could be used elsewhere, and on other road improvements. He offered he is happy to help with input and participation. He said that adding turn lanes will only encourage the speeders that exist on Nine Mile Rd. He said the Police have helped by adding speed trackers to track the speeds. Mr. Ferdi added that he had become good at being able to tell who was over the 35-mph speed limit. He said that he would like the Council and whoever is responsible to consider reducing the speed limit on Nine Mile to 30 mph. He said an increase in trucks has been continuous on that particular stretch, which there are signs to prevent, but they still pass through. He added that he rarely sees Police patrolling the area looking for speeders. He said he would urge whoever has the ability to encourage a speed and truck restriction. He said, as someone mentioned before, those trees are over 50 years old, and it would be a shame to cut them down. He added that he sees this project as a done deal, but he didn't see any public input from residents. He said he would request this particular project to be reconsidered.

Kelly Kasper, 21505 Sunflower, said she lives in the Whispering Meadow Subdivision and is at the meeting to discuss the tree situation on Nine Mile Rd. She said the City told her the amount of trees coming down is 25. She said they are over 100 years old and make a beautiful tunnel. She said when they purchased their home in Novi, she remembers thinking it was so beautiful. She added it felt like living in a community up north and she enjoys the trees on their side of town. She said they don't have any beautiful parks like Lakeshore Park, or any real walkable areas to walk in. She said it is nice to have Nine Mile with all the mature trees, for when they walk down the sidewalks, and it would be a shame to see them go. She said she doesn't know much about project development but

has done a little bit of research on her own. She added that widening lanes and roads creates induced demand. Rather than alleviating traffic problems, it creates more traffic problems because more people will drive on that road over time. She said she doesn't see a need to have a turn lane on the road, because Nine Mie is not a major entrance or exit ramp onto any major through fares; it is almost completely residential from one end to the other. She said she would like to use her last minute to discuss a resolution on peace in Gaza. She said, she stands with humanity and sees her neighbors and community members hurting. She thinks we need to stand up and say something on their behalf. She said she would like to call for a resolution for a ceasefire as well. She said if the Nine Mile project is going to go through with no say-so from the residents, she would like the city to consider replanting mature trees all down Nine Mile to repair some of the damage they are getting ready to do.

Khurram Abbas, 26508 Mandalay Cir., said he urges the Mayor and City Council to adopt a resolution calling for an immediate ceasefire in Gaza. He said there have been over 30,000 casualties, many being women and children. Children constitute almost half of that number. He said the ones alive are facing an acute and deliberate shortage of food and medicine. He said many other cities have called for a ceasefire through proclamations and resolutions, and he wants his Novi leadership to do the same. He said to be on the right side of history, take a stand, and call for peace and tranquility around the world. He said there had been a lot of people speaking, and he could see a lot of frustration and growing resentment among community members because the City Council was not listening to them. He said the second thing he wanted to discuss was the tree removal on Nine Mile Rd. He explained he used to live in that area and had personally never encountered a traffic problem there. He said he doesn't see the need for a left turn or the widening of the road. He added that the area reminds him of the tunnel of trees up north. He said the city staff probably did their due diligence and looked into it, but he would implore the city to look again and see if there is a way to proceed and preserve the mature trees.

Panagiota Wolstencroft, 40611 Oakwood Dr., said she was in attendance to oppose the widening of Nine Mile Rd. She said she grew up in this city and lived in the Village Oaks area for over 20 years. She said several years ago, the city put in a sidewalk that took down the trees that served as a buffer for those that back up to Nine Mile Rd. She stated that the city now wants to remove another 20 to 25 trees. She asked what effects the removal would have on noise levels, clean air, and the beauty of the road. She asked why the city was winding the road. She explained there is no need as it is in a developed residential area with a speed limit of 35 mph. She said winding the road would cause traffic to come closer to the sidewalk that was just put in. She said by taking the trees down, you remove buffers between pedestrians and traffic. She added that this will also result in more property loss for the residents on the north side of Nine Mile. Ms. Wolstencroft said there was mention of a traffic study increase, because of a year-long construction project on 10-Mile. Now, she said, it has returned to preconstruction levels and accidents do not happen on Nine Mile Rd., except at Nine Mile and Haggerty where people try to run the light. She said to maybe revisit the plan and focus on fixing traffic on Haggerty instead.

Farahnaz Ashtiani, 43145 Emerson Way, said she has been a Novi resident for the past 20 years and attended her first City Council meeting two weeks prior for the first time. She said many people requested a resolution for a ceasefire. She said she asked what was going to happen and when they would hear back, and was told they were not, because the Council does not consider this a topic related to the city. She said her discussions are why she thinks it is directly related to the city and residents of Novi. She said she understands that the Council cannot address every humanitarian topic in the world. But, she specifically wanted to talk about what is happening in Gaza. She said what's happening in Gaza is related to all of us as humans and Americans. She said none of us can claim to live in a human and democratic country if we witness the massacre of children and women that is funded by the Country you are a citizen of. She said everyone in the Council Chambers prides themselves in making an honorable and decent living for their families. She said part of our earnings and other indirect contributions are actually funding these massacres. She said that before October 7th, 2023, we did not know what was going on. The unfolding of these crimes beyond belief being broadcast to the world by the people is happening to have opened our eyes and questioned many of our values. She said she humbly asks the Mayor and City Council as representatives, parents, a spouse, daughter, or son if it is acceptable to see your hard-earned money directly or indirectly supporting a genocide, killing other families. She asked if it was acceptable that we are funding the starvations of other families and children in another corner of the world. She asked if it is acceptable that this money could be used in our community but is being used to fund crimes on the other side of the world. She said what happened in Palestine should not continue to happen. She said if the residents of Novi from any ethnicity or background want to have peace and want their children to live in a peaceful world, it does not happen by supporting the killing of other innocent children somewhere else in the world. She said she is asking for a resolution for a ceasefire.

A Novi resident of 5 years said he was at the meeting to talk about the Gaza ceasefire resolution. He said Gaza has 13,000 children already dead and thousands left with lifelong injuries and living in terrible conditions. He said hunger and starvation are just adding to the long list of dead children. He explained that he sits every day with his kids at the dinner table thinking about the fathers who aren't able to see to see or feed their kids anymore. He said he prays his daughter will never go through that. He said he humbly requests that the City of Novi passes a resolution to show that we stand for humanity, peace, and unity. He said to follow what other major cities have already done.

Noah Boehm, 40559 Oakwood Dr., said he attended the meeting to speak about the widening of Nine Mile Rd. He explained he had witnessed constant speeding, almost nonstop, people passing other people. He said he knows that he does the speed limit and gets dirty looks for it. He said he has called the police a handful of times about the matter, but he thinks this also falls on deaf ears. He said he rarely sees the police patrolling there. He said the digital speed sign is more of a target for seeing how high the number will go. He said you would think people would slow down, after seeing their speed on the digital sign, and then the road sign that says 35, but they don't even touch the brakes. He said if you add more to the road, it will make more room for passing, rather than

having to stop for someone who is turning into one of the neighborhoods. Rather than going around them and into oncoming traffic, they can just go around. He said right now, he believes it is a solid lane, uphill, but it still doesn't stop people from passing or going double the speed limit. He said he received an output from one of the sergeants at the police department that nobody was exceeding 40 mph, and he knew that wasn't true. He said he agrees that the road needs to be cleaned up, but clean up the trees by trimming them properly, not by cutting them down. He said that the money can be utilized elsewhere.

Meena Ansari, 40620 Camborne Ln., said she is a devoted mother of three and an educator within Novi schools. She said she stood before the council with a plea for peace, compassion, and humanity. She said the Holy Manta Ramadan commenced the evening of Sunday, March 10th. She said the day began marked by the abstinence from food and water, beginning at the break of dawn, and concluding at sunset, and most completed an arduous eight-hour work or school day without the nourishment they typically rely on. She said that night, instead of breaking the fast, they stood before the Council, because as constituents, they find themselves profoundly impacted by the situation in Palestine. The month of reflection and spiritual rejuvenation coincides with a period of heightened unrest and suffering. She said in Palestine, the plight of brothers and sisters there weighs heavily on their hearts and minds compelling them to gather at the meeting not only seeking solace but also solidarity. She said they are asked why there is a need for a resolution for this war when no other resolution was adopted for other conflicts. She said the reason is, because the City needs to speak out and that tax dollars are being directly used to fund a genocide. She said they need statements from a local level, so they can convey to the White House that its laws support funding a genocide. She said this is a genocide, not a war or a conflict. One side has a powerful army backed up by the most powerful country in the world. At the same time, the other side is an oppressed occupied population made up of mostly women and children. She said Palestinians go to sleep not knowing if they will wake up in the morning. She said people are eating grass because they are starving to death. Calling for a ceasefire is not about attacking the only Jewish state in the world or being antisemitic; thousands of Jewish Americans are calling for a ceasefire. She said they are rallying cries, not in our name, never again for anyone, and ceasefire. She said as Muslim Americans, they condemn the atrocities committed against Israel and Israeli civilians. She said they need the city to call for an immediate ceasefire. Silence in the face of genocide is not an option.

Ann Gayton, 40700 Mill Road Ct. W said she has been a resident of Novi for 37 years, and in her time, she has never had a problem making a left-hand turn. She said she didn't understand the need. She added she understands the road noise and the trucks that are currently disrupting the use of their yards. She said if your home backs up to Nine Mile, you'll hear a loud rumbling. She said you can't even have a conversation if you're sitting on a patio. She said she would ask the Council to reconsider the project and use the money elsewhere, like resurfacing the road. She added she loves those trees.

Firdaus Maldar, 39565 Westminster Cir, said the Council stated that it is not their place to speak on international policy, and their hands are tied. She said she also heard President

Biden's surrogate say that he has limited power over Israel's actions, yet there he has a quote from retired Israeli Major that says all of the missiles, ammunition, guided bombs, and airplane bombs are from the USA. She said the minute they turn off the tax, they can't keep fighting. They will have no capability. She said everyone understands that this war can not be fought without the USA. She said in 1982, Beirut was under siege by the Israeli troops. On August 12th, an Israeli jet bombed Beirut for 11 consecutive hours, killing over 100 people. President Reagan was shocked by the ages of Carnage he saw on his television. He called the Prime Minister begging of Israel to express his outrage. He called it needless destruction and bloodshed. She said it was a ten-minute phone call, and twenty minutes later a complete ceasefire had been called. She said those were the actions of a true leader and the power of the United States. She said some actors were born to lead nations while some play out as leaders. She said the biggest movements that changed the course of a democracy and made the USA a beacon of hope like women's suffrage, civil rights, and the Tea Party movement were started at the grassroots level by people like the council and similar positions. She said some of the Council would not be in the position they are if not for the 19th Amendment to the Constitution. She said our county faces a leadership vacuum; we don't have people who can inspire, energize, or unite the country as one at the state or federal level. She said the greatest leaders our world has seen have emerged in times of chaos and turmoil. She said the stage is set for the next great leader, a person of convictions and moral fortitude, willing to fight the good fight the gauntlet has thrown. She asked if anyone was up for the challenge. She read a Facebook post from the deceased Aaron Bushnell, US Air Force, "Many of us like to ask ourselves, 'What would I do if I was alive during slavery or the Jim Crow South or apartheid? What would I do if my county was committing genocide?'". She said the answer to those questions was whatever you were doing at this very moment.

Timothy Hasse, 23873 Pheasant Run, said he was here for a ceasefire resolution. He said this resolution would call for a bilateral ceasefire, the release and return of all hostages, and an entry of unhindered humanitarian aid into the region. He said it could condemn all hate and violence, racism, antisemitism, and Islamophobia. He said it could ask that we all come together as a community for peace, love, and non-violence. He said he started getting active politically for the first time after his wife had their first son, who is a month old. He said he doesn't think anyone who was a parent in the room is not scared about the world their child will grow up in. He explained we can't talk to each other, we hate each other, and there is constant violence and war everywhere. He said he thinks about what world his son is growing up in and feels like he needs to do something about it. He said we need to come together. He said his life is split in two. He grew up before 09/11/2001 and after growing up in Northville schools, when the towers came down, and parents rushed to pick up their kids, suddenly, he was growing up in a world full of fear where nobody trusted each other and has gotten more violent ever since. He said Dr. King said that meeting with violence only multiplies violence, and this is what we are seeing. He said we can use this situation to come together. People would like more engagement and to hear more from the Council. People would like to have conservations about this. He explained he helped the Northville Mayor develop a worldwide Peace Day instead of a ceasefire resolution. He said they are working to host

an event that brings the community together. He said there are multiple options and that people just want to talk and have some discussions.

John Garbacik, 45626 Emerald Forest Dr., said he is 30 years old and has been a Novi resident for 30 years. He said he has seen a lot of road construction throughout the years. He would like Novi to reconsider the funding for Nine Mile and try to find another road, like Twelve Mile Rd. He said he would also like to see a resolution to support our friends in Haiti. He said an article in the paper was absolutely disgusting, and we need to do something over there. He said we have totally ignored that poor country. He said he supports the senior bus system that Novi currently has for its senior citizens. The drivers are very enthusiastic, they know their customers and where to take them and are friendly. He said other places that have tried to outsource have not gone well. He explained that you get a constant changeover of drivers, and it is very important to have consistency.

Colleen Crossey, 22279 Brockshire St., said she lives just south of Nine Mile near Meadowbrook. She said that they needed the trees to stay and that it was good for cleaning the air, buffering the sound, and for habitats for humans and animals. She said, of course, there is also the ceasefire resolution, and asked, since when has peace been so controversial. She said not to get involved, because the conflict is considered international relations seemed like an empty reason. She added that someone wished a happy St. Patrick's Day, and the Irish have had their share of war. She said she attended the open house at the Muslim temple and got a free Quran, which was awesome. She said it was very encouraging to see so many Council Members there but discouraging to not see everyone there. She said very polite people have said 'Novi has always been known as a welcoming society that embraces diversity' and yet these people are cast out when the Council did not show up to find out more about these people. She said to please bring a resolution for peace.

**CONSENT AGENDA REMOVALS AND APPROVALS:**

Mayor Pro Tem Casey removed Item H from the consent agenda.

**CM 24-03-33 Moved by Thomas, seconded by Smith; MOTION CARRIED: 7-0**

**To approve the Consent Agenda as amended.**

A. Approve Minutes of:
March 4, 2024 - Regular Meeting

B. Approval to award design engineering services to AECOM for the 2024 Salt Dome Replacement Project, in the amount of $27,600.

C. Approval to award engineering design services to OHM Advisors for the assessment of operational improvements at the Island Lake Booster Station, in the amount of $35,250.00.

D. Approval to award a unit price debris removal services contract to Ellsworth Industries, Inc., the low bidder, in the estimated annual amount of $50,000. The contract term is one year with three one-year renewal options.

E. Consideration of approval to purchase three unmarked vehicles for the Novi Police Department, two from LaFontaine CDJR-Lansing and one from Lunghamer Ford of Owosso, through the MiDeal Cooperative purchasing contract, in the amount of $118,393, and amend the budget.

F. Consideration of approval to purchase three 2024 Ford Police Interceptor Explorers from Lunghamer Ford of Owosso, through the MiDeal Cooperative purchasing contract, in the amount of $128,970.

G. Adoption of a Resolution requesting the Michigan Department of Transportation (MDOT) include the existing bridge on Ashbury Drive over the Middle Branch of the Rouge River in the State Local Bridge Program List for Replacement. If MDOT selects the bridge, the City of Novi will accept 100% of the design engineering costs and 5% of the total construction cost.

H. Approval of the Beautification Commission's recommendation on the Neighborhood Entryway Enhancement Matching Grant Program to award the requested grant amount for the following neighborhoods upon successful completion of the entryway work depicted in the applications: Village Oaks ($5,000.00) and Walden Woods ($2,526.50). **Removed/ Later Approved**

I. Approval of the request of Singh Development LLC for JSP 20-27, Griffin Novi, for a one-year extension under Section 3.31.4.F of the Zoning Ordinance for the Preliminary Site Plan with a PD-2 option. The subject property is located at the southeast corner of Twelve Mile Road and Twelve Oaks Mall east access drive, in Section 14. The applicant received approval from City Council on March 14, 2022, for the Planned Development 2 (PD-2) Option to develop 174 multi-family residential units on a vacant 7.5-acre parcel.

J. Approval of the request of DTN Management/Tricap Holdings for JSP 18-10, The Bond development, for a one-year extension of their Final Site Plan approval. The property is zoned TC-1 (Town Center One) and is approximately 7.74 acres. It is located on the southwest side of Bond Street, south of Grand River Avenue and west of Novi Road in Section 22. The applicant received Final Stamping Set approval for a mixed-use development with two four-story multi-family residential buildings with a total of 260 apartments on April 14, 2022.

K. Acceptance of a Woodland Conservation Easement from Catholic Central High School of Detroit, Inc, being offered as a part of JSP21-44, Catholic Central STEM, for property located west of Wixom Road and south of Twelve Mile Road, in Section 18 of the City.

L. Acceptance of a Woodland Conservation Easement from Novi Development Company, LLC, offered as a part of JSP22-48, Extra Space Self Storage, for property located on the east side of Novi Road, south of Nine Mile Road in Section 35 of the City.

M. Approval of Grant Agreement with the Michigan Economic Development Corporation (MEDC) in connection with a State of Michigan grant for Jessica's Splash Pad at Bosco Fields.

N. Approval to grant a 10-foot wide easement to the DTE Energy Company for the Jessica's Splash Pad at Bosco Fields project located near the southwest corner of 11 Mile and Beck Roads at 25802 Beck Road or parcels 22-20-200-011 and 22-20-200-022 and authorize the City Manager to sign the document.

O. Approval of claims and warrants – Warrant 1152

**Roll call vote on CM 24-03-33** **Yeas: Gurumurthy, Heintz, Smith, Staudt, Thomas, Fischer, Casey**
**Nays: None**

**MATTERS FOR COUNCIL ACTION:**

**1. Consideration of approval to award engineering design services to OHM Advisors for the design of a Southwest Water Main Loop Connection in the amount of $368,054.**

**CM 24-03-34 Moved by Casey, seconded by Smith: MOTION CARRIED: 7-0**

**Approval to award engineering design services to OHM Advisors for the design of a Southwest Water Main Loop Connection in the amount of $368,054.**

**Roll call vote on CM 24-03-34** **Yeas: Heintz, Smith, Staudt, Thomas, Fischer, Casey, Gurumurthy**
**Nays: None**

**2. Consideration of a Resolution to Adopt the City of Novi 2023 Active Mobility Plan.**

City Manager Cardenas said they were looking forward to the Council's consideration of the proposed revisions to the Active Mobility Plan. The changes that are recommended will provide staff with a good work plan. He introduced Senior Planner Lindsay Bell. Ms. Bell said the Non-Motorized Master Plan was adopted in 2011 and served as a foundation for the past 12 years for the goal of working toward providing an interconnected and comprehensive system of pathways, sidewalks, and other facilities in the city. Many of the strategies recommended were implemented through the years with over 16 miles of trails and sidewalks completed between 2011 and 2022 by both public and private

funding. Recognizing the success of the 2011 plan and the realization that standards continue to adapt to new technologies and safety awareness, City Council contracted with the Greenway Collaborative to produce a comprehensive update of the Non-Motorized Master Plan, which we are now calling the Active Mobility Plan. The process kicked off in December of 2022 and continued through the year. The public input process included two public open houses, a survey to get initial feedback and another survey after the draft. She said preliminary plans were shared as well as several pop-up events attended by staff and the consultant team to get information and feedback from the community. There was also a session held at Lakeshore Park to hear from community members near Walled Lake about options to consider for both South Lake and East Lake Drive. During the process, they met several times with a technical advisory committee and the Walkable Novi Committeewhich both provided valuable feedback. She thanked the Mayor and Mayor Pro Tem for their involvement as members of that committee. During the process at the Walkable Novi Committee's October meeting, the members gave comments on the draft final Active Mobility Plan and the Planning Commission reviewed the plan and recommended it for approval. She said City Council is being asking to consider a resolution to adopt the 2023 Active Mobility Plan.

Norm Cox from The Greenway Collaborative thanked the residents of Novi that provided the input throughout the course of the project. This was driven by public input and that developed the themes throughout the plan. He said he would focus on the key elements of the plan. The near-term network is really the focus. Those are the priorities and the things that the city would be working on for the foreseeable future. It has three main components that came out of public involvement. A neighborhood greenway network, connecting to transit, and improved access to shopping and dining. The neighborhood greenways should be thought of as a family friendly network. It will connect the key destinations in the city and is a strategic building upon the existing pathway systems with some key crosswalks and filling in gaps. It's trying to create a nice network that everyone will feel comfortable using to get around the city. That ties into a larger regional greenway system, much of which is already in the works with your neighbors to build it where you can have a 30-mile loop connecting to the regional trail systems. He said another key aspect is connecting with the new SMART routes because you can't have a bus stopping without sidewalks and crosswalks. He said we want to take full advantage of this new service in the community and make sure the first and last mile of getting to and from the transit stops are well accounted for and very safe, which was the second key element. He said the third was access to shopping and dining. He said the city has done a wonderful job of providing facilities along the road right-of-way, but getting to the actual restaurant or store is something that needs to be improved upon. He said the near-term network will build on the existing trail system with strategic investments and integrate with the new SMART transit route. It will link to create a core active network that will link to recreation, civic and commercial destinations. This is the backbone of the system. The long-term network is something that will be implemented over time. He said this is trying to set up best practices so as the city rebuilds roadways, they could all be implemented. He said there are a lot of elements that could be implemented over time.

Member Smith said he didn't have any questions but wanted to thank everyone who was involved with this project for all the hard work that went into it. He said was pleased with the plan and thought it gave a great start for short-term and long-term goals for improving our non-motorized transit. He was looking forward to turning it into reality. He said there were a couple items to keep an eye on such as crossing over I-96. We have regional trails north of I-96 and south of it and it's a giant barrier. He said East Lake and South Lake Drive were very challenging areas to work in and it will take some creative long-term thinking to find a good solution.

**CM 24-03-35 Moved by Smith, seconded by Thomas: MOTION CARRIED: 4-3**

**Approval of the Resolution to Adopt the City of Novi 2023 Active Mobility Plan.**

Member Thomas said the report was incredibly thorough and thanked everyone for the amount of work that was put in. She said it's important that people show up when there are opportunities to get feedback, so they know they're meeting the needs of the community. She said she was looking forward to being able to start implementing.

Member Heintz said he appreciated the amount of effort and work that went into this. He said the slides show all of the different sources of information to support all the different initiatives to make sure there's a variety of ways people can get around. There is a strong emphasis on listening and meeting the needs of the public. He said he was looking forward to seeing the work ahead.

Member Gurumurthy said she was happy to see this plan and thanked everyone for providing feedback to get to this point. She said with respect to sidewalks, she's been talking to residents and one of the key things for seniors is that they would appreciate good rest areas and she said that in the plan. She wanted to reinforce that and make sure we evaluate where those rest areas can be put and integrate that in the map for the sidewalks. She recognized that you can't add everything at once, but maybe we can see a plan on how we can add those. She said she was glad to see pedestrian scale lighting. She wanted to request that we look into solar because that would increase the number of people using the sidewalks. She said she was hoping to see that implemented more in an actionable plan. She requested that we look for quick wins, less budget, less time, more impact so we don't have to wait for the long-term.

Member Staudt said the Walkable Novi Committee evolved out of the Sidewalk Prioritization Committee. He was a member and there was no such thing as a non-motorized master plan. There was a lot of vision but no money. He said one of the very first things they did was start building out the Eight Mile sidewalk between Beck and Napier, and nobody really lived there. The idea at the time was that we were going to connect to Maybury Park and someday have the ITC Trail. He said they built the Eight Mile sidewalk and over the years built the ITC Trail, but 14 years later we still haven't connected to Maybury Park. He asked how that was covered in this particular plan. Mr. Cox said there were a couple ways to connect such as having a connection along the

roadway and having a midblock crosswalk into the park at their north entrance. He said there's been discussion with the park managers about leading a trail from their entry road that would hook into their trail system. He said Northville is looking at making a connection to the park as well which would be a key part of hooking into that large regional trail system. Member Staudt said he heard that 14 years ago and we are no closer to it. He said that was a major priority to him and without that connectivity, the plan would not realize its full potential. He said he's learned that homeowners' associations and residents don't like pathways running through their backyard. He asked how that was addressed in this study. Mr. Cox said a lot of the open space that came part of a site plan approval actually restricts the type of pathway that could be put through an area. It allows nature trails, but not necessarily an 8-foot-wide paved trail. He said they've tried to respect that as they've located connections and identified the way that a lot of people get around by bicycling through the neighborhood roadways and ways to get from a neighborhood roadway to things like the ITC Trail. He said they're not proposing trails across someone's backyard but trying to stick to designated open space of right-of-way. Member Staudt said that was one of the number one things he's heard from residents is they don't want trails from my neighborhood directly between homes and from street to street, so that's important. He said another issue is not completing segments of major sidewalks that are highly rated to be finished. He said there has been a tremendous amount of discussion for years about finishing sidewalks. We have a lot of areas in Novi that have short segments where subdivisions were built, but there were older homes in between and those segments never got completed for a bevy of reasons. A lot of times it's because the right-or-way is blocked and a lot of times it's just very expensive. He asked what the plan's focus on finishing segments is. Mr. Cox said in the near-term plan, the neighborhood greenway looked at some of the key gaps that are in the system and how we can create the most impactful network with the fewest key gaps, filling in the key gaps, sometimes switching across the road by adding a midblock crosswalk. That whole network was also denied by where we saw the greatest need to provide non-motorized access. They prioritize based on the corridor and then create that core system. Member Staudt said he would personally like to see a lot of the gaps completed before we start doing anything else. He said his last comment is about having sidewalks on both sides of a street. A good example is Nine Mile Road between Haggerty and Meadowbrook. They had years' worth of discussion when they built the Nine Mile sidewalk and he thought they gave up federal dollars to make the sidewalk narrower so they wouldn't cut down as many trees. He said it left it as a much safer and long-term environmentally sound area. He said he saw there are suggestions about going across the street where there are primarily berms, where there isn't a place to put a 10-foot sidewalk, with the idea that in the long haul we'll putting sidewalks on both sides of the street. He felt very uncomfortable about having that in the plan, especially after they've studied it over and over. He said part of the issue of not having longer term Council members on some of the committees is that they don't remember the things that we went through years ago. He said he is opposed to trying to force sidewalks or pathways in areas that have long been determined as a very bad place to put them. If people are concerned now about what we're doing with roads to fix things, just wait. He said he is in support of the walkable idea that we've have in Novi for a long time. He and Council Member Mutch were the ones who started and pushed for it, but there are things that really concern him about

the plan, and he wasn't sure if they could fix it before they adopt it.

Mayor Pro Tem Casey said this has been a labor of love and commended everyone on the work to get resident input because that is critical. She said generally this was a very solid plan. She had concerns that she's expressed previously. She was seeking a list of items to prioritize, and they've got a good start. She was looking forward to the Mobility Committee having a chance to really go through some of those, prioritize those after we get the cost, but there are a couple of places in the plan where there are recommendations that don't read as recommendations. She said when they get adopted, it's going to look like this becomes Council policy in certain instances and she wasn't comfortable with that. One example was the idea of evaluating automatic counters. She thought it was a fantastic recommendation, but in the plan, it starts to look like it's a Council policy. She said a previous speaker spoke about the idea of sidewalks on both sides of the road and generally, that is a policy Council has held for many years, but there are places where it is not practicable. There should be language that says "where practical", and even more specifically, where we know with a level of certainty there's no likelihood of putting a sidewalk in. She said generally this was a rock solid plan. She thought some of the ideas he highlighted resonated with her, specifically what drove her to start talking about the fact we need a Mobility Committee instead of a Walkable Committee and a Roads Committee. So much of what is in the plan is getting the right combination of paying attention to the rest of the mobility around them. What concerned her was some of the recommendations looking like we're going to do every piece. She said they are ideas, but it's not phrased as an idea, so it looks like we are going to do all of it. There were a couple places in the plan where she thought needed work tweaking and it would make the difference.

Mayor Fischer said he must have been reading a different plan than his colleagues because he took a more critical approach to this plan. He said he's brought up concerns to the Walkable Novi Committee, so his comments shouldn't come as a surprise. He said the problem with doing a plan like this is that it grows legs. He said Mayor Pro Tem Casey mentioned that it becomes the policy or the recommendation of City Council. In 2011, the Council said the policy will be two sidewalks on every major road. He said a couple years ago he heard from residents on 10 Mile that the road was being re-done and they shouldn't put a big pathway there. He said he didn't get support and they ended up with a pathway, which may be great from a mobility perspective, but he didn't think the size was required to be that large. He said is also has an environmental impact when you drive down 10 Mile because a lot of nature was taken down all because someone, years ago, decided the City of Novi wants sidewalks on every single major thoroughfare on both sides. He said we know there are areas where a sidewalk just doesn't fit so to have an actual plan that shows maps where they know from a policy perspective that they don't want sidewalks on both sides is a disservice to the residents. He said if he were a resident along the south side of 9 Mile, the plan shows that we are putting a side path, which is an 8- or 10-foot pathway all the way down 9 Mile, he was not in favor of that. He said he will not support a plan or resolution that has that in it. He said that goes for some of the other proposals that are in the crosstown corridor, which is 11 Mile, 9 Mile, Taft Road, and Meadowbrook. He said it's the same thing. Are we going to put sidewalks on both

sides of Meadowbrook, including one that a side path that's 8- or 10-feet across? He said he did not support that and never will. He said the concept of the minor road stops, maybe the language needs to be tweaked, but it talks about having raised crossings at every single minor road stop. Every single entrance to every single subdivision along 9 Mile, Meadowbrook, is going to have a raised cross. He said they've head people talk about roundabouts being a waste of money. He said if he were talking to residents who have potholes in their roads, they're going to want the money going towards that over other things. He said he didn't think it was part of the planning process to look at this through a Novi specific lens as a city being built out of 50 years. He said that was disappointing. It's a great plan that pulls a bunch of best practices, but a lot of items in the plan don't match up with reality or a policy that he supports for the City of Novi. He said there are a couple heat maps that try to focus on where we should put our emphasis and it highlights areas where residents are more likely to be dependent on non-motorized travel. Apparently, there's some conglomeration of data, but the people in the City of Novi who are most likely to be dependent on non-motorized travel, based on demographics, poverty, and household type, is Fox Run. He said he's been to Fox Run plenty of times and he didn't think that was an accurate portrayal of what's going on there. He said they need other types of mobility, but to say they're most dependent on non-motorized trends is a misstatement. He said that shows once again another situation where this was probably put together with some data, but no one took that next step to analyze it and say, how does this really apply to Novi. He said he would not support the plan or the motion.

**Roll call vote on CM 24-03-35** **Yeas: Smith, Thomas, Gurumurthy, Heintz**
**Nays: Fischer, Casey, Staudt**

**3. Consideration of a resolution requesting Oakland County amend its agreement with People's Express (PEX) to add transportation services to the City of Novi.**

City Manager Cardenas said Oakland County put a measure before voters in 2022, which passed, and mass transit has begun to be offered in the city via SMART. Since the passage of the millage, the Older Adult Needs Committee has recommended expanding senior transit services for the older adult population in our community. The matter before the Council tonight is to pick the preferred operator for the door-to-door services. The city staff has done significant due diligence to date and believes People's Express (PEX) offers the best level of service for the older adult population along with residents with disabilities and for all other riders. Ridership fairs are set by the county and currently it's $2 for seniors and persons with disabilities, and $4 for everyone else. He said hours would be extended and days of operation would be extended as well.

Member Gurumurthy said when she looked at the whole PEX transition, one of the things that stood out was customer service. She said there was a paragraph about customer complaints and there is a number that riders can call if they have questions. She said she wanted to make sure that after the transition they didn't compromise on customer service. She asked what the current state of complaints were, such as the number of complaints, reasons, and response times. She said it's a good baseline to have in mind

before the transition. Evelina Taylor, Deputy Director of People's Express, explained there is a driver supervisor who handles complaints related to the driver and it's addressed by the next business day. The driver supervisor would also contact the driver. She said if the complaint is about an incident that happened in the vehicle, they have dash cam software and they can pull the footage to make sure it's documented accurately in an incident report. She said they deal with customer complaints immediately, but typically it's just feedback about what services people want to see. They don't really get complaints in terms of missed trips because they are diligent in making sure no one is left behind. She said sometimes they get compliments, which is awesome. She explained they have documentation and file all of the incidents. Member Gurumurthy asked how many customer complaints they had in 2023. Ms. Taylor said she didn't have the exact number, but they rarely get complaints. She added that they could set up a way to get direct feedback moving forward.

Member Smith said he was happy to see this on the agenda and thanked the staff for putting it together. He said contracting with PEX will address a lot of the issues they saw with the current older adult transit system. While it works great, it's understaffed compared to what PEX could do. He said it would cost roughly $2 million to reach the level of service that PEX can provide with our current transit system. We are currently budgeted around $170,000. He was glad to see that the Youth Council was represented because that's a group we also need to be serving. He said contracting with PEX makes the curb-to-curb service available for everyone in Novi for $2 to $4. He calculated we spent $170,000 in 2023 and provided roughly 14,000 rides, which equates to $12 a ride. He said if we decided to maintain a free service for seniors, we could either cut our budget to $30,000 or we could give about six times as many rides. He said he was hoping to see that as part of the discussion with PEX on how to address that issue.

**CM 24-03-36 Moved by Smith, seconded by Casey: MOTION CARRIED: 4-3**

**Approval of a resolution requesting Oakland County amend its agreement with People's Express (PEX) to add transportation services to the City of Novi.**

Member Thomas asked for an explanation about driver safety, how their training works, and how we know for sure that our residents are safe on PEX vehicles. Ms. Taylor said that have both an onboarding safety training process and recurring training. They have a safety trainer on site that works with the new drivers and it's a 4o hour work week for new hires to go through defensive driver, passenger safety, and sensitivity training. They have Taptco Paratransit operating training. They go through first aid and CPR. She said it's a whole work week of online training and on the road training. The safety trainer assesses all drivers to make sure they are physically capable of securing a wheelchair properly and safely. There is an assessment that is done for them to be able to go on the road. When they are on the road, the drivers are trained to be able to assess that new candidate to make sure they are interacting with the clientele and understand the expectations of the job. She said all drivers get background checks, and drug and alcohol screens. They have monthly driver meetings and an annual driver training where all drivers renew their training. They also have reoccurring training through the year with

the dash cam software. She explained if there is a coaching event where the driver maybe braked too hard or accelerated too fast, the driver supervisor and safety trainer can coach the driver to resolve the problem. She said that also have a corrective action plan if it is a medium safety event. Member Thomas said there were different levels of service they provide and asked if it was correct that they provide door to door service. Ms. Taylor said they provide curb to curb, but for those who need door to door service, they do provide that. Member Thomas asked what population that would be for. Ms. Taylor said people who have a mobility device or need assistance to get to and from the vehicle. Member Thomas asked if the city provides that today. City Manager Cardenas said yes, they do provide door to door service. There is a vetting process, and we don't enter a person's house.

Mayor Pro Tem Casey said this topic has been well discussed by the Older Adult Needs Committee and she was thrilled to see forward momentum. She asked if the drivers are required to have a CDL. Ms. Taylor said they have a mix of both chauffeur and CDL drivers, it just depends on the vehicle. Mayor Pro Tem Casey said she was intrigued by the dash cams because they provide safety for the driver and the riders. She asked if the riders were notified that there is a camera running or if there is any kind of privacy statement. Ms. Taylor said she didn't believe there was signage, but the camera is very visible. Mayor Pro Tem Casey asked how many instances they had where the block riders for being disruptive, cause damage, or are abusive. Ms. Taylor said they are very lenient on any type of suspension because oftentimes, PEX is their only solution to be able to get to appointments. Especially if it's a life sustaining appointment, they don't want to prevent someone from accessing that healthcare. She said sometimes a person needs an aide, like a relative or caregivers. They can connect them with different community resources who might be able to offer one. She explained that conversations happen before any type of suspension. Mayor Pro Tem Casey said using People's Express is going to offer a service to Novi residents 14 and older, not just like the service we offer which is only for residents 50 and older or those with disabilities. She said we're really opening the door for so many more residents and she was thrilled to be having the conversation. She said one of her colleagues asked about complaints and that's something staff will need to know and understand what's happening. If complaints are being raised by Novi residents about the driver, or not being able to get a ride, the city is going to want to be well aware of what's happening. She said her expectation was that they would provide regular reports. She said we have had our senior transit program for so long that our residents have an expectation of how service operates, and we are all well aware of what's happening. She said to be prepared to provide reports at the staff's request so we can fully understand how well the service is being provided. She said generally this was a service that we have provided, and she commended staff and the drivers for the work they've done. The movement to PEX is not in any way, shape, or form any kind of indication that we are less than happy with the service provided. This is just a chance to enhance it. She said she was still interested in understanding more details behind the transition plan. She said she liked the suggested 90-day transition. She loved the idea that we're exporting data over, so PEX has the information on our riders. It should be seamless for the riders. She will be looking for more information on what that transition is going to be like and how those 90 days will operate.

Member Heintz said he wanted to take a minute to recognize the awesomeness of this opportunity. They'll be able to expand from not only providing the service to aging adults, but everyone 14 and above without doing anything different because of the millage that was passed. He said he is looking forward to being able to work with PEX and being able to provide another resource and opportunities for people to get around Novi.

Member Staudt asked what amount of the $4.3 million that Novi is paying as part of the transit tax is PEX receiving for adding Novi to the contract. Ms. Taylor said they haven't worked out the budget adjustment but possibly $1.5 million. She explained a lot of that is looking at the demographics of the current ridership and costs that will influence the budget adjustment to the county. She added that nothing was confirmed but they are looking to get capital expenditures for vehicles, so they have the capacity for the riders. They have to look at what they are projecting with marketing and a campaign in the community. They would have projections, but most of those numbers haven't been worked out yet. Member Staudt asked if County Commissioner Raman, who was present in the audience, would answer a question. He said they just heard this service provider will get $1.5 million. He asked why those funds are not better served coming back into the City of Novi and letting us continue to run a program that we were doing on an extremely low costs basis. He asked what the County Commission's position was as to why they have refused to allow the City of Novi to do its own program. County Commissioner Raman said part of the reason is the millage passed and we're trying to get Novi connected to the rest of Oakland County. He said Novi is very good at delivering senior transit and they've done it successfully for years. The problem is if you travel much farther than Novi, you're limited in how far the residents can travel. Member Staudt said there was a period of time where he was in a disabled state, and he got rides for $4 to Plymouth Township. He said that is outside the service area that is being provided for by this service. He said he didn't understand because this isn't connected to SMART or other activities. They are very clear in their language on their website that they'll go outside their service area if that have capacity to do that. He said Novi could do a really good job with $1.5 million. We could buy all new buses, we could have full-time employees, we could have software. He said we were told point blank that wasn't an option and he'd like to understand why he can't get an explanation. He asked what percentage of the trips are outside your boundary area. Ms. Taylor said she would work with the Older Adult Needs Committee and provide that information. Member Staudt said all the questions he's asked about this proposal, nobody seems to have answers and he was concerned. He said one of his concerns was that our program doesn't currently allow 14-year-old to ride at any cost. The idea that we're going to allow for $4 a group of young students to get on a bus with 80-year-old folks who may be going to different medical procedures really concerned him. We have a physically challenged older adults program and now we're incorporating this into a transit program. It concerned him. He asked if other communities that they've taken over had a transit program like Novi. Ms. Taylor said prior to the millage, they contracted with communities individually. When the millage passed, the contract was transferred to the contract with the county. She said Novi has invested more than they've seen in the past. She said their company is usually the one going into communities and advocating for residents that this should be an investment. They didn't

always find established programs with people ready to invest back into their residents with transportation. Member Staudt asked if she was familiar with how many communities that are funding the transit millage that are greater than Novi in terms of dollars contributed. Ms. Taylor said she wouldn't be able to answer that. Member Staudt said we feel extraordinarily capable, especially with $1.5 million to run our own program, but we aren't even given that option. That option is limited to a handful of companies that were chosen by the county executive and the county commission. He asked if the drivers were part of a union. Ms. Taylor said no. Member Staudt asked if they anticipated going back to the county commission for greater funding or if they will raise the rates if their costs go up dramatically. Ms. Taylor said they have a contingency built in their budget for those fluctuations. Their organization also goes out and finds other funding sources. They are working with the county to access more of the state funding so it wouldn't be just the millage dollars supporting transportation in the communities. Member Staudt said he looked at their budget and this will be a big part of their budget moving forward. It's a big addition to their budget. He asked if they were a nonprofit organization. Ms. Taylor said People's Express is a 501(c)3. Member Staudt asked if the board was made up of local representatives. For example, $1.5 million would represent 30% to 40% of their budget moving forward if this occurred. He asked if they were going to invite members of our community to participate as members of their board. Since they represent a big part of our community, we should have some input as to the way you're run. Ms. Taylor said the board of directors is made up of various community members. They don't have direct seats that are allocated to community members, but they are open to inviting a representative from the community. She said the company really values that input. They want to be involved in community events so they can bring a vehicle and show what kind of services they offer. During the transition, they are looking for feedback from community residents as we as the city representatives. They have quarterly meetings with all of the community representatives where they get feedback on what's good, what's bad and just general thoughts. She said that's what's unique about them, that want to be cohesive and have hands-on engagement. Member Staudt said the contract is between Oakland County and People's Express, the City virtually has no voice in this.

Member Staudt asked administration if the intention was to liquidate the current senior transportation program. City Manager Cardenas said it will be brought back to City Council for consideration in terms of the Council's will and how they want to deal with those assets. There's a possibility of entering into an agreement with PEX to divest some of those assets, sell them outright, or maintain a portion of them for our own programming purposes. Member Staudt asked specifically if senior transportation, as it currently exists, remain. City Manager Cardenas said the intent is to keep senior transit in place until we have a complete transition to PEX, and then it will go away in its current form. Member Staudt said he was very opposed to this and didn't think it was good for the community. He said he didn't understand why we were being forced to move to a third-party system when we're fully capable of managing this system ourselves. He said he expected our county commissioner to be supportive of Novi being funded and providing a service that was Novi-focused and Novi run, but clearly, we have lost in this. Our residents have lost, our seniors are going to lose and 2-3 years from now, if this doesn't work, we will have nothing to start with.

Mayor Fischer said he couldn't believe, despite many emails, that they've gotten to this point where they are talking about a resolution to do this, to figure out what the actual cost to residents will be and it sounds like it's $1.5 million. We are currently providing a service for about $200,000, which equates to $14 per ride. He said he didn't know what all of the money would be going. Either you're going to increase the number of rides to more than a hundred thousand or we're funding something. He said to get to this point and finally start talking about dollars was crazy to him. He asked why they were even there. Why is City Council being asked to opine and have a resolution. It was his understanding that this was a contract between the county and this business. The county would be free to go ahead and enter into this contract without us, unless there's something in the legislation or the millage that says the city must sign in. City Attorney Schultz said he was not aware of anything in the legislation or the millage, but this is the process to get Oakland County to add us to their contract. Mayor Fischer said it's an Oakland County process to force the Council to make a resolution, but legally there's really no requirement other than the process, correct? City Attorney Schultz said not that he was aware of. You indicate to the county, if the resolution is adopted, that PEX is an adequate provider. Mayor Fischer said the fact that we've gotten this far without talking dollars and cents shows how premature we are in this discussion. When the millage was passed, there were a lot of different talks about micro mobility and subsidies for things like Uber. He said he loved the idea of our system being able to continue with some sort of subsidy from the county and he didn't think we'd exhausted all of those discussions. He said he thought one company came along and we're just going to jump on the contract and spend $1.5 million of the $4.4 million. He said this is way too premature. He said we've spent years, probably decades, as a Council building up our senior services and senior transportation. He said when he talks to senior citizens, they talk about the relationship that have with the drivers and they're comfortable with those people. He said if he were to guess, being able to know who's coming to take care of them, as opposed to the benefit of having additional hours, is what matters. He thinks they like what they have and they're comfortable with what they've had. He said he was nervous about this proposal and didn't think we'd vetted it to the extent that we should for our seniors. He didn't feel like the question had been fully answered so he asked the administration if this gets approved, is the intention to shut down senior transit services. City Manager Cardenas said that was correct once we get PEX up and running. There is a tentative start date of July 1st for PEX and we're not shutting down tomorrow.

Member Staudt asked Director Muck if he knew there was going to be $1.5 million spent on the City of Novi. Director Muck said he did not know the exact amount. Member Staudt asked how he would be able to run a senior transit program with $1.5 million. Director Muck said they included that information in the packet and if they wanted to maintain that within the city, it would cost us around $1.5 to $2 million to hire full-time staff, full-time drivers, match the hours of service, and expand the number of vehicles. He added that $1.5 million would be a good start.

Member Thomas said a recommendation was made to move forward and they discussed that. She asked Director Muck to talk about the due diligence the City has

done prior to recommending PEX. Director Muck said the city only received two proposals and they were vetted by a mix of staff from several departments and rated on several categories. PEX was the highest level of service by far. He added they did an on-site visit to the PEX headquarters and had extensive conversations with their representatives. Member Thomas asked if during that process, did they give any thought to maintaining Novi as one of those options. Director Muck said based on the Older Adult Needs Committee conversations, they talked significantly about expanding hours, not confusing the residents by having multiple services, it would be very confusing to the residents. He said they talked with Youth Council and were surprised that the response from the Youth Council as to how much safer they would feel using a service like this, which was vetted and accepted by the City of Novi, rather than a private provider like Uber of Lyft. Member Thomas said if they do move forward with PEX and there ends up being an issue or problem with the service, what are our options to make changes. City Manager Cardenas said they've been told by the county that in order to make a change to another provider that's approved under the county's list of providers, the only option would be the Western Oakland Transit Authority (WOTA). SMART has, to this point, not expressed interest in offering this kind of service for us. Member Thomas noted that she heard from staff that they were highly confident after doing the due diligence about the service that would be provided. We have other opportunities not having our buses used for senior services. She said everyone wants to make sure the seniors get the top top-notch service they expect, and she believed that would continue and it doesn't necessarily have to be provided by the City of Novi. She said she strongly believed we outsource things to companies all the time. They have their area of expertise, and we hire consultants and engineers. She said she viewed this in the same way. If you have a company that is focused on doing one thing and doing one thing well, they can do that reasonably. That gives us opportunities to be able to expand some of the transit and senior services. We're looking at the ability to do day trips. She asked the administration if the intention was to wind down the program and get rid of the assets or will that come back to Council. City Manager Cardenas said it was his intention to bring it back to City Council for consideration on what happens with those assets and to come forth with a transition plan to confirm how we're going to do this. They will make sure the starting date is realistic and possibly present a voucher program that we work out with PEX that could continue the free rides program we currently have. All of those things will be brought back. Member Thomas said she believed that we could maintain the level of service to our seniors and that we have mechanisms in place to ensure that we're getting the level of service that our seniors require. She personally liked the idea of extended hours and being able to provide a broader area. She said she was ok with 14-year-olds being able to get transportation, it's a good thing. She said she would be supporting the motion.

Mayor Pro Tem Casey said there was a map in the packet that shows their current boundaries, but she understood the boundaries will expand to include our current boundaries as well. Ms. Taylor said currently they are looking to maintain those boundaries covering the ten-mile radius from the west and the north, but east and south would get into the Plymouth and Canton area, which would not be covered under the flat fair. She said if, for some reason, they are unable to do that trip they could help the resident book an Uber or a Lyft. She said a huge part of the company is making sure

people are serviced on their very first call. Mayor Pro Tem Casey asked if there is a consideration for boundary expansion in 2025. Ms. Taylor said it would be based on the feedback of the riders and the demand. She said they look at when riders are going to out of the distant area. One example is the U of M health system, people may have special appointments in Washtenaw County. She said staying with the current boundaries will be the most seamless for residents this year, and they can look at expansion for next year. Mayor Pro Tem Casey asked how many drivers there are on staff. Ms. Taylor said there are 40, but they service areas other than Oakland County. Mayor Pro Tem Casey asked how likely the drivers would become consistent to Novi. Ms. Taylor said some of their drivers are retirees who live in Oakland County, and she is confident that every driver has a relationship with every client. She gave examples like remembering birthdays, grievance cards, etc. She said the personalized connection is there. Mayor Pro Tem Casey said she believed the expansion would be better for residents overall. Although there may be challenges to a transition of any kind, she is counting on Ms. Taylor's staff, and the Older Adult Services leadership, to be very focused on how this transition runs. She added she is confident that any challenges will be eliminated as quickly as they arise.

Member Heintz asked who decides what the contract entails, and how much the service will cost once the Council passes the vote. Ms. Taylor said the resolution is the first step, then the Council can deep dive into the data, and the company will work with them, Older Adult Services, and the County. She said this is the first step in formalizing a partnership for the company to engage with the City on a more formal level, and this would be the first of many meetings. Member Heintz explained he wanted to know more about the next phase of finalizing the parameters of the contract, the exact amount of money it would cost, and whether there would be a conversation between the company and the County. Ms. Taylor said the budget adjustments themselves are worked out between the County and themselves as the provider. She said the current expenditures and ridership levels will influence projections of what they need to adjust for the budget. Eli Cooper, Oakland County's Transit Manager, said he will be working with Evalina Taylor and the City to create the parameters of the proposed contract for Council consideration. He said there is a small group of staff at the County level with the capabilities to understand the various components of the type of services that People's Express provides. He said they will look at their forecast based on the previous ridership and that will be looked at with a crisp eye to ensure that there is an adequate amount of service for the community. He explained that the parameters, charges, and mileage to be delivered are reflected in the request that was prepared for the Council. He said historically, in the first year each of the operators had come back for an amendment, most of them reallocating, because they were offered more resources than the services that they could provide. He said the resources made available to the People's Express will be contingent upon the information the Council provides them and their assessment of that including projected longer and more trips. He said the number of trips and how far those trips are going, because the amount of distance correlates to the amount of labor it takes to deliver that person to their location, is not well known right now. He said they would create a contingency and have an opportunity to make amendments if need be.

Member Gurumurthy said she would like to go over some of the stated problems. She said there have been people younger than 70, needing rides, and now People's Express will be offering rides to even high school students and offering weekend hours. She said we could explore PEX for the different problems stated. She said they are not putting an end to the current senior transportation without piloting the program. She offered that the item to come back to the Council in possibly three months after they pilot and understand the program. She said if it had already been six months, what would be done? She asked if the Council would have the opportunity to close everything, and said this part was not clear. City Manager Cardenas said the plan would be to work with the current staff to maintain them until the July 1st transition. But, if they do a three-month transition after July 1st, not all of the drivers necessarily may want to go to People's Express. He said a trial period is something the Council could explore as well, as that is what is being done in Independence Township currently. He said they are operating their system, and doing a pilot with People's Express to see how it works out. He offered that it is unknown whether the driver pool would hang out for three months and then come back, or if they would immediately be onboarded to People's Express. He said we could maintain our vehicles, but our employment pool would be difficult to maintain. Member Gurumurthy said there are some issues if you run the programs parallel. She said she would be comfortable if she saw a pilot and could say the customer service is good, residents are happy, and you can close. She said if the programs do run parallel and there is a problem, is there a way for a solution? She said she would like to request to see if that is a possibility because she is open to exploring People's Express but is not comfortable saying they are done with the current senior transportation.

Mayor Fischer asked how many rides were given in the last trailing 12 months by People's Express. Ms. Taylor responded that there were around 25,000 rides for the seven communities. Mayor Fischer asked what the amount was from the county for those 25,000 rides. She said they took over the contract with the county in September. Before then, they were not a part of the initial rollout of the county millage. She expressed she would invite the Council to talk to the neighboring communities about the experience of not initially being part of the millage, and then being adjusted to have People's Express included. She said the County contract started in September, so they had 4 months of budget. She said the January 2024 budget is just shy of 2 million, including capital expenditures. Mayor Fischer clarified that by contracting, the City of Novi would increase ridership by almost 50%. Ms. Taylor said as a company, People's Express provides much larger ridership numbers working in Washtenaw County, Livingston County, and a partner with the City of Detroit. Mayor Fischer expressed to drop our residents into doing this program in 90 days and increase the ridership by 50% is a lot for that company to take on and it is a risky plan to completely shut down our City service. He added there are very few options for a transportation service that can handle Novi. He described WODA and said it was inadequate as a senior transit option. He said this is like putting all of your eggs in one basket without a backup plan. He asked how we would be able to revamp our senior program and rebuy seven buses with the shortages that we are facing. City Manager Cardenas asked Director Muck about the lead time on purchasing vehicles if they had to revamp the program. Director Muck said it is about a year to get seven

vehicles back up and running at about $80,000 a vehicle. Mayor Fischer clarified that it would be about half of a million dollars to try to re-up the feet in a year. Director Muck added that we could come back to have a discussion with the Council about changing the current staffing model of all part-time employees. Mayor Fischer added that if we go down this patch, we still have to subsidize out of our budget for our seniors to get a free ride, which will be very disappointing with the amount of money that Novi residents put into the county and how much money is going from the county to this program. He said the fact that the city could still have to pay the $2.00 if the County and PEX can't figure it out, and then it comes back to Council, he will be very disappointed. He said this is still a very early strategy. He said he loves outsourcing if it could save us a little money such as hiring some of our cleaning facilities, or people to help our DPW with plowing. He said he wouldn't outsource our people or our Parks Department.

**Roll call vote on CM 24-03-36** **Yeas: Thomas, Casey, Heintz, Smith**
**Nays: Staudt, Fischer, Gurumurthy**

**CONSENT AGENDA REMOVALS:**

**H. Consideration of approval of the Beautification Commission's recommendation on the Neighborhood Entryway Enhancement Matching Grant Program to award the requested grant amount for the following neighborhoods upon successful completion of the entryway work depicted in the applications: Village Oaks ($5,000.00) and Walden Woods ($2,526.50).**

Mayor Pro Tem Casey said she removed this item because this program impacts her neighborhood and subdivision. She lives in Village Oaks and one of the signs is at the end of her street. She disclosed that she is not on the subdivision board. She had no conversations with anyone in the subdivision about the grant program and application. She said she just wanted to go on record to say that she has had no involvement in this process and can be completely impartial on the issue.

**CM 24-03-37 Moved by Casey, seconded by Fischer: MOTION CARRIED: 7-0**

**Approval of the Beautification Commission's recommendation on the Neighborhood Entryway Enhancement Matching Grant Program to award the requested grant amount for the following neighborhoods upon successful completion of the entryway work depicted in the applications: Village Oaks ($5,000.00) and Walden Woods ($2,526.50).**

**Roll call vote on CM 24-03-37** **Yeas: Thomas, Fischer, Casey, Gurumurthy, Heintz, Smith, Staudt**
**Nays: None**

**AUDIENCE COMMENT:**

Anna Gaden said she was an active biker around Novi until about a year ago, but through the years was stymied many times by how unconnected all the paths were. She said a ten-foot-wide path is not needed, but we need to connect the pieces we have. She said to spend the money on connecting the sidewalks we already have, not buying new ones.

A member of the audience said when she spoke to Rebecca, Project Engineer, she was directed to the project plan and in that plan, there was no mention of the removal of any of the trees that are now marked for removal. She said from a resident's perspective, there is no way that they could have found this project plan online and read it and had any idea that the trees were being removed. She said when she asked Rebecca if the trees were going to be removed, she was told if it isn't in the project plan, it 'probably isn't going to happen'. She reiterated that taking down the trees is not in the plan.

A member of the audience said a lot of people at the meeting are against the Nine Mile Road Rehabilitation project. He said the Council heard from the people and they do not want the road widened, or the trees cut down. He said there was nobody there that support the project.

**COMMITTEE REPORTS:**

**1. Older Adult Needs Committee**

Mayor Pro Tem Casey said the Older Adult Needs Committee met last Monday. The focus group response was that there was not a lot of diversity, and they wanted to make sure they sought some input from additional residents. They had a group discussion with some of the older residents who were South Asian. She said it was a great conversation. The next meeting is on the following Monday, and the topic will be about what advocacy looks like going forward, and what kind of group or committee needs to be informed when this committee ends.

**MAYOR AND COUNCIL ISSUES:**

**1. Nine Mile Road**

Member Staudt said he is not in support of not spending a million dollars of Federal money, but he thinks it is important to know all the pieces to this, and this is an opportunity for a response to the audience, considering they don't normally respond. He asked Jeff Herczeg, Director of Public Works, to explain some of the history of this project. For example, when the Federal government went out and sent the grant, from there at what point did the removal of the trees become a reality in terms of the planning process? He added there was no discussion of tree removal at their meeting a year ago in relation to the project. Director Herczeg explained that the money is not a grant, but it is a federal aid committee that was Oakland County-based, called the CBTS. He said the funds were awarded in 2021 and obligated to 2024 as the construction year. He said as far as the design and the cutting of the trees, that isn't finalized yet. He explained that MDOT has

not provided them with 100% solid plans. He said they are going through something called the local agency, arguing the federal funding, going through a review process entailing safety recommendations and there are a lot of things that must be approved in the design. The design is in the final stages. He said the reason the specific trees are marked is there is a condition with long-eared bat trees that need to be removed between certain dates, so they do not disrupt the habitat. He said he doesn't suspect the project will be constructed this year, because funds are not available in the budget until July 1st. Member Staudt asked if he planned to cut the trees by March 31st. Director Herczeg said it is going to either be by March 31st or after November. He said the idea was to have them down to compensate for the contractor's timeline. Member Staudt asked if anybody involved in these decisions looks at the historical nature of our resources. He said this is something that a lot of people are emotional about. He added that previously they had excruciating plans to build things around the trees, and now it seems like we are just cutting them out. He asked if there was a way to review the plan and at least save a portion of the trees or implement a plan for putting them back in. Director Herczeg said after the project, there is a plan to look at it with the forester and come up with a plan. Member Staudt said he wants this done in advance. He said he would ask to find something short of removing all the canopy trees and to have a safe and passable road. Director Herczeg added that there must be miscommunication in regard to the tree replacements. He said they are not added to the project, because it would be non-participating and would be more efficient to do it when the project is done. He added that you don't want to put 24-inch in diameter trees in a crash zone six feet from the curb. He said you exclude the trees and then come back to it later like they have done previously with projects such as Wixom Rd., Taft, and 10 Mile Rd. Director Herczeg said they go to the residents and ask if they want a tree and what type. Member Staudt reiterated that he would like a plan to be in place prior.

Mayor Pro Tem Casey said when there are road projects, the Council isn't generally involved at this level of detail. She said she understands the feedback from residents and agrees that the tunnel of trees is awesome. She said she also agrees with the safety concerns on that road. She added that she is grateful they are talking about Nine Mile and that if the work isn't being done this year, let's be clear to leave the trees. She added that doesn't mean they won't come down next year. But if they are not doing construction this year, they shouldn't take down the trees this year. She said she understands there is a window, but this gives them time to do a little more due diligence. She asked if they needed a motion on that direction. City Manager Cardenas added that they will follow the direction and wait until after and come back with some other ideas in terms of planning.

Member Thomas asked Director Herczeg why they do the road improvements and landscaping separately and asked him to clarify. Director Herczeg said the federal process and the local agency process include participating and not participating funds. He said additional landscapes would be outside the scope and would not be participating. He added it makes it more difficult to include inside of the contract. He said we prefer to have control over what's going in by our people doing the design, talking to residents, and doing it cheaper rather than using the road contract. Member

Thomas asked if it would be possible to have parallel contracts, so there is at least a preliminary idea of what we think we would need to replace or how the city would mediate anything that needs to be removed or any problems that may exist. Director Herczeg said that is the direction that his team is going.

Member Smith said he is glad they are not taking the trees out this year. He said it sounds like there is still some room for design in that area and save as many trees as possible, and if we replace them, to do so with the most mature tree possible, not a sapling that will be fully grown in 50 years.

Member Gurumurthy said she heard the residents saying there was a lack of communication, and they didn't even know the trees were coming out. She asked what the normal process of communication is so that they don't realize something like this just weeks before it happens. Director Herczeg said on a major road project such as this one, the trees are all on the right of way. He said it is not like a neighborhood road where the impact is directly in from of the residents. He said he realizes the impact on their frontage and subdivisions. Communications are on the website, projects that are in the CIP, and trees are marked. Member Gurumurthy added that in the future there is an opportunity for a few months to give residents to react. She asked him to think through what they could do to alert the Council and residents to a situation like this.

Member Heintz asked Director Herczeg if this project is finalized or if there is potential for feedback from residents and the Council. He offered that potentially it is only segments of the road that need to be widened and tapered. He said the intersection of the three roads of Cranbrooke Dr., Sunrise Blvd., and Heatherwoode creates the offsetting of Heatherwoode and Sunrise, creating a left turn lock problem. He said as Member Staudt has pointed out, everyone is aware of the safety problems on Cranbrooke Drive. Director Herczeg said the profile or exhibit provided is the recommended design, if it is shrunk there will be trade-offs safety-wise. Member Heintz said that based on the feedback of residents, it could be further examined and could be beneficial to everyone.

Mayor Fischer said for clarification, Nine Mile Rd. to Haggerty Rd. is not being widened. The main widening is this 1400-foot section driven by three subdivision roads all hitting Nine Mile in a very close proximity, causing safety concerns from an engineering perspective. Director Herczeg confirmed the statement was correct. Mayor Fischer asked Director Herczeg to clarify the concept of a crash zone where the trees currently reside. Director Herczeg said generally you don't want fixed objects within what's referred to as the crash zone in the right of way. He said on some occasions there still are, and when safety adjustments are made typically, they are taken out. He said there are large existing trees in the crash zone currently. He said they could pose an infrastructure problem. He added that the trees are large, and their roots are likely the cause of the condition of that road, and these types of projects are driven by the condition, and safety is a second to the drive for the road rehabilitation. He said Nine Mile is one of the poorest-rated major roads in the city, patched together and cracks sealed. He said the main focus is the repair of the road for the entire mile stretch, the safety issue is the 1400 feet where all of the subdivisions intersect. Mayor Fischer clarified that the situation is similar to when the

trees start damaging the sidewalks and you have to lose some of the trees in order to repair the sidewalk. Director Herczeg said it is very similar and they are doing this for the long-term benefit of the new road. He said the trees have impacted electric service, sewers, sanitary sewers, sump pumps, and edge drains where there is head root growth. He said the trees can coexist with infrastructure in the right place. He said right now and long term, the priority has been the asset value of the road and fixing the road. Mayor Fischer said he is not looking to kill the project, there are getting 500 or a million dollars from federal funding and cannot just move over to another road. Director Herczeg said the Mayor was correct. Mayor Fischer added that they are trying to make decisions that are not just good for today, but for 10, 15, 20 years down the road. He said he would hate to lose some of the trees, and he knows that is something that is being looked at, but if it impacts safety, he will err on the side of keeping people safe in that general area. He said there should be a little more emphasis on getting a plan done sooner. He added that if it costs more money to provide mature trees, he is willing to pay it. He said we owe it to the residents to he ahead and minimize the aesthetic impact.

**COMMUNICATIONS**

**ADJOURNMENT** – There being no further business to come before Council, the meeting was adjourned at 8:42 P.M.

_____
Cortney Hanson, City Clerk

_____
Justin Fischer, Mayor

_____
Transcribed by Alyssa Craigie,
Administrative Assistant

Date approved: April 8, 2024

# CITY OF NOVI CITY COUNCIL
# APRIL 8, 2024

**SUBJECT:** Approval of employee contract between the City of Novi and Jan Ziozios as the City Assesor of the City of Novi, Michigan.

**SUBMITTING DEPARTMENT:** City Attorney

**BACKGROUND INFORMATION:**

City Council instructed the City Attorney and Mayor to negotiate an employment agreement with Jan Ziozios, current Deputy Assessor, for the position of City Assessor.

The contract is within the compensation parameters established for this position that City Council has direct oversight.

**RECOMMENDED ACTION:** Approval of employee contract between the City of Novi and Jan Ziozios as the City Assessor of the City of Novi, Michigan.

# EMPLOYMENT AGREEMENT

THIS AGREEMENT is made and entered into this 8th day of April, 2024, by and between the City of Novi, a Michigan municipal corporation, hereinafter referred to as the "Employer," and Janeene Ziozios, hereinafter referred to as the "Employee," both of whom understand as follows:

R E C I T A L S:

Employer desires to retain the services of Employee as City Assessor of the City of Novi, and to establish certain terms of compensation and benefits, conditions of employment, and working conditions for Employee; and

Employee desires to accept employment as the City Assessor of the City of Novi subject to such terms and conditions.

NOW, THEREFORE, in consideration of the mutual covenants herein contained, Employer and Employee agree as follows:

Section 1. Duties

Employer agrees to employ Employee as City Assessor of the City of Novi to perform the functions and duties specified in Section 4.11 of the Charter of the City of Novi and to perform such other legally permissible and proper duties and functions as the City Council shall from time to time assign.

Section 2. Term

A. Employee is appointed and employed as City Assessor for the City of Novi, with the effective date of her employment as City Assessor under this Agreement being April 8, 2024, the date of her original employment as City Assessor. The appointment is for an indefinite period of time. However, nothing in this Agreement shall prevent, limit, or otherwise interfere with the right of the City Council to terminate the services of Employee at any time, with or without cause, subject only to the provisions of the City Charter and any other applicable laws or City policies, and the provisions set forth in Section 3, Paragraph A, of this Agreement.

B. Nothing in this Agreement shall prevent, limit, or otherwise interfere with the right of Employee to resign at any time, from her position with Employer, subject only to the provisions set forth in Section 3, Paragraph B, of this Agreement.

C. Employee agrees to remain an exclusive employee of Employer, and agrees not to accept other employment or to become employed by any other employer while this Agreement is in effect. The term "employed" shall not be construed to include occasional teaching, writing, consulting, or military reserve service performed on Employee's time off.

Section 3. Severance Pay

A. In the event that Employee is terminated by the City Council, and during such time Employee is willing and able to perform her duties under this Agreement, then Employer agrees to pay Employee four (4) months' salary as severance pay. Notwithstanding the foregoing, in the event Employee is terminated because of her (i) conviction of any felony; (ii) conviction of a misdemeanor that would reflect negatively on the City (such as, but not limited to, an offense involving drug or alcohol abuse or sexual misconduct); (ii) conviction of any illegal act involving personal gain to him or affecting the performance of her duties under this Agreement: (iv) willful misrepresentation to the City, either in connection signing this Agreement or the performance of her duties; (v) willful misconduct or insubordination; (vi) breach of this Agreement; (vii) violation of the City Charter or ordinances or regulations adopted by the City Council; or (viii) permanent disability such that she becomes unable to perform her duties, then Employer shall have no obligation to pay for aggregate severance pay designated in this paragraph. Employee shall also be compensated for all accrued vacation time and personal business time, and other accrued benefits pursuant to the City's employee benefits policy in existence at the time this Agreement is terminated.

B. In the event Employee voluntarily resigns from her position with Employer, Employee shall give Employer sixty (60) days advance written notice, unless the parties agree otherwise. In the event Employee voluntarily resigns from her position, she shall not be entitled to the severance pay described in Paragraph A, above, but shall be compensated for all accrued vacation time and personal business time, and other accrued benefits pursuant to the City's employee benefits policy in existence at the time this Agreement is terminated.

Section 4. Salary and Benefits

A. Employer agrees to pay Employee for her services rendered pursuant to this Agreement an annual base salary of One Hundred and Twenty Six Thousand Four Hundred Nine ($126,409.00) Dollars, payable in installments at the same time as other general employees of the City are paid, with a one-time stipend or lump sum payment of $3,795.00 payable on or before April 19, 2024. The City agrees to review this base salary and/or other benefits of Employee at the same time as the Employee's performance evaluation provided for in Section 5 of this Agreement.

B. All provisions of the City Charter, City Ordinances, and all regulations, policies, and rules of the Employer relating to the vacation, sick leave, retirement and pension system contributions, deferred compensation, life insurance, dental insurance, optical reimbursement, medical and hospitalization insurance, disability insurance, and other fringe benefits and working conditions as they now exist or hereinafter may be amended shall also apply to Employee as they would to other department heads of the City, except as otherwise provided herein. Employer reserves the right to alter, modify, or terminate any or all of its benefits, specifically including insurance plans, provided to non-union employees during the term of this Agreement and Employee may not rely on any specific coverage or term of such plans or benefits being maintained by the Employer solely for Employee's benefit. Changes to the benefits provided to non-union employees after the date of this Agreement shall also apply to Employee.

Section 5. Performance Evaluation

Employer may annually review the performance of the Employee under a process to be determined by Employer, with the first such evaluation being in or around July, 2025. Employee and Employer are committed to and will provide feedback and interim reports and/or evaluation reports in such form as are mutually agreeable throughout the year, as a means of communicating and improving the performance of the organization without the need or expectation for additional compensation improvements.

Section 6. Automobile

Employer agrees to pay to Employee, during the term of this Agreement and in addition to other salary and benefits herein provided, the sum of $4,800.00 per year, payable monthly ($400.00 per month), as a vehicle allowance to be used to purchase, lease, own, operate, and maintain a motor vehicle. Employee shall be responsible for paying for liability, property damage, and comprehensive insurance coverage upon such vehicle and shall further be responsible for all expenses attendant to the purchase, operation, maintenance, repair, and regular replacement of said vehicle.

Section 7. Other Terms and Conditions of Employment

The City Council, in consultation with the Employee, shall fix any such other terms and conditions of employment, as it may determine from time to time related to the performance of Employee, provided such terms and conditions are not inconsistent with or in conflict with the provisions of this Agreement, the City Charter, City Ordinances, and/or any other law.

Section 8. Notices

Notices pursuant to this Agreement shall be given by first-class mailing with the United States Postal Service, postage prepaid, addressed as follows:

(1) Mayor of the City of Novi, Clerk of the City of Novi, 45175 W. Ten Mile Road, Novi, MI 48375; and

(2) Janeene Ziozios, [redacted]

Alternatively, notices required pursuant to this Agreement may be personally served in the same manner as is applicable to civil judicial practice. Notice shall be deemed given as of the date of personal service or as of the date of first-class mailing of such written notice with the United States Postal Service.

Section 9. General Provisions

A. All provisions of the City of Novi Personnel Policies, as they now exist or hereafter may be amended, shall apply to Employee as they would to other non-union exempt employees of Employer, unless otherwise provided in this Agreement.

B. The text herein shall constitute the entire agreement between the parties.

C. This Agreement shall be binding upon and inure to the benefit of the heirs at law and personal representatives of Employee.

D. A waiver by Employer of a breach of any provision of this Agreement by Employee shall not operate or be construed as a waiver of any subsequent breach by Employee.

E. This Agreement shall become effective April 8, 2024.

F. If any provision, or any portion thereof, contained in this Agreement is held unconstitutional, invalid, or unenforceable, the remainder of this Agreement, or portion thereof, shall be deemed severable, shall not be affected, and shall remain in full force and effect.

IN WITNESS WHEREOF, the City of Novi has caused this Agreement to be signed and executed on its behalf by its Mayor and City Clerk pursuant to authorization of the Novi City Council, and Employee has signed and executed this Agreement, both in duplicate, the day and year first above written.

CITY OF NOVI

_____
Justin P. Fischer, Mayor

_____
Janeene Ziozios

# CITY OF NOVI CITY COUNCIL
# APRIL 8, 2024

**SUBJECT:** Approval of request for Pyrotechnics Display Permit by Brightmoor Christian Church to be operated by James Herr, on Thursday, April 18th and Friday, April 19th, 2024.

**SUBMITTING DEPARTMENT:** City Clerk

**BACKGROUND INFORMATION:**

Brightmoor Christian Church would like to enhance upcoming programs with the addition of a pyrotechnics display on Thursday, April 18th and Friday, April 19th, 2024.

The pyrotechnics show will be launched from the worship center stage.

The Michigan Fireworks Safety Act requires the applicant to furnish adequate insurance coverage with the Fireworks Permit Application. The Certificate of Liability Insurance is acceptable and provides an endorsement listing the City of Novi as an Additional Insured.

The Novi Fire Department has conducted a site inspection, and an additional inspection will occur once the show is complete. Additional Police and Fire Department personnel will be assigned for the duration of the event to assure that all safety measures and processes are adhered to according to the fireworks permit.

**RECOMMENDED ACTION:** Approval of request for Pyrotechnics Display Permit by Brightmoor Christian Church to be operated by James Herr, on Thursday, April 18th and Friday, April 19th, 2024.

## 2024 Permit for Fireworks Other than Consumer or Low Impact

| Authority: 2011 PA 256 | The **LEGISLATIVE BODY OF CITY, VILLAGE OR TOWNSHIP BOARD** will not discriminate against any individual or group because of race, sex, religion, age, national origin,color, marital status, disability, or political beliefs. If you need assistance with reading, writing, hearing, etc., under the Americans with Disabilities Act, you may make your needs known to this Legislative Body of City, Village or Township Board. |
|---|---|

*This permit is not transferable. Possession of this permit authorizes the herein named person to possess, transport and display fireworks in the amounts, for the purpose of and at the place listed below only through permit expiration date.*

TYPE OF PERMIT(S) (Select all applicable boxes)

☐ Agricultural or Wildlife Fireworks ☒ Articles Pyrotechnic ☐ Display Fireworks

☐ Public Display ☒ Private Display

☐ Special Effects Manufactured for Outdoor Pest Control or Agricultural Purposes

**FOR USE BY LEGISLATIVE BODY OF CITY, VILLAGE OR TOWNSHIP BOARD ONLY.**

PERMIT(S) EXPIRATION DATE (ENTER DATE OF EXPIRATION)

NAME OF PERSON PERMIT ISSUED TO: James Herr

AGE (18 YEARS OR OLDER) ☒ YES ☐ NO

ADDRESS OF PERSON PERMIT ISSUED TO: 40800 W. 13 Mile Road, Novi MI 48377

NAME OF ORGANIZATION, GROUP, FIRM OR CORPORATION: Brightmour Church

ADDRESS: 40800 W. 13 Mile Road, Novi MI 48377

NUMBER AND TYPES OF FIREWORKS (Please attach additional pages if necessary)

(4) Tracer Comet 20'x 10 shots - Blue
(12) Airburst Large
(16) 1/2 sec x 20' Silver Gerb
(8) Mine 25' Gold Strobe
(12) 1/2 sec x 6' Silver Gerb

EXACT LOCATION OF DISPLAY OR USE: Main Worship Center Platform

CITY, VILLAGE, TOWNSHIP: Novi

DATE: 4/18 + 4/19/24

TIME: 7:00pm

BOND OR INSURANCE FILED ☒ YES ☐ NO

AMOUNT: 900,000

Issued by action of the Legislative Body of the

☐ City ☐ Village ☐ Township of _____ on the ____ day of _____, 2024.

_____

(Signature and Title of Legislative Body Representative)

***THIS FORM IS VALID UNTIL THE DATE OF EXPIRATION OF PERMIT***

# Instruction/Manual

Theatrical pyrotechnic articles of category T1 Articles

## PYROTECHNIC – AIRBURST TYPE C – LARGE SILVER SINGLE

**Airburst - Large Silver Single**

CE 0589

**0589-T1-0050**

| | |
|---|---|
| **Product name: Airburst Large Silver Single**<br>**Registration number: 0589-T1-0050**<br>**Category: T1**<br>**EC Type-Examination Certificate no. : 0589.PYR.0273/11** | **Description of Effect:**<br>The effect is generated without delay after ignition with a noise / bang. The contained pyrotechnic composition produces a bang and sparks which are ejected in all directions. The respective color or type is indicated on the label of the pyrotechnic article. |
| **Technical data :**<br>NEQ: approx. 8,1g<br>Outer diameter: approx. 30mm<br>Mid. effect height : 4m<br>Mid. radial effect width : 1,8m<br>Soundlevel max. at 8m : 120,0db (Almax)<br>Max. Distance of burning or incandescent material: 0m<br>Max. Distance of hazardous debris : 0m | **Technical data igniter/match :**<br>**Type of Bridge wire igniter: A**<br>NEQ: 0,005 g<br>Max. Test current: 0,025A<br>Minimum firing current : 0,5A |
| **Storage:**<br>Dry and cool . Protect from moisture.<br>Store according to national explosive law<br>Division: 1.4<br>compatibility group: G<br>Transport classification : 1.4 G<br>Name and UN-Nr.:UN0431, ARTICLES PYROTECNIC | **Failure and defect items and Disposal:**<br>Don't use failure, defect articles or wet articles.<br>Disposal according to national provisions or return to manufacturer |

**Instruction for safe handling:**
**Hang article up high!**

**Safety distance direction of Effect: 8m**
**Safety distance radial: 4m**

1. **Connect only to currentless firing cables and ignition device.** Connect cable only to currentless ignition systems and make sure the device is switched off and the safety key must be in possession of the responsible users.
2. **Hang article up high!** Burning of under fire resistant underlay. When using the item over an audience, several items should be pre-fired to ensure that the safety margin is adequate. The atmospheric conditions may change depending on the place of use and affect the effect sizes.
3. During use, absolute **no smoking and no open light or fire** at and near the burning-off place.
4. Only ignite the pyrotechnic article if there is an unobstructed view of the burning site and the safety instructions are complied with.
5. Take precautionary measures (such as shutting off danger areas, providing fire extinguishers, providing first aid, marking the area with no smoking signs, etc.).
6. The items shall be used only for technical purposes within stage, film and television productions, as well as within music and show productions.
7. Minimum age limits according to Directive 2013/29/EU or national provisions. For Germany applies: **Hand-over to persons under the age of 18 years prohibited.**
8. The distribution and disposition of the articles only within unopened original packaging.
9. Do not use near persons or fire-endangered objects.
10. **Pay attention to national and local guidelines and laws**
11. **Observe regulations!** (eg in Germany 1.SprengV, VstättVO, VBG C1, BGI 812, SP25,1 / 4), create hazard analysis.
12. Testing and use are permitted only with the approval of the competent authorities. Obtain approval of the security forces.
13. Please note special regulations for use in location /venue.
14. Note the effect of the local fire alarm system in the rooms, determine the safety distances with the safety officer.

ultratec special effects

Hersteller:
Ultratec Special Effects GmbH
Dieselstr.30-40, 60314 Frankfurt am Main , Deutschland
Tel:+49 (0)69 870001850
www.ultratecfx.com

Safety Data Sheet

## Section 1: Identification

**Product Name:** **Preloaded Airburst/Starburst (all colors and sizes)**
including but not limited to: Pro-fetti Airburst, Starburst, Preloaded Airburst

**Recommended use:** Airburst/Starburst have a ball shaped flash with possible report typically with sparks, color or tissue paper/mylar

Professional Use only by a qualified Pyrotechnician in a Theatrical Entertainment Application or in Professional Training Applications.

**Manufacturer and Distributor's Name and Address:**
Ultratec Special Effects, Inc.
148 Moon drive
Owens Cross Roads, AL 35763
United States
Telephone Number: (256) 725-4224
www.ultratecfx.com

**Emergency Telephone Number: 800-255-3924 - ChemTel**

## Section 2: Hazard Identification

### Classification of substance or mixture:

Chemicals have been withheld for trade secret and proprietary information purposes.

**WARNING**

Burn, eye, skin, respiratory irritation, ingestion, acute or chronic exposure
BURN: Wash affected area.
EYE: Flush eyes with water for several minutes.
SKIN: Wash with soap and water
RESPIRATORY: Move to fresh air and consult physician.
INGESTION: DO NOT INDUCE VOMITING, Contact poison control
ACUTE OR CHRONIC EXPOSURE: Seek medical attention immediately
SEEK MEDICAL ATTENTION IF YOU FEEL UNWELL
Keep away from heat, sparks and open flame, hot surfaces-
NO SMOKING
Store in a cool dry approved area
Dispose of content/container in accordance with local/regional/national and international regulations

## Section 3: Composition/Information on Ingredients

Chemicals have been withheld for trade secret and proprietary information purposes.

## Section 4: First-Aid Measures

**BURN:** Wash affected area.

**Skin:** Wash with soap and water. Get medical attention if irritation develops

**EYE:** Flush eyes with water for several minutes.

**RESPIRATORY:** Move to fresh air and consult physician.

**INGESTION:** DO NOT INDUCE VOMITING, Contact poison control

**ACUTE OR CHRONIC EXPOSURE:** Seek medical attention immediately

**SEEK MEDICAL ATTENTION IF YOU FEEL UNWELL**

## Section 5: Fire-Fighting Measures

**Extinguishing Media:** Flood with water if a small number of pieces are involved.
**Special Fire Fighting Procedures:** Do not use suffocation method; device contains its own oxygen. If large quantities are involved, allow them to burn and prevent spread of fire.
**Unusual Fire and Explosion Hazards:** Items will burn rapidly in the event of ignition, and items may become airborne if not secured or contained.

## Section 6: Accidental Release Measures

Personal precautions: Use personal protective equipment. Avoid breathing vapors, mist, or gas. Ensure adequate ventilation
Methods and materials for containment and cleanup: Clean spills in a manner that does not disperse dust into the air

## Section 7: Handling and Storage

Do not alter device. Do not remove from protective package until ready to use.
Do not handle until all safety precautions have been read and understood.
Use personal protection recommended in Section 8. Do not eat, drink or smoke when using this product.
Use only in well-ventilated areas. Keep away from heat/sparks/open flames/hot surfaces. No smoking.

All storage magazines must be safely located, or approved design and securely locked. Do not store improperly with other explosives (severe physical injury or death may occur from ignition). Store in accordance with all state, local, and federal regulations.
Keep shipping and storage containers in cool, dry place. Do not crush, abrade, or subject these items to shock. Avoid open flames, smoking, and temperatures above 120F

## Section 8: Exposure Controls/ Personal Protection

**Respiratory Protection:** None
**Ventilation:** N/A
**Mechanical:** N/A
**Local Exhaust:** N/A
**Special:** N/A
**Other:** N/A
**Protective Gloves:** N/A
**Eye Protection:** Safety Glasses should be worn at all times for Pyrotechnic Operation
**Other Protective Clothing and Equipment:** Wearing at least 60% cotton clothing is recommended.
**Work/Hygienic Practices:** No smoking in the vicinity of item. Keep away from food. Wash hands thoroughly before eating or smoking.
**Exposure Limits:** N/A

## Section 9: Physical and Chemical Properties

**Appearance:** All pyrotechnic composition is contained within article
**Upper/Lower flammability or explosive limits:** N/A
**Odor:** no odor
**Vapor Pressure:** N/A
**Odor Threshold:** N/A
**Vapor Density :** N/A
**pH:** N/A
**Relative Density:** N/A
**Melting Point/Freezing Point:** N/A
**Solubility(ies):** Slight
**Initial Boiling Point:** N/A
**Flash Point:** N/A
**Evaporation Rate:** N/A
**Flammability:** N/A
**Upper/Lower flammability or explosive limits:** N/A
**Vapor Pressure:** N/A
**Vapor Density:** N/A
**Partition coefficient: n-octanol/water:** N/A

**Auto-ignition Temperature:** N/A
**Viscosity:** N/A

## Section 10: Stability and Reactivity

**Stability:** Stable
**Conditions to Avoid:** Storage at temperatures above 120°F. Avoid friction, shock, open flames, smoking, or ignition sources including sparks, and static discharges. Items may deteriorate over time, dispose of items that exceed the Use By Date
**Incompatibility (Materials to Avoid):** Exposure to water may cause item to deteriorate
**Hazardous Decomposition or Byproducts:** Smoke, oxides, chlorides, and other gaseous and solid particulates
**Hazardous Polymerization:** Will not occur

## Section 11: Toxicological Information

**Routes of Entry: Inhalation.** Ingestion, skin contact, inhalation, eye contact
**Toxicity to Animals:** Not available
**Chronic Effects on Humans:** Exposure to finished items does not pose a health hazard. During function, the gases and smoke created may cause respiratory irritation if inhaled in large amounts. Device may cause thermal burns if used improperly.
**Other Toxic Effects on Humans:** N/A
**Special Remarks on Toxicity to Animals:** Not available
**Special Remarks on Chronic Effects on Humans:** Not available
**Special Remarks on other Toxic Effects on Humans:** Not available
**Acute Potential Health Effects:** N/A

## Section 12: Ecological Information

**Ecotoxicity:** Not available.
**BOD5 and COD:** Not available.
**Products of Biodegradation:** Not Available
**Toxicity of the Products of Biodegradation:** Not available.
**Special Remarks on the Products of Biodegradation:** Not available

## Section 13: Disposal Considerations

**Waste disposal:** Waste must be disposed of in accordance with federal, state and local environmental control regulations.
**Steps to be taken in case material is released or spilled:** No smoking or open flames in vicinity of broken or spilled items. Carefully pick up and place spilled items in container. Sweep up any exposed chemical composition with a natural fiber brush.

## Section 14: Transport Information

**DOT Classification:** UNO431, 1.4G

**Identification:** Articles, Pyrotechnic for technical purposes

**Special Provisions for Transport:** Not available

## Section 15: Other Regulatory Information

**Other regulatory information:** N/A

## Section 16: Other Information

**References:** Not available
**Other Special Considerations:** Not available
**Created:** 03/25/2015

**The information above is believed to be accurate and represents the best information currently available to us.**

**All Pyrotechnics should be used and handled with extreme caution, in accordance with all relevant regulations and codes only by experienced professional Pyrotechnicians.**

# Instruction/Manual

Theatrical pyrotechnic articles of category T1 Articles

**PYROTECHNIC- JET TYP (1sx6m) Silver – Jet TYP (1sx6m) Silver**
**Gerb – 1 x 20 Silver**
**PYROTECHNIC- JET TYP (0,5sx6m) Silver – Jet TYP (0,5sx6m) Silver**
**Gerb – 1 /2 x 20 Silver**
**PYROTECHNIC- JET TYP (0,25sx6,5m) Silver – Jet TYP (0,25sx6,5m) Silver**
**Gerb – 1 /4 x 20 Silver**

CE 0589

**0589-T1-0055**

| | |
|---|---|
| **Product name: : Gerb 1/4x20 Silver**<br>**Gerb 1/2x20 Silver**<br>**Gerb 1x20 Silver**<br>**Registration number: 0589-T1-0055**<br>**Category: T1**<br>**EC Type-Examination Certificate no. : 0589.PYR.1263/11** | **Description of Effect:**<br>The effect is generated without delay after ignition with a noise / bang. Silver or gold burning sparks are emitted. The duration, height and color of the sparks are indicated on the pyrotechnic article label. |
| **Technical data :**<br>NEQ: cs. 2,1g-2,3g<br>outer diameter: ca. 17,2mm<br>Inner diameter : ca.12,5mm<br>Height: ca.55mm<br>max. Effect hight : 6,5m<br>max radial Effect width: 2m<br>Soundlevel max. at 10m : 90,9dB (AImax)<br>Max. Distance of burning or incandescent material: 0m<br>Max. Distance of hazardous debris : 0m | **Technical data igniter/match :**<br>**Type of Bridge wire igniter: A**<br>NEQ: 0,005 g<br>Max. Test current: 0,025A<br>Minimum firing current : 0,5A |
| **Storage:**<br>Dry and Cool . Protect from moisture.<br>Store according to national explosiv law<br>Division: 1.4<br>compatibility group: S<br>Transport classification : 1.4 S<br>Name and UN-Nr.:UN0432, ARTICLES PYROTECNIC | **Failure and defect items and Disposal:**<br>Don't use failure, defect articles or wet articles.<br>Disposal according to national provisions or return to manufacturer |

**Instruction for safe handling:**

| |
|---|
| **Safety distance direction of Effect: 9m**<br>**Safety distance radial: 3m** |

1. **Connect only to currentless firing cables and ignition device.** Connect cable only to currentless ignition systems and make sure the device is switched off and the safety key must be in possession of the responsible users.
2. **To prevent it from falling over, fix the object for use.** The item should be mounted on at least flame retardant material.
3. During use, absolute **no smoking and no open light or fire** at and near the burning-off place.
4. Only ignite the pyrotechnic article if there is an unobstructed view of the burning site and the safety instructions are complied with.
5. Take precautionary measures (such as shutting off danger areas, providing fire extinguishers, providing first aid, marking the area with no smoking signs, etc.).
6. The items shall be used only for technical purposes within stage, film and television productions, as well as within music and show productions.
7. Minimum age limits according to Directive 2013/29/EU or national provisions. For Germany applies: **Hand-over to persons under the age of 18 years prohibited.**
8. The distribution and disposition of the articles only within unopened original packaging.
9. Do not use near persons or fire-endangered objects.
10. **Note national and local guidelines and laws**
11. **Note regulations!** (eg in Germany 1.SprengV, VstättVO, VBG C1, BGI 812, SP25,1 / 4), create hazard analysis.
12. Testing and use are permitted only with the approval of the competent authorities. Obtain approval of the security forces.
13. Please note special regulations for use in location /venue.
14. Note the effect of the local fire alarm system in the rooms, determine the safety distances with the safety officer.

ultratec special effects

Hersteller:
Ultratec Special Effects GmbH
Dieselstr.30-40, 60314 Frankfurt am Main , Deutschland
Tel:+49 (0)69 870001850
www.ultratecfx.com

Safety Data Sheet

## Section 1: Identification

**Product Name:** **Gerbs, Waterfalls, AF Gerbs, Smokes, Flares, Line Rockets, Saxons, Colored Gerbs, Crackle Gerbs, Kool Fountains, Whistle (All Sizes with and without Tail)**

**Recommended use:**

**Gerbs** produce a fountain of sparks in varying colors, Silver or Gold. They also have a variety in duration and heights.
**Crackle gerbs** produce a 4' to 6' plume of fuzzy gold sparks and a LOT of noise
**Transformation gerbs** change in the middle. The gerb will burn 5 seconds with gold sparks, and the last 5 seconds with silver sparks
**Waterfalls** are gerbs that are made to burn upside down.
**Flares** produce high light output in addition to the approx. 1' tall flame
**Line Rockets** have a burn duration of 3 seconds and typically travel about 225 ft across a horizontal cable.
**Saxons** are essentially 2 gerbs on a pivot point. The first gerb burns and drives the entire device around in one direction, then the burn transfers to the second gerb, which continues the spin in the opposite direction.
**Non Sulfur Smoke** produces a plume of smoke
**Whistles** produce a obnoxious screeching sound in a variety of durations

Professional Use only by a qualified Pyrotechnician in a Theatrical Entertainment Application or in Professional Training Applications.

**Manufacturer and Distributor's Name and Address:**

Ultratec Special Effects, Inc.
148 Moon drive
Owens Cross Roads, AL 35763
United States
Telephone Number: (256) 725-4224
www.ultratecfx.com

**Emergency Telephone Number: 800-255-3924 - ChemTel**

## Section 2: Hazard Identification

Chemicals have been withheld for trade secret and proprietary information purposes.

**WARNING**

Burn, eye, skin, respiratory irritation, ingestion, acute or chronic exposure
BURN: Wash affected area.
EYE: Flush eyes with water for several minutes.
SKIN: Wash with soap and water
RESPIRATORY: Move to fresh air and consult physician.
INGESTION: DO NOT INDUCE VOMITING, Contact poison control
ACUTE OR CHRONIC EXPOSURE: Seek medical attention immediately
SEEK MEDICAL ATTENTION IF YOU FEEL UNWELL
Keep away from heat, sparks and open flame, hot surfaces-
NO SMOKING
Store in a cool dry approved area
Dispose of content/container in accordance with local/regional/national and international regulations

## Section 3: Composition/Information on Ingredients

Chemicals have been withheld for trade secret and proprietary information purposes.

## Section 4: First-Aid Measures

**BURN:** Wash affected area.

**Skin:** Wash with soap and water. Get medical attention if irritation develops

**EYE:** Flush eyes with water for several minutes.

**RESPIRATORY:** Move to fresh air and consult physician.

**INGESTION:** DO NOT INDUCE VOMITING, Contact poison control

**ACUTE OR CHRONIC EXPOSURE:** Seek medical attention immediately

**SEEK MEDICAL ATTENTION IF YOU FEEL UNWELL**

## Section 5: Fire-Fighting Measures

**Extinguishing Media:** Flood with water if a small number of pieces are involved.
**Special Fire Fighting Procedures:** Do not use suffocation method; device contains its own oxygen. If large quantities are involved, allow them to burn and prevent spread of fire.
**Unusual Fire and Explosion Hazards:** Items will burn rapidly in the event of ignition, and items may become airborne if not secured or contained.

## Section 6: Accidental Release Measures

Personal precautions: Use personal protective equipment. Avoid breathing vapors, mist, or gas. Ensure adequate ventilation
Methods and materials for containment and cleanup: Clean spills in a manner that does not disperse dust into the air

## Section 7: Handling and Storage

Do not alter device. Do not remove from protective package until ready to use.
Do not handle until all safety precautions have been read and understood.
Use personal protection recommended in Section 8. Do not eat, drink or smoke when using this product.

Use only in well-ventilated areas. Keep away from heat/sparks/open flames/hot surfaces. No smoking.

All storage magazines must be safely located, or approved design and securely locked. Do not store improperly with other explosives (severe physical injury or death may occur from ignition). Store in accordance with all state, local, and federal regulations.
Keep shipping and storage containers in cool, dry place. Do not crush, abrade, or subject these items to shock. Avoid open flames, smoking, and temperatures above 120F

## Section 8: Exposure Controls/ Personal Protection

**Respiratory Protection:** None
**Ventilation:** N/A
**Mechanical:** N/A
**Local Exhaust:** N/A
**Special:** N/A
**Other:** N/A
**Protective Gloves:** N/A
**Eye Protection:** Safety Glasses should be worn at all times for Pyrotechnic Operation
**Other Protective Clothing and Equipment:** Wearing at least 60% cotton clothing is recommended.
**Work/Hygienic Practices:** No smoking in the vicinity of item. Keep away from food. Wash hands thoroughly before eating or smoking.
**Exposure Limits:** N/A

## Section 9: Physical and Chemical Properties

**Appearance:** All pyrotechnic composition is contained within article
**Upper/Lower flammability or explosive limits:** N/A
**Odor:** no odor
**Vapor Pressure:** N/A
**Odor Threshold:** N/A
**Vapor Density :** N/A
**pH:** N/A
**Relative Density:** N/A
**Melting Point/Freezing Point:** N/A
**Solubility(ies):** Slight
**Initial Boiling Point:** N/A
**Flash Point:** N/A
**Evaporation Rate:** N/A
**Flammability:** N/A
**Upper/Lower flammability or explosive limits:** N/A
**Vapor Pressure:** N/A
**Vapor Density:** N/A
**Partition coefficient: n-octanol/water:** N/A
**Auto-ignition Temperature:** N/A
**Viscosity:** N/A

## Section 10: Stability and Reactivity

**Stability:** Stable
**Conditions to Avoid:** Storage at temperatures above 120°F. Avoid friction, shock, open flames, smoking, or ignition sources including sparks, and static discharges. Items may deteriorate over time, dispose of items that exceed the Use By Date
**Incompatibility (Materials to Avoid):** Exposure to water may cause item to deteriorate
**Hazardous Decomposition or Byproducts:** Smoke, oxides, chlorides, and other gaseous and solid particulates
**Hazardous Polymerization:** Will not occur

## Section 11: Toxicological Information

**Routes of Entry: Inhalation.** Ingestion, skin contact, inhalation, eye contact
**Toxicity to Animals:** Not available
**Chronic Effects on Humans:** Exposure to finished items does not pose a health hazard. During function, the gases and smoke created may cause respiratory irritation if inhaled in large amounts. Device may cause thermal burns if used improperly.
**Other Toxic Effects on Humans:** N/A
**Special Remarks on Toxicity to Animals:** Not available
**Special Remarks on Chronic Effects on Humans:** Not available
**Special Remarks on other Toxic Effects on Humans:** Not available
**Acute Potential Health Effects:** N/A

## Section 12: Ecological Information

**Ecotoxicity:** Not available.
**BOD5 and COD:** Not available.
**Products of Biodegradation:** Not Available
**Toxicity of the Products of Biodegradation:** Not available.
**Special Remarks on the Products of Biodegradation:** Not available

## Section 13: Disposal Considerations

**Waste disposal:** Waste must be disposed of in accordance with federal, state and local environmental control regulations.
**Steps to be taken in case material is released or spilled:** No smoking or open flames in vicinity of broken or spilled items. Carefully pick up and place spilled items in container. Sweep up any exposed chemical composition with a natural fiber brush.

## Section 14: Transport Information

**DOT Classification:** UNO431, 1.4G

**Identification:** Articles, Pyrotechnic for technical purposes

**Special Provisions for Transport:** Not available

## Section 15: Other Regulatory Information

**Other regulatory information:** N/A

## Section 16: Other Information

**References:** Not available
**Other Special Considerations:** Not available
**Created:** 03/30/2015

**The information above is believed to be accurate and represents the best information currently available to us.**

**All Pyrotechnics should be used and handled with extreme caution, in accordance with all relevant regulations and codes only by experienced professional Pyrotechnicians.**

# Instruction/Manual

Theatrical pyrotechnic articles of category T1 Articles

## PYROTECHNIC - MINE (25ft) – MINE 25ft
## Mine – 25' Pixie Dust / Mine – 25' Flitter / Mine - 25' Gold Glitter/ Mine- 25' Silver Mine - 25' Gold Strobe/ Mine – 25' Silver Strobe

CE 0589

**0589-T1-0080**

| | |
|---|---|
| **Product name:**<br>**Mine – 25' Pixie Dust / Mine – 25' Flitter / Mine – 25' Crackle**<br>**Mine – 25' Gold Glitter / Mine – 25' Silver Glitter**<br>**Mine – 25' Gold Strobe / Mine - 25' Silver Strobe**<br>**Registration number: 0589-T1-0080**<br>**Category: T1**<br>**EC Type-Examination Certificate no. : 0589.PYR.3409/11** | **Description of Effect:**<br>The effect is generated without delay after ignition with a noise / bang. The pyrotechnic stars are expelled burning silver or gold and produce a silver or gold sparkling, flashing optical effect. The particular color is indicated on the label of the pyrotechnic article. |
| **Technical data :**<br>NEQ: ca. 13g<br>outer diameter: ca.28mm<br>Inner diameter : ca.26mm<br>Height: ca.101,6mm<br>max Effect height : 8m<br>Max. radial Effect width : 2,8m<br>Soundlevel max. at 8m : 105,4db (Almax)<br>Max. Distance of burning or incandescent material: 0m<br>Max. Distance of hazardous debris : 0m | **Technical data igniter/match :**<br>**Type of Bridge wire igniter: A**<br>NEQ: 0,005 g<br>Max. Test current: 0,025A<br>Minimum firing current : 0,5A |
| **Storage:**<br>Dry and cool . Protect from moisture.<br>Store according to national explosiv law<br>Division: 1.4<br>Compatibility group: G<br>Transport classification : 1.4 G<br>Name and UN-Nr.:UN0431, ARTICLES PYROTECNIC | **Failure and defect items and Disposal:**<br>Don't' use failure, defect articles or wet articles.<br>Disposal according to national provisions or return to manufacturer |

**Instruction for safe handling:**

**Safety distance direction of Effect: 11m**
**Safety distance radial: 4m**
**OUTDOOR USE ONLY!**

1. **Connect only to currentless firing cables and ignition device.** Connect cable only to currentless ignition systems and make sure the device is switched off and the safety key must be in possession of the responsible users.
2. **To prevent it from falling over, fix the object for use.** The item should be mounted on at least flame retardant material.
3. During use, absolute **no smoking and no open light or fire** at and near the burning-off place.
4. Only ignite the pyrotechnic article if there is an unobstructed view of the burning site and the safety instructions are complied with.
5. Take precautionary measures (such as shutting off danger areas, providing fire extinguishers, providing first aid, marking the area with no smoking signs, etc.).
6. The items shall be used only for technical purposes within stage, film and television productions, as well as within music and show productions.
7. Minimum age limits according to Directive 2013/29/EU or national provisions. For Germany applies: **Hand-over to persons under the age of 18 years prohibited.**
8. The distribution and disposition of the articles only within unopened original packaging.
9. Do not use near persons or fire-endangered objects.
10. **Pay attention to national and local guidelines and laws**
11. **Observe regulations!** (eg in Germany 1.SprengV, VstättVO, VBG C1, BGI 812, SP25,1 / 4), create hazard analysis.
12. Testing and use are permitted only with the approval of the competent authorities. Obtain approval of the security forces.
13. Observe special regulations for use in location /venue.
14. Observe the effect of the local fire alarm system in the rooms, determine the safety distances with the safety officer.

*NOTE: A person with specialist knowledge can handle and/or use articles labelled T1 or T1 'for outdoor use only' in a different manner to that prescribed on the label or within the instructions for use, provided that they have taken due consideration of the hazards and risks that any deviations they make might have. . A person with specialist knowledge is expected to have the knowledge to make use of T1 products in a different manner to those prescribed on the label or the instructions.

ultratec special effects

Hersteller:
Ultratec Special Effects GmbH
Dieselstr.30-40, 60314 Frankfurt am Main , Deutschland
Tel:+49 (0)69 870001850
www.ultratecfx.com

# Instruction/Manual

Theatrical pyrotechnic articles of category T1

## PYROTECHNIC – COMBINATION – COMBINATION 20ft, COLOR
## Tracer Comet – 20' Color, 10 Shot x 10 Sec

CE 0589

**0589-T1-0069**

| | |
|---|---|
| **Product name:**<br>**Tracer Comet AF – 20' Color 10 Shot x 10 sec**<br>**Registration number: 0589-T1-0069**<br>**Category: T1**<br>**EC Type-Examination Certificate no. : 0589.PYR.2798/11** | **Description of effect:**<br>The effect is generated without delay after ignition with a noise / bang. The single pyrotechnic star is colored burning, with or without tail, quickly ejected. After the ignition, 10 comets are ejected within 10 seconds. The respective color with and without tail is indicated on the label of the pyrotechnic article. |
| **Technical data:**<br>NEQ: approx. 20g<br>Width: approx. 48mm<br>Height: approx. 29mm<br>Length: approx. 300mm<br>Mid. effect height: 6m<br>Mid. radial effect width: 0,5m<br>Soundlevel max. at 8m: 105,0db (Almax)<br>Max. distance of burning or incandescent material: 0m<br>Max. distance of hazardous debris : 0m | **Technical data igniter/match :**<br>**Type of Bridge wire igniter: A**<br>NEQ: 0,005 g<br>Max. Test current: 0,025A<br>Minimum firing current : 0,5A |
| **Storage:**<br>Dry and cool. Protect from moisture.<br>Store according to national explosive law<br>Division: 1.4<br>compatibility group: G<br>Transport classification : 1.4 G<br>Name and UN-no.: UN0431, ARTICLES PYROTECNIC | **Failure and defect items and disposal:**<br>Don't use failure, defect articles or wet articles.<br>Disposal according to national provisions or return to manufacturer |

**Instruction for safe handling:**

**Safety distance direction of Effect: 9m**
**Safety distance radial: 2m**

1. **Connect only to currentless firing cables and ignition device.** Connect cable only to currentless ignition systems and make sure the device is switched off and the safety key must be in possession of the responsible users.
2. **To prevent it from falling over, fix the object for use.** The item should be mounted on at least flame retardant material.
3. During use, absolute **no smoking and no open light or fire** at and near the burning-off place.
4. Only ignite the pyrotechnic article if there is an unobstructed view of the burning site and the safety instructions are complied with.
5. Take precautionary measures (such as shutting off danger areas, providing fire extinguishers, providing first aid, marking the area with no smoking signs, etc.).
6. The items shall be used only for technical purposes within stage, film and television productions, as well as within music and show productions.
7. Minimum age limits according to Directive 2013/29/EU or national provisions. For Germany applies: **Hand-over to persons under the age of 18 years prohibited.**
8. The distribution and disposition of the articles only within unopened original packaging.
9. Do not use near persons or fire-endangered objects.
10. **Pay attention to national and local guidelines and laws**
11. **Observe regulations!** (eg in Germany 1.SprengV, VstättVO, VBG C1, BGI 812, SP25,1 / 4), create hazard analysis.
12. Testing and use are permitted only with the approval of the competent authorities. Obtain approval of the security forces.
13. Please note special regulations for use in location /venue.
14. Note the effect of the local fire alarm system in the rooms, determine the safety distances with the safety officer.

ultratec special effects

Hersteller:
Ultratec Special Effects GmbH
Dieselstr.30-40, 60314 Frankfurt am Main , Deutschland
Tel:+49 (0)69 870001850
www.ultratecfx.com

**Safety Data Sheet**

## Section 1: Identification

**Product Name:** **Mines, Comets, & Falling Stars (All sizes with and without Tail)**

**Recommended use:** **Mines** project a plume of bright points of color with or without sparkles **Comets** produce a large bright colored star with minimum smoke and virtually no fallout

Professional Use only by a qualified Pyrotechnician in a Theatrical Entertainment Application or in Professional Training Applications.

**Manufacturer and Distributor's Name and Address:**

Ultratec Special Effects, Inc.
148 Moon drive
Owens Cross Roads, AL 35763
United States
Telephone Number: (256) 725-4224
www.ultratecfx.com

**Emergency Telephone Number: 800-255-3924 - ChemTel**

## Section 2: Hazard Identification

Chemicals have been withheld for trade secret and proprietary information purposes.

**WARNING**

Burn, eye, skin, respiratory irritation, ingestion, acute or chronic exposure
BURN: Wash affected area.
EYE: Flush eyes with water for several minutes.
SKIN: Wash with soap and water
RESPIRATORY: Move to fresh air and consult physician.
INGESTION: DO NOT INDUCE VOMITING, Contact poison control
ACUTE OR CHRONIC EXPOSURE: Seek medical attention immediately
SEEK MEDICAL ATTENTION IF YOU FEEL UNWELL
Keep away from heat, sparks and open flame, hot surfaces-
NO SMOKING
Store in a cool dry approved area
Dispose of content/container in accordance with local/regional/national and international regulations

## Section 3: Composition/Information on Ingredients

Chemicals have been withheld for trade secret and proprietary information purposes.

## Section 4: First-Aid Measures

**BURN:** Wash affected area.

**Skin:** Wash with soap and water. Get medical attention if irritation develops

**EYE:** Flush eyes with water for several minutes.

**RESPIRATORY:** Move to fresh air and consult physician.

**INGESTION:** DO NOT INDUCE VOMITING, Contact poison control

**ACUTE OR CHRONIC EXPOSURE:** Seek medical attention immediately

**SEEK MEDICAL ATTENTION IF YOU FEEL UNWELL**

## Section 5: Fire-Fighting Measures

**Extinguishing Media:** Flood with water if a small number of pieces are involved.
**Special Fire Fighting Procedures:** Do not use suffocation method; device contains its own oxygen.
If large quantities are involved, allow them to burn and prevent spread of fire.
**Unusual Fire and Explosion Hazards:** Items will burn rapidly in the event of ignition, and items may become airborne if not secured or contained.

## Section 6: Accidental Release Measures

Personal precautions: Use personal protective equipment. Avoid breathing vapors, mist, or gas. Ensure adequate ventilation
Methods and materials for containment and cleanup: Clean spills in a manner that does not disperse dust into the air

## Section 7: Handling and Storage

Do not alter device. Do not remove from protective package until ready to use.
Do not handle until all safety precautions have been read and understood.
Use personal protection recommended in Section 8. Do not eat, drink or smoke when using this product.
Use only in well-ventilated areas. Keep away from heat/sparks/open flames/hot surfaces. No smoking.

All storage magazines must be safely located, or approved design and securely locked. Do not store improperly with other explosives (severe physical injury or death may occur from ignition). Store in accordance with all state, local, and federal regulations.
Keep shipping and storage containers in cool, dry place. Do not crush, abrade, or subject these items to shock. Avoid open flames, smoking, and temperatures above 120F

## Section 8: Exposure Controls/ Personal Protection

**Respiratory Protection:** None
**Ventilation:** N/A
**Mechanical:** N/A
**Local Exhaust:** N/A
**Special:** N/A
**Other:** N/A
**Protective Gloves:** N/A
**Eye Protection:** Safety Glasses should be worn at all times for Pyrotechnic Operation
**Other Protective Clothing and Equipment:** Wearing at least 60% cotton clothing is recommended.
**Work/Hygienic Practices:** No smoking in the vicinity of item. Keep away from food. Wash hands thoroughly before eating or smoking.
**Exposure Limits:** N/A

## Section 9: Physical and Chemical Properties

**Appearance:** All pyrotechnic composition is contained within article
**Upper/Lower flammability or explosive limits:** N/A
**Odor:** no odor
**Vapor Pressure:** N/A
**Odor Threshold:** N/A
**Vapor Density :** N/A
**pH:** N/A
**Relative Density:** N/A
**Melting Point/Freezing Point:** N/A
**Solubility(ies):** Slight
**Initial Boiling Point:** N/A
**Flash Point:** N/A
**Evaporation Rate:** N/A
**Flammability:** N/A
**Upper/Lower flammability or explosive limits:** N/A
**Vapor Pressure:** N/A
**Vapor Density:** N/A
**Partition coefficient: n-octanol/water:** N/A
**Auto-ignition Temperature:** N/A
**Viscosity:** N/A

## Section 10: Stability and Reactivity

**Stability:** Stable
**Conditions to Avoid:** Storage at temperatures above 120°F. Avoid friction, shock, open flames, smoking, or ignition sources including sparks, and static discharges. Items may deteriorate over time, dispose of items that exceed the Use By Date
**Incompatibility (Materials to Avoid):** Exposure to water may cause item to deteriorate
**Hazardous Decomposition or Byproducts:** Smoke, oxides, chlorides, and other gaseous and solid particulates
**Hazardous Polymerization:** Will not occur

## Section 11: Toxicological Information

**Routes of Entry: Inhalation.** Ingestion, skin contact, inhalation, eye contact

**Toxicity to Animals:** Not available
**Chronic Effects on Humans:** Exposure to finished items does not pose a health hazard. During function, the gases and smoke created may cause respiratory irritation if inhaled in large amounts. Device may cause thermal burns if used improperly.
**Other Toxic Effects on Humans:** N/A
**Special Remarks on Toxicity to Animals:** Not available
**Special Remarks on Chronic Effects on Humans:** Not available
**Special Remarks on other Toxic Effects on Humans:** Not available
**Acute Potential Health Effects:** N/A

## Section 12: Ecological Information

**Ecotoxicity:** Not available.
**BOD5 and COD:** Not available.
**Products of Biodegradation:** Not Available
**Toxicity of the Products of Biodegradation:** Not available.
**Special Remarks on the Products of Biodegradation:** Not available

## Section 13: Disposal Considerations

**Waste disposal:** Waste must be disposed of in accordance with federal, state and local environmental control regulations.
**Steps to be taken in case material is released or spilled:** No smoking or open flames in vicinity of broken or spilled items. Carefully pick up and place spilled items in container. Sweep up any exposed chemical composition with a natural fiber brush.

## Section 14: Transport Information

**DOT Classification:** UNO431, 1.4G

**Identification:** Articles, Pyrotechnic for technical purposes

**Special Provisions for Transport:** Not available

## Section 15: Other Regulatory Information

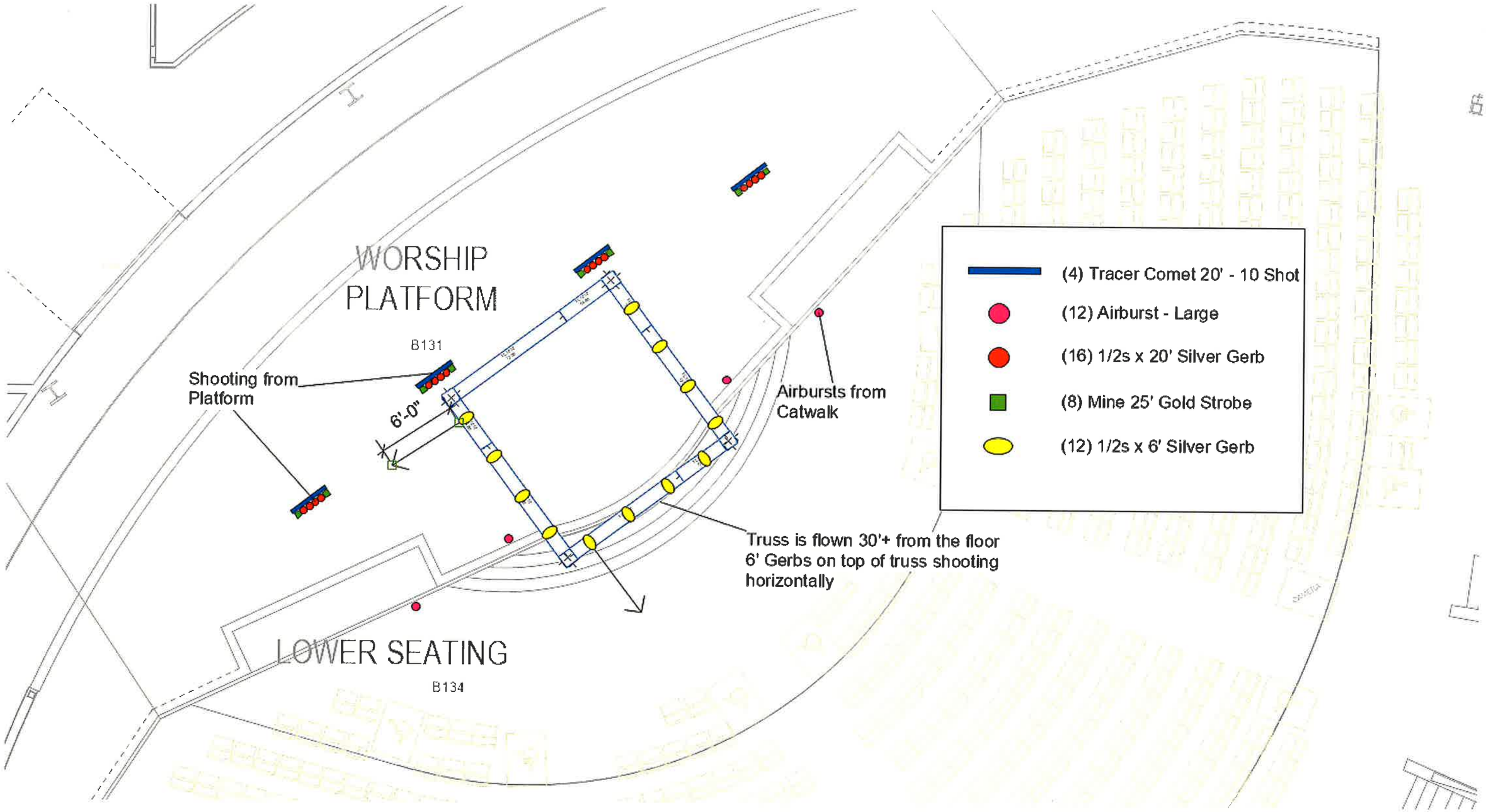
**Other regulatory information:** N/A

## Section 16: Other Information

**References:** Not available
**Other Special Considerations:** Not available
**Created:** 03/30/2015

**The information above is believed to be accurate and represents the best information currently available to us.**

**All Pyrotechnics should be used and handled with extreme caution, in accordance with all relevant regulations and codes only by experienced professional Pyrotechnicians.**


WORSHIP
PLATFORM
B131
Shooting from
Platform
6'-0"
Airbursts from
Catwalk
(4) Tracer Comet 20' - 10 Shot
(12) Airburst - Large
(16) 1/2s x 20' Silver Gerb
(8) Mine 25' Gold Strobe
(12) 1/2s x 6' Silver Gerb
Truss is flown 30'+ from the floor
6' Gerbs on top of truss shooting
horizontally
LOWER SEATING
B134

BRIGH-3 OP ID: MB

# CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY) 03/11/2024

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must have ADDITIONAL INSURED provisions or be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

| | |
|---|---|
| PRODUCER<br>Shilton & Associates, Inc.<br>Dave Shilton<br>660 Cascade West Parkway, SE<br>Grand Rapids, MI 49546<br>Jared Nathan Shilton<br>616-956-5300 | CONTACT NAME: Jared Nathan Shilton<br>PHONE (A/C, No, Ext): 616-956-5300 FAX (A/C, No): 616-956-9993<br>E-MAIL ADDRESS: jared@shiltoninc.com |
| INSURED<br>Brightmoor Christian Church<br>40800 W 13 Mile Rd<br>Novi, MI 48377-2327 | INSURER(S) AFFORDING COVERAGE — NAIC #<br>INSURER A : Brotherhood Mutual<br>INSURER B :<br>INSURER C :<br>INSURER D :<br>INSURER E :<br>INSURER F : |

**COVERAGES** **CERTIFICATE NUMBER:** **REVISION NUMBER:**

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

| INSR LTR | TYPE OF INSURANCE | ADDL INSD | SUBR WVD | POLICY NUMBER | POLICY EFF (MM/DD/YYYY) | POLICY EXP (MM/DD/YYYY) | LIMITS | |
|---|---|---|---|---|---|---|---|---|
| A | X COMMERCIAL GENERAL LIABILITY<br>CLAIMS-MADE X OCCUR<br>GEN'L AGGREGATE LIMIT APPLIES PER:<br>POLICY PRO-JECT LOC<br>OTHER: | X | | 21MRA0437802 | 09/01/2023 | 09/01/2024 | EACH OCCURRENCE<br>DAMAGE TO RENTED PREMISES (Ea occurrence)<br>MED EXP (Any one person)<br>PERSONAL & ADV INJURY<br>GENERAL AGGREGATE<br>PRODUCTS - COMP/OP AGG | $ 1,000,000<br>$ 300,000<br>$ 10,000<br>$ 1,000,000<br>$ 3,000,000<br>$ 3,000,000 |
| A | AUTOMOBILE LIABILITY<br>ANY AUTO<br>OWNED AUTOS ONLY X SCHEDULED AUTOS<br>X HIRED AUTOS ONLY X NON-OWNED AUTOS ONLY | | | 21A5A0437786 | 09/01/2023 | 09/01/2024 | COMBINED SINGLE LIMIT (Ea accident)<br>BODILY INJURY (Per person)<br>BODILY INJURY (Per accident)<br>PROPERTY DAMAGE (Per accident) | $ 1,000,000<br>$<br>$<br>$ |
| A | UMBRELLA LIAB OCCUR<br>X EXCESS LIAB CLAIMS-MADE<br>DED RETENTION $ | | | 21MRA0437802 | 09/01/2023 | 09/01/2024 | EACH OCCURRENCE<br>AGGREGATE | $ 6,000,000<br>$ 6,000,000 |
| A | WORKERS COMPENSATION AND EMPLOYERS' LIABILITY<br>ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? Y / N<br>(Mandatory in NH)<br>If yes, describe under DESCRIPTION OF OPERATIONS below | N / A | | 21WRA0437775 | 09/01/2023 | 09/01/2024 | X PER STATUTE OTH-ER<br>E.L. EACH ACCIDENT<br>E.L. DISEASE - EA EMPLOYEE<br>E.L. DISEASE - POLICY LIMIT | <br>$ 500,000<br>$ 500,000<br>$ 500,000 |
| A | Fireworks Display | | | 21MRA0437802 | 09/01/2023 | 09/01/2024 | Occurrenc<br>Aggregate | 300,000<br>900,000 |

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)

**General Liability Certificate listing City of Novi as additional insured for the Easter Programs (featuring pyrotechnics) on the following dates:April 18th and 19th, 2024. 30 Day Notice of Cancellation/ 10 Day Notice for non payment of premium. Coverage for additional insureds is strictly subject to the terms of the policy.**

**CERTIFICATE HOLDER**

CITYONO

City of Novi
45175 Ten Mile Road
Novi, MI 48375

**CANCELLATION**

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE

Jared Shilton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This Liability Coverage Endorsement is subject to the **terms** of the applicable Commercial Liability Coverage Form (GL-100) and the Liability and Medical Coverage Form (BGL-11). Only one liability coverage will apply to an **occurrence** and any **related loss.** This endorsement is attached to and made part of the policy.

**THIS INSURANCE ENDORSEMENT FORMS PART OF YOUR POLICY CONTRACT.**
**PLEASE READ IT CAREFULLY.**

---

# ADDITIONAL INSURED ENDORSEMENT
## ADDITIONAL CONDITION

### ADDITIONA L CONDITION

The following additional condition is added to the Conditions section of the Liability and Medical Coverage Form (BGL-11):

**Additional Insureds:** With respect to any person or entity shown on the **declarations** as an Additional Insured or who is otherwise designated by the Named Insured and recognized by **us** as an Additional Insured, **we** will provide Principal Coverage L of the Commercial Liability Coverage Form (GL-100) to such Additional Insured (they will be considered an **insured** for Principal Coverage L), but only to the extent that such person or entity is legally liable for the acts of **you**, **your leader**, **your** employee, or **your appointed person**. Such coverage will be limited to that which is specifically provided by Principal Coverage L, and will be strictly subject to the **terms** of this policy. No coverage will apply to any independent acts, errors, or omissions of an Additional Insured.

### OTHER PROVISIONS

All other provisions of the applicable Commercial Liability Coverage Form (GL-100) and the Liability and Medical Coverage Form (BGL-11) remain unchanged


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# MinistryFirst℠ Commercial Multi-Peril Insurance Coverage Summary

These are your policy's Declarations.
Amended Effective Date: 09/01/2023
See Policy Change History

**Brightmoor Christian Church**
40800 W 13 Mile Rd
Novi, MI 48377

**Policy Number 21MRA0437802**
Brotherhood Mutual Insurance Company
Print Date: September 7, 2023
Policy Period: 09/01/2023 at 12:01 a.m. to 09/01/2024 at 12:01 a.m.

**616-956-5300**
**Shilton & Associates Inc 0127-009**
**Suite 215**
660 Cascade W Pkwy SE
Grand Rapids, MI 49546-2147

Contact your agent with your customer service questions, including updating your policy or reporting a claim.

**www.brotherhoodmutual.com/payonline**
For your convenience, you can make premium payments online.

| | |
|---|---|
| NAMED INSURED | Brightmoor Christian Church |
| POLICY NUMBER | 21MRA0437802 |
| POLICY PERIOD | 09/01/2023 at 12:01 a.m. to 09/01/2024 at 12:01 a.m. |

## Key Facts About Your Policy

These Declarations replace your previous ones. Your policy's Declarations contain a summary of the coverage contained in the insurance policy. Your policy contains a full explanation of your coverage.

**AGREEMENT:** In return for the payment of the premium and subject to all the terms of the policy, we agree to provide the insurance stated in the policy.

**TYPE OF ORGANIZATION:** Church/School Institution
**FORM OF ORGANIZATION:** Corporation

## Policy Overview

| COVERAGE DESCRIPTION | DETAILS | COVERAGE DESCRIPTION | DETAILS |
|---|---|---|---|
| Property Coverage | Page 2 - 6 | Terrorism Premium | $5,541 (See Notice Form BN6025A-D 4.0 for details) |
| Liability Coverage | Page 7 - 14 | | |
| Excess Liability Coverage | Page 15 - 15 | | |

## Policy Premium Overview

This premium is subject to adjustment at each anniversary. This premium is subject to adjustment due to premium audit provision.

**ANNUAL PREMIUM:** $50,364.00 **PAYMENT SCHEDULE:** See invoice.

## Common Policy Forms

| FORM | FORM NAME |
|---|---|
| GL100 1.0 | Commercial Liability Coverage |
| CL300 1.0 | Amendatory Endorsement |
| BCP100 4.5 | Commercial Property Coverage Conditions |
| BN1B 1.0 | Notice Of Payment-Related Charges |
| G131 1.0 | Notice To Michigan Policyholders |
| BN6EX 4.0 | Notice-Cond Excl-Terrorism-Related Loss |
| BN11A 1.2 | Customer Notice: Value-Added Benefits |
| CL0200 03 99 | Amendatory Endorsement Michigan |

| FORM | FORM NAME |
|---|---|
| CL100 1.0 | Common Policy Conditions |
| CP1 1.0 | Table of Contents |
| CL0458 01 01 | Amendatory Endorsement Michigan |
| BCL100 1.1 | Additional Policy Conditions |
| EX0606 1.0 | Conditional Terrorism Exclusion |
| BCL301 1.0 | Form Number Reference |
| BCL120 1.0 | Amendatory Endorsement - Assignment |
| BN6025A-D 4.0 | Notice - Terrorism-Related Loss |

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| | |
|---|---|
| NAMED INSURED | Brightmoor Christian Church |
| POLICY NUMBER | 21MRA0437802 |
| POLICY PERIOD | 09/01/2023 at 12:01 a.m. to 09/01/2024 at 12:01 a.m. |

# Property Coverage Summary

Ministry*First*℠ commercial multi-peril policy Declarations continued...

We provide the Commercial Property coverage at the declared premise(s) for the coverage and limits indicated. The Coverages listed here are provided according to the terms of the designated coverage form and any other applicable forms or endorsements.

## Property Coverage Details

| | |
|---|---|
| **PROPERTY DEDUCTIBLE** | $5,000 |
| **GLASS DEDUCTIBLE** | $5,000 |

## Schedule of Locations

| LOCATION # | DESCRIPTION | ADDRESS |
|---|---|---|
| 1/1 | Church | 40800 W 13 Mile Rd Novi, MI 48377 |
| 2/1 | Storage | 23745 Research Dr Farmington Hills, MI 48335-2625 |
| 3/1 | Storage Unit | 28265 Beck Rd Ste C13 C14 Wixom, MI 48393-4718 |

## Schedule of Buildings and Personal Property

**CHURCH** — **40800 W 13 Mile Rd Novi, MI 48377** — **LOCATION 1/1**

| | | | |
|---|---|---|---|
| Mortgagee | BMO Harris Bank N.A. RIB Its Successors and/or Assigns | 77865061646781 | PO Box 4260 Napa, CA 94558-0425 |

| COVERAGE DESCRIPTION (INCL. TYPE OF PROPERTY) | COVERAGE LIMIT | COINSURANCE | EQ DED | VALUATION TYPE | AUTO INCR | PERIL TYPE | FORM |
|---|---|---|---|---|---|---|---|
| Building | $51,806,000 | Agreed Amount | N/A | Replacement Cost | 0% | Special with Theft | BCP85 4.8 |
| Roof | | | | Actual Cash Value (Roof ACV) | | | BCP915 4.0 |
| Personal Property | $8,000,000 | Agreed Amount | N/A | Replacement Cost | 0% | Special with Theft | BCP85 4.8 |

**STORAGE** — **23745 Research Dr Farmington Hills, MI 48335-2625** — **LOCATION 2/1**

| COVERAGE DESCRIPTION (INCL. TYPE OF PROPERTY) | COVERAGE LIMIT | COINSURANCE | EQ DED | VALUATION TYPE | AUTO INCR | PERIL TYPE | FORM |
|---|---|---|---|---|---|---|---|
| Personal Property | $45,000 | Agreed Amount | N/A | Replacement Cost | 0% | Special with Theft | BCP85 4.8 |

**STORAGE UNIT** — **28265 Beck Rd Ste C13 C14 Wixom, MI 48393-4718** — **LOCATION 3/1**

| COVERAGE DESCRIPTION (INCL. TYPE OF PROPERTY) | COVERAGE LIMIT | COINSURANCE | EQ DED | VALUATION TYPE | AUTO INCR | PERIL TYPE | FORM |
|---|---|---|---|---|---|---|---|
| Personal Property | $60,000 | Agreed Amount | N/A | Replacement Cost | 0% | Special with Theft | BCP85 4.8 |

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| | |
|---|---|
| NAMED INSURED | Brightmoor Christian Church |
| POLICY NUMBER | 21MRA0437802 |
| POLICY PERIOD | 09/01/2023 at 12:01 a.m. to 09/01/2024 at 12:01 a.m. |

# Property Coverage Summary

Ministry*First*℠ commercial multi-peril policy Declarations continued...

We provide the Commercial Property coverage at the declared premise(s) for the coverage and limits indicated. The Coverages listed here are provided according to the terms of the designated coverage form and any other applicable forms or endorsements.

## Schedule of Additional Coverages: All Locations

The policy's property deductible applies to each of these coverages. Details are found on the Commercial Property Coverages BCP12B 4.5 form.

| COVERAGE DESCRIPTION | COVERAGE LIMIT | DEDUCTIBLE | FORM |
|---|---|---|---|
| Property Off Premises | $50,000+ | $5,000 | BCP12B 4.5 |
| Owned Personal Property-Parsonage | $10,000 | $5,000 | BCP12B 4.5 |
| Building/Personal Property - Newly Acquired/Constructed | $2,000,000++ | $5,000 | BCP12B 4.5 |
| Outside Objects and Structures | $20,000/category, $30,000 Total | $5,000 | BCP12B 4.5 |
| For any one landscaping item | $2,000 | $5,000 | BCP12B 4.5 |
| Each loss caused by wind | $5,000 | $5,000 | BCP12B 4.5 |
| Other Structures (Unscheduled) and their Contents | $15,000 for Structures, $15,000 for Contents | $5,000 | BCP12B 4.5 |
| Owned Personal Property - Dwellings | 5% of dwelling value | $5,000 | BCP12B 4.5 |
| Contents - Buildings and Structures Described on the Declarations | $15,000+++ | $5,000 | BCP12B 4.5 |
| Trailers | $10,000 | $5,000 | BCP12B 4.5 |
| Vehicle Equipment and Accessories | $25,000 | $5,000 | BCP12B 4.5 |
| Money and Securities | $5,000 (Loss from specified perils only. Doubled on specified holidays) | $5,000 | BCP12B 4.5 |
| Spoilage | $10,000 | $5,000 | BCP12B 4.5 |
| Damage to Buildings and Personal Property from Animals | $10,000 ($2,500 sublimit for loss caused by animals listed in policy form) | $5,000 | BCP12B 4.5 |
| Temporary Emergency Coordination/Shelter Operation Clean-Up | $50,000 for clean-up costs | $5,000 | BCP12B 4.5 |

*+ If the loss resulted from a covered peril and the property is off premises for no longer than 180 days.*
*++ Coverage applies for 180 days from the time construction begins or the new property is acquired.*
*+++ Only applies if the limit of insurance shown for the structure is no more than $15,000 and there is no limit of Organizational Personal Property shown on the declarations for the structure.*

The policy's property deductible does not apply to the following coverages. Details are found on the Commercial Property Coverages form.

| COVERAGE DESCRIPTION | COVERAGE LIMIT | FORM |
|---|---|---|
| Debris Removal Expense - Partial or Total Loss | Partial Loss: Remaining Limit for Covered Property - Total Loss: $25,000 | BCP12B 4.5 |
| Emergency Removal | Coverage applies up to 30 days after property is first moved | BCP12B 4.5 |
| Fire Department Service Charges | $50,000 | BCP12B 4.5 |
| Fire Extinguisher Recharge | $50,000 if recharged within 30 days | BCP12B 4.5 |
| Pollutant Clean-Up and Removal | $10,000 (annual aggregate)* | BCP12B 4.5 |
| Installed Lock Recalibration | $10,000 if recalibrated within 10 days | BCP12B 4.5 |
| Arson Reward | $20,000** | BCP12B 4.5 |
| Papers and Records (including electronic data) | $50,000 | BCP12B 4.5 |
| Personal Property Owned by Others (non-clergy) | $5,000 per person/$25,000 maximum (excess)*** | BCP12B 4.5 |
| Personal Property Owned by Clergy | $30,000 (excess)*** | BCP12B 4.5 |
| Theft or Vandalism Reward | $5,000** | BCP12B 4.5 |

** If the loss resulted from a covered peril and was reported within 180 days.*
*** Or the amount paid to the insured as a result of the direct loss, if less than the limit stated above.*
**** Additional limits are available*

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|---|---|
| NAMED INSURED | Brightmoor Christian Church |
| POLICY NUMBER | 21MRA0437802 |
| POLICY PERIOD | 09/01/2023 at 12:01 a.m. to 09/01/2024 at 12:01 a.m. |

# Property Coverage Summary

Ministry*First*℠ commercial multi-peril policy Declarations continued...

We provide the Commercial Property coverage at the declared premise(s) for the coverage and limits indicated. The Coverages listed here are provided according to the terms of the designated coverage form and any other applicable forms or endorsements.

## Optional Coverages: All Locations

### Combined Ordinance or Law Enforcement Coverage

| COVERAGE DESCRIPTION | COVERAGE LIMIT | DEDUCTIBLE | FORM |
|---|---|---|---|
| Ordinance or Law A - Increased Building Loss | $350,000 | $5,000 | BCP138B 4.5 |
| Ordinance or Law B - Increased Debris Removal | $100,000 | $5,000 | BCP138B 4.5 |
| Ordinance or Law C - Increased Cost of Construction | $100,000 | $5,000 | BCP138B 4.5 |

### Organizational Optional Theft Coverage

| COVERAGE DESCRIPTION | COVERAGE LIMIT | DEDUCTIBLE | FORM |
|---|---|---|---|
| Theft of Money and Securities | $10,000 | $250 | BCP36 4.5 |
| Theft of Building Materials | $5,000 | $250 | BCP36 4.5 |

### Ministry Personnel Dishonesty Coverage

| COVERAGE DESCRIPTION | COVERAGE LIMIT | DEDUCTIBLE | FORM |
|---|---|---|---|
| Personnel Dishonesty Coverage | $45,000 | N/A | BCP37A 4.5 |

### Earnings and Donations and Extra Expense Coverage Part

Perils Part: See Peril Type for the Property Described on the Schedule of Buildings and Personal Property That Sustains a Loss

| COVERAGE DESCRIPTION | COVERAGE LIMIT | DEDUCTIBLE | FORM |
|---|---|---|---|
| Earnings and Donations | $1,060,000 | N/A | BCP71 4.8 |
| Extra Expense | $100,000 | N/A | BCP71 4.8 |

### Water Damage - Flood, Backup, and Subsurface

| COVERAGE DESCRIPTION | COVERAGE LIMIT | DEDUCTIBLE | FORM |
|---|---|---|---|
| Water Damage-Flood, Back-up, and Subsurface | $10,000 | $5,000 | BCP27 4.5 |

### Sewer and Drain Back-up Extension

| COVERAGE DESCRIPTION | COVERAGE LIMIT | DEDUCTIBLE | FORM |
|---|---|---|---|
| Sewer/Drain Backup Extension | See Building/Personal Property Limit | $5,000 | BCP135 4.1 |

# Property Coverage Summary

Ministry*First*℠ commercial multi-peril policy Declarations continued...

We provide the Commercial Property coverage at the declared premise(s) for the coverage and limits indicated. The Coverages listed here are provided according to the terms of the designated coverage form and any other applicable forms or endorsements.

## Systems / Equipment Breakdown Coverage

| COVERAGE DESCRIPTION | COVERAGE LIMIT | DEDUCTIBLE | FORM |
|---|---|---|---|
| Systems/Equipment Breakdown Coverage | Building/Personal Property Limit | $5,000 | BSEB100 4.1 |

## Rented Personal Property of Others Coverage

| COVERAGE DESCRIPTION | COVERAGE LIMIT | DEDUCTIBLE | FORM |
|---|---|---|---|
| Rented Personal Property of Others | $100,000 | $1,000 | BCP12B 4.5 |

## Interior Building Damage Coverage

| COVERAGE DESCRIPTION | COVERAGE LIMIT | DEDUCTIBLE | FORM |
|---|---|---|---|
| Interior Building Damage Coverage-Including Gutters/ Downspouts Coverage | $60,011,000 | $5,000 | BCP49 4.0 |

## Terrorism Loss Coverage

| COVERAGE DESCRIPTION | COVERAGE LIMIT | DEDUCTIBLE | FORM |
|---|---|---|---|
| Certified and Non-Certified Terrorism Loss | $60,011,000 | $5,000 | BCL0600 3.0 |

## Laboratory Clean-up Coverage

| COVERAGE DESCRIPTION | COVERAGE LIMIT | DEDUCTIBLE | FORM |
|---|---|---|---|
| Laboratory Clean-up Coverage | $100,000 | $5,000 | BCP124 1.0 |

## Additional Property Forms

| FORM | FORM NAME |
|---|---|
| BCP0643 01 08 | Exclusion - War and Military Action |
| BCP603MI 1.1 | Michigan Amendatory Endorsement |
| BCP88MI 4.0 | Earth Movement & Volcanic Eruption Excl |
| BN12V 1.0 | Notice Regarding Building Valuation |
| BN2567 1.0 | Notice Water Damage/Flood Coverage |
| CP132 1.0 | Loss Payable Options |
| EX0651 2.3 | NBC Terrorism Exclusion |

| FORM | FORM NAME |
|---|---|
| BCP500 4.5 | Loss Free Deductible Reduction End |
| BCP700 1.0 | Appraisal Endorsement Provision Amend |
| BCP915 4.0 | Property Coverage Modification ACV Roof |
| BN15 1.0 | Notice To Mortgagee |
| CP0171 10 08 | Exclusion Water Damage |
| CL1630 06 06 | Conditional Terrorism Exclusion |

## Additional Interests

| NAME | TYPE | LOAN NUMBER | INTEREST | ADDRESS |
|---|---|---|---|---|
| Canton Business Center, LLC | Additional Insured | | Other: Storage Unit - Loc 0201 | 28345 Beck Rd Wixom, MI 48393 -4733 |
| Beck Business Center LLC | Additional Insured | | Other: Storage Unit- Loc 0301 | 28345 Beck Rd Wixom, MI 48393 -4733 |

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| | |
|---|---|
| NAMED INSURED | Brightmoor Christian Church |
| POLICY NUMBER | 21MRA0437802 |
| POLICY PERIOD | 09/01/2023 at 12:01 a.m. to 09/01/2024 at 12:01 a.m. |

# Property Coverage Summary

## Ministry*First*℠ commercial multi-peril policy Declarations continued...

We provide the Commercial Property coverage at the declared premise(s) for the coverage and limits indicated. The Coverages listed here are provided according to the terms of the designated coverage form and any other applicable forms or endorsements.

| NAME | TYPE | LOAN NUMBER | INTEREST | ADDRESS |
|---|---|---|---|---|
| BMO Harris Bank N.A. RIB, Its Successors and/or Assigns | Lender's Loss Payable | | Other: Church | PO Box 4260 Napa, CA 94558 -0425 |
| Millennium Business Systems | Loss Payee | 0031783962000 | Other: Leased Imaging Production Copier | PO Box 202134 Florence, SC 29502 -2134 |
| PItney Bowes | Loss Payee | 0040829996 | Other: Postage Machine # 0040829996 | 27 Waterview Dr Shelton, CT 06484 -4301 |

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|---|---|
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| POLICY NUMBER | 21MRA0437802 |
| POLICY PERIOD | 09/01/2023 at 12:01 a.m. to 09/01/2024 at 12:01 a.m. |

# Liability Coverage Summary

Ministry*First*℠ commercial multi-peril policy Declarations continued...

The Coverages listed within these declarations are provided according to the terms of the designated coverage forms and any other applicable forms or endorsements. Only one liability coverage and one medical coverage will apply to an occurrence and any related loss. Any limit which is specifically stated within a coverage form or endorsement represents the most we will pay for the coverage to which such a limit applies. For application of limits, see Liability and Medical Coverage form (BGL11 4.5).

## Key Liability Coverage Facts: Schedule of Limits

| | |
|---|---|
| **GENERAL OCCURRENCE LIMIT** | $1,000,000 |
| **GENERAL AGGREGATE LIMIT** | $3,000,000 |

## Principal Liability Coverages

| COVERAGE DESCRIPTIONS | COVERAGE LIMIT | COVERAGE AGGREGATE LIMIT | FORM |
|---|---|---|---|
| Bodily Injury/Property Damage Liability (L) | $1,000,000* | $3,000,000* | GL100 1.0 |
| Medical Payments (M) | $10,000*+ | $3,000,000* | GL100 1.0 |
| Products/Completed Work (N) | $1,000,000* | $3,000,000* | GL100 1.0 |
| Fire Legal Liability (O) | $1,000,000* | $3,000,000* | BGL951 4.5 |

## Supplemental Coverages

| COVERAGE DESCRIPTIONS | COVERAGE LIMIT | COVERAGE AGGREGATE LIMIT | FORM |
|---|---|---|---|
| Incidental Contractual Liability | $1,000,000* | $3,000,000* | GL100 1.0 |
| Incidental Medical Malpractice | $1,000,000* | $3,000,000* | GL100 1.0 |
| Mobile Equipment | $1,000,000* | $3,000,000* | GL100 1.0 |

## Additional Coverages

| COVERAGE DESCRIPTIONS | COVERAGE LIMIT | COVERAGE AGGREGATE LIMIT | FORM |
|---|---|---|---|
| Membership Emotional Injury Liability Coverage | $1,000,000* | $3,000,000* | BGL51 4.5 |
| Nursery/Child Care Corporal Punishment Liability | $1,000,000* | $3,000,000* | BGL51 4.5 |
| Supervision-Related Emotional Injury Liability Coverage | $1,000,000* | $3,000,000* | BGL51 4.5 |
| Food Preparation Liability Coverage | $1,000,000* | $3,000,000* | BGL51 4.5 |
| Privacy Violation Liability Coverage | $1,000,000* | $3,000,000* | BGL51 4.5 |
| Damage To Property Of Others Coverage | | | BGL51 4.5 |
| Not in Your Control | $1,000*+ | $3,000,000* | BGL51 4.5 |
| In Your Control | $2,500*+ | $3,000,000* | BGL51 4.5 |
| Prosthetic Devices | $500*+ | $3,000,000* | BGL51 4.5 |
| Incidental Camper Medical Coverage | $10,000* | $3,000,000* | BGL51 4.5 |
| Additional Incidental Contractual Liability Coverage | $1,000,000* | $3,000,000* | BGL51 4.5 |

## Related Organizations/Operations

The following entities are insured for designated related Coverages.

** Only a single limit applies to the loss. All coverage limits are subject to the general occurrence limit and all aggregate limits are subject to the general aggregate limit.*
*+ per person limit*

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| | |
|---|---|
| NAMED INSURED | Brightmoor Christian Church |
| POLICY NUMBER | 21MRA0437802 |
| POLICY PERIOD | 09/01/2023 at 12:01 a.m. to 09/01/2024 at 12:01 a.m. |

# Liability Coverage Summary

## Ministry*First*℠ commercial multi-peril policy Declarations continued...

The Coverages listed within these declarations are provided according to the terms of the designated coverage forms and any other applicable forms or endorsements. Only one liability coverage and one medical coverage will apply to an occurrence and any related loss. Any limit which is specifically stated within a coverage form or endorsement represents the most we will pay for the coverage to which such a limit applies. For application of limits, see Liability and Medical Coverage form (BGL11 4.5).

### Details of Related Organization/Operations

| NAME | ADDRESS | MINISTRY TYPE | FORMS |
|---|---|---|---|
| Franklin Road Christian School | 40800 W 13 Mile Rd Novi, MI 48377 | Parochial Schools | BGL53R 4.5 |
| The Train Station Preschool | 40800 W 13 Mile Rd Novi, MI 48377 | Day Nursery Institution | BGL53R 4.5 |

### Additional Coverages

| COVERAGE DESCRIPTIONS | COVERAGE LIMIT | COVERAGE AGGREGATE LIMIT | FORM |
|---|---|---|---|
| Academic Practices Emotional Injury Liability Coverage | $1,000,000* | $3,000,000* | BGL53R 4.5 |
| Supervision-Related Emotional Injury Liability Coverage | $1,000,000* | $3,000,000* | BGL53R 4.5 |
| Student Corporal Punishment Liability Coverage | $1,000,000* | $3,000,000* | BGL53R 4.5 |
| Teacher/Governing Board Liability Coverage | $1,000,000* | $3,000,000* | BGL53R 4.5 |
| Food Preparation Liability Coverage | $1,000,000* | $3,000,000* | BGL53R 4.5 |
| Privacy Violation Liability Coverage | $1,000,000* | $3,000,000* | BGL53R 4.5 |
| Damage To Property of Others Coverage | | | |
| Not in Your Control | $1,000*+ | $3,000,000* | BGL53R 4.5 |
| In Your Control | $2,500*+ | $3,000,000* | BGL53R 4.5 |
| Additional Incidental Contractual Liability Coverage | $1,000,000* | $3,000,000* | BGL53R 4.5 |
| Concussive Impact Liability Coverage not including High Hazard Activities | $1,000,000* | $3,000,000* | BGL53R 4.5 |
| International Exchange Student Reimbursement Coverage | $1,000* | $3,000,000* | BGL53R 4.5 |

## Defense Coverage

Applies in addition to the liability limit unless otherwise specifically stated in an applicable coverage form.

## Counseling Acts Liability Coverage

| COVERAGE DESCRIPTIONS | COVERAGE LIMIT | COVERAGE AGGREGATE LIMIT | FORM |
|---|---|---|---|
| Counseling Acts Liability Coverage | $1,000,000* | $3,000,000* | BGL63 4.1 |
| Outside Counseling Reimbursement Coverage | $5,000+ | $3,000,000* | BGL63 4.1 |
| Collegiate Student Counselor Counseling Activity Liability Coverage | $1,000,000* | $3,000,000* | BGL64A 4.5 |
| Outside Counseling Reimbursement Coverage | $5,000+ | $3,000,000* | BGL64A 4.5 |

** Only a single limit applies to the loss. All coverage limits are subject to the general occurrence limit and all aggregate limits are subject to the general aggregate limit.*
*+ per person limit*

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| | |
|---|---|
| NAMED INSURED | Brightmoor Christian Church |
| POLICY NUMBER | 21MRA0437802 |
| POLICY PERIOD | 09/01/2023 at 12:01 a.m. to 09/01/2024 at 12:01 a.m. |

# Liability Coverage Summary

Ministry*First*℠ commercial multi-peril policy Declarations continued...

The Coverages listed within these declarations are provided according to the terms of the designated coverage forms and any other applicable forms or endorsements. Only one liability coverage and one medical coverage will apply to an occurrence and any related loss. Any limit which is specifically stated within a coverage form or endorsement represents the most we will pay for the coverage to which such a limit applies. For application of limits, see Liability and Medical Coverage form (BGL11 4.5).

## Cyber Liability Coverage

| COVERAGE DESCRIPTIONS | COVERAGE LIMIT | COVERAGE AGGREGATE LIMIT | FORM |
|---|---|---|---|
| Computer Use Liability Coverage | $500,000* | $1,500,000* | BGL87 4.5 |
| Electronic Commerce Liability Coverage | $500,000* | $1,500,000* | BGL87 4.5 |
| Data Breach Liability Coverage | $500,000* | $1,500,000* | BGL87 4.5 |
| Outsourced IT Liability Coverage | $500,000* | $1,500,000* | BGL87 4.5 |
| Special Reimbursement Coverage (Data Breach Rectification Costs) | $125,000 | $125,000 | BGL87 4.5 |
| Special Reimbursement Coverage (Electronic Discovery Costs) | $50,000 | $50,000 | BGL87 4.5 |
| Special Defense Coverage (Subpoenas, Regulatory Actions and Injunctive) | $50,000 | $50,000 | BGL87 4.5 |

## Defense Reimbursement Coverage

| COVERAGE DESCRIPTIONS | COVERAGE LIMIT | COVERAGE AGGREGATE LIMIT | FORM |
|---|---|---|---|
| Covered Lawsuit Proceeding (Proceeding Limit) | $50,000 | $100,000 | BGL89 4.8 |
| Law Enforcement Inquiry (Inquiry Limit) | $10,000 | $30,000 | BGL89 4.8 |

## Directors and Officers Liability Coverage

| COVERAGE DESCRIPTIONS | COVERAGE LIMIT | COVERAGE AGGREGATE LIMIT | FORM |
|---|---|---|---|
| Directors and Officers (Leadership) Liability Coverage | $1,000,000* | $3,000,000* | BGL81 4.1 |

## Educational Preparation Liability Coverage

| COVERAGE DESCRIPTIONS | COVERAGE LIMIT | COVERAGE AGGREGATE LIMIT | FORM |
|---|---|---|---|
| Educational Preparation Liability Coverage | $1,000,000* | $3,000,000* | BGL953 2.2 |

## Benefits Administration Liability Coverage

| COVERAGE DESCRIPTIONS | COVERAGE LIMIT | COVERAGE AGGREGATE LIMIT | FORM |
|---|---|---|---|
| Employee Benefit Liability Coverage | $1,000,000 | $3,000,000 | BGL83 4.0 |
| (Medical Expense Limit) | $100,000* | $500,000* | BGL83 4.0 |

## Employment Practices ("Employment Pract") Liability Coverage

| COVERAGE DESCRIPTIONS | COVERAGE LIMIT | COVERAGE AGGREGATE LIMIT | FORM |
|---|---|---|---|
| Employment-Related Liability Coverage | $1,000,000* | $3,000,000* | BGL85 4.5 |

** Only a single limit applies to the loss. All coverage limits are subject to the general occurrence limit and all aggregate limits are subject to the general aggregate limit.*
*+ per person limit*

BROTHERHOOD MUTUAL®

| | |
|---|---|
| NAMED INSURED | Brightmoor Christian Church |
| POLICY NUMBER | 21MRA0437802 |
| POLICY PERIOD | 09/01/2023 at 12:01 a.m. to 09/01/2024 at 12:01 a.m. |

# Liability Coverage Summary

Ministry*First*℠ commercial multi-peril policy Declarations continued...

The Coverages listed within these declarations are provided according to the terms of the designated coverage forms and any other applicable forms or endorsements. Only one liability coverage and one medical coverage will apply to an occurrence and any related loss. Any limit which is specifically stated within a coverage form or endorsement represents the most we will pay for the coverage to which such a limit applies. For application of limits, see Liability and Medical Coverage form (BGL11 4.5).

## Fire Legal/Nonowned Property Damage Liability Coverage

| COVERAGE DESCRIPTIONS | COVERAGE LIMIT | COVERAGE AGGREGATE LIMIT | FORM |
|---|---|---|---|
| Nonowned Property Damage Liability Coverage | $1,000,000* | $3,000,000* | BGL951 4.5 |
| Additional Incidental Contractual Liability Coverage | $1,000,000* | $3,000,000* | BGL951 4.5 |

## Media Liability Coverage

| COVERAGE DESCRIPTIONS | COVERAGE LIMIT | COVERAGE AGGREGATE LIMIT | FORM |
|---|---|---|---|
| Personal Injury Liability Coverage (Media/Communications Activity) | $1,000,000* | $3,000,000* | BGL41 1.0 |
| Personal Injury Liability Coverage (Personal Violations) | $1,000,000* | $3,000,000* | BGL41 1.0 |
| Personal Injury Liability Coverage (Unauthorized Access/ Posting) | $1,000,000* | $3,000,000* | BGL41 1.0 |
| Special Defense Coverage (Alleged Intentional Acts) | $1,000,000* | $3,000,000* | BGL41 1.0 |

## Medical Coverage

| COVERAGE DESCRIPTIONS | COVERAGE LIMIT | COVERAGE AGGREGATE LIMIT | FORM |
|---|---|---|---|
| Student/Day Care Medical | $5,000*+ | $3,000,000* | BGL93A 4.5 |
| Religious Athletic Medical Coverage | $10,000*+ | $3,000,000* | BGL91 4.5 |

## Nonowned Vehicle Coverage

| COVERAGE DESCRIPTIONS | COVERAGE LIMIT | COVERAGE AGGREGATE LIMIT | FORM |
|---|---|---|---|
| Nonowned Vehicle Liability Coverage | $1,000,000* | $3,000,000* | BGL71 4.0 |
| Defense Coverage: Authorized Operator | $1,000,000* | $3,000,000* | BGL71 4.0 |
| Loss of Use Coverage | $500 per vehicle | $1,000* | BGL71 4.0 |
| Trip Occupant Coverage | $500*+ | $3,000,000* | BGL71 4.0 |
| Damage to Property of Others Coverage | $500* | $3,000,000* | BGL71 4.0 |
| Nonowned Vehicle Deductible Reimbursement Coverage | $1,000* | $3,000,000* | BGL71 4.0 |
| Rental Vehicle Physical Damage Coverage | $90,000 per vehicle, $250 deductible | $180,000* | BGL777 3.0 |

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*+ per person limit*

BROTHERHOOD MUTUAL®

| | |
|---|---|
| NAMED INSURED | Brightmoor Christian Church |
| POLICY NUMBER | 21MRA0437802 |
| POLICY PERIOD | 09/01/2023 at 12:01 a.m. to 09/01/2024 at 12:01 a.m. |

# Liability Coverage Summary

MinistryFirst℠ commercial multi-peril policy Declarations continued...

The Coverages listed within these declarations are provided according to the terms of the designated coverage forms and any other applicable forms or endorsements. Only one liability coverage and one medical coverage will apply to an occurrence and any related loss. Any limit which is specifically stated within a coverage form or endorsement represents the most we will pay for the coverage to which such a limit applies. For application of limits, see Liability and Medical Coverage form (BGL11 4.5).

## Other Liability Coverage

| COVERAGE DESCRIPTIONS | COVERAGE LIMIT | COVERAGE AGGREGATE LIMIT | FORM |
|---|---|---|---|
| Terrorism Liability Coverage | $1,000,000 | $3,000,000 | BGL0250 3.1 |

## Relief Activity Additional Coverages

| COVERAGE DESCRIPTIONS | COVERAGE LIMIT | COVERAGE AGGREGATE LIMIT | FORM |
|---|---|---|---|
| Emotional Injury and Financial Damage Liability | $1,000,000* | $3,000,000* | BGL994 1.0 |
| Additional Medical Expense Coverage | $50,000+,$250,000 per occurrrence | $3,000,000 | BGL994 1.0 |
| Broadened Wage Loss Reimbursement Coverage | $10,000+, $50,000 per occurrence | $3,000,000 | BGL994 1.0 |
| Damage to Relief Worker's Tools and Equipment Coverage | $2,500+, $10,000 per occurrence | $3,000,000 | BGL994 1.0 |
| Primary Liability Coverage for Relief Workers | $1,000,000* | $3,000,000* | BGL994 1.0 |

## Religious Freedom Protection Coverage

| COVERAGE DESCRIPTIONS | COVERAGE LIMIT | COVERAGE AGGREGATE LIMIT | FORM |
|---|---|---|---|
| Religious Communication Liability Coverage | $1,000,000* | $3,000,000* | BGL66 1.2 |
| Religious Activity Liability Coverage | $1,000,000* | $3,000,000* | BGL66 1.2 |
| Discriminatory Acts Liability Coverage | $1,000,000* | $3,000,000* | BGL66 1.2 |
| Tax Exempt Challenge: Expense Reimbursement Coverage | $25,000* | $25,000* | BGL66 1.2 |
| Litigation Activity: Legal Defense Reimbursement Coverage | See form | See form | BGL66 1.2 |
| Litigation Activity: Declaratory Action Reimbursement Coverage | See form | See form | BGL66 1.2 |

## Security Operations Coverage

| COVERAGE DESCRIPTIONS | COVERAGE LIMIT | COVERAGE AGGREGATE LIMIT | FORM |
|---|---|---|---|
| Additional Medical Expense Coverage | $50,000*+ | $250,000* | BGL993 4.0 |
| Broadened Wage Loss Reimbursement Coverage (Emotional Injury) | $10,000*+ | $50,000* | BGL993 4.0 |
| Individual Counseling Coverage | $10,000*+ | $50,000* | BGL993 4.0 |
| Damage to Security-Related Equipment | $2,500*+ | $10,000* | BGL993 4.0 |
| Primary Coverage for Specified Individuals | See Form | See Form | BGL993 4.0 |
| Enforcement of Security Policy or Weapons Policy | $1,000,000* | $1,000,000* | BGL993 4.0 |
| Negligent Infliction of Emotional Distress Arising from Security Operations | $1,000,000* | $1,000,000* | BGL993 4.0 |

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*+ per person limit*

BROTHERHOOD MUTUAL®

| | |
|---|---|
| NAMED INSURED | Brightmoor Christian Church |
| POLICY NUMBER | 21MRA0437802 |
| POLICY PERIOD | 09/01/2023 at 12:01 a.m. to 09/01/2024 at 12:01 a.m. |

# Liability Coverage Summary

Ministry*First*℠ commercial multi-peril policy Declarations continued...

The Coverages listed within these declarations are provided according to the terms of the designated coverage forms and any other applicable forms or endorsements. Only one liability coverage and one medical coverage will apply to an occurrence and any related loss. Any limit which is specifically stated within a coverage form or endorsement represents the most we will pay for the coverage to which such a limit applies. For application of limits, see Liability and Medical Coverage form (BGL11 4.5).

## Traumatic Incident Response Coverage

| COVERAGE DESCRIPTIONS | COVERAGE LIMIT | COVERAGE AGGREGATE LIMIT | FORM |
|---|---|---|---|
| Additional Medical Expense Coverage | $50,000*+ | $1,000,000* | BGL991D 4.1 |
| Broadened Wage Loss Reimbursement Coverage (Including Emotional Injury) | See form | $1,000,000* | BGL991D 4.1 |
| Individual Counseling Coverage | $10,000*+ | $1,000,000* | BGL991D 4.1 |
| Additional Organizational Expense | $500,000* | $1,000,000* | BGL991D 4.1 |

## Worldwide Liability Extension Coverage

**Extended Foreign Ministry Operations- Excluded**

| COVERAGE DESCRIPTIONS | COVERAGE LIMIT | COVERAGE AGGREGATE LIMIT | FORM |
|---|---|---|---|
| Short-Term Trip Limited Kidnap and Extortion Expense Reimbursement Coverage | See Form | See Form | BGL112 1.0 |
| Short-Term Foreign Trip Terrorism-Related Travel Interruption Reimbursement | See Form | See Form | BGL112 1.0 |
| Short-Term Foreign Trip Death Reimbursement Coverage For Your Leaders | See Form | See Form | BGL112 1.0 |
| Foreign Operations Image Restoration Extension | See Form | See Form | BGL112 1.0 |
| Expanded Medical Coverage For Foreign Ministry Participants | See Form | See Form | BGL112 1.0 |

## Wage Reimbursement Coverage

| COVERAGE DESCRIPTIONS | COVERAGE LIMIT | COVERAGE AGGREGATE LIMIT | FORM |
|---|---|---|---|
| Wage Loss Reimbursement Coverage | $3,500+ | $35,000 per occurrence | BGL99 4.0 |

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*+ per person limit*

BROTHERHOOD MUTUAL®

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|---|---|
| NAMED INSURED | Brightmoor Christian Church |
| POLICY NUMBER | 21MRA0437802 |
| POLICY PERIOD | 09/01/2023 at 12:01 a.m. to 09/01/2024 at 12:01 a.m. |

# Liability Coverage Summary

Ministry*First*℠ commercial multi-peril policy Declarations continued...

The Coverages listed within these declarations are provided according to the terms of the designated coverage forms and any other applicable forms or endorsements. Only one liability coverage and one medical coverage will apply to an occurrence and any related loss. Any limit which is specifically stated within a coverage form or endorsement represents the most we will pay for the coverage to which such a limit applies. For application of limits, see Liability and Medical Coverage form (BGL11 4.5).

## Sexual Acts Liability Coverage

| COVERAGE DESCRIPTIONS | COVERAGE LIMIT | COVERAGE AGGREGATE LIMIT | FORM |
|---|---|---|---|
| Sexual Acts Liability Coverage With Screening | $1,000,000* | $1,000,000* | BGL61 4.7 |
| Sexual Harassment Liability Coverage (other than your employees) | $1,000,000* | $1,000,000* | BGL61 4.7 |
| Improper Reporting of Sexual Acts Liability Coverage | $1,000,000* | $1,000,000* | BGL61 4.7 |
| Improper Supervision of Convicted Sexual Offenders Liability Coverage | $1,000,000* | $1,000,000* | BGL61 4.7 |
| Outside Counseling Reimbursement Coverage | $5,000*+ | $100,000* | BGL61 4.7 |
| Sexual Acts Medical Payment Extension | $10,000*+ | $100,000* | BGL61 4.7 |
| Image Restoration Extension | $10,000* | $1,000,000* | BGL61 4.7 |
| Redemptive Employment/Appointment | $300,000* | $300,000* | BGL613 4.5 |

## Schedule of Liability Exposures

In issuing this policy, we have relied on material information provided to us by the Named Insured. The following schedule discloses all of the insured's insurable exposures (as conveyed by the Named Insured) known to exist at the policy inception date. Declared premises must be owned, occupied, or rented by you or your scheduled related organizations.

| EXPOSURE DESCRIPTIONS | ADDRESS / BUILDING DESCRIPTION | CODE | RATING BASIS |
|---|---|---|---|
| Day Nursery<br>Medical including students | Location 1 Building 1 Church | 07100 | 4,000 Square Feet<br>109 Students |
| Parochial or Private School<br>Medical including students | 40800 W 13 Mile Rd Novi MI 48377 | 07900 | 314 Students |
| Church | Location 1 Building 1 Church | 08101 | 116,204 Square Feet |
| Athletic Games Sponsored By Insured | 40800 W 13 Mile Rd Novi MI 48377 | 13000 | 400 Games |
| Self Storage Warehouse | Location 2 Building 1 Storage | 15202 | 1,000 Square Feet |
| Self Storage Warehouse | Location 3 Building 1 Storage | 15202 | 2,000 Square Feet |
| Bleachers or Grandstands | Location 1 Building 1 Church | 30035 | 1 Each |
| Playgrounds | 40800 W 13 Mile Rd Novi MI 48377 | 30320 | 2 Each |
| Baseball Diamond Rated As Playground | 40800 W 13 Mile Rd Novi MI 48377 | 30320 | 1 Each |
| Soccer Field Rated As Playground | 40800 W 13 Mile Rd Novi MI 48377 | 30320 | 1 Each |
| Parsonage | | | |
| Pastoral Counseling | | | 4 Pastor(s) |
| Special Events | | | |

** Only a single limit applies to the loss. All coverage limits are subject to the general occurrence limit and all aggregate limits are subject to the general aggregate limit.*
*+ per person limit*

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| | |
|---|---|
| NAMED INSURED | Brightmoor Christian Church |
| POLICY NUMBER | 21MRA0437802 |
| POLICY PERIOD | 09/01/2023 at 12:01 a.m. to 09/01/2024 at 12:01 a.m. |

# Liability Coverage Summary

Ministry*First*℠ commercial multi-peril policy Declarations continued...

The Coverages listed within these declarations are provided according to the terms of the designated coverage forms and any other applicable forms or endorsements. Only one liability coverage and one medical coverage will apply to an occurrence and any related loss. Any limit which is specifically stated within a coverage form or endorsement represents the most we will pay for the coverage to which such a limit applies. For application of limits, see Liability and Medical Coverage form (BGL11 4.5).

## High Hazard Activities

For details regarding how these coverage limits will apply, see the *How Much We Pay* section of the High Hazard Activities Coverage Limits Form (BGL-21).

| ACTIVITY DESCRIPTION | MEDICAL LIMIT | OCCURRENCE LIMIT | COVERAGE AGGREGATE LIMIT | FORM |
|---|---|---|---|---|
| Skate Park Operations | $0 per person | $100,000 | $300,000 | BGL21 4.1 |
| Fireworks Sales | $0 per person | $100,000 | $300,000 | BGL21 4.1 |
| Fireworks Display | $0 per person | $300,000 | $900,000 | BGL21 4.1 |
| Construction Oversight | $0 per person | $100,000 | $300,000 | BGL21 4.1 |
| School High Hazard Sports Activities (Concussive Impact) | | $300,000 | $900,000 | BGL421 1.1 |

## Other Liability and Medical Forms

| FORM | FORM NAME |
|---|---|
| BGL100A1 2.2 | Commercial Liability Endorsement |
| BGL152 1.0 | Additional Insured Endorsement |
| BGL59RA 4.0 | Related Org Principal and Additional Cov |
| EX220 1.0 | Infectious Disease Liability Exclusion |
| GL0163 01 08 | Exclusion War and Military Action |
| GL0950 12 99 | Known Injury or Damage Amendments |
| BGL939AI 1.0 | Additional Insured - Excess Liability |
| GL1270 06 06 | Conditional Terrorism Exclusion |

| FORM | FORM NAME |
|---|---|
| BGL11 4.5 | Liability And Medical Coverage Form |
| BGL210 1.1 | Designated Premises Exclusion |
| BGL960 1.0 | Educators Liability Coverage |
| EX909 1.0 | Asbestos Exposure Exclusion |
| GL0403 03 10 | Amendatory Endorsement Michigan |
| GL890 1.0 | Lead Liability Exclusion |
| EX0281 2.4 | NBC Terrorism Exclusion |

## Additional Insureds

| NAME | LOAN/REFERENCE NUMBER | INTEREST | ADDRESS |
|---|---|---|---|
| BMO Harris Bank N.A. RIB Its successors and/or Assigns, Additional Insured | 77865061646781 | Location: 1 | PO Box 4260 Napa, CA 94558 -0425 |
| City of Novi, Additional Insured | | Building: 1/1 | 45175 W 10 Mile Rd Novi, MI 48375 -3006 |

** Only a single limit applies to the loss. All coverage limits are subject to the general occurrence limit and all aggregate limits are subject to the general aggregate limit.*
*+ per person limit*

BROTHERHOOD MUTUAL®

| | |
|---|---|
| NAMED INSURED | Brightmoor Christian Church |
| POLICY NUMBER | 21MRA0437802 |
| POLICY PERIOD | 09/01/2023 at 12:01 a.m. to 09/01/2024 at 12:01 a.m. |

# Commercial Excess Liability Supplemental Coverage Summary

Ministry*First*℠ commercial multi-peril policy Declarations continued...

In return for the payment of the premium, and subject to all the terms of the policy, we agree with you to provide the insurance as stated in the Excess/Umbrella Liability Coverage endorsement BGL939 4.7.

## Key Excess Liability Coverage Facts

| | |
|---|---|
| **NAME OF INSURED** | Brightmoor Christian Church |
| **ADDRESS** | 40800 W 13 Mile Rd, Novi, MI 48377 |
| **EXCESS LIABILITY POLICY PERIOD** | 9/1/2023 to 9/1/2024 at 12:01 a.m. at the location listed above |
| **EXCESS LIABILITY ANNUAL PREMIUM** | $5,150 |

## Excess Liability Coverage - Limit of Insurance

| | |
|---|---|
| **Coverage Limit (per Occurrence)** | $6,000,000 |
| **Coverage Aggregate Limit** | $6,000,000 |
| **Deductible/Retention** | N/A |

## Optional Excess Coverage Information

| COVERAGE | STATUS | LIMIT |
|---|---|---|
| Directors and Officers Liability Coverage | Included | $1,000,000 |
| Sexual Acts Liability Coverage | Excluded | N/A |
| Employment Practices Liability Coverage | Excluded | N/A |
| Cyber Liability Coverage | Excluded | N/A |
| Benefits Administration Liability Coverage | Excluded | N/A |

*Optional Coverage Limits are the same as the Excess Liability "per Occurrence" and Aggregate limits shown above, unless otherwise specified.*

## Schedule of Underlying Insurance

| TYPE | INSURER | POLICY PERIOD | POLICY NUMBER | LIMITS OF LIABILITY |
|---|---|---|---|---|
| General Liability | Brotherhood Mutual Insurance Company | 09/01/2023 - 09/01/2024 | 21MRA0437802 | $1,000,000 Occ/$3,000,000 Agg |
| Automobile Liability | Brotherhood Mutual Insurance Company | See applicable declarations page. | 21A0437786 | $1,000,000 |
| Employer's Liability | Brotherhood Mutual Insurance Company | See applicable declarations page. | 21W0437775 | $500000/$500000/$500000 |

Brotherhood Mutual
Insurance Company

| | |
|---|---|
| NAMED INSURED | Brightmoor Christian Church |
| POLICY NUMBER | 21MRA0437802 |
| POLICY PERIOD | 09/01/2023 to 09/01/2024 |
| AGENCY NAME | Shilton & Associates Inc |

# Policy Change History

Ministry*First*℠ commercial multi-peril policy change history.

## Change History

| CHANGE EFF DATE | CHANGE DESCRIPTION | PREMIUM IMPACT | PROCESSED DATE |
|---|---|---|---|
| 09/01/2023 | Liability Additional Insured Changed<br>Loss Payee Changed<br>Mortgagee Changed | $0 | 09/07/2023 |

This endorsement changes the Commercial Property Coverages provided by this policy

**-- PLEASE READ IT CAREFULLY --**

# LOSS PAYABLE OPTIONS

## SCHEDULE

(The information required below may be shown on a separate schedule or supplemental **declarations**.)

| Prem. No. | Bldg. No. | Description of Property | Name and Address of Loss Payee |
|---|---|---|---|
| | | Church | BMO Harris Bank N.A. RIB,<br>Its Successors and/or Assigns<br>PO Box 4260<br>Napa, CA 94558-0425 |

In addition to the policy **terms** which are contained in other sections of the Commercial Property Coverage, the following conditions apply to the property described on the schedule and only when indicated by an "X":

☐ **LOSS PAYABLE**

Any loss shall be adjusted with **you** and shall be payable to **you** and the loss payee shown on the schedule as **your** and their interests appear.

☒ **LENDER'S LOSS PAYABLE**

Any loss shall be payable to **you** and the loss payee shown on the schedule as interests appear. If more than one loss payee is named, they shall be paid in order of precedence.

The insurance for the loss payee continues in effect even when **your** insurance may be void because of **your** acts, neglect, or failure to comply with the coverage **terms**. The insurance for the loss payee does not continue in effect if the loss payee is aware of changes in ownership or substantial increase in risk and does not notify **us**.

If **we** cancel this policy, **we** notify the loss payee at least 10 days before the effective date of cancellation if **we** cancel for **your** nonpayment of premium, or 30 days before the effective date of cancellation if **we** cancel for any other reason.

**We** may request payment of the premium from the loss payee, if **you** fail to pay the premium.

If **we** pay the loss payee for a loss where **your** insurance may be void, the loss payee's right to collect that portion of the debt from **you** then belongs to **us.** This does not affect the loss payee's right to collect the remainder of the debt from **you**. As an alternative, **we** may pay the loss payee the remaining principal and accrued interest in return for a full assignment of the loss payee's interest and any instruments given as security for the debt.

If **we** choose not to renew this policy, **we** give written notice to the loss payee at least 10 days before the expiration date of this policy.

☐ **CONTRACT OF SALE**

Any loss shall be adjusted with **you** and shall be payable to **you** and the loss payee shown on the schedule as **your** and their interests appear.

The loss payee shown on the schedule is a person or organization **you** have entered a contract with for the sale of covered property.

When covered property is the subject of a contract of sale, the word **you** also means the loss payee.


Copyright MXMXCIV, American Association of Insurance Services

This endorsement changes the Commercial Property Coverages provided by this policy

**-- PLEASE READ IT CAREFULLY --**

# LOSS PAYABLE OPTIONS

## SCHEDULE

(The information required below may be shown on a separate schedule or supplemental **declarations**.)

| Prem. No. | Bldg. No. | Description of Property | Name and Address of Loss Payee |
|---|---|---|---|
| | | Leased Imaging Production Copier | Millennium Business Systems<br>PO Box 202134<br>Florence, SC 29502-2134 |

In addition to the policy **terms** which are contained in other sections of the Commercial Property Coverage, the following conditions apply to the property described on the schedule and only when indicated by an "X":

☒ **LOSS PAYABLE**

Any loss shall be adjusted with **you** and shall be payable to **you** and the loss payee shown on the schedule as **your** and their interests appear.

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Any loss shall be payable to **you** and the loss payee shown on the schedule as interests appear. If more than one loss payee is named, they shall be paid in order of precedence.

The insurance for the loss payee continues in effect even when **your** insurance may be void because of **your** acts, neglect, or failure to comply with the coverage **terms**. The insurance for the loss payee does not continue in effect if the loss payee is aware of changes in ownership or substantial increase in risk and does not notify **us**.

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The loss payee shown on the schedule is a person or organization **you** have entered a contract with for the sale of covered property.

When covered property is the subject of a contract of sale, the word **you** also means the loss payee.


Copyright MXMXCIV, American Association of Insurance Services

This endorsement changes the Commercial Property Coverages provided by this policy

**-- PLEASE READ IT CAREFULLY --**

# LOSS PAYABLE OPTIONS

## SCHEDULE

(The information required below may be shown on a separate schedule or supplemental **declarations**.)

| Prem. No. | Bldg. No. | Description of Property | Name and Address of Loss Payee |
|---|---|---|---|
| | | Postage Machine # 0040829996 | PItney Bowes<br>27 Waterview Dr<br>Shelton, CT 06484-4301 |

In addition to the policy **terms** which are contained in other sections of the Commercial Property Coverage, the following conditions apply to the property described on the schedule and only when indicated by an "X":

☒ **LOSS PAYABLE**

Any loss shall be adjusted with **you** and shall be payable to **you** and the loss payee shown on the schedule as **your** and their interests appear.

☐ **LENDER'S LOSS PAYABLE**

Any loss shall be payable to **you** and the loss payee shown on the schedule as interests appear. If more than one loss payee is named, they shall be paid in order of precedence.

The insurance for the loss payee continues in effect even when **your** insurance may be void because of **your** acts, neglect, or failure to comply with the coverage **terms**. The insurance for the loss payee does not continue in effect if the loss payee is aware of changes in ownership or substantial increase in risk and does not notify **us**.

If **we** cancel this policy, **we** notify the loss payee at least 10 days before the effective date of cancellation if **we** cancel for **your** nonpayment of premium, or 30 days before the effective date of cancellation if **we** cancel for any other reason.

**We** may request payment of the premium from the loss payee, if **you** fail to pay the premium.

If **we** pay the loss payee for a loss where **your** insurance may be void, the loss payee's right to collect that portion of the debt from **you** then belongs to **us.** This does not affect the loss payee's right to collect the remainder of the debt from **you**. As an alternative, **we** may pay the loss payee the remaining principal and accrued interest in return for a full assignment of the loss payee's interest and any instruments given as security for the debt.

If **we** choose not to renew this policy, **we** give written notice to the loss payee at least 10 days before the expiration date of this policy.

☐ **CONTRACT OF SALE**

Any loss shall be adjusted with **you** and shall be payable to **you** and the loss payee shown on the schedule as **your** and their interests appear.

The loss payee shown on the schedule is a person or organization **you** have entered a contract with for the sale of covered property.

When covered property is the subject of a contract of sale, the word **you** also means the loss payee.


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Copyright MXMXCIV, American Association of Insurance Services

# MEMORANDUM

**TO:** CORTNEY HANSON, CITY CLERK

**FROM:** ERICK W. ZINSER
DIRECTOR OF PUBLIC SAFETY / CHIEF OF POLICE

**INITIATED BY:** MICHAEL BENDER, DETECTIVE MB

**SUBJECT:** PYROTECHNIC APPLICATION-
BRIGHTMOOR CHURCH

**DATE:** MARCH 22, 2024

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APPLICANT:
James Herr
2247 Charms Ravine
Wixom, MI 48393

VENUE OF EVENT:
Brightmoor Church
40800 W. Thirteen Mile Rd
Novi, MI 48377

PYROTECHNIC COMPANY:
Ultratec Special Effects, Inc.
148 Moon Drive
Owens Cross Roads, AL 35763
(256) 725-4224

SOURCE:
This request was received by the Novi Police Department on March 20th, 2024. A response is requested by April 2nd, 2024.

INFORMATION:
The Novi Police Department received this request from the Novi City Clerk's Office to review a Theatrical Pyrotechnic application which will be displayed at Brightmoor Church, on the main worship center platform.

INVESTIGATION:
An ICHAT, Sex Offender Registry and CLEMIS. The check revealed nothing of concern that would disqualify any applicant from approval.

# MEMORANDUM

**TO:** MELISSA MORRIS, DEPUTY CITY CLERK

**FROM:** CHARLES BOULARD, DIRECTOR OF COMMUNITY DEVELOPMENT

**SUBJECT:** BRIGHTMOOR CHURCH - PYROTECHNICS

**DATE:** MARCH 25, 2024

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- ☐ Auctions
- ☐ Liquor License
- ☐ Arcade License
- ☐ Massage License
- ☐ Outdoor Gathering
- ☐ Outdoor Seating
- ☒ Other: **Brightmoor Church Pyrotechnics Display – April 18-19, 2024**

From a building safety standpoint, the Building Division does not object to the proposed fireworks/pyrotechnics show being held at Brightmoor Church – Main worship Center April 18-19, 2024, no exceptions taken. Should you have any further questions with regards to this matter please feel free to contact me at (248) 347-0423.

**CITY COUNCIL**

**Mayor**
Justin Fischer

**Mayor Pro Tem**
Laura Marie Casey

Dave Staudt

Brian Smith

Ericka Thomas

Matt Heintz

Priya Gurumurthy

**City Manager**
Victor Cardenas

**Director of Public Safety**
**Chief of Police**
Erick W. Zinser

**Fire Chief**
John B. Martin

**Assistant Chief of Police**
Scott R. Baetens

**Assistant Fire Chief**
Todd Seog

**Novi Public Safety Administration**
45125 Ten Mile Road
Novi, Michigan 48375
248.348.7100
248.347.0590 fax

cityofnovi.org

April 2, 2024

TO: Cortney Hanson- City Clerk

FROM: Fire Marshal Kevin S. Pierce

SUBJECT: **Indoor Pyrotechnics for Brightmoor Christian Church**
**40800 Thirteen Mile Rd, Novi MI 48377**

EVENT DATES & TIMES: April 18, 2024 @ 7pm
April 19, 2024 @ 7pm

I have reviewed the application for a Fireworks Permit at the above location. This application is **recommended for approval with conditions** and is contingent upon a satisfactory fire safety inspection prior to each of the performances. Along with the fire safety inspection, there will be two fire safety officers for each show on fire standby.

1) NFPA 6.4 **Pre-Show Review and Demonstration.** A walk-through and a representative demonstration of the pyrotechnics shall be approved by the authority having jurisdiction before permit is approved.

2) **MUST** provide Fire Department exact location where fireworks will be ignited.

3) **MUST** provide additional fire extinguishers behind the stage. Extinguishers must follow IFC 2012 for locations.

4) Conduct a fire safety inspection prior to each performance.

5) NFPA 6.5.1.1: An applicant for licensing as an operator shall provide evidence of actual experience as an operator or assistant as part of demonstrating competency to the authority having jurisdiction.

6) NFPA 8.1.1* **Portable Fire-Fighting Equipment.** Four or more fire extinguishers of the classification and size as approved by the authority having jurisdiction shall be readily accessible while the pyrotechnics are being loaded, preparing for firing or fired.

7) NFPA 8.1.1.1* In all cases, at least two pressurized water, Class 2-A extinguishers and two Class 10-BC extinguishers shall be provided, in addition to those required by NFPA 10, for the building.

8) NFPA 8.4 Separation Distance for Audiences:
    - Pyrotechnic device fired shall be a minimum of 15' or twice the fallout radius of the device, whichever is greater.
    - Concussion mortars and concussion effects shall be a minimum of 25'separation.
    - Glowing or flaming particles shall be 10' of greater.

# CITY OF NOVI CITY COUNCIL
# APRIL 8, 2024

**SUBJECT:** Approval of a Resolution to close Meadowbrook Road from 25075 Meadowbrook to Ten Mile and close 10 Mile Road from Meadowbrook to the Civic Center at 45175 Ten Mile Road for the 2024 Memorial Day Parade from 10:00 AM to 12:00 PM on Monday, May 27, 2024.

**SUBMITTING DEPARTMENT:** Department of Public Works, Engineering Division

**BACKGROUND INFORMATION:**

In recognition of service to our country, the City of Novi hosts a Memorial Day parade in honor of all Veterans. The Road Commission for Oakland County (RCOC) has issued an Annual Permit Number 64939 (valid through December 31, 2026) to the City allowing use of the roadways under County jurisdiction for civic events. The permit is predicated upon the adoption of an Authorizing Resolution by the Novi City Council approving the event and agreeing to the terms of the permit. Permit requirements include a hold harmless and indemnity agreement and represents the Board of Road Commissioners against any and all claims for bodily injury or property damage, or any other claim related to the event.

Ten Mile Road is under the jurisdiction of the RCOC. Approval of the attached resolution is required as part of RCOC Permit Number 64939.

**RECOMMENDED ACTION**: Approval of a Resolution to close Meadowbrook Road from 25075 Meadowbrook to Ten Mile and close 10 Mile Road from Meadowbrook to the Civic Center at 45175 Ten Mile Road for the 2024 Memorial Day Parade from 10:00 AM to 12:00 PM on Monday, May 27, 2024.

**CITY OF NOVI**

**COUNTY OF OAKLAND, MICHIGAN**

**RESOLUTION AUTHORIZING 2024 City of Novi Memorial Day Parade on Meadowbrook and Ten Mile Roads**

Minutes of a Meeting of the City Council of the City of Novi, County of Oakland, Michigan, held in the City Hall of said City on April 8, 2024, at 7 o'clock P.M. Prevailing Eastern Time.

PRESENT: Councilmembers_____

ABSENT: Councilmembers_____

The following preamble and Resolution were offered by Councilmember _____and supported by Councilmember _____.

**WHEREAS**; the 2024 Memorial Day Parade, presented by the City of Novi, will take place on Monday, May 27, 2024 from 10:00 am to 12:00 pm; and

**WHEREAS**; the Parade will begin at 25075 Meadowbrook Road and proceed South to 10 Mile Road and proceed West on 10 Mile Road and end at the Civic Center located at 45175 Ten Mile Road; and

**WHEREAS**; the City of Novi has been issued an annual permit, that is valid through December 31, 2026, permit number 64939, by the Road Commission for Oakland County to conduct civic events on roads under the jurisdiction of RCOC; and

**WHEREAS**; the validity of the permit is conditioned upon adoption of an Authorizing Resolution by the Novi City Council for the event and a statement agreeing to the terms of the permit.

**NOW THEREFORE, BE IT RESOLVED** that the Mayor and Council of the City of Novi hereby support and authorize the 2024 Memorial Day Parade and will fulfill all permit requirements, hold harmless, indemnify, and represent the Board of Road Commissioners against any and all claims for bodily injury or property damage, or any other claim arising out of or related to the 2024 Memorial Day Parade.

**AYES:**

**NAYS:**

RESOLUTION DECLARED ADOPTED.

_____
Cortney Hanson, City Clerk

**CERTIFICATION**

I hereby certify that the foregoing is a true and complete copy of a resolution adopted by the City Council of the City of Novi, County of Oakland, and State of Michigan, at a regular meeting held this 8th day of April 2024, and that public notice of said meeting was given pursuant to and in full compliance with Act No. 267, Public Acts of Michigan, 1976, and that the minutes of said meeting have been kept and made available to the public as required by said Act.

_____
Cortney Hanson, City Clerk
City of Novi

# ROAD CLOSURE PERMIT FOR BLOCK PARTIES AND PARADES

Permit No.: **PRCL24-003**
Issue Date:

Upon the request of **Sandra Fisher**, authorized representative of **Novi Parks, Recreation and Cultural Services** and in accordance with the provisions of the Code of Ordinances of the City of Novi, Michigan Section 33-52, Parades and Processions in the Uniform Traffic Code, and Section 31-9, Road Closures, a permit to temporarily close **Meadowbrook Road from 25075 Meadowbrook to Ten Mile and close 10 Mile Road from Meadowbrook to the Civic Center at 45175 Ten Mile Road** for the purpose of a **Memorial Day Parade - 2024** is granted as follows:

The parade route begins at Meadowbrook Commons located at 25075 Meadowbrook Road and process to City of Novi Civic Center located at 45175 Ten Mile Road.

**Time:**10 am to 12 pm

**Date:** Memorial Day - Monday, May 27, 2024

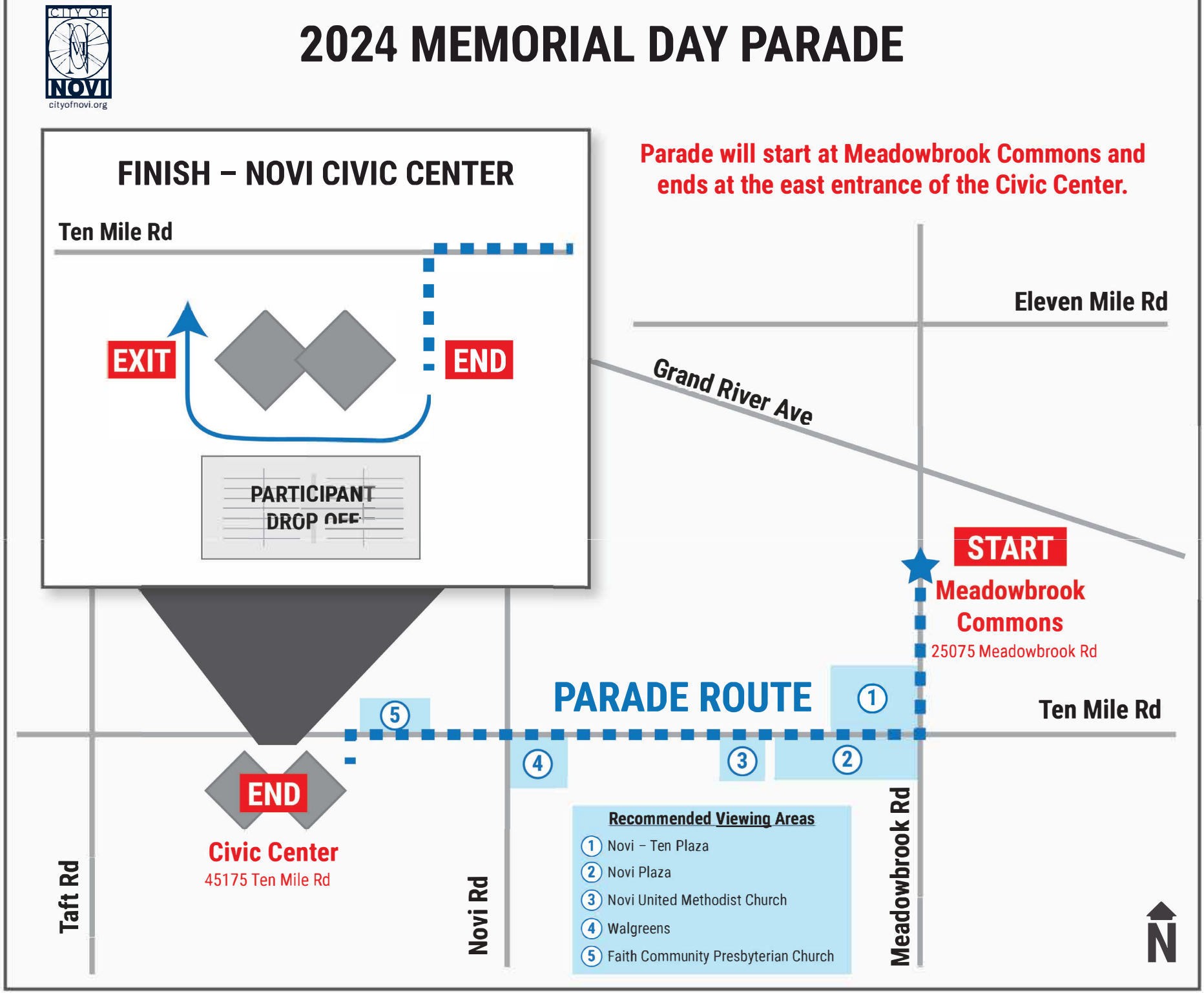
If the applicant needs barricades, barrels, or cones for the event, the applicant MUST contact DPW Field Operations at 248-735-5640 at least 7 business days prior to the event to make the request and coordinate locations.

Approved by:

_____
Ben Croy, City Engineer

cc: Erick Zinser, Director of Public Safety/Chief of Police
John Martin, Fire Chief
Scott Beatens, Assistant Police Chief
Todd Seog, Assistant Fire Chief
Kristie Gruenwald, Police Commander
Jason Meier, Police Commander
Matt Wiktorowski, Field Operations Senior Manager
Aaron Staup, Construction Engineer

# 2024 MEMORIAL DAY PARADE



BOARD OF COUNTY ROAD COMMISSIONER, OAKLAND COUNTY, MICHIGAN
2420 PONTIAC LAKE ROAD - WATERFORD, MI 48328
REFER ALL INQUIRIES TO DEPARTMENT OF CUSTOMER SERVICES - PERMITS (248) 858-4835

| | | |
|---|---|---|
| | $ | 0.00 |
| Const. Bond: | $ | 0.00 |
| Permit Fee: | $ | 0.00 |
| Deposit: | $ | 0.00 |
| Est. Insp. Fee: | $ | 0.00 |
| Paint Fee: | $ | 0.00 |
| Sign Fee: | $ | 0.00 |
| Signal Fee: | | |

Application No: 23-2040
**Permit No: 64939**

This permit is issued on the condition that lincesees and any persons working under the authority of this permit shall comply with the requirements of Act 53 of the P.A. of 1974.

CALL MISS DIG BEFORE YOU DIG
PHONE: (248) 647-7344

01/06/2024

Received of **NOVI, CITY OF** to be applied in accordance with the terms of below permit. **BOARD OF COUNTY ROAD COMMISSIONERS, Oakland County, Michigan**

_____ by: _____ Deputy Secretary-Clerk

Subject to the conditions on the reverse side hereof and the application on file, permission is granted by the Board of County Road Commissioners, Oakland County, Michigan hereinafter referred to as the Board, to:

**NOVI, CITY OF**
45175 W 10 MILE ROAD NOVI, MI 48375 248-347-0460, hereinafter referred to as the Licensee.

This is a permit to:

CONDUCT PARADES AND OTHER COMMUNITY EVENTS OR INSTALL BANNERS, AT TIMES AND LOCATIONS AS APPROVED BY LOCAL MUNICIPALITY RESOLUTION. THE LOCAL MUNICIPALITY SHALL PROVIDE FOR ALL TRAFFIC CONTROL INCLUDING SIGNS, BARRICADES AND POLICE CONTROL OF TRAFFIC. THE MUNICIPALITY SHALL NOTIFY THE ROAD COMMISSION IN ADVANCE AND PROVIDE A COPY OF RESOLUTIONS AUTHORIZING THE PARADE, COMMUNITY EVENT, OR BANNER. THE WORDING ON BANNERS SHALL BE APPROVED BY RESOLUTION OF THE LOCAL MUNICIPALITY AND SHALL NOT ADVERTISE FOR A PRIVATE BUSINESS OR BE POLITICAL IN NATURE. BANNERS SHALL BE INSTALLED AT A HEIGHT AND LOCATION THAT MEETS RCOC SPECIFICATIONS AND GUIDELINES.
THE DISTANCE BETWEEN THE BOTTOM OF THE BANNER AND THE SURFACE OF THE ROAD SHALL BE NO LESS THAN 18 FEET AND THE BANNER SHALL BE LOCATED SO THAT IT CAUSES NO VISUAL OBSTRUCTION WITH TRAFFIC SIGNALS OR OTHER TRAFFIC CONTROL DEVICES.

SUBCONTRACTORS AND ANY OTHER PARTIES WORKING ON BEHALF OF THE MUNICIPALITY SHALL BE MADE AWARE OF THE TERMS OF THE PERMIT.

ALL BILLINGS FOR INSPECTION FEES AND WORK PERFORMED BY THE RCOC AS A RESULT OF THESE ACTIVITIES SHALL BE BILLED TO THE MUNICIPALITY.

All construction shall be in accordance with the attached approved plan and application on file for:

NOVI, CITY OF
as prepared by CITY OF NOVI
and with the RCOC Supplementary Permit Specifications as follows:
ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE APPROVED PLAN AND APPLICATION ON FILE AND WITH THE ROAD COMMISSION FOR OAKLAND COUNTY PERMIT RULES, SPECIFICATIONS, AND GUIDELINES DATED MARCH 14, 2013.

This permit is granted for the period
Commencing 01/06/2024
and ending 12/31/2026

NOVI VARIOUS
**BOARD OF COUNTY ROAD COMMISSIONERS, Oakland County, Michigan Department of Customer Services - Permits**
By: _____

In consideration of the granting of this permit, the undersigned Licensee hereby agrees to abide by and confrom with all of the terms and conditions herein set forth or incorporated herein by reference. (SEE APPLICATION AND REVERSE SIDE FOR CONDITIONS OF PERMIT.)

By: X Matthew T. Wiktorowski

01/06/2024 NOVI, CITY OF

# CONDITIONS OF PERMIT

1. **PRECAUTIONS:** During the progress of any construction undertaken within the limits of the said highway in pursuance hereof, the Licensee shall provide all barricades, signs, lights, watchmen and flagmen as may be required for the safety and convenience of the public in accordance with the Michigan Manual of Uniform Traffic Control Devices, permit attachments and/or as shall seem advisable to this Board. Traffic shall be maintained at all times unless otherwise indicated hereon by special endorsement of the Board's duly authorized representative. A copy of this permit and the application therefor shall be kept on the site during the course of any construction pursuant hereof by the Licensee or his duly authorized agent.
2. **ACCIDENT LIABILITY AND INDEMNIFICATION:** "The said Licensee shall be liable for all damages to either persons or property or both resulting from or arising out of accidents which may occur as a result of the proposed operations in pursuance hereof. The licensee agrees to save harmless, indemnify, represent and defend the Board and the County of Oakland from any and all claims for bodily injury or property damage or any other claim relating to or arising out of the operations, use or continued existence of the work which is the subject of this permit."
3. **BONDS AND INSPECTION FEE:** The Licensee shall before or at any time during operations upon demand of this Board, furnish a cash deposit and/or surety bond in such an amount as deemed necessary by this Board to cover damage to the highway. This Board may retain any portion of the cash deposited herewith which in the opinion of this Board shall be necessary to cover any expense for damage through the granting of this Permit and the cash deposit or the balance thereof shall be returned to the Licensee upon completion of the work to the satisfaction of this Board. Surety bonds shall be kept in effect by the Licensee until released by this Board. The Board may also require the deposit of an estimated inspection fee to cover the Board's cost of inspecting the work. If the inspection cost exceeds the inspection fee, the Licensee shall pay the additional cost. If the inspection fee exceeds the inspection cost the balance will be refunded upon permit release.
4. **HIGHWAY:** All damage to drainage structures, roadbeds, trees, pavements and other highway appurtenances shall be repaired at expense of the Licensee. No portion of the pavement of any highway shall be disturbed without prior permission of this Board. Upon completion of any work within limits of the highways, restoration shall be such that it will provide a condition equal to or better than the original condition and in accordance with current Board Standards and Specifications.
5. **EXCAVATION AND BACKFILL:** Excavations shall be no larger than necessary and no closer to the pavement than necessary to carry on the work. The Licensee shall assume the full responsibility for preventing the caving, loss or settlement of foundation material supporting the pavement and all other highway installations such as sewers, culverts, etc., and shall provide and place all sheeting, shoring and bracing necessary for such protection. Backfilling shall be done as soon as possible with materials and methods approved by this Board. Backfill shall be thoroughly compacted and left level in a neat condition. Compaction will be subject to check by the Controlled Density Method. Future settlements shall be repaired at the expense of the Licensee.
6. **CROSSING UNDER ROADS:** All crossing under roads shall be made by Tunneling or Jacking and Boring unless another method is specifically approved by this Board. When open-cut methods are approved, the road surface shall be replaced in accordance with current Board standards. All pavement removed shall be replaced with a temporary hot mixed bituminous surface immediately upon completion of the backfill. Permanent pavement replacement shall be made at a later date by this Board unless otherwise provided and all expense of same shall be charged to and paid for by the Licensee.
7. **TAPPING COUNTY ROAD SEWER:** Any rights granted herein to connect into any County Road sewer are revocable at the will of this Board and the Licensee expressly waives any right to claim damages or compensation in case permit therefor is revoked.
8. **TREES OR SHRUBS:** The Licensee must apply for and receive a forestry permit for all work involving trimming, removal or tunnelling of trees or shrubs occurring within the right of way.
9. **DRIVEWAYS AND STREET APPROACHES:** The Licensee shall furnish all materials including culverts specified herein and shall install same in accordance with the requirements of this Board. Curb cuts for driveways are to be left one (1) inch above existing gutter grade. Curb cuts and driveway approaches including their radii shall not extend in front of property other than that owned or controlled by the Licensee.
10. **DISPOSAL OF GROUND WATER:** Road side drainage systems–open ditches, storm sewers, etc.–shall not be used for disposal of water pumped from below the surface of the ground unless specifically allowed by this Board.
11. **SIGNS:** All traffic control and street name signs which must be removed during construction shall be immediately reset in a temporary position as directed.
12. **WORK WITHIN CORPORATE LIMITS OF CITIES, VILLAGES, OR TOWNSHIPS:** Licensee shall be responsible for securing, and shall secure, any other permits necessary or required by law from cities, villages, townships, corporations or individuals.
13. **SOIL EROSION AND SEDIMENTATION CONTROL:** This permit does not relieve the Licensee of any responsibility of obtaining a permit from the County Enforcing Agency in accordance with Act 347 of Michigan Public Acts of 1972.
14. **VIOLATION:** The violation of any conditions by the said Licensee shall constitute a revocation hereof and shall operate to suspend and annul any and all rights acquired by the said Licensee under the terms hereof.
15. **REVOCATION OF PERMIT:** It is to be understood that the rights granted herein are revocable at the will of this Board and that the Licensee acquires no rights in the highway and expressly waives any right to claim damages or compensation in case this permit is revoked.
16. **TIME LIMIT AND PROGRESS:** This permit is valid for work within the right of way only during the period shown on the face hereof. If the work cannot be done during this period, this Board, at its discretion, may grant an extension of time or may reschedule the work period. The Licensee shall conduct his operation without undue hindrance to the traveling public or adjacent property owner, and shall complete the project and restoration of the highway as soon as possible within the allotted time.
17. **COOPERATION WITH OTHERS:** The issuance of this permit does not give the Licensee an exclusive right to work within the area covered by this permit. The Licensee shall cooperate with others and shall conduct his operations in such a fashion as to cause a minimum conflict with and/or inconvenience to others working in the area. The work of others does not relieve the Licensee of his responsibility to complete the work in accordance with the permit.
18. **NOTIFICATION OF START OF WORK:** The Licensee shall give notice to the Board at least two (2) working days prior to commencement of operations covered by this permit.
19. **NOTIFICATION OF COMPLETION OF WORK:** The Licensee shall notify the Board in writing when the work is completed and request release of the permit.
20. **SUPPLEMENTAL SPECIFICATIONS:** The supplemental specifications appearing on the back of the application for this permit, copy attached, and other attached supplemental specification are herein incorporated as part of this permit.

Attached Supplemental Specifications ☐ Underground ☐ Approach

# Start of Work Application

**Mail To:**
Road Commission for Oakland County
Department of Customer Services
Permits
2420 Pontiac Lake Road
Waterford, MI 48328

**Or Fax To: (248) 858-4773** **Or Email To: PERMITS@RCOC.ORG**

THE PERMIT LICENSEE SHALL GIVE NOTICE TO THE DEPARTMENT OF CUSTOMER SERVICES **AT LEAST TWO (2) WORKING DAYS PRIOR TO COMMENCEMENT OF OPERATIONS** COVERED BY THIS PERMIT.

**Date:** _____

**Permit Issued to:** _____

**Permit Number:** _____

**City or Township:** _____

**Beginning Date:** _____

**Location of Work:** _____

**Description of Work:** _____

**Submitted By:** _____

**Company you work for:** _____

**Telephone Number:** _____

**NOTE:**

- A CONDITION OF THE PERMIT THAT YOU RECENTLY RECEIVED IS THAT A TWO-DAY ADVANCE NOTICE BE GIVEN TO THE ROAD COMMISSION **BEFORE WORK BEGINS**. PLEASE SUBMIT THIS FORM A MINIMUM OF 2 DAYS PRIOR TO BEGINNING WORK IN THE RIGHT OF WAY. PLEASE KEEP A COPY FOR YOUR RECORDS.

- IF THERE IS ANY CHANGE IN DATE OR TIME AFTER YOU SUBMIT THIS FORM, PLEASE NOTIFY THE PERMIT INSPECTOR IMMEDIATELY.

**PERMIT OFFICE HOURS:**
**MONDAY – FRIDAY 7:30 AM – 4:15 PM**
(248) 858-4835

# CITY OF NOVI CITY COUNCIL
# APRIL 8, 2024

**SUBJECT:** Approval of the adoption of a resolution designating the City of Novi as a Bee City USA affiliate and affirming commitments to conserve native pollinators.

**SUBMITTING DEPARTMENT:** City Attorney

**BACKGROUND INFORMATION:**

Bee City USA is an initiative of the Xerces Society for Invertebrate Conservation that provides a framework for communities to conserve native pollinators. The program outlines providing pollinators with healthy habitat rich in a variety of native plants, nest sites, and protection from pesticides. While the program focus is bees, primarily native species, it also benefits a variety of other pollinators and the environment as a whole.

The City of Novi Beautification Commission, as part of their commitment to both the enhancement and preservation of natural beauty in the City, would take on the facilitation of the Bee City USA initiative commitments and requirements.

**RECOMMENDED ACTION:** Approval of the adoption of a resolution designating the City of Novi as a Bee City USA affiliate and affirming commitments to conserve native pollinators.

**CITY OF NOVI**

**COUNTY OF OAKLAND, MICHIGAN**

**RESOLUTION DESIGNATING THE CITY OF NOVI AS A BEE CITY USA AFFILIATE**

Minutes of a Meeting of the City Council of the City of Novi, County of Oakland, Michigan, held in the City Hall of said City on April 8, 2024, at 7 o'clock P.M. Prevailing Eastern Time.

PRESENT: Councilmembers_____

ABSENT: Councilmembers_____

The following preamble and Resolution were offered by Councilmember _____and supported by Councilmember _____.

**WHEREAS,** the mission of BEE CITY USA is to galvanize communities to sustain pollinators, responsible for the reproduction of almost 90% of the world's flowering plant species, by providing them with healthy habitat, rich in a variety of native plants and free to nearly free of pesticides; and

**WHEREAS,** thanks to the more than 3,600 species of native bees in the United States, along with introduced honeybees, we have very diverse dietary choices rich in fruits, nuts, and vegetables; and

**WHEREAS,** bees and other pollinators have experienced population declines due to a combination of habitat loss, poor nutrition, pesticides (including insecticides, fungicides, and herbicides), parasites, diseases, and climate change; and

**WHEREAS,** pollinator-friendly communities can benefit local and regional economies through healthier ecosystems, increased vegetable and fruit crop yields, and increased demand for pollinator-friendly plant materials from local growers; and

**WHEREAS,** ideal pollinator-friendly habitat (A) Is comprised of mostly native wildflowers, grasses, vines, shrubs, and trees blooming in succession throughout the growing season to provide diverse and abundant nectar and pollen, since many wild pollinators prefer or depend on the native plants with which they co-adapted; (B) is free to nearly free of pesticides, as many pesticides can harm pollinators and/or their habitat; (C) comprises undisturbed spaces (leaf and brush piles, unmown fields or field margins, fallen trees and other dead wood) for nesting and overwintering; and (D) provides connectivity between habitat areas to support pollinator movement and resilience; and

**WHEREAS,** Integrated Pest Management (IPM) is a long-term approach to maintaining healthy landscapes and facilities that minimizes risks to people and the environment by identifying and removing the causes of pest problems rather than only attacking the symptoms (the pests); employing pests' natural enemies along with cultural, mechanical, and physical controls when prevention is not enough; and using pesticides only when no other method is feasible or effective; and

**WHEREAS,** supporting pollinators fosters broad-based community engagement in environmental awareness and sustainability; and

**WHEREAS,** the City of Novi should be certified a BEE CITY USA community because in 2015 the City of Novi Beautification Commission installed the Fuerst Park Monarch Waystation and then expanded it the following year with a variety of Michigan/Midwest native flowers and grasses that provide food for butterflies and other pollinators; and are committed to environmental sustainability of which pollinators are a vital part.

**NOW THEREFORE, IT IS THEREFORE RESOLVED** that in order to enhance understanding among local government staff and the public about the vital role that pollinators play and what each of us can do to sustain them, the City of Novi chooses to support and encourage healthy pollinator habitat creation and enhancement, resolving as follows:

1. The City of Novi Manager's Office is hereby designated as the BEE CITY USA sponsor.
2. The Executive Assistant of the City Manager, or their designee, is designated as the BEE CITY USA Liaison.
3. Facilitation of the City of Novi's BEE CITY USA program is assigned to the Beautification Commission.
4. The Beautification Commission, alongside City staff, is authorized to and shall:
    a. **Celebration**: Host at least one educational event or pollinator habitat planting or restoration each year to showcase the City of Novi's commitment to raising awareness of pollinator conservation and expanding pollinator health and habitat.
    b. **Publicity & Information**: Install and maintain at least one authorized BEE CITY USA street sign in a prominent location, and create and maintain a webpage on the City of Novi website which includes, at minimum a copy of this resolution and links to the national BEE CITY USA website; contact information for your BEE CITY USA Liaison and Committee; reports of the pollinator-friendly activities the community has accomplished the previous year(s); and your recommended native plant species list and integrated pest management plan (explained below).
    c. **Habitat**: Develop and implement a program to create or expand pollinator-friendly habitat on public and private land, which includes, but is not limited to, Identifying and inventorying the City of Novi's real property that can be enhanced with pollinator-friendly plantings; creating a recommended locally native plant list to include wildflowers, grasses, vines, shrubs, and trees and a list of local suppliers for those species; and, tracking (by square footage and/or acreage) annual area of pollinator habitat created or enhanced.
    d. **Pollinator-Friendly Pest Management:** Create and adopt an integrated pest management (IPM) plan designed to prevent pest problems, reduce pesticide use, and expand the use of non-chemical pest management methods.

e. **Policy & Plans**: Establish, through the City of Novi, a policy in an appropriate City of Novi Plan to acknowledge and commit to the BEE CITY USA designation and review any relevant plans and documents to consider improvements to pest management policies and practices as they relate to pollinator conservation, identify appropriate locations for pollinator-friendly plantings, and consider other appropriate measures.

f. **Renewal:** After completing the first calendar year as a BEE CITY USA affiliate, each February, apply for renewal of the City of Novi's BEE CITY USA designation following the format provided by BEE CITY USA, including a report of the previous year's BEE CITY USA activities, and paying the renewal fee based on the City of Novi's population.

**AYES:**

**NAYS:**

RESOLUTION DECLARED ADOPTED.

_____
Cortney Hanson, City Clerk

**CERTIFICATION**

I hereby certify that the foregoing is a true and complete copy of a resolution adopted by the City Council of the City of Novi, County of Oakland, and State of Michigan, at a regular meeting held this 8th day of April, 2024, and that public notice o said meeting was given pursuant to and in full compliance with Act No. 267, Public Acts of Michigan, 1976, and that the minutes of said meeting have been kept and made available to the public as required by said Act.

_____
Cortney Hanson, City Clerk
City of Novi

# MEMORANDUM

**TO:** CITY COUNCIL

**FROM:** KATHERINE OPPERMANN, EXECUTIVE ASSISTANT

**SUBJECT:** BEE CITY USA

**DATE:** MARCH 7, 2024

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The City of Novi Beautification Commission, as part of their commitment to both the enhancement and preservation of natural beauty in the City, would like to encourage City Council to take on the commitment of becoming a Bee City USA affiliate.

Bee City USA is an initiative of the Xerces Society for Invertebrate Conservation that, alongside its sister program of Bee Campus USA, provides a framework for communities to conserve native pollinators. The program outlines providing pollinators with healthy habitat rich in a variety of native plants, nest sites, and protection from pesticides. While the program focus is bees, primarily native species, it also benefits a variety of other pollinators such butterflies, moths, and non-native honeybees as well as the environment as a whole.

The first step to becoming a Bee City USA affiliate is for City Council to adopt a Resolution which outlines various commitments to conserve pollinators including:

1. **Increasing the abundance of native plants and providing nest sites**, ideally creating, or enhancing pollinator habitat on public land each year

2. **Reduce the use of pesticides and incorporate pollinator-conscious practices into City policies and plans**, including the creation of or review of an Integrated Pest Management (IPM) Plan

3. **Community Education:** By providing pollinator awareness event(s) and making information on habitat creation and management readily available to the community such as native plant and local plant supplier lists through the city webpage

In taking on this commitment the City of Novi would become one of the 204 current affiliate Bee City USA communities across the United States of America, and among the earliest adopters in Michigan.

With City Council's approval and adoption of the Resolution, when presented at an upcoming meeting, the Beautification Commission intends to take on the work of implementing these steps alongside City staff.

# CITY OF NOVI CITY COUNCIL
# APRIL 8, 2024

**SUBJECT:** Approval of the 2024 Summer Maintenance Agreement between the City of Novi and the Road Commission for Oakland County for street sweeping selected County Roads in Novi; and adoption of resolution authorizing Novi to provide summer maintenance on selected County roads.

**SUBMITTING DEPARTMENT:** Department of Public Works, Field Operations Division

**BACKGROUND INFORMATION:**

Each season, DPW crews sweep debris from City-maintained major roadways, neighborhood streets, as well as select County roads inside City limits. The City utilizes a general maintenance permit with the Road Commission for Oakland County (RCOC) to provide these enhanced maintenance services. For the 2024 season, the RCOC provided an agreement for street sweeping services. The agreement requires the following County roads be swept by DPW three times (1st: Apr 30 - May 30; 2nd: July 30 - Aug 30; 3rd: Oct 30 - Nov 30).

| Road | From | To | Total Curb Miles | County Reimbursement to Novi for Each Sweeping Occurrence |
|---|---|---|---|---|
| Pontiac Trail | West Park Drive | Beck Road | 1.23 | $226.01 |
| Beck Road | Grand River Avenue | 12 Mile Road | 1.21 | $222.33 |
| Grand River Avenue | Wixom Road | Haggerty Road | 9.03 | $1,659.26 |
| Ten Mile Road | Napier Road | Haggerty Highway | 2.89 | $531.03 |
| Novi Road | 8 Mile Road | 12 Mile Road | 5.74 | $1,054.72 |
| Haggerty Highway | 14 Mile Road | 8 Mile Road | 5.91 | $1,085.96 |
| 12 Mile Road | Grand River Avenue | Haggerty Highway | 12.04 | $2,212.35 |
| 8 Mile Road | Napier Road | Taft Road | 2.31 | $424.46 |
| 14 Mile Road | Beck Road | West Park Drive | 0.89 | $163.53 |
| Napier Road | 12 Mile Road | 8 Mile Road | 0.88 | $161.70 |
| Roundabout | Napier Road | 10 Mile Road | 1.68 | $308.70 |
| Brickscape | 8 Mile Road | Terminus | 0.03 | $5.51 |
| Baseline | 8 Mile Road | Terminus | 0.04 | $7.35 |
| | | **Total** | **43.88** | **$8,062.95** |

The City would be responsible for street sweeping services on these roads as agreed upon by the RCOC and the City of Novi, and this agreement would become effective upon the start of the 2024 season.

To offset costs of performing street sweeping services on County roadways, the City will receive reimbursement in two increments: 65% ($15,722.75) in September 2024, and 35% ($8,062.95) upon completion of the activity ($8,466.10 X 3 sweeping occurrences; $24,188.85 total). Reimbursement funding is based on a pro-rated amount of Act 51 gas tax revenue the RCOC receives from the State of Michigan, and will be paid to the City in full as part of the agreement. The City Attorney's favorable review of the agreement is attached (Beth Saarela, March 15, 2024).

**RECOMMENDED ACTION:** Approval of the 2024 Summer Maintenance Agreement between the City of Novi and the Road Commission for Oakland County for street sweeping selected County Roads in Novi; and adoption of resolution authorizing Novi to provide summer maintenance on selected County roads.

**ELIZABETH KUDLA SAARELA**
esaarela@rsjalaw.com

27555 Executive Drive, Suite 250
Farmington Hills, Michigan 48331
P 248.489.4100 | F 248.489.1726
rsjalaw.com

ROSATI | SCHULTZ
JOPPICH | AMTSBUECHLER

March 13, 2024

Matt Wiktorowski, Senior Manager
Field Operations Division
City of Novi
Field Services Complex
26300 Lee BeGole Drive
Novi, Michigan 48375

**Re: 2024 Summer Maintenance Agreement with Road Commission for Oakland County**

Dear Mr. Wiktorowski:

We have received and reviewed the proposed 2024 Road Maintenance Agreement prepared by the Road Commission for Oakland County for the purpose of authorizing payment to the City for the City sweeping County roads within the City. The format and terms of the Agreement are the same as the terms for the 2023 Summer Road Maintenance Agreement with RCOC.

Subject to approval of all insurance requirements by the City's insurer, we see no legal impediment to the City's approval and execution of the 2024 Summer Road Maintenance Agreement.

Please feel free to contact me with any questions or concerns in regard to this matter.

Very truly yours,

ROSATI SCHULTZ JOPPICH
& AMTSBUECHLER PC

Elizabeth Kudla Saarela

EKS
Enclosure
C: Cortney Hanson, Clerk (w/Enclosure)
Jeffrey Herczeg, Public Services Director (w/Enclosure)
Ben Croy, City Engineer (w/Enclosures)
Thomas R. Schultz, Esquire (w/Enclosure)

2024 SUMMER MAINTENANCE AGREEMENT
CITY OF NOVI

Under 1951 PA 51, As Amended

This Summer Maintenance Agreement ("Agreement") is made this ____day of_____, 2024, between the Board of County Road Commissioners of the County of Oakland, State of Michigan, a public body corporate, (hereinafter variously referred to as the "Board and as the "Road Commission for Oakland County") and the **City of Novi,** Oakland County Michigan, a Michigan municipal corporation hereinafter referred to as the "City."

WHEREAS, certain county primary and local roads more specifically set forth in Exhibit A, attached hereto, are under the jurisdiction and control of the Board and are located within or adjacent to the City; and

WHEREAS, The City desires to be responsible for certain maintenance of said roads under the terms of this Agreement and the Board is willing to participate in the cost thereof as provided in Section III of this Agreement.

NOW, THEREFORE, in consideration of the mutual covenants set forth herein as provided, it is hereby agreed as follows:

I

The City hereby agrees to be responsible for performing Summer Maintenance of certain roads under the terms of this Agreement, and the Board agrees to participate in the cost thereof as provided in Section III of this Agreement. "Summer Maintenance," herein required to be performed by City, shall mean the work and services specified in Exhibit B hereto and this Agreement. All maintenance work and services performed by the City shall be in accordance with the Board's minimum maintenance standards and this Agreement.

II

The Board has determined and specified the equipment and personnel necessary to provide the Summer Maintenance and the City has acquired the necessary equipment and personnel so specified. The City shall keep accurate and uniform records of all Summer Maintenance work performed pursuant to this Agreement. The Board shall have the right to audit City accounts and records insofar as such documents concern this Agreement and the work and services performed and to be performed hereunder.

III

In consideration of the Summer Maintenance by the City, the Board hereby agrees to pay to the City the sum of **$24,188.85**, as set forth in Exhibit A, attached hereto and made a part hereof. Such amounts are to be used by the City for Summer Maintenance. Payments are to be made by the Board to the City as follows:

65% on September 15, 2024
35% upon completion of the last Summer Maintenance activity

The making of said payments shall constitute the Board's entire obligation in reference to Summer Maintenance.

IV

It is specifically understood and agreed by the City and the Board that by undertaking to perform Summer Maintenance of certain county primary roads, the City does not assume the Board's legal duty to

keep said roads in such condition as to be in accordance with MCLA 224.21, reasonably safe and convenient for public travel, other than as may relate to the work and service to be performed as listed in Section I above, and the City hereby agrees to hold harmless, represent, defend with counsel acceptable to the Board, and indemnify the Board; the County of Oakland; the Office of the Oakland County Water Resources Commissioner and any and all applicable drainage districts(s); the Michigan State Department of Transportation and the Transportation Commission; any and all local units(s) of government within which the roads subject to this Agreement are located, and the respective officers, agents and employees of all of the foregoing, against any and all claims, charges, complaints, damages, or causes of action for (a) public or private property damage, (b) injuries to persons, or (c) other claims, charges, complaints, damages or causes of action arising out of the performance or non-performance of the activities which are the subject matter of this Agreement, both known and unknown, whether during the progress or after the completion thereof. However, this harmless provision does not apply in so far as any claim or suit is alleged to be, or demonstrated to be, the result of a defect in highway design or condition and not related to the Summer Maintenance activities set out in Section I. Further, since the Board has the statutory responsibility for maintenance of the roads under this Agreement, it is the intent of the parties that the delegation by this Agreement of those maintenance responsibilities to the City provide immunity to the City as an agent of the County. Therefore, the City falls within the governmental immunity protection of the County.

During that part of the year that the City is providing Summer Maintenance under Section I, the City agrees to notify the Board within 30 days, should it become aware of defects or maintenance requirements in the roads set forth in Exhibit A, if said defects or maintenance requirements are not Summer Maintenance subject to this Agreement.

V

The City shall acquire and maintain, during the term of the Agreement, statutory worker's compensation, employer's liability, automobile and comprehensive general liability insurance coverages, and such other insurance coverages, as described in Exhibit C attached hereto, covering the Board's liability for any and all claims arising out of the City's performance or non-performance of the activities which are the subject matter of this Agreement, and these coverages shall be obtained and maintained in accordance with the requirements set forth in Exhibit C attached hereto and made a part hereof and shall be primary and non-contributory.

VI

The City further agrees to comply with all applicable laws and regulations, including laws and regulations of the State of Michigan for safeguarding the air and waters of the State**.** In particular, City facilities and operations must meet the provisions of Part 5 (Spillage of Oil and Polluting Materials) rules promulgated pursuant to Part 31, Water Resources Protection, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended. (Rules R324.2001 through R324.2009 address release prevention planning, secondary containment, surveillance, and release reporting requirements).

VII

In accordance with Michigan 1976 PA 453, as amended, and 1976 PA 220, as amended, the Contractor covenants not to discriminate against any employee or applicant for employment with respect to hire, tenure, terms, conditions, or privileges of employment, or a matter directly or indirectly related to employment, because of race, color, religion, national origin, age, sex, height, weight, marital status or because of a disability that is unrelated to the individual's ability to perform the duties of the particular job or position, and to require a similar covenant on the part of any subcontractor employed in the performance of the Agreement. A breach of this covenant may be regarded as a material breach of this Agreement.

VIII

Contractor shall utilize the provisions of the Federal E-Verify Program to verify the work authorization status of all newly hired employees; and the Road Commission for Oakland County may terminate the contract for failure of Contractor to so comply with the Federal E-Verify Program.

IX

It is the intention of the parties hereto that this Agreement is not made for the benefit of any third party.

It is anticipated that subsequent agreements regarding Summer Maintenance activities will be executed annually by the parties hereto.

The terms and conditions of this Agreement shall become effective as of April 1, 2024, and shall continue in full force and effect until a subsequent Summer Maintenance agreement has been executed by the parties hereto or until this Agreement is terminated, as set forth below.

In the event that a subsequent Summer Maintenance agreement has not been executed by the parties hereto on or before November 30, 2024, either party may terminate this Agreement by providing the other party hereto with written notice of intent to terminate, at least thirty (30) days prior to the date of termination.

This Agreement is executed by the Board at its meeting of _____, and by the City by authority of a resolution of its governing body, adopted _____, (copy attached as Exhibit D).

Witnesses:

**CITY OF NOVI**
A Municipal Corporation

_____

By:_____

Its:_____

_____

By:_____

Its:_____

Witnesses:

BOARD OF COUNTY ROAD COMMISSIONERS
OF THE COUNTY OF OAKLAND,
A Public Body Corporate

_____

By:_____

Its:_____

_____

By:_____

Its:_____

**EXHIBIT A**

2024 SUMMER MAINTENANCE AGREEMENT

CITY OF NOVI

**CURB SWEEPING**

| | | | |
|---|---|---|---|
| Primary Roads | | | Miles |
| **Pontiac Trail:** | West Park Dr. to just W/O Beck Rd | Border includes Commerce side | 1.23 |
| **Beck Road:** | Grand River Ave. to 12 Mile Rd | Border includes Wixom side | 1.21 |
| **Grand River Ave.:** | Wixom Rd to Haggerty Rd | | 9.03 |
| **10 Mile Rd.:** | Napier Rd to Haggerty Hwy | | 2.89 |
| **Novi Rd.:** | 8 Mile Rd to 12 Mile Rd | | 5.74 |
| **Haggerty Hwy:** | 14 Mile Rd to 8 Mile Rd | Border includes Farmington side | 5.91 |
| **12 Mile Rd.:** | Grand River Ave to Haggerty Hwy | includes Median & section E/O Grand River | 12.04 |
| **8 Mile Rd.:** | Napier Rd to Taft Rd | Border includes Northville (both sides) | 2.31 |
| **14 Mile Rd.:** | Haggerty to East Lake | Border includes Commerce side | 0.89 |
| **Napier Rd.:** | 12 Mile Rd to 8 Mile Rd | Border includes Lyon side but not Roundabout | 0.88 |
| **Napier/10 Mile (Roundabout):** | Includes all legs and Lyon side | | 1.68 |
| Local Roads | | | |
| **Brickscape:** | North of 8 Mile Rd | | 0.03 |
| **Baseline:** | Just South of 8 Mile Rd | | 0.04 |
| | | **TOTAL MILES** | **43.88** |

| | | |
|---|---|---|
| **Sweeping** | 43.88 Curb Miles x $183.75/Curb Mile = $8,062.95 x 3 Sweepings:<br>(Both directions, including medians and border roads) | $24,188.85 |
| | **TOTAL CONTRACT** | **$24,188.85** |

**EXHIBIT B**

2024 SUMMER MAINTENANCE AGREEMENT

CITY OF NOVI

WORK TO BE PERFORMED:

1. Sweep all roads listed in Exhibit A, in both directions of travel and around islands, as provided in this Agreement, three (3) times, once between April 30th and May 30th, once between July 30th and August 30th, and once between October 30th and November 30th.

2. The City may at its own expense sweep more frequently, subject to the other terms and conditions of this Agreement, including, without limitation, the indemnification and insurance provisions.

**EXHIBIT C**

2024 SUMMER MAINTENANCE AGREEMENT

CITY OF NOVI

**SPECIAL PROVISION**
**FOR**
**INDEMNIFICATION, DAMAGE LIABILITY AND INSURANCE**

**SPECIAL PROVISION**
**FOR**
**INDEMNIFICATION, DAMAGE LIABILITY AND INSURANCE**

Indemnification and Damage Liability
See provisions of the maintenance agreement to which this Exhibit C is attached.

Insurance Coverage:
The City, prior to execution of the maintenance agreement, shall file with the Board of County Road Commissioners of the County of Oakland ("Board"), copies of completed certificates of insurance as evidence that it carries adequate insurance satisfactory to the Board; and, without the prior written consent of the Board, the City shall not cancel, reduce, or fail to renew the insurance coverage required by this Agreement. The City shall immediately notify the Board and cease operations upon the occurrence of any cancellation, reduction, modification or termination of insurance required hereunder, and shall not resume operations under this Agreement until all insurance as required by this Agreement is in full force and effect. The City shall provide in a form and substance acceptable to the Board an underwriter's endorsement to its comprehensive general liability insurance and auto liability insurance, including any excess umbrella insurance, in the amounts set forth on Exhibit C, naming the Board and the Office of the Oakland County Water Resources Commissioner as an additional named insured. The City shall obtain and deliver to the Board notices of cancellation and non-renewal endorsement, acceptable to the Board, for the general liability, auto liability, and worker's compensation and employer's liability policies. Prior to commencing the work, the City shall provide to the Board evidence satisfactory to the Board of payment of the current premium for the required insurance and endorsements and shall also obtain certificates of insurance for each policy, providing for thirty (30) days actual (not "endeavor to") prior, written notice to the Board by the insurance carrier of any cancellation, termination reduction or material change of the policy. The City shall make sure that each of its subcontractors, if any, providing any of the work and services under this contract, shall obtain and maintain insurance as set forth in this Agreement.

The City shall provide the following insurance coverages which shall be primary and non-contributory:

a. Workmen's Compensation Insurance: The insurance shall provide protection for the City's employees, to the statutory limits of the State of Michigan and $500,000 employer's liability. The indemnification obligation under this section shall not be limited in any ways by any limitation on the amount or type of damages, compensation or benefits payable by or for the City under worker's disability compensation coverage established by law.

b. Bodily Injury and Property Damage Other than Automobile: The insurance shall provide protection against all claims for damages to public or private property, and injuries to persons arising out of and during the progress and to the completion of the work, and with respect to product and completed operations for one year after completion of the work.

| | |
|---|---|
| Bodily Injury Liability<br>Each Person:<br>$1,000,000<br>Each Occurrence:<br>$1,000,000<br>Aggregate:<br>$2,000,000<br>-and-<br>Property Damage<br>Liability:<br>Each Occurrence:<br>$250,000<br>Aggregate:<br>$250,000 | Or: Single Limit: Bodily injury<br>and Property Damage<br>Each Occurrence: $1,000,000<br>Aggregate: $2,000,000 |

Such insurance shall include: 1) explosion, collapse, and underground damage hazards (x,c,u), which shall include, but not be limited to coverage for (a) underground damage to facilities due to drilling and excavating with mechanical equipment; and (b) collapse or structural injury to structures due to blasting or explosion, excavation, tunneling, pile driving, cofferdam work, or building moving or demolition; (2) products and completed operations; (3) contractual liability; and (4) independent contractors' coverages.

c. Bodily Injury Liability and Property Damage Liability - Automobiles (Comprehensive Auto Liability) The minimum limits of bodily injury liability and property damage liability shall be:

| | |
|---|---|
| Bodily Injury Liability<br>Each Person:<br>$500,000<br>Each Occurrence:<br>$1,000,000<br>-and-<br>Property Damage Liability:<br>Each Occurrence:<br>$1,000,000 | Or: Single Limit: Bodily Injury<br>and Property Damage<br>Each Occurrence: $2,000,000 |

Such insurance shall include coverage for all owned, hired, and non-owned vehicles.

d. Excess and Umbrellas Insurance – The City may substitute corresponding excess and/or umbrella liability insurance for a portion of the above listed requirements to meet the specified minimum limits of liability.

e. The City shall provide for and in behalf of the Board and all agencies specified by the Board, as their interest may appear, Owner's Protective Public Liability Insurance. Such insurance shall provide coverage and limits the same as the City's Public Liability Insurance.

Reports – The City or his insurance carrier shall immediately report all claims received which relate to the Contract, and shall also report claims investigations made, and disposition of claims to the County Highway Engineer.

See provisions of the maintenance agreement to which this Exhibit C is attached.

michigan municipal league

Workers' Compensation Fund

# Certificate of Membership

## Proof of Insurance

The Michigan Municipal League Workers' Compensation Fund, approved by the Director of the Workers' Compensation Agency as a group self-insurer, certifies that

Novi City of

Policy Number: 5003710-23

is a member in good standing of the Fund, for the year expiring

June 30, 2024

and as such is approved by the Agency as a self-insured.

Employer's Liability coverage of

$2,000,000 is included.

Michael J Forster

July 1, 2023

Effective Date

Note: This certificate is proof that your entity has complied with the Workers' Disability Compensation Act by becoming a Member of the Michigan Municipal League Workers' Compensation Fund. Copies of this certificate may be provided to third parties as evidence that the required workers' compensation coverage is in place.

ROAD COMMISSION for OAKLAND COUNTY

QUALITY LIFE THROUGH GOOD ROADS:
ROAD COMMISSION FOR OAKLAND COUNTY
"WE CARE."

**Board of Road Commissioners**

*Ronald J. Fowkes*
*Commissioner*

*Andrea LaLonde*
*Commissioner*

*Nancy Quarles*
*Commissioner*

*Dennis G. Kolar, P.E.*
*Managing Director*

*Gary Piotrowicz, P.E., P.T.O.E.*
*Deputy Managing Director*
*County Highway Engineer*

**Highway Maintenance Department**

**2420 Pontiac Lake Road**
**Waterford, MI 48328**

**248-858-4881**

**FAX**
**248-858-7607**

**www.rcocweb.org**

February 27, 2024

Mr. Matt Wiktorowski
Public Service, Field Operations
City of Novi
45175 W. Ten Mile Road
Novi MI 48375-3024

RE: 2024 Summer Maintenance Agreement

Dear Mr. Wiktorowski:

Attached are two copies of a Summer Maintenance Agreement between the Road Commission for Oakland County and the City of Novi for sweeping on Pontiac Trail, Beck Rd., Grand River Ave., 10 Mile Rd., Novi Rd., Haggerty Hwy., 12 Mile Rd., 8 Mile Rd., 14 Mile Rd., Napier Rd., Napier/10 Mile Roundabout, Brickscape and Baseline within the city limits. The frequency of the sweeping activity for this year is 3 sweepings.

Please note: We are requesting that the City invoice the Road Commission for 65% of the total contract amount on September 15, 2024, and invoice for the remaining 35% upon completion of the last maintenance activity.

If the agreement is satisfactory, please attach certified copies of the resolution of approval by your City Council, and return the two signed copies to this office for approval by the Board of Road Commissioners. One fully signed copy will be returned to you.

Please submit your proof of liability insurance that covers this agreement and particularly covers your personnel and equipment working on county roads under the jurisdiction of the Board of Road Commissioners. As your current Certificate of Membership in the Michigan Municipal Workers Compensation Fund will expire in June, I would appreciate it if you would forward a new certificate at that time. If there are any changes in the coverage during the term of this agreement, we must be notified of these changes.

The Board of County Road Commissioners and I extend our appreciation to you, the City Council and your road employees, for the fine work that has been done regarding past agreements, and we want to continue to cooperate with you in any way that we can.

Also, please note that the prices in Exhibit A are reflective of our current bids. If you have any questions, please call.

Sincerely,

Darryl M. Heid, P.E.
Director of Highway Maintenance

DMH/ls

attachments

2024 SUMMER MAINTENANCE AGREEMENT
CITY OF NOVI

Under 1951 PA 51, As Amended

This Summer Maintenance Agreement ("Agreement") is made this ____day of_____, 2024, between the Board of County Road Commissioners of the County of Oakland, State of Michigan, a public body corporate, (hereinafter variously referred to as the "Board and as the "Road Commission for Oakland County") and the **City of Novi,** Oakland County Michigan, a Michigan municipal corporation hereinafter referred to as the "City."

WHEREAS, certain county primary and local roads more specifically set forth in Exhibit A, attached hereto, are under the jurisdiction and control of the Board and are located within or adjacent to the City; and

WHEREAS, The City desires to be responsible for certain maintenance of said roads under the terms of this Agreement and the Board is willing to participate in the cost thereof as provided in Section III of this Agreement.

NOW, THEREFORE, in consideration of the mutual covenants set forth herein as provided, it is hereby agreed as follows:

I

The City hereby agrees to be responsible for performing Summer Maintenance of certain roads under the terms of this Agreement, and the Board agrees to participate in the cost thereof as provided in Section III of this Agreement. "Summer Maintenance," herein required to be performed by City, shall mean the work and services specified in Exhibit B hereto and this Agreement. All maintenance work and services performed by the City shall be in accordance with the Board's minimum maintenance standards and this Agreement.

II

The Board has determined and specified the equipment and personnel necessary to provide the Summer Maintenance and the City has acquired the necessary equipment and personnel so specified. The City shall keep accurate and uniform records of all Summer Maintenance work performed pursuant to this Agreement. The Board shall have the right to audit City accounts and records insofar as such documents concern this Agreement and the work and services performed and to be performed hereunder.

III

In consideration of the Summer Maintenance by the City, the Board hereby agrees to pay to the City the sum of **$24,188.85**, as set forth in Exhibit A, attached hereto and made a part hereof. Such amounts are to be used by the City for Summer Maintenance. Payments are to be made by the Board to the City as follows:

65% on September 15, 2024
35% upon completion of the last Summer Maintenance activity

The making of said payments shall constitute the Board's entire obligation in reference to Summer Maintenance.

IV

It is specifically understood and agreed by the City and the Board that by undertaking to perform Summer Maintenance of certain county primary roads, the City does not assume the Board's legal duty to

keep said roads in such condition as to be in accordance with MCLA 224.21, reasonably safe and convenient for public travel, other than as may relate to the work and service to be performed as listed in Section I above, and the City hereby agrees to hold harmless, represent, defend with counsel acceptable to the Board, and indemnify the Board; the County of Oakland; the Office of the Oakland County Water Resources Commissioner and any and all applicable drainage districts(s); the Michigan State Department of Transportation and the Transportation Commission; any and all local units(s) of government within which the roads subject to this Agreement are located, and the respective officers, agents and employees of all of the foregoing, against any and all claims, charges, complaints, damages, or causes of action for (a) public or private property damage, (b) injuries to persons, or (c) other claims, charges, complaints, damages or causes of action arising out of the performance or non-performance of the activities which are the subject matter of this Agreement, both known and unknown, whether during the progress or after the completion thereof. However, this harmless provision does not apply in so far as any claim or suit is alleged to be, or demonstrated to be, the result of a defect in highway design or condition and not related to the Summer Maintenance activities set out in Section I. Further, since the Board has the statutory responsibility for maintenance of the roads under this Agreement, it is the intent of the parties that the delegation by this Agreement of those maintenance responsibilities to the City provide immunity to the City as an agent of the County. Therefore, the City falls within the governmental immunity protection of the County.

During that part of the year that the City is providing Summer Maintenance under Section I, the City agrees to notify the Board within 30 days, should it become aware of defects or maintenance requirements in the roads set forth in Exhibit A, if said defects or maintenance requirements are not Summer Maintenance subject to this Agreement.

V

The City shall acquire and maintain, during the term of the Agreement, statutory worker's compensation, employer's liability, automobile and comprehensive general liability insurance coverages, and such other insurance coverages, as described in Exhibit C attached hereto, covering the Board's liability for any and all claims arising out of the City's performance or non-performance of the activities which are the subject matter of this Agreement, and these coverages shall be obtained and maintained in accordance with the requirements set forth in Exhibit C attached hereto and made a part hereof and shall be primary and non-contributory.

VI

The City further agrees to comply with all applicable laws and regulations, including laws and regulations of the State of Michigan for safeguarding the air and waters of the State. In particular, City facilities and operations must meet the provisions of Part 5 (Spillage of Oil and Polluting Materials) rules promulgated pursuant to Part 31, Water Resources Protection, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended. (Rules R324.2001 through R324.2009 address release prevention planning, secondary containment, surveillance, and release reporting requirements).

VII

In accordance with Michigan 1976 PA 453, as amended, and 1976 PA 220, as amended, the Contractor covenants not to discriminate against any employee or applicant for employment with respect to hire, tenure, terms, conditions, or privileges of employment, or a matter directly or indirectly related to employment, because of race, color, religion, national origin, age, sex, height, weight, marital status or because of a disability that is unrelated to the individual's ability to perform the duties of the particular job or position, and to require a similar covenant on the part of any subcontractor employed in the performance of the Agreement. A breach of this covenant may be regarded as a material breach of this Agreement.

VIII

Contractor shall utilize the provisions of the Federal E-Verify Program to verify the work authorization status of all newly hired employees; and the Road Commission for Oakland County may terminate the contract for failure of Contractor to so comply with the Federal E-Verify Program.

IX

It is the intention of the parties hereto that this Agreement is not made for the benefit of any third party.

It is anticipated that subsequent agreements regarding Summer Maintenance activities will be executed annually by the parties hereto.

The terms and conditions of this Agreement shall become effective as of April 1, 2024, and shall continue in full force and effect until a subsequent Summer Maintenance agreement has been executed by the parties hereto or until this Agreement is terminated, as set forth below.

In the event that a subsequent Summer Maintenance agreement has not been executed by the parties hereto on or before November 30, 2024, either party may terminate this Agreement by providing the other party hereto with written notice of intent to terminate, at least thirty (30) days prior to the date of termination.

This Agreement is executed by the Board at its meeting of _____, and by the City by authority of a resolution of its governing body, adopted _____, (copy attached as Exhibit D).

Witnesses:

**CITY OF NOVI**
A Municipal Corporation

_____ By: _____

Its: _____

_____ By: _____

Its: _____

Witnesses:

BOARD OF COUNTY ROAD COMMISSIONERS
OF THE COUNTY OF OAKLAND,
A Public Body Corporate

_____ By: _____

Its: _____

_____ By: _____

Its: _____

**EXHIBIT A**

2024 SUMMER MAINTENANCE AGREEMENT

CITY OF NOVI

**CURB SWEEPING**

Primary Roads

| | | | Miles |
|---|---|---|---|
| **Pontiac Trail:** | West Park Dr. to just W/O Beck Rd | Border includes Commerce side | 1.23 |
| **Beck Road:** | Grand River Ave. to 12 Mile Rd | Border includes Wixom side | 1.21 |
| **Grand River Ave.:** | Wixom Rd to Haggerty Rd | | 9.03 |
| **10 Mile Rd.:** | Napier Rd to Haggerty Hwy | | 2.89 |
| **Novi Rd.:** | 8 Mile Rd to 12 Mile Rd | | 5.74 |
| **Haggerty Hwy:** | 14 Mile Rd to 8 Mile Rd | Border includes Farmington side | 5.91 |
| **12 Mile Rd.:** | Grand River Ave to Haggerty Hwy | includes Median & section E/O Grand River | 12.04 |
| **8 Mile Rd.:** | Napier Rd to Taft Rd | Border includes Northville (both sides) | 2.31 |
| **14 Mile Rd.:** | Haggerty to East Lake | Border includes Commerce side | 0.89 |
| **Napier Rd.:** | 12 Mile Rd to 8 Mile Rd | Border includes Lyon side but not Roundabout | 0.88 |
| **Napier/10 Mile (Roundabout):** | Includes all legs and Lyon side | | 1.68 |

Local Roads

| | | | |
|---|---|---|---|
| **Brickscape:** | North of 8 Mile Rd | | 0.03 |
| **Baseline:** | Just South of 8 Mile Rd | | 0.04 |
| | | **TOTAL MILES** | **43.88** |

| | | |
|---|---|---|
| Sweeping | 43.88 Curb Miles x $183.75/Curb Mile = $8,062.95 x 3 Sweepings:<br>(Both directions, including medians and border roads) | $24,188.85 |
| | **TOTAL CONTRACT** | **$24,188.85** |

**EXHIBIT B**

2024 SUMMER MAINTENANCE AGREEMENT

CITY OF NOVI

WORK TO BE PERFORMED:

1. Sweep all roads listed in Exhibit A, in both directions of travel and around islands, as provided in this Agreement, three (3) times, once between April 30th and May 30th, once between July 30th and August 30th, and once between October 30th and November 30th.

2. The City may at its own expense sweep more frequently, subject to the other terms and conditions of this Agreement, including, without limitation, the indemnification and insurance provisions.

**EXHIBIT C**

2024 SUMMER MAINTENANCE AGREEMENT

CITY OF NOVI

**SPECIAL PROVISION**
**FOR**
**INDEMNIFICATION, DAMAGE LIABILITY AND INSURANCE**

**SPECIAL PROVISION**
**FOR**
**INDEMNIFICATION, DAMAGE LIABILITY AND INSURANCE**

Indemnification and Damage Liability
See provisions of the maintenance agreement to which this Exhibit C is attached.

Insurance Coverage:
The City, prior to execution of the maintenance agreement, shall file with the Board of County Road Commissioners of the County of Oakland ("Board"), copies of completed certificates of insurance as evidence that it carries adequate insurance satisfactory to the Board; and, without the prior written consent of the Board, the City shall not cancel, reduce, or fail to renew the insurance coverage required by this Agreement. The City shall immediately notify the Board and cease operations upon the occurrence of any cancellation, reduction, modification or termination of insurance required hereunder, and shall not resume operations under this Agreement until all insurance as required by this Agreement is in full force and effect. The City shall provide in a form and substance acceptable to the Board an underwriter's endorsement to its comprehensive general liability insurance and auto liability insurance, including any excess umbrella insurance, in the amounts set forth on Exhibit C, naming the Board and the Office of the Oakland County Water Resources Commissioner as an additional named insured. The City shall obtain and deliver to the Board notices of cancellation and non-renewal endorsement, acceptable to the Board, for the general liability, auto liability, and worker's compensation and employer's liability policies. Prior to commencing the work, the City shall provide to the Board evidence satisfactory to the Board of payment of the current premium for the required insurance and endorsements and shall also obtain certificates of insurance for each policy, providing for thirty (30) days actual (not "endeavor to") prior, written notice to the Board by the insurance carrier of any cancellation, termination reduction or material change of the policy. The City shall make sure that each of its subcontractors, if any, providing any of the work and services under this contract, shall obtain and maintain insurance as set forth in this Agreement.

The City shall provide the following insurance coverages which shall be primary and non-contributory:

a. Workmen's Compensation Insurance: The insurance shall provide protection for the City's employees, to the statutory limits of the State of Michigan and $500,000 employer's liability. The indemnification obligation under this section shall not be limited in any ways by any limitation on the amount or type of damages, compensation or benefits payable by or for the City under worker's disability compensation coverage established by law.

b. Bodily Injury and Property Damage Other than Automobile: The insurance shall provide protection against all claims for damages to public or private property, and injuries to persons arising out of and during the progress and to the completion of the work, and with respect to product and completed operations for one year after completion of the work.

| | |
|---|---|
| Bodily Injury Liability<br>Each Person:<br>$1,000,000<br>Each Occurrence:<br>$1,000,000<br>Aggregate:<br>$2,000,000<br>-and-<br>Property Damage<br>Liability:<br>Each Occurrence:<br>$250,000<br>Aggregate:<br>$250,000 | Or: Single Limit: Bodily injury<br>and Property Damage<br>Each Occurrence: $1,000,000<br>Aggregate: $2,000,000 |

Such insurance shall include: 1) explosion, collapse, and underground damage hazards (x,c,u), which shall include, but not be limited to coverage for (a) underground damage to facilities due to drilling and excavating with mechanical equipment; and (b) collapse or structural injury to structures due to blasting or explosion, excavation, tunneling, pile driving, cofferdam work, or building moving or demolition; (2) products and completed operations; (3) contractual liability; and (4) independent contractors' coverages.

c. Bodily Injury Liability and Property Damage Liability - Automobiles (Comprehensive Auto Liability) The minimum limits of bodily injury liability and property damage liability shall be:

| | |
|---|---|
| Bodily Injury Liability<br>Each Person:<br>$500,000<br>Each Occurrence:<br>$1,000,000<br>-and-<br>Property Damage Liability:<br>Each Occurrence:<br>$1,000,000 | Or: Single Limit: Bodily Injury<br>and Property Damage<br>Each Occurrence: $2,000,000 |

Such insurance shall include coverage for all owned, hired, and non-owned vehicles.

d. Excess and Umbrellas Insurance – The City may substitute corresponding excess and/or umbrella liability insurance for a portion of the above listed requirements to meet the specified minimum limits of liability.

e. The City shall provide for and in behalf of the Board and all agencies specified by the Board, as their interest may appear, Owner's Protective Public Liability Insurance. Such insurance shall provide coverage and limits the same as the City's Public Liability Insurance.

Reports – The City or his insurance carrier shall immediately report all claims received which relate to the Contract, and shall also report claims investigations made, and disposition of claims to the County Highway Engineer.

See provisions of the maintenance agreement to which this Exhibit C is attached.

# CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY): 3/11/2024

**THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.**

**IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must have ADDITIONAL INSURED provisions or be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).**

| | |
|---|---|
| **PRODUCER**<br>Kapnick Insurance Group<br>333 Industrial Dr<br>Adrian MI 49221 | **CONTACT NAME:** Andrea Miller<br>**PHONE (A/C, No, Ext):** 248.327.0462 **FAX (A/C, No):**<br>**E-MAIL ADDRESS:** andrea.miller@kapnick.com |
| | **INSURER(S) AFFORDING COVERAGE** — **NAIC #** |
| | **INSURER A :** Tokio Marine Specialty Insurance Company — 23850 |
| **INSURED** CITYOFN-01<br>City of Novi<br>45175 Ten Mile Road<br>Novi MI 48375 | **INSURER B :**<br>**INSURER C :**<br>**INSURER D :**<br>**INSURER E :**<br>**INSURER F :** |

**COVERAGES** **CERTIFICATE NUMBER:** 1875683062 **REVISION NUMBER:**

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

| INSR LTR | TYPE OF INSURANCE | ADDL INSD | SUBR WVD | POLICY NUMBER | POLICY EFF (MM/DD/YYYY) | POLICY EXP (MM/DD/YYYY) | LIMITS | |
|---|---|---|---|---|---|---|---|---|
| A | X **COMMERCIAL GENERAL LIABILITY**<br>☐ CLAIMS-MADE ☐ OCCUR<br>GEN'L AGGREGATE LIMIT APPLIES PER:<br>X POLICY ☐ PRO-JECT ☐ LOC<br>☐ OTHER: | Y | Y | U23PKG80430-01 | 7/1/2023 | 7/1/2024 | EACH OCCURRENCE<br>DAMAGE TO RENTED PREMISES (Ea occurrence)<br>MED EXP (Any one person)<br>PERSONAL & ADV INJURY<br>GENERAL AGGREGATE<br>PRODUCTS - COMP/OP AGG | $ 1,000,000<br>$ 50,000<br>$ 10,000<br>$ 1,000,000<br>$ 3,000,000<br>$ 3,000,000 |
| A | **AUTOMOBILE LIABILITY**<br>X ANY AUTO<br>☐ OWNED AUTOS ONLY ☐ SCHEDULED AUTOS<br>☐ HIRED AUTOS ONLY ☐ NON-OWNED AUTOS ONLY | Y | Y | U23PKG80430-01 | 7/1/2023 | 7/1/2024 | COMBINED SINGLE LIMIT (Ea accident)<br>BODILY INJURY (Per person)<br>BODILY INJURY (Per accident)<br>PROPERTY DAMAGE (Per accident) | $ 1,000,000<br>$ 1,000,000<br>$ 1,000,000<br>$ |
| A | X **UMBRELLA LIAB** ☐ OCCUR<br>X **EXCESS LIAB** ☐ CLAIMS-MADE<br>☐ DED ☐ RETENTION $ | Y | Y | U23PKG80430-01 | 7/1/2023 | 7/1/2024 | EACH OCCURRENCE<br>AGGREGATE | $ 9,000,000<br>$ 9,000,000 |
| | **WORKERS COMPENSATION AND EMPLOYERS' LIABILITY** Y / N<br>ANYPROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? ☐<br>**(Mandatory in NH)**<br>If yes, describe under DESCRIPTION OF OPERATIONS below | N / A | | | | | ☐ PER STATUTE ☐ OTH-ER<br>E.L. EACH ACCIDENT<br>E.L. DISEASE - EA EMPLOYEE<br>E.L. DISEASE - POLICY LIMIT | $<br>$<br>$ |

**DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)**

The certificate holder and all agencies specified by the Road Commission, as their interest may appear, Owner's Public Liability Insurance shall be an additional insured with reference to the "2023-2024 Summer Maintenance, Road Commission of Oakland County". A 60 day notice of cancellation applies.

**CERTIFICATE HOLDER**

Road Commission for Oakland County
31001 Lahser Road
Beverly Hills MI 48025

**CANCELLATION**

**SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.**

**AUTHORIZED REPRESENTATIVE**

James D Kapnick

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# CITY OF NOVI CITY COUNCIL
# APRIL 8, 2024

**SUBJECT:** Approval of the 2024 Suburban Mobility Authority for Regional Transportation (SMART) Municipal Credit Fund Contract and Resolution for the Older Adult Transportation Program in the amount of $62,149.

**SUBMITTING DEPARTMENT:** Parks, Recreation and Cultural Services (PRCS)

**BACKGROUND INFORMATION:**

The City of Novi is eligible to receive $62,149 in Suburban Mobility Authority for Regional Transportation (SMART) Municipal Credit Funds for 2024. These funds are utilized to support the Older Adult Services (OAS) Transportation Program for Novi residents ages 55 and older, and those younger than 55 with a limiting disability. The OAS Transportation Program has been supported by the City of Novi General Fund, farebox fees, partnerships, and SMART Municipal Credits funding. SMART funding is determined by the population of the city. Municipal Credit funds under this contract are made available by the Michigan Legislature pursuant to Michigan Public Act 51 of 1951. Municipal Credit funds made available to SMART through legislative appropriation are based on the State's approved budget.

The City will utilize these funds internally for the fiscal year July 1, 2023 – June 30, 2024 to help support the Older Adult Services Transportation Services. Pursuant to the recent council action of engaging with Peoples Express as the new transit provider, these funds will be transferred to Peoples Express beginning July 1, 2024, as the City of Novi will no longer be directly offering these types of services.

**RECOMMENDED ACTION:** Approval of the 2024 Suburban Mobility Authority for Regional Transportation (SMART) Municipal Credit Fund Contract and Resolution for the Older Adult Transportation Program in the amount of $62,149.

**CITY OF NOVI**

**COUNTY OF OAKLAND, MICHIGAN**

**RESOLUTION S.M.A.R.T. MUNICIPAL CREDIT PROGRAM**

Minutes of a Meeting of the City Council of the City of Novi, County of Oakland, Michigan, held in the City Hall of said City on April 8, 2024, at 7 o'clock P.M. Prevailing Eastern Time.

PRESENT: Councilmembers_____

ABSENT: Councilmembers_____

The following preamble and Resolution were offered by Councilmember _____and supported by Councilmember _____.

**WHEREAS,** the City of Novi is desirous of maintaining the existing Suburban Mobility Authority for Regional Transportation (S.M.A.R.T.) Municipal Credit Program, and

**WHEREAS,** this program provides an essential service to senior citizens and handicapped individuals.

**NOW THEREFORE, IT IS THEREFORE RESOLVED** that that the Novi City Council hereby requests the 2024 Municipal Credit funding from Suburban Mobility Authority for Regional Transportation (S.M.A.R.T.), in the amount of $62,149, and

**BE IF FURTHER RESOLVED** that funding be distributed in the following manner: Novi Older Adult Transportation Program.

**AYES:**

**NAYS:**

RESOLUTION DECLARED ADOPTED.

_____
Cortney Hanson, City Clerk

**CERTIFICATION**

I hereby certify that the foregoing is a true and complete copy of a resolution adopted by the City Council of the City of Novi, County of Oakland, and State of Michigan, at a regular meeting held this 8th day of April, 2024, and that public notice of said meeting was given pursuant to and in full compliance with Act No. 267, Public Acts of Michigan, 1976, and that the minutes of said meeting have been kept and made available to the public as required by said Act.

_____

Cortney Hanson, City Clerk
City of Novi

# MUNICIPAL CREDIT and COMMUNITY CREDIT CONTRACT FOR FY2024

I, **Victor Cardenas**, as the **City Manager** of **the City of Novi** (hereinafter, the "Community") hereby apply to SMART and agree to the terms and conditions herein, for the receipt and expenditure of **Municipal Credits** available for the period July 1, 2023 through June 30, 2024 (Section 1 below), and **Community Credits** available for the period July 1, 2023 to June 30, 2024 (Section 2 below); and further agree that the **Municipal and Community Credits Master Agreement** between the parties is incorporated herein by reference. A description of the service the Community shall provide hereunder is set forth in **Exhibit A**, and the operating budget for that service is set forth in **Exhibit B**, both of which are attached hereto and incorporated herein.

**1.** The Community agrees to use **$62149** in **Municipal Credit** funds as follows:

(a) Transfer to _____ Funding of: $ _____

TRANSFEREE COMMUNITY

(b) Van/Bus Operations At the cost of: $ _____

**(**Including Charter and Taxi services)

(c) Services Purchased from SMART At the cost of: $ _____

(Including Tickets, Shuttle Services/Dial-a-Ride)

(d) Services Purchased from Subcontractor At the cost of: $ _____

_____

(NAME OF SUBCONTRACTOR)

(See attached Subcontractor Service Agreement)

**Total $62149**

SMART intends to provide Municipal Credit funds under this contract to the extent funds for the program are made available to it by the Michigan Legislature pursuant to Michigan Public Act 51 of 1951. Municipal Credit funds made available to SMART through legislative appropriation are based on the State's approved budget. In the event that revenue actually received is insufficient to support the Legislature's appropriation, it will result in an equivalent reduction in funding provided to the Community pursuant to this Contract. In such event, SMART reserves the right, without notice, to reduce the payment of Municipal Credit funds by the amount of any reduction by the legislature

to SMART. All Municipal Credit funding must be spent by June 30, 2026; all funds not spent by that date will revert back to SMART pursuant to Michigan Public Act 51 of 1951, for expenditure consistent with Michigan law and SMART policy.

**2.** The Community agrees to use **$0** in **Community Credit** funds available as follows:

(a) Transfer to _____ Funding of: $ _____

TRANSFEREE COMMUNITY

(b) Van/Bus Operations At the cost of: $ _____

(Including Charter and Taxi services)

(c) Services Purchased from SMART At the cost of: $ _____

(Including Tickets, Shuttle Services/Dial-a-Ride)

(d) Capital Purchases At the cost of: $ _____

(e) Services Purchased from Subcontractor At the cost of: $ _____

_____

(NAME OF SUBCONTRACTOR)

(See attached Subcontractor Service Agreement)

**Total $0**

To the extent that this Contract calls for a payment of funds directly from SMART to a subcontractor, Community hereby acknowledges that it is the party entitled to receive such funds and is affirmatively authorizing and directing SMART to pay such funds directly to the subcontractor on its behalf. Capital purchases permitted with Community Credits are subject to applicable state and federal regulations, and SMART policy, including procurement guidelines. When advantageous, SMART may make procurements directly. Reimbursement for purchases made by Community requires submission of proper documentation to support the purchase (i.e. purchase orders, receiving reports, invoices, etc.). Community Credit dollars available in FY 2024, may be required to serve local employer transportation needs per the coordination requirements set forth in the aforementioned Master Agreement. All Community Credit funds must be spent by June 30, 2027; any funds not spent by that date may revert back to SMART for expenditure consistent with SMART policy.

The Parties acknowledge and agree that this Agreement may be executed by electronic signature, which shall be considered as an original signature for all purposes and shall have the same force and effect as an original signature. The Parties agree that the electronic signatures appearing on this Agreement are the same as handwritten signatures for the purposes of validity, enforceability and admissibility. Without limitation, "electronic signature" shall include faxed versions of an original signature or electronically scanned and transmitted versions (e.g., via pdf) of an original signature.

This Agreement shall be binding once signed by both parties.

| **SUBURBAN MOBILITY AUTHORITY FOR REGIONAL TRANSPORTATION** | **CITY OF NOVI** |
|---|---|
| Signature | Signature |
| Printed Name | Victor Cardenas<br>Printed Name |
| Title | City Manager<br>Title |
| Date | Date |

**EXHIBIT A**

**PROJECT DESCRIPTION**

Overall Project Description (Provide a descriptive narrative):

The City of Novi Older Adult Transportation Program is an advance reservation transportation service for adults 55 and over and disabled non-seniors provided by the City of Novi Parks, Recreation and Cultural Services Department. The priority of the Transportation Program is to provide rides for medical appointments, trips to hospitals, grocery stores, banks, malls, and numerous other facilities. Emphasis is placed on transporting riders to Meadowbrook Activity Center, Novi Civic Center and the Novi Public Library as well as city-sponsored events. The city promotes the program through "Engage!" Parks, Recreation and Cultural Services catalog, flyers, community presentations, Facebook, etc. Riders are given a brochure with information about the transportation program the first time they use the service.

Service Area (Provide geographic boundaries):

Service for the Novi Older Adult Transportation area is available to residents within 10 miles of the Novi Civic Center. In some cases, a medical facility may be located just outside of the 10 mile distance and consideration will be given based on availability.

Service Times (Provide days and hours of service):

Transportation is available –
- 8 a.m. – 4 p.m. Monday – Friday with the last pick-up within Novi at 4:00 p.m., and the last pickup outside of Novi at 3:30 p.m.
- 9 a.m. – 3 p.m. on Saturday with the last pick-up within Novi is 2:30 p.m., and the last pick-up outside of Novi is 2 p.m.
- There is no service on Sunday.
- Reservations are required at least one business day in advance and are scheduled based on availability. Riders may schedule rides between 8 a.m. – 4 p.m. daily by calling (248) 735-5617 or can book any time on the self-service booking portal.

Eligible User Groups (Users eligible to use the service):

Novi residents 55+ or those younger than 55 with a limiting disability are eligible. The service will not accommodate children.

Fare Structure: (Cost to use service)

$0 within Novi and $5 one-way outside of Novi.

Service Mode (Describe the amount and type of vehicles available, and whether they are wheelchair lift-equipped):

Novi uses 7 vehicles: 1 Ford Escape Hybrid
2 Dodge Grand Caravans (1 with a side ramp)
3 Ford Transits 350HD's with wheelchair lifts
1 Ford E450 Bus

**EXHIBIT B**

**PROJECT OPERATING BUDGET**

Municipality: City of Novi

Contract Period: July 1, 2023 through June 30, 2024

Account Number: 48233

**OPERATING EXPENSES:**

| | | |
|---|---|---|
| Administrative Fee: *(All employees other than drivers and dispatchers)* (10% max. of MC & CC funds) | | |
| Driver Wages | 200,000 | |
| Fringe Benefits | | |
| Gasoline & Lubricants | 30,000 | |
| Vehicle Insurance | | |
| Parts, Maintenance Supplies | 24,550 | |
| Mechanic Wages | | |
| Fringe Benefits | | |
| Dispatch Wages | | |
| Other (Specify) | | |
| **Sub-Total (Operating Expenses)** | | 254,550 |

**PURCHASED SERVICE:**

| | |
|---|---|
| Taxi Service | |
| Charter Service | |
| SMART Bus Tickets | |
| SMART Shuttle Service | |
| SMART Dial-A-Ride | |

Other (Specify) _____

**Sub-Total (Purchased Service)**

**CAPITAL EQUIPMENT:**

*(Only list purchases to be made with Community Credits)*

Computer Equipment

Software

Vehicle

Maintenance Equipment

Other (Specify)

**Sub-Total (Capital Equipment)**

254,550

**TOTAL EXPENSES Operating Expenses, Purchased Service, and Capital Equipment:**

**EXHIBIT B, continued (Page 2)**

**REVENUES:**

| | | |
|---|---|---|
| Municipal Credit Funds | **62149** | |
| Community Credit Funds | **0** | |
| Specialized Services Funds | | |
| General Funds | 182,401 | |
| Farebox Revenue | 10,000 | |
| In-Kind Service | | |
| Special Fares (Contracted Service) | | |
| Other (Specify) | | |
| | | 254,550 |

**TOTAL REVENUE:**

**(Note: *TOTAL EXPENSES* must equal *TOTAL REVENUE*)**

Suburban Mobility Authority for Regional Transportation

# EEO COMPLIANCE REPORT A

**COMMUNITY PARTNERSHIP FORM**

| **Agency/Community Information** | | |
|---|---|---|
| Program Type: Community Partnership Program (CPP) ☒ Specialized Service ☐ New Freedom ☐ JARC ☐ 5310 ☐ | | |
| Name of Agency/Community: City of Novi | | |
| Address: 45175 10 Mile Road | | |
| City: Novi | State: MI | Zip: 48009 |
| **Agency/Community Data** | | |

| |
|---|
| 1) Has your agency/community completed in excess of $1,000,000 in<br>DOT federally-funded contracts from SMART in the past year? Yes ☐ No ☒ |
| 2) Does your agency/community employ over fifty (50) transit related employees? Yes ☐ No ☒ |
| If the answers to the previous two questions were both "Yes", Please forward<br>your agency's/community's Affirmative Action plan to the address below:<br><br>Buhl Building<br>535 Griswold Street, Suite 600<br>Detroit, MI 48226<br><br>Attn: EEO Coordinator |
| Have all subcontractors been informed of their responsibility to file an EEO Compliance Report A form? Yes☐No☐N/A ☒ |
| **Drug and Alcohol Testing Program Requirements** |
| Does your agency/community have a DOT Drug and Alcohol testing program for<br>Safety-sensitive employees? (Vehicle operators, dispatchers, mechanics and armed security) Yes ☐ No ☒ |
| Name of drug and alcohol testing manager? Title: |
| Phone Number: Ext: Email: |
| **Please Proceed to Employment Data Section on Back** |

Suburban Mobility Authority for Regional Transportation

# EEO COMPLIANCE REPORT A COMMUNITY PARTNERSHIP FORM

| Employment Data | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Report **ONLY** employees directly involved in the operation of your non-emergency transportation program. Including permanent, temporary, or part-time employees. Enter the appropriate figures in the spaces below relating to each employee's race and gender. | | | | | | | | | | | | | | | | | | | |
| **Job Classification** | **Total** | | | | **Race** | | | | | | | | | | | | | | |
| | | | | | **Minority** | | | | | | | | | | | | | | |
| | | | | | **White** | | **African American** | | **Hispanic** | | **Asian** | | **Pacific Islander** | | **American Indian** | | **Multi Race** | | |
| | **Employees** | **Male** | **Female** | **Minority** | **Male** | **Female** | **Male** | **Female** | **Male** | **Female** | **Male** | **Female** | **Male** | **Female** | **Male** | **Female** | **Male** | **Female** | |
| **Officials/Managers** | 2 | 1 | 1 | | 1 | 1 | | | | | | | | | | | | | |
| **Professionals** | 3 | 1 | 2 | | 1 | 2 | | | | | | | | | | | | | |
| **Technicians** | | | | | | | | | | | | | | | | | | | |
| **Office and Clerical Staff** | | | | | | | | | | | | | | | | | | | |
| **Craftsmen (Skilled)** | | | | | | | | | | | | | | | | | | | |
| **Operators (Semi-Skilled)** | | | | | | | | | | | | | | | | | | | |
| **Laborers (Unskilled)** | | | | | | | | | | | | | | | | | | | |
| **Service Workers** | 16 | 15 | | 1 | 13 | 1 | 2 | | | | | | | | | | | | |
| **Journey Workers** | | | | | | | | | | | | | | | | | | | |
| **Apprentices** | | | | | | | | | | | | | | | | | | | |
| **Total** | 21 | | | | | | | | | | | | | | | | | | |

| Certification |
|---|
| How was this information obtained? Visual Survey: Yes X☐ No ☐ Employment Records: Yes ☐ NoX ☐ |
| Name of Authorizing Official (Print): Jeff Muck Title: PRCS Director |
| Signature: Date: |
| Contact person for report: Jeff Muck Title: PRCS Director |
| Telephone: 248-347-0402 Ext: Email: jmuck@cityofnovi.org |

# CITY OF NOVI CITY COUNCIL
# APRIL 8, 2024

**SUBJECT:** Consideration of approval to purchase and install sound dampening panels for the Lakeshore Park community building from Takeform, through the General Services Administration (GSA) cooperative purchasing contract, in the amount of $69,346.15.

**SUBMITTING DEPARTMENT:** Parks, Recreation and Cultural Services

| | |
|---|---|
| **EXPENDITURE REQUIRED** | **$ 69,346.15** |
| **AMOUNT BUDGETED** | **$ 105,870** |
| **APPROPRIATION REQUIRED** | **$ 69,346.15** |
| **LINE ITEM NUMBER** | **208-752.00-976.191** |

**BACKGROUND INFORMATION:**

The Lakeshore Park Community Building is used for Camp Lakeshore, Novi Public Library, and Parks, Recreation & Cultural Services programs as well as various city sponsored meetings and activities. Staff, participants, and instructors have expressed concerns with the acoustics of the rooms. Due to the hard surfaces and high ceilings of the main room (Dodge Brothers Room), sound echoes and causes communication and programming issues.

City staff are recommending the purchase and installation of acoustical sound reduction panels for both the Dodge Brothers Room and the small activity room. Initial quotes were estimated to be in excess of $100,000. Staff met with a local vendor (Omni Tech Spaces in Wixom) and discussed options that would maintain the architectural aesthetics while gaining significant reduction. The vendor recommended utilizing Takeform for sound calculations, room renderings and purchase of acoustical products. Takeform completed a site visit in early 2024 to verify measurements and calculations. An estimated 63% reduction in sound echoing will occur with the addition of wall and ceiling panels.

The General Services Administration (GSA) cooperative purchasing contract will be utilized to significantly reduce the cost of the project. It is anticipated the project can be completed before Camp Lakeshore occupies the building for the summer.

**RECOMMENDED ACTION:** Consideration of approval to purchase and install sound dampening panels for the Lakeshore Park community building from Takeform, through the General Services Administration (GSA) cooperative purchasing contract, in the amount of $69,346.15.

takeform
branding space. moving people.

Quorum Group, LLC DBA

# Estimate #: 218566

March 28, 2024

**Prepared For:**

**City of Novi**
45175 W 10 Mile Rd
Novi, MI 48375-3006

Account Manager: **Kaitlyn Delamarter**
krd@takeform.net
(585) 318-1015

**Jeff Muck**
(248) 347-0400
jmuck@cityofnovi.org

Representative: **Tiffani Caputo**
tiffani.caputo@ki.com
(614) 374-1796

**CIT0112: City of Novi - Lakeshore Park**

## Combined_Full Scope

| | | QTY | Unit Net | Extended Net |
|---|---|---|---|---|
| 1 | Type OS: Suspended Custom Ceiling Panels | 1 | $29,408.18 | $29,408.18 |
| 2 | Types OM.1-OM.5: Wall Panels (Kid's Activity Room) | 1 | $20,428.36 | $20,428.36 |
| 3 | Types OM.6-OM.10: Wall Panels (Meeting Room) | 1 | $8,766.45 | $8,766.45 |
| 4 | Takeform Certified Installation Service - Standard Labor (1 Install Trip: 3 Days _ Full Scope) | 1 | $9,200.00 | $9,200.00 |

| | |
|---|---|
| **Subtotal:** | $67,802.99 |
| **S & H:** | $1,543.16 |
| **Taxes:** | $0.00 |
| **Total:** | $69,346.15 |

takeform
branding space. moving people.

Quorum Group, LLC DBA

# Estimate #: 218566

March 28, 2024

## CIT0112: City of Novi - Lakeshore Park

**Terms:** Net 30

Contract # GS-07F-5546R
Federal Supply Schedule 078, SIN 366-11
DUNS: 803784537 / CAGE CODE: 3YZZ7
Contract Period 1/1/05 to 12/31/2024

Prices reflect GSA discount.

NOT ON CONTRACT: Some items are non contract open market items.

RELEASE TO PRODUCTION: Client approvals of rendering, location plan and message schedule/proof required prior to production.

SHIPMENT WINDOW: If shipment cannot be completed within 1 year of purchase order, a price escalation of 7% shall apply with an additional 7% for every ensuing year. The increase shall be based on total invoice excluding taxes.

DELIVERY: 4 weeks after receipt of approvals contingent on project scope and materials.

FOB Origin, with full freight allowed unless noted.

INSTALLATION: Unless indicated, sign installation is not included. If shown, price is based on the minimum trips required to perform the work. If additional trips are necessary, for reasons beyond our control, additional charges may apply. Please advise if multiple trips are anticipated. Prices reflect installations performed during regular business hours (M-F, 7:00am - 5:00pm). Work outside these hours or days will incur additional cost.

CHANGES: Changes in quantities, sign types and/or finishes may affect prices. Further, due to rising material prices, it may be necessary to adjust prices for orders which fail to ship within one year of placement.

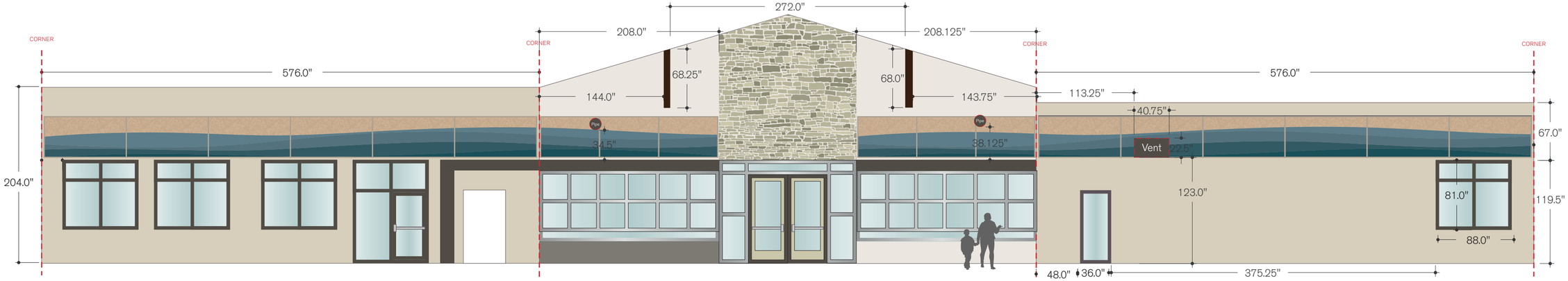
CANCELLATION: Canceled orders shall be subject to a 25% fee.

EXPIRATION: Prices are valid for 90 days.

WARRANTY: Takeform warrants its products to be free of defects in material and workmanship for a period of five years from date of shipment. Warranty covers all material and labor to repair or replace products determined to be defective.

**Purchase Order:** _____ **Total:** $69,346.15

**Signature:** _____ **Date:** _____

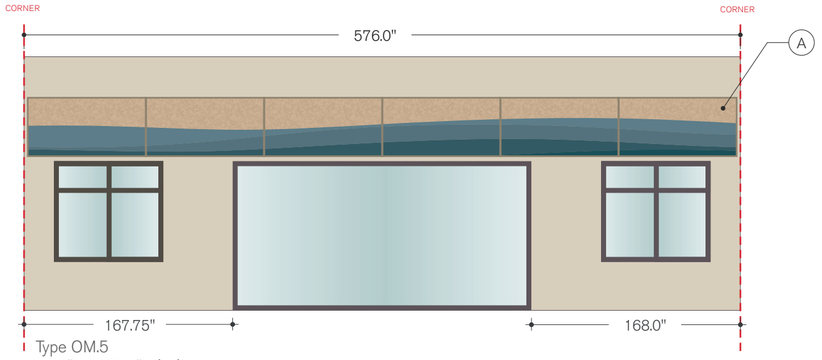



Type OM.1
95.0"w X 47.0"h (x6)

Type OM.2
68.33"w X 47.0"h (x3)

Type OM.3
68.33"w X 47.0"h (x3)

Type OM.4
95.0"w X 47.0"h (x6)




Type OM.5
95.0"w X 47.0"h (x6)

*Kid's Activity Room*

**Oomph**

A Panel Color: **AC150** Toasty Buns
Print Pattern: **TBD** w/ 100% Spot

takeform
11601 Maple Ridge Rd, Medina, NY, 14103
P 800.528.1398 F 585.798.8889
www.takeform.net

# Rendering

Project:
City of Novi - Lakeshore Park

Date: 11.21.23
Drawn By: AKB

Filename:
CIT0112_215175_RND_rev2

Design Review By:
JF 03.14.24

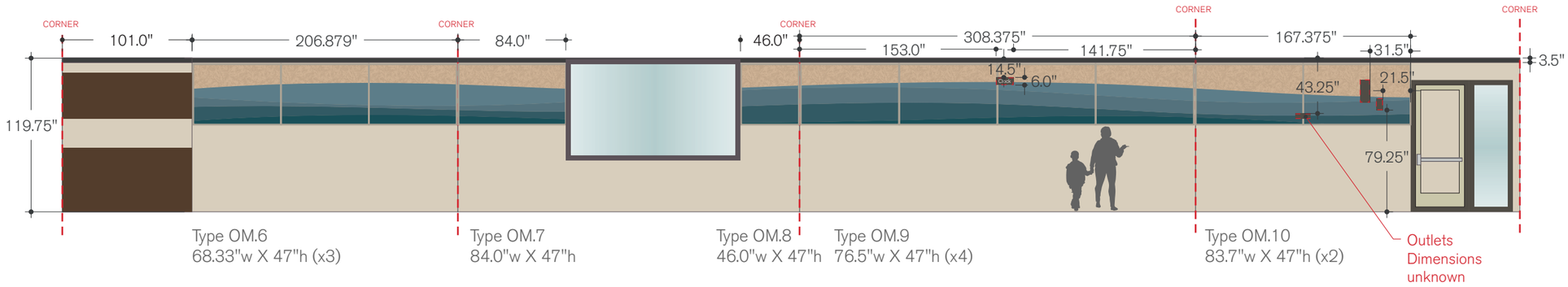
Revisions:
12.18.23AKB updt options
03.14.24AML update dimensions

Scale: 1/8" = 1'

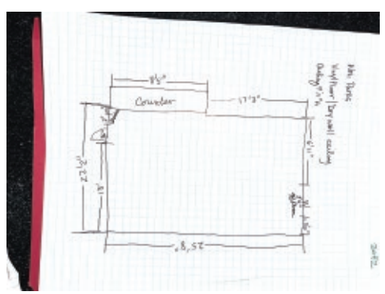
Oomph
CREATIVE ACOUSTICS

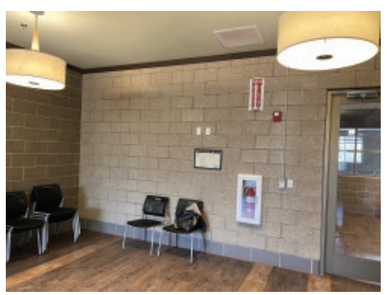
**Notes:**
- Push-thru patterns are NOT compatible with adhesive-mounted wall panels.
- Standard panels may include print OR cut pattern, but NOT both

**Product Approval**
☐ As Is ☐ As Noted
Approved By: _____
Date: _____




## *Meeting Room*





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Oomph
CREATIVE ACOUSTICS

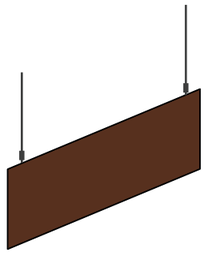
**Notes:**
- Push-thru patterns are NOT compatible with adhesive-mounted wall panels.
- Standard panels may include print OR cut pattern, but NOT both

**Product Approval**

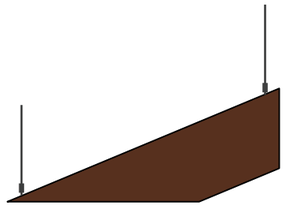
☐ As Is ☐ As Noted

Approved By: _____

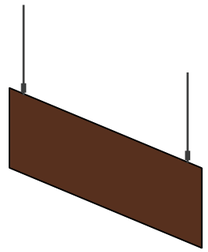
Date: _____



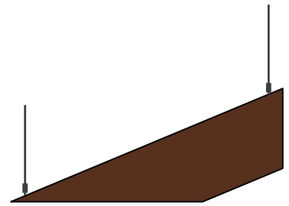
Type OS.1a
Sizes: 60.952"w X 50.709"h
QTY: 16
Cable Suspended



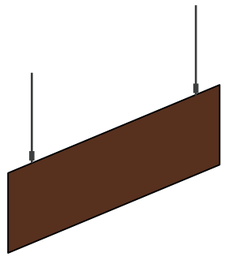
Type OS.1c
Sizes: 86.146"w X 35.894"h
QTY: 3
Cable Suspended



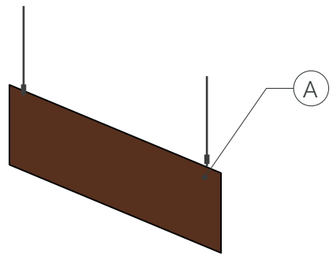
Type OS.2a
Sizes: 60.952"w X 50.709"h
QTY: 16
Cable Suspended



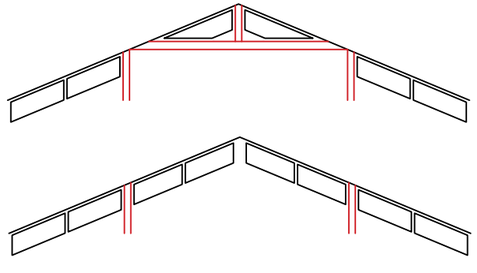
Type OS.2c
Sizes: 86.146"w X 35.894"h
QTY: 3
Cable Suspended



Type OS.1b
Sizes: 67.048"w X 53.25"h
QTY: 22
Cable Suspended




Type OS.2b
Sizes: 67.048"w X 53.25"h
QTY: 22
Cable Suspended



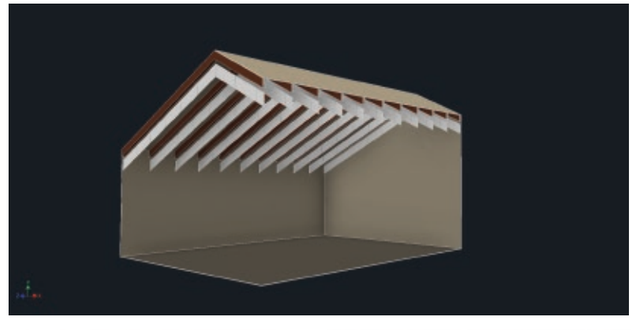
x3

x8

**Oomph**

A Panel Color: **AC155** Bad Dog

*Elevation View*



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JF 03.14.24

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12.18.23AKB updt options
03.14.24AML update dimensions

Scale: 1/4" = 1'

Oomph
CREATIVE ACOUSTICS

**Notes:**
- Push-thru patterns are NOT compatible with adhesive-mounted wall panels.
- Standard panels may include print OR cut pattern, but NOT both

**Product Approval**
☐ As Is ☐ As Noted
Approved By: _____
Date: _____

# CITY OF NOVI CITY COUNCIL
# APRIL 8, 2024

**SUBJECT:** Approval of a Storm Drainage Facility Maintenance Easement Agreement and acceptance of a Warranty Deed for additional right-of-way along Garfield Road as part of the Parc Vista Development located on the north side of Eight Mile Road and west of Garfield Road (parcel 50-22-31-402-045).

**SUBMITTING DEPARTMENT:** Department of Public Works, Engineering Division

**BACKGROUND INFORMATION:**

Toll Brothers, LLC is the developer of Parc Vista, a 44-unit single-family residential development located on the north side of 8 Mile Road and west of Garfield Road.

**Storm Drainage Facility Maintenance Easement Agreement:**
The developer of Parc Vista, Toll Brothers, LLC requests approval of the Storm Drainage Facility Maintenance Easement Agreement (SDFMEA) for the storm water management system associated with the project.

The SDFMEA is a Storm Water Management Ordinance requirement and details the responsibilities of the property owner to properly maintain their privately owned on-site storm water system.

The on-site storm water maintenance system has been inspected by Spalding DeDecker, and attached is the inspection approval letter dated February 6, 2024. The enclosed agreement has been favorably reviewed by the City Attorney (Beth Saarela, January 12, 2024) and the City Engineering consultant (Spalding DeDecker, February 1, 2024), and is recommended for approval.

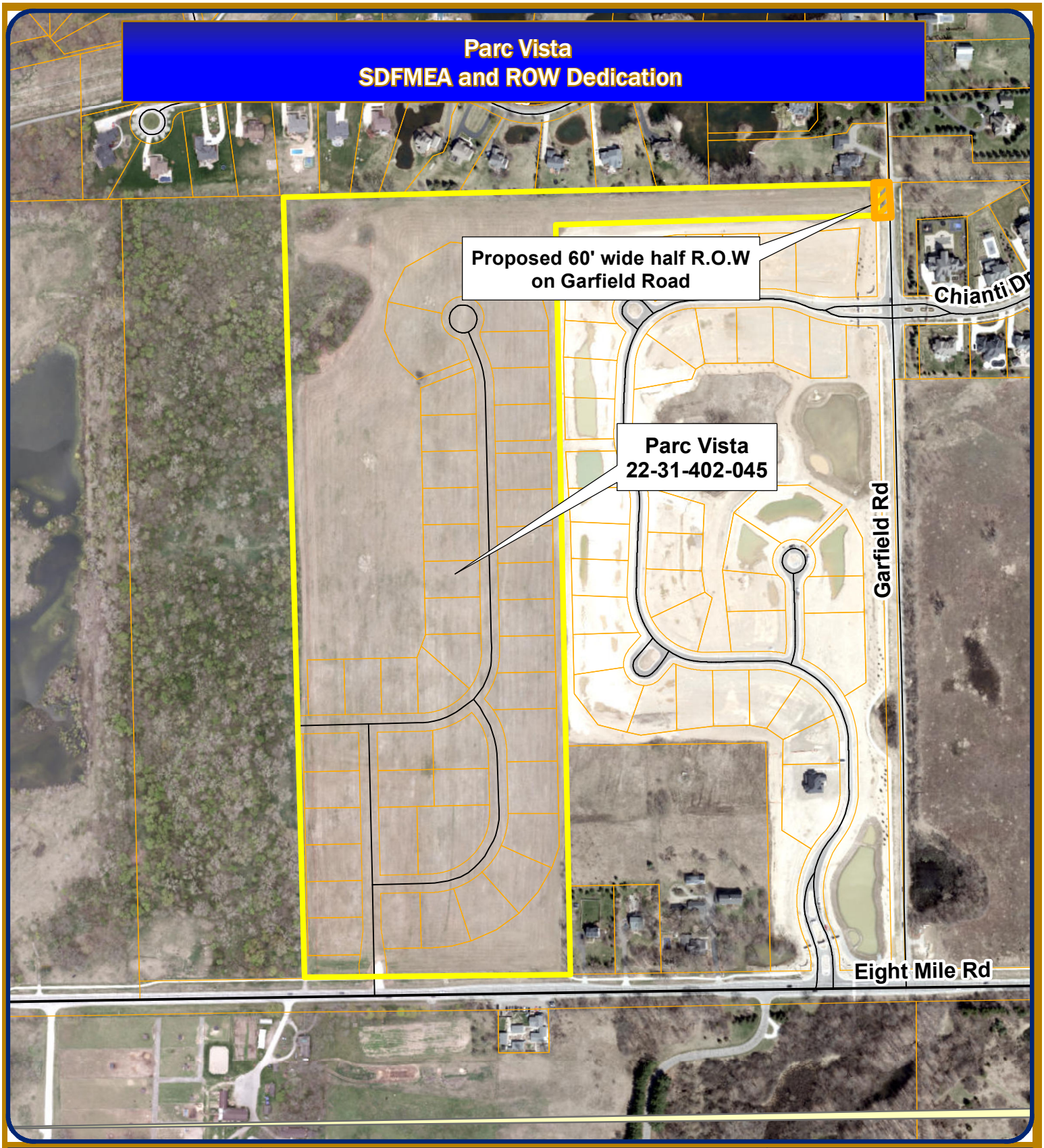
**Warranty Deed for Additional Right-of-way along Garfield Road:**
Toll Brothers, LLC is requesting the acceptance of a warranty deed for the additional right-of-way along Garfield Road, dedicating the master-planned 60-foot right-of-way for Garfield Road, as proposed on the approved site plan.

The enclosed letter by the City Attorney (Beth Saarela, January 12, 2024) provides the Warranty Deed that was prepared for this dedication. These documents and exhibits have been reviewed and approved by the City Attorney and by the City's Engineering

Consultant, Spalding DeDecker (February 1, 2024) and are recommended for acceptance.

**RECOMMENDED ACTION:** Approval of a Storm Drainage Facility Maintenance Easement Agreement and acceptance of a Warranty Deed for additional right-of-way along Garfield Road as part of the Parc Vista Development located on the north side of Eight Mile Road and west of Garfield Road (parcel 50-22-31-402-045).

# Parc Vista
# SDFMEA and ROW Dedication




Map Author: Humna Anjum
Date: 3/25/2024
Project:Parc Vista

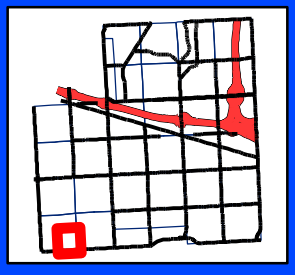
Amended By:
Date:
Department:

MAP INTERPRETATION NOTICE

Map information depicted is not intended to replace or substitute for any official or primary source. This map was intended to meet National Map Accuracy Standards and use the most recent, accurate sources available to the people of the City of Novi. Boundary measurements and area calculations are approximate and should not be construed as survey measurements performed by a licensed Michigan Surveyor as defined in Michigan Public Act 132 of 1970 as amended. Pleased contact the City GIS Manager to confirm source and accuracy information related to this map.

**Legend**

- Major Roads
- Minor Roads
- Project location
- Proposed R.O.W on Garfield Road




**City of Novi**
Engineering Division
Department of Public Works
26300 Lee BeGole Drive
Novi, MI 48375
cityofnovi.org


Feet
0 95 190 380 570
1 inch = 425 feet

**ELIZABETH KUDLA SAARELA**
esaarela@rsjalaw.com

27555 Executive Drive, Suite 250
Farmington Hills, Michigan 48331
P 248.489.4100 | F 248.489.1726
www.rsjalaw.com

ROSATI | SCHULTZ
JOPPICH | AMTSBUECHLER

January 12, 2024

Ben Croy, City Engineer
City of Novi
Field Services Complex
26300 Lee BeGole Drive
Novi, MI 48375

**RE: Parc Vista JSP 21-0047**
**On-Site Acceptance Documents**

Dear Mr. Croy:

We have received and reviewed the following **original** **on-site** documents for the Parc Vista Development:

1. Water System Easement ***(Approved)***
2. Sanitary Sewer System Easement ( ***Approved***)
3. Bill of Sale – Water and Sanitary Sewer ***(Approved***)
4. Garfield Road ROW – (***Approved***)
5. Title Search

**Water and Sanitary Sewer System Easements**

Toll Northeast V Corp., seeks to convey the on-site Water System and Sanitary Sewer System Easements to the City for operation, maintenance, repair, and replacement of the water and sanitary sewer systems within the development. The Easements are consistent with the title search provided, and acceptable for this purpose. The exhibits have been reviewed and approved by the City's Consulting Engineer. The Bill of Sale is acceptable to convey the water and sanitary sewer system facilities to the City.

**Warranty Deed – Garfield Road ROW**

The Warranty Deed for Garfield Road ROW is in the standard format for a right-of-way conveyance, and is consistent with the title search provided. The exhibits have been reviewed and approved by the City's Consulting Engineer.

The Water System and Sanitary Sewer System Easements once accepted by Affidavit of the City Engineer should be recorded with the Oakland County Register of Deeds in the usual manner.. The title search and Bill of Sale should be retained in the City's file. The Warranty Deed should

be placed on an upcoming City Council Agenda for acceptance. Once accepted, it should be recorded with the Oakland County Register of Deeds in the usual manner. The originals will be forwarded to the City Clerk's Office once received.

Please feel free to contact me with any questions or concerns in regard to this matter.

Very truly yours,

ROSATI SCHULTZ JOPPICH
& AMTSBUECHLER PC

Elizabeth Kudla Saarela

EKS
(w/Enclosures)
C: Cortney Hanson, Clerk
Charles Boulard, Community Development Director
Lindsay Bell, Planner
Ian Hogg, Planner
Heather Ziegler, Planner
James Hill, Planner
Diana Shanahan, Planning Assistant
Sarah Marchioni, Community Development Building Project Coordinator
Angie Sosnowski, Community Development Bond Coordinator
Humna Anjum, Project Engineer
Rebecca Runkel, Project Engineer
Adam Yako, Project Engineer
Alyssa Craigie, Administrative Assistant
Sydney Waynick, Taylor Reynolds & Ted Meadows, Spalding DeDecker
Scott Hansen, Toll Brothers
Thomas R. Schultz, Esquire

**WARRANTY DEED**

**KNOW ALL MEN BY THESE PRESENTS,** that **TOLL NORTHEAST V CORP.,** a Delaware corporation **("Grantor")**, whose address is: 26200 Town Center Drive, Suite 200, Novi, Mi 48375 conveys and warrants to the **CITY OF NOVI,** a Michigan municipal corporation **(Grantee")**, whose address is 45175 West Ten Mile Road, Novi, Michigan 48375, the following described premises situated in the City of Novi, County of Oakland, State of Michigan, to-wit:

See **Exhibit A** attached hereto and made a part hereof for public right-of-way purposes.

Together with all and singular tenements, hereditaments and appurtenances thereunto belonging to or in anywise appertaining, for the sum of One and 00/100 Dollars ($1.00), subject to easements, building and use restrictions and other matters of record.

This deed is exempt from transfer taxes by virtue of M.C.L.A. Section 207.505(a) and M.C.L.A. Section 207.526(a).

THE PROPERTY CONVEYED BY THIS DEED MAY BE LOCATED WITHIN THE VICINITY OF FARM LAND OR A FARM OPERATION. GENERLLY ACCEPTED AGRICULTURAL AND MANAGEMENT PRACTICES WHICH MAY GENERATE NOISE, DUST, ODORS, AND OTHER ASSOCIATED CONDITIONS MAY BE USED AND ARE PROTECTED BY THE MICHIGAN RIGHT TO FARM ACT.

Dated this 8 day of January, 2024

[signatures follow]

IN WITNESS WHEREOF, Grantor has executed this Warranty Deed as of the day and year first above set forth.

**GRANTOR:**

**TOLL NORTHEAST V CORP.**, a Delaware corporation

By: _____
Name: Isaac Boyd
Title: Division President

STATE OF )
) ss
COUNTY OF Oakland )

The foregoing instrument was executed before me, the undersigned Notary Public, this 8 day of January, 2024, by Isaac Boyd, who acknowledged himself to be the Division President of Toll Northeast V Corp., a Delaware corporation, on behalf of said corporation.

_____
Notary Public
Genesee County, State of Michigan
My commission expires: 3/8/2026

| When Recorded Return to: | Send Subsequent Tax Bills to: | Drafted by: |
|---|---|---|
| Maryanne Cornelius, Clerk<br>City of Novi<br>45175 West Ten Mile Road<br>Novi, MI 48375-3024 | City of Novi<br>45175 West Ten Mile Road<br>Novi, MI 48375 | Jeff Calcagni, Esq.<br>Toll Bros., Inc.<br>1140 Virginia Drive<br>Fort Washington, PA 19034 |

Part of Tax Parcel No.

MARJORIE J. GOOCH
NOTARY PUBLIC - STATE OF MICHIGAN
COUNTY OF GENESEE
My Commission Expires 3/8/2026
Acting in the County of Oakland

**EXHIBIT A**
**TO**
**WARRANTY DEED**

**Legal Description**

# EXHIBIT A
# DESCRIPTION

## ROAD RIGHT–OF–WAY DEDICATION

PART OF THE SOUTHEAST 1/4 OF SECTION 31, TOWN 1 NORTH, RANGE 8 EAST, CITY OF NOVI, OAKLAND COUNTY, MICHIGAN DESCRIBED AS BEGINNING AT THE EAST 1/4 CORNER OF SAID SECTION 31; THENCE S03°27'16"E 115.00 FEET ALONG THE EAST LINE OF SAID SECTION 31 AND THE CENTERLINE OF GARFIELD ROAD (33 FOOT HALF WIDTH); THENCE S86°31'01"W 60.00 FEET; THENCE N03°27'16"W 115.00 FEET THENCE N86°31'01"E 60.00 FEET ALONG THE EAST–WEST 1/4 LINE OF SAID SECTION 31 TO THE POINT OF BEGINNING. AS DEPICTED ON EXHIBIT B.

# PARC VISTA
## GARFIELD ROAD RIGHT–OF–WAY EXHIBIT

SOUTHEAST 1/4 OF SECTION 31, TOWNSHIP 1 NORTH, RANGE 8 EAST, CITY OF NOVI, OAKLAND COUNTY, MICHIGAN

ESE Land Planning Engineering Land Surveying

26200 Town Center Court
Suite 200
Novi, Michigan 48375
TEL: (248) 305-4013
FAX: (248) 305-4001

CIVIL ENGINEERS - LAND SURVEYORS - LANDSCAPE ARCHITECTS - LAND PLANNERS

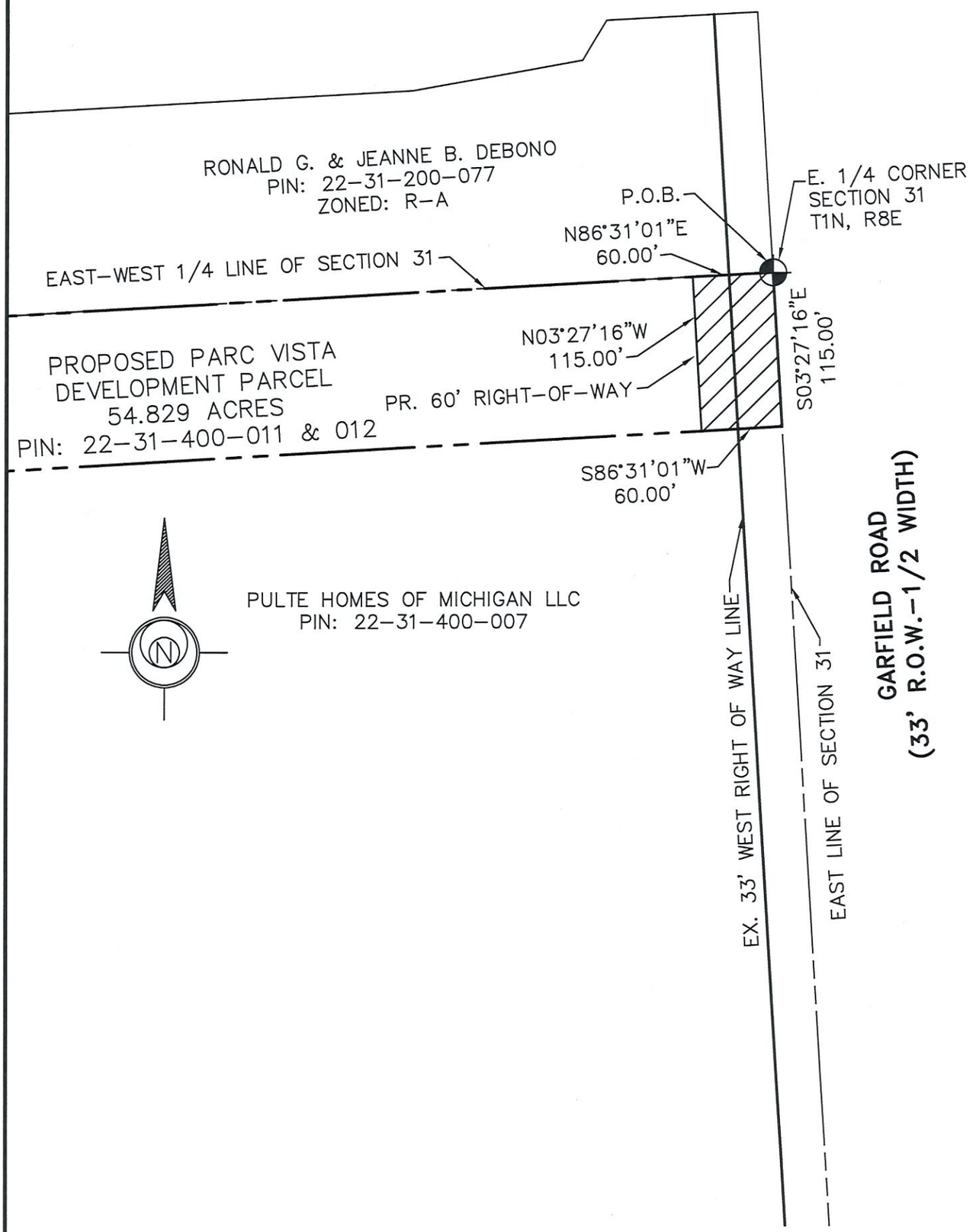
| | | |
|---|---|---|
| DESIGNED: | DRAWN: SRB | CHECKED: JIF |
| SCALE: NONE | DATE: 16 FEB 2023 | DWG. 8341–ROW–DEDICATION |

**EXHIBIT B**

**TO**
**WARRANTY DEED**

**RIGHT OF WAY DEDICATION**

# EXHIBIT B




# PARC VISTA
## GARFIELD ROAD RIGHT-OF-WAY EXHIBIT

SOUTHEAST 1/4 OF SECTION 31, TOWNSHIP 1 NORTH, RANGE 8 EAST, CITY OF NOVI, OAKLAND COUNTY, MICHIGAN


ESE Land Planning Engineering Land Surveying

26200 Town Center Court
Suite 200
Novi, Michigan 48375
TEL: (248) 305-4013
FAX: (248) 305-4001

CIVIL ENGINEERS - LAND SURVEYORS - LANDSCAPE ARCHITECTS - LAND PLANNERS


| | | |
|---|---|---|
| DESIGNED: | DRAWN: SRB | CHECKED: JIF |
| SCALE: 1" = 100' | DATE: 16 FEB 2023 | DWG. 8341-ROW-DEDICATION |

| First American Title™ | Owner's Policy of Title Insurance |
|---|---|
| | ISSUED BY<br>**First American Title Insurance Company** |
| **Owner's Policy** | POLICY NUMBER<br>**5011400-3585426e** |

**Any notice of claim and any other notice or statement in writing required to be given to the Company under this policy must be given to the Company at the address shown in Section 18 of the Conditions.**

**COVERED RISKS**

SUBJECT TO THE EXCLUSIONS FROM COVERAGE, THE EXCEPTIONS FROM COVERAGE CONTAINED IN SCHEDULE B, AND THE CONDITIONS, **FIRST AMERICAN TITLE INSURANCE COMPANY**, a Nebraska corporation (the "Company") insures, as of Date of Policy and, to the extent stated in Covered Risks 9 and 10, after Date of Policy, against loss or damage, not exceeding the Amount of Insurance, sustained or incurred by the Insured by reason of:

1. Title being vested other than as stated in Schedule A.
2. Any defect in or lien or encumbrance on the Title. This Covered Risk includes but is not limited to insurance against loss from
   (a) A defect in the Title caused by
      (i) forgery, fraud, undue influence, duress, incompetency, incapacity, or impersonation;
      (ii) failure of any person or Entity to have authorized a transfer or conveyance;
      (iii) a document affecting Title not properly created, executed, witnessed, sealed, acknowledged, notarized, or delivered;
      (iv) failure to perform those acts necessary to create a document by electronic means authorized by law;
      (v) a document executed under a falsified, expired, or otherwise invalid power of attorney;
      (vi) a document not properly filed, recorded, or indexed in the Public Records including failure to perform those acts by electronic means authorized by law; or
      (vii) a defective judicial or administrative proceeding.
   (b) The lien of real estate taxes or assessments imposed on the Title by a governmental authority due or payable, but unpaid.
   (c) Any encroachment, encumbrance, violation, variation, or adverse circumstance affecting the Title that would be disclosed by an accurate and complete land survey of the Land. The term "encroachment" includes encroachments of existing improvements located on the Land onto adjoining land, and encroachments onto the Land of existing improvements located on adjoining land.
3. Unmarketable Title.
4. No right of access to and from the Land.

**(Covered Risks Continued on Page 2)**

In Witness Whereof, First American Title Insurance Company has caused its corporate name to be hereunto affixed by its authorized officers as of Date of Policy shown in Schedule A.

***First American Title Insurance Company***

Kenneth D. DeGiorgio, President

Greg L. Smith, Secretary

For Reference:

**File #:** 106-21000911-CTB
**Policy #:** 5011400-3585426e

Issued By:

**Westminster Abstract Company d/b/a Westminster Title Agency, Inc**
39500 High Pointe Boulevard, Suite 160
Novi, MI 48375

(This Policy is valid only when Schedules A and B are attached)

**This jacket was created electronically and constitutes an original document**

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5. The violation or enforcement of any law, ordinance, permit, or governmental regulation (including those relating to building and zoning) restricting, regulating, prohibiting, or relating to
   (a) the occupancy, use, or enjoyment of the Land;
   (b) the character, dimensions, or location of any improvement erected on the Land;
   (c) the subdivision of land; or
   (d) environmental protection
   if a notice, describing any part of the Land, is recorded in the Public Records setting forth the violation or intention to enforce, but only to the extent of the violation or enforcement referred to in that notice.
6. An enforcement action based on the exercise of a governmental police power not covered by Covered Risk 5 if a notice of the enforcement action, describing any part of the Land, is recorded in the Public Records, but only to the extent of the enforcement referred to in that notice.
7. The exercise of the rights of eminent domain if a notice of the exercise, describing any part of the Land, is recorded in the Public Records.
8. Any taking by a governmental body that has occurred and is binding on the rights of a purchaser for value without Knowledge.
9. Title being vested other than as stated in Schedule A or being defective
   (a) as a result of the avoidance in whole or in part, or from a court order providing an alternative remedy, of a transfer of all or any part of the title to or any interest in the Land occurring prior to the transaction vesting Title as shown in Schedule A because that prior transfer constituted a fraudulent or preferential transfer under federal bankruptcy, state insolvency, or similar creditors' rights laws; or
   (b) because the instrument of transfer vesting Title as shown in Schedule A constitutes a preferential transfer under federal bankruptcy, state insolvency, or similar creditors' rights laws by reason of the failure of its recording in the Public Records
      (i) to be timely, or
      (ii) to impart notice of its existence to a purchaser for value or to a judgment or lien creditor.
10. Any defect in or lien or encumbrance on the Title or other matter included in Covered Risks 1 through 9 that has been created or attached or has been filed or recorded in the Public Records subsequent to Date of Policy and prior to the recording of the deed or other instrument of transfer in the Public Records that vests Title as shown in Schedule A.

The Company will also pay the costs, attorneys' fees, and expenses incurred in defense of any matter insured against by this Policy, but only to the extent provided in the Conditions.

## EXCLUSIONS FROM COVERAGE

The following matters are expressly excluded from the coverage of this policy, and the Company will not pay loss or damage, costs, attorneys' fees, or expenses that arise by reason of:

1. (a) Any law, ordinance, permit, or governmental regulation (including those relating to building and zoning) restricting, regulating, prohibiting, or relating to
      (i) the occupancy, use, or enjoyment of the Land;
      (ii) the character, dimensions, or location of any improvement erected on the Land;
      (iii) the subdivision of land; or
      (iv) environmental protection;
      or the effect of any violation of these laws, ordinances, or governmental regulations. This Exclusion 1(a) does not modify or limit the coverage provided under Covered Risk 5.
   (b) Any governmental police power. This Exclusion 1(b) does not modify or limit the coverage provided under Covered Risk 6.
2. Rights of eminent domain. This Exclusion does not modify or limit the coverage provided under Covered Risk 7 or 8.
3. Defects, liens, encumbrances, adverse claims, or other matters
   (a) created, suffered, assumed, or agreed to by the Insured Claimant;
   (b) not Known to the Company, not recorded in the Public Records at Date of Policy, but Known to the Insured Claimant and not disclosed in writing to the Company by the Insured Claimant prior to the date the Insured Claimant became an Insured under this policy;
   (c) resulting in no loss or damage to the Insured Claimant;
   (d) attaching or created subsequent to Date of Policy (however, this does not modify or limit the coverage provided under Covered Risk 9 and 10); or
   (e) resulting in loss or damage that would not have been sustained if the Insured Claimant had paid value for the Title.
4. Any claim, by reason of the operation of federal bankruptcy, state insolvency, or similar creditors' rights laws, that the transaction vesting the Title as shown in Schedule A, is
   (a) a fraudulent conveyance or fraudulent transfer; or
   (b) a preferential transfer for any reason not stated in Covered Risk 9 of this policy.
5. Any lien on the Title for real estate taxes or assessments imposed by governmental authority and created or attaching between Date of Policy and the date of recording of the deed or other instrument of transfer in the Public Records that vests Title as shown in Schedule A.

1. DEFINITION OF TERMS

The following terms when used in this policy mean:

(a) "Amount of Insurance": The amount stated in Schedule A, as may be increased or decreased by endorsement to this policy, increased by Section 8(b), or decreased by Sections 10 and 11 of these Conditions.

(b) "Date of Policy": The date designated as "Date of Policy" in Schedule A.

(c) "Entity": A corporation, partnership, trust, limited liability company, or other similar legal entity.

(d) "Insured": The Insured named in Schedule A.

(i) The term "Insured" also includes

(A) successors to the Title of the Insured by operation of law as distinguished from purchase, including heirs, devisees, survivors, personal representatives, or next of kin;

(B) successors to an Insured by dissolution, merger, consolidation, distribution, or reorganization;

(C) successors to an Insured by its conversion to another kind of Entity;

(D) a grantee of an Insured under a deed delivered without payment of actual valuable consideration conveying the Title

(1) if the stock, shares, memberships, or other equity interests of the grantee are wholly-owned by the named Insured,

(2) if the grantee wholly owns the named Insured,

(3) if the grantee is wholly-owned by an affiliated Entity of the named Insured, provided the affiliated Entity and the named Insured are both wholly-owned by the same person or Entity, or

(4) if the grantee is a trustee or beneficiary of a trust created by a written instrument established by the Insured named in Schedule A for estate planning purposes.

(ii) With regard to (A), (B), (C), and (D) reserving, however, all rights and defenses as to any successor that the Company would have had against any predecessor Insured.

(e) "Insured Claimant": An Insured claiming loss or damage.

(f) "Knowledge" or "Known": Actual knowledge, not constructive knowledge or notice that may be imputed to an Insured by reason of the Public Records or any other records that impart constructive notice of matters affecting the Title.

(g) "Land": The land described in Schedule A, and affixed improvements that by law constitute real property. The term "Land" does not include any property beyond the lines of the area described in Schedule A, nor any right, title, interest, estate, or easement in abutting streets, roads, avenues, alleys, lanes, ways, or waterways, but this does not modify or limit the extent that a right of access to and from the Land is insured by this policy.

(h) "Mortgage": Mortgage, deed of trust, trust deed, or other security instrument, including one evidenced by electronic means authorized by law.

(i) "Public Records": Records established under state statutes at Date of Policy for the purpose of imparting constructive notice of matters relating to real property to purchasers for value and without Knowledge. With respect to Covered Risk 5(d), "Public Records" shall also include environmental protection liens filed in the records of the clerk of the United States District Court for the district where the Land is located.

(j) "Title": The estate or interest described in Schedule A.

(k) "Unmarketable Title": Title affected by an alleged or apparent matter that would permit a prospective purchaser or lessee of the Title or lender on the Title to be released from the obligation to purchase, lease, or lend if there is a contractual condition requiring the delivery of marketable title.

2. CONTINUATION OF INSURANCE

The coverage of this policy shall continue in force as of Date of Policy in favor of an Insured, but only so long as the Insured retains an estate or interest in the Land, or holds an obligation secured by a purchase money Mortgage given by a purchaser from the Insured, or only so long as the Insured shall have liability by reason of warranties in any transfer or conveyance of the Title. This policy shall not continue in force in favor of any purchaser from the Insured of either (i) an estate or interest in the Land, or (ii) an obligation secured by a purchase money Mortgage given to the Insured.

3. NOTICE OF CLAIM TO BE GIVEN BY INSURED CLAIMANT

The Insured shall notify the Company promptly in writing (i) in case of any litigation as set forth in Section 5(a) of these Conditions, (ii) in case Knowledge shall come to an Insured hereunder of any claim of title or interest that is adverse to the Title, as insured, and that might cause loss or damage for which the Company may be liable by virtue of this policy, or (iii) if the Title, as insured, is rejected as Unmarketable Title. If the Company is prejudiced by the failure of the Insured Claimant to provide prompt notice, the Company's liability to the Insured Claimant under the policy shall be reduced to the extent of the prejudice.

4. PROOF OF LOSS

In the event the Company is unable to determine the amount of loss or damage, the Company may, at its option, require as a condition of payment that the Insured Claimant furnish a signed proof of loss. The proof of loss must describe the defect, lien, encumbrance, or other matter insured against by this policy that constitutes the basis of loss or damage and shall state, to the extent possible, the basis of calculating the amount of the loss or damage.

5. DEFENSE AND PROSECUTION OF ACTIONS

(a) Upon written request by the Insured, and subject to the options contained in Section 7 of these Conditions, the Company, at its own cost and without unreasonable delay, shall provide for the defense of an Insured in litigation in which any third party asserts a claim covered by this policy adverse to the Insured. This obligation is limited to only those stated causes of action alleging matters insured against by this policy. The Company shall have the right to select counsel of its choice (subject to the right of the Insured to object for reasonable cause) to represent the Insured as to those stated causes of action. It shall not be liable for and will not pay the fees of any other counsel. The Company will not pay any fees, costs, or expenses incurred by the Insured in the defense of those causes of action that allege matters not insured against by this policy.

(b) The Company shall have the right, in addition to the options contained in Section 7 of these Conditions, at its own cost, to institute and prosecute any action or proceeding or to do any other act that in its opinion may be necessary or desirable to establish the Title, as insured, or to prevent or reduce loss or damage to the Insured. The Company may take any

appropriate action under the terms of this policy, whether or not it shall be liable to the Insured. The exercise of these rights shall not be an admission of liability or waiver of any provision of this policy. If the Company exercises its rights under this subsection, it must do so diligently.

(c) Whenever the Company brings an action or asserts a defense as required or permitted by this policy, the Company may pursue the litigation to a final determination by a court of competent jurisdiction, and it expressly reserves the right, in its sole discretion, to appeal any adverse judgment or order.

**6. DUTY OF INSURED CLAIMANT TO COOPERATE**

(a) In all cases where this policy permits or requires the Company to prosecute or provide for the defense of any action or proceeding and any appeals, the Insured shall secure to the Company the right to so prosecute or provide defense in the action or proceeding, including the right to use, at its option, the name of the Insured for this purpose. Whenever requested by the Company, the Insured, at the Company's expense, shall give the Company all reasonable aid (i) in securing evidence, obtaining witnesses, prosecuting or defending the action or proceeding, or effecting settlement, and (ii) in any other lawful act that in the opinion of the Company may be necessary or desirable to establish the Title or any other matter as insured. If the Company is prejudiced by the failure of the Insured to furnish the required cooperation, the Company's obligations to the Insured under the policy shall terminate, including any liability or obligation to defend, prosecute, or continue any litigation, with regard to the matter or matters requiring such cooperation.

(b) The Company may reasonably require the Insured Claimant to submit to examination under oath by any authorized representative of the Company and to produce for examination, inspection, and copying, at such reasonable times and places as may be designated by the authorized representative of the Company, all records, in whatever medium maintained, including books, ledgers, checks, memoranda, correspondence, reports, e-mails, disks, tapes, and videos whether bearing a date before or after Date of Policy, that reasonably pertain to the loss or damage. Further, if requested by any authorized representative of the Company, the Insured Claimant shall grant its permission, in writing, for any authorized representative of the Company to examine, inspect, and copy all of these records in the custody or control of a third party that reasonably pertain to the loss or damage. All information designated as confidential by the Insured Claimant provided to the Company pursuant to this Section shall not be disclosed to others unless, in the reasonable judgment of the Company, it is necessary in the administration of the claim. Failure of the Insured Claimant to submit for examination under oath, produce any reasonably requested information, or grant permission to secure reasonably necessary information from third parties as required in this subsection, unless prohibited by law or governmental regulation, shall terminate any liability of the Company under this policy as to that claim.

**7. OPTIONS TO PAY OR OTHERWISE SETTLE CLAIMS; TERMINATION OF LIABILITY**

In case of a claim under this policy, the Company shall have the following additional options:

(a) To Pay or Tender Payment of the Amount of Insurance.

To pay or tender payment of the Amount of Insurance under this policy together with any costs, attorneys' fees, and expenses incurred by the Insured Claimant that were authorized by the Company up to the time of payment or tender of payment and that the Company is obligated to pay.

Upon the exercise by the Company of this option, all liability and obligations of the Company to the Insured under this policy, other than to make the payment required in this subsection, shall terminate, including any liability or obligation to defend, prosecute, or continue any litigation.

(b) To Pay or Otherwise Settle With Parties Other Than the Insured or With the Insured Claimant.

(i) To pay or otherwise settle with other parties for or in the name of an Insured Claimant any claim insured against under this policy. In addition, the Company will pay any costs, attorneys' fees, and expenses incurred by the Insured Claimant that were authorized by the Company up to the time of payment and that the Company is obligated to pay; or

(ii) To pay or otherwise settle with the Insured Claimant the loss or damage provided for under this policy, together with any costs, attorneys' fees, and expenses incurred by the Insured Claimant that were authorized by the Company up to the time of payment and that the Company is obligated to pay.

Upon the exercise by the Company of either of the options provided for in subsections (b)(i) or (ii), the Company's obligations to the Insured under this policy for the claimed loss or damage, other than the payments required to be made, shall terminate, including any liability or obligation to defend, prosecute, or continue any litigation.

**8. DETERMINATION AND EXTENT OF LIABILITY**

This policy is a contract of indemnity against actual monetary loss or damage sustained or incurred by the Insured Claimant who has suffered loss or damage by reason of matters insured against by this policy.

(a) The extent of liability of the Company for loss or damage under this policy shall not exceed the lesser of

(i) the Amount of Insurance; or

(ii) the difference between the value of the Title as insured and the value of the Title subject to the risk insured against by this policy.

(b) If the Company pursues its rights under Section 5 of these Conditions and is unsuccessful in establishing the Title, as insured,

(i) the Amount of Insurance shall be increased by 10%, and

(ii) the Insured Claimant shall have the right to have the loss or damage determined either as of the date the claim was made by the Insured Claimant or as of the date it is settled and paid.

(c) In addition to the extent of liability under (a) and (b), the Company will also pay those costs, attorneys' fees, and expenses incurred in accordance with Sections 5 and 7 of these Conditions.

**9. LIMITATION OF LIABILITY**

(a) If the Company establishes the Title, or removes the alleged defect, lien, or encumbrance, or cures the lack of a right of access to or from the Land, or cures the claim of Unmarketable Title, all as insured, in a reasonably diligent manner by any method, including litigation and the completion of any appeals, it shall have fully performed its obligations with respect to that matter and shall not be liable for any loss or damage caused to the Insured.

(b) In the event of any litigation, including litigation by the

Company or with the Company's consent, the Company shall have no liability for loss or damage until there has been a final determination by a court of competent jurisdiction, and disposition of all appeals, adverse to the Title, as insured.

(c) The Company shall not be liable for loss or damage to the Insured for liability voluntarily assumed by the Insured in settling any claim or suit without the prior written consent of the Company.

**10. REDUCTION OF INSURANCE; REDUCTION OR TERMINATION OF LIABILITY**

All payments under this policy, except payments made for costs, attorneys' fees, and expenses, shall reduce the Amount of Insurance by the amount of the payment.

**11. LIABILITY NONCUMULATIVE**

The Amount of Insurance shall be reduced by any amount the Company pays under any policy insuring a Mortgage to which exception is taken in Schedule B or to which the Insured has agreed, assumed, or taken subject, or which is executed by an Insured after Date of Policy and which is a charge or lien on the Title, and the amount so paid shall be deemed a payment to the Insured under this policy.

**12. PAYMENT OF LOSS**

When liability and the extent of loss or damage have been definitely fixed in accordance with these Conditions, the payment shall be made within 30 days.

**13. RIGHTS OF RECOVERY UPON PAYMENT OR SETTLEMENT**

(a) Whenever the Company shall have settled and paid a claim under this policy, it shall be subrogated and entitled to the rights of the Insured Claimant in the Title and all other rights and remedies in respect to the claim that the Insured Claimant has against any person or property, to the extent of the amount of any loss, costs, attorneys' fees, and expenses paid by the Company. If requested by the Company, the Insured Claimant shall execute documents to evidence the transfer to the Company of these rights and remedies. The Insured Claimant shall permit the Company to sue, compromise, or settle in the name of the Insured Claimant and to use the name of the Insured Claimant in any transaction or litigation involving these rights and remedies.

If a payment on account of a claim does not fully cover the loss of the Insured Claimant, the Company shall defer the exercise of its right to recover until after the Insured Claimant shall have recovered its loss.

(b) The Company's right of subrogation includes the rights of the Insured to indemnities, guaranties, other policies of insurance, or bonds, notwithstanding any terms or conditions contained in those instruments that address subrogation rights.

**14. ARBITRATION**

Either the Company or the Insured may demand that the claim or controversy shall be submitted to arbitration pursuant to the Title Insurance Arbitration Rules of the American Land Title Association ("Rules"). Except as provided in the Rules, there shall be no joinder or consolidation with claims or controversies of other persons. Arbitrable matters may include, but are not limited to, any controversy or claim between the Company and the Insured arising out of or relating to this policy, any service in connection with its issuance or the breach of a policy provision, or to any other controversy or claim arising out of the transaction giving rise to this policy. All arbitrable matters when the Amount of Insurance is $2,000,000 or less shall be arbitrated at the option of either the Company or the Insured. All arbitrable matters when the Amount of Insurance is in excess of $2,000,000 shall be arbitrated only when agreed to by both the Company and the Insured. Arbitration pursuant to this policy and under the Rules shall be binding upon the parties. Judgment upon the award rendered by the Arbitrator(s) may be entered in any court of competent jurisdiction.

**15. LIABILITY LIMITED TO THIS POLICY; POLICY ENTIRE CONTRACT**

(a) This policy together with all endorsements, if any, attached to it by the Company is the entire policy and contract between the Insured and the Company. In interpreting any provision of this policy, this policy shall be construed as a whole.

(b) Any claim of loss or damage that arises out of the status of the Title or by any action asserting such claim shall be restricted to this policy.

(c) Any amendment of or endorsement to this policy must be in writing and authenticated by an authorized person, or expressly incorporated by Schedule A of this policy.

(d) Each endorsement to this policy issued at any time is made a part of this policy and is subject to all of its terms and provisions. Except as the endorsement expressly states, it does not (i) modify any of the terms and provisions of the policy, (ii) modify any prior endorsement, (iii) extend the Date of Policy, or (iv) increase the Amount of Insurance.

**16. SEVERABILITY**

In the event any provision of this policy, in whole or in part, is held invalid or unenforceable under applicable law, the policy shall be deemed not to include that provision or such part held to be invalid, but all other provisions shall remain in full force and effect.

**17. CHOICE OF LAW; FORUM**

(a) Choice of Law: The Insured acknowledges the Company has underwritten the risks covered by this policy and determined the premium charged therefor in reliance upon the law affecting interests in real property and applicable to the interpretation, rights, remedies, or enforcement of policies of title insurance of the jurisdiction where the Land is located.

Therefore, the court or an arbitrator shall apply the law of the jurisdiction where the Land is located to determine the validity of claims against the Title that are adverse to the Insured and to interpret and enforce the terms of this policy. In neither case shall the court or arbitrator apply its conflicts of law principles to determine the applicable law.

(b) Choice of Forum: Any litigation or other proceeding brought by the Insured against the Company must be filed only in a state or federal court within the United States of America or its territories having appropriate jurisdiction.

**18. NOTICES, WHERE SENT**

Any notice of claim and any other notice or statement in writing required to be given to the Company under this policy must be given to the Company at **First American Title Insurance Company, Attn: Claims National Intake Center, 1 First American Way, Santa Ana, California 92707. Phone: 888-632-1642.**

| First American Title™ | Owner's Policy of Title Insurance |
|---|---|
| | ISSUED BY<br>**First American Title Insurance Company** |
| **Schedule A** | POLICY NUMBER<br>**5011400-3585426e** |

Name and Address of Title Insurance Company: **FIRST AMERICAN TITLE INSURANCE COMPANY, 1 First American Way, Santa Ana, California**

File No.: 106-21000911-CTB

Address Reference: Vac. 8 Mile Road- Parcel A & B (First Baptist Church of Northville), Novi, MI 48375

Amount of Insurance: $2,200,000.00

Premium: $6,755.00

Date of Policy: February 15, 2023 at 08:00 AM

1. Name of Insured:

   Toll Northeast V Corp., A Delaware Corporation

2. The estate or interest in the Land that is insured by this policy is:

   Fee Simple

3. Title is vested in:

   Toll Northeast V Corp.a Delaware Corporation

4. The Land referred to in this policy is described as follows:

   Property Located in the City of Novi, County of Oakland, State of Michigan:

   Parcel A

   Part of the Southeast 1/ 4 of Section 31,Town 1North, Range 8 East, City of Novi, Oakland County, Michigan, described as: Commencing at the Southeast corner of said Section 31; thence North 89 Degrees 46 Minutes 33 Seconds West along the South line of said Section 1100.00 feet to the point of beginning thence North 89 Degrees 46 Minutes 33 Seconds West along the same said South line 526.53 feet; thence North 00 Degrees 14 Minutes 04 Seconds West 2631.67 feet; thence North 89 Degrees 51 Minutes 00 Second East 1631.80 feet to the East 1/4 corner of said Section; thence South 00 Degrees 07 Minutes 08 Seconds East along the East line of said Section 115.00 feet; thence South 89 Degree 51 Minutes 00 Seconds West 1099.98 feet; thence South 00 Degrees 07 Minutes 08 Seconds East 2520.11feet to the point of beginning.

   Parcel B

   Part of the Southeast 1/ 4 of Section 31,Town 1North, Range 8 East, City of Novi,Oakland County, Michigan, described as: Commencing at the Southeast corner of said Section 31;thence North 89 Degrees 46 Minutes 33 Seconds West along the South line of said Section 1626.53 feet to the point of beginning thence North 89 Degrees 46 Minutes 33 Seconds West along the same said South line 350.00 feet; thence North 00 Degrees 14 Minutes 04 Seconds West 2629.38 feet; thence North 89 Degrees 51 Minutes 00 Seconds East along the East and West 1/ 4 line of said Section, 350.00 feet; thence South 00 Degrees 14 minutes 04 Seconds East 2631.67 feet to the point of beginning.

Westminster Title Agency, Inc.

Jodie L. Berbas, Authorized Signatory
(This Schedule A valid only when Schedule B is attached)

| First American Title™ | Owner's Policy of Title Insurance |
|---|---|
| | ISSUED BY<br>**First American Title Insurance Company** |
| **Schedule B** | POLICY NUMBER<br>**5011400-3585426e** |

File No.: 106-21000911-CTB

## EXCEPTIONS FROM COVERAGE

This policy does not insure against loss or damage, and the Company will not pay costs, attorneys' fees, or expenses that arise by reason of:

1. Any facts, rights, interests, or claims that are not shown by the Public Records but that could be ascertained by an inspection of the Land or by making inquiry of persons in possession of the Land.

2. Easements, liens or encumbrances, or claims thereof, not shown by the Public Records.

3. Any encroachment, encumbrance, violation, variation, or adverse circumstance affecting the Title including discrepancies, conflicts in boundary lines, shortage in area, or any other facts that would be disclosed by an accurate and complete land survey of the Land, and that are not shown in the Public Records.

4. Any lien or right to lien for services, labor or material imposed by law and not shown by the Public Records.

5. Taxes and assessments not due and payable at Policy Date.

6. Easements and /or Setback Lines, if any, as disclosed by the recorded plat.

7. Minerals of whatsoever kind, subsurface and surface substances, including but not limited to coal,lignite, oil,gas, uranium, clay, rock, sand and gravel in, on, under and that may be produced from the Land, together with all rights, privileges, and immunities relating thereto, whether or not appearing in the Public Records or listed in Schedule B. The Company makes no representation as to the present ownership of any such interests. There may be leases, grants, exceptions or reservations of interests that are not listed.

   Any provision contained in any instruments of record, which provisions pertain to the transfer of divisions under Section 109 (3) of the Subdivision Control Act of 1967, as amended.

   Any loss or damage sustained by the Insured as a result of any inaccuracy in the amount of acreage reflected in Schedule A, legal description.

   Rights of the public and any governmental agency in and to that portion of captioned property taken, deeded or used for street, road or highway purposes for Eight Mile Rd and Garfield Rd.

   Right of Way in favor of Consumers Power Company for gas main purposes over the subject property, as recorded in Liber 3598, Page 202, Oakland County Records.

   Terms and conditions of Notice of Claim under the Marketable Record Title Act as recited in instrument recorded in Liber 14579, Page 885, Oakland County Records.

## SCHEDULE B
(Continued)

8. Interest, if any, of the United States, State of Michigan, or any political subdivision thereof, in the oil, gas and minerals in and under and that may be produced from the captioned land.

9. Lien for outstanding water or sewer charges, if any.

10. Rights of the public and of any Governmental unit in any part of subject property taken, used or deeded for street, road or highway purposes.

11. Easement agreement as disclosed in Liber 58320, Page 499, Oakland County Records.

12. Residential Unit Development Agreement as disclosed in Liber 58317, Page 65-95, Oakland County Records.

| First American Title™ | Owner's Policy of Title Insurance |
|---|---|
| | ISSUED BY<br>**First American Title Insurance Company** |
| **Schedule C** | POLICY NUMBER<br>**5011400-3585426e** |

File No.: 106-21000911-CTB

## LEGAL DESCRIPTION

The Land referred to in this policy is described as follows:

Property Located in the City of Novi, County of Oakland, State of Michigan:

Parcel A

Part of the Southeast 1/ 4 of Section 31,Town 1North, Range 8 East, City of Novi, Oakland County, Michigan, described as: Commencing at the Southeast corner of said Section 31; thence North 89 Degrees 46 Minutes 33 Seconds West along the South line of said Section 1100.00 feet to the point of beginning thence North 89 Degrees 46 Minutes 33 Seconds West along the same said South line 526.53 feet; thence North 00 Degrees 14 Minutes 04 Seconds West 2631.67 feet; thence North 89 Degrees 51 Minutes 00 Second East 1631.80 feet to the East 1/4 corner of said Section; thence South 00 Degrees 07 Minutes 08 Seconds East along the East line of said Section 115.00 feet; thence South 89 Degree 51 Minutes 00 Seconds West 1099.98 feet; thence South 00 Degrees 07 Minutes 08 Seconds East 2520.11feet to the point of beginning.

Parcel B

Part of the Southeast 1/ 4 of Section 31,Town 1North, Range 8 East, City of Novi,Oakland County, Michigan, described as: Commencing at the Southeast corner of said Section 31;thence North 89 Degrees 46 Minutes 33 Seconds West along the South line of said Section 1626.53 feet to the point of beginning thence North 89 Degrees 46 Minutes 33 Seconds West along the same said South line 350.00 feet; thence North 00 Degrees 14 Minutes 04 Seconds West 2629.38 feet; thence North 89 Degrees 51 Minutes 00 Seconds East along the East and West 1/ 4 line of said Section, 350.00 feet; thence South 00 Degrees 14 minutes 04 Seconds East 2631.67 feet to the point of beginning.

# ENDORSEMENT
**Attached to Policy No.:** 5011400-3585426e

**Issued By**

***First American Title Insurance Company***

1. The insurance provided by this endorsement is subject to the exclusion in Section 4 of this endorsement; and the Exclusions from Coverage, the Exceptions from Coverage contained in Schedule B, and the Conditions in the policy.
2. For purposes of this endorsement only:
   a. "Improvement" means a building, structure located on the surface of the Land, and any paved road, walkway, parking area, driveway, or curb, affixed to the Land at Date of Policy and that by law constitutes real property, but excluding any crops, landscaping, lawn, shrubbery, or trees.
   b. "Future Improvement" means a building, structure, and any paved road, walkway, parking area, driveway, or curb to be constructed on or affixed to the Land in the locations according to the Plans and that by law will constitute real property, but excluding any crops, landscaping, lawn, shrubbery, or trees.
   c. "Plans" means the survey, site and elevation plans or other depictions or drawings prepared by Atwell dated October 14, 2022 last revised January 6, 2023, designated as 21003508 consisting of 51 sheets.
3. The Company insures against loss or damage sustained by the Insured by reason of the enforced removal or alteration of an Improvement or a Future Improvement, resulting from the future exercise of any right existing at Date of Policy to use the surface of the Land for the extraction or development of minerals or any other subsurface substances excepted from the description of the Land or excepted in Schedule B.
4. This endorsement does not insure against loss or damage (and the Company will not pay costs, attorneys' fees, or expenses) resulting from:
   a. contamination, explosion, fire, flooding, vibration, fracturing, earthquake or subsidence; or
   b. negligence by a person or an Entity exercising a right to extract or develop minerals or other subsurface substances; or

This endorsement is issued as part of the policy. Except as it expressly states, it does not (i) modify any of the terms and provisions of the policy, (ii) modify any prior endorsements, (iii) extend the Date of Policy, or (iv) increase the Amount of Insurance. To the extent a provision of the policy or a previous endorsement is inconsistent with an express provision of this endorsement, this endorsement controls. Otherwise, this endorsement is subject to all of the terms and provisions of the policy and of any prior endorsements.

Westminster Title Agency, Inc.

Jodie L Berbas

***First American Title Insurance Company***

Kenneth D. DeGiorgio, President

Greg L. Smith, Secretary

Jodie L. Berbas, Authorized Signatory

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AMERICAN LAND TITLE ASSOCIATION

**ELIZABETH KUDLA SAARELA**
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Farmington Hills, Michigan 48331
P 248.489.4100 | F 248.489.1726
rsjalaw.com

ROSATI | SCHULTZ
JOPPICH | AMTSBUECHLER

January 12, 2024

Ben Croy, City Engineer
City of Novi
Field Services Complex
26300 Lee BeGole Drive
Novi, MI 48375

RE: **Parc Vista JSP 21-0047**
***Storm Drainage Facility Maintenance Easement Agreement***

Dear Mr. Croy:

We have received and reviewed the Storm Drainage Facility Maintenance Easement Agreement for storm water drainage facilities serving the Parc Vista development. The Storm Drainage Facility Maintenance Easement Agreement is in the City's standard format and is acceptable as provided. The City's Consulting Engineer has reviewed and approved the attached exhibits. The Agreement appears to be in order and may be placed on an upcoming City Council Agenda for approval. Once approved and executed by the City, the Agreement should be recorded with Oakland County Records by the City Clerk's Office. We will forward the original to the City Clerk's office upon receipt.

Please feel free to contact me with any questions or concerns in regard to this matter.

Very truly yours,

ROSATI SCHULTZ JOPPICH
& AMTSBUECHLER PC

Elizabeth Kudla Saarela

Enclosure

C: (w/Enclosures)
Cortney Hanson, Clerk
Charles Boulard, Community Development Director
Lindsay Bell, Planner
Ian Hogg, Planner
Heather Ziegler, Planner
James Hill, Planner
Diana Shanahan, Planning Assistant
Sarah Marchioni, Community Development Building Project Coordinator
Angie Sosnowski, Community Development Bond Coordinator
Humna Anjum, Project Engineer
Rebecca Runkel, Project Engineer
Adam Yako, Project Engineer
Alyssa Craigie, Administrative Assistant
Sydney Waynick, Taylor Reynolds & Ted Meadows, Spalding DeDecker
Scott Hansen, Toll Brothers
Thomas R. Schultz, Esquire

**STORM DRAINAGE FACILITY**
**MAINTENANCE EASEMENT AGREEMENT**

THIS EASEMENT AGREEMENT is made this 8 day of January, 2024 by and between Toll Northeast V Corp., a Delaware corporation, whose address is 26200 Town Center Drive, Suite 200, Novi, MI 48375 (hereinafter the "Owner"), and the City of Novi, its successors, assigns, or transferees, whose address is 45175 Ten Mile Road, Novi, MI 48375 (hereinafter the "City").

RECITATIONS:

A. Owner is the owner and developer of a certain parcel of land situated in Section 31 of the City of Novi, Oakland County, Michigan, described on the attached and incorporated **Exhibit A** (the "Property"). Owner has received final site plan approval for construction of a Residential Unit Development on the Property called Parc Vista.

B. The Parc Vista development, shall contain certain storm drainage, detention and/or retention facilities, including but not limited to, a detention/sedimentation basin, for the collection, conveyance, storage, treatment and/or discharge of storm water from the Property in accordance with all approved plans, and all applicable ordinances, laws and regulations.

NOW, THEREFORE, the Owner hereby covenants and agrees that the Owner shall, at its own expense, perpetually preserve, maintain, and repair all storm drainage, detention and retention facilities, including all wetlands which are part of the system, to insure that the same continue to function as intended. The Owner shall establish a regular and systematic program of maintenance (the "Schedule of Maintenance") for such facilities and areas to insure that the physical condition and intended function of such areas and facilities shall be preserved and maintained. The Schedule of Maintenance and the annual estimated costs for maintenance and repairs for the first three (3) years are described in the attached **Exhibit B**.

In the event that the Owner shall at any time fail to carry out the responsibilities specified within this agreement, and/or in the event of a failure to preserve and/or maintain the storm water drainage, detention and retention facilities in reasonable order and condition, the City may serve written notice upon the Owner setting forth the deficiencies in maintenance and/or preservation along with a demand that the deficiencies be cured within a stated reasonable time period, and the date, time and place for a hearing before the City for the purpose of allowing Owner an opportunity to be heard as to why the City should not proceed with the correction of the deficiency or obligation which has not been undertaken or properly fulfilled. At any such hearing, the time for curing and the hearing itself may be extended and/or continued to a date certain. If, following such hearing, the person conducting the hearing shall determine that the obligation has not been fulfilled or failure corrected within the time specified in the notice, as determined by the City in its reasonable discretion, the City shall thereupon have the power and authority, but not the obligation, to enter upon the Property, or cause its agents or contractors to enter the Property through the Ingress/Egress Easement Area as described and depicted in **Exhibit C** and perform such obligation or take such corrective measures as reasonably found by the City to be appropriate or necessary with respect to the detention/sedimentation basin within the Detention/Sedimentation Basin Easement Area described and depicted in **Exhibit D**, for the purposes described above. The

cost and expense of making and financing such actions by the City, including notices by the City and reasonable legal fees incurred by the City, plus an administrative fee in an amount equivalent to twenty-five (25%) percent of the total of all such costs and expenses incurred, shall be paid by Owner within thirty (30) days of a billing to the Owner. All unpaid amounts may be placed on the delinquent tax roll of the City as to the Property, and shall accrue interest and penalties, and shall be collected as, and deemed delinquent real property taxes, according to the laws made and provided for the collection of delinquent real property taxes. In the discretion of the City, such costs and expenses may be collected by suit initiated against the Owner, and, in such event, the Owner shall pay all court costs and reasonable attorney fees incurred by the City in connection with such suit.

The Owner, its agents, representatives, successors, and assigns shall defend, indemnify, and hold harmless the City and the City's, elected officials, agents and employees, from any and all costs, claims, suits, actions, losses, damages, or demands, including court costs and attorneys' fees, relating in any way to or arising out of the design, construction, use, inspection, maintenance, repair, or operation (or omissions in such regard) of the storm drainage system which is the subject of this Agreement.

The parties hereto make this Agreement on behalf of themselves, their heirs, successors, assigns and transferees, and hereby warrant that they have the authority and capacity to execute this Agreement and bind the property as described in the terms and conditions of this agreement.

Invalidation of any of these covenants or conditions by Judgment or Court Order shall in no way affect the validity of any other provision which shall remain in full force and effect.

This agreement shall run with the land and be binding upon all owners, their agents, heirs, successors, assigns and transferees.

IN WITNESS WHEREOF, Owner has executed this Agreement as of the day and year first above set forth.

OWNER
Toll Northeast V Corp., a Delaware corporation

By: Isaac Boyd
Its: Division President

STATE OF MICHIGAN )
) ss.
COUNTY OF OAKLAND )

The foregoing instrument was acknowledged before me this 8 day of January, 2024, by Isaac Boyd, as the Division President of Toll Northeast V Corp., a Delaware corporation.

Notary Public
Acting in Oakland County, Michigan
My Commission Expires: 3/8/2026

MARJORIE J. GOOCH
NOTARY PUBLIC - STATE OF MICHIGAN
COUNTY OF GENESEE
My Commission Expires 3/8/2026
Acting in the County of Oakland

CITY OF NOVI
A Municipal Corporation

_____

By:
Its:

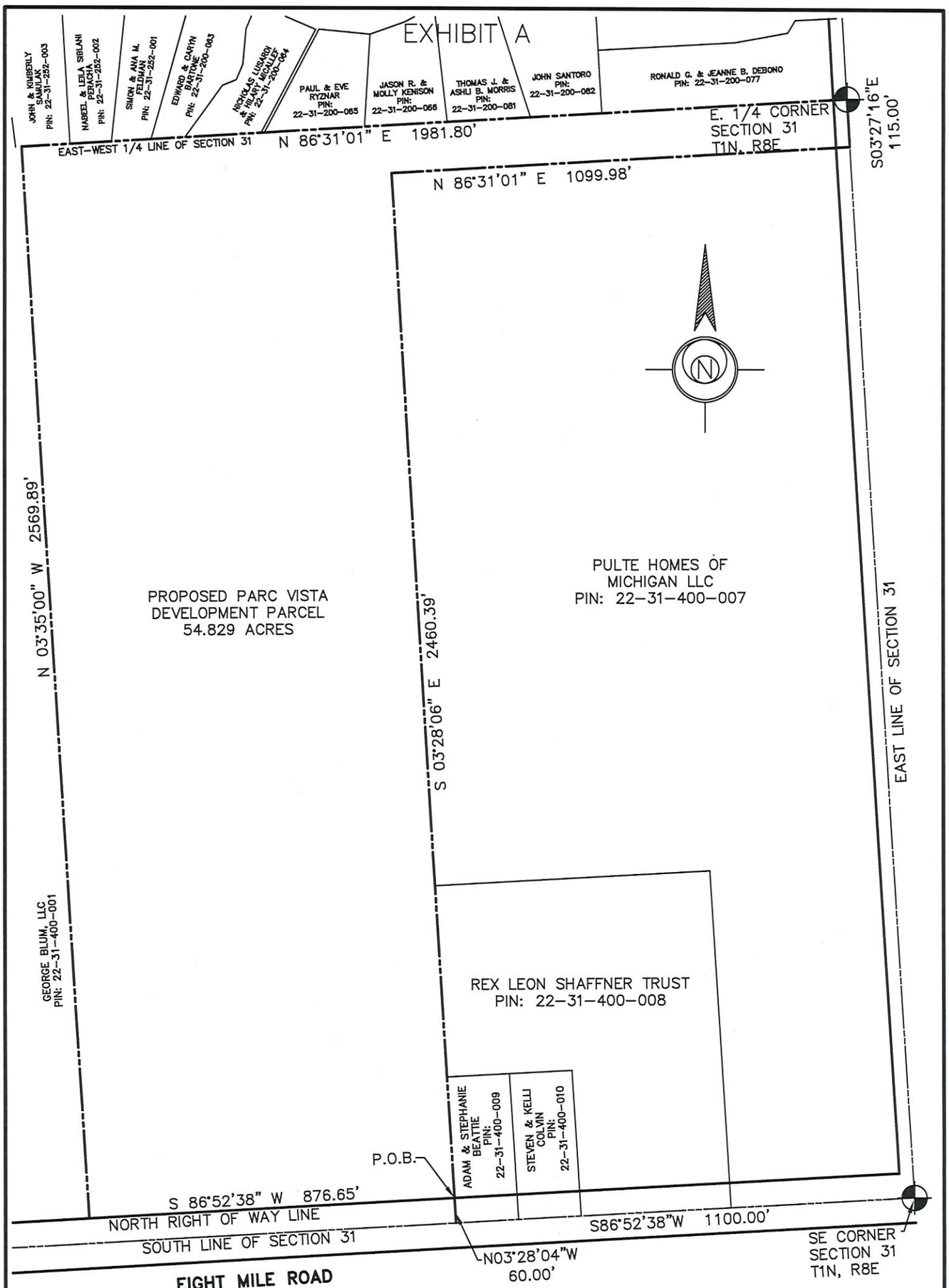
STATE OF MICHIGAN )
) ss.
COUNTY OF OAKLAND )

The foregoing instrument was acknowledged before me on this _____day of _____ 20___, by,_____, on behalf of the City of Novi, a Municipal Corporation.

_____

Notary Public
Acting in Oakland County, Michigan
My Commission Expires:_____

| | |
|---|---|
| Drafted by:<br>Elizabeth Kudla Saarela<br>Johnson, Rosati, Schultz & Joppich, P.C.<br>27555 Executive Drive, Suite 250<br>Farmington Hills, MI 48331 | And when recorded return to:<br>Cortney Hanson, City Clerk<br>City of Novi<br>45175 Ten Mile Rd<br>Novi, MI 48375 |




# PARC VISTA
## OVERALL PARCEL
## EXHIBIT

SOUTHEAST 1/4 OF SECTION 31, TOWNSHIP 1 NORTH, RANGE 8 EAST, CITY OF NOVI, OAKLAND COUNTY, MICHIGAN


ESE Land Planning Engineering Land Surveying

26200 Town Center Court
Suite 200
Novi, Michigan 48375
TEL: (248) 305-4013
FAX: (248) 305-4001

CIVIL ENGINEERS - LAND SURVEYORS - LANDSCAPE ARCHITECTS - LAND PLANNERS


REV. 1-8-2024 -SRB- PER CITY REVIEW
REV. 12-14-2023 -SRB- PER CITY REVIEW

| | | |
|---|---|---|
| DESIGNED: | DRAWN: SRB | CHECKED: JIF |
| SCALE: 1" = 300' | DATE: 19 JAN 2023 | DWG. 8341-STORM DRAINAGE |

# EXHIBIT A

## LEGAL DESCRIPTION OVERALL PARCEL (BY OTHERS)

DESCRIPTION OF A 54.829 ACRE PARCEL OF LAND LOCATED IN THE SOUTHEAST 1/4 OF SECTION 31, TOWN 1 NORTH, RANGE 8 EAST, CITY OF NOVI, OAKLAND COUNTY, MICHIGAN:

COMMENCING AT THE SOUTHEAST CORNER OF SECTION 31, TOWN 1 NORTH, RANGE 8 EAST, CITY OF NOVI, OAKLAND COUNTY, MICHIGAN; THENCE S86°52'38"W (RECORDED AS N89°46'33"W AND N89°55'04"W) 1100.00 FEET ALONG THE SOUTH LINE OF SAID SECTION 31, LYING IN EIGHT MILE ROAD (60 FOOT HALF WIDTH); THENCE N03°28'04"W (RECORDED AS N00°15'46"W) 60.00 FEET FOR A PLACE OF BEGINNING; THENCE S86°52'38"W (RECORDED AS N89°55'04"W) 876.65 FEET ALONG THE NORTH RIGHT OF WAY LINE OF SAID EIGHT MILE ROAD; THENCE N03°35'00"W (RECORDED AS N00°22'42"W AND N00°14'04"W) 2569.89 FEET; THENCE N86°31'01"E (RECORDED AS N89°43'21"E AND N89°51'00"E) 1981.80 FEET ALONG THE EAST–WEST 1/4 LINE OF SAID SECTION 31, ALSO BEING THE SOUTHERLY LINE OF DEER RUN OF NOVI CONDOMINIUM, OAKLAND COUNTY CONDOMINIUM SUBDIVISION PLAN NO. 1303, AS RECORDED IN LIBER 21978, PAGE 266, OAKLAND COUNTY RECORDS, AND ITS EASTERLY EXTENSION THEREOF; THENCE S03°27'16"E (RECORDED AS S00°07'08"E AND S00°15'06"E) 115.00 FEET ALONG THE EAST LINE OF SAID SECTION 31, LYING IN GARFIELD ROAD (33 FOOT HALF WIDTH); THENCE S86°31'01"W (RECORDED AS S89°51'00"W AND S89°43'21"W) 1099.98 FEET; THENCE S03°28'06"E (RECORDED AS S00°15'46"E AND S00°07'08"E) 2460.39 FEET (RECORDED AS 2460.38 FEET) TO THE PLACE OF BEGINNING, CONTAINING 54.829 ACRES OF LAND, MORE OR LESS, BEING SUBJECT TO THE RIGHTS OF THE PUBLIC OVER THE EAST 33 FEET THEREOF AS OCCUPIED BY SAID GARFIELD ROAD, ALSO BEING SUBJECT TO EASEMENTS, CONDITIONS, RESTRICTIONS AND EXCEPTIONS OF RECORD, IF ANY.

# PARC VISTA
## OVERALL PARCEL
## EXHIBIT

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TEL: (248) 305-4013
FAX: (248) 305-4001

CIVIL ENGINEERS - LAND SURVEYORS - LANDSCAPE ARCHITECTS - LAND PLANNERS

REV. 1–8–2024 –SRB– PER CITY REVIEW
REV. 12–14–2023 –SRB– PER CITY REVIEW

| | | |
|---|---|---|
| DESIGNED: | DRAWN: SRB | CHECKED: JIF |
| SCALE: NONE | DATE: 19 JAN 2023 | DWG. 8341–STORM DRAINAGE |

# EXHIBIT B

## PERMANENT MAINTENANCE

TO BE PERFORMED BY THE ASSOCIATION

| TASKS | COMPONENTS: PAVED AREAS | PERVIOUS AREAS | RIP-RAP/SILT FENCE | STORM DRAINAGE SYSTEM | CATCH BASIN SUMPS | CATCH BASIN INLET COVER | RETENTION BASIN | EMERGENCY OVERFLOW | | SCHEDULE | COST |
|---|---|---|---|---|---|---|---|---|---|---|---|
| INSPECT FOR SEDIMENT ACCUMULATION | X | | X | X | X | X | X | | | SEMI-ANUALLY/AS NEEDED* | $100 |
| REMOVAL OF SEDIMENT ACCUMULATION | X | | X | X | X | X | X | | | 5-10 YRS/AS NEEDED* | $500 |
| INSPECT FOR FLOATABLES AND DEBRIS | | | | X | X | | X | | | ANNUALLY | $100 |
| CLEANING FOR FLOATABLES AND DEBRIS | | | | X | X | | X | | | ANNUALLY | $150 |
| INSPECTION FOR EROSION | | X | X | | | | X | X | | SEMI-ANNUALLY | $100 |
| REESTABLISH PERMANENT VEGETATION ON ERODED SLOPES | | X | | | | | X | X | | AS NEEDED | $350 |
| MOWING | | X | | | | | X | | | AS NEEDED | $400 |
| INSPECT STRUCTURAL ELEMENTS DURING WET WEATHER AND COMPARE TO AS-BUILT PLANS (BY A PROFESSIONAL ENGINEER REPORTING TO THE ASSOCIATION) | | | X | X | | | X | X | | ANNUALLY | $150 |
| MAKE ADJUSTMENTS OR REPLACEMENTS AS DETERMINED BY ANNUAL WET WEATHER INSPECTION | | | X | X | | | X | X | | AS NEEDED | $400 |
| KEEP RECORDS OF ALL INSPECTIONS AND MAINTENANCE ACTIVITIES. REPORT TO THE ASSOCIATION. | | | | | | | | | | ANNUALLY | $100 |
| KEEP RECORDS OF ALL COSTS FOR INSPECTIONS, MAINTENANCE AND REPAIRS. REPORT TO THE ASSOCIATION. | | | | | | | | | | ANNUALLY | $100 |
| THE ASSOCIATION REVIEWS COST EFFECTIVENESS OF THE PREVENTATIVE MAINTENANCE PROGRAM AND MAKES NECESSARY ADJUSTMENTS | | | | | | | | | | ANNUALLY | |
| THE ASSOCIATION IS TO HAVE A PROFESSIONAL ENGINEER CARRY OUT EMERGENCY INSPECTIONS UPON IDENTIFICATION OF SEVERE PROBLEMS | | | | | | | | | | AS NEEDED | $200 |
| | | | | | | | | | | ESTIMATED ANNUAL COST | $2650 |

* REMOVE ALL THE TEMPORARY CONTROLS AFTER GETTING APPROVAL BY THE SOIL EROSION INSPECTOR.

## RETENTION BASIN MAINTENANCE SCHEDULE

THE PROPERTY OWNER IS RESPONSIBLE FOR THE MAINTENANCE OF THE RETENTION BASIN. MAINTENANCE SHOULD BE PERFORMED FOLLOWING ANY STORM AND SHOULD INCLUDE:

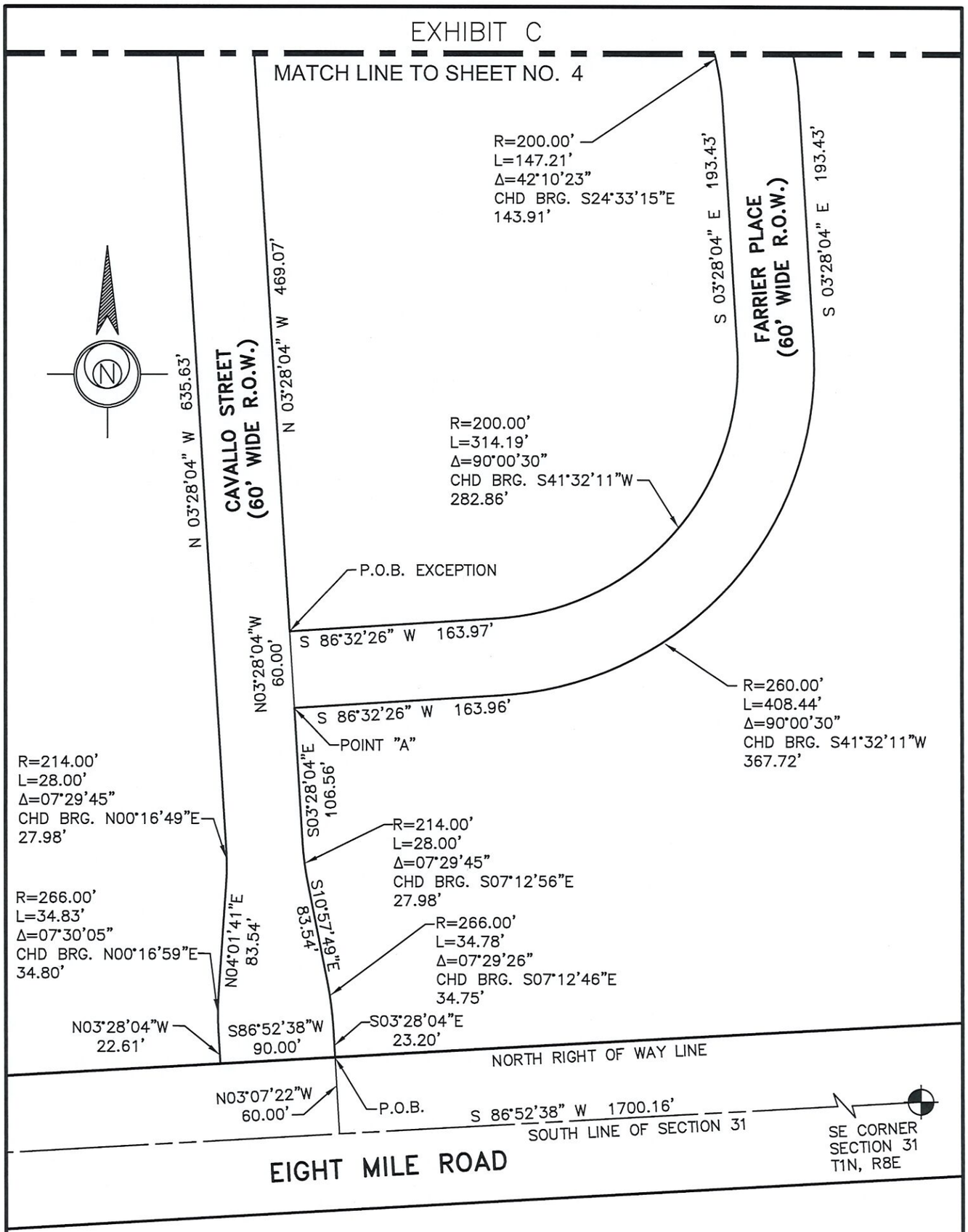
RETENTION BASIN

1. REGULARLY CHECK BANKS AND BOTTOM FOR EROSION (AT LEAST ANNUALLY) AND CORRECT AS NECESSARY.
2. INSPECT FOR AND REMOVE FLOATABLES AND DEBRIS AT LEAST ANNUALLY.
3. RESEED BANKS NEAR INLETS AND STABILIZE ERODED BANKS AS NECESSARY.
4. ADD ADDITIONAL PLANTINGS AS NECESSARY.
5. REMOVE DEAD VEGETATION (IN EARLY SPRING) THAT OBSTRUCTS FLOW.
6. INSPECT FOR SEDIMENT ACCUMULATION. REMOVE SEDIMENT WHEN ACCUMULATION REACHES SIX INCHES OR RESUSPENSION IS OBSERVED. WHEN SEDIMENT IS REMOVED IT WILL BE HAULED OFFSITE.

SEDIMENT FOREBAYS

1. CHECK OUTLETS REGULARLY FOR CLOGGING AND CLEAN WHEN NECESSARY, ESPECIALLY AFTER LARGE STORM EVENTS. REPLACE STONE AROUND STANDPIPE AS NEEDED.
2. INSPECT ENTIRE SYSTEM AT LEAST ANNUALLY INCLUDING INLET/OUTLET PIPES, ANIMAL GRATES AND FILTERS.
3. INSPECT FOR AND REMOVE FLOATABLES AND DEBRIS AT LEAST ANNUALLY.
4. REGULARLY CHECK BANKS AND BOTTOM FOR EROSION (AT LEAST ANNUALLY) AND CORRECT AS NECESSARY.
5. RESEED BANKS NEAR INLET/OUTLET AND STABILIZE ERODED BANKS AS NECESSARY.
6. ADD ADDITIONAL PLANTINGS AS NECESSARY.
7. REMOVE SEDIMENT WHEN ACCUMULATION REACHES SIX INCHES OR RESUSPENSION IS OBSERVED. WHEN SEDIMENT IS REMOVED IT WILL BE HAULED OFFSITE.

# EXHIBIT C




# PARC VISTA
## ROAD RIGHT OF WAY EXHIBIT

SOUTHEAST 1/4 OF SECTION 31, TOWNSHIP 1 NORTH, RANGE 8 EAST, CITY OF NOVI, OAKLAND COUNTY, MICHIGAN


ESE Land Planning Engineering Land Surveying

26200 Town Center Court
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TEL: (248) 305-4013
FAX: (248) 305-4001

CIVIL ENGINEERS - LAND SURVEYORS - LANDSCAPE ARCHITECTS - LAND PLANNERS


REV. 1-8-2024 -SRB- PER CITY REVIEW
REV. 12-14-2023 -SRB- PER CITY REVIEW

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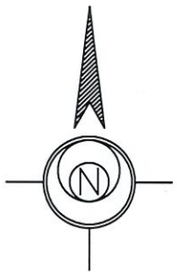
|---|---|---|
| DESIGNED: | DRAWN: SRB | CHECKED: JIF |
| SCALE: 1" = 100' | DATE: 19 JAN 2023 | DWG. 8341-STORM DRAINAGE |

MATCH LINE TO SHEET NO. 5

EXHIBIT C




N 03°28'06" W 869.25'

PALOMINO DRIVE
(60' WIDE R.O.W.)

S 03°28'06" E 869.25'

PROPOSED PARC VISTA
DEVELOPMENT PARCEL
54.829 ACRES

R=260.00'
L=170.14'
Δ=37°29'35"
CHD BRG. S15°16'42"W
167.12'

R=200.00'
L=314.16'
Δ=90°00'02"
CHD BRG. N41°31'55"E
282.84'

R=260.00'
L=178.04'
Δ=39°14'04"
CHD BRG. N66°54'54"E
174.58'

GEORGE BLUM, LLC
PIN: 22-31-400-001

N 86°31'56" E 411.37'

PALOMINO DRIVE
(60' WIDE R.O.W.)

N 86°31'56" E 147.78'

N03°35'00"W
60.00'

S 86°31'56" W 203.47'

R=260.00'
L=195.25'
Δ=43°01'38"
CHD BRG. S24°58'53"E
190.70'

MATCH LINE TO SHEET NO. 3

# PARC VISTA
## ROAD RIGHT OF WAY EXHIBIT

SOUTHEAST 1/4 OF SECTION 31, TOWNSHIP 1 NORTH, RANGE 8 EAST, CITY OF NOVI, OAKLAND COUNTY, MICHIGAN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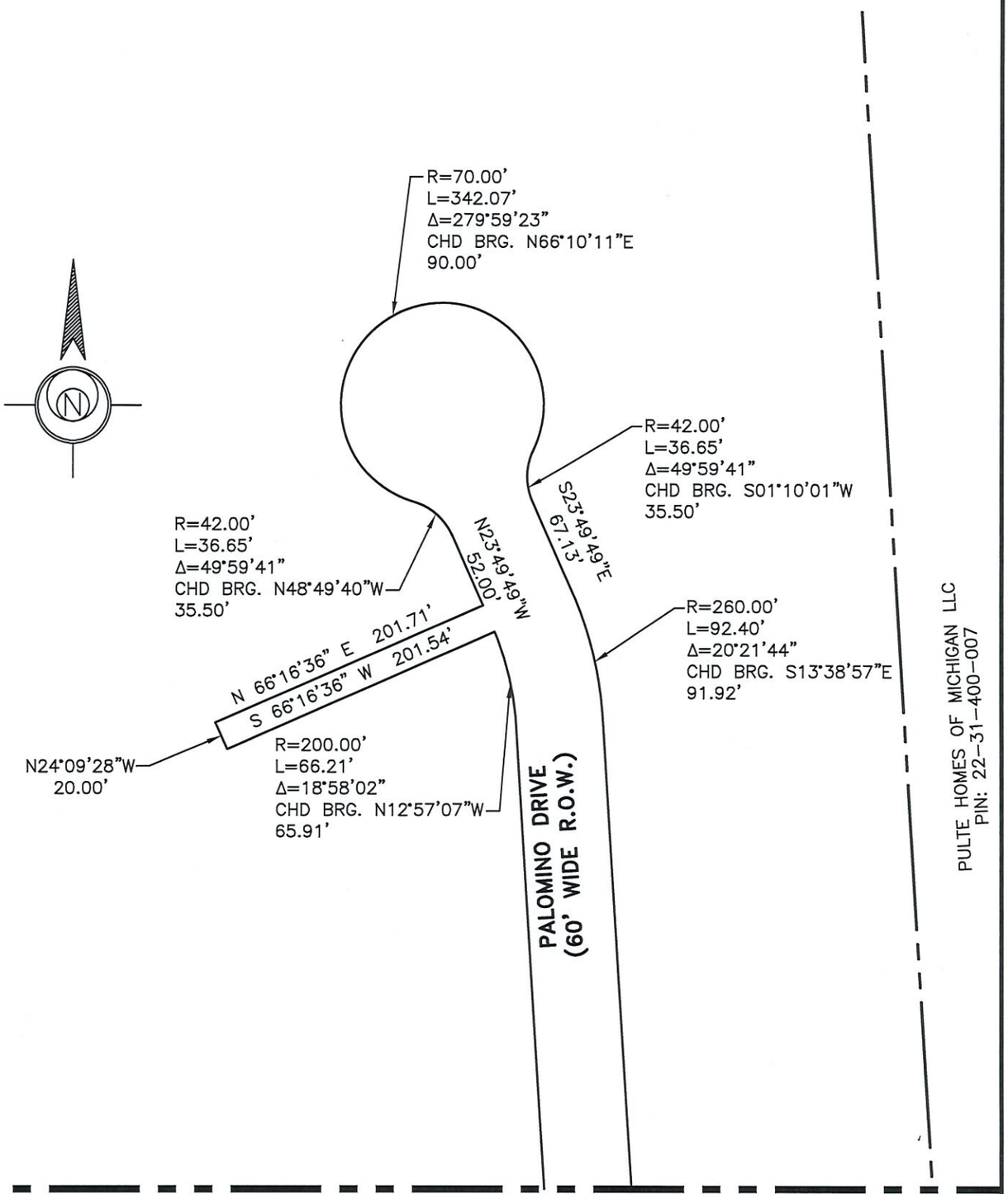
REV. 12-14-2023 -SRB- PER CITY REVIEW

SHEET 4 OF 10

| | | |
|---|---|---|
| DESIGNED: | DRAWN: SRB | CHECKED: JIF |
| SCALE: 1" = 100' | DATE: 19 JAN 2023 | DWG. 8341-STORM DRAINAGE |

# EXHIBIT C




MATCH LINE TO SHEET NO. 4

# PARC VISTA
## ROAD RIGHT-OF-WAY EXHIBIT

SOUTHEAST 1/4 OF SECTION 31, TOWNSHIP 1 NORTH, RANGE 8 EAST, CITY OF NOVI, OAKLAND COUNTY, MICHIGAN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REV. 1-8-2024 -SRB- PER CITY REVIEW
REV. 12-14-2023 -SRB- PER CITY REVIEW

| | | |
|---|---|---|
| DESIGNED: | DRAWN: SRB | CHECKED: JIF |
| SCALE: 1" = 100' | DATE: 19 JAN 2023 | DWG. 8341-STORM DRAINAGE |

# EXHIBIT C
# DESCRIPTION

## ROAD RIGHT–OF–WAY

A ROAD RIGHT–OF–WAY LOCATED IN THE SOUTHEAST 1/4 OF SECTION 31, TOWN 1 NORTH, RANGE 8 EAST, CITY OF NOVI, OAKLAND COUNTY, MICHIGAN DESCRIBED AS COMMENCING AT THE SOUTHEAST CORNER OF SAID SECTION 31; THENCE S86°52'38"W 1700.16 FEET ALONG THE SOUTH LINE OF SAID SECTION 31 AND THE CENTERLINE OF 8 MILE ROAD (60 FOOT HALF WIDTH); THENCE N03°07'22"W 60.00 FEET TO THE NORTH RIGHT OF WAY LINE OF SAID 8 MILE ROAD TO THE POINT OF BEGINNING AND THE EASTERLY RIGHT OF WAY LINE OF CAVALLO STREET (60 FEET WIDE): THENCE ALONG THE NORTH LINE OF 8 MILE ROAD RIGHT OF WAY S86°52'38"W 90.00 FEET TO THE WESTERLY RIGHT OF WAY LINE OF CAVALLO STREET (60 FEET WIDE); THENCE ALONG SAID RIGHT OF WAY LINE N03°28'04"W 22.61 FEET; THENCE ALONG A CURVE TO THE RIGHT HAVING A RADIUS OF 266.00 FEET, AN ARC LENGTH OF 34.83 FEET, CHORD BEARING N00°16'59"E 34.80 FEET; THENCE N04°01'41"E 83.54 FEET; THENCE ALONG A CURVE TO THE LEFT HAVING A RADIUS OF 214.00 FEET, AN ARC LENGTH OF 28.00 FEET, CHORD BEARING N00°16'49"E 27.98 FEET; THENCE N03°28'04"W 635.63 FEET TO THE SOUTHERLY RIGHT OF WAY LINE OF PALOMINO DRIVE (60 FEET WIDE); THENCE ALONG SAID RIGHT OF WAY LINE S86°31'56"W 203.47 FEET TO THE EASTERLY LINE OF GEORGE BLUM, LLC PIN: 22–31–400–001; THENCE ALONG SAID LINE N03°35'00"W 60.00 FEET TO THE NORTHERLY RIGHT OF WAY LINE OF PALOMINO DRIVE (60 FEET WIDE); THENCE THENCE ALONG SAID RIGHT OF WAY LINE N86°31'56"E 411.37 FEET; THENCE ALONG A CURVE TO THE LEFT HAVING A RADIUS OF 200.00 FEET, AN ARC LENGTH OF 314.16 FEET, CHORD BEARING N41°31'55"E 282.84 FEET; THENCE N03°28'06"W 869.25 FEET; THENCE ALONG A CURVE TO THE LEFT HAVING A RADIUS OF 200.00 FEET, AN ARC LENGTH OF 66.21 FEET, CHORD BEARING N12°57'07"W 65.91 FEET; THENCE S66°16'36"W 201.54 FEET; THENCE N24°09'28"W 20.00 FEET; THENCE N66°16'36"E 201.71 FEET; THENCE N23°49'49"W 52.00 FEET; THENCE ALONG A CURVE TO THE LEFT HAVING A RADIUS OF 42.00 FEET, AN ARC LENGTH OF 36.65 FEET, CHORD BEARING N48°49'40"W 35.50 FEET; THENCE ALONG A CURVE TO THE RIGHT HAVING A RADIUS OF 70.00 FEET, AN ARC LENGTH OF 342.07 FEET, CHORD BEARING N66°10'11"E 90.00 FEET TO THE EASTERLY RIGHT OF WAY LINE OF PALOMINO DRIVE (60 FEET WIDE); THENCE ALONG SAID RIGHT OF WAY LINE ALONG A CURVE TO THE LEFT HAVING A RADIUS OF 42.00 FEET, AN ARC LENGTH OF 36.65 FEET, CHORD BEARING S01°10'01"W 35.50 FEET; THENCE S23°49'49"E 67.13 FEET; THENCE ALONG A CURVE TO THE RIGHT HAVING A RADIUS OF 260.00 FEET, AN ARC LENGTH OF 92.40 FEET, CHORD BEARING S13°38'57"E 91.92 FEET; THENCE S03°28'06"E 869.25 FEET; THENCE ALONG A CURVE TO THE RIGHT HAVING A RADIUS OF 260.00 FEET, AN ARC LENGTH 170.14 FEET, CHORD BEARING S15°16'42"W 167.12 FEET TO THE EASTERLY RIGHT OF WAY LINE OF FARRIER PLACE (60 FEET WIDE); THENCE ALONG SAID RIGHT OF WAY LINE ALONG A CURVE TO THE RIGHT HAVING A RADIUS OF 260.00 FEET, AN ARC LENGTH OF 195.25 FEET, CHORD BEARING S24°58'53"E 190.70 FEET; THENCE S03°28'04"E 193.43 FEET; THENCE ALONG A CURVE TO THE RIGHT HAVING A RADIUS OF 260.00 FEET, AN ARC LENGTH OF 408.44 FEET, CHORD BEARING S41°32'11"W 367.72 FEET TO THE SOUTHERLY RIGHT OF WAY OF FARRIER PLACE (60 FEET WIDE); THENCE ALONG SAID RIGHT OF WAY S86°32'26"W 163.96 FEET TO POINT "A" AND THE EASTERLY RIGHT OF WAY LINE OF CAVALLO STREET (60 FEET WIDE); THENCE ALONG SAID RIGHT OF WAY LINE S03°28'04"E 106.56 FEET; THENCE ALONG A CURVE TO THE LEFT HAVING A RADIUS OF 214.00 FEET, AN ARC LENGTH OF 28.00 FEET, CHORD BEARING S07°12'56"E 27.98 FEET; THENCE S10°57'49"E 83.54 FEET; THENCE ALONG A CURVE TO THE RIGHT HAVING A RADIUS OF 266.00 FEET, AN ARC LENGTH OF 34.78 FEET, CHORD BEARING S07°12'46"E 34.75 FEET; THENCE S03°28'04"E 23.20 FEET TO THE POINT OF BEGINNING. DEPICTED ON EXHIBIT A.

EXCEPT FOR THE FOLLOWING:

DESCRIBED AS COMMENCING AT POINT "A" AND THE EASTERLY RIGHT OF WAY LINE OF CAVALLO STREET (60 FEET WIDE); THENCE ALONG SAID RIGHT OF WAY LINE N03°28'04"W 60.00 FEET TO THE POINT OF BEGINNING: THENCE N03°28'04"W 469.07 FEET TO THE SOUTHERLY RIGHT OF WAY LINE OF PALOMINO DRIVE (60 FEET WIDE); THENCE ALONG SAID RIGHT OF WAY LINE N86°31'56"E 147.78 FEET; THENCE ALONG A CURVE TO THE LEFT HAVING A RADIUS OF 260.00 FEET, AN ARC LENGTH OF 178.04 FEET, CHORD BEARING N66°54'54"E 174.58 FEET TO THE WESTERLY RIGHT OF WAY LINE OF FARRIER PLACE (60 FEET WIDE); THENCE ALONG SAID RIGHT OF WAY LINE ALONG A CURVE TO THE RIGHT HAVING A RADIUS OF 200.00 FEET, AN ARC LENGTH OF 147.21 FEET, CHORD BEARING S24°33'15"E 143.91 FEET; THENCE S03°28'04"E 193.43 FEET; THENCE ALONG A CURVE TO THE RIGHT HAVING A RADIUS OF 200.00 FEET, AN ARC LENGTH OF 314.19 FEET, CHORD BEARING S41°32'11"W 282.86 FEET TO THE SOUTHERLY RIGHT OF WAY LINE OF FARRIER PLACE (60 FEET WIDE); THENCE ALONG SAID RIGHT OF WAY LINE S86°32'26"W 163.97 FEET TO THE POINT OF BEGINNING. DEPICTED ON EXHIBIT A.

PIN: 22–31–400–011 & 012

# PARC VISTA
## ROAD RIGHT–OF–WAY
## EXHIBIT

SOUTHEAST 1/4 OF SECTION 31, TOWNSHIP 1 NORTH, RANGE 8 EAST, CITY OF NOVI, OAKLAND COUNTY, MICHIGAN

ESE Land Planning Engineering Land Surveying

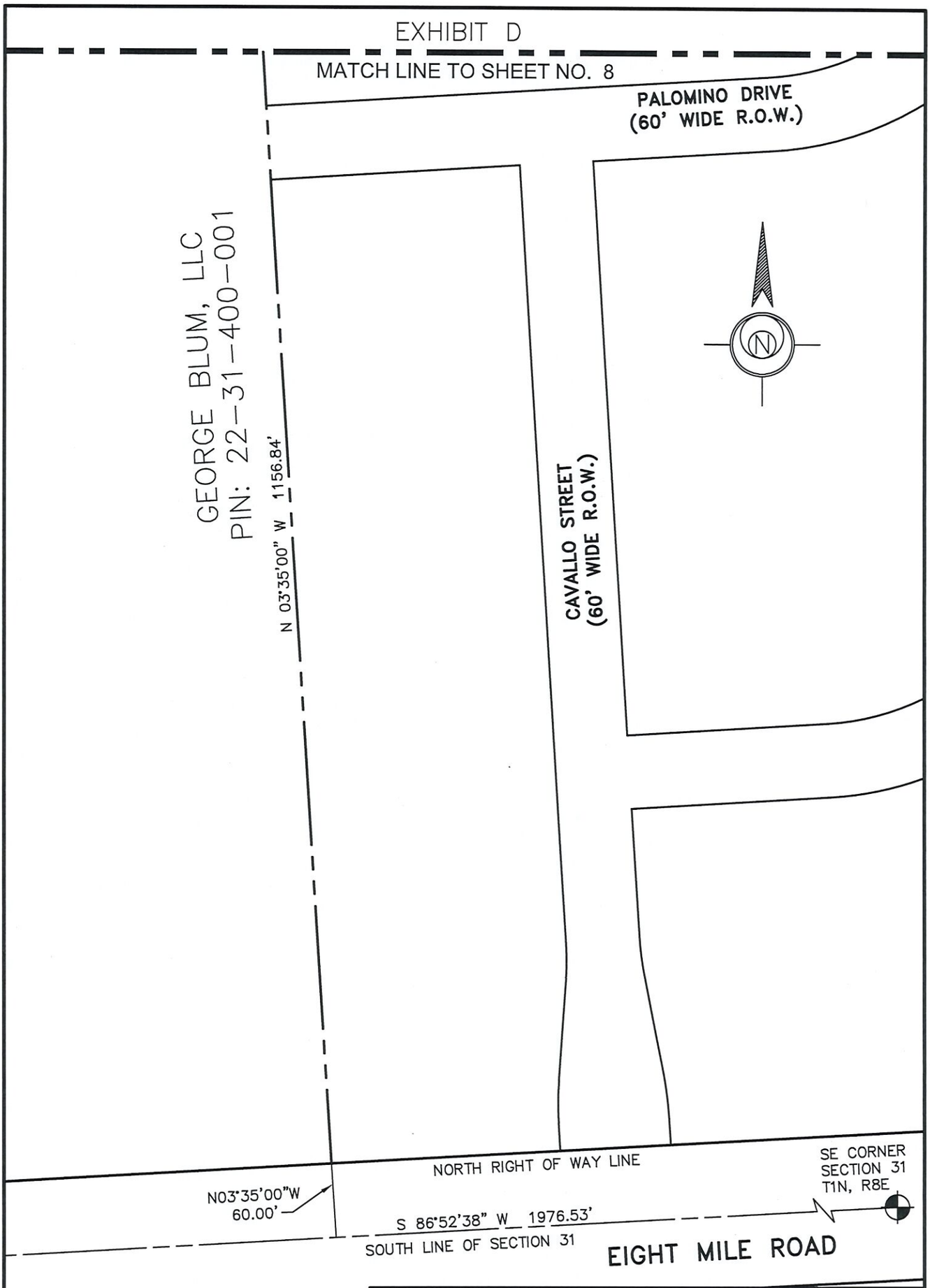
26200 Town Center Court
Suite 200
Novi, Michigan 48375
TEL: (248) 305-4013
FAX: (248) 305-4001

CIVIL ENGINEERS - LAND SURVEYORS - LANDSCAPE ARCHITECTS - LAND PLANNERS

REV. 1–8–2024 –SRB– PER CITY REVIEW
REV. 12–14–2023 –SRB– PER CITY REVIEW

| | | |
|---|---|---|
| DESIGNED: | DRAWN: SRB | CHECKED: JIF |
| SCALE: NONE | DATE: 19 JAN 2023 | DWG. 8341–STORM DRAINAGE |

EXHIBIT D




# PARC VISTA
## STORM DRAINAGE EXHIBIT

SOUTHEAST 1/4 OF SECTION 31, TOWNSHIP 1 NORTH, RANGE 8 EAST, CITY OF NOVI, OAKLAND COUNTY, MICHIGAN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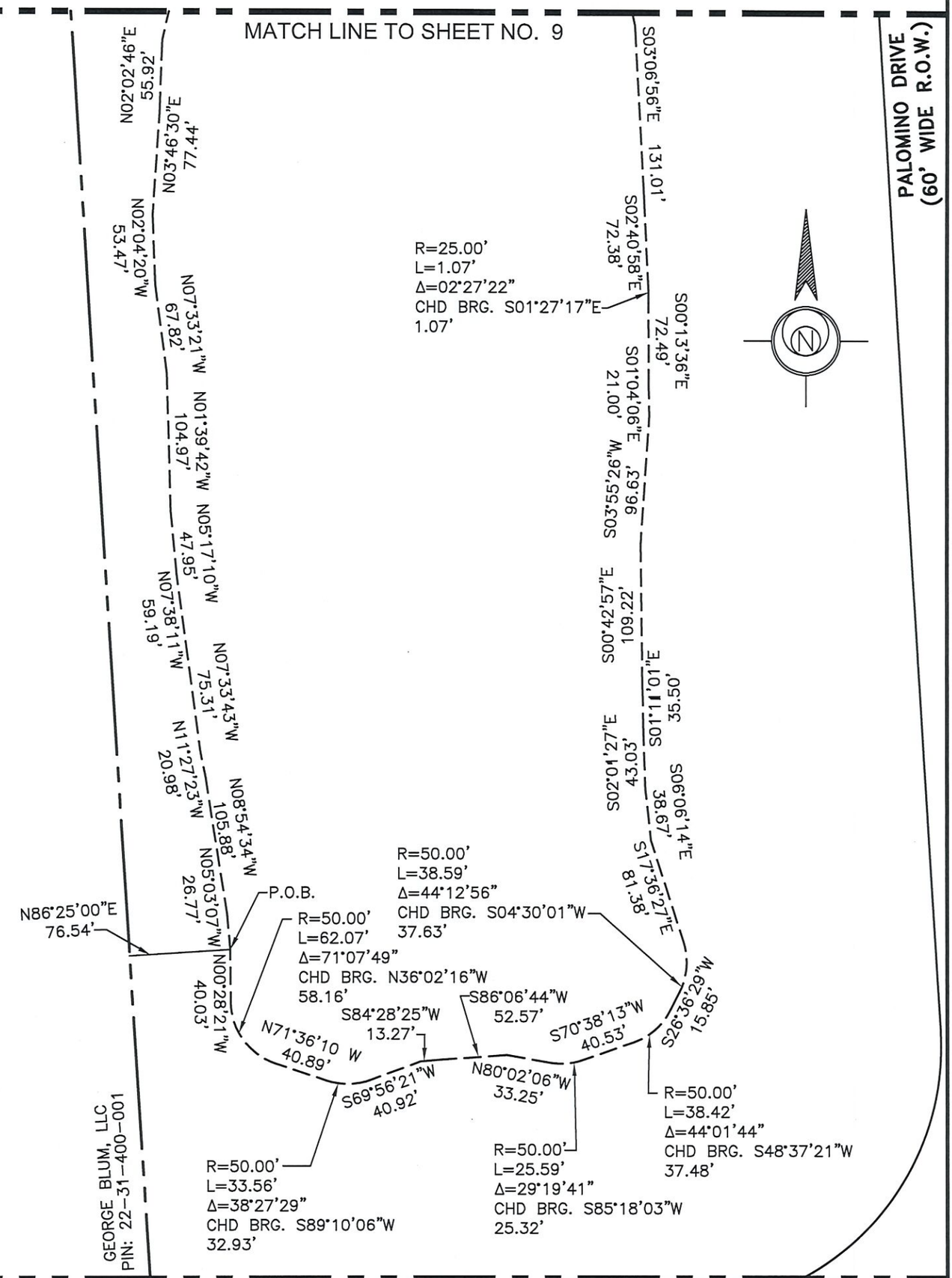
CIVIL ENGINEERS - LAND SURVEYORS - LANDSCAPE ARCHITECTS - LAND PLANNERS


REV. 1-8-2024 -SRB- PER CITY REVIEW
REV. 12-14-2023 -SRB- PER CITY REVIEW

| | | |
|---|---|---|
| DESIGNED: | DRAWN: SRB | CHECKED: JIF |
| SCALE: 1" = 100' | DATE: 19 JAN 2023 | DWG. 8341-STORM DRAINAGE |

# EXHIBIT D




# PARC VISTA
## STORM DRAINAGE EXHIBIT

SOUTHEAST 1/4 OF SECTION 31, TOWNSHIP 1 NORTH, RANGE 8 EAST, CITY OF NOVI, OAKLAND COUNTY, MICHIGAN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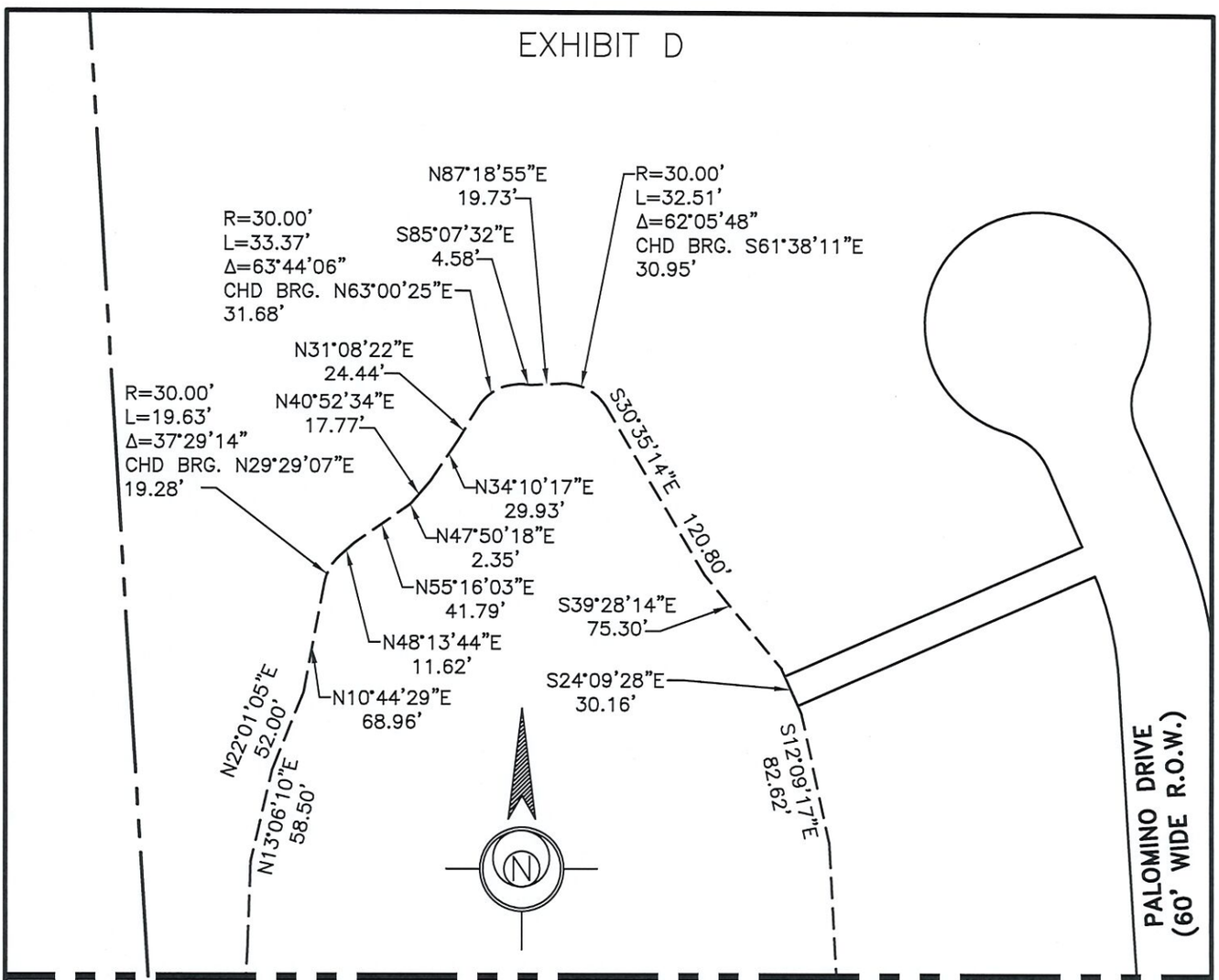
CIVIL ENGINEERS - LAND SURVEYORS - LANDSCAPE ARCHITECTS - LAND PLANNERS


REV. 1-8-2024 -SRB- PER CITY REVIEW
REV. 12-14-2023 -SRB- PER CITY REVIEW

| | | |
|---|---|---|
| DESIGNED: | DRAWN: SRB | CHECKED: JIF |
| SCALE: 1" = 100' | DATE: 19 JAN 2023 | DWG. 8341-STORM DRAINAGE |

# EXHIBIT D




MATCH LINE TO SHEET NO. 8

# PARC VISTA
## STORM DRAINAGE EXHIBIT

SOUTHEAST 1/4 OF SECTION 31, TOWNSHIP 1 NORTH, RANGE 8 EAST, CITY OF NOVI, OAKLAND COUNTY, MICHIGAN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Novi, Michigan 48375
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FAX: (248) 305-4001

CIVIL ENGINEERS - LAND SURVEYORS - LANDSCAPE ARCHITECTS - LAND PLANNERS


| | | |
|---|---|---|
| DESIGNED: | DRAWN: SRB | CHECKED: JIF |
| SCALE: 1" = 100' | DATE: 19 JAN 2023 | DWG. 8341–STORM DRAINAGE |

REV. 1–8–2024 –SRB– PER CITY REVIEW
REV. 12–14–2023 –SRB– PER CITY REVIEW

# EXHIBIT D
# DESCRIPTION

## STORM DRAINAGE

A STORM DRAINAGE BASIN AREA LOCATED IN THE SOUTHEAST 1/4 OF SECTION 31, TOWN 1 NORTH, RANGE 8 EAST, CITY OF NOVI, OAKLAND COUNTY, MICHIGAN DESCRIBED AS COMMENCING AT THE SOUTHEAST CORNER OF SAID SECTION 31; THENCE S86°52'38"W 1976.53 FEET ALONG THE SOUTH LINE OF SAID SECTION 31 AND THE CENTERLINE OF 8 MILE ROAD (60 FOOT HALF WIDTH); THENCE N03°35'00"W 60.00 FEET TO THE NORTH RIGHT OF WAY LINE OF SAID 8 MILE ROAD AND THE EASTERLY LINE OF GEORGE BLUM, LLC PIN: 22-31-400-001; THENCE ALONG SAID LINE N03°35'00"W 1156.84 FEET; THENCE N86°25'00"E 76.54 TO THE POINT OF BEGINNING: THENCE N05°03'07"W 26.77 FEET; THENCE N08°54'34"W 105.88 FEET; THENCE N11°27'23"W 20.98 FEET; THENCE N07°33'43"W 75.31 FEET; THENCE N07°38'11"W 59.19 FEET; THENCE N05°17'10"W 47.95 FEET; THENCE N01°39'42"W 104.97 FEET; THENCE N07°33'21"W 67.82 FEET; THENCE N02°04'20"W 53.47 FEET; THENCE N03°46'30"E 77.44 FEET; THENCE N02°02'46"E 55.92 FEET; N13°06'10"E 58.50 FEET; THENCE N22°01'05"E 52.00 FEET; THENCE N10°44'29"E 68.96 FEET; THENCE ALONG A CURVE TO THE RIGHT, HAVING A RADIUS OF 30.00 FEET, AN ARC LENGTH OF 19.63 FEET, CHORD BEARING N29°29'07"E 19.28 FEET; THENCE N48°13'44"E 11.62 FEET; THENCE N55°16'03"E 41.79 FEET; THENCE N47°50'18"E 2.35 FEET; THENCE N40°52'34"E 17.77 FEET; THENCE N34°10'17"E 29.93 FEET; THENCE N31°08'22"E 24.44 FEET; THENCE ALONG A CURVE TO THE RIGHT, HAVING A RADIUS OF 30.00 FEET, AN ARC LENGTH OF 33.37 FEET, CHORD BEARING N63°00'25"E 31.68 FEET; THENCE S85°07'32"E 4.58 FEET; THENCE N87°18'55"E 19.73 FEET; THENCE ALONG A CURVE TO THE RIGHT, HAVING A RADIUS OF 30.00 FEET, AN ARC LENGTH OF 32.51 FEET, CHORD BEARING S61°38'11"E 30.95 FEET; THENCE S30°35'14"E 120.80 FEET; THENCE S39°28'14"E 75.30 FEET; THENCE S24°09'28"E 30.16 FEET; THENCE S12°09'17"E 82.62 FEET; S03°06'56"E 131.01 FEET; THENCE S02°40'58"E 72.38 FEET; THENCE ALONG A CURVE TO THE RIGHT, HAVING A RADIUS OF 25.00 FEET, AN ARC LENGTH OF 1.07 FEET, CHORD BEARING S01°27'17"E 1.07 FEET; THENCE S00°13'36"E 72.49 FEET; S01°04'06"E 21.00 FEET; THENCE S03°55'26"W 96.63 FEET; THENCE S00°42'57"E 109.22 FEET; THENCE S01°11'01"E 35.50 FEET; THENCE S02°01'27"E 43.03 FEET; THENCE S06°06'14"E 38.67 FEET; THENCE S17°36'27"E 81.38 FEET; THENCE ALONG A CURVE TO THE RIGHT, HAVING A RADIUS OF 50.00 FEET, AN ARC LENGTH OF 38.59 FEET, CHORD BEARING S04°30'01"W 37.63 FEET; THENCE S26°36'29"W 15.85 FEET; THENCE ALONG A CURVE TO THE RIGHT, HAVING A RADIUS OF 50.00 FEET, AN ARC LENGTH OF 38.42 FEET, CHORD BEARING S48°37'21"W 37.48 FEET; THENCE S70°38'13"W 40.53 FEET; THENCE ALONG A CURVE TO THE RIGHT, HAVING A RADIUS OF 50.00 FEET, AN ARC LENGTH OF 25.59 FEET, CHORD BEARING S85°18'03"W 25.32 FEET; THENCE N80°02'06"W 33.25 FEET; THENCE S86°06'44"W 52.57 FEET; THENCE S84°28'25"W 13.27 FEET; THENCE S69°56'21"W 40.92 FEET; THENCE ALONG A CURVE TO THE RIGHT, HAVING A RADIUS OF 50.00 FEET, AN ARC LENGTH OF 33.56 FEET, CHORD BEARING S89°10'06"W 32.93 FEET; THENCE N71°36'10"W 40.89 FEET: THENCE ALONG A CURVE TO THE RIGHT, HAVING A RADIUS OF 50.00 FEET, AN ARC LENGTH OF 62.07 FEET, CHORD BEARING N36°02'16"W 58.16 FEET; THENCE N00°28'21"W 40.03 FEET TO THE POINT OF BEGINNING. DEPICTED ON EXHIBIT D.

PIN: 22-31-400-011 & 012

REV. 1-8-2024 -SRB- PER CITY REVIEW
REV. 12-14-2023 -SRB- PER CITY REVIEW
SHEET 10 OF 10

# PARC VISTA
## STORM DRAINAGE
## EXHIBIT

SOUTHEAST 1/4 OF SECTION 31, TOWNSHIP 1 NORTH, RANGE 8 EAST, CITY OF NOVI, OAKLAND COUNTY, MICHIGAN

ESE Land Planning Engineering Land Surveying
26200 Town Center Court
Suite 200
Novi, Michigan 48375
TEL: (248) 305-4013
FAX: (248) 305-4001
CIVIL ENGINEERS - LAND SURVEYORS - LANDSCAPE ARCHITECTS - LAND PLANNERS

| | | |
|---|---|---|
| DESIGNED: | DRAWN: SRB | CHECKED: JIF |
| SCALE: 1" = 100' | DATE: 19 JAN 2023 | DWG. 8341-STORM DRAINAGE |

SPALDING DEDECKER
Engineering & Surveying Excellence since 1954

February 1, 2024

Ben Croy
City of Novi
26300 Lee BeGole Drive
Novi, Michigan 48375

Re: Parc Vista - Acceptance Documents Review
Novi # JSP21-0047
SDA Job No. NV23-201
**FINAL DOCUMENTS APPROVED**

Dear Mr. Croy:

We have reviewed the Acceptance Document Package received by our office on December 19, 2023 against the Final Site Plan (Stamping Set) approved on July 20, 2023 and against the as-built plans. We offer the following comments:

**Final Acceptance Documents**

1. On-Site Water System Easement
(executed on 01/08/2024: exhibit dated 01/05/2023)
Exhibits Approved.

2. On-Site Sanitary Sewer Easement
(executed on 01/08/2024: exhibit dated 01/03/2023)
Exhibits Approved.

3. Storm Drainage Facility / Maintenance Easement Agreement
(executed on 01/08/2024: exhibit dated 01/08/2024)
Exhibits A, B, C, D Approved.

4. Emergency Access Easement
(unexecuted: exhibit dated 12/29/2022)
Exhibits Approved.

5. Warranty Deed for Road Right-of-Way
(executed, unrecorded, dated 02/16/2023)
Exhibits Approved.

6. Monument Easement
(unexecuted, exhibit dated 12/05/2023)
Exhibits Approved.

7. Bills of Sale: Sanitary Sewer System and Water Supply System
(executed, dated 01/09/2024)
Exhibits Approved

**8.** Full Unconditional Waivers of Lien from contractors installing public utilities
(executed, dated 12/13/2023)
Received

**9.** Sworn Statement signed by Developer
(executed, dated 01/09/2024)
Received

**10.** Warranty Deed
(executed, dated 01/08/2024)
Exhibit Approved

Unless otherwise stated above, the documents as submitted were found to be acceptable by our office pending review by the City Attorney. Legal review will not occur until a current title policy is submitted to the City. For those documents which require revisions, please forward those revised documents to the City for further review and approval.

The City Attorney's Office will retain the original documents in their files until such time as they are approved and ready (notarized and executed properly) for the mayor's signature.

**It should be noted** that the Plan Review Center Report dated March 10, 2023 contains all documentation requirements necessary prior to construction and occupancy of the facility.

If you have any questions regarding this matter, please contact this office at your convenience.

Sincerely,

**SPALDING DEDECKER**

Taylor E. Reynolds, PE
Senior Project Manager

Cc (via Email): Holly Demers, Spalding DeDecker
Adam Yako, City of Novi
Cortney Hanson, City of Novi
Diana Shanahan, City of Novi
Sarah Marchioni, City of Novi
Humna Anjum, City of Novi
Beth Saarela, Rosati, Schultz, Joppich, Amtsbuechler
Angie Sosnowski, City of Novi
Melissa Morris, City of Novi
Alyssa Craigie, City of Novi
Barb McBeth, City of Novi
Lindsay Bell, City of Novi
Diana Shanahan, City of Novi
James Hill, City of Novi
Heather Zeigler, City of Novi

SPALDING DeDECKER
Engineering & Surveying Excellence since 1954

February 6, 2024

Mrs. Humna Ajum
Mr. Adam Yako
Project Engineer
Department of Public Services
Field Services Complex – Engineering Division
26300 Lee BeGole Drive
Novi, MI 48375

**Re: Parc Vista**
**Storm Water Detention System Inspection**
Novi SP No.: JSP21-0047
SDA Job No.: NV23-201

Dear Mrs. Anjum & Mr. Yako:

This letter serves to officially notify you that we have reviewed the status of the storm water detention systems including storm sewer piping, detention basins and outlet control structures for the above mentioned project. As a result of this review, we have determined the storm water detention system to be in general conformance with the approved construction plans and recommend a full release of this financial guarantee.

If you have any questions, please do not hesitate to contact us at our office.

Sincerely,

**SPALDING DeDECKER**

Sydney Waynick
Engineer

cc: Sarah Marchioni, City of Novi – Building Project Coordinator (e-mail)
Angela Sosnowski, City of Novi – Bond Coordinator (e-mail)
Scott Roselle, City of Novi – Water and Sewer Asset Manager (e-mail)
Scott Hansen, Toll Brothers (e-mail)
Brian Woellmer, Toll Brothers (e-mail)
SDA CE Job File

# CITY OF NOVI CITY COUNCIL
# APRIL 8, 2024

**SUBJECT:** Enter Executive Session immediately following the regular meeting of April 8, 2024 in the Council Annex to discuss pending litigation (Novi v Malles, et al) and confidential written communication for legal counsel.

**SUBMITTING DEPARTMENT:** City Clerk

**BACKGROUND INFORMATION:**

**RECOMMENDED ACTION:** Enter Executive Session immediately following the regular meeting of April 8, 2024 in the Council Annex to discuss pending litigation (Novi v Malles, et al) and confidential written communication for legal counsel.

# CITY OF NOVI CITY COUNCIL
# APRIL 8, 2024

**SUBJECT:** Approval of claims and warrants – Warrant 1153

**SUBMITTING DEPARTMENT:** Finance

**BACKGROUND INFORMATION:**

Per Section 8.10 of the City's charter all funds drawn by the treasury department must be approved by City Council. This approval occurs through a warrant system and appears on all City Council's agenda. The most recent Warrant, #1153 comes before City council for approval.

**RECOMMENDED ACTION:** Approval of claims and warrants – Warrant 1153

**CITY OF NOVI**
**Warrant 1153**
**Monday, April 8, 2024**

| Check | Vendor Name | Description | Amount |
|---|---|---|---|
| 188210-188222 | CONSUMERS ENERGY | HEAT | 1,871.90 |
| 188223 | DTE ENERGY | ELECTRICITY | 20.64 |
| 188224 | MARK'S OUTDOOR POWER EQUIPMENT | EQUIPMENT MAINTENANCE (PARKS MAINTENANCE) | 3,291.75 |
| 188225 | MORRIS, MELISSA | PER DIEM IIMC CLERK'S CONFERENCE | 186.00 |
| 188226 | SAM'S CLUB DIRECT | OPERATING SUPPLIES (LIBRARY, FIRE, P&R, POLICE) | 3,332.40 |
| 188227 | AT&T MOBILITY | UTILITIES | 20.80 |
| 188228 | CHADWICK, COREY | TRAINING REIMBURSEMENT (HIDTA) | 1,951.07 |
| 188229 | COVERT TRACK GROUP INC | PROFESSIONAL SERVICES (HIDTA) | 4,933.45 |
| 188230 | KELLEY, ERICA | 2023 CHIEF SUPPLIES | 549.98 |
| 188231 | KUIACK, MATTHEW | TRAINING REIMBURSEMENT (HIDTA) | 2,402.73 |
| 188232 | REFALO, CHRISTOPHER | TRAINING REIMBURSEMENT | 552.46 |
| 188233 | SCHLAUFMAN, JENNIFER | TRAINING REIMBURSEMENT | 640.49 |
| 188234 | VERIZON WIRELESS | UTILITIES | 40.01 |
| 188235 | VERIZON WIRELESS | UTILITIES (HIDTA) | 1,835.41 |
| 188236 | WELKER, LANCE | TRAINING REIMBURSEMENT | 1,951.07 |
| 188237 | ASHE-BAGGETT, PAGIE | CONFERENCE | 700.00 |
| 188238 | HOTH TESTING | CONFERENCE | 175.00 |
| 188239 | 123NET. INC | BLDG. BOND REFUND (ESCROW) | 1,500.00 |
| 188240 | 123NET. INC | BLDG. BOND REFUND (ESCROW) | 1,500.00 |
| 188241 | 123NET. INC | BLDG. BOND REFUND (ESCROW) | 1,500.00 |
| 188242 | 123NET. INC | BLDG. BOND REFUND (ESCROW) | 1,500.00 |
| 188243 | 123NET. INC | BLDG. BOND REFUND (ESCROW) | 1,500.00 |
| 188244 | 123NET. INC | BLDG. BOND REFUND (ESCROW) | 1,500.00 |
| 188245 | 123NET. INC | BLDG. BOND REFUND (ESCROW) | 5,000.00 |
| 188246 | 123NET. INC | BLDG. BOND REFUND (ESCROW) | 1,500.00 |
| 188247 | 123NET. INC | BLDG. BOND REFUND (ESCROW) | 1,500.00 |
| 188248 | 123NET. INC | BLDG. BOND REFUND (ESCROW) | 1,500.00 |
| 188249 | 123NET. INC | BLDG. BOND REFUND (ESCROW) | 1,500.00 |
| 188250 | A AND R PLUMBING LLC | BUILDING MAINT (POLICE, P&R, FACILITIES, W&S) | 7,078.31 |
| 188251 | ACCUFORM PRINTING & GRAPHICS INC | OFFICE SUPPLIES/ENGAGE (COMM REL, POLICE, DPW) | 23,955.90 |
| 188252 | ACE CUTTING EQUIPMENT INC | WATER LINE MAINTENANCE | 122.00 |
| 188253 | ADT COMMERCIAL LLC | OPERATING SUPPLIES (POLICE, PARKS & REC) | 4,256.80 |
| 188254 | ADVANCED TURF SOLUTIONS, INC. | GROUNDS MAINTENANCE (PARKS MAINT) | 1,110.70 |
| 188255 | AECOM GREAT LAKES, INC | PROFESSIONAL SERV - VAR PROJ (STREETS, W&S) | 240,940.00 |
| 188256 | AIRGAS USA, LLC | VEHICLE MAINTENANCE | 682.34 |
| 188257 | ALLIANCE HEALTH AND LIFE | EMPLOYEE HEALTHCARE INSURANCE | 14,560.00 |
| 188258 | ALLIE BROTHERS INC | SUPPLIES UNIFORMS (FIRE) | 1,448.44 |
| 188259 | ALLIED BUILDING SERVICE COMPANY | BUILDING MAINTENANCE (LIBRARY) | 4,406.20 |
| 188260 | ALTECH DOORS LLC | BUILDING MAINTENANCE (FACILITIES, POLICE) | 3,727.80 |
| 188261 | AMAZON | LIBRARY BOOKS | 2,635.56 |
| 188262 | AMERI-TIME LLC | VEHICLE MAINTENANCE | 497.97 |
| 188263 | AMERICAN GENERATORS SALES AND | BUILDING MAINT/GENERATOR (P&F, W&S, FACILITIES) | 42,021.81 |
| 188264 | AMERICAN LIBRARY ASSOCIATION | COMMUNITY PROMOTION | 109.27 |
| 188265 | ANAGO OF METRO DETROIT | BUILDING MAINTENANCE | 420.00 |
| 188266 | ANDREW LITTLETON | UB REFUND 47082 NORTHUMBERLAND | 59.75 |
| 188267 | APOLLO FIRE APPARATUS SALES AND | VEHICLE MAINTENANCE | 395.30 |
| 188268 | ARAMARK REFRESHMENT SERVICES | OPERATING SUPPLIES (FIRE, DPW) | 1,067.48 |
| 188269 | ASCENSION MICHIGAN EMPLOYER | MEDICAL SERVICE - PRE EMPLOYMENT (HR) | 2,003.00 |
| 188270 | ASTI ENVIRONMENTAL | LAND ACQUISITION (GF) | 3,877.07 |
| 188271 | ATA NATIONAL TITLE GROUP, LLC | MEADOWBROOK RD REHAB ROW (MAJOR STREETS) | 1,500.00 |
| 188272 | B & B LANDSCAPING | GROUNDS MAINTENANCE | 350.00 |
| 188273 | B&M ASHMAN | BLDG. BOND REFUND (ESCROW) | 1,500.00 |
| 188274 | B&M ASHMAN | BLDG. BOND REFUND (ESCROW) | 1,500.00 |
| 188275 | BAKER & TAYLOR, LLC | AUDIO VISUAL MATERIALS | 611.16 |
| 188276 | BAKER LEGAL GROUP PLLC | PROSECUTOR FEES 3/2024 (POLICE) | 9,360.00 |
| 188277 | BARNHILL III, JOHN H. | YOUTH BASKETBALL | 140.00 |
| 188278 | BARRETT, JULIA | REIMBURSE MCOLES LICENSING FEES | 75.00 |
| 188279 | BELLE TIRE | VEHICLE MAINTENANCE (DPW, POLICE, W&S, P&R) | 2,809.87 |

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| 188280 | BERKSETH, SCOTT | PER DIEM CONFERENCE | 110.00 |
| 188281 | BESK, DANIEL | YOUTH BASKETBALL | 385.00 |
| 188282 | BLACKWELL FORD INC | VEHICLE MAINTENANCE | 502.52 |
| 188283 | BLUE CROSS BLUE SHIELD OF MICHIGAN | EMPLOYEE HEALTHCARE INSURANCE | 34,124.21 |
| 188284 | BMW MOTORCYCLES OF SOUTHEAST | (2) BMW R 1250 RT-P MOTORCYLES (POLICE) | 61,119.20 |
| 188285 | BOULARD, CHARLES | CONFERENCE | 30.00 |
| 188286 | BOUND TREE MEDICAL LLC | OPERATING SUPPLIES (FIRE) | 1,411.35 |
| 188287 | BRENTWOOD ELECTRIC LLC | BLDG. PAYMENT REFUND (ESCROW) | 452.00 |
| 188288 | BRIEN'S SERVICES INC | GROUNDS MAINTENANCE | 300.00 |
| 188289 | BRILLIANT SYSTEMS, LLC | NEW RADIO SYSTEM (POLICE) | 8,939.40 |
| 188290 | BRODART CO. | LIBRARY BOOKS | 5,687.51 |
| 188291 | BRUSH, EMILY | MILEAGE REIMBURSEMENT | 243.34 |
| 188292 | BSN SPORTS INC. | YOUTH SOCCER (PARKS & REC) | 1,251.82 |
| 188293 | C-MAR PRODUCTS INC | GROUNDS MAINTENANCE | 513.00 |
| 188294 | CANON FINANCIAL SERVICES INC | EQUIPMENT RENTAL - COPIERS (LIBRARY, IT) | 5,383.49 |
| 188295 | CAPITAL TIRE INC | VEHICLE MAINTENANCE (POLICE) | 2,700.00 |
| 188296 | CARLETON EQUIPMENT COMPANY, INC. | MINI EXCAVATOR ATTACHMENTS (DRAIN) | 2,112.60 |
| 188297 | CARLISLE WORTMAN ASSOCIATES, INC. | BUILDING, TRADE, & PLAN REVIEW SERV (COMM DEV) | 4,080.00 |
| 188298 | CAUCHI, PATRICIA | PETTY CASH | 63.93 |
| 188299 | CBTS LLC | INTERNAL TECHNOLOGY (IT) | 1,062.50 |
| 188300 | CDW GOVERNMENT LLC | INTERNAL TECHNOLOGY - CITYWIDE (IT) | 35,038.82 |
| 188301 | CENTER MASS INC | EDUCATION AND TRAINING | 998.00 |
| 188302 | CENTER POINT LARGE PRINT | LIBRARY BOOKS | 309.81 |
| 188303 | CGS INC. | CONFERENCE (3 ) STAFF (DPW) | 2,955.00 |
| 188304 | CHALLENGER SPORTS TEAMWEAR, LLC | YOUTH SOCCER (PARKS & REC) | 8,426.70 |
| 188305 | CHET'S RENT-ALL INC. | EQUIPMENT RENTAL | 482.08 |
| 188306 | CINTAS CORP | SUPPLIES UNIFORMS (DPW) | 2,131.94 |
| 188307 | CITY OF NOVI | CITY'S SAHRE OF FEES COLLECTED | 3,278.47 |
| 188308 | CITY OF STERLING HEIGHTS | GASOLINE AND OIL | 502.94 |
| 188309 | CONSERVA ELECTRIC SUPPLY, INC. | BUILDING MAINTENANCE (POLICE, FIRE, FACILITIES) | 1,705.53 |
| 188310 | CORE & MAIN LP | SEWER LINE MAINTENANCE | 591.18 |
| 188311 | CORRIGAN RECORD STORAGE LLC | RECORDS STORAGE- CITYWIDE (CLERK) | 2,733.95 |
| 188312 | COUGAR SALES & RENTAL INC | EQUIPMENT MAINTENANCE | 337.77 |
| 188313 | CRANDALL-WORTHINGTON INC | CUSTODIAL SUPPLIES | 993.13 |
| 188314 | CREATIVE DIMENSIONS INC | STUDIO NO.VI (PEG FUND) | 80,497.90 |
| 188315 | CREATIVE NATURE ART & DESIGN LLC | LIBRARY PROGRAMMING | 700.00 |
| 188316 | CREATURE CONTROL LLC | VILLA BARR PROPERTY | 55.00 |
| 188317 | CUTMYTREEDOWN.COM | FORESTRY MAINTENANCE (TREE FUND) | 5,530.00 |
| 188318 | D/A CENTRAL, INC. | DOG PARK EXPENDITURES | 751.25 |
| 188319 | DALTON COMMERCIAL CLEANING CORP | BUILDING MAINTENANCE | 225.00 |
| 188320 | DEANGELIS DIAMOND CONSTRUCTION LLC | CONSTRUCTION: JESSICA'S SPLASH PAD (CIP FUND) | 12,968.46 |
| 188321 | DELL MARKETING L.P. | INTERNAL TECHNOLOGY - CITYWIDE (IT) | 66,166.39 |
| 188322 | ELLSWORTH INDUSTRIES INC. | WATER LINE MAINTENANCE | 930.57 |
| 188323 | EMPIRE PRINTING, LLC | SUPPLIES UNIFORMS | 407.85 |
| 188324 | ETNA SUPPLY | GROUNDS MAINTENANCE | 110.94 |
| 188325 | EVANSKI, JACKIE | TUITION REIMBURSEMENT | 560.00 |
| 188326 | FIFER INVESTIGATIONS LLC | RECRUITMENT (FIRE) | 5,700.00 |
| 188327 | FIREFIGHTER SAFE, LLC | SUPPLIES (FIRE) | 1,123.38 |
| 188328 | FOSTER, SWIFT, COLLINS & SMITH, P.C | LEGAL FEES | 122.50 |
| 188329 | FOUNDATION SYSTEMS OF MICHIGAN | BLDG. PAYMENT REFUND (ESCROW) | 140.00 |
| 188330 | FURUKAWA, HARUNA | REFUND PARKS | 8.00 |
| 188331 | G2 CONSULTING GROUP, LLC. | WATER MAIN REPAIRS (WATER & SEWER) | 6,035.00 |
| 188332 | GARBER, DEAN | YOUTH BASKETBALL | 140.00 |
| 188333 | GFL ENVIRONMENTAL | RUBBISH MONTHLY 2/2024 (RUBBISH) | 176,989.25 |
| 188334 | GRAINGER INC, W W | VEHICLE MAINTENANCE | 250.92 |
| 188335 | GREAT AMERICA FINANCIAL SERVICES | OPERATING SUPPLIES | 167.54 |
| 188336 | GREAT LAKES ACE | OPERATING SUPPLIES | 19.99 |
| 188337 | GREAT LAKES POWER & LIGHTING INC. | BUILDING MAINTENANCE (PARKS MAINT, FIRE) | 2,940.82 |
| 188338 | GREAT LAKES WATER AUTHORITY | WATER & IWC CHARGES 2/2024 (W&S) | 782,339.17 |
| 188339 | GREEN OAK TIRE INC. | VEHICLE MAINTENANCE (DPW) | 2,104.00 |
| 188340 | GUARDIAN ALARM | BUILDING MAINTENANCE | 113.34 |
| 188341 | GUNNERS METERS & PARTS, INC. | WATER LINE MAINTENANCE | 265.00 |
| 188342 | HADLEY'S TOWING LLC | VEHICLE MAINTENANCE | 200.00 |
| 188343 | HALT FIRE,INC. | VEHICLE MAINTENANCE (FIRE) | 1,033.24 |
| 188344 | HARRELL'S, LLC | GROUNDS MAINTENANCE (PARKS MAINT) | 4,755.84 |
| 188345 | HARTMAN, PAUL | WITNESS | 27.60 |

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| 188346 | HAWAIIAN DANCERS LLC | DANCE PROGRAMS (PARKS & REC) | 5,055.60 |
| 188347 | HEALTH ALLIANCE PLAN | EMPLOYEE LIFE, LTD AND AD&D INSURANCE | 18,830.49 |
| 188348 | HELMLE, ANITA G | BLDG. BOND REFUND (ESCROW) | 800.00 |
| 188349 | HOME DEPOT CREDIT SERVICES | OPERATING SUPPLIES - CITYWIDE | 2,736.77 |
| 188350 | HOME SERVICE CORP | BLDG. PAYMENT REFUND (ESCROW) | 51.00 |
| 188351 | HTH COMMUNICATIONS | BLDG. BOND REFUND (ESCROW) | 1,000.00 |
| 188352 | HUBBERT, DOMINIC | YOUTH BASKETBALL | 105.00 |
| 188353 | IDEAL ELECTRIC INC | BLDG. PAYMENT REFUND (ESCROW) | 169.00 |
| 188354 | IMAGE 360 - NOVI | OPERATING SUPPLIES | 25.00 |
| 188355 | IMMEDIATE CONTRACTOR SERVICES, LLC | BLDG. BOND REFUND (ESCROW) | 1,500.00 |
| 188356 | IMPERIAL DADE | BUILDING MAINTENANCE (LIBRARY) | 1,154.18 |
| 188357 | INCOME POWER | BLDG. PAYMENT REFUND (ESCROW) | 104.00 |
| 188358 | INTEGRA REALTY RESOURCES-DETROIT | TAX TRIBUNAL APPRAISALS (ASSESSING) | 19,500.00 |
| 188359 | INTERSTATE RESTORATION, LLC | BIO HAZARD CLEANING OF JAIL CELLS (POLICE) | 1,393.49 |
| 188360 | INTRADO LIFE & SAFETY, INC | TELEPHONE MAINTENANCE | 430.00 |
| 188361 | ISCG, INC. | OFFICE SUPPLIES (IT) | 4,689.75 |
| 188362 | JACK DOHENY SUPPLIES INC | WATER LINE MAINTENANCE (WATER & SEWER) | 5,506.10 |
| 188363 | JANSON, PAMELA L. | OLDER ADULTS FITNESS | 486.00 |
| 188364 | JAPAN BUSINESS SOCIETY OF DETROIT | MEMBERSHIPS | 75.00 |
| 188365 | JOE'S TRAILER MFG INC | EQUIPMENT MAINTENANCE | 135.72 |
| 188366 | JOHNSON, ANTHONY W. | YOUTH BASKETBALL | 175.00 |
| 188367 | KAPLAN, DAVID J | HISTORICAL COMMISSION | 230.00 |
| 188368 | KIMBALL MIDWEST | OPERATING SUPPLIES (DPW, STREETS, POLICE) | 2,687.85 |
| 188369 | KRONK, ADAM | YOUTH BASKETBALL | 70.00 |
| 188370 | LAKESHORE LEARNING MATERIALS | LIBRARY BOOKS | 133.21 |
| 188371 | LAVEIRGE, WILFORD | YOUTH BASKETBALL | 70.00 |
| 188372 | LENNY'S HOME SERVICES | HCD (COMM DEV BLOCK GRANT) | 22,759.00 |
| 188373 | LGC GLOBAL INC. | CONSTRUCTION: NOVI RD/ 13 MILE RD PCCP (W&S) | 638,686.39 |
| 188374 | LIBRARY NETWORK, THE | ELECTRONIC RESOURCES (LIBRARY) | 4,603.74 |
| 188375 | LOKAR, IRIS J. | OLDER ADULTS FITNESS | 403.20 |
| 188376 | LOKKEN, ROBIN S. | YOUTH BASKETBALL | 140.00 |
| 188377 | LOOMIS | ARMORED CAR SERVICES | 590.07 |
| 188378 | M-2 AUTO PARTS, INC. | VEHICLE MAINTENANCE | 420.19 |
| 188379 | M/I HOMES OF MICHIGAN LLC | BLDG. BOND REFUND (ESCROW) | 750.00 |
| 188380 | MADISON ELECTRIC COMPANY | LIFT STATION MAINTENANCE | 160.14 |
| 188381 | MAJOR CONSTRUCTION GROUP, INC | STORM SEWER MAINT (DRAIN) | 3,794.66 |
| 188382 | MALINOWSKI, JUDITH M. | MEDICAL SERVICES - PRE EMPLOYMENT (P&F) | 3,000.00 |
| 188383 | MARCO TECHNOLOGIES, LLC | INTERNAL TECHNOLOGY | 101.37 |
| 188384 | MCKENNA ASSOCIATES INC | HCD (COMM DEV BLOCK GRANT) | 8,243.75 |
| 188385 | MEADOWBROOK ART CENTER | OPERATING SUPPLIES (IT, COMM REL) | 1,971.96 |
| 188386 | MEDORA BUILDING COMPANY | BLDG. BOND REFUND (ESCROW) | 500.00 |
| 188387 | MERRI-CRAFT FLORIST | VALENTINES DADS/DAUGHTER | 900.00 |
| 188388 | MESSNER, KAREN | REFUND PARKS | 36.00 |
| 188389 | METRO SEWER CLEANERS INC | BUILDING MAINTENANCE (FACILITIES) | 1,443.75 |
| 188390 | MICHIGAN LINEN SERVICE, INC. | BUILDING MAINTENANCE (POLICE, FIRE, FACILITIES) | 1,920.00 |
| 188391 | MICHIGAN.COM | PRINTING AND PUBLISHING - LEGAL ADS (CLERK) | 2,790.38 |
| 188392 | MIDWEST TAPE, LLC | AUDIO VISUAL MATERIALS (LIBRARY) | 1,652.18 |
| 188393 | MNM CONSTRUCTION LLC | HCD (COMM DEV BLOCK GRANT) | 5,000.00 |
| 188394 | MOE'S ON TEN | OLDER ADULTS SPECIAL EVENTS (PARKS & REC) | 1,229.58 |
| 188395 | MOTOR CITY HARLEY-DAVIDSON | VEHICLE MAINTENANCE | 799.98 |
| 188396 | MTECH | VEHICLE MAINTENANCE (DPW) | 1,273.60 |
| 188397 | MUNICIPAL WEB SERVICES, INC | WEB PAGE MAINTENANCE (COMM REL) | 6,021.00 |
| 188398 | NAK4FIT | SPORTS CAMPS (PARKS & REC) | 1,764.00 |
| 188399 | NOVI COMMUNITY SCHOOLS | YOUTH BASKETBALL (PARKS & REC) | 5,310.00 |
| 188400 | O'REILLY AUTO PARTS | VEHICLE MAINTENANCE (DPW) | 1,787.45 |
| 188401 | OAKLAND COUNTY REGISTER OF DEEDS | PARC VISTA LICENSE AGT ENTRANCE GATE | 30.00 |
| 188402 | OAKLAND COUNTY REGISTER OF DEEDS | DISCHARGE CLAIM OF INTEREST | 30.00 |
| 188403 | OAKLAND COUNTY REGISTER OF DEEDS | WOODLAND EASEMENT CATHOLIC CENTRAL | 30.00 |
| 188404 | OAKLAND COUNTY REGISTER OF DEEDS | SELF STORAGE CONSERVATION EASEMENT | 30.00 |
| 188405 | OAKLAND COUNTY TREASURERS | CONFERENCE | 487.26 |
| 188406 | OCCUPATIONAL HEALTH CENTERS | MEDICAL SERVICE | 416.00 |
| 188407 | ODP BUSINESS SOLUTIONS, LLC | INTERNAL TECHNOLOGY POLICE | 59.67 |
| 188408 | ORCHARD, HILTZ & MC CLIMENT | PROFESSIONAL SERV - VAR PROJ (STREETS, DRAIN, CIP) | 103,609.12 |
| 188409 | ORIENTAL TRADING CO INC | LIBRARY PROGRAMMING | 456.46 |
| 188410 | ORKIN | BUILDING MAINTENANCE | 755.92 |
| 188411 | OSCAR W. LARSON CO. | GASOLINE AND OIL | 1,880.30 |

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| 188412 | PAHUJA, ATUL | REFUND PARKS | 150.00 | |
| 188413 | PARAGON LABORATORIES, INC. | WATER LINE MAINTENANCE | 75.00 | |
| 188414 | PETRES, RUTH | REFUND PARKS | 265.00 | |
| 188415 | PHOENIX SAFETY OUTFITTERS | SUPPLIES UNIFORMS (FIRE) | 1,877.50 | |
| 188416 | POSITIVE CONCEPTS, INC. | OPERATING SUPPLIES | 720.92 | |
| 188417 | PRECISE MRM LLC | INTERNAL TECHNOLOGY - CITYWIDE (IT) | 3,775.00 | |
| 188418 | PRINTING SYSTEMS | ELECTION SUPPLIES (CLERK) | 4,231.29 | |
| 188419 | QUILL CORPORATION | OFFICE SUPPLIES | 471.44 | |
| 188420 | RAPID ROOFING | BUILDING MAINTENANCE (FACILITIES) | 1,377.00 | |
| 188421 | RAUHORN ELECTRIC | BLDG. BOND REFUND (ESCROW) | 5,000.00 | |
| 188422 | RAYBURN PROPERTIES LLC | BLDG. BOND REFUND (ESCROW) | 5,000.00 | |
| 188423 | RAYBURN PROPERTIES, LLC | BLDG. BOND REFUND (ESCROW) | 500.00 | |
| 188424 | RESOURCE RECOVERY AND RECYCLING | RECYCLING CENTER (DPW) | 2,006.00 | |
| 188425 | RISE ABOVE FIRE TRAINING & TOOLS | CONFERENCE (FIRE) | 4,500.00 | |
| 188426 | RKA PETROLEUM COS., INC | GASOLINE AND OIL | 27,935.20 | |
| 188427 | RM DISTRIBUTORS | CONFERENCE | 850.00 | |
| 188428 | ROAD COMMISSION FOR OAKLAND COUNTY | COST SHARE: NOVI ROAD 9 MILE TO 10 MILE (STREETS) | 35,563.27 | |
| 188429 | ROBY, KEVIN | CONFERENCE EXPENSES | 286.00 | |
| 188430-188432 | ROSATI, SCHULTZ, JOPPICH | LEGAL FEES (GF, ECROW) | 31,072.30 | |
| 188433 | ROSS, MICHAEL | YOUTH SPORTS (PARKS & REC) | 1,430.00 | |
| 188434 | ROWERDINK INC | VEHICLE MAINTENANCE (POLICE) | 1,918.74 | |
| 188435 | ROYAL TRUCK & TRAILER SALES & SVC | VEHICLE MAINTENANCE | 337.12 | |
| 188436 | RUGGIRELLO, CHARLES | YOUTH VOLLEYBALL | 210.00 | |
| 188437 | SAKURA NOVI RESIDENTIAL, LLC | BLDG. PAYMENT REFUND (ESCROW) | 580.00 | |
| 188438 | SAM'S CLUB DIRECT | OPERATING SUPPLIES | 304.13 | |
| 188439 | SCHINDLER ELEVATOR CORPORATION | BUILDING MAINTENANCE (LIBRARY) | 3,798.12 | |
| 188440 | SEILER INSTRUMENT AND MANUFACTURING | INTERNAL TECHNOLOGY (IT) | 1,825.00 | |
| 188441 | SEXTON, KRAIG | YOUTH BASKETBALL | 140.00 | |
| 188442 | SITEONE LANDSCAPE SUPPLY, LLC | GROUNDS MAINTENANCE | 238.32 | |
| 188443 | SMART BUSINESS SOURCE LLC | OFFICE SUPPLIES - CITYWIDE (FINANCE) | 2,342.32 | |
| 188444 | SPALDING DE DECKER | PROFESSIONAL SERVICES (ESCROW) | 117,251.16 | |
| 188445 | VOID | VOID | - | V |
| 188446 | SPARTAN DISTRIBUTORS INC | LAWN MOWER MAINTENANCE | 891.28 | |
| 188447 | SPECTRUM PRINTERS INC | ELECTION SUPPLIES (CLERK) | 1,068.73 | |
| 188448 | SQUEAKY SHINE CAR WASH | VEHICLE MAINTENANCE | 610.00 | |
| 188449 | STATE OF MICHIGAN | MARCH 2024 SALES TAX | 3.90 | |
| 188450 | STATE OF MICHIGAN | OUTSIDE DATA PROCESSING | 132.00 | |
| 188451 | STATE OF MICHIGAN - LARA | BUILDING MAINTENANCE | 450.00 | |
| 188452 | STIMAC, JOHN M & BETH D TRUST | BLDG. BOND REFUND (ESCROW) | 1,000.00 | |
| 188453 | SUTTLE ENTERPRISES LLC | PROFESSIONAL SERVICES | 500.00 | |
| 188454 | SYSTEMP CORPORATION | EQUIPMENT MAINT (POLICE, FIRE, ACILITIES, W&S) | 18,064.42 | |
| 188455 | TEL SYSTEMS | COMPUTER SUPPLIES | 347.00 | |
| 188456 | TELNET WORLDWIDE INC. | TELEPHONE (LIBRARY) | 1,015.55 | |
| 188457 | TOKIO MARINE HCC - PUBLIC RISK GRP | INSURANCE DEDUCTIBLE (GF) | 2,066.19 | |
| 188458 | TRUCK & TRAILER SPECIALTIES, INC. | VEHICLE MAINTENANCE | 564.30 | |
| 188459 | UNDERGROUND CONTRACTORS INC | BLDG. BOND REFUND (ESCROW) | 1,500.00 | |
| 188460 | US POSTAL SERVICE | POSTAGE - CITYWIDE | 50,000.00 | |
| 188461 | VARIPRO | EMPLOYEE FLEXIBLE SPENDING REIMBURSMENT | 4,438.23 | |
| 188462 | VARSITY LINCOLN, INC | VEHICLE MAINTENANCE | 260.18 | |
| 188463 | VERITACORP | BLDG. BOND REFUND (ESCROW) | 1,500.00 | |
| 188464 | VERITACORP | BLDG. BOND REFUND (ESCROW) | 1,500.00 | |
| 188465 | W.W. WILLIAMS MIDWEST, INC. | VEHICLE MAINTENANCE (DPW) | 6,083.96 | |
| 188466 | WARREN PUBLIC LIBRARY | LIBRARY BOOK FINES | 32.00 | |
| 188467 | WEAKLEY III, ROOSEVELT | YOUTH BASKETBALL | 140.00 | |
| 188468 | WEINGARTZ SUPPLY CO INC | EQUIPMENT MAINTENANCE (PARKS MAINT) | 1,855.40 | |
| 188469 | WORLDVIEW TECHNOLOGIES GROUP | INTERNAL TECHNOLOGY (ICE ARENA) | 1,350.00 | |
| 188470 | YALDO, THMEAA | WITNESS | 16.80 | |
| 188471 | ZYLMAN, BRAD | LIBRARY PROGRAMMING | 100.00 | |
| | | **GRAND TOTAL** | **$ 3,006,484.08** | |

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| GENERAL FUND | 101 | 587,921.35 |
| MAJOR STREET FUND | 202 | 138,427.06 |
| LOCAL STREET FUND | 203 | 151,614.13 |
| MUNICIPAL STREET FUND | 204 | 51,239.50 |
| PARKS, REC & CULTURAL SVCS FUND | 208 | 38,838.85 |

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| DRAIN FUND | 211 | 40,997.17 |
| TREE FUND | 213 | 2,852.50 |
| RUBBISH COLLECTION FUND | 226 | 176,989.25 |
| LIBRARY FUND | 271 | 33,483.37 |
| LIBRARY CONTRIBUTION FUND | 272 | 357.61 |
| COMMUNITY DVLPMNT BLOCK GRANT FUND | 274 | 28,880.25 |
| CAPITAL IMPROVMENT PRGRM (CIP) FUND | 401 | 23,742.68 |
| PEG CABLE - CAPITAL FUND | 463 | 80,497.90 |
| WATER AND SEWER FUND | 592 | 1,528,247.11 |
| SELF INSURANCE - HEALTH CARE FUND | 677 | 14,560.00 |
| AGENCY FUND | 701 | 89,679.41 |
| CURRENT TAX COLLECTION FUND | 703 | 3,278.47 |
| MI HIDTA | 725 | 14,877.47 |
| **GRAND TOTAL** | | **$ 3,006,484.08** |