PROVIDENCE MEADOWS
JZ25-24

JZ25-24 PROVIDENCE MEADOWS PRO PLAN WITH REZONING 18.752

Public hearing at the request of Robertson Brothers for initial submittal and eligibility discussion for a Zoning Map Amendment from Light Industrial to High-Density Multiple Family with a Planned Rezoning Overlay. The subject site is approximately 31 acres and is located west of Providence Parkway, south of Grand River Avenue (Section 17). The applicant is proposing to develop a 161-unit townhome development.

REQUIRED ACTION

Discussion of the initial submittal and eligibility of the rezoning request from Light Industrial (I-1) to High-Density Multiple Family (RM-2) with a Planned Rezoning Overlay.

REVIEW	RESULT	DATE	COMMENTS
Planning	**Concerns Noted**	12-3-25	• **Benefits offered do not outweigh detriments such as on abutting existing general industrial properties** • **Use not consistent with Future Land Use Map** • **Concerns with compatibility adjacent to Heavy Industrial zoning, which will become non-conforming, and limit uses on the properties** • **Deviations for building setback on west side** *(Supported)* • **Deviation for total number of rooms** *(Supported)* • **Deviation for building orientation** *(Supported)* • **Deviation for distance between buildings** *(Supported)* • **Deviation for distance between parking and building** *(Supported)* • **Deviation for Pedestrian connectivity where sidewalks only provided on one side of the road** *(May be Supported)* • **Deviation for lack of covered bike parking** *(Not Supported)* • **Deviation for lack of parking lot lighting** *(Not Supported)*
Engineering	No Significant Concerns	11-10-25	• Items to be addressed on subsequent submittals
Landscaping	**Concerns Noted**	10-24-25	• **Deviation for lack of greenbelt berms** *(Supported)*

			• **Deviations for lack of berm/ landscaping and street trees in ITC easement** *(Supported)* • **Deviation for deficiency in street trees on GRA and Providence Pkwy** *(May be Supported)* • **Deviation for significant deficiencies in multi-family landscaping – foundations, unit trees, and interior drive trees** *(Not Supported)*
Wetlands	No Significant Concerns	11-10-25	• **Significant areas of regulated wetlands on the site – impacts to 0.53 acre** • **Wetland permits required** • **Adequate wetland mitigation appears to be proposed.**
Woodlands	**Concerns Noted**	11-10-25	• **Insufficient information provided to calculate woodland impacts** • Items to be addressed on subsequent submittals
Traffic	No Significant Concerns	8-13-25	• **Deviation for parking along street with centerline radius less than 230-ft** • **Deviation for parking on a major drive** • Items to be addressed in Site Plan submittals
Traffic Impact Statement Review	**Concerns Noted**	11-12-25	• **Traffic signal at Providence Pkwy and Grand River is warranted, but not proposed**
Façade	**Concerns Noted**	11-10-25	• Facades in compliance with Section 5.15 • **Design does not represent an enhancement to the area as described in PRO Ordinance**
Fire	No Significant Concerns	10-29-25	• Items to be addressed in future submittals

Planning Commission's opportunity to Comment on the request (No Motion Needed)

The Planning Commission is invited to provide comment on the initial submittal and eligibility of the proposal to rezone the subject property from Light Industrial (I-1) to High Density Residential (RM-2) with a Planned Rezoning Overlay Plan. Planning Commission 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.

As stated in the 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.

CONDITIONS

The following is a summary of example conditions *that the applicant might consider in its efforts 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. Preservation of _____ acres of City regulated woodlands in conservation easement
2. Preservation of _____acres of City regulated wetlands in conservation easement
3. Density shall not exceed 6.54 dwelling units per acre (More limiting than the dwelling units per acre allowed in the RM-2 District)
4. Exceeding the usable open space requirement by 58%.
5. Providing the community amenities shown in the PRO Plan
6. Dedication of ____ linear feet (or acres) of Right of Way
7. Building height will be limited to 35 feet.
8. The landscape plan will exceed the required 50% native species.
9. Specifying uses of land that will not be permitted (which are otherwise allowed in the RM-2 District).
10. Improvements or other measures to improve traffic congestion or vehicular movement with regard to existing conditions or conditions anticipated to result from the development.
11. Creation or preservation of public parkland or open space.

The suggested types of conditions of Subsection C of the PRO Ordinance are summarized in the table below. The Full text of Ordinance Amendment, including Subsection C, can be found in Zoning Ordinance Section 7.13.

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.
(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**	Number of units can be stated as maximum allowed. Additional restrictions could include limits on parking, height of buildings.
(3) Provision for setbacks, landscaping, and other buffers in a manner that exceeds what the Ordinance of the Code of Ordinances can require.	**Yes**	Open space exceeds requirement by 58%. Landscape buffers are proposed along the northwest property line where the property is adjacent to I-2, General Industrial zoning and land uses.
(4) Exceptional site and building design, architecture, and other features beyond the minimum requirements of the Ordinance or the Code of Ordinances.	No	The building materials comply with minimum standards, but design does not qualify as exceptional. The layout of the buildings is such that the attractive front facades and landscaping are only visible from the interior pedestrian walkways. Only the plain building rear faces with no foundation landscaping are visible to automobile traffic or visitors to the site, creating a stark appearance.
(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.	**TBD**	Areas of wetland and woodlands are proposed to be preserved. The impacts are significant although the layout attempts to minimize encroachment. Wetland impacts require mitigation, which is proposed in excess of requirements. Additional information needed to determine woodland impacts.
(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**	Use to be limited to multi-family residential

(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**	8-foot wide shared-use pathway proposed within the site
(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.	No	Not proposed.
(9) Improvements to site drainage (storm water) or drainage in the area of the development not otherwise required by the Code of Ordinances.	No	Not proposed.
(10) Limitations on signage.	No	Not proposed.
(11) Creation or preservation of public or private parkland or open space.	**Yes**	Creation of a small trailhead area within the Henry Ford Health campus
(12) Other representation, limitations, improvements, or provisions approved by the City Council.	TBD	

BENEFITS TO THE PUBLIC

The following is a summary of features 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 (from the applicant's narrative):*

1. Public Trail Access Through the Site: A pedestrian pathway will be constructed to provide public access from the future sidewalk paralleling Grand River Avenue through the development to Providence Parkway. This pathway will feature landscape plantings and offer scenic views of the site's natural features. Together, the sidewalk and pathway will create a vital connection between the Grand River corridor and the Henry Ford and ITC trail systems. **The proposed pedestrian pathway will be parallel, and in very close proximity, to the existing sidewalk on Providence Parkway. Future homeowners may object to the public being able to walk or bike through their community and attempt to limit public access. The applicant should provide more details for how public access to this pathway would be protected in the long term. Alternatively, since the pathway does not offer a significant enhancement over the one on Providence Parkway, alternative benefits to the public could be considered such as those recommended in the Active Mobility Plan.**

2. Trailhead Connection and Signage: Development of a new trailhead that links to the larger Henry Ford and ITC trail system. **Staff agrees this would be an enhancement that would benefit the greater public. It may require a public access easement be granted by Henry Ford Health and indication of which party will be responsible for the maintenance of the improvements.**

3. Attainable Housing Option: The development will offer 163 for-sale townhomes specifically designed to meet the demand for attainable housing in Novi. These homes will offer a more accessible price point for young professionals, first-time buyers, and essential workers, including nurses, doctors, and administrative staff employed at the adjacent Henry Ford Health campus. **The applicant should provide more details about how attainability will be measured. Will a condition be offered in the PRO Agreement stating the units will not be sold above a certain price point, or some similar limitation to achieve "attainability"? If not, what assurance does the City have these would be anything other than fully market rate units, not necessarily fulfilling this representation?**

4. Preservation of Wetlands and Woodlands: The site has been carefully planned to minimize impacts on its natural features, including wetlands and woodlands, creating a balanced integration of residential living and nature. These areas will be permanently protected through a conservation easement, ensuring their preservation and ecological value for future residents and the broader community. Further, through meetings with adjacent homeowners, we have revised the plans to provide a 60' minimum natural buffer along the southern property line. **The preservation of natural features and mitigated areas are considered a benefit to the public at large. However, the applicant should be sure to address regulated woodland comments in subsequent submittals.**

DEVIATIONS

At this time, the proposed PRO Concept Plan includes the following ordinance deviation requests:

1. **Building Setbacks** *(Sec 3.1.7.D):* A Zoning Ordinance deviation is requested to reduce the building setbacks from 75 feet to 50 feet along the west property line. **Along the west side, it appears that many of the existing trees will be preserved to provide a buffer from the adjacent property. That portion of the abutting property contains a stormwater management pond, but is otherwise undeveloped.**

2. **Total Number of Rooms** (Sec. 3.8.1.A): A Zoning Ordinance deviation is requested to allow a greater number of rooms than the RM-2 District permits for buildings less than 4-stories (644 rooms proposed, 536 permitted). **The RM-2 district allows a greater number of rooms for buildings 4 stories or taller, with corresponding higher units. This deviation has been permitted previously, as the overall density permitted by the district is not exceeded.**

3. **Building Orientation** *(Sec. 3.8.2.D):* A Zoning Ordinance deviation is requested to revise the required orientation of the buildings from a minimum of 45 degrees in certain locations. This allows for a more uniform site layout, and the buildings parallel to the property lines are not immediately adjacent to other uses. **All buildings are either parallel or perpendicular to property lines abutting non-residential districts. This deviation has been requested and granted for many residential projects in the City in the last 5 years.**

4. **Distance between Buildings** *(Sec 3.8.2.H): A Zoning Ordinance deviation is requested to reduce the building separation distance from the calculated formula as shown on sheet*

C7 to a minimum of 15 feet. **This deviation enables the layout of this project to fit within the available space while minimizing wetland and woodland impacts.**

5. **Parking along Major Drives** *(Sec. 5.10)*: A Zoning Ordinance deviation is requested to allow for perpendicular parking on a major drive. **Perpendicular parking for guests is proposed toward the end of Harborfield Drive where traffic speeds should be low. The parking spaces will not cause any more disruption on the roadway than cars that will be backing out of the driveways.**

6. **Parking along Curves** (Sec. 5.10): A Zoning Ordinance deviation may be required to allow on-street parking on curves with less than a 230-foot centerline radius. **The applicant should review the areas where parking is in such curves and consider moving the spaces, or review to ensure a safe and adequate sight distance is provided.**

7. **Covered Bike Parking** (Sec. 5.16.4): When 20 or more bike parking spaces are required, 25% of the spaces shall be covered. The applicant requests a deviation**. Applicant response letter indicates bike parking will be provided in unit garages.**

8. **Parking Distance to Buildings** (Sec. 3.8.2.F): In some locations, off-street parking spaces are within 15 feet of the adjacent building. The ordinance requires 25-feet between parking spaces and a dwelling structure that contains openings involving living areas. **These locations generally occur near the sides of buildings. The elevations show there are no windows or openings on these side facades.**

9. **Pedestrian Connectivity** (Sec. 3.8.2.G): Five-foot sidewalks are required on both sides of private drives. It appears that an 8-foot sidewalk is proposed on only one side of Harborfield Drive. Other roadways have sidewalks at the "front" of the buildings. **Please provide the required sidewalks, or provide a justification for the deviation.**

10. **Parking Lot Lighting** (Section 5.7.3.J./5.7.3.O): Parking areas should be lit at a minimum 0.2 fc in residential districts for safety. The applicant requests a deviation from the requirement to provide lighting in the parking areas. **No justification is noted for the deviation. Staff suggests that bollard lighting could provide necessary lighting without being intrusive to residents.**

11. **Right-of-Way Landscaping** (Sec. 5.5.3.B.ii): A deviation for the lack of required 3-foot berm along Grand River Avenue and Providence Parkway due to the existing natural areas to be preserved, and the presence of the ITC easement. **This is supported by staff because the buildings and parking areas will not be close to the frontages.**

12. **Right-of-Way Landscaping** (Sec. 5.5.3.B.ii): A landscape deviation to allow a deficiency in street trees along Grand River Avenue. **This is supported by staff because of the presence of utility conflicts.**

13. **Right-of-Way Landscaping** (Sec. 5.5.3.B.ii): A landscape deviation to allow a deficiency in greenbelt landscaping on Grand River Avenue. **This is supported by staff for the area that falls within the ITC Easement.**

14. **Right-of-Way Landscaping** (Sec. 5.5.3.B.iii.): A landscape deviation to allow a deficiency in street trees along Providence Parkway access easement. **This may be supported by staff. Please add trees where possible and/or explain the need for the deviation if the required trees cannot be provided.**

15. **Right-of-Way Landscaping** (Sec. 5.5.3.B.iii.): A landscape deviation to allow a deficiency in street trees along Harborfield Drive within the ITC easement. **This is supported by staff.**

16. **Right-of-Way Landscaping** (Sec. 5.5.3.B.ii): A deviation for the lack of greenbelt plantings Providence Parkway. **This may be supported by staff. The applicant is asked to clearly identify the existing trees to remain and count toward the required tree count on the plan view and in the calculations, and add trees to remove any remaining deficiencies.**

17. **Multi-Family Landscaping** (Sec. 5.5.3.F.iii): A landscape deviation for the deficiency multi-family unit trees and foundation landscaping. **This deviation is not supported by staff as there are opportunities to more closely comply with the ordinance standards.**

MAPS

Location

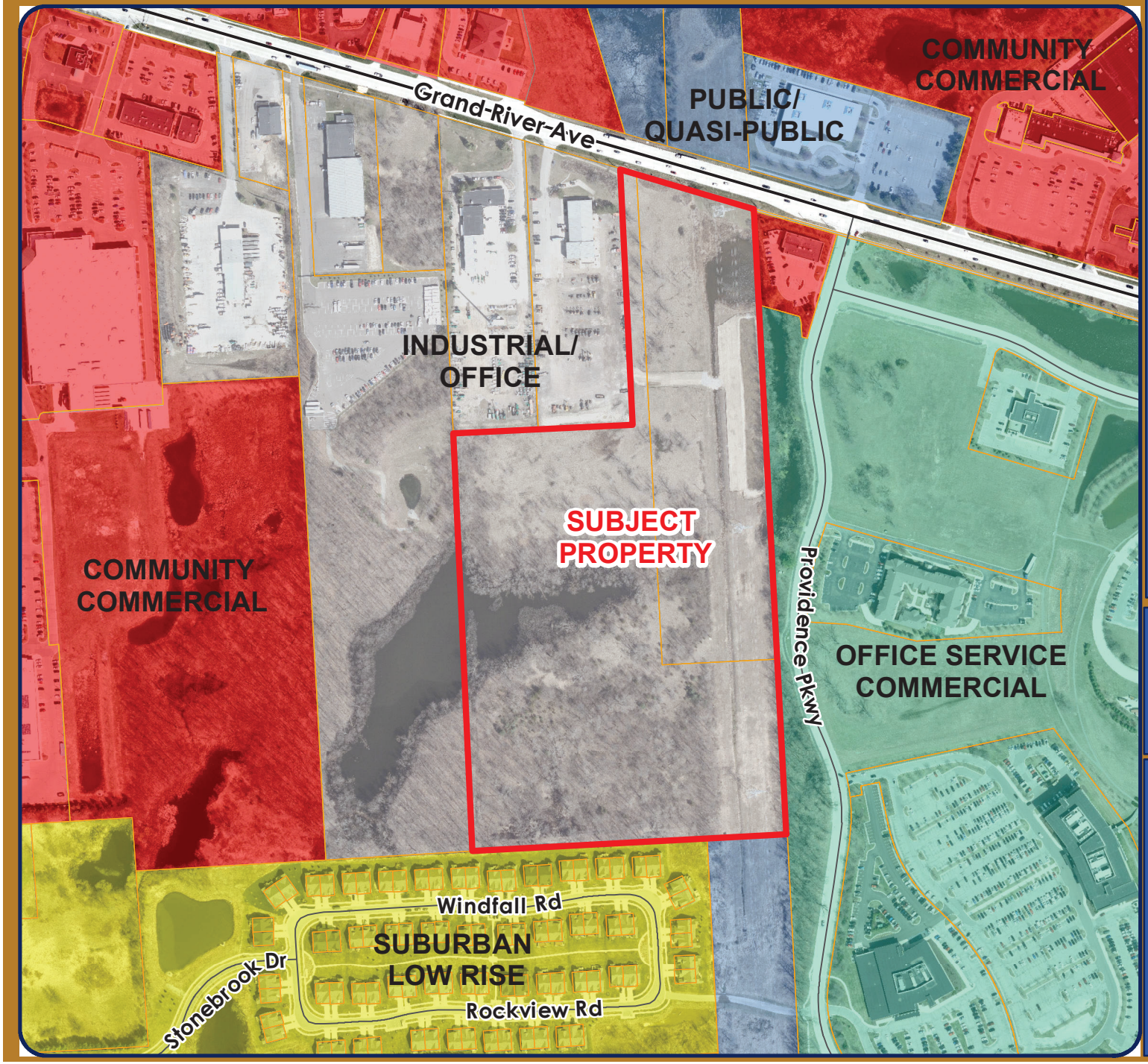
Zoning

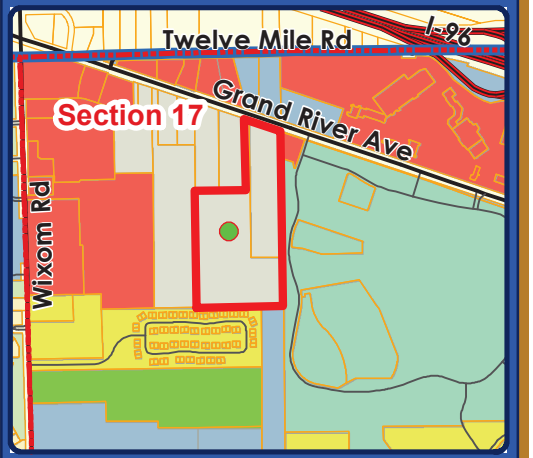
Future Land Use

Natural Features

PROVIDENCE PARK WEST PRO

FUTURE LAND USE





LEGEND

- Single Family
- Suburban Low-Rise
- Public Park
- Private Park
- Public/Quasi-Public
- Office, Service, Commercial
- Community Commercial
- Industrial/Office
- 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: 8/13/25
Project: PROV PARK WEST
Version #: 1

Feet
0 90 180 360 540

1 inch = 417 feet

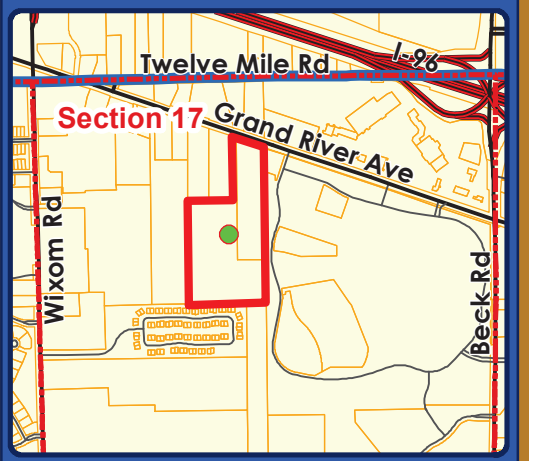
MAP INTERPRETATION NOTICE

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PROVIDENCE PARK WEST 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

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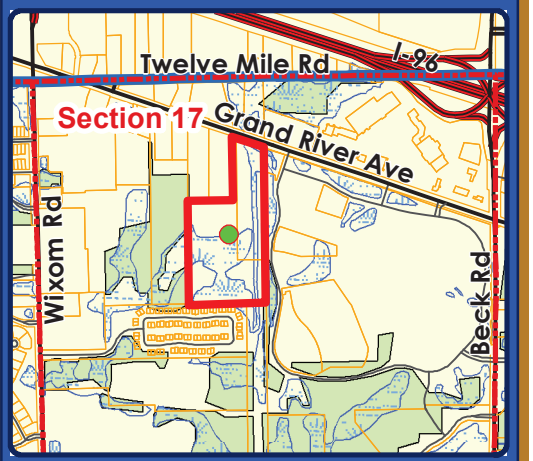
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PROVIDENCE PARK WEST PRO

NATURAL FEATURES





LEGEND

- WETLANDS
- WOODLANDS
- Subject Property

City of Novi
Dept. of Community Development
City Hall / Civic Center
45175 W Ten Mile Rd
Novi, MI 48375
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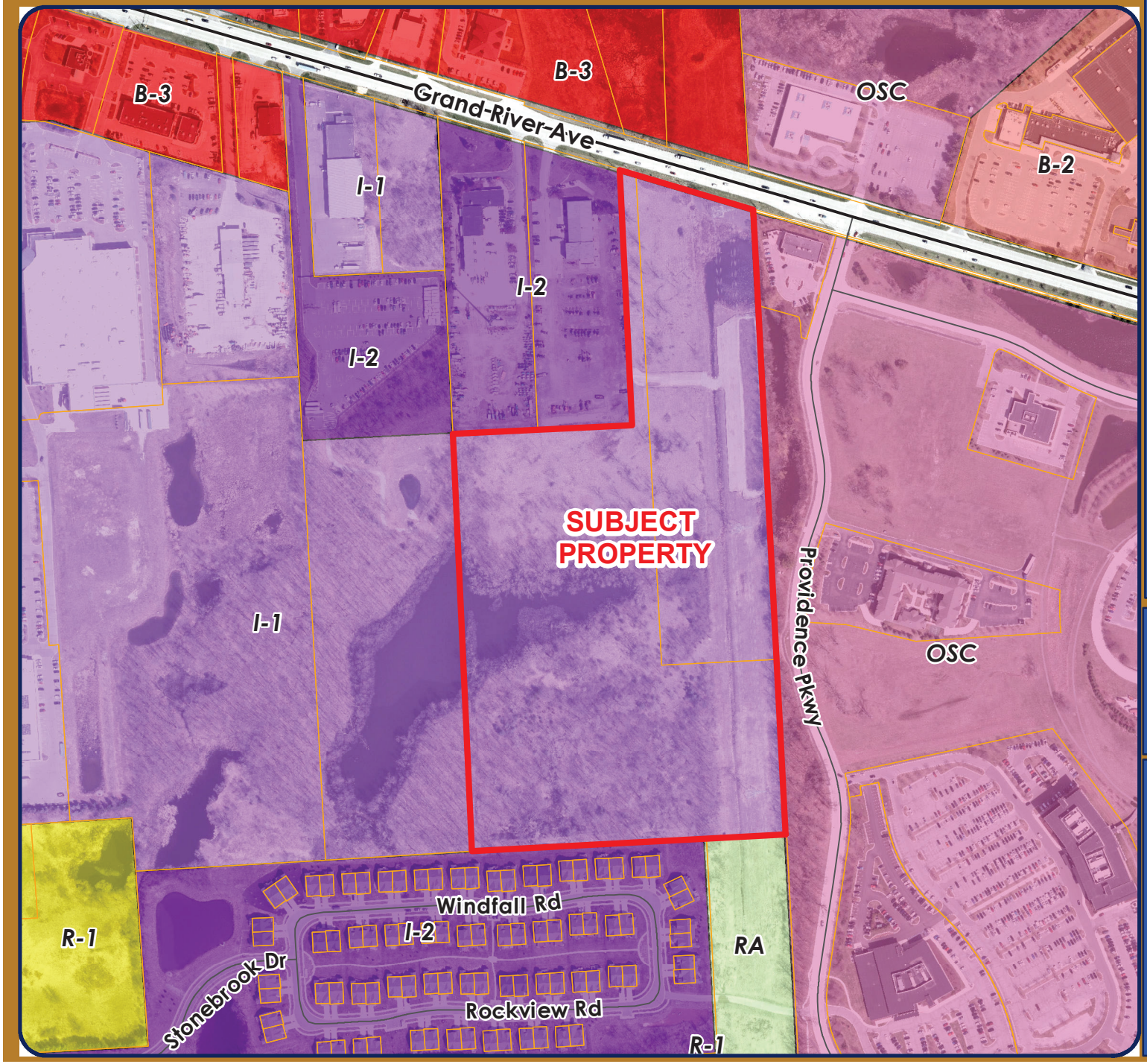
1 inch = 417 feet

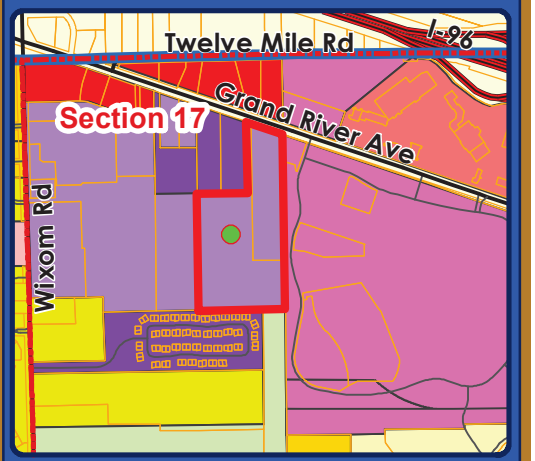
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PROVIDENCE PARK WEST PRO

ZONING





LEGEND

- R-A: Residential Acreage
- R-1: One-Family Residential District
- R-3: One-Family Residential District
- RM-1: Low-Density Multiple Family
- B-1: Local Business District
- B-2: Community Business District
- B-3: General Business District
- I-1: Light Industrial District
- I-2: General Industrial District
- OSC: Office Service Commercial
- Subject Property

City of Novi
Dept. of Community Development
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PRO CONCEPT PLAN

Site Data:

Gross Site Area:	31.32 Ac.
Net Site Area:	24.61
Proposed Units:	161
Proposed Density:	6.54 Du./Ac.
Building Setbacks:	
- Front Yard:	50' min.
- Building Separation:	16'-4" min.
Parking:	
- Garage Parking:	322 spaces
- Guest Parking:	72 spaces
- Parking Distribution:	2.45 spaces / Du.
Road Width:	20' / 24' / 28'
Road Length:	
- 20' width (EVA):	460 LF
- 24' width:	3,298 LF
- 28' width:	1,132 LF
Road Length per Unit:	30.73 LF/Du.
Wetland Impact:	0.53 Ac.
Total Open Space:	24.72 Ac. (78.93% of Gross Site Area)

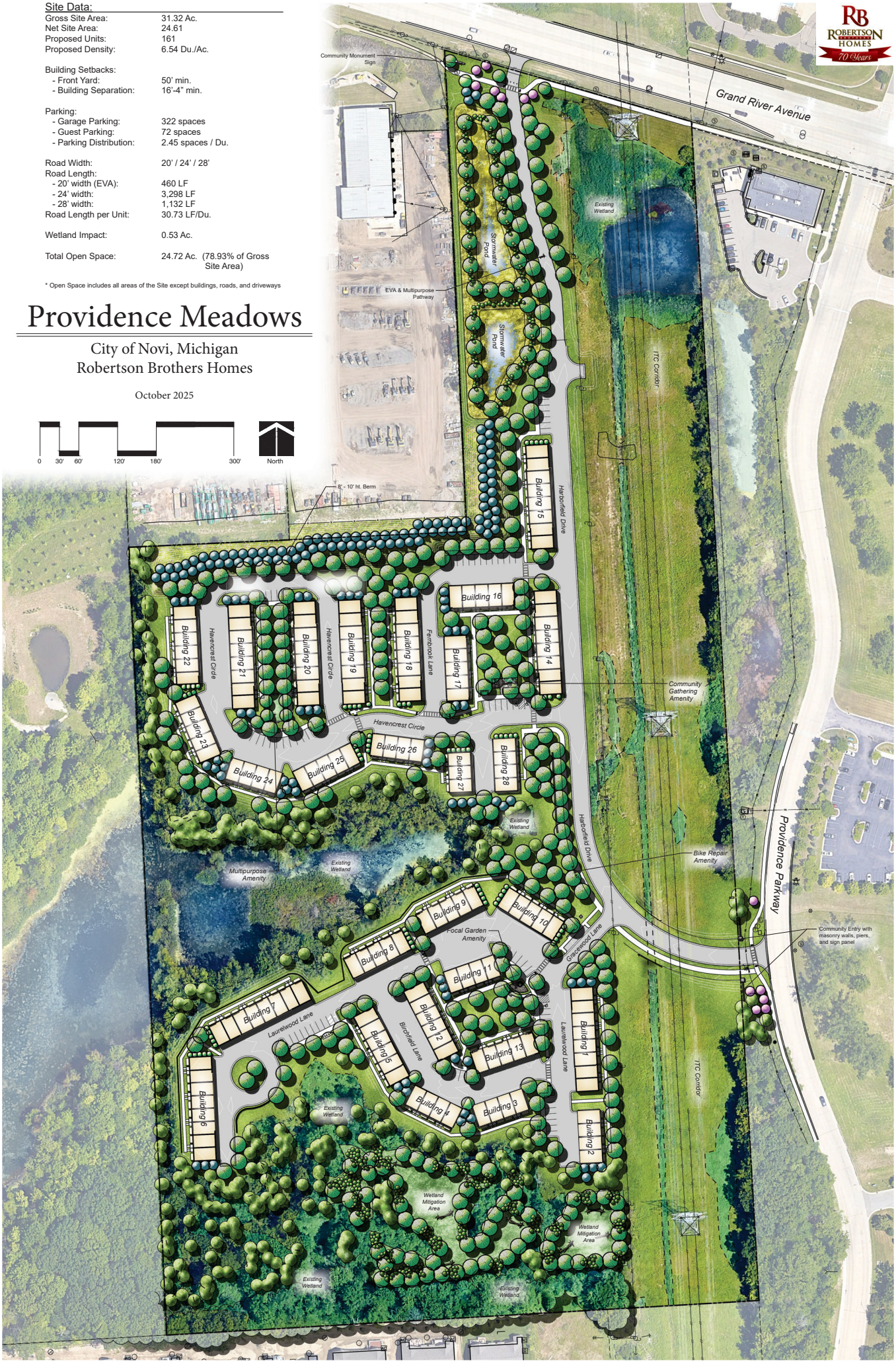
* Open Space includes all areas of the Site except buildings, roads, and driveways

Providence Meadows

City of Novi, Michigan
Robertson Brothers Homes

October 2025

0 30' 60' 120' 180' 300' North



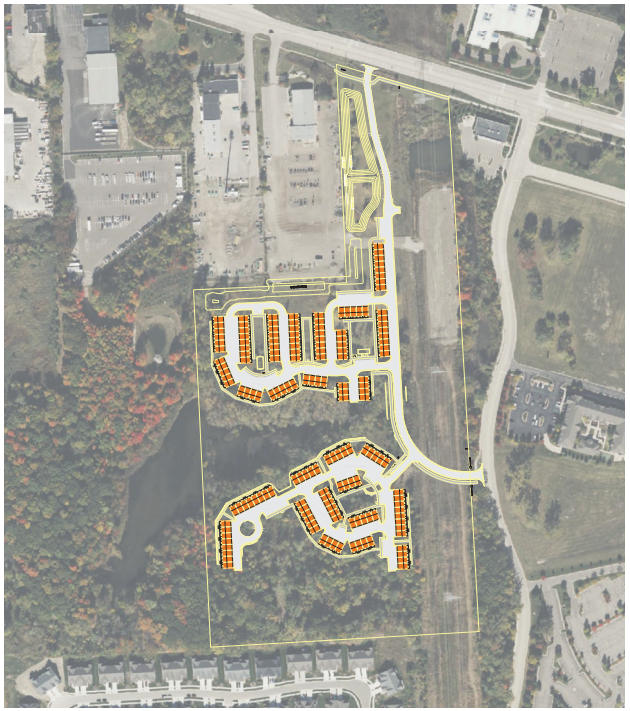
PRO PLANS FOR:
PROVIDENCE MEADOWS

PART OF THE NORTH WEST 1/4 OF SECTION 17, T.1N., R.8E.,
CITY OF NOVI, OAKLAND COUNTY, MI

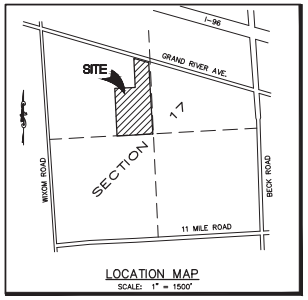
PREPARED FOR:

ROBERTSON BROTHERS HOMES

6905 TELEGRAPH ROAD STE. 200,
BLOOMFIELD HILLS, MI 48301

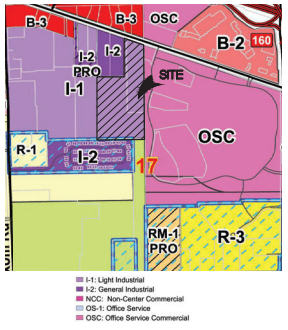


GRAPHIC SCALE
200 0 100 200 400
(IN FEET)
1" = 200'



LOCATION MAP
SCALE: 1" = 1500'

ZONING MAP



SHEET INDEX

C1	COVER SHEET
C2–C6	ALTA/NSPS LAND TITLE SURVEY AND BOUNDARY/TOPOGRAPHIC SURVEY
C7	OVERALL SITE PLAN
C8–C10	SITE PLAN
C11–C13	UTILITY PLAN
C14–C16	GRADING PLAN
C17	STORM WATER MANAGEMENT PLAN
C18	EASEMENT PLAN
C19	WETLAND PLAN
C20	FIRE TRUCK ROUTING PLAN
C21	NOTES AND DETAILS
	LANDSCAPE PLANS
	PHOTOMETRIC PLANS
	ARCHITECTURE PLANS

FIRE DEPARTMENT NOTES

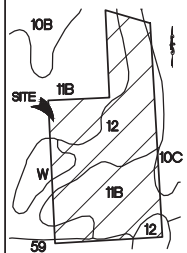
1. All fire hydrants & water mains shall be installed & in service prior to above foundation building construction.
2. All roads shall be paved and capable of supporting 35 tons prior to construction above foundation.
3. Building addresses shall be posted facing the street. Addresses shall be a minimum 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. 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.

SOILS MAP

SCALE: 1" = 500'



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
11B – CAPAC SANDY LOAM, 0 TO 4 PERCENT SLOPES
12 – BROOKSTON AND COLWOOD LOAMS
27 – HOUGHTON AND ADRIAN MUCKS
59 – URBAN LAND
W – WATER

LANDSCAPE PLANS PROVIDED BY:

LAND DESIGN STUDIO
750 FOREST AVE. STE. 101
BIRMINGHAM, MICHIGAN 48009
PHONE: 248.770.3465

STATE OF MICHIGAN
JASON A RICKARD
License No. 6201046145
LICENSED PROFESSIONAL ENGINEER

ENGINEERING PLANNING
LAND DEVELOPMENT CONSULTING
SKE GROUP
39205 COUNTRY CLUB DR. STE C8
FARMINGTON HILLS, MI 48331
(248.308.3331)

SUBMITTAL DATE: 07-18-25

NO.	REVISION	DATE
1.	REV. PER CITY REVIEW	08-25-25
2.	REV. PER CITY REVIEW	10-17-25

811
3 WORKING DAYS BEFORE YOU DIG
CALL MISS DIG
1-800-482-7171
TOLL FREE FOR THE LOCATION OF UNDERGROUND FACILITIES

PROJECT NUMBER: 24-283
PROJECT MANAGER: J. RICKARD
DRAWN BY: –
CHECKED BY: J. RICKARD
OFFICE: FARMINGTON HILLS

CLIENT INFO:
ROBERTSON HOMES
6905 TELEGRAPH ROAD, SUITE 200
BLOOMFIELD HILLS, MICHIGAN
947.257.5956

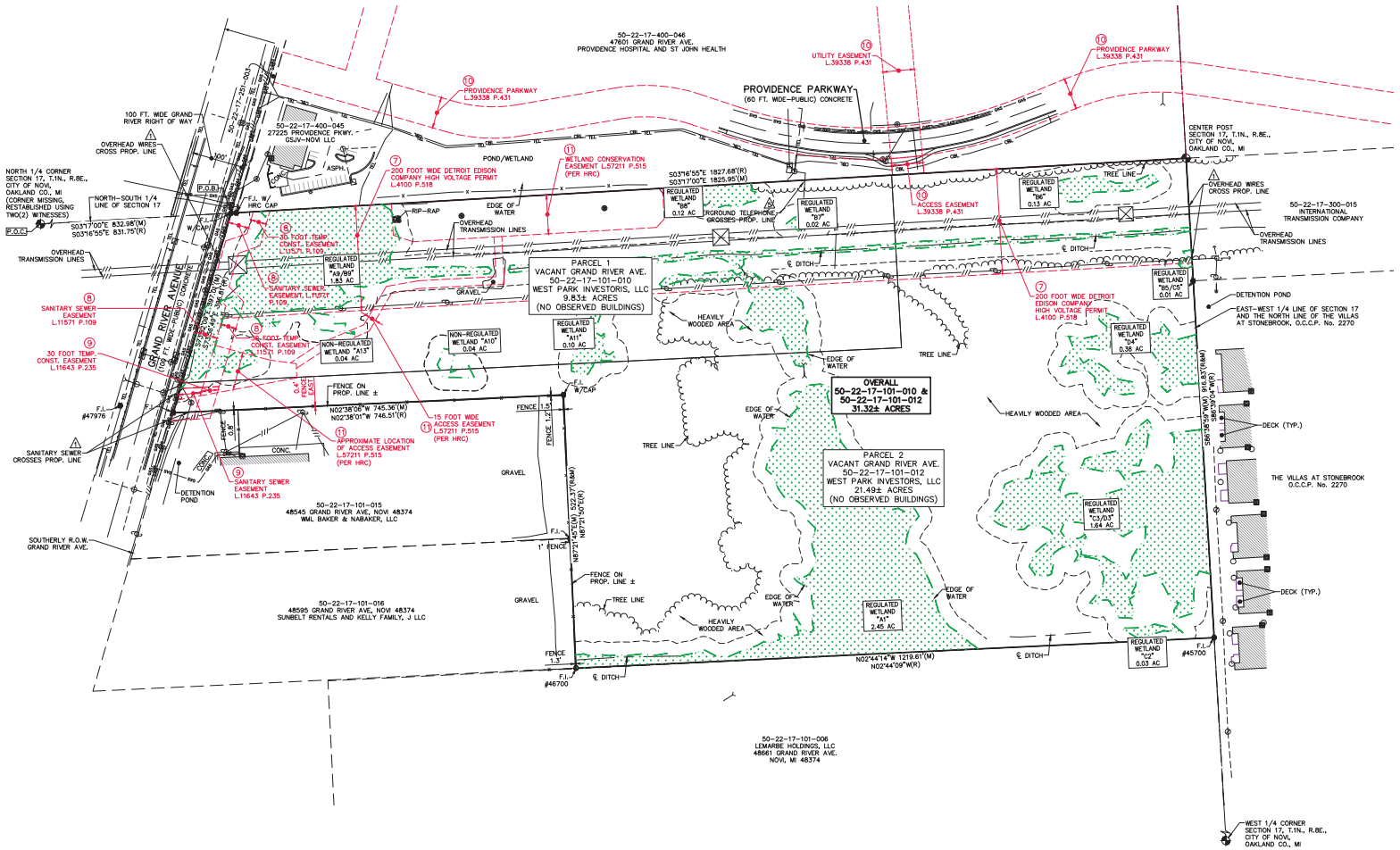
PROJECT NAME:
PROVIDENCE MEADOWS
PART OF SECTION 17, T.1N., R.8E., CITY OF NOVI, OAKLAND COUNTY, MI

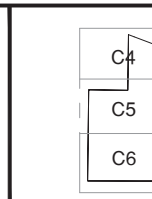
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COVER SHEET

PAGE No.:
C1

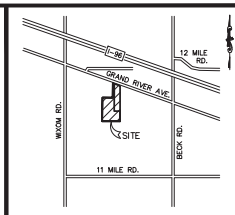
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"ALTA/NSPS LAND TITLE SURVEY"





KEY MAP
NOT TO SCALE



LOCATION MAP
NOT TO SCALE

EXISTING LEGEND

- EASEMENT
- GAS MAIN
- SANITARY SEWER
- WATER MAIN
- STORM SEWER
- OVERHEAD UTILITY LINES
- UNDERGROUND UTILITY LINES
- FENCE
- DITCH CENTERLINE
- UNDERGROUND CABLE
- UNDERGROUND TELEPHONE
- UNDERGROUND ELECTRICAL
- EDGE OF WOODS
- SANITARY MANHOLE
- SANITARY CLEANOUT
- STORM SQUARE CATCH BASIN
- STORM ROUND CATCH BASIN
- STORM MANHOLE
- CULVERT
- FIRE HYDRANT
- VALVE IN WELL
- WELL
- GAS VALVE
- GAS METER
- ELECTRICAL TRANSFORMER
- ELECTRICAL RISER
- ELECTRICAL MANHOLE
- TELEPHONE RISER
- TELEPHONE MANHOLE
- CABLE RISER
- UTILITY FLAG
- MONITORING WELL
- LIGHT POLE
- UTILITY POLE
- GUY WIRE
- MAILBOX
- GUARDPOST / BOLLARD
- FENCE POST
- P.I. SIGN
- SECTION CORNER
- F.I. FOUND IRON
- S.I. SET IRON
- (M) MEASURED
- (R) RECORD
- SET IRON
- FOUND IRON
- FOUND MONUMENT
- ℄ CENTERLINE
- P.O.B. POINT OF BEGINNING
- P.O.C. POINT OF COMMENCEMENT
- R.O.W. RIGHT OF WAY
- OFFSITE BUILDING
- TRANSMISSION TOWER

BOUNDARY LINE OBSERVATIONS:

⚠ UTILITY CROSSES PROPERTY LINE

PARCEL ID#:
22-17-101-010 & 22-17-101-012

FLOOD ZONE:
PARCEL 1 AND PARCEL 2 ARE LOCATED IN ZONE "X" (AREAS DETERMINED TO BE OUTSIDE OF THE 0.2% ANNUAL CHANCE FLOODPLAIN) PER FIRM MAP NO. 26125C0607F, DATED 09/29/2006.

WETLANDS:
WETLANDS SHOWN PER FIELD DELINEATION DATA PROVIDED BY ATWELL, LLC.

BEARINGS AND DATUM:
BEARINGS ARE BASED ON MICHIGAN STATE PLANE COORDINATES (NAD83), SOUTH ZONE, INTERNATIONAL FEET, GROUND DISTANCES. VERTICAL DATUM IS BASED ON NAVD88.

MEASURED BEARINGS DIFFER FROM RECORD TITLE BEARINGS.

ACCESS:
SUBJECT PROPERTY (PARCEL 1 AND PARCEL 2) HAS DIRECT ACCESS TO GRAND RIVER AVENUE, A PUBLIC ROAD.

NOTES:
THERE WAS NO OBSERVED EVIDENCE OF RECENT EARTH WORK OR BUILDING CONSTRUCTION AS OF THE DATE OF THE FIELD WORK.

THERE ARE NO OBSERVED CHANGES TO THE CURRENT STREET RIGHT OF WAY LINES AS OF THE DATE OF THIS SURVEY.

NOTE:
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GRAPHIC SCALE
100 0 50 100 200
(IN FEET)
1" = 100'

ENGINEERING PLANNING
LAND DEVELOPMENT CONSULTING
SKE GROUP
39205 COUNTRY CLUB DR, STE C8
FARMINGTON HILLS, MI 48331
(248.308.3331)

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1.	REV PER CITY REVIEW	08-25-25
2.	REV PER CITY REVIEW	10-17-25

SUBMITTAL DATE: 07-18-25

811
3 WORKING DAYS
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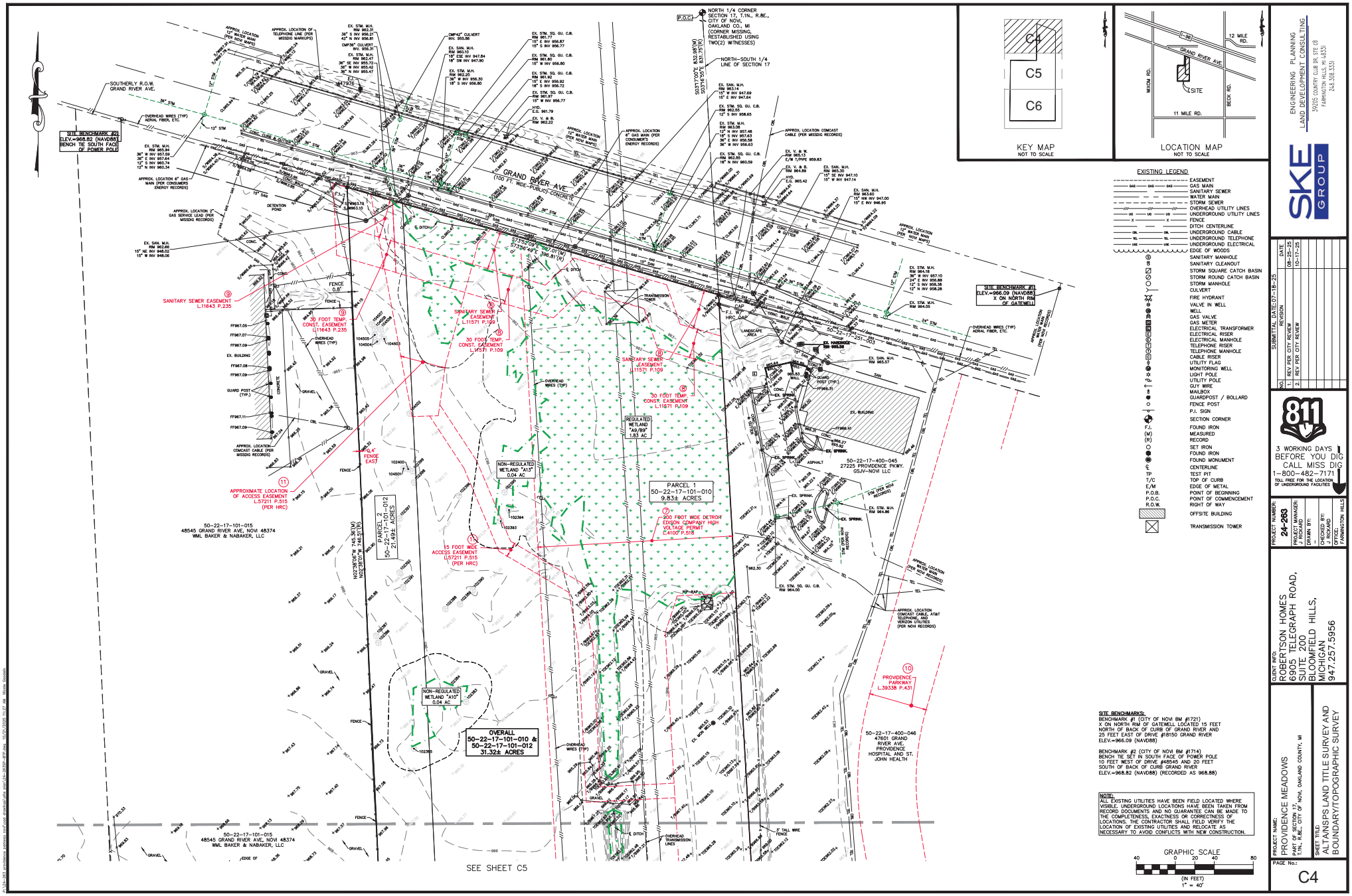
PROJECT NUMBER: 24-283
PROJECT MANAGER: J. RICKARD
DRAWN BY: -
CHECKED BY: J. RICKARD
OFFICE: FARMINGTON HILLS

CLIENT INFO:
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6905 TELEGRAPH ROAD,
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947.257.5956

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SHEET TITLE:
ALTA/NSPS LAND TITLE SURVEY AND
BOUNDARY/TOPOGRAPHIC SURVEY

PAGE No.:
C2



KEY MAP
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LOCATION MAP
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- WELL
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- ELECTRICAL MANHOLE
- TELEPHONE RISER
- TELEPHONE MANHOLE
- CABLE RISER
- UTILITY FLAG
- MONITORING WELL
- LIGHT POLE
- UTILITY POLE
- GUY WIRE
- MAILBOX
- GUARDPOST / BOLLARD
- FENCE POST
- P.I. SIGN
- SECTION CORNER
- FOUND IRON
- MEASURED
- RECORD
- SET IRON
- FOUND IRON
- FOUND MONUMENT
- CENTERLINE
- TEST PIT
- TOP OF CURB
- EDGE OF METAL
- POINT OF BEGINNING
- POINT OF COMMENCEMENT
- RIGHT OF WAY
- OFFSITE BUILDING
- TRANSMISSION TOWER

SITE BENCHMARKS:
BENCHMARK #1 (CITY OF NOVI BM #1721)
X ON NORTH RIM OF GATEWELL LOCATED 15 FEET NORTH OF BACK OF CURB OF GRAND RIVER AND 25 FEET EAST OF DRIVE #18150 GRAND RIVER
ELEV.=966.09 (NAVD88)

BENCHMARK #2 (CITY OF NOVI BM #1714)
BENCH TIE SET IN SOUTH FACE OF POWER POLE 10 FEET WEST OF DRIVE #48545 AND 20 FEET SOUTH OF BACK OF CURB GRAND RIVER
ELEV.=968.82 (NAVD88) (RECORDED AS 968.88)

NOTE:
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40 0 20 40 80
(IN FEET)
1" = 40'

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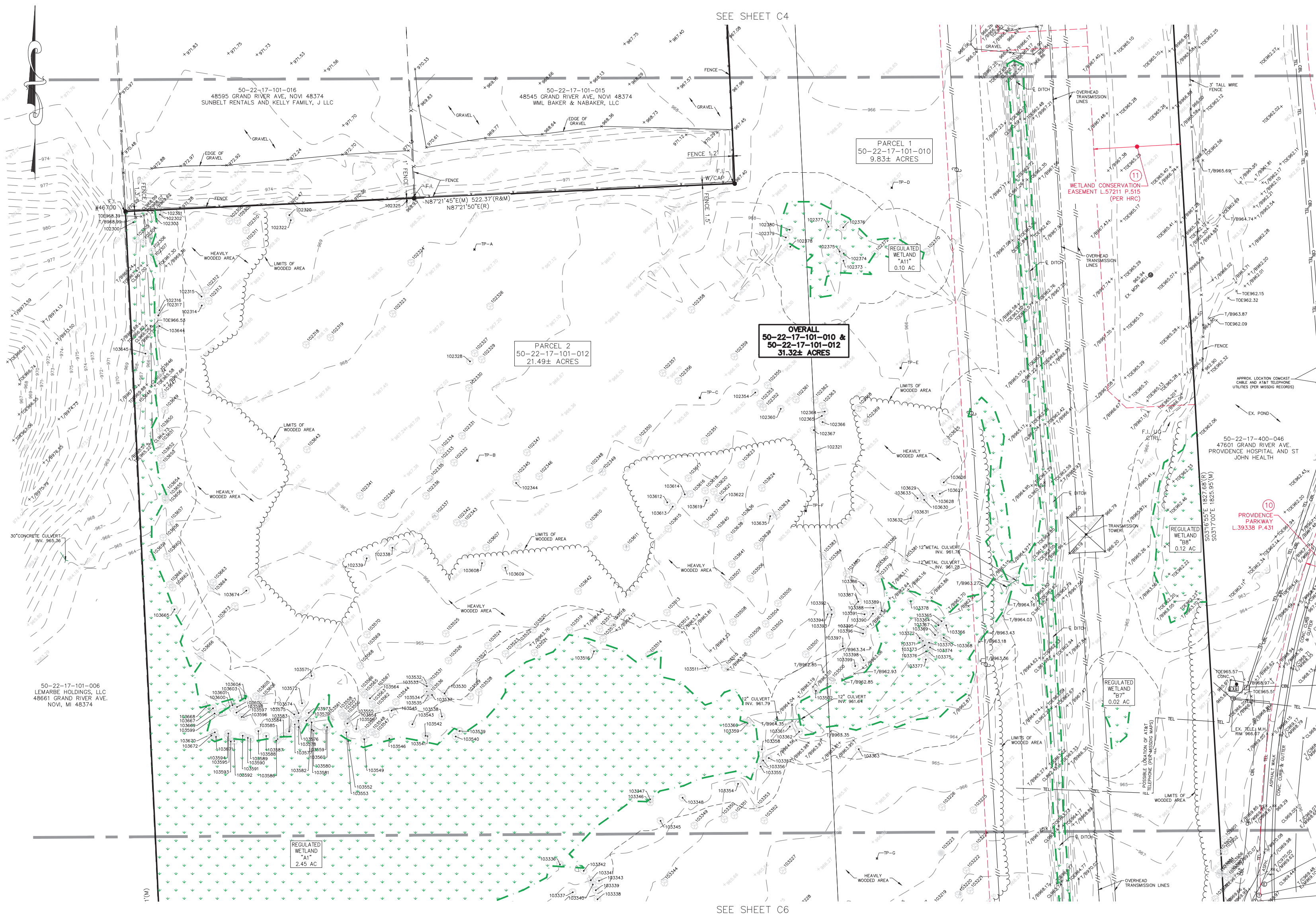
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PROJECT MANAGER: J. RICKARD
DRAWN BY: –
CHECKED BY: J. RICKARD
OFFICE: FARMINGTON HILLS

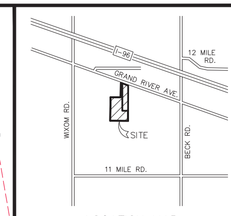
CLIENT INFO:
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6905 TELEGRAPH ROAD, SUITE 200
BLOOMFIELD HILLS, MICHIGAN
947.257.5956

PROJECT NAME:
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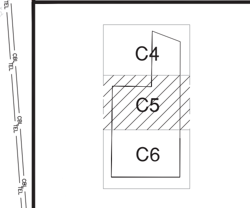
SHEET TITLE:
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PAGE No.:
C4





LOCATION MAP
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WATER MAIN
STORM SEWER
OVERHEAD UTILITY LINES
UNDERGROUND UTILITY LINES
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DITCH CENTERLINE
UNDERGROUND CABLE
UNDERGROUND TELEPHONE
UNDERGROUND ELECTRICAL
EDGE OF WOODS
SANITARY MANHOLE
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UTILITY POLE
GUY WIRE
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P.I. SIGN
SECTION CORNER
F.I. FOUND IRON
(M) MEASURED
(R) RECORD
SET IRON
FOUND IRON
FOUND MONUMENT
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TP TEST PIT
T/C TOP OF CURB
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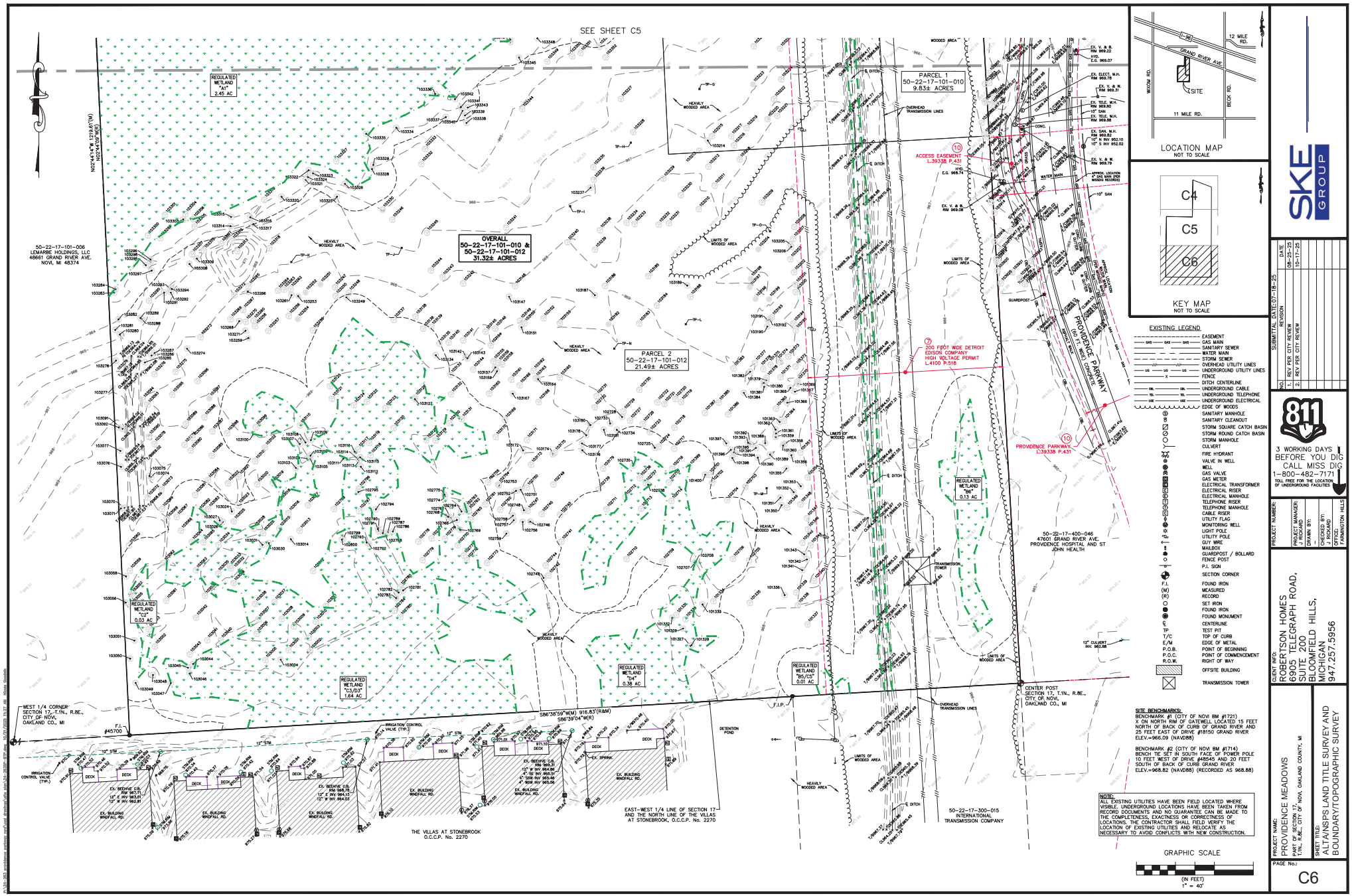
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PROJECT MANAGER: J RICKARD
DRAWN BY: -
CHECKED BY: J RICKARD
OFFICE: FARMINGTON HILLS

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PAGE No.: C5



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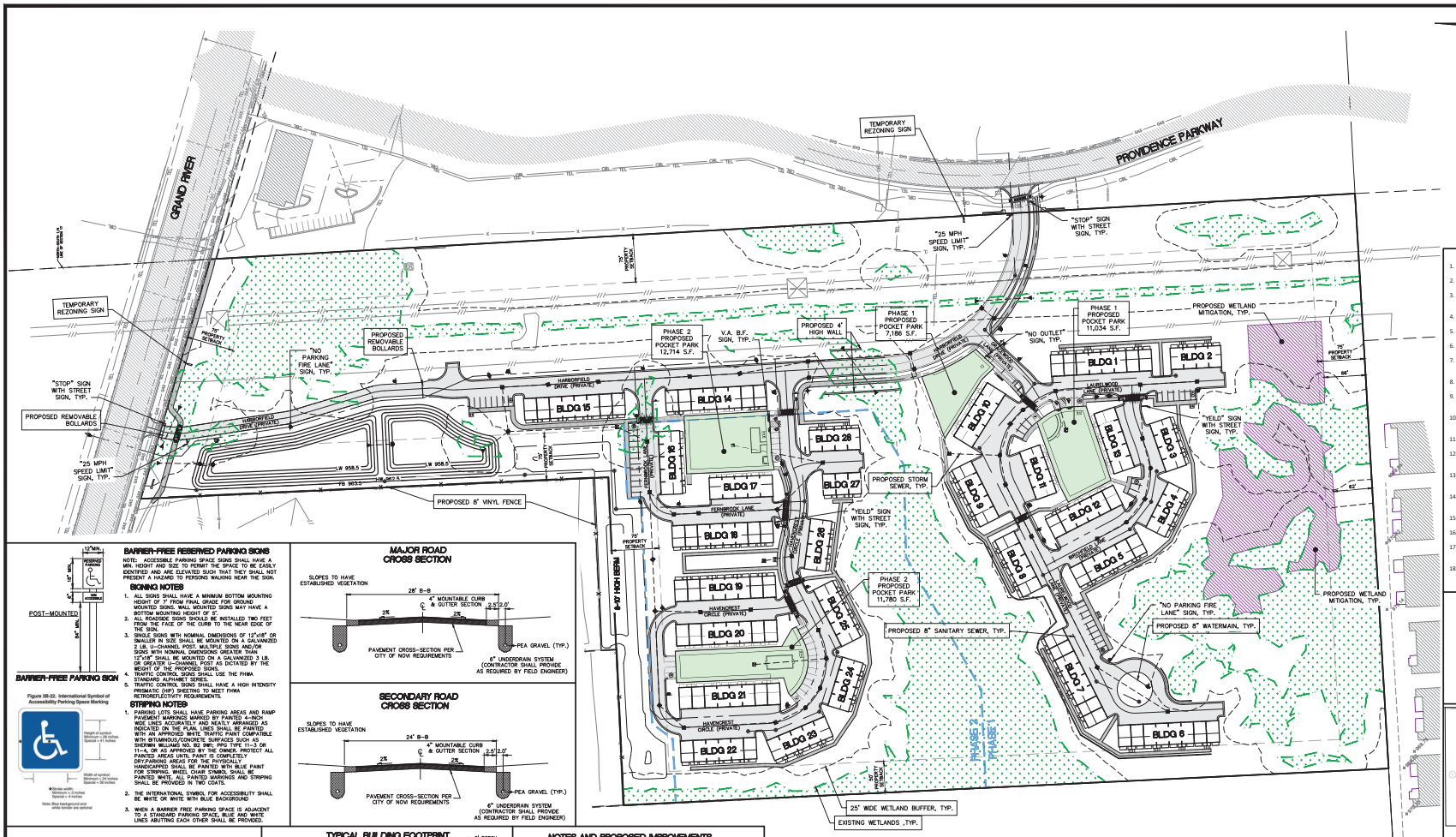
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PROJECT MANAGER: J. RICKARD
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DESIGNED BY: J. RICKARD
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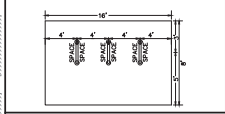
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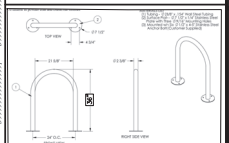


REQUESTED DEVIATIONS

1. Building Orientation (Sec. 3.8.2.D) Requested deviation for buildings not to be configured at 45 degrees.
2. Setbacks (Sec. 3.31.7.D) Requested deviation to reduce the setback from 75 feet to 50 feet along the west boundary line.
3. Distance between Buildings (Sec. 3.8.2.H) Requested deviation is to provide 30 feet between buildings that are aligned and 15 feet where buildings are angled.
4. Total number of rooms (Sec. 3.8.1. A & B) Requested deviation is 536 rooms allowed 644 rooms requested.
5. Parking on Major and Minor Drives (Sec. 5.10.1.B.iv-vi) Requested deviation for parking stall setback from 25' to 15'.
6. Parking along Curves (Sec. 5.10) Requested deviation to allow on-street parking on curves with less than 230' radius.
7. Covered Bike Parking (Sec. 5.16.4) Requested deviation from requirement of when 20 or more bike parking spaces are required, 25% shall be covered spaces.
8. Parking Distance to Buildings (Sec. 3.8.2.F) Requested deviation to allow parking within 25-feet of dwelling structures.
9. Pedestrian Connectivity (Sec. 3.8.2.C) Requested deviation from requirement to provide 5-foot sidewalks on both sides of private drives.
10. Right-of-Way Landscaping (Sec. 5.5.3.B.ii) Requested deviation for the lack of required 3-foot berm along Grand River and Providence Parkway.
11. Right-of-Way Landscaping (Sec. 5.5.3.B.ii) Requested deviation for the number of street trees along Grand River Avenue.
12. Right-of-Way Landscaping (Sec. 5.5.3.B.ii) Required deviation for the amount of greenbelt landscaping along Grand River Avenue.
13. Right-of-Way Landscaping (Sec. 5.5.3.B.iii) Requested deviation for the number of street trees along Providence Parkway access easement.
14. Right-of-Way Landscaping (Sec. 5.5.3.B.iii) Requested deviation for the number of street trees along Harborfield Drive within the ITC easement.
15. Right-of-Way Landscaping (Sec. 5.5.3.B.ii) Requested deviation for greenbelt plantings along Providence Parkway.
16. Multi-Family Landscaping (Sec. 5.5.3.F.iii) Requested deviation for multi-family unit trees and foundation landscaping.
17. Parking Lot Lighting (Sec. 5.7.3.J) Requested deviation for providing the minimum illumination necessary to ensure adequate vision and comfort.
18. Residential Developments (Sec. 5.7.3.O) Requested deviation for providing sufficient illumination at each entrance from major thoroughfare.

6 BIKES RACK PARKING LAYOUT





INVERTED 'U' BIKE RACK
NOT TO SCALE

BARRIER-FREE RESERVED PARKING SIGNS

NOTE: ACCESSIBLE PARKING SPACE SIGNS SHALL HAVE A MIN. HEIGHT AND SIZE TO PERMIT THE SPACE TO BE EASILY IDENTIFIED AND ARE ELEVATED SUCH THAT THEY SHALL NOT PRESENT A HAZARD TO PERSONS WALKING NEAR THE SIGN.

SIGNING NOTES

1. ALL SIGNS SHALL HAVE A MINIMUM BOTTOM MOUNTING HEIGHT OF 7' FROM FINAL GRADE FOR GROUND MOUNTED SIGNS. WALL MOUNTED SIGNS MAY HAVE A BOTTOM MOUNTING HEIGHT OF 5'.
2. ALL ROADSIDE SIGNS SHOULD BE INSTALLED TWO FEET FROM THE FACE OF THE CURB TO THE NEAR EDGE OF THE SIGN.
3. SINGLE SIGNS WITH NOMINAL DIMENSIONS OF 12"x18" OR SMALLER SIZE SHALL BE MOUNTED ON A GALVANIZED 2 LB. U-CHANNEL POST. MULTIPLE SIGNS AND/OR SIGNS WITH NOMINAL DIMENSIONS GREATER THAN 12"x18" SHALL BE MOUNTED ON A GALVANIZED 3 LB. OR GREATER U-CHANNEL POST AS DICTATED BY THE WEIGHT OF THE PROPOSED SIGNS.
4. TRAFFIC CONTROL SIGNS SHALL USE THE FHWA STANDARD ALPHABET SERIES.
5. TRAFFIC CONTROL SIGNS SHALL HAVE A HIGH INTENSITY PRISMATIC (HIP) SHEETING TO MEET FHWA RETROREFLECTIVITY REQUIREMENTS.

BARRIER-FREE PARKING SIGN

Figure 3B-22. International Symbol of Accessibility Parking Space Marking

STRIPING NOTES

1. PARKING LOTS SHALL HAVE PARKING AREAS AND RAMP PAVEMENT MARKINGS MARKED BY PAINTED 4-INCH WIDE LINES ACCURATELY AND NEATLY ARRANGED AS INDICATED ON THE PLAN. LINES SHALL BE PAINTED WITH AN APPROVED WHITE TRAFFIC PAINT COMPATIBLE WITH BITUMINOUS/CONCRETE SURFACES SUCH AS SHERWIN WILLIAMS NO. 82 (WF); PPG TYPE 11-3 OR 11-4, OR AS APPROVED BY THE OWNER. PROTECT ALL PAINTED AREAS UNTIL PAINT IS COMPLETELY DRY/HARDENED. ALL CURBS, ISLANDS AND HANDICAPPING SIGNS SO PAINTED WITH BLUE PAINT FOR STRIPING. WHEEL CHAIR SYMBOL SHALL BE PAINTED WHITE. ALL PAINTED MARKINGS AND STRIPING SHALL BE PROVIDED IN TWO COATS.
2. THE INTERNATIONAL SYMBOL FOR ACCESSIBILITY SHALL BE WHITE OR WHITE WITH BLUE BACKGROUND
3. WHEN A BARRIER FREE PARKING SPACE IS ADJACENT TO A STANDARD PARKING SPACE, BLUE AND WHITE LINES ABUTTING EACH OTHER SHALL BE PROVIDED.

MAJOR ROAD CROSS SECTION

SECONDARY ROAD CROSS SECTION

BUILDING COVERAGE

MAXIMUM PERMITTED LOT COVERAGE	25%
PROPOSED LOT COVERAGE	10.3%

PARKING CALCULATIONS

PARKKNG REQUIRED PER SEC. 5.2.12.A
2.5 SPACES REQUIRED FOR EACH UNIT HAVING 3 OR MORE BEDROOMS

PHASE 1		
NUMBER OF UNITS		88 EA
PARKING REQUIRED		220 SPACES
PARKING PROVIDED		
ATTACHED GRAGE PARKING		176 SPACES
DRIVEWAY PARKING (BLD 9-11)	(14 UNITS)	
PARKING = 14 X .5		7 SPACES
GUEST PARKING		37 SPACES
ADA SPACES PROVIDED	(2 SPACES)	
TOTAL PARKING PROVIDED		220 SPACES
PHASE 2		
NUMBER OF UNITS		73 EA
PARKING REQUIRED		183 SPACES
PARKING PROVIDED		
ATTACHED GRAGE PARKING		146 SPACES
GUEST PARKING		37 SPACES
ADA SPACES PROVIDED	(2 SPACES)	
TOTAL PARKING PROVIDED		183 SPACES

TYPICAL BUILDING FOOTPRINT



OPEN SPACE

USABLE OPEN SPACE CALCULATIONS SEC. 3.1.7.D

USABLE OPEN SPACE

PHASE 1	
NUMBER OF UNITS	88 EA
USABLE OPEN SPACE REQUIRED	
200 SF PER UNIT	17600 SF
USABLE OPEN SPACE PROVIDED	
UNIT DECKS (50 SF)	4400 SF
POCKET PARKS	18220 SF
TOTAL	22620 SF
PHASE 2	
NUMBER OF UNITS	73 EA
USABLE OPEN SPACE REQUIRED	
200 SF PER UNIT	14600 SF
USABLE OPEN SPACE PROVIDED	
UNIT DECKS (50 SF)	3650 SF
POCKET PARKS	24494 SF
TOTAL	28144 SF

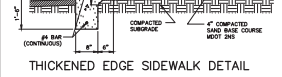
NOTES AND PROPOSED IMPROVEMENTS

1. MUNICIPAL SEWER TO BE PROVIDED BY CONNECTING TO AN EXISTING 10" SANITARY SEWER AT PROVIDENCE PARKWAY AND AN EXISTING 15" SANITARY SEWER AT GRAND RIVER AVENUE.
2. MUNICIPAL WATER TO BE PROVIDED BY CONNECTING TO AN EXISTING 12" WATER MAIN LOCATED ON THE NORTH SIDE OF GRAND RIVER AVENUE, ALSO CONNECTING TO AN EXISTING 8" WATER MAIN LOCATED ON PROVIDENCE PARKWAY.
3. STORM WATER DETENTION SHALL BE PROVIDED ONSITE.
4. 5' WIDE CONCRETE SIDEWALKS SHALL BE CONSTRUCTED AS SHOWN.
5. ALL ROADWAYS TO BE PRIVATE.
6. A CITY OF NOVI RIGHT-OF-WAY PERMIT IS REQUIRED FOR WORK WITHIN ANY PUBLIC ROAD RIGHT-OF-WAY.
7. ALL SIDEWALKS AND SIDEWALK RAMPS SHALL A.D.A. COMPLIANT.
8. ALL WORK SHALL CONFORM TO THE CURRENT CITY OF NOVI STANDARDS AND SPECIFICATIONS.
9. PROP. WATER MAIN AND PROP. SANITARY SEWER TO BE CENTERLINE OF 20' WIDE PUBLIC EASEMENT.
10. TRASH TO BE PICKED UP BY CURBSIDE PICK UP.
11. NO ACCESSORY STRUCTURES ARE PROPOSED.

BICYCLE PARKING

BICYCLE PARKING REQUIRED PER SECTION 5.15.1
ONE SPACE FOR EACH 5 UNITS

PHASE 1	
NUMBER OF UNITS	88 EA
BICYCLE PARKING REQUIRED	17.6 EA
BICYCLE PARKING PROVIDED	18 EA
PHASE 2	
NUMBER OF UNITS	73 EA
BICYCLE PARKING REQUIRED	14.6 EA
BICYCLE PARKING PROVIDED	16 EA



THICKENED EDGE SIDEWALK DETAIL

SITE DATA

EXISTING ZONING	I-1
PROPOSED ZONING	RM-2 WITH PRO
GROSS ACRES	31.32 AC
WETLANDS	6.71 AC
NET ACRES	24.61 AC
NUMBER OF BUILDING	28 EA
NUMBER OF UNITS	161 EA
ALL UNITS HAVE 3 BEDROOMS (4 ROOMS)	
PROPOSED NUMBER OF ROOMS	644 ROOMS
NUMBER OF ROOMS ALLOWED	536 ROOMS
PROPOSED DENSITY	6.54 UNITS/AC

MINIMUM DISTANCE BETWEEN BUILDINGS

$$\frac{L_2 + (L_a + 2(L_b + H_b))}{6}$$

SPACE BETWEEN BUILDINGS:	La	Lb	Ha	Hb	REQUIRED SPACING	PROPOSED SPACING	PRO DEVIATION
1 AND 2	34.33	34.38	37.83	37.83	35.64	30.00	YES
3 AND 4	22.40	23.26	37.83	37.83	31.39	16.50	YES
4 AND 5	39.39	26.72	37.83	37.83	32.91	16.51	YES
6 AND 7	1.06	4.92	37.83	37.83	26.17	19.27	YES
7 AND 8	34.13	34.33	37.83	37.83	36.86	72.37	NO
8 AND 9	23.33	23.33	37.83	37.83	33.00	30.00	YES
9 AND 10	7.14	7.68	37.83	37.83	27.72	20.90	YES
11 AND 12	31.29	34.05	37.83	37.83	35.11	30.05	YES
14 AND 15	34.33	34.33	37.83	37.83	36.86	69.93	NO
16 AND 16	39.60	39.95	37.83	37.83	31.81	30.58	YES
16 AND 17	23.33	23.33	37.83	37.83	33.00	43.37	NO
18 AND 19	160.67	160.67	37.83	37.83	78.78	52.68	YES
20 AND 21	160.56	160.56	37.83	37.83	78.72	62.30	YES
22 AND 23	27.92	26.59	37.83	37.83	33.31	16.32	YES
23 AND 24	8.22	21.99	37.83	37.83	30.26	17.73	YES
24 AND 25	38.03	38.64	37.83	37.83	51.43	38.63	YES
25 AND 26	28.43	35.75	37.83	37.83	32.58	17.68	YES
26 AND 27	38.83	31.81	37.83	37.83	35.33	38.83	NO

4' TALL x 6' WIDE REZONING SIGN DETAIL

ZONING CHANGE PROPOSED FROM I-1 TO RM-1 WITH PRO
FOR MORE INFORMATION CALL:
NOVI COMMUNITY DEVELOPMENT DEPARTMENT
248-347-0475
Min. 6" high letters
Min. 4" high letters

PROVIDE (2) SIGNS:
(1) AT GRAND RIVER
(1) AT PROVIDENCE PARKWAY



VINYL FENCE

SIGN QUANTITIES

SYMBOL	DESCRIPTION	QUANTITY	PANEL POST
R1	R1-1 30"x30" "STOP" SIGN	5	5
R2	R1-2 30" "YIELD" SIGN	6	6
R3	12" D3-1 STREET NAME ATOP SIGN	11	0
R4	R2-1(25) "25 MPH SPEED LIMIT" SIGN 24"x30"	2	2
R5	12"x 18" V.A. BARRIER SIGN (R7-8)	4	4
R6	4"x 12" VAN ACCESSIBLE SIGN (R7-8P)	4	0
R7	"NO PARKING FIRE LANE" (R8-3) IN ACCORDANCE WITH SEC. 15-99 (a)(1).	15	15
R8	"NO OUTLET" (W14-2) 30"x30"	1	1



SIGNAGE NOTES

1. STREET NAME SIGNS SHOULD BE PLACED A TOP THE INTERSECTION.
2. STREET-NAME SIGN SHALL COMPLY WITH THE CITY OF NOVI DESIGN STANDARDS.
3. ALL TRAFFIC SIGNAGE SHALL COMPLY WITH THE CURRENT MMUTCD STANDARDS.
4. SIGNS 12"x18" OR SMALLER IN SIZE SHALL BE MOUNTED ON A GALVANIZED 2 LB. U-CHANNEL POST.
5. SIGNS LARGER THAN 12"x18" SHALL BE MOUNTED ON A GALVANIZED 3 LB. OR GREATER U-CHANNEL POST.
6. SIGNS BOTTOM HEIGHT OF 7' FROM FINAL GRADE .
7. SIGNAGE SHALL BE PLACED 2' FROM THE FACE OF THE CURB OR EDGE OF THE NEAREST SIDEWALK TO THE NEAR EDGE OF THE SIGN.
8. FHWA STANDARD ALPHABET SERIES USED FOR ALL SIGN LANGUAGE.
9. HIGH INTENSITY PRISMATIC (HIP) SHEETING TO MEET FHWA RETRO-REFLECTIVITY.

PROPOSED LEGEND

- SANITARY SEWER
- WATER MAIN
- STORM SEWER
- SILT FENCE
- TREE PROTECTION FENCE
- WETLAND
- 1000 CONTOUR
- CURB AND GUTTER
- SANITARY MANHOLE
- STORM MANHOLE
- STORM CATCH BASIN
- END SECTION
- FIRE HYDRANT
- VALVE IN WELL
- PAVEMENT (ASPHALT)
- PAVEMENT (CONCRETE SIDEWALK)
- DIRECTION SURFACE WATER FLOW
- 1000.00 GRADE

811
3 WORKING DAYS BEFORE YOU DIG, CALL MISS DIG
1-800-482-7171
TOLL FREE FOR THE LOCATION OF UNDERGROUND FACILITIES

NO.	REVISION	DATE
1.	REV PER CITY REVIEW	08-25-25
2.	REV PER CITY REVIEW	10-17-25

SUBMITTAL DATE: 07-18-25

PROJECT NUMBER: 24-283
PROJECT MANAGER: R. RICCARDI
DRAWN BY: --
CHECKED BY: J. RICKARD
OFFICE: FARMINGTON HILLS

CLIENT INFO:
ROBERTSON HOMES
6905 TELEGRAPH ROAD, SUITE 200
BLOOMFIELD HILLS, MICHIGAN
947.257.5956

PROJECT NAME:
PROVIDENCE MEADOWS
CITY OF NOVI
T1N., R.8E., CITY OF NOVI, OAKLAND COUNTY, MI

SHEET TITLE:
OVERALL SITE PLAN

PAGE No.:
C7

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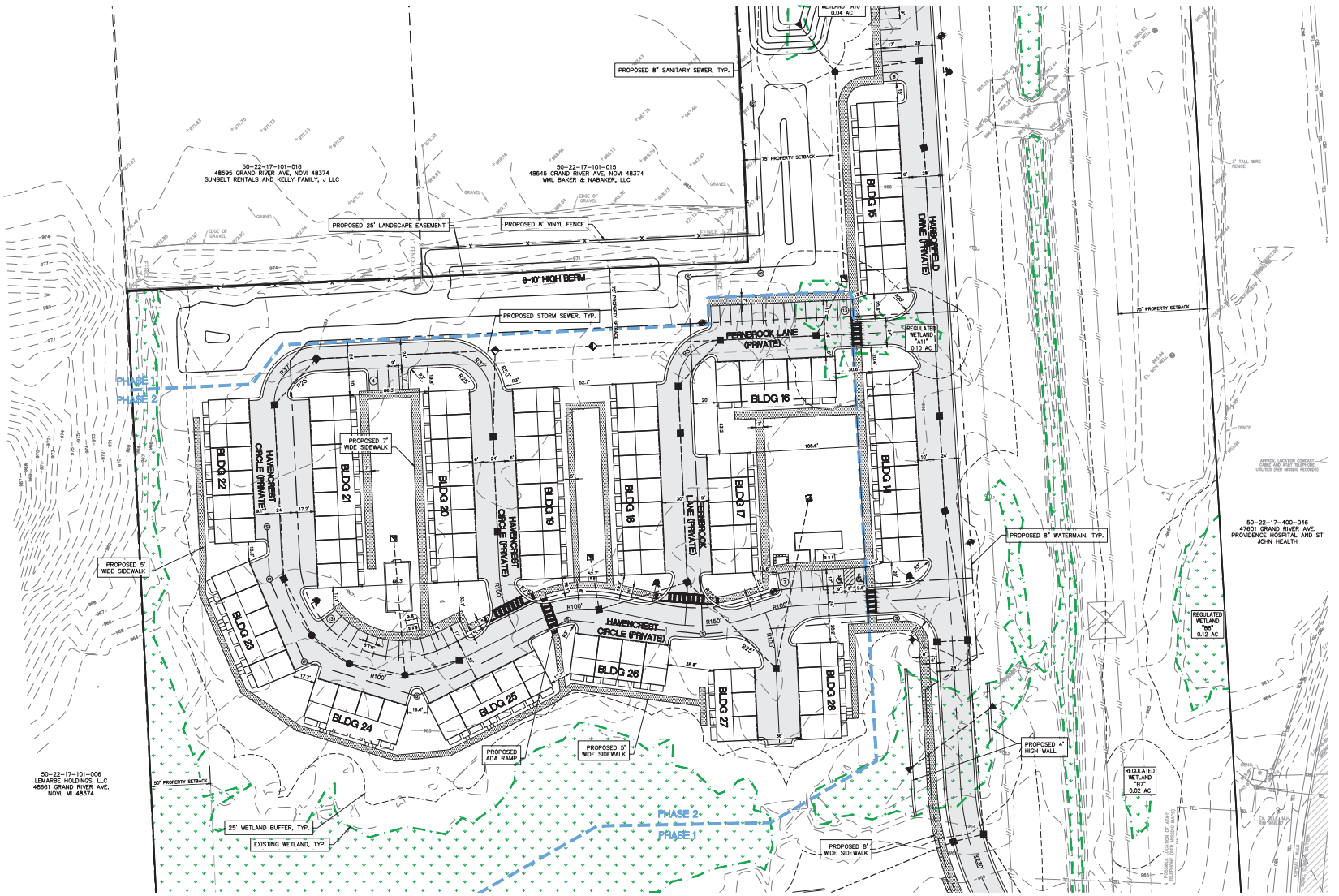
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PROJECT NAME:
PROVIDENCE MEADOWS
PART OF SECTION 17, T1N, R8E., CITY OF NOVI, OAKLAND COUNTY, MI

SHEET TITLE:
SITE PLAN

PAGE No.:
C8



GRAPHIC SCALE
40 0 20 40 80
(IN FEET)
1" = 40'

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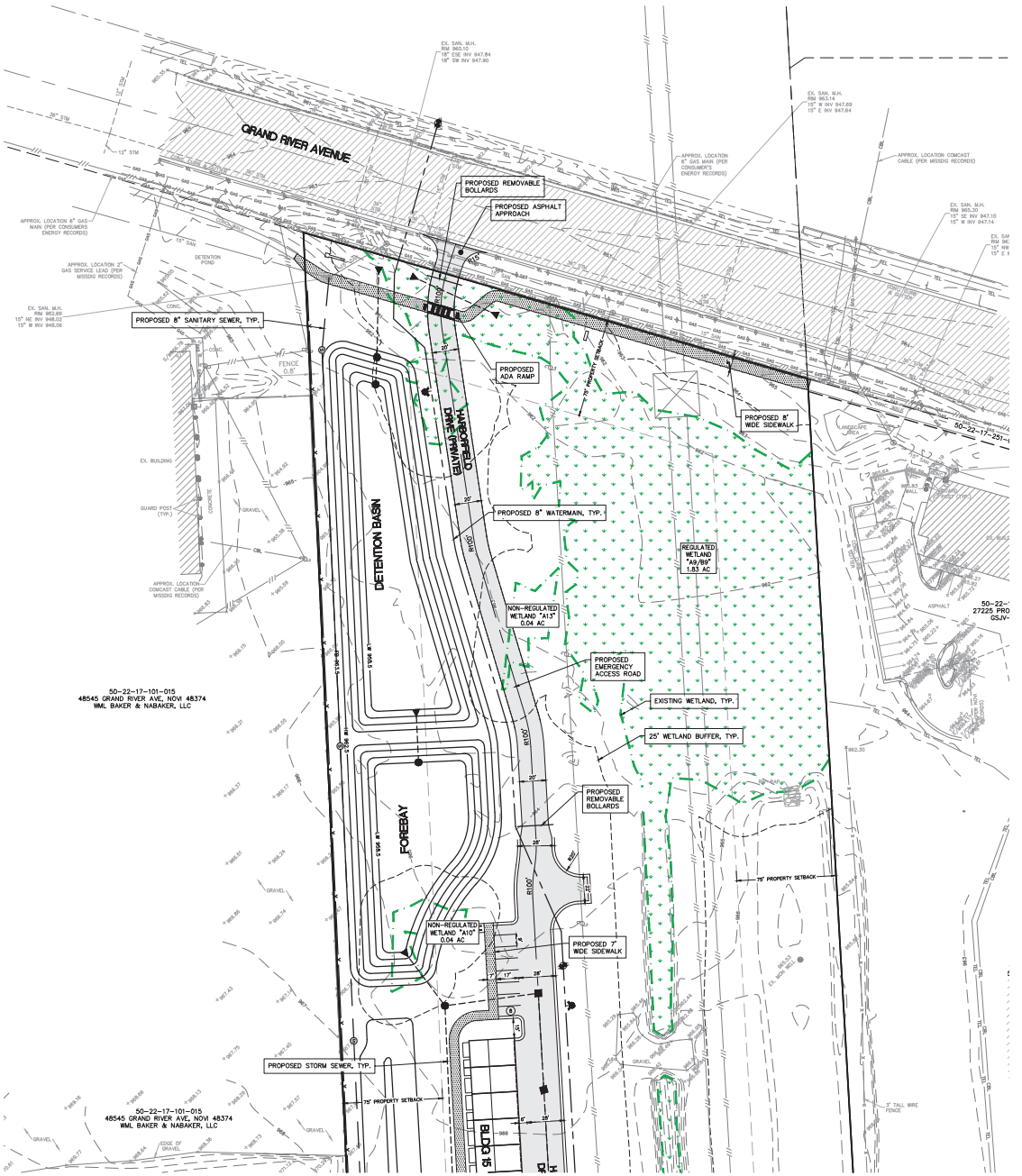
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PROJECT NAME:
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PART OF SECTION 17, T1N, R8E,, CITY OF NOVI, OAKLAND COUNTY, MI

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C9



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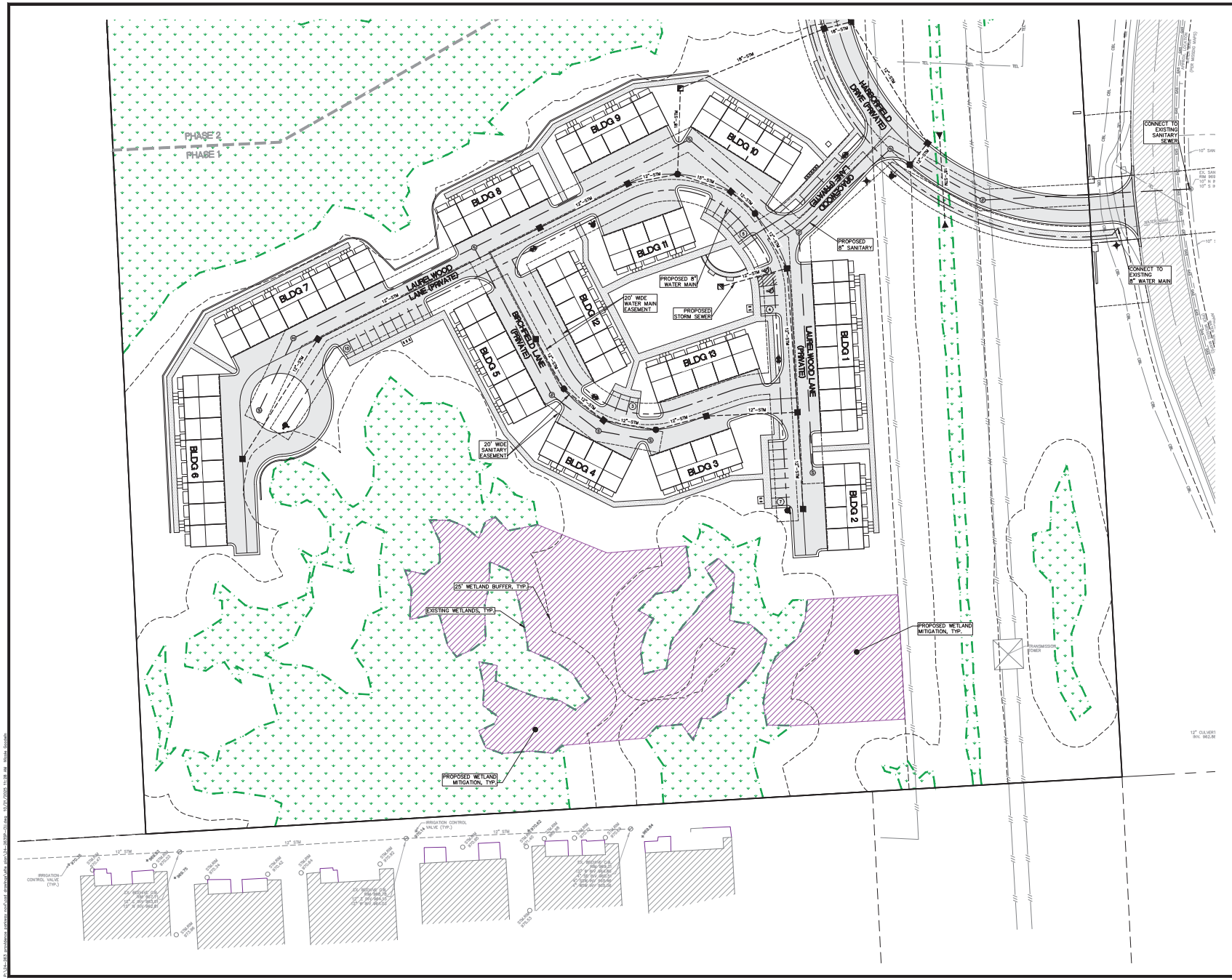
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PART OF SECTION 17
T1N., R.8E., CITY OF NOVI, OAKLAND COUNTY, MI

SHEET TITLE:
SITE PLAN

PAGE No.:
C10

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GRAPHIC SCALE
40 0 20 40 80
(IN FEET)
1" = 40'

SANITARY BASIS OF DESIGN - PHASE 2

NUMBER OF UNITS	91	UNITS
3.2 PEOPLE/UNIT	291.2	PEOPLE
AVERAGE FLOW		
PEOPLE X 100GAL/CAP/DAY	29120	GAL/DAY
	0.045	CFS
	0.030	MGD
PEAK FLOW		
PEAK FACTOR (< 500 PEOPLE)	4	
PEAK FACTOR X AVERAGE FLOW	116480	GAL/DAY
	0.180	CFS
	0.116	MGD
Q EXISTING (15" sanitary)	1626667	GAL/DAY
	2.517	CFS
	1.627	MGD

SANITARY BASIS OF DESIGN - PHASE 1

NUMBER OF UNITS	72	UNITS
3.2 PEOPLE/UNIT	230.4	PEOPLE
AVERAGE FLOW		
PEOPLE X 100GAL/CAP/DAY	23040	GAL/DAY
	0.036	CFS
	0.024	MGD
PEAK FLOW		
PEAK FACTOR (< 500 PEOPLE)	4	
PEAK FACTOR X AVERAGE FLOW	92160	GAL/DAY
	0.143	CFS
	0.092	MGD
Q EXISTING (10" sanitary)	497629	GAL/DAY
	0.77	CFS
	0.498	MGD

PROPOSED LEGEND

- SANITARY SEWER
- WATER MAIN
- STORM SEWER
- SILT FENCE
- TREE PROTECTION FENCE
- WETLAND
- 1000 CONTOUR
- CURB AND GUTTER
- SANITARY MANHOLE
- STORM MANHOLE
- STORM CATCH BASIN
- END SECTION
- FIRE HYDRANT
- VALVE IN WELL
- PAVEMENT (ASPHALT)
- PAVEMENT (CONCRETE SIDEWALK)
- DIRECTION SURFACE WATER FLOW
- 1000.00 GRADE

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PROJECT MANAGER: J. RICKARD
DRAWN BY: -
CHECKED BY: J. RICKARD
OFFICE: FARMINGTON HILLS

CLIENT INFO:
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BLOOMFIELD HILLS, MICHIGAN
947.257.5956

PROJECT NAME:
PROVIDENCE MEADOWS
PART OF SECTION 17
T1N., R.8E., CITY OF NOVI, OAKLAND COUNTY, MI

SHEET TITLE:
UTILITY PLAN

PAGE No.:
C11

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PROPOSED LEGEND

SANITARY SEWER
WATER MAIN
STORM SEWER
TREE PROTECTION FENCE
SILT FENCE
WETLAND
CONCRETE CURB AND GUTTER
SANITARY MANHOLE
STORM MANHOLE
STORM CATCH BASIN
END SECTION
FIRE HYDRANT
VALVE IN WELL
PAVEMENT (ASPHALT)
PAVEMENT (CONCRETE)
DIRECTION OF SURFACE WATER FLOW
GRADE

GRAPHIC SCALE
1" = 40' (IN FEET)
0 20 40 80

PROJECT NAME:
PROVIDENCE MEADOWS
PART OF SECTION 17,
T.1N., R.8E., CITY OF NOVI, OAKLAND COUNTY, MI

SHEET TITLE:
UTILITY PLAN

PAGE No.:
C12

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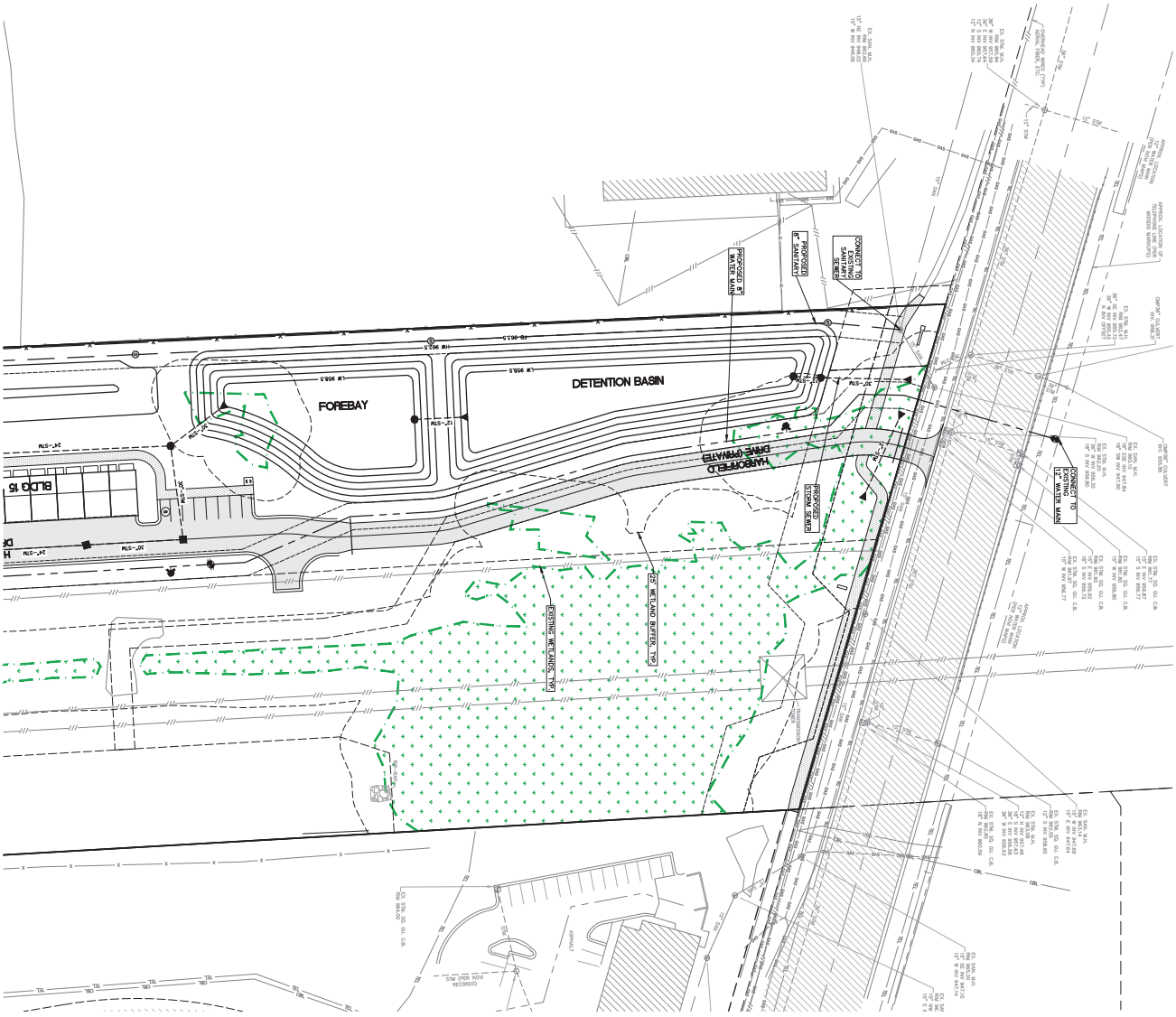
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PROJECT MANAGER:
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DRAWN BY:
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J. RICKARD
OFFICE:
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PROPOSED LEGEND

SANITARY SEWER
WATER MAIN
STORM SEWER
SILT FENCE
TREE PROTECTION FENCE
CONCRETE CURB AND GUTTER
WETLAND
SANITARY MANHOLE
STORM MANHOLE
STORM CATCH BASIN
END SECTION
FIRE HYDRANT
VALVE IN WELL
PAVEMENT (ASPHALT)
PAVEMENT (CONCRETE)
DIRECTION OF SURFACE WATER FLOW
GRADE

GRAPHIC SCALE
1" = 40' (IN FEET)
0 20 40 80

PROJECT NAME: PROVIDENCE MEADOWS PART OF SECTION 17, T.1N., R.8E., CITY OF NOVI, OAKLAND COUNTY, MI	CLIENT INFO: ROBERTSON HOMES 6905 TELEGRAPH ROAD, SUITE 200 BLOOMFIELD HILLS, MICHIGAN 947.257.5956	PROJECT NUMBER: 24-263 PROJECT MANAGER: J. RICKARD DRAWN BY: – CHECKED BY: J. RICKARD OFFICE: FARMINGTON HILLS

PAGE No.: C13

SHEET TITLE: UTILITY PLAN

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GRAPHIC SCALE
40 0 20 40 80
(IN FEET)
1" = 40'

NOTE: APPROVAL FROM DTE IS REQUIRED FOR CROSSINGS AND GRADING UNDER OVERHEAD LINES

PROPOSED LEGEND

- SANITARY SEWER
- WATER MAIN
- STORM SEWER
- SILT FENCE
- TREE PROTECTION FENCE
- WETLAND
- 1000 CONTOUR
- CURB AND GUTTER
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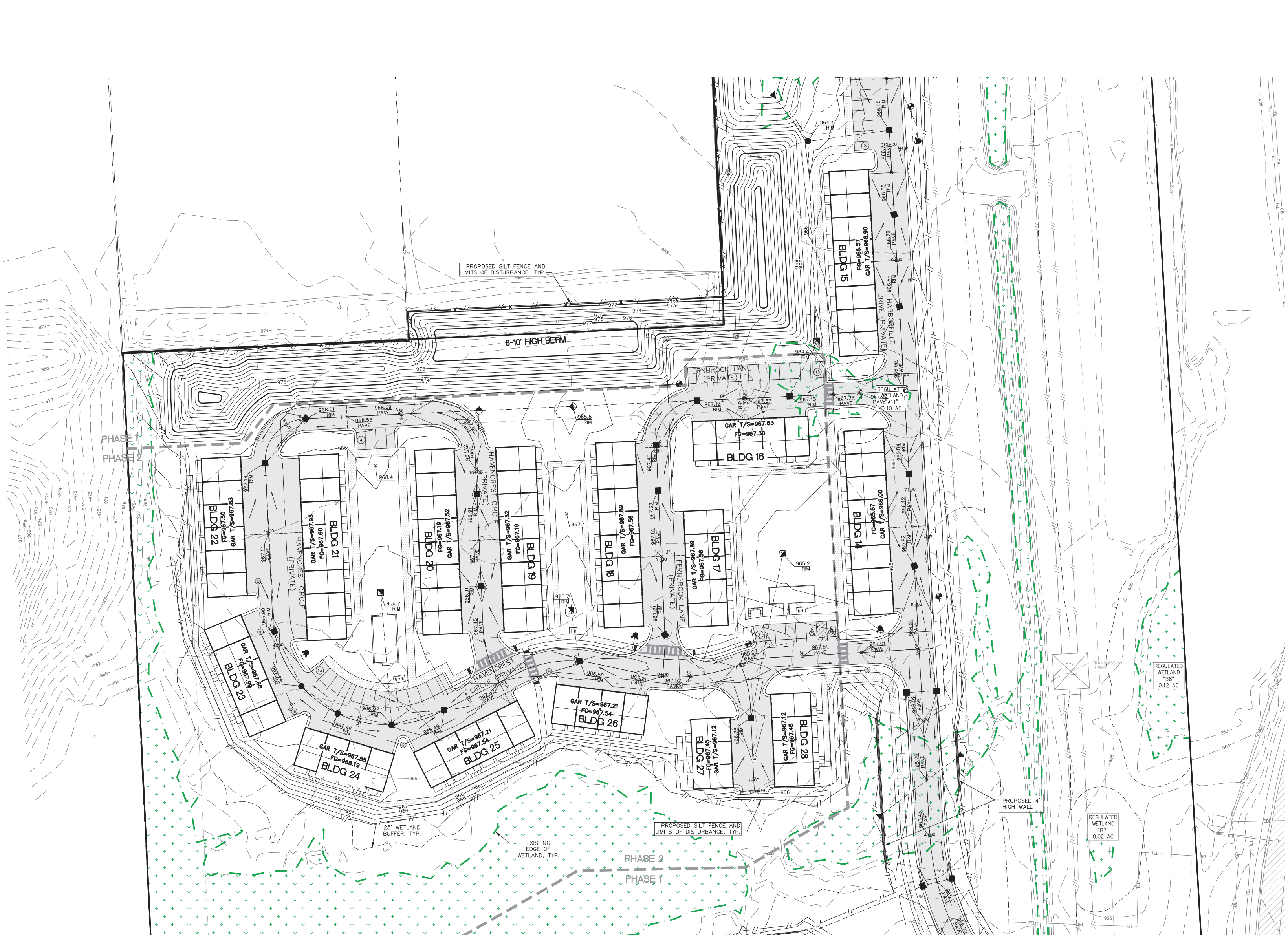
PROJECT NUMBER: 24-283
PROJECT MANAGER: J. RICKARD
DRAWN BY: --
CHECKED BY: J. RICKARD
OFFICE: FARMINGTON HILLS

CLIENT INFO:
ROBERTSON HOMES
6905 TELEGRAPH ROAD, SUITE 200
BLOOMFIELD HILLS, MICHIGAN
947.257.5956

PROJECT NAME:
PROVIDENCE MEADOWS
PART OF SECTION 17, T1N., R.8E., CITY OF NOVI, OAKLAND COUNTY, MI

SHEET TITLE:
GRADING PLAN

PAGE No.:
C14



GRAPHIC SCALE

40 0 20 40 80

(IN FEET)
1" = 40'

PROPOSED LEGEND

	SANITARY SEWER
	WATER MAIN
	STORM SEWER
	SILT FENCE
	TREE PROTECTION FENCE
	WETLAND
1000	CONTOUR
	CURB AND GUTTER
	SANITARY MANHOLE
	STORM MANHOLE
	STORM CATCH BASIN
	END SECTION
	FIRE HYDRANT
	VALVE IN WELL
	PAVEMENT (ASPHALT)
	PAVEMENT (CONCRETE SIDEWALK)
	DIRECTION SURFACE WATER FLOW
1000.00	GRADE

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DRAWN BY: -

CHECKED BY: J RICKARD

OFFICE: FARMINGTON HILLS

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MICHIGAN
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PART OF SECTION 17,
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SHEET TITLE:
GRADING PLAN

PAGE No.:
C15



PROPOSED LEGEND

- SANITARY SEWER
- WATER MAIN
- STORM SEWER
- SILT FENCE
- TREE PROTECTION FENCE
- WETLAND
- CONTOUR
- CURB AND GUTTER
- SANITARY MANHOLE
- STORM MANHOLE
- STORM CATCH BASIN
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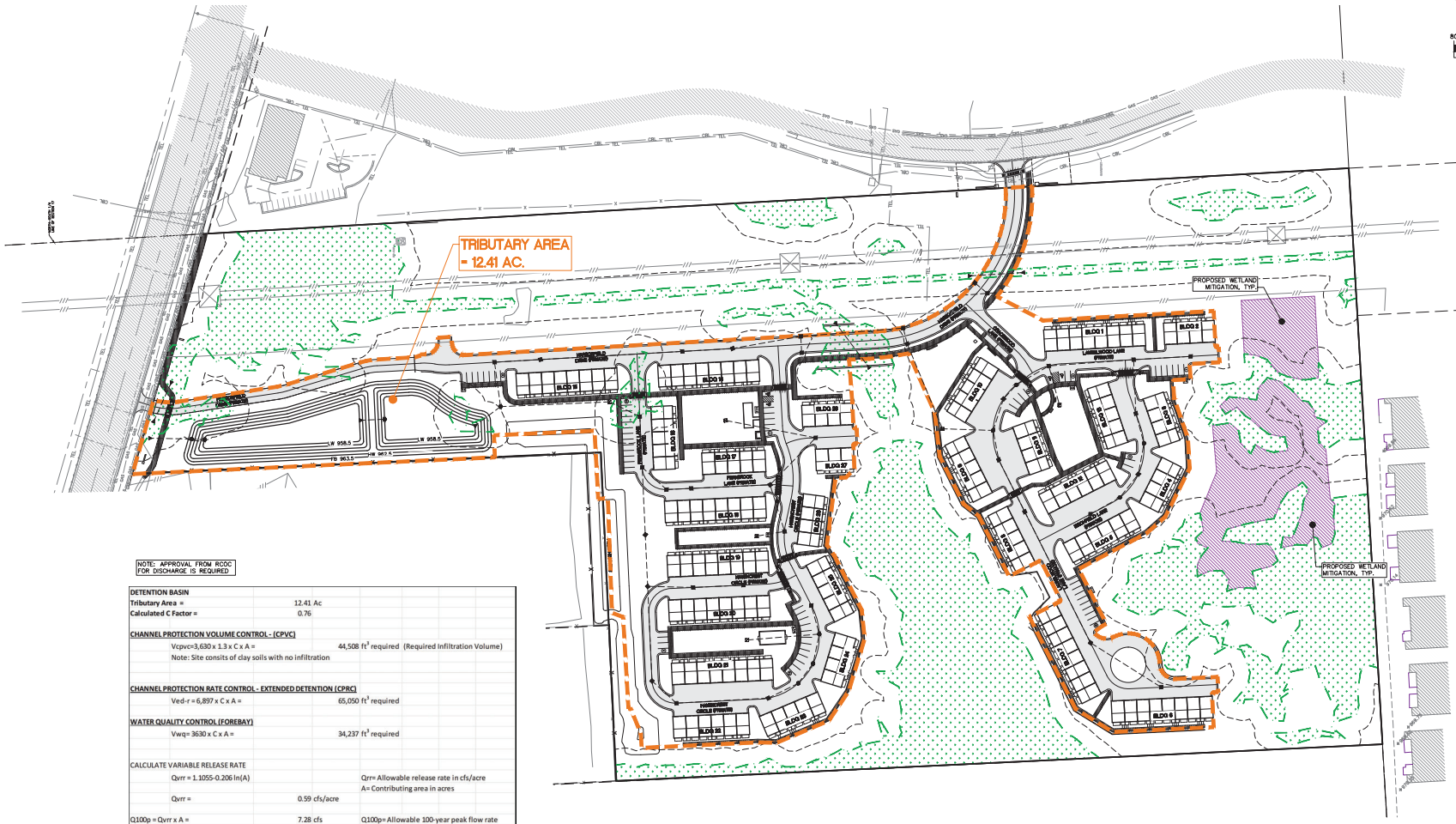
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SHEET TITLE:
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PAGE No.: C16



GRAPHIC SCALE
80 0 40 80 160
(IN FEET)
1" = 80'

NOTE: APPROVAL FROM RCOC FOR DISCHARGE IS REQUIRED

DETENTION BASIN

Tributary Area =	12.41 Ac	
Calculated C Factor =	0.76	

CHANNEL PROTECTION VOLUME CONTROL - (CPVC)

Vcpvc=3,630 x 1.3 x C x A = 44,508 ft³ required (Required Infiltration Volume)
Note: Site consits of clay soils with no infiltration

CHANNEL PROTECTION RATE CONTROL - EXTENDED DETENTION (CPRC)

Ved-r = 6,897 x C x A = 65,050 ft³ required

WATER QUALITY CONTROL (FOREBAY)

Vwq= 3630 x C x A = 34,237 ft³ required

CALCULATE VARIABLE RELEASE RATE

Qvrr = 1.1055-0.206 ln(A) Qrr= Allowable release rate in cfs/acre
A= Contributing area in acres

Qvrr = 0.59 cfs/acre

Q100p = Qvrr x A = 7.28 cfs Q100p= Allowable 100-year peak flow rate
USE Q100p = 7.28 cfs **Q100P is the lesser of:**
1- The restricted rate for the drain (cf/Acre)
2 - The Variable Release Rate (Qvrr) (cf/Acre)

100-YEAR DETENTION VOLUME (V100D)

V100r=18985 x C x A = 179,059 ft³

100-YEAR PEAK INFLOW RATE (Q100IN)

Tr = 26.35 min Based on Storm Calculations
I100=83.18/(Tc+9.17)^0.81
I100 = 4.61 in/hr
Q100IN= 43.52 cfs

STORAGE CURVE FACTOR FOR THE 100-YEAR DETENTION VOLUME (R)

R= [0.206-0.15IN (Q100P/Q100IN)]
R = 0.474

100-YEAR REQUIRED DETENTION BASIN VOLUME

VCP-P = 0
V100D= (V100R x R) - VCP-P = 84,911 ft³ required

Basin "A" must be designed to accommodate the following volumes:

Vwq=	34,237	cubic feet
Vcpvc=	44,508	cubic feet
Ved=	65,050	cubic feet
V100D=	84,911	cubic feet

VOLUME PROVIDED IN SEDIMENT FOREBAY

Elevation	Area	Vol (ft³)	Total Vol (ft³)
960	7263		
961	9294	8279	8279
962	11519	10407	18685
963	13940	12730	31415

Storage EL = 963.20 Vreq = 34237 ft³ Vprov = 31415 ft³

VOLUME PROVIDED IN DETENTION BASIN

Elevation	Area	Vol (ft³)	Forebay Vol (ft³)	Total Vol (ft³)
958.5	9088			
959.5	12120	10604	8279	18883
960.5	15364	13742	10407	43031
961.5	18821	17093	12730	72853
962.5	39004	28913		101766

100 Year EL = 962.07 Vreq = 84911 ft³
Ved EL = 961.09 Vprov = 101766 ft³

C-Factor Determination

Tributary Area	=	12.41	Ac.		
Impervious Areas					
Buildings	=	2.38	Ac.	0.95	
Roads	=	2.74	Ac.	0.95	
Sidewalks/Parking	=	1.14	Ac.	0.95	
Driveways	=	0.41	Ac.	0.95	
		6.67	Ac.	at C =	0.95
Pervious Areas					
Lawn Areas (Soils D)	=	5.38	Ac.	at C =	0.50
Low Water	=	0.36	Ac.	at C =	1.00
C Avg.	=	0.76			

PROPOSED LEGEND

- SANITARY SEWER
- WATER MAIN
- STORM SEWER
- SILT FENCE
- TREE PROTECTION FENCE
- WETLAND
- 1000 CONTOUR
- CURB AND GUTTER
- SANITARY MANHOLE
- STORM MANHOLE
- STORM CATCH BASIN
- END SECTION
- FIRE HYDRANT
- VALVE IN WELL
- PAVEMENT (ASPHALT)
- PAVEMENT (CONCRETE SIDEWALK)
- DIRECTION SURFACE WATER FLOW
- 1000.00 GRADE

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DESIGNED BY: J. RICKARD
OFFICE: FARMINGTON HILLS

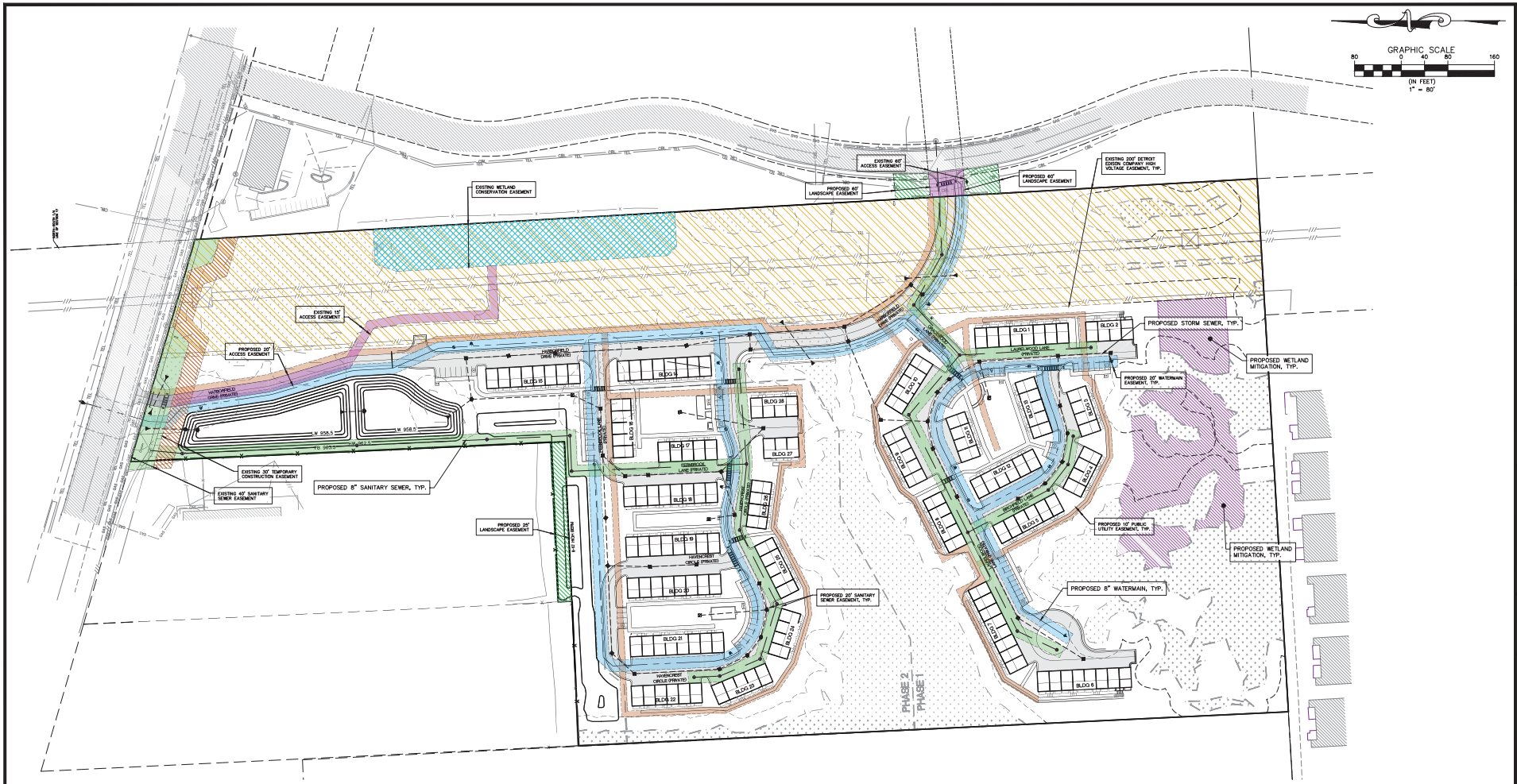
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947.257.5956

PROJECT NAME:
PROVIDENCE MEADOWS
PART OF SECTION 17, T1N, R.8E., CITY OF NOVI, OAKLAND COUNTY, MI

SHEET TITLE:
STORM WATER MANAGEMENT PLAN

PAGE No.:
C17

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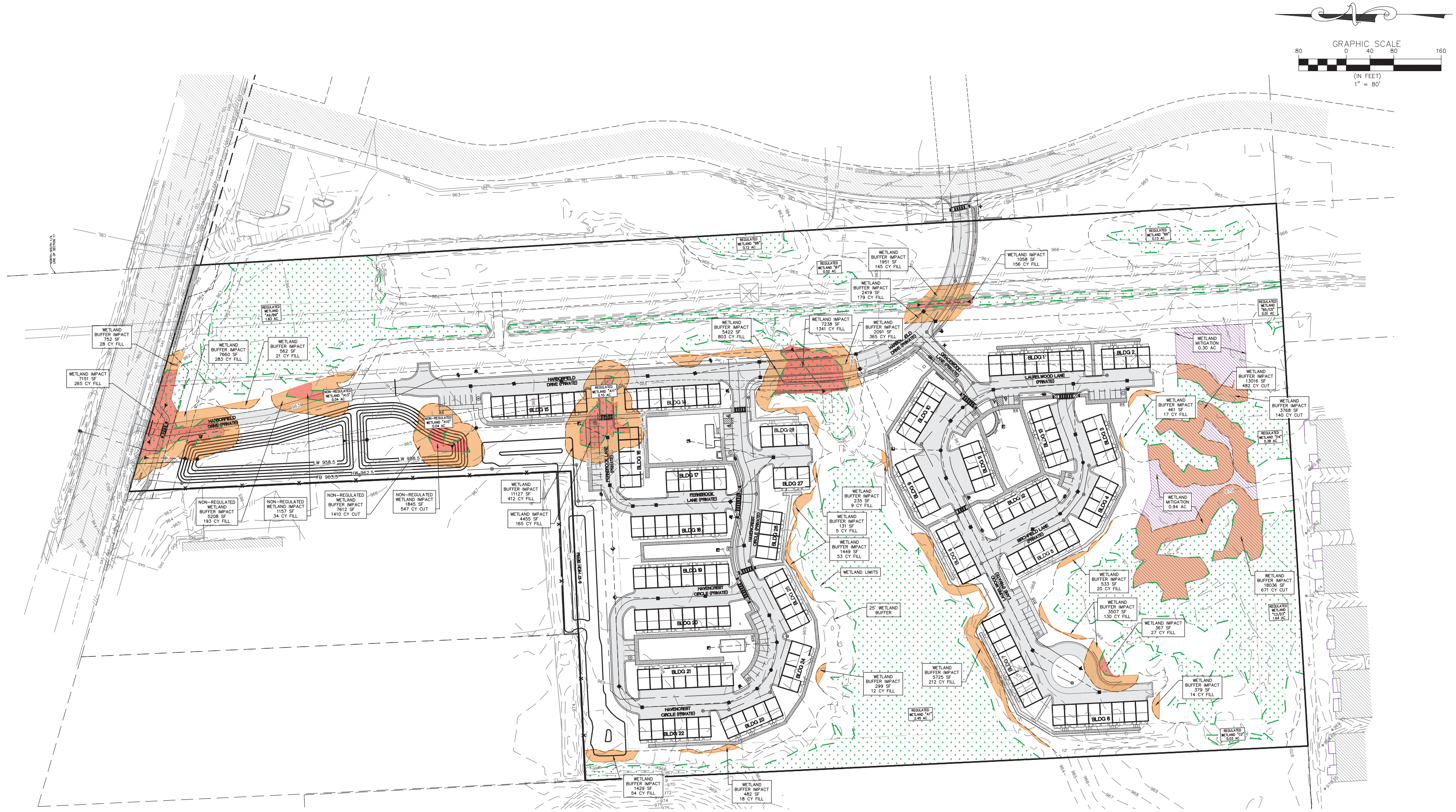
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T1N., R.8E., CITY OF NOVI, OAKLAND COUNTY, MI

SHEET TITLE:
EASEMENT PLAN

PAGE No.:
C18

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REGULATED WETLAND IMPACTS

WETLAND ID	TYPE	WETLAND (AC)	WETLAND IMPACTED (SF)	WETLAND IMPACTED (AC)	WETLAND VOL FILL/(CUT) (CY)	TEMPORARY BUFFER IMPACTED (SF)	PERMANENT BUFFER IMPACTED (SF)	TEMPORARY BUFFER IMPACTED (AC)	PERMANENT BUFFER IMPACTED (AC)	TEMPORARY BUFFER VOL FILL/(CUT) (CY)	PERMANENT BUFFER VOL FILL/(CUT) (CY)
A1	EMERGENT/SCRUB-SHRUB/FORESTED	2.45	0	0	0	9750	0	0.22	0	363	0
C2	EMERGENT/SCRUB-SHRUB/FORESTED	0.03	0	0	0	0	0	0	0	0	0
C3/D3	EMERGENT/SCRUB-SHRUB/FORESTED	1.64	367	0.01	27	22455	0	0.52	0	(507)	0
D4	EMERGENT/SCRUB-SHRUB/FORESTED	0.38	0	0	0	17245	0	0.40	0	(605)	0
B5/C5	EMERGENT/SCRUB-SHRUB/FORESTED	0.01	0	0	0	0	0	0	0	0	0
B6	EMERGENT/SCRUB-SHRUB/FORESTED	0.13	0	0	0	0	0	0	0	0	0
B7	EMERGENT/SCRUB-SHRUB/FORESTED	0.02	0	0	0	0	0	0	0	0	0
B8	EMERGENT/SCRUB-SHRUB/FORESTED	0.12	0	0	0	0	0	0	0	0	0
A9/B9	EMERGENT/SCRUB-SHRUB	1.83	15447	0.35	1762	0	20557	0	0.47	0	1824
A11	EMERGENT/SCRUB-SHRUB/FORESTED	0.10		0.10	484			0	0.26	0	839
	TOTAL	**6.71**		**0.46**	**2273**			**1.14**	**0.73**	**-749**	**2663**

NON-REGULATED WETLAND IMPACTS

WETLAND ID	TYPE	WETLAND (AC)	WETLAND IMPACTED (SF)	WETLAND IMPACTED (AC)	WETLAND VOL FILL/(CUT) (CY)	TEMPORARY BUFFER IMPACTED (SF)	PERMANENT BUFFER IMPACTED (SF)	TEMPORARY BUFFER IMPACTED (AC)	PERMANENT BUFFER IMPACTED (AC)	TEMPORARY BUFFER VOL FILL/(CUT) (CY)	PERMANENT BUFFER VOL FILL/(CUT) (CY)
A10	EMERGENT/SCRUB-SHRUB/FORESTED	0.04	1845	0.04	(547)	0	7612	0	0.06	0	(1410)
A13	EMERGENT/SCRUB-SHRUB/FORESTED	0.04	1157	0.03	34	0	5208	0.0	0.12	0	193
	TOTAL	**0.08**		**0.07**	**-513**			**0.00**	**0.18**	**0**	**-1217**

REGULATED WETLAND MITIGATION REQUIRED

	RATE	WETLAND IMPACTED (AC)	MITIGATION AREA (AC)
	2.0	0.46	0.93

NON-REGULATED WETLAND MITIGATION REQUIRED

	RATE	WETLAND IMPACTED (AC)	MITIGATION AREA (AC)
	2.0	0.07	0.13

TOTAL **1.06** **REQUIRED**
1.24 **PROVIDED**

WETLAND DISTURBANCE LEGEND

- WETLAND IMPACT
- WETLAND MITIGATION
- WETLAND BUFFER IMPACT

PROPOSED LEGEND

- SANITARY SEWER
- WATER MAIN
- STORM SEWER
- SILT FENCE
- TREE PROTECTION FENCE
- WETLAND
- CONTOUR
- CURB AND GUTTER
- SANITARY MANHOLE
- STORM MANHOLE
- STORM CATCH BASIN
- END SECTION
- FIRE HYDRANT
- VALVE IN WELL
- PAVEMENT (ASPHALT)
- PAVEMENT (CONCRETE SIDEWALK)
- DIRECTION SURFACE WATER FLOW
- GRADE

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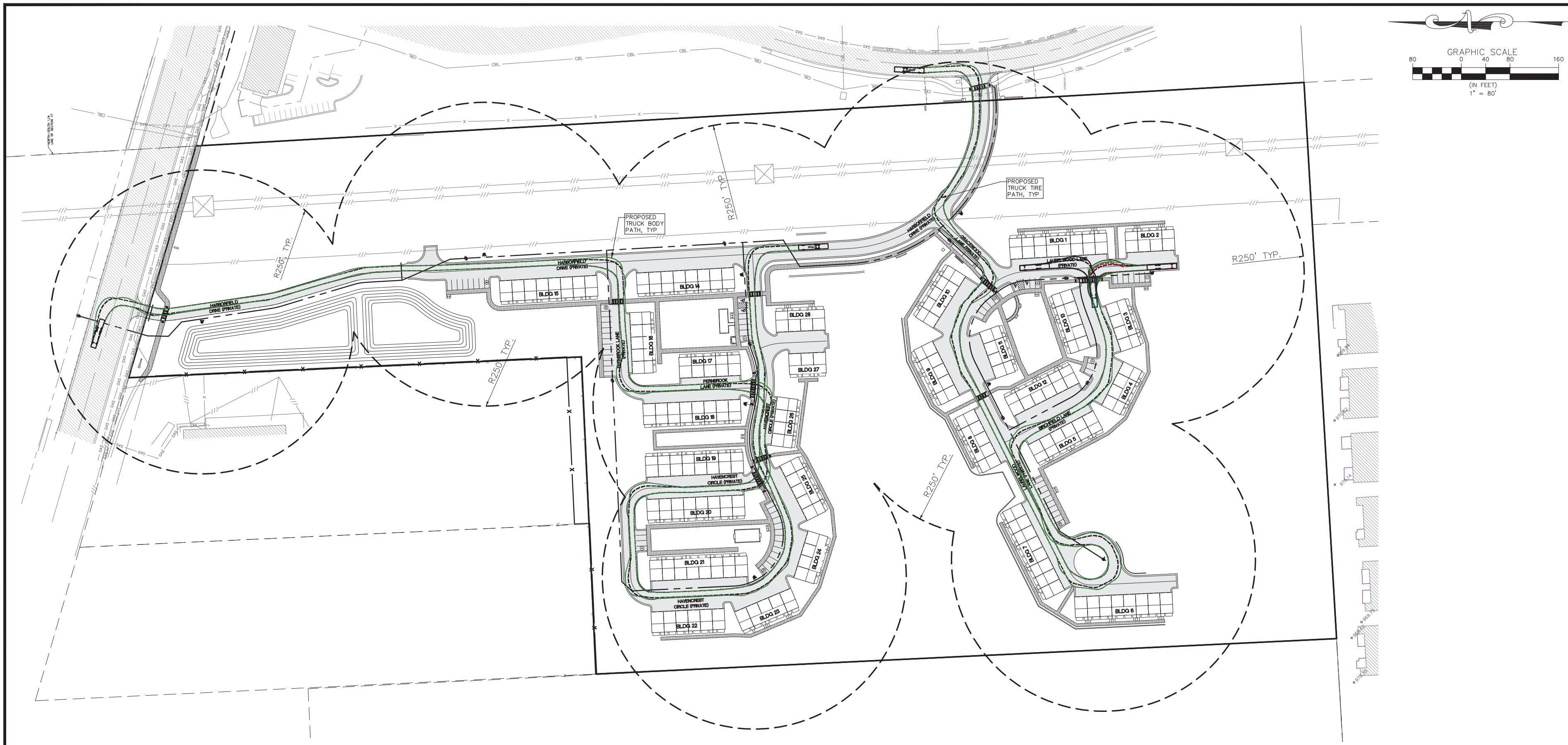
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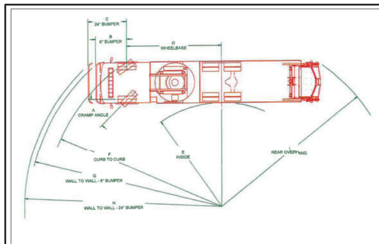
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947.257.5956

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PART OF SECTION 17, T.1N., R.8E., CITY OF NOVI, OAKLAND COUNTY, MI

SHEET TITLE:
WETLAND PLAN

PAGE No.: C19





Parameters

A	Cramp Angle (maximum)	45 deg. 425 Tires
B	Front Overhang 6" Bumper	76"
C	Front Overhang 24" Bumper	94"
D	Wheelbase	247"

Calculated Results

E	Inside Turning Radius	19'-10"
F	Curb to Curb	35'-2"
G	Wall to Wall 6" Bumper	39'-1"
H	Wall to Wall 24" Bumper	40'-1"
I	Rear Overhang Swing	33'-7"

Cramp Angle may vary due to vehicle configuration.
Curb to Curb based on a 9" curb

pg.1

NOTE: BUILDINGS MUST COMPLY WITH THE INTERNATIONAL FIRE CODE SECTION 510 FOR EMERGENCY RADIO COVERAGE

PROPOSED LEGEND

- SANITARY SEWER
- WATER MAIN
- STORM SEWER
- SILT FENCE
- TREE PROTECTION FENCE
- WETLAND
- CONTOUR (1000)
- CURB AND GUTTER
- SANITARY MANHOLE
- STORM MANHOLE
- STORM CATCH BASIN
- END SECTION
- FIRE HYDRANT
- VALVE IN WELL
- PAVEMENT (ASPHALT)
- PAVEMENT (CONCRETE SIDEWALK)
- DIRECTION SURFACE WATER FLOW
- GRADE (1000.00)

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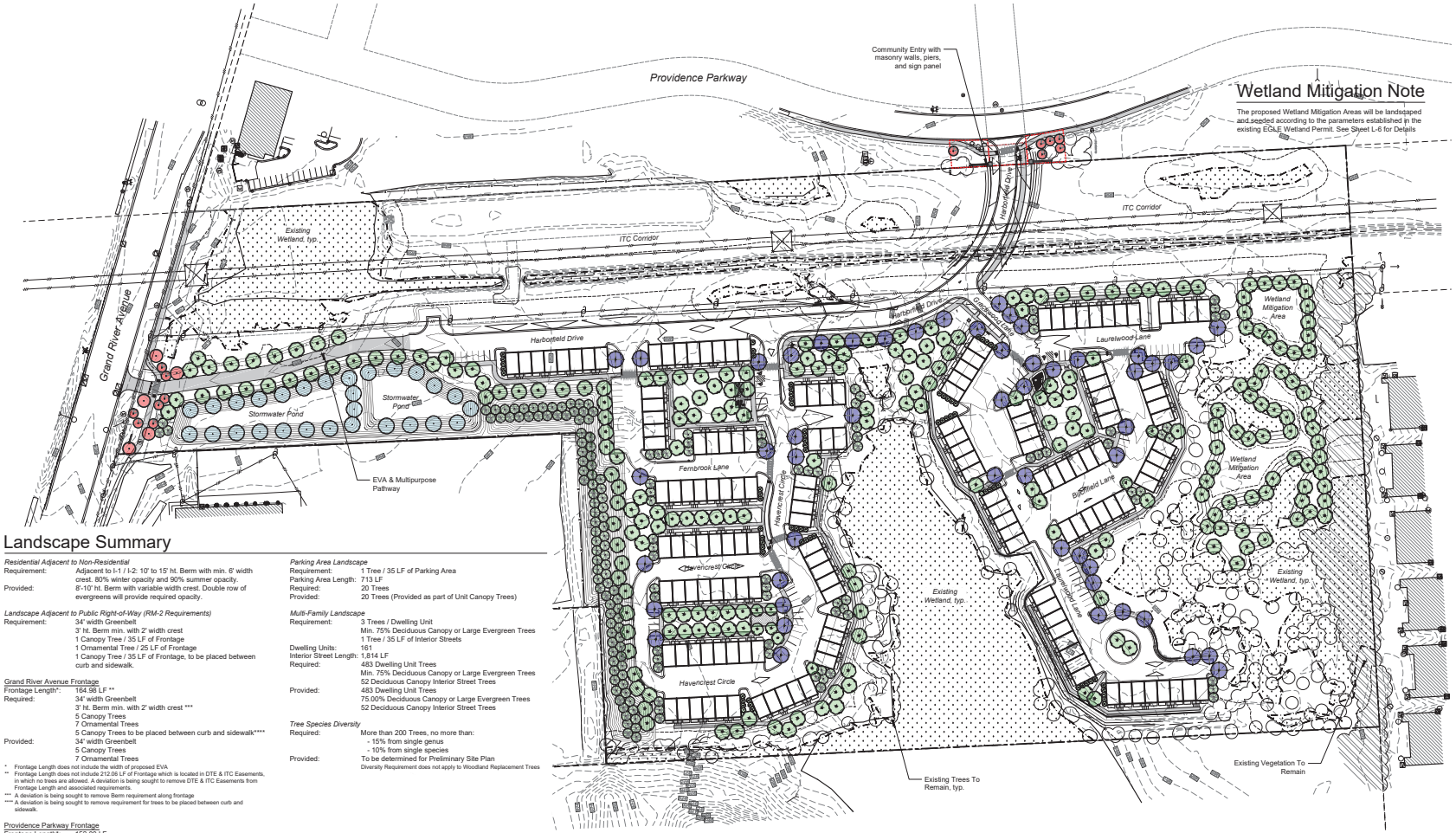
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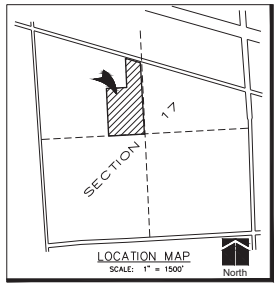
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PART OF SECTION 17,
T.1N., R.8E., CITY OF NOVI, OAKLAND COUNTY, MI

SHEET TITLE:
FIRE TRUCK ROUTING PLAN

PAGE No.: C20





Landscape Summary

Residential Adjacent to Non-Residential
Requirement: Adjacent to I-1 / I-2- 10' to 15' ht. Berm with min. 6' width crest. 80% winter opacity and 90% summer opacity.
Provided: 8'-10' ht. Berm with variable width crest. Double row of evergreens will provide required opacity.

Landscape Adjacent to Public Right-of-Way (RM-2 Requirements)
Requirement: 34' width Greenbelt
3' ht. Berm min. with 2' width crest
1 Canopy Tree / 35 LF of Frontage
1 Ornamental Tree / 25 LF of Frontage
1 Canopy Tree / 35 LF of Frontage, to be placed between curb and sidewalk.

Grand River Avenue Frontage
Frontage Length*: 164.98 LF **
Required: 34' width Greenbelt
3' ht. Berm min. with 2' width crest ***
5 Canopy Trees
7 Ornamental Trees
5 Canopy Trees to be placed between curb and sidewalk****
Provided: 34' width Greenbelt
5 Canopy Trees
7 Ornamental Trees

* Frontage Length does not include the width of proposed EVA
** Frontage Length does not include 212.06 LF of Frontage which is located in DTE & ITC Easements, in which no trees are allowed. A deviation is being sought to remove DTE & ITC Easements from Frontage Length and associated requirements.
*** A deviation is being sought to remove Berm requirement along frontage
**** A deviation is being sought to remove requirement for trees to be placed between curb and sidewalk.

Providence Parkway Frontage
Frontage Length*: 152.00 LF
Required: 34' width Greenbelt
3' ht. Berm min. with 2' width crest **
4 Canopy Trees
6 Ornamental Trees
4 Canopy Trees to be placed between curb and sidewalk
Provided: 34' width Greenbelt
4 Canopy Trees (4 Existing Trees, See Sheet L-2)
6 Ornamental Trees
0 Canopy Trees to be placed between curb and sidewalk***

* Frontage Length is calculated as the length of granted access and landscape easements and does not include the width of proposed entry drive
** A deviation is being sought to remove Berm requirement along frontage
*** Trees are not proposed between the curb and sidewalk due to existing utilities and limited space within the access and landscape easements.

Parking Area Landscape
Requirement: 1 Tree / 35 LF of Parking Area
Parking Area Length: 713 LF
Required: 20 Trees
Provided: 20 Trees (Provided as part of Unit Canopy Trees)

Multi-Family Landscape
Requirement: 3 Trees / Dwelling Unit
Min. 75% Deciduous Canopy or Large Evergreen Trees
1 Tree / 35 LF of Interior Streets
Dwelling Units: 161
Interior Street Length: 1,814 LF
Required: 483 Dwelling Unit Trees
Min. 75% Deciduous Canopy or Large Evergreen Trees
52 Deciduous Canopy Interior Street Trees
Provided: 483 Dwelling Unit Trees
75.00% Deciduous Canopy or Large Evergreen Trees
52 Deciduous Canopy Interior Street Trees

Tree Species Diversity
Required: More than 200 Trees, no more than:
- 15% from single genus
- 10% from single species
Provided: To be determined for Preliminary Site Plan
Diversity Requirement does not apply to Woodland Replacement Trees

Landscape Deviation Requests

1. *Deviation for the lack of required 3-foot berm along Grand River Avenue and Providence Parkway due to the existing natural areas to be preserved, and the presence of the ITC easement.*
2. *Deviation to allow a deficiency in street trees along Grand River Avenue.*
3. *Deviation to allow a deficiency in greenbelt landscaping along Grand River Avenue.*
4. *Deviation to allow the use of existing trees as street trees along Providence Parkway access easement.*
5. *Deviation to allow a deficiency in street trees along Harborfield Drive within the ITC easement.*
6. *Deviation for the lack of greenbelt plantings along Providence Parkway.*

Tree Legend

= Landscape Adjacent to R.O.W. Deciduous Tree
= Landscape Adjacent to R.O.W. Deciduous Subcanopy Tree
= Interior Street Trees Deciduous Canopy Tree
= Multi-Family Dwelling Unit Trees Deciduous Canopy Tree
= Multi-Family Dwelling Unit Trees Large Evergreen Tree
= Storm Pond Trees Deciduous Canopy Tree

Required Tree Setbacks from Utilities

- Sanitary Sewer: 10' setback min.
- Storm Sewer: 5' setback min.
- Water Main: 5' setback min.

Woodland Replacement Summary

Total Trees Surveyed:	878
- Total Trees Offsite:	9
Total Onsite Trees:	869
Total Regulated Trees:	6*
Total Trees Saved:	332
- Previously Dead Trees:	9
Total Trees Removed:	537
- Previously Dead Trees:	14
- Trees Requiring Replacement:	3

Removed Tree d.b.h. (In Inches)	Ratio Replacement/ Removed Trees
8 < 11	1
> 11 < 20	2
> 20 < 29	3
> 30	4

Required Replacements

DBH of Trees Removed	*Quantity*	*Required Trees* **
8" to 11"	1	1
11.1" to 20"	1	2
20.1" to 29"	1	3
Greater than 30"	0	0

Total Replacements Required: 6 - 2.5" caliper Trees
Total Replacements Proposed: 0 - 2.5" caliper Trees
6 Landscape Credits Used

* Trees with DBH 8" and larger and are located within a Novi Regulated Woodland, according to the Novi Regulated Woodland Map, are regulated by the City of Novi Ordinance Chapter 37
** Required Trees are calculated using the required replacement rate set forth in the City of Novi Ordinance Chapter 37, Article I, Section 37-8.a. See Chart above.

Existing Trees Used for Landscape Requirements

- Trees Saved Onsite: 332
- Saved Trees to be used towards Landscape Requirements*: 77
- **Landscape Credits: 195 Trees**

Table 11.b.(1)(f) from Novi Landscape Design Manual:

Diameter of Trunk of Preserved Tree*	Number of Tree Credits	Number of Trees Onsite **
36" or greater caliper	7 trees	0
29" to 36" caliper	6 trees	0
23 to 29" caliper	5 trees	0
17 to 23" caliper	4 trees	4
12 to 17" caliper	3 trees	17
7 to 12" caliper	2 trees	63
3 to 7" caliper	1 tree	2

* Per Novi Landscape Design Manual Section 11b.(1)(a)-(f), Landscape Credit can be acquired for preserved canopy trees if they do not fall within a Novi regulated Wetland or Woodland, are not a prohibited species, or are of poor quality. Credits are determined by the above Table.
** Total quantity of trees in the identified column above equals 86 due to multi-trunk existing trees.

Know what's below. Call before you dig.

1"= 80'
0 40' 80' 160' 240' 320'
North

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STATE OF MICHIGAN WILLIAM KREAH No. 1172 LICENSED LANDSCAPE ARCHITECT

sheet title:
Overall Landscape Concept

project title:
Providence Meadows
City of Novi, Michigan

prepared for:
Robertson Brothers Homes
6905 Telegraph Rd. - Suite 200
Bloomfield Hills, MI 48301
Phone: 248.657.4968

job number:	date:
24018	07.18.2025
drawn by:	checked by:
EMJ	WTK

revisions:
10.17.2025 Per Municipal Review

sheet no.
L-1



Tree Legend

- = Landscape Adjacent to R.O.W. Deciduous Subcanopy Tree
- = Interior Street Trees Deciduous Canopy Tree
- = Multi-Family Dwelling Unit Trees Deciduous Canopy Tree
- = Multi-Family Dwelling Unit Trees Large Evergreen Tree

Wetland Mitigation Note

The proposed Wetland Mitigation Areas will be landscaped and seeded according to the parameters established in the existing EGLE Wetland Permit. See Sheet L-6 for Details

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1"= 40'

0 20' 40' 80' 120' 160'

North

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WILLIAM T. KRUEGER
No. 1172
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sheet title:
Landscape Concept Plan - South

project title:
Providence Meadows
City of Novi, Michigan

prepared for:
Robertson Brothers Homes
6905 Telegraph Rd. - Suite 200
Bloomfield Hills, MI 48301

Phone: 248.657.4968

job number:	date:
24018	07.18.2025

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EMJ	WTK

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10.17.2025 Per Municipal Review

sheet no.
L-2



Tree Legend

= Interior Street Trees
Deciduous Canopy Tree

= Multi-Family Dwelling Unit Trees
Deciduous Canopy Tree

= Multi-Family Dwelling Unit Trees
Large Evergreen Tree

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WILLIAM KREAN
No. 1172
REGISTERED LANDSCAPE ARCHITECT

sheet title:
Landscape Concept Plan - Central

project title:
Providence Meadows
City of Novi, Michigan

prepared for:
Robertson Brothers Homes
6905 Telegraph Rd. - Suite 200
Bloomfield Hills, MI 48301

Phone: 248.657.4968

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24018	07.18.2025

drawn by:	checked by:
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0 20' 40' 80' 120' 160'
1"= 40'

North

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L-3

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Stormwater Pond Landscape Summary

Requirement:	1 Canopy Tree / 35 LF of pond edge, measured at the permanent water level, to be located 6'-10' from permanent water level. Large, native shrubs covering 70%-75% of basin perimeter, measured 10' from permanent water level or pond bottom. Bottom & sides of basin, extending 25' from permanent water level to be planted with native seed mix and not mowed.
Length of Water Edge:	953.34 LF
Shrub Length of North:	636.95 LF
Shrub Length of South:	442.05 LF
Required:	28 Canopy Trees Shrubs North: 445.87 LF Shrubs South: 309.44 LF 70%-75% basin perimeter covered by large native shrubs. Native seed mix covering bottom and sides of basin, extending 25' from permanent water level.
Provided:	28 Canopy Trees Shrubs North: 450.86 LF Shrubs South: 314.87 LF 70.97% of basin perimeter covered by large native shrubs. See Seeding Details This Sheet

Native Seed Mix Submittal Note

Prior to seed application, Contractor shall submit photo of the seed bag to be used to City Landscape Architect or City Environmental Consultant for verification and approval.

Detention Pond Seeding Summary

Pond Zone - Pond Bottom - 958.50'

16,353 s.f.
Application Rate: 36.88 lbs. / Ac.
13.85 lbs. of Emergent Wetland Seed Mix
3"-6" of Topsoil or Wetland Mulch Shall be Placed in this Area. Use Seed Mat.

Edge Zone - Elevation 958.50' - 963.50'

28,052 s.f.
Application Rate: 36.38 lbs. / Ac.
23.43 lbs. of Stormwater Seed Mix
3"-6" of Topsoil or Wetland Mulch Shall be Placed in this Area. Use Seed Mat.

Seed Mixes available from Stantec Native Plant Nursery
- www.stantec.com/en/services/native-plant-nursery
- 574.586.2412
All Seed shall be protected with mulch blanket

Tree Legend

- = Landscape Adjacent to R.O.W. Deciduous Tree
- = Landscape Adjacent to R.O.W. Deciduous Subcanopy Tree
- = Multi-Family Dwelling Unit Trees Deciduous Canopy Tree
- = Multi-Family Dwelling Unit Trees Large Evergreen Tree
- = Storm Pond Trees Deciduous Canopy Tree
- = Storm Pond Large Shrubs

Pond Zone - Emergent Wetland Seed Mix

Botanical Name	Common Name	PLS Oz/Acre
Permanent Grasses/Sedges/Rushes		
Bolboschoenus fluviatilis	River Bulrush	4.00
Carex comosa	Bristly Sedge	2.50
Carex lacustris	Common Lake Sedge	6.50
Carex lurida	Bottlebrush Sedge	2.00
Carex stricta	Common Tussock Sedge	1.00
Carex vulpinoidea	Brown Fox Sedge	2.00
Eleocharis palustris	Great Spike Rush	1.00
Juncus effusus	Common Rush	1.00
Leersia oryzoides	Rice Cut Grass	9.00
Schoenoplectus acutus	Hard-Stemmed Bulrush	1.50
Schoenoplectus pungens	Chairmaker's Rush	1.50
Schoenoplectus tabernaemontani	Great Bulrush	6.00
	Total	36.50
Temporary Cover		
Avena sativa	Common Oat	512.00
	Total	512.00
Forbs		
Alnus americana	Smooth Alder	1.00
Alisma subcordatum	Common Water Plantain	2.00
Asclepias incarnata	Swamp Milkweed	1.00
Boehmeria cylindrica	False Nettle	2.00
Caltha palustris var. palustris	Marsh Marigold	1.00
Eupatorium perfoliatum	Boneset	0.50
Eutrochium maculatum	Spotted Joe-Pye Weed	0.50
Hibiscus spp.	Rose Mallow Species	4.00
Iris spp.	Blue Flag Species	6.00
Lobelia cardinalis	Cardinal Flower	0.20
Lobelia siphilitica	Great Blue Lobelia	0.20
Lycopus americanus	Common Water Horehound	1.00
Mimulus ringens	Monkey Flower	1.00
Pontederia cordata	Pickerel Weed	8.00
Rudbeckia laciniata	Cutleaf Coneflower	2.00
Sagittaria latifolia	Common Arrowhead	6.00
Symphyotrichum novae-angliae	New England Aster	0.50
Verbena hastata	Blue Vervain	1.00
	Total	32.40

Edge Zone - Stormwater Seed Mix

Botanical Name	Common Name	PLS Oz/Acre
Permanent Grasses/Sedges/Rushes		
Bolboschoenus fluviatilis	River Bulrush	4.00
Carex crinita	Crested Oval Sedge	6.00
Carex lacustris	Bottlebrush Sedge	2.00
Carex vulpinoidea	Brown Fox Sedge	2.00
Eleocharis obtusa	Blunt Spike Rush	0.50
Elymus virginicus	Virginia Wild Rye	24.00
Glyceria striata	Fowl Manna Grass	1.00
Juncus effusus	Common Rush	1.00
Leersia oryzoides	Rice Cut Grass	1.00
Panicum virgatum	Switch Grass	2.00
Schoenoplectus tabernaemontani	Great Bulrush	3.00
Scirpus atrovirens	Dark Green Rush	2.00
Scirpus cyperinus	Wool Grass	1.00
	Total	44.50
Temporary Cover		
Avena sativa	Common Oat	512.00
	Total	512.00
Forbs and Shrubs		
Alisma subcordatum	Common Water Plantain	2.00
Asclepias incarnata	Swamp Milkweed	2.00
Bidens spp.	Bidens Species	2.00
Eupatorium perfoliatum	Common Boneset	1.00
Helenium autumnale	Sneezeweed	2.00
Iris spp.	Blue Flag Species	4.00
Lycopus americanus	Common Water Horehound	0.50
Mimulus ringens	Monkey Flower	1.00
Penthorum sedoides	Ditch Stonecrop	0.50
Physostegia spp.	Obedient Species	2.00
Rudbeckia subtomentosa	Sweet Black-Eyed Susan	1.00
Rudbeckia triloba	Brown-Eyed Susan	1.50
Sagittaria latifolia	Common Arrowhead	1.00
Silene stellata	Wild Senna	2.00
Symphyotrichum laeve laeve	Smooth Aster	0.50
Symphyotrichum novae-angliae	New England Aster	0.50
Thalictrum dioicum	Purple Meadow Rue	2.00
	Total	26.00

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STATE OF MICHIGAN
WILLIAM T. KREAG
LICENSED LANDSCAPE ARCHITECT
No. 1172
APPROVED

sheet title:
Landscape Concept Plan - North

project title:
Providence Meadows
City of Novi, Michigan

prepared for:
Robertson Brothers Homes
6905 Telegraph Rd. - Suite 200
Bloomfield Hills, MI 48301

Phone: 248.657.4968

job number:	date:
24018	07.18.2025
drawn by:	checked by:
EMJ	WTK

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revisions:
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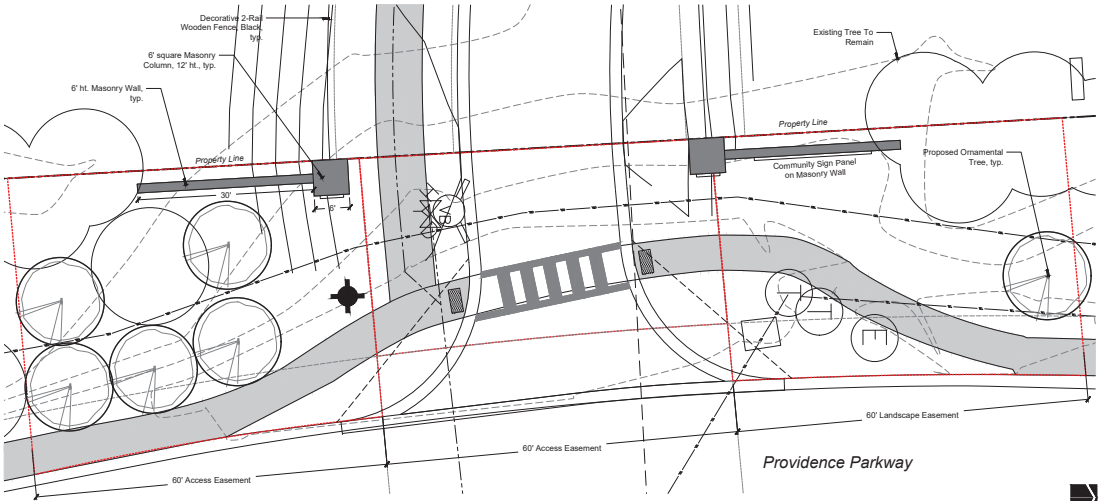
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North

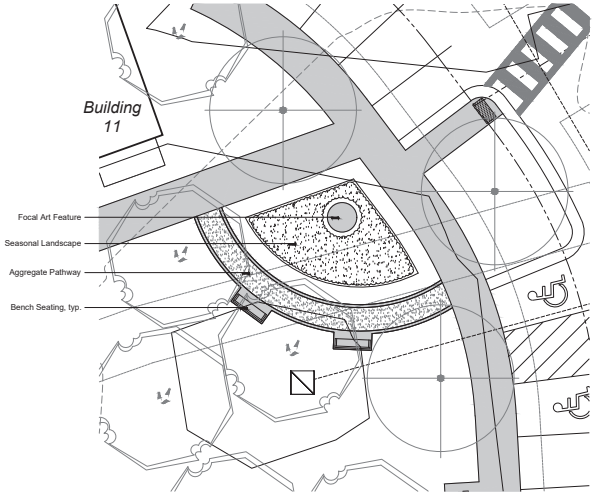
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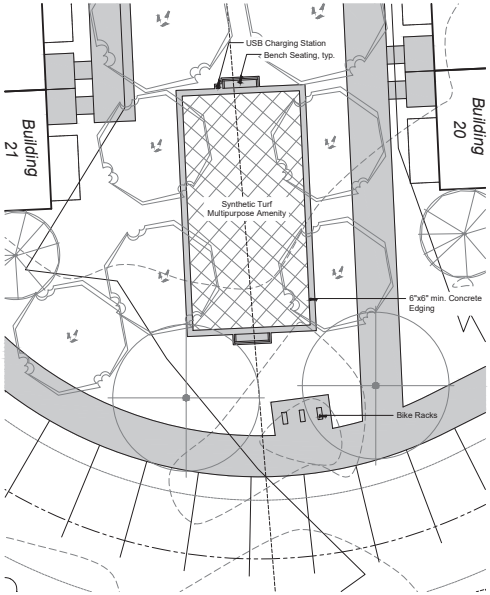
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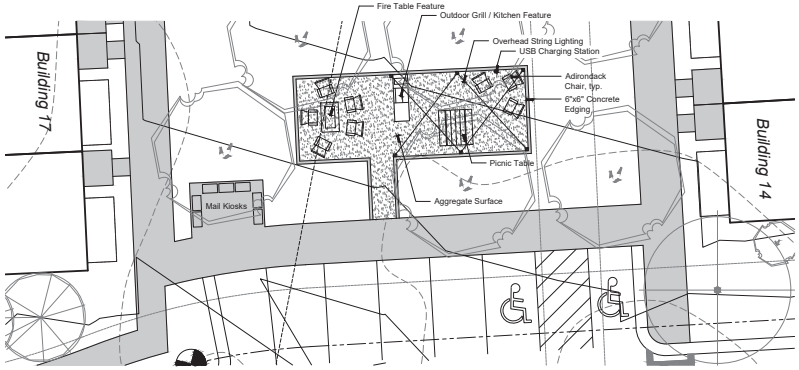
Providence Parkway Entry Concept Enlargement



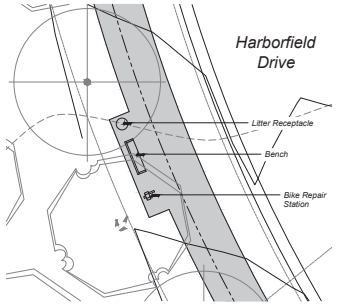
Focal Garden Amenity Concept



Multipurpose Amenity Concept



Community Gathering Amenity Concept



Bike Repair Roadside Amenity

Proposed Amenity & Entry Concept Plans are conceptual at this time. Final details will be developed for Final Site Plan Approval.

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0 5' 10' 20' 30' 40' 1"= 10'

North

sheet no. L-5

revisions:
10.17.2025 Per Municipal Review

sheet title:
Amenity & Entry Concept Plans

project title:
Providence Meadows
City of Novi, Michigan

prepared for:
Robertson Brothers Homes
6905 Telegraph Rd. - Suite 200
Bloomfield Hills, MI 48301

Phone: 248.657.4968

job number:	date:
24018	07.18.2025

drawn by:	checked by:
EMJ	WTK



Wetland Shrub Plant Schedule

Shrubs

sym.	qty.	botanical name	common name	size	spacing	root
AM	102	*Aronia melanocarpa*	Black Chokeberry	No. 3	per plans	cont.
CA	68	*Cornus amomum sericea*	Silky Dogwood	No. 3	per plans	cont.
CS	102	*Cornus stalonifera*	Red Osier Dogwood	No. 3	per plans	cont.
VL	102	*Viburnum lentago*	Nannyberry	No. 3	per plans	cont.
	374					

Wetland Mitigation Seeding Summary

Emergent Wetland Zone

18,325 s.f.
Application Rate: 36.88 lbs. / Ac.
15.50 lbs. of Emergent Wetland Seed Mix
3"-6" of Topsoil or Wetland Mulch Shall be Placed in this Area. Use Seed Mat.

Scrub-Shrub Wetland Zone

35,972 s.f.
Application Rate: 36.38 lbs. / Ac.
30.00 lbs. of Stormwater Seed Mix
3"-6" of Topsoil or Wetland Mulch Shall be Placed in this Area. Use Seed Mat.

Seed Mixes available from Stantec Native Plant Nursery
- www.stantec.com/en/services/native-plant-nursery
- 574.586.2412
All Seed shall be protected with mulch blanket

Wetland Landscape Summary

Size of Wetland Mitigation: 1.247 Ac.

Habitat Structures
Requirement: Habitat structures installed at a rate of 6 structures per acre of mitigation.
Required: 8 structures
Provided: 8 structures

Shrub Plantings
Requirement: Native shrubs to be installed at a rate of 300 shrubs per acre of mitigation and comprising a min. 4 different species.
Required: 374 Shrubs
Provided: 374 Shrubs

Wetland Seeding
See Seeding Summary this sheet for Details.

Emergent Wetland Seed Mix

Botanical Name	Common Name	PLS lb/Acre
Permanent Grasses/Sedges/Rushes		
Bolboschoenus fluviatilis	River Bulrush	4.00
Carex stricta	Tussock Sedge	2.50
Carex lacustris	Common Lake Sedge	0.50
Carex lurida	Sallow Sedge	2.00
Carex stricta	Common Tussock Sedge	1.00
Carex vulpinoidea	Brown Fox Sedge	2.00
Eleocharis palustris	Great Spike Rush	1.00
Juncus effusus	Common Rush	1.00
Leersia oryzoides	Rice Cut Grass	3.00
Schoenoplectus acutus	Hard-Stemmed Bulrush	1.50
Schoenoplectus pungens	Chairmaker's Rush	1.50
Schoenoplectus tabernaemontani	Great Bulrush	4.00
	Total	24.00
Temporary Cover		
Avena sativa	Common Oat	51.00
	Total	51.00
Forbs		
Alisma subcordatum	Common Water Plantain	2.00
Asclepias incarnata	Swamp Milkweed	1.00
Bidens cernua	Nodding Beggarticks	2.00
Eupatorium perfoliatum	Common Boneset	1.00
Helenium autumnale	Sneezeweed	2.00
Iris virginica	Blue Flag Iris	4.00
Lycopus americanus	Common Water Horehound	0.50
Mimulus ringens	Monkey Flower	1.00
Pontederia cordata	Pickerel Weed	8.00
Rudbeckia laciniata	Cutleaf Coneflower	2.00
Sagittaria latifolia	Common Arrowhead	2.00
Symphyotrichum novae-angliae	New England Aster	0.50
Verbena hastata	Blue Vervain	1.00
	Total	26.00

Scrub-Shrub Wetland Seed Mix

Botanical Name	Common Name	PLS lb/Acre
Permanent Grasses/Sedges/Rushes		
Bolboschoenus fluviatilis	River Bulrush	4.00
Carex crinita	Crested Oval Sedge	0.50
Carex lurida	Sallow Sedge	2.00
Carex vulpinoidea	Brown Fox Sedge	3.00
Eleocharis obtusa	Blunt Spike Rush	0.50
Elymus virginicus	Virginia Wild Rye	24.00
Glyceria striata	Fowl Manna Grass	1.00
Juncus effusus	Common Rush	1.00
Leersia oryzoides	Rice Cut Grass	1.00
Panicum virgatum	Switch Grass	2.00
Schoenoplectus tabernaemontani	Great Bulrush	4.00
Scirpus atrovirens	Dark Green Rush	2.00
Scirpus cyperinus	Wool Grass	1.00
	Total	44.00
Temporary Cover		
Avena sativa	Common Oat	51.00
	Total	51.00
Forbs and Shrubs		
Alisma subcordatum	Common Water Plantain	2.00
Asclepias incarnata	Swamp Milkweed	2.00
Bidens spp.	Bidens Species	2.00
Equisetum pratense	Common Bankrush	1.00
Helenium autumnale	Sneezeweed	2.00
Iris spp.	Blue Flag Species	4.00
Lycopus americanus	Common Water Horehound	0.50
Mimulus ringens	Monkey Flower	1.00
Pontederia cordata	Pickerel Weed	8.00
Prunus virginiana	Common Chokecherry	2.00
Rudbeckia hirta	Black-Eyed Susan	1.00
Sagittaria latifolia	Common Arrowhead	1.00
Silphium terebinthinaceum	Prairie Dock	2.00
Symphyotrichum laeve	Smooth Blue Aster	0.50
Symphyotrichum novae-angliae	New England Aster	0.50
Thalictrum dasycarpum	Purple Meadow Rue	2.00
	Total	31.00

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STATE OF MICHIGAN
WILLIAM T. KRUEGER
LICENSED LANDSCAPE ARCHITECT
No. 1172

sheet title:
Wetland Mitigation Landscape Plan

project title:
Providence Meadows
City of Novi, Michigan

prepared for:
Robertson Brothers Homes
6905 Telegraph Rd. - Suite 200
Bloomfield Hills, MI 48301

Phone: 248.657.4968

job number:	date:
24018	10.17.2025

drawn by:	checked by:
EMJ	WTK

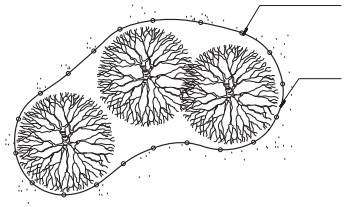
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1"= 30'
0 15' 30' 60' 90' 120'
North

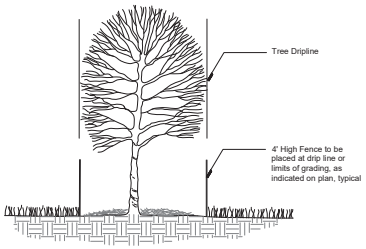
sheet no.
L-6





Tree Protection Detail - Plan

Scale: NTS



Tree Protection Detail - Section

Scale: NTS

Tree Protection Notes

1. Approved tree protection shall be erected prior to the start of construction activities, and shall remain in place until construction is complete.
2. No person may conduct any activity within the drip line, or protected area, of any designated tree to remain, including, but not limited to, placing solvents, building materials, construction equipment, etc.
3. Grade changes may not occur within the drip line of protected trees.
4. During construction, no person shall attach any device or wire to any remaining tree.
5. All utility service requests must include notification to the installer that protected trees must be avoided. All trenching shall occur outside of the protective fencing.
6. Swales shall be routed to avoid the area within the drip lines of protected trees.
7. Trees located on adjacent properties that may be affected by construction activities must be protected.
8. Trees to be removed shall be flagged by the Owner Representative prior to site grading.
9. Root zones of protected trees should be well marked with bright colors and surrounded with rigidly staked fencing.
10. The parking of idle and running equipment shall be prohibited under the drip line of protected trees.
11. The stripping of topsoil from around protected trees shall be prohibited.
12. Trees to be removed shall be fell away from trees to be saved.
13. Grubbing of understory vegetation in construction areas should be cleared by cutting vegetation at ground level with a chain saw or minimally with a hydro-axe.
14. The Landscape Architect shall be notified immediately if any protected tree is damaged or removed.

Tree Preservation Legend

= Existing Tree, To Remain

= Existing Tree, To Be Removed

= Approximate Location of Tree Protection Fencing

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0 40' 80' 160' 240' 320'

1"= 80'

North

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STATE OF MICHIGAN
WILLIAM E. KRUEGER
No. 1172
LICENSED LANDSCAPE ARCHITECT

sheet title:
Tree Preservation Plan - Overall

project title:
Providence Meadows
City of Novi, Michigan

prepared for:
Robertson Brothers Homes
6905 Telegraph Rd. - Suite 200
Bloomfield Hills, MI 48301

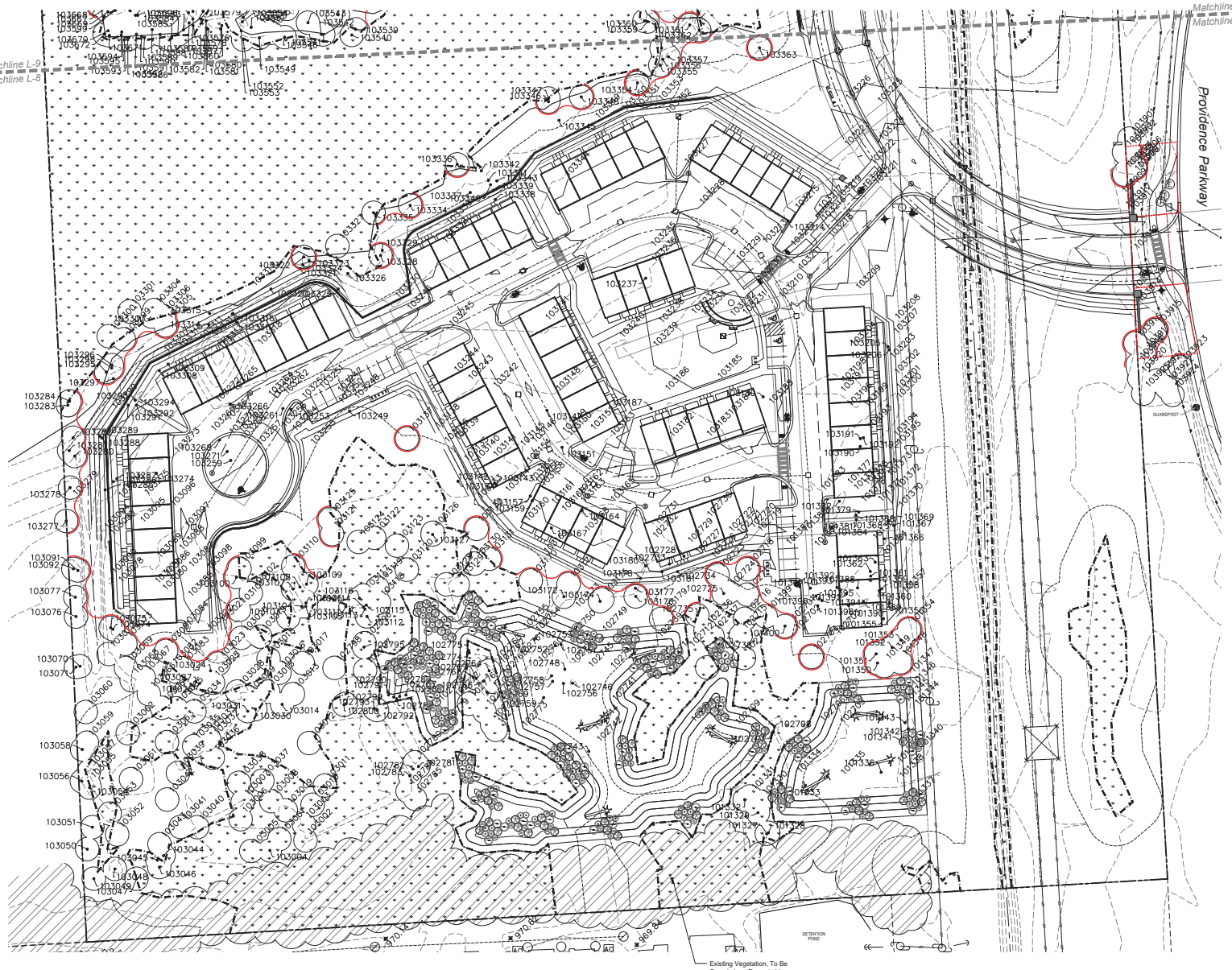
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sheet no.
L-7



Tree Preservation Legend

= Existing Tree, To Remain

= Existing Tree, To Be Removed

= Approximate Location of Tree Protection Fencing

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STATE OF MICHIGAN
WILLIAM J. KREAN
LICENSED LANDSCAPE ARCHITECT
No. 1172

sheet title:
Tree Preservation Plan - South

project title:
Providence Meadows
City of Novi, Michigan

prepared for:
Robertson Brothers Homes
6905 Telegraph Rd. - Suite 200
Bloomfield Hills, MI 48301

Phone: 248.657.4968

job number:	date:
24018	07.18.2025

drawn by:	checked by:
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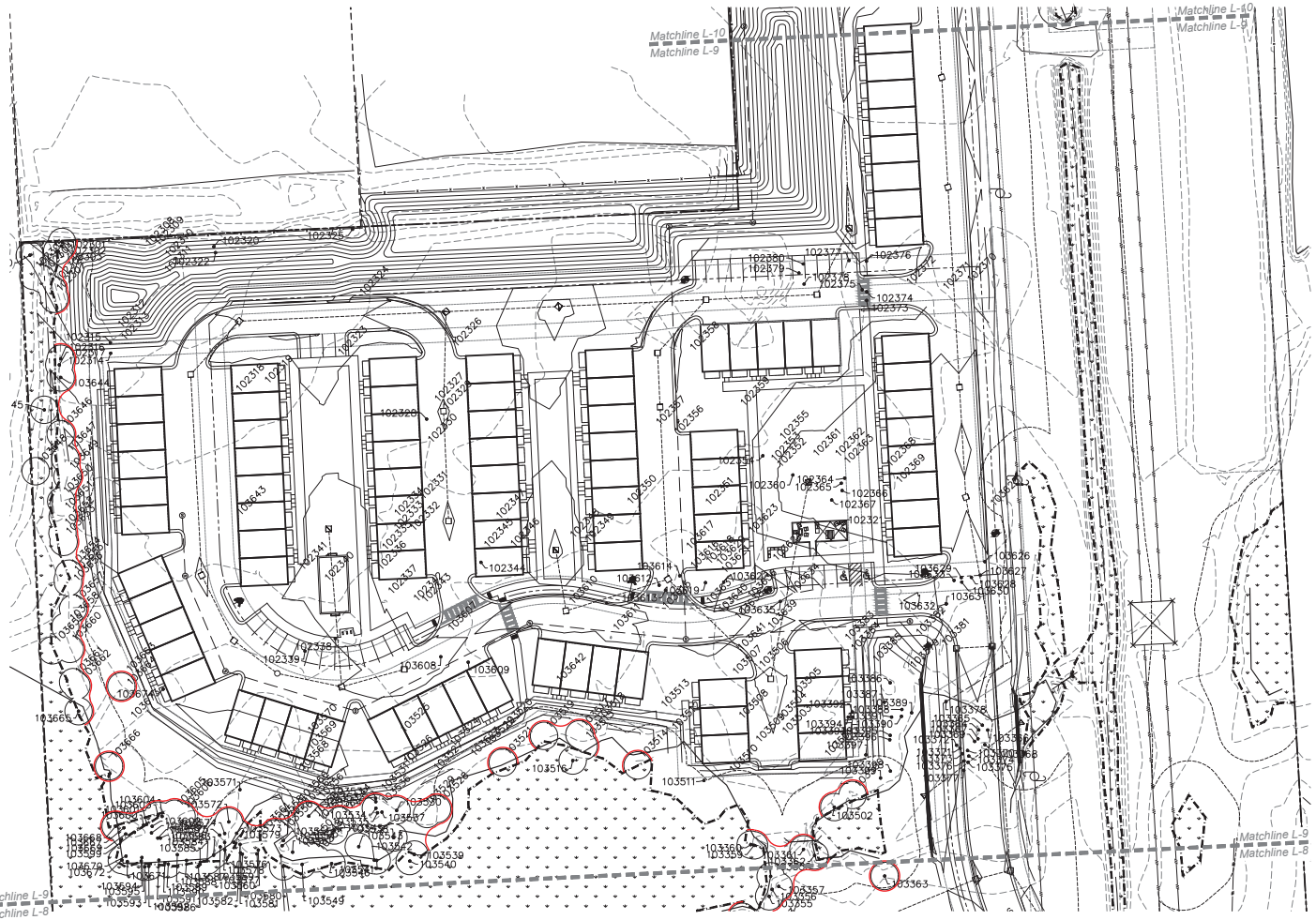
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1"= 40'
0 20' 40' 80' 120' 160'

North

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L-8

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Tree Preservation Legend

= Existing Tree, To Remain

= Existing Tree, To Be Removed

= Approximate Location of Tree Protection Fencing

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WILLIAM T. KNEAL
LICENSED LANDSCAPE ARCHITECT
No. 1172

sheet title:

Tree Preservation Plan - Central

project title:

Providence Meadows

City of Novi, Michigan

prepared for:

Robertson Brothers Homes
6905 Telegraph Rd. - Suite 200
Bloomfield Hills, MI 48301

Phone: 248.657.4968

job number:	date:
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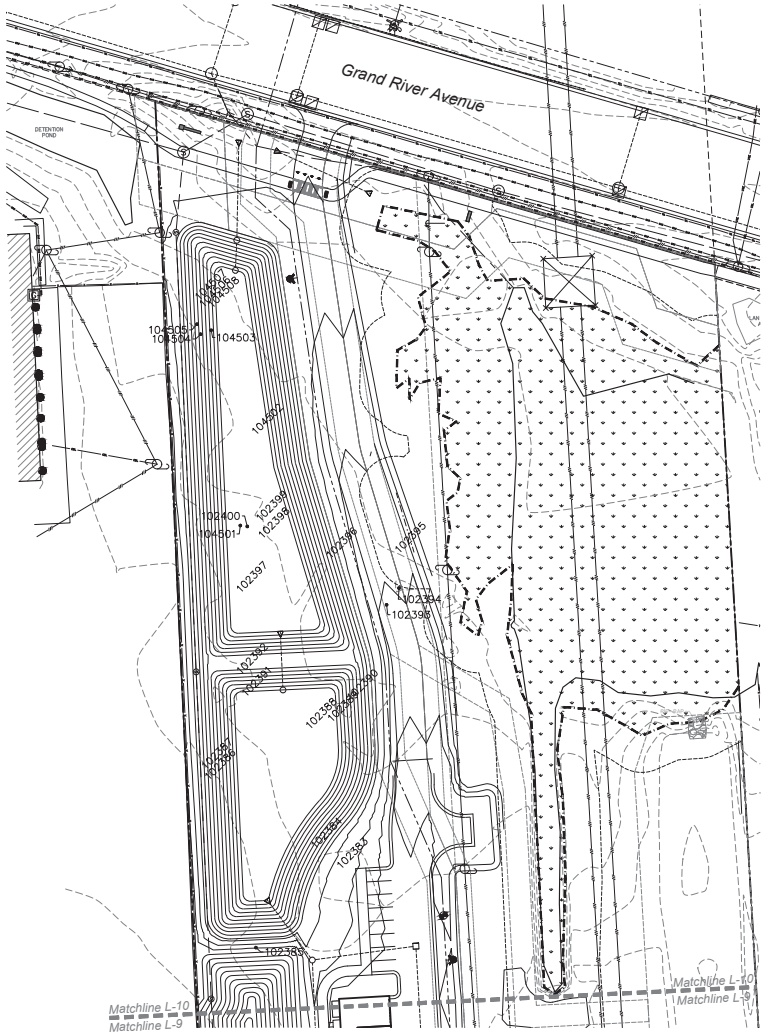
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0 20' 40' 80' 120' 160'
1"= 40'

North

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L-9

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TAG#	SIZE	SPECIES	COMMON NAME	CONDITION	IN REGULATED WOODLAND?	IN REGULATED WETLAND?	SAVE/ REMOVE	USED FOR LANDSCAPE REQUIREMENTS?
101327	9"	*Populus grandidentata*	BIGTOOTH ASPEN	GOOD	No	Yes	**SAVE**	No
101328	12"	*Populus grandidentata*	BIGTOOTH ASPEN	GOOD	No	Yes	**SAVE**	No
101329	8"	*Populus grandidentata*	BIGTOOTH ASPEN	GOOD	No	Yes	**SAVE**	No
101330	14"	*Populus grandidentata*	BIGTOOTH ASPEN	GOOD	No	Yes	**SAVE**	No
101331	10"	*Populus grandidentata*	BIGTOOTH ASPEN	GOOD	No	Yes	**SAVE**	No
101332	10"	*Populus grandidentata*	BIGTOOTH ASPEN	GOOD	No	Yes	**SAVE**	No
101333	6"	*Ulmus americana*	AMERICAN ELM	GOOD	No		REMOVE	No
101334	7",8"	*Tilia americana*	BASSWOOD	GOOD	No		REMOVE	No
101335	8"	*Acer saccharinum*	SILVER MAPLE	GOOD	No		REMOVE	No
101336	8"	*Quercus alba*	WHITE OAK	GOOD	No		REMOVE	No
101337	8"	*Tilia americana*	BASSWOOD	GOOD	No		REMOVE	No
101338	13"	*Carya ovata*	SHAGBARK HICKORY	GOOD	No		REMOVE	No
101339	12"	*Betula papyrifera*	WHITE BIRCH	GOOD	No		REMOVE	No
101340	2-14"	*Quercus macrocarpa*	BUR OAK	GOOD	No		REMOVE	No
101341	10",12"	*Carya cordiformis*	BITTERNUT HICKORY	GOOD	No		REMOVE	No
101342	12"	*Carya ovata*	SHAGBARK HICKORY	GOOD	No		REMOVE	No
101343	10"	*Carya ovata*	SHAGBARK HICKORY	GOOD	No		REMOVE	No
101344	10"	*Carya glabra*	PIGNUT HICKORY	GOOD	No		REMOVE	No
101345	10"	*Carya ovata*	SHAGBARK HICKORY	GOOD	No		REMOVE	No
101346	10"	*Carya glabra*	PIGNUT HICKORY	GOOD	No		REMOVE	No
101347	8"	*Carya glabra*	PIGNUT HICKORY	GOOD	No		REMOVE	No
101348	17",15"	*Tilia americana*	BASSWOOD	GOOD	No	No	**SAVE**	Yes
101349	10"	*Carya glabra*	PIGNUT HICKORY	GOOD	No	No	**SAVE**	Yes
101350	8"	*Carya glabra*	PIGNUT HICKORY	GOOD	No	No	**SAVE**	Yes
101351	9"	*Carya glabra*	PIGNUT HICKORY	GOOD	No	No	**SAVE**	Yes
101352	8",12"	*Carya cordiformis*	BITTERNUT HICKORY	GOOD	No	No	**SAVE**	Yes
101353	14"	*Acer saccharum*	SUGAR MAPLE	GOOD	No	No	**SAVE**	Yes
101354	8"	*Carya cordiformis*	BITTERNUT HICKORY	GOOD	No	No	**SAVE**	Yes
101355	12"	*Carya cordiformis*	BITTERNUT HICKORY	GOOD	No		REMOVE	No
101356	15", 17"	*Tilia americana*	BASSWOOD	GOOD	No		REMOVE	No
101357	12",11",12"	*Acer saccharum*	SUGAR MAPLE	GOOD	No		REMOVE	No
101358	13"	*Carya cordiformis*	BITTERNUT HICKORY	GOOD	No		REMOVE	No
101359	10"	*Carya cordiformis*	BITTERNUT HICKORY	GOOD	No		REMOVE	No
101360	8"	*Carya cordiformis*	BITTERNUT HICKORY	GOOD	No		REMOVE	No
101361	10"	*Carya cordiformis*	BITTERNUT HICKORY	GOOD	No		REMOVE	No
101362	10"	*Carya cordiformis*	BITTERNUT HICKORY	GOOD	No		REMOVE	No
101363	12"	*Carya cordiformis*	BITTERNUT HICKORY	GOOD	No		REMOVE	No
101364	10"	*Acer saccharum*	SUGAR MAPLE	GOOD	No		REMOVE	No
101365	8"	*Quercus alba*	WHITE OAK	GOOD	No		REMOVE	No
101366	20"	*Acer saccharum*	SUGAR MAPLE	GOOD	No		REMOVE	No
101367	18"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
101368	18"	*Prunus serotina*	BLACK CHERRY	GOOD	No		REMOVE	No
101369	10"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
101370	9"	*Acer saccharum*	SUGAR MAPLE	GOOD	No		REMOVE	No
101371	8"	*Carya cordiformis*	BITTERNUT HICKORY	GOOD	No		REMOVE	No
101372	10"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
101373	10"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
101374	17"	*Acer saccharum*	SUGAR MAPLE	GOOD	No		REMOVE	No
101375	11"	*Acer saccharum*	SUGAR MAPLE	GOOD	No		REMOVE	No
101376	10"	*Acer saccharum*	SUGAR MAPLE	GOOD	No		REMOVE	No
101377	11"	*Carya cordiformis*	BITTERNUT HICKORY	GOOD	No		REMOVE	No
101378	8"	*Carya cordiformis*	BITTERNUT HICKORY	GOOD	No		REMOVE	No
101379	9"	*Carya cordiformis*	BITTERNUT HICKORY	GOOD	No		REMOVE	No
101380	6"	*Carya cordiformis*	BITTERNUT HICKORY	GOOD	No		REMOVE	No
101381	10"	*Carya ovata*	SHAGBARK HICKORY	GOOD	No		REMOVE	No
101382	9"	*Quercus alba*	WHITE OAK	GOOD	No		REMOVE	No
101383	8"	*Populus grandidentata*	BIGTOOTH ASPEN	GOOD	No		REMOVE	No
101384	12",10"	*Carya ovata*	SHAGBARK HICKORY	GOOD	No		REMOVE	No
101385	11"	*Carya cordiformis*	BITTERNUT HICKORY	GOOD	No		REMOVE	No
101386	12"	*Carya cordiformis*	BITTERNUT HICKORY	GOOD	No		REMOVE	No
101387	10"	*Carpinus caroliniana*	AMERICAN HORNBEAM	GOOD	No		REMOVE	No
101388	8"	*Ulmus rubra*	SLIPPERY ELM	GOOD	No		REMOVE	No
101389	10"	*Carya cordiformis*	BITTERNUT HICKORY	GOOD	No		REMOVE	No
101390	10"	*Carya cordiformis*	BITTERNUT HICKORY	GOOD	No		REMOVE	No
101391	10"	*Carya cordiformis*	BITTERNUT HICKORY	GOOD	No		REMOVE	No
101392	8"	*Carya cordiformis*	BITTERNUT HICKORY	GOOD	No		REMOVE	No
101393	14",8"	*Quercus alba*	WHITE OAK	GOOD	No		REMOVE	No
101394	8"	*Ulmus americana*	AMERICAN ELM	GOOD	No		REMOVE	No
101395	13"	*Tilia americana*	BASSWOOD	GOOD	No		REMOVE	No
101396	11"	*Quercus alba*	WHITE OAK	GOOD	No		REMOVE	No
101397	10"	*Carya ovata*	SHAGBARK HICKORY	GOOD	No		REMOVE	No
101398	16"	*Quercus bicolor*	SWAMP WHITE OAK	GOOD	No		REMOVE	No
101399	15"	*Populus grandidentata*	BIGTOOTH ASPEN	GOOD	No	Yes	**SAVE**	No
101400	10"	*Quercus rubra*	RED OAK	GOOD	No	No	**SAVE**	Yes
102300	7",9"	*Cornus florida*	FLOWERING DOGWOOD	GOOD	No	No	**SAVE**	Yes
102301	12"	*Juglans nigra*	BLACK WALNUT	GOOD	No	No	**SAVE**	Yes
102302	14"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No	No	**SAVE**	No
102303	13"	*Juglans nigra*	BLACK WALNUT	GOOD	No	No	**SAVE**	Yes
102304	16"	*Quercus alba*	WHITE OAK	GOOD	No	No	**SAVE**	Yes
102305	6"	*Prunus serotina*	BLACK CHERRY	GOOD	No	No	**SAVE**	Yes
102306	11",18",11"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No	No	**SAVE**	No
102307	15"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No	No	**SAVE**	No
102308	8",6"	*Acer saccharinum*	SILVER MAPLE	GOOD	No		REMOVE	No
102309	11"	*Acer saccharinum*	SILVER MAPLE	GOOD	No		REMOVE	No
102310	9",5"	*Acer saccharinum*	SILVER MAPLE	GOOD	No		REMOVE	No
102311	6"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
102312	19"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
102313	18",13",10"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
102314	10"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
102315	15",7"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
102316	20"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No	No	**SAVE**	No
102317	5",12"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No	No	**SAVE**	No
102318	9",8"	*Acer rubrum*	RED MAPLE	GOOD	No		REMOVE	No
102319	10"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
102320	13",7"	*Carya glabra*	PIGNUT HICKORY	GOOD	No		REMOVE	No
102321	12"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
102322	6"	*Acer saccharum*	SUGAR MAPLE	FAIR	No		REMOVE	No
102323	4",8",6",9"	*Juglans nigra*	BLACK WALNUT	GOOD	No		REMOVE	No
102324	8"	*Acer saccharinum*	SILVER MAPLE	GOOD	No		REMOVE	No

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STATE OF MICHIGAN
WILLIAM KREAN
LICENSED LANDSCAPE ARCHITECT

sheet title:
Tree Preservation Plan - North

project title:
Providence Meadows
City of Novi, Michigan

prepared for:
Robertson Brothers Homes
6905 Telegraph Rd. - Suite 200
Bloomfield Hills, MI 48301

Phone: 248.657.4968

job number:	date:
24018	07.18.2025
drawn by:	checked by:
EMJ	WTK

811 Know what's **below.** **Call** before you dig.

1"= 40'
0 20' 40' 80' 120' 160'

North

sheet no.
L-10

revisions:
10.17.2025 Per Municipal Review

TAG#	SIZE	SPECIES	COMMON NAME	CONDITION	IN REGULATED WOODLAND?	IN REGULATED WETLAND?	SAVE / REMOVE	USED FOR LANDSCAPE REQUIREMENTS?
102325	10"	*Juglans nigra*	BLACK WALNUT	FAIR	No		REMOVE	No
102326	9"	*Acer saccharinum*	SILVER MAPLE	FAIR	No		REMOVE	No
102327	7",5",6"	*Acer saccharinum*	SILVER MAPLE	FAIR	No		REMOVE	No
102328	8",6",3",2"	*Acer saccharinum*	SILVER MAPLE	GOOD	No		REMOVE	No
102329	9"	*Acer saccharinum*	SILVER MAPLE	GOOD	No		REMOVE	No
102330	3-6"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
102331	6",7",6"	*Juglans nigra*	BLACK WALNUT	GOOD	No		REMOVE	No
102332	8",7",5"	*Juglans nigra*	BLACK WALNUT	GOOD	No		REMOVE	No
102333	6"	*Acer saccharinum*	SILVER MAPLE	GOOD	No		REMOVE	No
102334	6"	*Juglans nigra*	BLACK WALNUT	GOOD	No		REMOVE	No
102335	9",9"	*Acer saccharinum*	SILVER MAPLE	GOOD	No		REMOVE	No
102336	7"	*Quercus alba*	WHITE OAK	GOOD	No		REMOVE	No
102337	7"	*Quercus rubra*	RED OAK	GOOD	No		REMOVE	No
102338	11"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
102339	9"	*Quercus alba*	WHITE OAK	GOOD	No		REMOVE	No
102340	9"	*Juglans nigra*	BLACK WALNUT	GOOD	No		REMOVE	No
102341	7"	*Acer saccharinum*	SILVER MAPLE	GOOD	No		REMOVE	No
102342	6"	*Acer saccharinum*	SILVER MAPLE	GOOD	No		REMOVE	No
102343	6"	*Acer saccharinum*	SILVER MAPLE	GOOD	No		REMOVE	No
102344	16"	*Quercus alba*	WHITE OAK	GOOD	No		REMOVE	No
102345	8"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
102346	17"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
102347	10"	*Juglans nigra*	BLACK WALNUT	GOOD	No		REMOVE	No
102348	7",7"	*Acer saccharinum*	SILVER MAPLE	GOOD	No		REMOVE	No
102349	6",3"	*Acer saccharinum*	SILVER MAPLE	GOOD	No		REMOVE	No
102350	21"	*Quercus alba*	WHITE OAK	FAIR	No		REMOVE	No
102351	12",15"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
102352	14",11"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
102353	11",12",3",3"	*Juglans nigra*	BLACK WALNUT	GOOD	No		REMOVE	No
102354	10"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
102355	11"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
102356	2-6"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
102357	10",8"	*Acer saccharinum*	SILVER MAPLE	GOOD	No		REMOVE	No
102358	29",12"	*Quercus alba*	WHITE OAK	GOOD	No		REMOVE	No
102359	2-14"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
102360	10"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
102361	12"	*Juglans nigra*	BLACK WALNUT	GOOD	No		REMOVE	No
102362	12"	*Juglans nigra*	BLACK WALNUT	GOOD	No		REMOVE	No
102363	10"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
102364	6"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
102365	10"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
102366	10"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
102367	10"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
102368	16"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
102369	16",17"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
102370	19"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
102371	6",4",13",11"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
102372	14"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
102373	13"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
102374	11"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
102375	11"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
102376	12"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
102377	9",10"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
102378	13"	*Juglans nigra*	BLACK WALNUT	GOOD	No		REMOVE	No
102379	13"	*Juglans nigra*	BLACK WALNUT	GOOD	No		REMOVE	No
102380	10"	*Juglans nigra*	BLACK WALNUT	GOOD	No		REMOVE	No
102383	18",8"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
102384	14"	*Juglans nigra*	BLACK WALNUT	FAIR	No		REMOVE	No
102385	6",9"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
102386	18"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
102387	13"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
102388	24"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
102389	8",6",4",7",6"	*Juglans nigra*	BLACK WALNUT	GOOD	No		REMOVE	No
102390	35"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
102391	15"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
102392	32",27",28",29"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
102393	8"	*Juglans nigra*	BLACK WALNUT	GOOD	No		REMOVE	No
102394	2-9"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
102395	2-12"		UNKNOWN TREE	DEAD	No		REMOVE	No
102396	27"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
102397	11",10",15",15"	*Populus deltoides*	EASTERN COTTONWOOD	POOR	No		REMOVE	No
102398	17",17",18"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
102399	13",6"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
102400	10",14"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
102701	10"	*Quercus rubra*	RED OAK	GOOD	No	No	REMOVE	No
102702	11"	*Fraxinus americana*	WHITE ASH	GOOD	No		REMOVE	No
102703	11",28"	*Acer rubrum*	RED MAPLE	GOOD	No		REMOVE	No
102704	11",10"	*Carya ovata*	SHAGBARK HICKORY	GOOD	No	No	SAVE	Yes
102705	8"	*Acer rubrum*	RED MAPLE	GOOD	No		REMOVE	No
102706	24",8"	*Acer rubrum*	RED MAPLE	GOOD	No		REMOVE	No
102707	14"	*Populus grandidentata*	BIGTOOTH ASPEN	GOOD	No		REMOVE	No
102708	12"	*Populus grandidentata*	BIGTOOTH ASPEN	GOOD	No		REMOVE	No
102709	8"	*Tilia americana*	BASSWOOD	GOOD	No		REMOVE	No
102710	9"	*Carya cordiformis*	BITTERNUT HICKORY	GOOD	No		REMOVE	No
102711	11",10"	*Carya ovata*	SHAGBARK HICKORY	GOOD	No		REMOVE	No
102712	8"	*Tilia americana*	BASSWOOD	GOOD	No		REMOVE	No
102713	10"	*Fraxinus pennsylvanica*	GREEN ASH	GOOD	No	Yes	SAVE	No
102714	18"	*Populus grandidentata*	BIGTOOTH ASPEN	DEAD	No	Yes	SAVE	No
102715	12"	*Fraxinus americana*	WHITE ASH	GOOD	No	Yes	SAVE	No
102716	18"	*Acer rubrum*	RED MAPLE	GOOD	No	No	SAVE	Yes
102717	10"	*Quercus alba*	WHITE OAK	GOOD	No	No	SAVE	Yes
102718	18"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No	No	SAVE	No
102719	11"	*Carpinus caroliniana*	AMERICAN HORNBEAM	GOOD	No		REMOVE	No
102720	8"	*Quercus alba*	WHITE OAK	GOOD	No		REMOVE	No
102721	12"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
102722	10"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
102723	12"	*Carya cordiformis*	BITTERNUT HICKORY	GOOD	No	No	SAVE	Yes
102724	10"	*Populus grandidentata*	BIGTOOTH ASPEN	GOOD	No	No	SAVE	Yes
102725	14"	*Populus grandidentata*	BIGTOOTH ASPEN	GOOD	No	No	SAVE	Yes
102726	10"	*Populus grandidentata*	BIGTOOTH ASPEN	GOOD	No		REMOVE	No

TAG#	SIZE	SPECIES	COMMON NAME	CONDITION	IN REGULATED WOODLAND?	IN REGULATED WETLAND?	SAVE / REMOVE	USED FOR LANDSCAPE REQUIREMENTS?
102727	12"	*Carya cordiformis*	BITTERNUT HICKORY	GOOD	No		REMOVE	No
102728	11"	*Populus grandidentata*	BIGTOOTH ASPEN	GOOD	No		REMOVE	No
102729	9"		UNKNOWN TREE	DEAD	No		REMOVE	No
102730	8"	*Populus grandidentata*	BIGTOOTH ASPEN	GOOD	No		REMOVE	No
102731	10"	*Fraxinus americana*	WHITE ASH	GOOD	No		REMOVE	No
102732	10"	*Carya ovata*	SHAGBARK HICKORY	GOOD	No		REMOVE	No
102733	9"	*Carya ovata*	SHAGBARK HICKORY	GOOD	No		REMOVE	No
102734	8"	*Acer rubrum*	RED MAPLE	GOOD	No		REMOVE	No
102735	11"	*Carya ovata*	SHAGBARK HICKORY	GOOD	No	Yes	SAVE	No
102736	10"	*Populus grandidentata*	BIGTOOTH ASPEN	DEAD	No	Yes	SAVE	No
102737	10"		UNKNOWN TREE	DEAD	No	Yes	SAVE	No
102738	9"		UNKNOWN TREE	DEAD	No		REMOVE	No
102739	11"	*Carya cordiformis*	BITTERNUT HICKORY	GOOD	No		REMOVE	No
102740	12"	*Carya cordiformis*	BITTERNUT HICKORY	GOOD	No		REMOVE	No
102741	8"	*Carya cordiformis*	BITTERNUT HICKORY	GOOD	No		REMOVE	No
102742	8"	*Quercus alba*	WHITE OAK	GOOD	No		REMOVE	No
102743	11"	*Acer saccharum*	SUGAR MAPLE	GOOD	No		REMOVE	No
102744	8"	*Ulmus rubra*	SLIPPERY ELM	GOOD	No		REMOVE	No
102745	9"	*Carya cordiformis*	BITTERNUT HICKORY	GOOD	No		REMOVE	No
102746	9"	*Carya ovata*	SHAGBARK HICKORY	GOOD	No		REMOVE	No
102747	9"	*Carya ovata*	SHAGBARK HICKORY	GOOD	No		REMOVE	No
102748	9"	*Carya cordiformis*	BITTERNUT HICKORY	GOOD	No		REMOVE	No
102749	14"	*Populus grandidentata*	BIGTOOTH ASPEN	GOOD	No		REMOVE	No
102750	12"		UNKNOWN TREE	DEAD	No		REMOVE	No
102751	11"	*Carya ovata*	SHAGBARK HICKORY	GOOD	No		REMOVE	No
102752	8"	*Carya ovata*	SHAGBARK HICKORY	GOOD	No		REMOVE	No
102753	8"	*Carya ovata*	SHAGBARK HICKORY	GOOD	No		REMOVE	No
102754	7"	*Populus grandidentata*	BIGTOOTH ASPEN	GOOD	No		REMOVE	No
102755	8"	*Carya ovata*	SHAGBARK HICKORY	GOOD	No		REMOVE	No
102756	8"	*Carya cordiformis*	BITTERNUT HICKORY	GOOD	No		REMOVE	No
102757	9"	*Carya cordiformis*	BITTERNUT HICKORY	GOOD	No		REMOVE	No
102758	8"	*Carya ovata*	SHAGBARK HICKORY	GOOD	No		REMOVE	No
102759	10"	*Carya cordiformis*	BITTERNUT HICKORY	GOOD	No		REMOVE	No
102760	13",9"	*Ulmus rubra*	SLIPPERY ELM	GOOD	No		REMOVE	No
102761	9",8"	*Carya ovata*	SHAGBARK HICKORY	GOOD	No		REMOVE	No
102762	11"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
102763	9"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
102764	9"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No	Yes	SAVE	No
102765	12"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
102766	8"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No	Yes	SAVE	No
102767	14"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No	Yes	SAVE	No
102768	12"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No	Yes	SAVE	No
102769	11"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No	Yes	SAVE	No
102770	18"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No	Yes	SAVE	No
102771	24"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No	Yes	SAVE	No
102772	20"	*Acer saccharinum*	SILVER MAPLE	GOOD	No	Yes	SAVE	No
102773	9"	*Fraxinus nigra*	BLACK ASH	GOOD	No		REMOVE	No
102774	11"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
102775	8"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
102776	8"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No	Yes	SAVE	No
102777	10",11"	*Carya ovata*	SHAGBARK HICKORY	GOOD	No		REMOVE	No
102778	8"	*Juglans nigra*	BLACK WALNUT	GOOD	No		REMOVE	No
102779	10"		UNKNOWN TREE	DEAD	No		REMOVE	No
102780	10"	*Carya ovata*	SHAGBARK HICKORY	GOOD	No	Yes	SAVE	No
102781	8"	*Carya ovata*	SHAGBARK HICKORY	GOOD	No	Yes	SAVE	No
102782	14"	*Quercus macrocarpa*	BUR OAK	GOOD	No	Yes	SAVE	No
102783	14"	*Acer rubrum*	RED MAPLE	GOOD	No	Yes	SAVE	No
102784	14"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No	Yes	SAVE	No
102785	18",15",20"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No	Yes	SAVE	No
102786	8"	*Carya ovata*	SHAGBARK HICKORY	GOOD	No		REMOVE	No
102787	10"	*Carya ovata*	SHAGBARK HICKORY	GOOD	No		REMOVE	No
102788	8"		UNKNOWN TREE	DEAD	No		REMOVE	No
102789	10"	*Ulmus rubra*	SLIPPERY ELM	GOOD	No		REMOVE	No
102790	10"	*Carya ovata*	SHAGBARK HICKORY	GOOD	No		REMOVE	No
102791	11"	*Ulmus rubra*	SLIPPERY ELM	GOOD	No		REMOVE	No
102792	12"	*Acer saccharinum*	SILVER MAPLE	GOOD	No	Yes	SAVE	No
102793	17"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No	Yes	SAVE	No
102794	14",12"	*Acer saccharinum*	SILVER MAPLE	GOOD	No		REMOVE	No
102795	14"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No	Yes	SAVE	No
102796	12"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No	Yes	SAVE	No
102797	24"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No	Yes	SAVE	No
102798	16",8"	*Ulmus rubra*	SLIPPERY ELM	GOOD	No	Yes	SAVE	No
102799	36"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No	Yes	SAVE	No
102800	10"	*Acer saccharinum*	SILVER MAPLE	GOOD	No	Yes	SAVE	No
103001	15",14"	*Acer saccharinum*	SILVER MAPLE	GOOD	No	Yes	SAVE	No
103002	20"	*Acer saccharinum*	SILVER MAPLE	GOOD	No	Yes	SAVE	No
103003	18",12"	*Acer saccharinum*	SILVER MAPLE	GOOD	No	Yes	SAVE	No
103004	11"	*Acer saccharinum*	SILVER MAPLE	GOOD	No	Yes	SAVE	No
103005	22",18"	*Acer saccharinum*	SILVER MAPLE	GOOD	No	Yes	SAVE	No
103006	12"	*Fagus grandifolia*	AMERICAN BEECH	GOOD	No	Yes	SAVE	No
103007	18"	*Acer saccharinum*	SILVER MAPLE	GOOD	No	Yes	SAVE	No
103008	36"	*Acer saccharinum*	SILVER MAPLE	GOOD	No	Yes	SAVE	No
103009	18"	*Acer saccharinum*	SILVER MAPLE	GOOD	No	Yes	SAVE	No
103010	24",18",15",12"	*Acer saccharinum*	SILVER MAPLE	GOOD	No	Yes	SAVE	No
103011	13"	*Quercus macrocarpa*	BUR OAK	GOOD	No	Yes	SAVE	No
103012	17",9"	*Acer saccharinum*	SILVER MAPLE	GOOD	No	Yes	SAVE	No
103013	20"	*Tilia americana*	BASSWOOD	GOOD	No	Yes	SAVE	No
103014	9"	*Carya cordiformis*	BITTERNUT HICKORY	GOOD	No	Yes	SAVE	No
103015	8"	*Carya cordiformis*	BITTERNUT HICKORY	GOOD	No	Yes	SAVE	No
103016	9"	*Carya ovata*	SHAGBARK HICKORY	GOOD	No	Yes	SAVE	No
103017	8"	*Carya cordiformis*	BITTERNUT HICKORY	GOOD	No	Yes	SAVE	No
103018	18"	*Acer rubrum*	RED MAPLE	GOOD	No	Yes	SAVE	No
103019	10"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No	Yes	SAVE	No
103020	12"	*Tilia americana*	BASSWOOD	GOOD	No	No	SAVE	Yes
103021	18"	*Tilia americana*	BASSWOOD	GOOD	No		REMOVE	No
103022	8"	*Acer saccharinum*	SILVER MAPLE	GOOD	No		REMOVE	No
103023	15"	*Acer saccharinum*	SILVER MAPLE	GOOD	No	No	SAVE	No
103024	13"	*Acer saccharinum*	SILVER MAPLE	GOOD	No	No	SAVE	No
103025	12",14"	*Acer saccharinum*	SILVER MAPLE	GOOD	No	No	SAVE	No
103026	12"	*Acer saccharinum*	SILVER MAPLE	GOOD	No	Yes	SAVE	No

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STATE OF MICHIGAN
WILLIAM KRUEGER
No. 1172
LICENSED LANDSCAPE ARCHITECT

sheet title:

Tree Survey
1 of 4

project title:

Providence Meadows

City of Novi, Michigan

prepared for:

Robertson Brothers Homes
6905 Telegraph Rd. - Suite 200
Bloomfield Hills, MI 48301

Phone: 248.657.4968

job number:	date:
24018	07.18.2025

drawn by:	checked by:
EMJ	WTK

811
Know what's **below.**
Call before you dig.

revisions:

10.17.2025 Per Municipal Review

sheet no.

L-11

TAG#	SIZE	SPECIES	COMMON NAME	CONDITION	IN REGULATED WOODLAND?	IN REGULATED WETLAND?	SAVE / REMOVE	USED FOR LANDSCAPE REQUIREMENTS?
103027	8"	*Acer rubrum*	RED MAPLE	GOOD	No	No	**SAVE**	Yes
103028	12"	*Acer saccharinum*	SILVER MAPLE	GOOD	No	Yes	**SAVE**	No
103029	8"	*Fraxinus americana*	WHITE ASH	GOOD	No	Yes	**SAVE**	No
103030	12"	*Populus grandidentata*	BIGTOOTH ASPEN	GOOD	No	Yes	**SAVE**	No
103031	12"		UNKNOWN TREE	DEAD	No	Yes	**SAVE**	No
103032	15"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No	Yes	**SAVE**	No
103033	18"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No	Yes	**SAVE**	No
103034	11"	*Acer rubrum*	RED MAPLE	GOOD	No	Yes	**SAVE**	No
103035	16"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No	Yes	**SAVE**	No
103036	20"	*Acer saccharinum*	SILVER MAPLE	GOOD	No	Yes	**SAVE**	No
103037	11"	*Acer saccharinum*	SILVER MAPLE	GOOD	No	Yes	**SAVE**	No
103038	16"	*Ulmus americana*	AMERICAN ELM	GOOD	No	Yes	**SAVE**	No
103039	18"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No	No	**SAVE**	No
103040	8"	*Carya cordiformis*	BITTERNUT HICKORY	GOOD	No	No	**SAVE**	Yes
103041	14",16"	*Acer saccharinum*	SILVER MAPLE	GOOD	No	No	**SAVE**	No
103042	15"	*Quercus rubra*	RED OAK	GOOD	No	No	**SAVE**	Yes
103043	15"	*Quercus rubra*	RED OAK	GOOD	No	No	**SAVE**	Yes
103044	10"	*Ulmus rubra*	SLIPPERY ELM	GOOD	No	No	**SAVE**	Yes
103045	8"	*Carya ovata*	SHAGBARK HICKORY	GOOD	No	Yes	**SAVE**	No
103046	8"	*Carya ovata*	SHAGBARK HICKORY	GOOD	No	Yes	**SAVE**	No
103047	9"	*Quercus rubra*	RED OAK	GOOD	No	Yes	**SAVE**	No
103048	8"	*Ulmus rubra*	SLIPPERY ELM	GOOD	No	No	**SAVE**	Yes
103049	8"	*Carya ovata*	SHAGBARK HICKORY	GOOD	No	No	**SAVE**	Yes
103050	10"	*Ulmus rubra*	SLIPPERY ELM	GOOD	No	No	**SAVE**	Yes
103051	11"	*Quercus rubra*	RED OAK	GOOD	No	No	**SAVE**	Yes
103052	12"	*Acer saccharinum*	SILVER MAPLE	POOR	No	No	**SAVE**	No
103053	20"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No	Yes	**SAVE**	No
103054	8"	*Quercus rubra*	RED OAK	GOOD	No	Yes	**SAVE**	No
103055	15"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No	No	**SAVE**	No
103056	10"	*Quercus rubra*	RED OAK	GOOD	No	No	**SAVE**	Yes
103057	8"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No	Yes	**SAVE**	No
103058	14"	*Quercus rubra*	RED OAK	GOOD	No	No	**SAVE**	Yes
103059	8"	*Quercus alba*	WHITE OAK	GOOD	No	No	**SAVE**	Yes
103060	11"	*Quercus rubra*	RED OAK	GOOD	No	No	**SAVE**	Yes
103061	17",12",12",14"	*Acer saccharinum*	SILVER MAPLE	GOOD	No	No	**SAVE**	No
103062	13"	*Acer saccharum*	SUGAR MAPLE	GOOD	No	No	**SAVE**	Yes
103063	11"	*Carya ovata*	SHAGBARK HICKORY	GOOD	No	Yes	**SAVE**	No
103064	20"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No	No	**SAVE**	No
103065	8"	*Acer saccharinum*	SILVER MAPLE	GOOD	No	Yes	**SAVE**	No
103066	16",9"	*Quercus alba*	WHITE OAK	GOOD	No	No	**SAVE**	Yes
103067	11"	*Carya ovata*	SHAGBARK HICKORY	GOOD	No	No	**SAVE**	Yes
103068	8"	*Quercus rubra*	RED OAK	GOOD	No	No	**SAVE**	Yes
103069	10"	*Carya ovata*	SHAGBARK HICKORY	GOOD	No	No	**SAVE**	Yes
103070	10"	*Quercus rubra*	RED OAK	GOOD	No	No	**SAVE**	Yes
103071	11"	*Quercus alba*	WHITE OAK	GOOD	No	No	**SAVE**	Yes
103072	8"	*Quercus rubra*	RED OAK	GOOD	No	No	**SAVE**	Yes
103073	9"	*Carya ovata*	SHAGBARK HICKORY	GOOD	No	No	**SAVE**	Yes
103074	11",12"	*Quercus rubra*	RED OAK	GOOD	No	No	**SAVE**	Yes
103075	12"	*Quercus rubra*	RED OAK	GOOD	No	No	**SAVE**	Yes
103076	8",11"	*Pyrus communis*	PEAR	GOOD	No	No	**SAVE**	Yes
103077	10"	*Acer saccharinum*	SILVER MAPLE	GOOD	No	No	**SAVE**	No
103078	2-8"	*Carya ovata*	SHAGBARK HICKORY	GOOD	No		REMOVE	No
103079	8"	*Quercus rubra*	RED OAK	GOOD	No		REMOVE	No
103080	22"	*Quercus velutina*	BLACK OAK	GOOD	No		REMOVE	No
103081	9"	*Carya glabra*	PIGNUT HICKORY	GOOD	No	No	**SAVE**	Yes
103082	12"	*Acer saccharinum*	SILVER MAPLE	GOOD	No	Yes	**SAVE**	No
103083	8"	*Carya ovata*	SHAGBARK HICKORY	GOOD	No	No	**SAVE**	Yes
103084	8"	*Carya ovata*	SHAGBARK HICKORY	GOOD	No		REMOVE	No
103085	14"	*Quercus rubra*	RED OAK	GOOD	No		REMOVE	No
103086	10"	*Carya ovata*	SHAGBARK HICKORY	GOOD	No		REMOVE	No
103087	12"	*Carya ovata*	SHAGBARK HICKORY	GOOD	No		REMOVE	No
103088	11"	*Quercus rubra*	RED OAK	GOOD	No		REMOVE	No
103089	8"	*Carya ovata*	SHAGBARK HICKORY	GOOD	No		REMOVE	No
103090	12"	*Quercus rubra*	RED OAK	GOOD	No		REMOVE	No
103091	9"	*Fagus grandifolia*	AMERICAN BEECH	GOOD	No	No	**SAVE**	Yes
103092	9"	*Acer saccharum*	SUGAR MAPLE	GOOD	No	No	**SAVE**	Yes
103093	10"	*Acer saccharinum*	SILVER MAPLE	GOOD	No		REMOVE	No
103094	8"	*Carya ovata*	SHAGBARK HICKORY	GOOD	No		REMOVE	No
103095	12"	*Quercus rubra*	RED OAK	GOOD	No		REMOVE	No
103096	8"	*Carya ovata*	SHAGBARK HICKORY	GOOD	No		REMOVE	No
103097	18"	*Pinus sylvestris*	SCOTT PINE	GOOD	No		REMOVE	No
103098	8"	*Carya ovata*	SHAGBARK HICKORY	GOOD	No		REMOVE	No
103099	14"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No	Yes	**SAVE**	No
103100	17"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No	No	**SAVE**	No
103101	10"	*Carya ovata*	SHAGBARK HICKORY	GOOD	No	No	**SAVE**	Yes
103102	10"	*Fagus grandifolia*	AMERICAN BEECH	GOOD	No	No	**SAVE**	Yes
103103	8"	*Quercus rubra*	RED OAK	GOOD	No	Yes	**SAVE**	No
103104	8"	*Ulmus rubra*	SLIPPERY ELM	GOOD	No	Yes	**SAVE**	No
103105	12"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No	Yes	**SAVE**	No
103106	14"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No	Yes	**SAVE**	No
103107	9"	*Quercus rubra*	RED OAK	GOOD	No	Yes	**SAVE**	No
103108	13"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No	Yes	**SAVE**	No
103109	10"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No	Yes	**SAVE**	No
103110	12"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No	Yes	**SAVE**	No
103111	9"	*Pinus sylvestris*	SCOTT PINE	GOOD	No	Yes	**SAVE**	No
103112	10"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No	Yes	**SAVE**	No
103113	12"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No	Yes	**SAVE**	No
103114	13"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No	Yes	**SAVE**	No
103115	18"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No	Yes	**SAVE**	No
103116	13"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No	Yes	**SAVE**	No
103117	15"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No	Yes	**SAVE**	No
103118	16",11"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No	Yes	**SAVE**	No
103119	16"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No	Yes	**SAVE**	No
103120	8"	*Populus grandidentata*	BIGTOOTH ASPEN	GOOD	No	Yes	**SAVE**	No
103121	12"	*Quercus rubra*	RED OAK	DEAD	No	No	**SAVE**	No
103122	12"	*Acer saccharinum*	SILVER MAPLE	GOOD	No	Yes	**SAVE**	No
103123	9"	*Populus grandidentata*	BIGTOOTH ASPEN	GOOD	No	Yes	**SAVE**	No
103124	16"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No	Yes	**SAVE**	No
103125	12"		UNKNOWN TREE	DEAD	No	No	**SAVE**	No
103126	14", 12"	*Acer saccharinum*	SILVER MAPLE	GOOD	No	Yes	**SAVE**	No

TAG#	SIZE	SPECIES	COMMON NAME	CONDITION	IN REGULATED WOODLAND?	IN REGULATED WETLAND?	SAVE / REMOVE	USED FOR LANDSCAPE REQUIREMENTS?
103127	22"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No	Yes	**SAVE**	No
103128	11"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No	Yes	**SAVE**	No
103129	8"	*Fraxinus nigra*	BLACK ASH	GOOD	No	Yes	**SAVE**	No
103130	10"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No	Yes	**SAVE**	No
103131	8"	*Acer saccharinum*	SILVER MAPLE	GOOD	No	Yes	**SAVE**	No
103132	8"	*Fraxinus nigra*	BLACK ASH	GOOD	No	No	**SAVE**	Yes
103133	13"	*Populus grandidentata*	BIGTOOTH ASPEN	GOOD	No		REMOVE	No
103134	10"	*Populus grandidentata*	BIGTOOTH ASPEN	DEAD	No		REMOVE	No
103135	12", 10"	*Carya cordiformis*	BITTERNUT HICKORY	GOOD	No		REMOVE	No
103136	12"	*Ulmus rubra*	SLIPPERY ELM	GOOD	No		REMOVE	No
103137	9"	*Fraxinus nigra*	BLACK ASH	GOOD	No	No	**SAVE**	Yes
103138	8",8",9"	*Acer negundo*	BOX ELDER	GOOD	No		REMOVE	No
103139	13"	*Carya ovata*	SHAGBARK HICKORY	GOOD	No		REMOVE	No
103140	8"	*Carya ovata*	SHAGBARK HICKORY	GOOD	No		REMOVE	No
103141	13"	*Populus grandidentata*	BIGTOOTH ASPEN	GOOD	No		REMOVE	No
103142	10"	*Populus grandidentata*	BIGTOOTH ASPEN	GOOD	No		REMOVE	No
103143	10"	*Populus grandidentata*	BIGTOOTH ASPEN	GOOD	No		REMOVE	No
103144	20"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
103145	12"	*Carya cordiformis*	BITTERNUT HICKORY	GOOD	No		REMOVE	No
103146	8"	*Quercus alba*	WHITE OAK	GOOD	No		REMOVE	No
103147	8",9",10"	*Malus sylvestris*	CRABAPPLE	GOOD	No		REMOVE	No
103148	11"	*Cornus florida*	FLOWERING DOGWOOD	GOOD	No		REMOVE	No
103149	14"	*Quercus rubra*	RED OAK	GOOD	No		REMOVE	No
103150	13"	*Quercus rubra*	RED OAK	DEAD	No		REMOVE	No
103151	16"	*Quercus rubra*	RED OAK	GOOD	No		REMOVE	No
103152	40"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
103153	30"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
103154	9"	*Carya ovata*	SHAGBARK HICKORY	GOOD	No		REMOVE	No
103155	8"	*Carya ovata*	SHAGBARK HICKORY	GOOD	No		REMOVE	No
103156	10"	*Carya glabra*	PIGNUT HICKORY	GOOD	No		REMOVE	No
103157	8"	*Carya ovata*	SHAGBARK HICKORY	GOOD	No		REMOVE	No
103158	11"	*Carya ovata*	SHAGBARK HICKORY	GOOD	No		REMOVE	No
103159	9"	*Quercus rubra*	RED OAK	GOOD	No		REMOVE	No
103160	9"	*Carya ovata*	SHAGBARK HICKORY	GOOD	No		REMOVE	No
103161	12"	*Quercus rubra*	RED OAK	GOOD	No		REMOVE	No
103162	12"	*Fraxinus americana*	WHITE ASH	DEAD	No		REMOVE	No
103163	12"	*Fraxinus americana*	WHITE ASH	DEAD	No		REMOVE	No
103164	10"	*Carya ovata*	SHAGBARK HICKORY	GOOD	No		REMOVE	No
103165	11", 10", 9"	*Carya ovata*	SHAGBARK HICKORY	GOOD	No		REMOVE	No
103166	12"	*Carya cordiformis*	BITTERNUT HICKORY	GOOD	No		REMOVE	No
103167	10"	*Carya ovata*	SHAGBARK HICKORY	GOOD	No		REMOVE	No
103168	8"	*Fraxinus americana*	WHITE ASH	GOOD	No		REMOVE	No
103169	12"	*Carya ovata*	SHAGBARK HICKORY	GOOD	No		REMOVE	No
103170	8"	*Carya cordiformis*	BITTERNUT HICKORY	GOOD	No	No	**SAVE**	Yes
103171	14"	*Carya ovata*	SHAGBARK HICKORY	GOOD	No	No	**SAVE**	Yes
103172	9"	*Carya cordiformis*	BITTERNUT HICKORY	GOOD	No	No	**SAVE**	Yes
103173	10"	*Carya ovata*	SHAGBARK HICKORY	GOOD	No		REMOVE	No
103174	8"	*Carya cordiformis*	BITTERNUT HICKORY	GOOD	No	No	**SAVE**	Yes
103175	9"	*Carya cordiformis*	BITTERNUT HICKORY	GOOD	No	No	**SAVE**	Yes
103176	9"	*Fraxinus americana*	WHITE ASH	GOOD	No	No	**SAVE**	Yes
103177	9"	*Carya cordiformis*	BITTERNUT HICKORY	GOOD	No		REMOVE	No
103178	11"	*Carya ovata*	SHAGBARK HICKORY	GOOD	No		REMOVE	No
103179	9"	*Carya cordiformis*	BITTERNUT HICKORY	GOOD	No	No	**SAVE**	Yes
103180	8"	*Carya cordiformis*	BITTERNUT HICKORY	GOOD	No		REMOVE	No
103181	8"	*Carya cordiformis*	BITTERNUT HICKORY	GOOD	No		REMOVE	No
103182	10"	*Pinus sylvestris*	SCOTT PINE	GOOD	No		REMOVE	No
103183	20"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
103184	15"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
103185	24", 13", 14"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
103186	13"	*Prunus serotina*	BLACK CHERRY	GOOD	No		REMOVE	No
103187	8"	*Fraxinus americana*	WHITE ASH	GOOD	No		REMOVE	No
103188	13", 10"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
103189	12"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
103190	8"	*Prunus serotina*	BLACK CHERRY	GOOD	No		REMOVE	No
103191	13"	*Pinus sylvestris*	SCOTT PINE	FAIR	No		REMOVE	No
103192	8"	*Fraxinus americana*	WHITE ASH	GOOD	No		REMOVE	No
103193	9"	*Acer saccharum*	SUGAR MAPLE	GOOD	No		REMOVE	No
103194	10", 8"	*Carya cordiformis*	BITTERNUT HICKORY	GOOD	No		REMOVE	No
103195	12"	*Carya ovata*	SHAGBARK HICKORY	GOOD	No		REMOVE	No
103196	12"	*Pinus sylvestris*	SCOTT PINE	GOOD	No		REMOVE	No
103197	10"	*Pinus sylvestris*	SCOTT PINE	POOR	No		REMOVE	No
103198	8"	*Pinus sylvestris*	SCOTT PINE	GOOD	No		REMOVE	No
103199	8"	*Pinus sylvestris*	SCOTT PINE	GOOD	No		REMOVE	No
103200	12"	*Carya ovata*	SHAGBARK HICKORY	GOOD	No		REMOVE	No
103201	8"	*Pyrus communis*	PEAR	GOOD	No		REMOVE	No
103202	12"	*Populus grandidentata*	BIGTOOTH ASPEN	GOOD	No		REMOVE	No
103203	10"		UNKNOWN TREE	DEAD	No		REMOVE	No
103204	10"	*Pinus sylvestris*	SCOTT PINE	GOOD	No		REMOVE	No
103205	12"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
103206	8"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
103207	9"	*Populus grandidentata*	BIGTOOTH ASPEN	GOOD	No		REMOVE	No
103208	9"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
103209	8"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
103210	12", 13", 8", 10"	*Fraxinus americana*	WHITE ASH	GOOD	No		REMOVE	No
103211	8"	*Quercus alba*	WHITE OAK	FAIR	No		REMOVE	No
103212	24"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
103213	8"	*Acer negundo*	BOX ELDER	GOOD	No		REMOVE	No
103214	8"	*Carya cordiformis*	BITTERNUT HICKORY	POOR	No		REMOVE	No
103215	10"	*Acer negundo*	BOX ELDER	GOOD	No		REMOVE	No
103216	8"	*Fraxinus americana*	WHITE ASH	GOOD	No		REMOVE	No
103217	8"	*Fraxinus americana*	WHITE ASH	GOOD	No		REMOVE	No
103218	8"	*Fraxinus americana*	WHITE ASH	GOOD	No		REMOVE	No
103219	10", 8"	*Fraxinus americana*	WHITE ASH	GOOD	No		REMOVE	No
103220	10", 12", 11"	*Fraxinus americana*	WHITE ASH	GOOD	No		REMOVE	No
103221	10"	*Prunus serotina*	BLACK CHERRY	GOOD	No		REMOVE	No
103222	10"	*Acer negundo*	BOX ELDER	GOOD	No		REMOVE	No
103223	10"	*Pinus sylvestris*	SCOTT PINE	GOOD	No		REMOVE	No
103224	10"	*Quercus bicolor*	SWAMP WHITE OAK	GOOD	No		REMOVE	No
103225	8"	*Fraxinus americana*	WHITE ASH	GOOD	No		REMOVE	No
103226	13"	*Fraxinus americana*	WHITE ASH	GOOD	No		REMOVE	No

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STATE OF MICHIGAN
WILLIAM T. KRUEGER
No. 1172
LICENSED LANDSCAPE ARCHITECT

sheet title:

Tree Survey
2 of 4

project title:

Providence Meadows

City of Novi, Michigan

prepared for:

Robertson Brothers Homes
6905 Telegraph Rd. - Suite 200
Bloomfield Hills, MI 48301

Phone: 248.657.4968

job number:	date:
24018	07.18.2025

drawn by:	checked by:
EMJ	WTK

811
Know what's **below.**
Call before you dig.

revisions:

10.17.2025 Per Municipal Review

sheet no.

L-12

TAG#	SIZE	SPECIES	COMMON NAME	CONDITION	IN REGULATED WOODLAND?	IN REGULATED WETLAND?	SAVE / REMOVE	USED FOR LANDSCAPE REQUIREMENTS?
103227	16"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
103228	8"	*Robinia pseudoacacia*	BLACK LOCUST	GOOD	No		REMOVE	No
103229	12"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
103230	10"	*Fraxinus americana*	WHITE ASH	GOOD	No		REMOVE	No
103231	8"	*Fraxinus americana*	WHITE ASH	GOOD	No		REMOVE	No
103232	10"	*Fraxinus americana*	WHITE ASH	GOOD	No		REMOVE	No
103233	10"	*Fraxinus pennsylvanica*	GREEN ASH	GOOD	No		REMOVE	No
103234	12"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
103235	13"/ 18/ 12/ 14/8"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
103236	20",14", 18"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
103237	18"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
103238	8"	*Robinia pseudoacacia*	BLACK LOCUST	GOOD	No		REMOVE	No
103239	11"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
103240	12"	*Robinia pseudoacacia*	BLACK LOCUST	GOOD	No		REMOVE	No
103241	12"	*Fraxinus nigra*	BLACK ASH	GOOD	No		REMOVE	No
103242	12",14"	*Pyrus communis*	PEAR	GOOD	No		REMOVE	No
103243	12"	*Acer negundo*	BOX ELDER	GOOD	No		REMOVE	No
103244	8"	*Acer nigrum*	BLACK MAPLE	GOOD	No		REMOVE	No
103245	38"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
103246	10"	*Acer negundo*	BOX ELDER	GOOD	No		REMOVE	No
103247	13"	*Carya cordiformis*	BITTERNUT HICKORY	GOOD	No		REMOVE	No
103248	13"	*Carya cordiformis*	BITTERNUT HICKORY	GOOD	No		REMOVE	No
103249	14"	*Carya cordiformis*	BITTERNUT HICKORY	GOOD	No		REMOVE	No
103250	15"	*Carya cordiformis*	BITTERNUT HICKORY	GOOD	No		REMOVE	No
103251	10"	*Juniperus virginiana*	EASTERN RED CEDAR	GOOD	No		REMOVE	No
103252	12"	*Juniperus virginiana*	EASTERN RED CEDAR	GOOD	No		REMOVE	No
103253	14"	*Juniperus virginiana*	EASTERN RED CEDAR	GOOD	No		REMOVE	No
103254	13"	*Juniperus virginiana*	EASTERN RED CEDAR	GOOD	No		REMOVE	No
103255	8"	*Quercus alba*	WHITE OAK	GOOD	No		REMOVE	No
103256	8"	*Carya cordiformis*	BITTERNUT HICKORY	GOOD	No		REMOVE	No
103257	14"	*Acer saccharum*	SUGAR MAPLE	GOOD	No		REMOVE	No
103258	8"	*Populus grandidentata*	BIGTOOTH ASPEN	GOOD	No		REMOVE	No
103259	9"	*Pinus sylvestris*	SCOTT PINE	GOOD	No		REMOVE	No
103260	12"	*Populus grandidentata*	BIGTOOTH ASPEN	GOOD	No		REMOVE	No
103261	8"	*Fraxinus americana*	WHITE ASH	GOOD	No		REMOVE	No
103262	10"	*Fraxinus americana*	WHITE ASH	GOOD	No		REMOVE	No
103263	12"	*Acer saccharum*	SUGAR MAPLE	GOOD	No		REMOVE	No
103264	9"	*Carya cordiformis*	BITTERNUT HICKORY	GOOD	No		REMOVE	No
103265	12"	*Populus grandidentata*	BIGTOOTH ASPEN	GOOD	No		REMOVE	No
103266	8"	*Fraxinus pennsylvanica*	GREEN ASH	GOOD	No		REMOVE	No
103267	8"	*Populus grandidentata*	BIGTOOTH ASPEN	GOOD	No		REMOVE	No
103268	8"	*Populus grandidentata*	BIGTOOTH ASPEN	GOOD	No		REMOVE	No
103269	8"	*Fraxinus americana*	WHITE ASH	GOOD	No		REMOVE	No
103270	8"	*Populus grandidentata*	BIGTOOTH ASPEN	GOOD	No		REMOVE	No
103271	8"	*Populus grandidentata*	BIGTOOTH ASPEN	GOOD	No		REMOVE	No
103272	9"	*Acer saccharum*	SUGAR MAPLE	GOOD	No		REMOVE	No
103273	9"	*Carya glabra*	PIGNUT HICKORY	GOOD	No		REMOVE	No
103274	18"	*Acer saccharum*	SUGAR MAPLE	GOOD	No		REMOVE	No
103275	9"	*Acer saccharum*	SUGAR MAPLE	GOOD	No		REMOVE	No
103276	8"	*Ulmus rubra*	SLIPPERY ELM	GOOD	No		REMOVE	No
103277	8"	*Prunus serotina*	BLACK CHERRY	GOOD	No	No	**SAVE**	Yes
103278	10"	*Acer saccharum*	SUGAR MAPLE	GOOD	No	No	**SAVE**	Yes
103279	15"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
103280	8"	*Carya ovata*	SHAGBARK HICKORY	GOOD	No	No	**SAVE**	Yes
103281	8"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No	No	**SAVE**	No
103282	8"	*Carya cordiformis*	BITTERNUT HICKORY	GOOD	No	No	**SAVE**	Yes
103283	24",14",8"	*Acer saccharinum*	SILVER MAPLE	GOOD	No	Yes	**SAVE**	No
103284	20"	*Acer saccharinum*	SILVER MAPLE	GOOD	No	Yes	**SAVE**	No
103285	8"	*Carya cordiformis*	BITTERNUT HICKORY	GOOD	No		REMOVE	No
103286	8"	*Carya ovata*	SHAGBARK HICKORY	GOOD	No		REMOVE	No
103287	8"	*Carya cordiformis*	BITTERNUT HICKORY	GOOD	No		REMOVE	No
103288	8"	*Acer saccharinum*	SILVER MAPLE	GOOD	No		REMOVE	No
103289	14"	*Acer saccharinum*	SILVER MAPLE	GOOD	No		REMOVE	No
103290	16"	*Carya laciniosa*	SHELLBARK HICKORY	GOOD	No		REMOVE	No
103291	9"	*Carya ovata*	SHAGBARK HICKORY	GOOD	No		REMOVE	No
103292	8"	*Carya cordiformis*	BITTERNUT HICKORY	GOOD	No		REMOVE	No
103293	20"	*Quercus rubra*	RED OAK	GOOD	No		REMOVE	No
103294	28"	*Quercus rubra*	RED OAK	GOOD	No		REMOVE	No
103295	14"	*Acer saccharinum*	SILVER MAPLE	GOOD	No	Yes	**SAVE**	No
103296	20"	*Acer saccharinum*	SILVER MAPLE	GOOD	No	Yes	**SAVE**	No
103297	8"	*Populus grandidentata*	BIGTOOTH ASPEN	GOOD	No		REMOVE	No
103298	8"	*Acer saccharum*	SUGAR MAPLE	GOOD	No	Yes	**SAVE**	No
103299	16"	*Acer saccharinum*	SILVER MAPLE	GOOD	No	Yes	**SAVE**	No
103300	15"	*Acer saccharinum*	SILVER MAPLE	GOOD	No	Yes	**SAVE**	No
103301	22", 15"	*Acer saccharinum*	SILVER MAPLE	GOOD	No	Yes	**SAVE**	No
103303	8"	*Acer saccharum*	SUGAR MAPLE	GOOD	No	Yes	**SAVE**	No
103304	10",11"	*Acer saccharum*	SUGAR MAPLE	GOOD	No	Yes	**SAVE**	No
103305	11",10"	*Acer saccharinum*	SILVER MAPLE	GOOD	No	Yes	**SAVE**	No
103306	8"	*Acer saccharinum*	SILVER MAPLE	GOOD	No	Yes	**SAVE**	No
103307	12"	*Acer saccharum*	SUGAR MAPLE	GOOD	No		REMOVE	No
103308	10"	*Acer rubrum*	RED MAPLE	GOOD	No		REMOVE	No
103309	20"	*Acer rubrum*	RED MAPLE	GOOD	No		REMOVE	No
103310	10"	*Acer rubrum*	RED MAPLE	GOOD	No		REMOVE	No
103311	24"	*Acer saccharinum*	SILVER MAPLE	GOOD	No		REMOVE	No
103312	24"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
103313	13",14",12"	*Prunus serotina*	BLACK CHERRY	GOOD	No		REMOVE	No
103314	8"	*Carpinus caroliniana*	AMERICAN HORNBEAM	GOOD	No		REMOVE	No
103315	28"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
103316	28",24"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
103317	15"	*Prunus serotina*	BLACK CHERRY	GOOD	No		REMOVE	No
103318	8"	*Fraxinus nigra*	BLACK ASH	GOOD	No		REMOVE	No
103319	12"	*Acer saccharinum*	SILVER MAPLE	GOOD	No		REMOVE	No
103320	24",20"	*Acer saccharinum*	SILVER MAPLE	GOOD	No		REMOVE	No
103321	30",12",12"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
103322	30"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No	Yes	**SAVE**	No
103323	18"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
103324	14"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
103325	13", 10"	*Fraxinus americana*	WHITE ASH	GOOD	No		REMOVE	No
103326	32"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
103327	24"	*Acer saccharinum*	SILVER MAPLE	GOOD	No	Yes	**SAVE**	No

TAG#	SIZE	SPECIES	COMMON NAME	CONDITION	IN REGULATED WOODLAND?	IN REGULATED WETLAND?	SAVE / REMOVE	USED FOR LANDSCAPE REQUIREMENTS?
103328	14"	*Pyrus communis*	PEAR	GOOD	No	No	**SAVE**	Yes
103329	10"	*Quercus alba*	WHITE OAK	DEAD	No		REMOVE	No
103330	8"	*Fraxinus americana*	WHITE ASH	GOOD	No		REMOVE	No
103332	10"	*Fraxinus americana*	WHITE ASH	GOOD	No		REMOVE	No
103333	8"	*Robinia pseudoacacia*	BLACK LOCUST	GOOD	No		REMOVE	No
103334	10"	*Fraxinus americana*	WHITE ASH	GOOD	No	No	**SAVE**	Yes
103335	8"	*Carya ovata*	SHAGBARK HICKORY	GOOD	No	Yes	**SAVE**	No
103336	32",13"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No	Yes	**SAVE**	No
103337	8"	*Fraxinus americana*	WHITE ASH	GOOD	No		REMOVE	No
103338	24"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
103339	8"	*Robinia pseudoacacia*	BLACK LOCUST	GOOD	No		REMOVE	No
103340	18", 12"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
103341	18"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
103342	14", 16"	*Salix babylonica*	WILLOW	DEAD	No		REMOVE	No
103343	8"	*Robinia pseudoacacia*	BLACK LOCUST	GOOD	No		REMOVE	No
103344	18"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
103345	9"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
103346	8"	*Acer rubrum*	RED MAPLE	GOOD	No	Yes	**SAVE**	No
103347	15"		UNKNOWN TREE	DEAD	No	Yes	**SAVE**	No
103348	11"	*Carya cordiformis*	BITTERNUT HICKORY	GOOD	No	Yes	**SAVE**	No
103349	10"	*Ulmus rubra*	SLIPPERY ELM	GOOD	No		REMOVE	No
103350	8"	*Robinia pseudoacacia*	BLACK LOCUST	GOOD	No		REMOVE	No
103351	10"	*Robinia pseudoacacia*	BLACK LOCUST	GOOD	No		REMOVE	No
103352	10",8"	*Robinia pseudoacacia*	BLACK LOCUST	GOOD	No		REMOVE	No
103353	8"	*Robinia pseudoacacia*	BLACK LOCUST	GOOD	No		REMOVE	No
103354	12"	*Platanus occidentalis*	SYCAMORE	GOOD	No	No	**SAVE**	Yes
103355	24"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No	Yes	**SAVE**	No
103356	18"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No	Yes	**SAVE**	No
103357	28",20"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No	No	**SAVE**	No
103358	15"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No	Yes	**SAVE**	No
103359	12"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No	Yes	**SAVE**	No
103360	20"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No	Yes	**SAVE**	No
103361	8"	*Acer negundo*	BOX ELDER	GOOD	No	No	**SAVE**	No
103362	28",24"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No	Yes	**SAVE**	No
103363	10"	*Fraxinus americana*	WHITE ASH	GOOD	No		**SAVE**	No
103364	20",22",15"	*Robinia pseudoacacia*	BLACK LOCUST	GOOD	No		REMOVE	No
103365	10"	*Acer saccharum*	SUGAR MAPLE	GOOD	No		REMOVE	No
103366	12", 10"	*Acer saccharum*	SUGAR MAPLE	GOOD	No		REMOVE	No
103367	9"	*Acer saccharum*	SUGAR MAPLE	GOOD	No		REMOVE	No
103368	26"	*Carpinus caroliniana*	AMERICAN HORNBEAM	GOOD	No		REMOVE	No
103369	10"	*Acer saccharum*	SUGAR MAPLE	GOOD	No		REMOVE	No
103370	14"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
103371	10"	*Acer saccharum*	SUGAR MAPLE	GOOD	No		REMOVE	No
103372	9"	*Acer saccharum*	SUGAR MAPLE	GOOD	No		REMOVE	No
103373	14"	*Acer saccharinum*	SILVER MAPLE	GOOD	No		REMOVE	No
103374	9"	*Acer saccharum*	SUGAR MAPLE	GOOD	No		REMOVE	No
103375	16"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
103376	10"	*Carya ovata*	SHAGBARK HICKORY	GOOD	No		REMOVE	No
103377	12"	*Acer saccharinum*	SILVER MAPLE	GOOD	No		REMOVE	No
103378	12"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
103379	14", 12"	*Carpinus caroliniana*	AMERICAN HORNBEAM	GOOD	No		REMOVE	No
103380	14"	*Ulmus rubra*	SLIPPERY ELM	GOOD	No		REMOVE	No
103381	28"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
103382	8"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
103383	8"	*Ostrya virginiana*	HOP HORNBEAM	GOOD	No		REMOVE	No
103384	18"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
103385	12"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
103386	16",14",12"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
103387	18"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
103388	18"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
103389	18"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
103390	12"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
103391	12"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
103392	18"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
103393	14"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
103394	18"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
103395	16"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
103396	12"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
103397	20"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
103398	12"	*Ulmus americana*	AMERICAN ELM	GOOD	No		REMOVE	No
103399	18", 16"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
103500	18", 15"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No	Yes	**SAVE**	No
103501	8"	*Robinia pseudoacacia*	BLACK LOCUST	GOOD	No		REMOVE	No
103502	14"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No	Yes	**SAVE**	No
103503	8"	*Robinia pseudoacacia*	BLACK LOCUST	GOOD	No		REMOVE	No
103504	9"	*Robinia pseudoacacia*	BLACK LOCUST	GOOD	No		REMOVE	No
103505	8"	*Acer negundo*	BOX ELDER	GOOD	No		REMOVE	No
103506	10"	*Robinia pseudoacacia*	BLACK LOCUST	GOOD	No		REMOVE	No
103507	8"	*Acer negundo*	BOX ELDER	GOOD	No		REMOVE	No
103508	8"	*Robinia pseudoacacia*	BLACK LOCUST	GOOD	No		REMOVE	No
103509	8"	*Robinia pseudoacacia*	BLACK LOCUST	GOOD	No		REMOVE	No
103510	10"	*Acer negundo*	BOX ELDER	GOOD	No		REMOVE	No
103511	38"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
103512	40"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
103513	36"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
103514	25",24"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No	Yes	**SAVE**	No
103515	24",18"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No	Yes	**SAVE**	No
103516	24"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No	Yes	**SAVE**	No
103517	18"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No	No	**SAVE**	No
103518	14"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
103519	30"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No	Yes	**SAVE**	No
103520	28"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
103521	18"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No	Yes	**SAVE**	No
103522	18"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
103523	28"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
103524	8"	*Acer negundo*	BOX ELDER	GOOD	No		REMOVE	No
103525	8"	*Robinia pseudoacacia*	BLACK LOCUST	GOOD	No		REMOVE	No
103526	26"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
103527	8"	*Pyrus communis*	PEAR	GOOD	No		REMOVE	No
103528	24"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No	No	**SAVE**	No

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STATE OF MICHIGAN
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City of Novi, Michigan

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Phone: 248.657.4968

■ job number:	■ date:
24018	07.18.2025
■ drawn by:	■ checked by:
EMJ	WTK

811
Know what's **below.**
Call before you dig.

■ revisions:

10.17.2025 Per Municipal Review

sheet no.

L-13

TAG#	SIZE	SPECIES	COMMON NAME	CONDITION	IN REGULATED WOODLAND?	IN REGULATED WETLAND?	SAVE / REMOVE	USED FOR LANDSCAPE REQUIREMENTS?
103529	24"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No	No	**SAVE**	No
103530	16"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No	No	**SAVE**	No
103531	24"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
103532	22"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
103533	14"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
103534	20"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No	No	**SAVE**	No
103535	18"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No	No	**SAVE**	No
103536	15"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No	Yes	**SAVE**	No
103537	14"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No	No	**SAVE**	No
103538	11"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No	Yes	**SAVE**	No
103539	13"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No	Yes	**SAVE**	No
103540	18"	*Carya cordiformis*	BITTERNUT HICKORY	GOOD	No	Yes	**SAVE**	No
103541	12"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No	Yes	**SAVE**	No
103542	10"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No	Yes	**SAVE**	No
103543	12"	*Acer saccharum*	SUGAR MAPLE	GOOD	No	Yes	**SAVE**	No
103544	18"	*Populus deltoides*	EASTERN COTTONWOOD	DEAD	No	No	**SAVE**	No
103545	12"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No	No	**SAVE**	No
103546	12"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No	Yes	**SAVE**	No
103547	20"	*Carpinus caroliniana*	AMERICAN HORNBEAM	DEAD	No	Yes	**SAVE**	No
103548	9"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No	Yes	**SAVE**	No
103549	10"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No	Yes	**SAVE**	No
103550	10"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No	Yes	**SAVE**	No
103551	8"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No	Yes	**SAVE**	No
103552	20"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No	Yes	**SAVE**	No
103553	14"	*Carpinus caroliniana*	AMERICAN HORNBEAM	GOOD	No	Yes	**SAVE**	No
103554	14"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No	Yes	**SAVE**	No
103555	15"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No	Yes	**SAVE**	No
103556	13"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No	Yes	**SAVE**	No
103557	10"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No	Yes	**SAVE**	No
103558	18", 12", 10"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No	Yes	**SAVE**	No
103559	10", 12"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No	Yes	**SAVE**	No
103560	18", 8"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No	Yes	**SAVE**	No
103561	8"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No	Yes	**SAVE**	No
103562	18"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No	No	**SAVE**	No
103563	9"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No	No	**SAVE**	No
103564	10"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No	No	**SAVE**	No
103565	24"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No	No	REMOVE	No
103566	8"	*Quercus alba*	WHITE OAK	GOOD	No	No	REMOVE	No
103567	18"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
103568	18"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
103569	22"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
103570	12"	*Populus deltoides*	EASTERN COTTONWOOD	FAIR	No		REMOVE	No
103571	8"	*Tilia americana*	BASSWOOD	GOOD	No	No	REMOVE	No
103572	12"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No	No	**SAVE**	No
103573	12"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No	Yes	**SAVE**	No
103574	18"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No	No	**SAVE**	No
103575	19"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No	No	**SAVE**	No
103576	28"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No	No	**SAVE**	No
103577	14"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No	Yes	**SAVE**	No
103578	15"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No	Yes	**SAVE**	No
103579	10"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No	Yes	**SAVE**	No
103580	8"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No	Yes	**SAVE**	No
103581	10"	*Carpinus caroliniana*	AMERICAN HORNBEAM	GOOD	No	Yes	**SAVE**	No
103582	11"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No	Yes	**SAVE**	No
103583	12"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No	Yes	**SAVE**	No
103584	12"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No	Yes	**SAVE**	No
103585	20"	*Carpinus caroliniana*	AMERICAN HORNBEAM	FAIR	No	Yes	**SAVE**	No
103586	10"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No	Yes	**SAVE**	No
103587	13"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No	Yes	**SAVE**	No
103588	10"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No	Yes	**SAVE**	No
103589	10", 9"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No	Yes	**SAVE**	No
103590	10"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No	Yes	**SAVE**	No
103591	12"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No	Yes	**SAVE**	No
103592	8"	*Robinia pseudoacacia*	BLACK LOCUST	GOOD	No	Yes	**SAVE**	No
103593	8"	*Robinia pseudoacacia*	BLACK LOCUST	GOOD	No	Yes	**SAVE**	No
103594	12"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No	Yes	**SAVE**	No
103595	18"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No	Yes	**SAVE**	No
103596	8"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No	Yes	**SAVE**	No
103597	11"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No	No	**SAVE**	No
103598	16"	*Carpinus caroliniana*	AMERICAN HORNBEAM	GOOD	No	No	**SAVE**	Yes
103599	12"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No	Yes	**SAVE**	No
103600	13"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No	Yes	**SAVE**	No
103601	8"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No	Yes	**SAVE**	No
103602	18"	*Robinia pseudoacacia*	BLACK LOCUST	GOOD	No	No	**SAVE**	No
103603	15"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No	Yes	**SAVE**	No
103604	8"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No	Yes	**SAVE**	No
103605	24"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No	No	**SAVE**	No
103606	18"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No	No	**SAVE**	No
103607	10"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
103608	12"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
103609	11"	*Carya glabra*	PIGNUT HICKORY	GOOD	No		REMOVE	No
103610	14"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
103611	18"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
103612	8"	*Carya cordiformis*	BITTERNUT HICKORY	GOOD	No		REMOVE	No
103613	10"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
103614	8"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
103615	11"	*Robinia pseudoacacia*	BLACK LOCUST	GOOD	No		REMOVE	No
103616	16"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
103617	2-8"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
103618	12"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
103619	14"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
103620	10"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
103621	18"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
103622	14"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
103623	10"	*Acer negundo*	BOX ELDER	GOOD	No		REMOVE	No
103624	24"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
103625	24"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
103626	16"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No	No	REMOVE	No
103627	16", 14"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No	No	REMOVE	No
103628	18"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No

TAG#	SIZE	SPECIES	COMMON NAME	CONDITION	IN REGULATED WOODLAND?	IN REGULATED WETLAND?	SAVE / REMOVE	USED FOR LANDSCAPE REQUIREMENTS?
103629	36"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
103630	14"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
103631	30"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
103632	30"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
103633	20"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
103634	8"	*Acer negundo*	BOX ELDER	GOOD	No		REMOVE	No
103635	12"	*Robinia pseudoacacia*	BLACK LOCUST	GOOD	No		REMOVE	No
103636	14"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
103637	12"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
103638	16"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
103639	10"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
103640	10"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
103641	8"	*Robinia pseudoacacia*	BLACK LOCUST	GOOD	No		REMOVE	No
103642	8"	*Robinia pseudoacacia*	BLACK LOCUST	GOOD	No		REMOVE	No
103643	8", 9"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
103644	20"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No	No	**SAVE**	No
103645	18", 16"	*Sassafras albidum*	SASSAFRAS	GOOD	No	No	**SAVE**	Yes
103646	22"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No	No	**SAVE**	No
103647	22", 18", 10", 12"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No	No	**SAVE**	No
103648	8"	*Prunus serotina*	BLACK CHERRY	GOOD	No	No	**SAVE**	Yes
103649	38"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No	No	**SAVE**	No
103650	12"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No	No	**SAVE**	No
103651	12"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No	No	**SAVE**	No
103652	24", 18", 18"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No	No	**SAVE**	No
103653	24", 20"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No	No	**SAVE**	No
103654	42"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No	No	**SAVE**	No
103655	12"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No	No	**SAVE**	No
103656	13"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No	No	**SAVE**	No
103657	9"	*Acer nigrum*	BLACK MAPLE	GOOD	No	No	**SAVE**	Yes
103658	10"	*Acer saccharinum*	SILVER MAPLE	GOOD	No	No	**SAVE**	No
103659	10", 9", 8"	*Acer saccharinum*	SILVER MAPLE	POOR	No	Yes	**SAVE**	No
103660	20"	*Salix babylonica*	WILLOW	GOOD	No	No	**SAVE**	No
103661	20"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No	Yes	**SAVE**	No
103662	24"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No	Yes	**SAVE**	No
103663	24"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
103664	10"	*Liriodendron tulipifera*	TULIP TREE	GOOD	No	No	**SAVE**	Yes
103665	20"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No	Yes	**SAVE**	No
103666	18", 10"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No	Yes	**SAVE**	No
103667	12"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No	Yes	**SAVE**	No
103668	18"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No	Yes	**SAVE**	No
103669	10"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No	Yes	**SAVE**	No
103670	12"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No	Yes	**SAVE**	No
103671	12"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No	Yes	**SAVE**	No
103672	10"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No	Yes	**SAVE**	No
103673	8"	*Tilia americana*	BASSWOOD	GOOD	No		REMOVE	No
103674	12"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
103901	12"		DECIDUOUS	DEAD	Offsite	Offsite	**SAVE**	No
103902	10"	Acer rubrum	RED MAPLE	GOOD	No	No	**SAVE**	Yes
103903	15", 18"	Pyrus communis	PEAR	GOOD	No	No	**SAVE**	Yes
103904	20"	Pyrus communis	PEAR	GOOD	No	No	**SAVE**	Yes
103905	14"	Pyrus communis	PEAR	GOOD	No	No	**SAVE**	Yes
103906	8"	Pyrus communis	PEAR	GOOD	No	No	**SAVE**	Yes
103907	8"	Pyrus communis	PEAR	GOOD	No		REMOVE	No
103908	8"	Pyrus communis	PEAR	GOOD	No		REMOVE	No
103909	8"	Acer negundo	BOX ELDER	GOOD	No		REMOVE	No
103910	8"	Pyrus communis	PEAR	GOOD	No		REMOVE	No
103911	2-8"	Acer saccharum	SUGAR MAPLE	GOOD	No		REMOVE	No
103912	8", 15"	Populus deltoides	EASTERN COTTONWOOD	GOOD	Yes		REMOVE	No
103913	13"	Carya laciniosa	SHELLBARK HICKORY	GOOD	Yes		REMOVE	No
103914	8"	Carya laciniosa	SHELLBARK HICKORY	GOOD	Yes		REMOVE	No
103915	28"	Quercus macrocarpa	BUR OAK	GOOD	Yes	No	**SAVE**	No
103916	18"	Carya ovata	SHAGBARK HICKORY	GOOD	Yes	No	**SAVE**	No
103917	12", 16"	Acer saccharum	SUGAR MAPLE	GOOD	Yes	No	**SAVE**	No
103918	15"	Acer saccharum	SUGAR MAPLE	GOOD	Yes	Offsite	**SAVE**	No
103919	8"	Carya laciniosa	SHELLBARK HICKORY	GOOD	Yes	Offsite	**SAVE**	No
103920	18"	Ulmus americana	AMERICAN ELM	GOOD	Yes	Offsite	**SAVE**	No
103921	19"	Ulmus americana	AMERICAN ELM	GOOD	Yes	Offsite	**SAVE**	No
103922	22"	Ulmus americana	AMERICAN ELM	GOOD	Yes	Offsite	**SAVE**	No
103923	32"	Carya laciniosa	SHELLBARK HICKORY	GOOD	Yes	Offsite	**SAVE**	No
103924	14"	Juglans nigra	BLACK WALNUT	GOOD	Yes	Offsite	**SAVE**	No
103925	12	Juglans nigra	BLACK WALNUT	GOOD	Yes	Offsite	**SAVE**	No
104501	12"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
104502	25", 7"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
104503	13"	*Juglans nigra*	BLACK WALNUT	GOOD	No		REMOVE	No
104504	9"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
104505	10", 18"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
104506	7", 11"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No
104507	13"	*Juglans nigra*	BLACK WALNUT	GOOD	No		REMOVE	No
104508	11"	*Populus deltoides*	EASTERN COTTONWOOD	GOOD	No		REMOVE	No

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STATE OF MICHIGAN
WILLIAM KRUEGER
APPROVED
No. 1172
LICENSED LANDSCAPE ARCHITECT

sheet title:

Tree Survey
4 of 4

project title:

Providence Meadows

City of Novi, Michigan

prepared for:

Robertson Brothers Homes
6905 Telegraph Rd. - Suite 200
Bloomfield Hills, MI 48301

Phone: 248.657.4968

job number:	date:
24018	07.18.2025

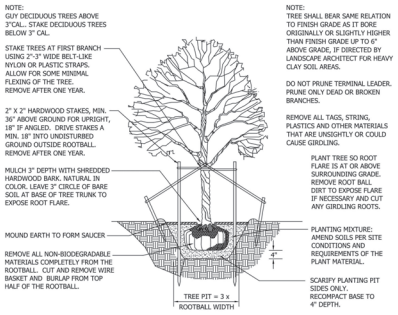
drawn by:	checked by:
EMJ	WTK

811
Know what's **below.**
Call before you dig.

revisions:
10.17.2025 Per Municipal Review

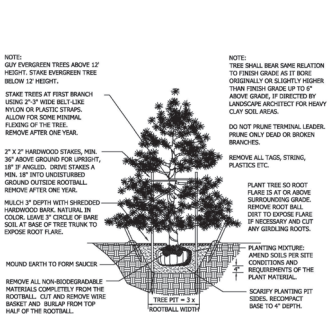
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L-14



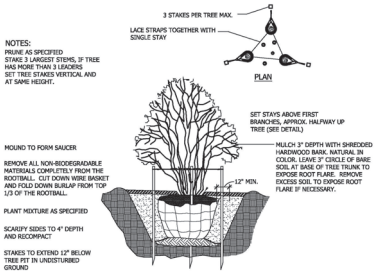
DECIDUOUS TREE PLANTING DETAIL

Not to scale



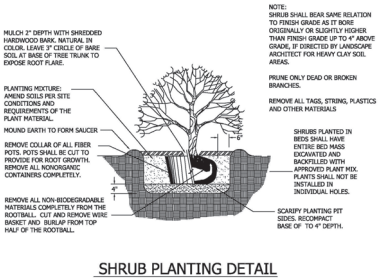
EVERGREEN TREE PLANTING DETAIL

Not to scale



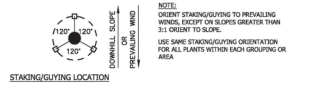
MULTI-STEM TREE PLANTING DETAIL

Not to scale

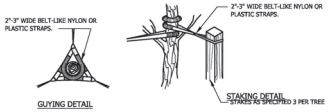


SHRUB PLANTING DETAIL

NOT TO SCALE

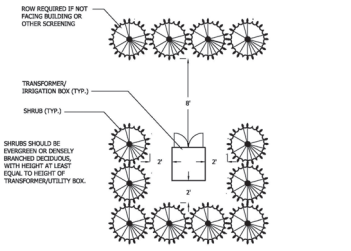


STAKING/GUYING LOCATION



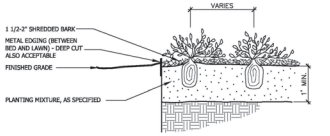
TREE STAKING DETAIL

Not to scale



TRANSFORMER SCREENING DETAIL

Not to scale

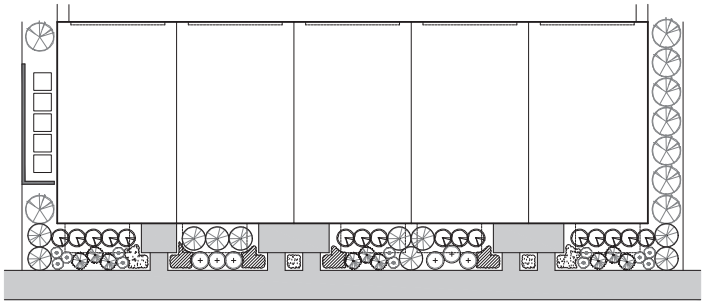


PERENNIAL PLANTING DETAIL

Not to scale

City of Novi Landscape Notes

1. The proposed landscape shall be installed between March 15 & November 15
2. It is intended to guarantee the plant material for 2 years from the date of acceptance and to maintain all such landscaped areas in accordance with the requirements set forth in the City of Novi Ordinance.
3. The plant material should be grown in a nursery located in the Upper Midwest or Great Lakes region.
4. The property's landscape shall be maintained per the approved final site plan in perpetuity, per Zoning Ordinance Section 5.5.7, including replacement of all dead or failing plant material within three (3) months of its discovery, or the next appropriate time as determined by the City Landscape Architect.
5. Any plant species substitutions from the approved plan shall be approved in writing by the City Landscape Architect.



Typical Unit Landscape Concept Plan

Scale: 1" = 10'

20' Width Building Foundation Summary

Required: Min. 35% of Unit Facade, less paved entry points, adjacent to foundation landscape

	Length	Required	Provided
Central Units:	14'	4.90'	14.00' (100%)
End Unit:	48.67'	17.03'	48.67' (100%)

Landscape Notes

1. All landscaping and landscape elements shall be planted, and earth moving or grading performed, in a sound workmanlike manner, according to accepted planting and grading procedure.
2. Landscaping required by this Ordinance shall be maintained in a reasonably healthy condition, free from refuse and debris.
3. All unhealthy or dead material shall be replaced within three (3) months of damage or death or the next appropriate planting period, whichever comes first.
4. All landscaped areas shall be provided with irrigation or a readily available and acceptable water supply. Irrigation systems shall include separate zones for Lawn and Plants.
5. Topsoil removed during construction shall be stockpiled in an appropriate manner to prevent erosion, and shall be redistributed on regraded surfaces to be landscaped, and provide a minimum of four (4) inches of even cover.
6. Plants shall be mulched with shredded hardwood bark mulch at a depth of three (3) inches. Mulch is to be free from debris and foreign material and shall contain no pieces of inconsistent size.
7. All plant material shall be true to name and free from physical damage and wind burn.
8. Plants shall be full, well-branched, and in a healthy, vigorous growing condition.
9. Plants shall be watered before and after planting is complete.
10. All trees must be staked, fertilized, and mulched and shall be guaranteed to exhibit a normal growth cycle for at least one (1) full year following planting.
11. All material shall conform to the guidelines established in the most recent edition of the American Standard for Nursery Stock.
12. Provide clean backfill soil, using material stockpiled on site. Soil shall be screened and free of any debris, foreign material, or stone.
13. "Agriform" tabs or similar slow-release fertilizer shall be added to the planting pits before being backfilled.
14. Amended planting mix shall consist of 1/3 screened topsoil, 1/3 sand, and 1/3 compost.
15. The Landscape Contractor shall be responsible for all work shown on the landscape drawings and specifications.
16. No substitutions or changes of location, or plant types shall be made without the approval of the Landscape Architect or Owner's representative.
17. The Landscape Architect shall be notified of any discrepancies between the plans and field conditions prior to installation.
18. The Landscape Contractor shall be responsible for maintaining all plant material in a vertical condition throughout the guaranteed period.
19. 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 plan and specifications, if requested by the owner.
20. The 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.
21. The Landscape Contractor shall seed and mulch or sod (as indicated on plans) all areas disturbed during construction, throughout the contract limits.
22. A pre-emergent weed control agent, "Preen" or equal, shall be applied uniformly to all planting beds prior to mulching.
23. The Developer and Landscape Architect reserve the right to change location of plant material and alter plant species/variety at the time of installation based upon availability and quantity of material as well as site conditions. Materials will be of similar size, appearance and growth habit.
24. All Lawn areas shall be Sodded

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750 Forest Ave. Suite 101
Birmingham, MI 48009
T:: 248.770.3465

STATE OF MICHIGAN
WILLIAM J. KREAS
LICENSED LANDSCAPE ARCHITECT
No. 1172

sheet title:
Building Foundation Concept & Details

project title:
Providence Meadows
City of Novi, Michigan

prepared for:
Robertson Brothers Homes
6905 Telegraph Rd. - Suite 200
Bloomfield Hills, MI 48301

Phone: 248.657.4968

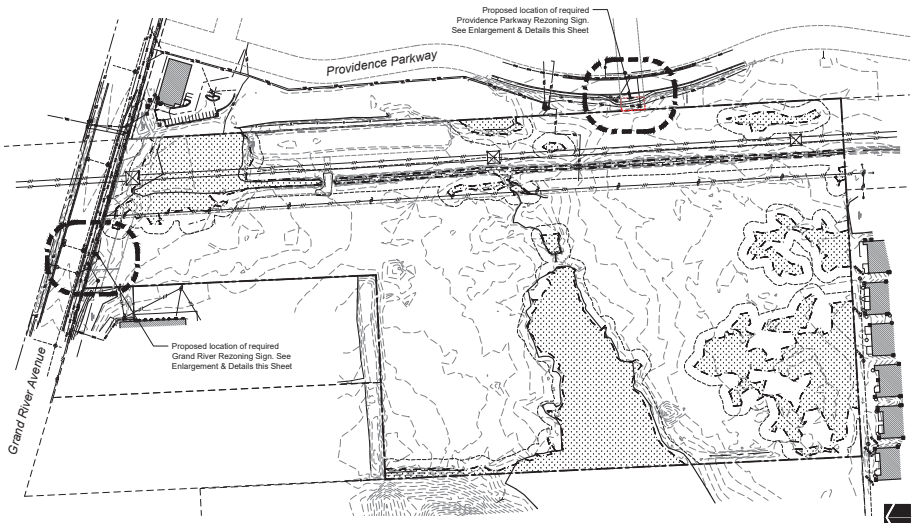
job number:	date:
24018	07.18.2025
drawn by:	checked by:
EMJ	WTK

revisions:
10.17.2025 Per Municipal Review

Know what's **below.** **Call** before you dig.

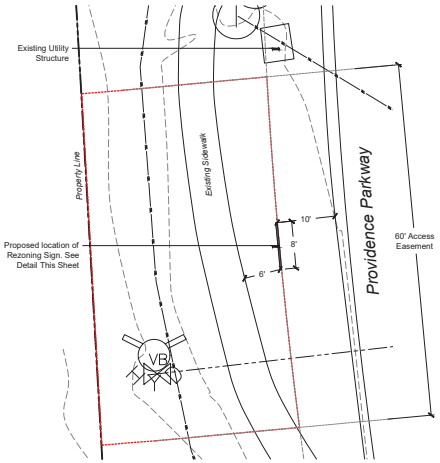
sheet no.
L-15

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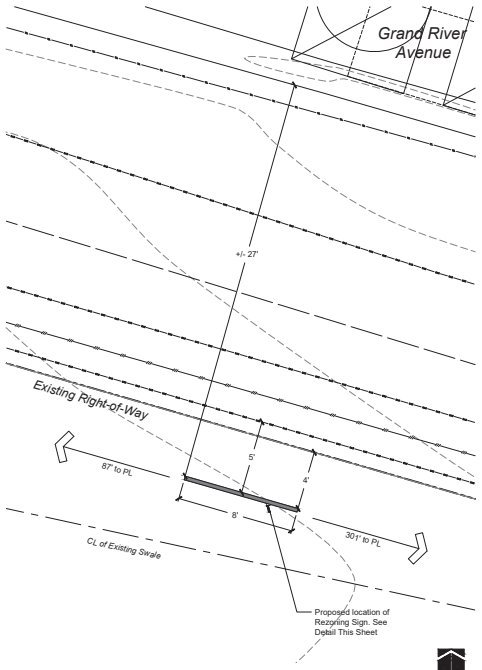
Rezoning Sign Location Plan

Scale: 1" = 150'



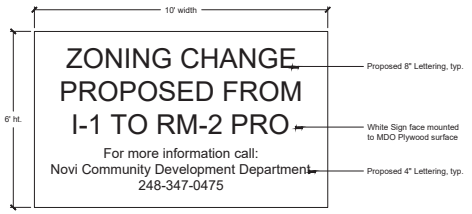
Providence Parkway Rezoning Sign Enlargement Plan

Scale: 1" = 10'



Grand River Rezoning Sign Enlargement Plan

Scale: 1" = 1'



Rezoning Sign Detail

Scale: 1" = 1'

Notes:
- Lettering shall be black on a white background
- Sign backing shall be MDO Plywood
- Sign supports shall be 4x4 treated lumber posts

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750 Forest Ave. Suite 101
Birmingham, MI 48009
T:: 248.770.3465

STATE OF MICHIGAN
WILLIAM KREAN
No. 1172
LICENSED LANDSCAPE ARCHITECT

sheet title:
Rezoning Sign Plan & Detail

project title:
Providence Meadows
City of Novi, Michigan

prepared for:
Robertson Brothers Homes
6905 Telegraph Rd. - Suite 200
Bloomfield Hills, MI 48301

Phone: 248.657.4968

job number:	date:
24018	07.18.2025

drawn by:	checked by:
EMJ	WTK

revisions:
10.17.2025 Per Municipal Review

Know what's **below.**
Call before you dig.

sheet no.
S-1



Plan View
Scale - 1" = 50ft

General Note
1. SEE SCHEDULE FOR LUMINAIRE MOUNTING HEIGHT.
2. SEE LUMINAIRE SCHEDULE FOR LIGHT LOSS FACTOR.
3. CALCULATIONS ARE SHOWN IN FOOTCANDLES AT: GRADE

THE ENGINEER AND/OR ARCHITECT MUST DETERMINE APPLICABILITY OF THE LAYOUT TO EXISTING / FUTURE FIELD CONDITIONS. THIS LIGHTING LAYOUT REPRESENTS ILLUMINATION LEVELS CALCULATED FROM LABORATORY DATA TAKEN UNDER CONTROLLED CONDITIONS IN ACCORDANCE WITH ILLUMINATING ENGINEERING SOCIETY APPROVED METHODS. ACTUAL PERFORMANCE OF ANY MANUFACTURER'S LUMINAIRE MAY VARY DUE TO VARIATION IN ELECTRICAL VOLTAGE, TOLERANCE IN LAMPS, AND OTHER VARIABLE FIELD CONDITIONS. MOUNTING HEIGHTS INDICATED ARE FROM GRADE AND/OR FLOOR UP.

THESE LIGHTING CALCULATIONS ARE NOT A SUBSTITUTE FOR INDEPENDENT ENGINEERING ANALYSIS OF LIGHTING SYSTEM SUITABILITY AND SAFETY. THE ENGINEER AND/OR ARCHITECT IS RESPONSIBLE TO REVIEW FOR MICHIGAN ENERGY CODE AND LIGHTING QUALITY COMPLIANCE.

UNLESS EXEMPT, PROJECT MUST COMPLY WITH LIGHTING CONTROLS REQUIRMENTS DEFINED IN ASHRAE 90.1 2019. FOR SPECIFIC INFORMATION CONTACT GBA CONTROLS GROUP AT CONTROLS@GASSERBUSH.COM OR 734-266-6705.

Alternates Note
THE USE OF FIXTURE ALTERNATES MUST BE RESUBMITTED TO THE CITY FOR APPROVAL.

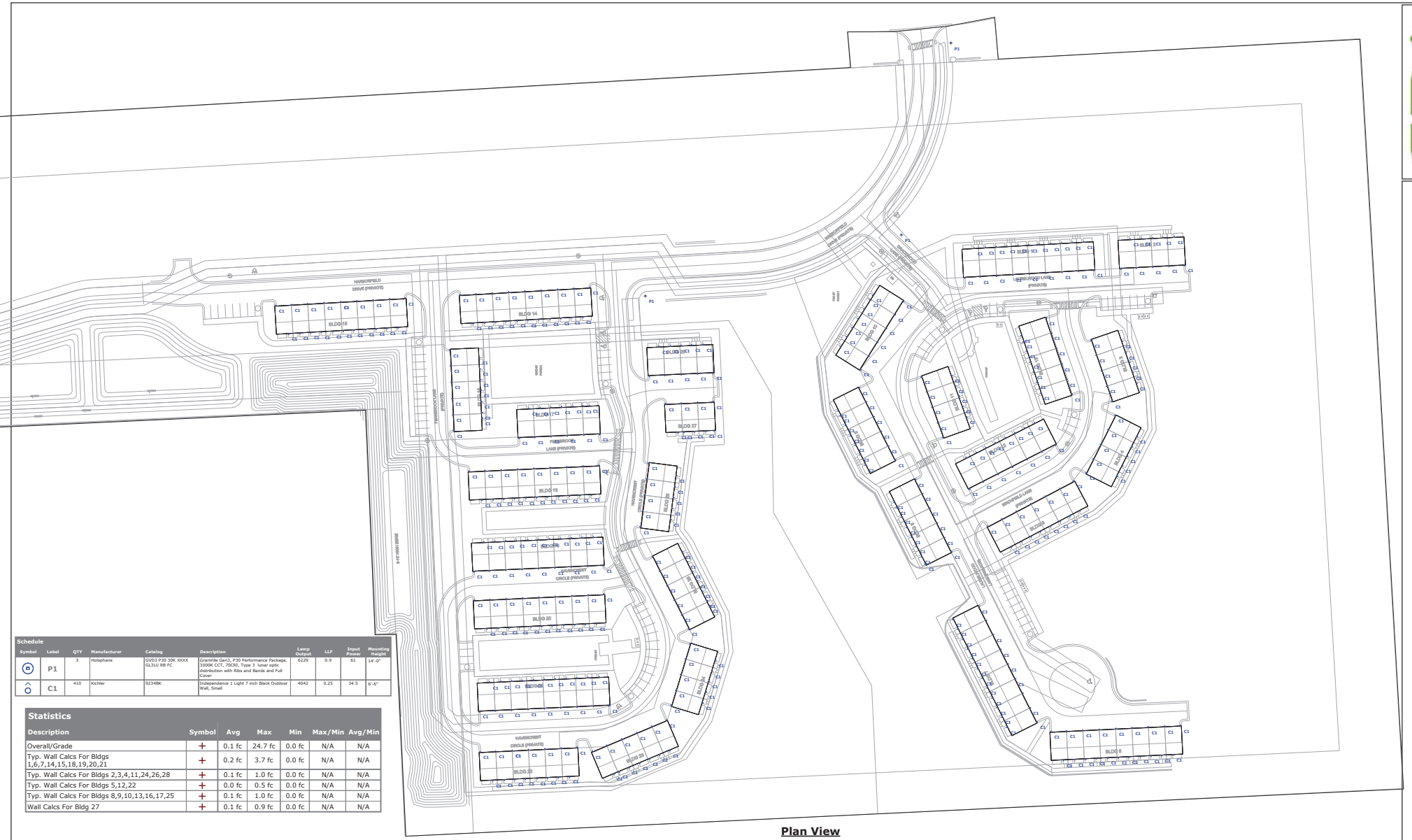
Drawing Note
THIS DRAWING WAS GENERATED FROM AN ELECTRONIC IMAGE FOR ESTIMATION PURPOSE ONLY. LAYOUT TO BE VERIFIED IN FIELD BY OTHERS.

Ordering Note
FOR INQUIRIES CONTACT GASSER BUSH AT QUOTES@GASSERBUSH.COM OR 734-266-6705.

Mounting Height Note
MOUNTING HEIGHT IS MEASURED FROM GRADE TO FACE OF FIXTURE. POLE HEIGHT SHOULD BE CALCULATED AS THE MOUNTING HEIGHT LESS BASE HEIGHT.

PROVIDENCE MEADOWS
EXTERIOR PHOTOMETRIC PLAN
GASSER BUSH ASSOCIATES
WWW.GASSERBUSH.COM

Designer
BK
Date
10/13/2025
Scale
Not to Scale
Drawing No.
#25-46077 V2



Schedule

Symbol	Label	QTY	Manufacturer	Catalog	Description	Lamp Output	LLF	Input Power	Mounting Height
	P1	3	Holophane	GVD3 P30 30K XXXX GL3LU RB FC	GranVille Gen3, P30 Performance Package, 3000K CCT, 70CRI, Type 3 lunar optic distribution with Ribs and Bands and Full Cover	6229	0.9	61	14'-0"
	C1	410	Kichler	92348K	Independence 1 Light 7 inch Black Outdoor Wall, Small	4042	0.25	34.5	6'-6"

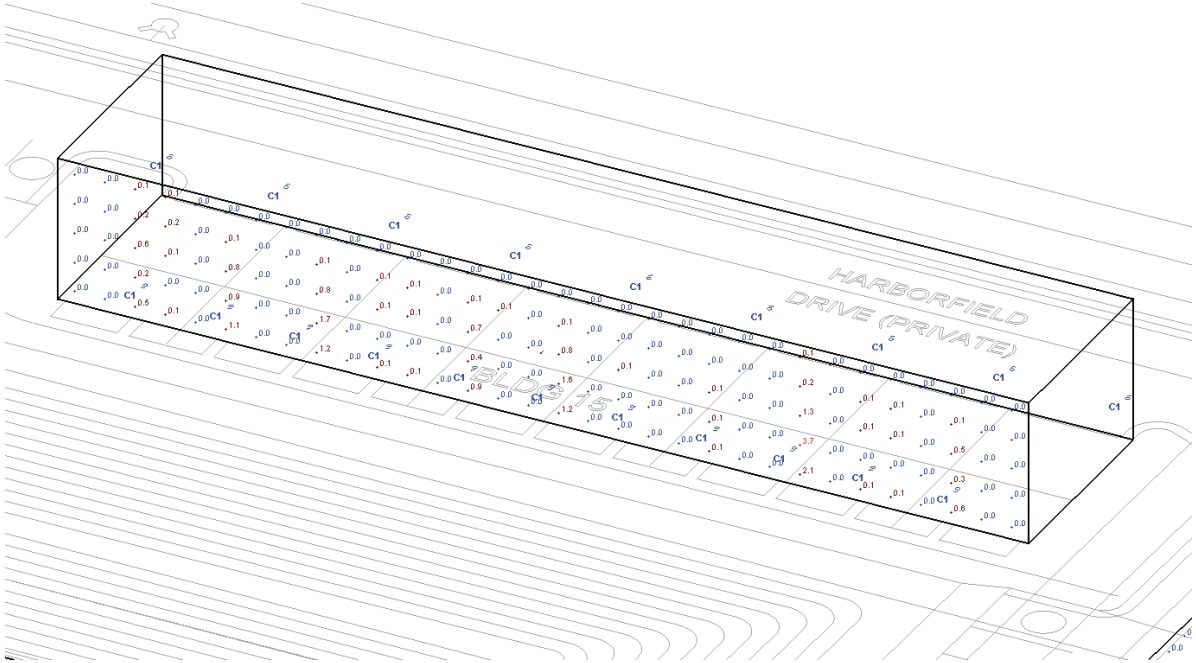
Statistics

Description	Symbol	Avg	Max	Min	Max/Min	Avg/Min
Overall/Grade	+	0.1 fc	24.7 fc	0.0 fc	N/A	N/A
Typ. Wall Calcs For Bldgs 1,6,7,14,15,18,19,20,21	+	0.2 fc	3.7 fc	0.0 fc	N/A	N/A
Typ. Wall Calcs For Bldgs 2,3,4,11,24,26,28	+	0.1 fc	1.0 fc	0.0 fc	N/A	N/A
Typ. Wall Calcs For Bldgs 5,12,22	+	0.0 fc	0.5 fc	0.0 fc	N/A	N/A
Typ. Wall Calcs For Bldgs 8,9,10,13,16,17,25	+	0.1 fc	1.0 fc	0.0 fc	N/A	N/A
Wall Calcs For Bldg 27	+	0.1 fc	0.9 fc	0.0 fc	N/A	N/A

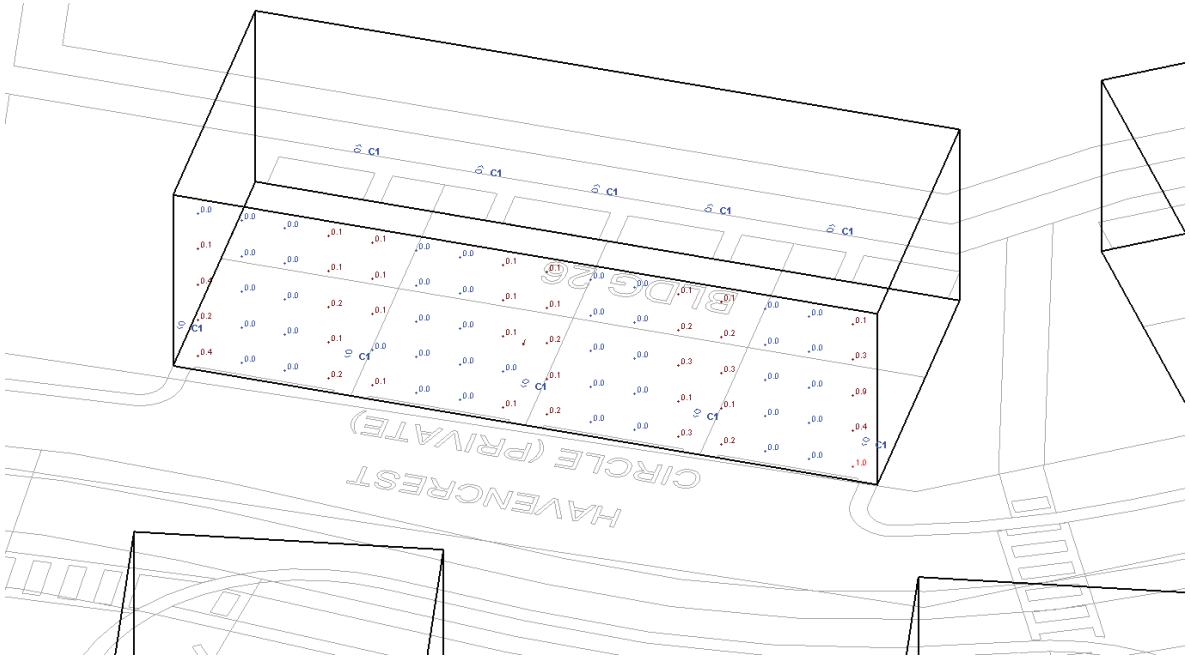
Plan View
Scale - 1" = 50ft

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Typ. Wall Calcs For Bldgs 1,6,7,14,15,18,19,20,21



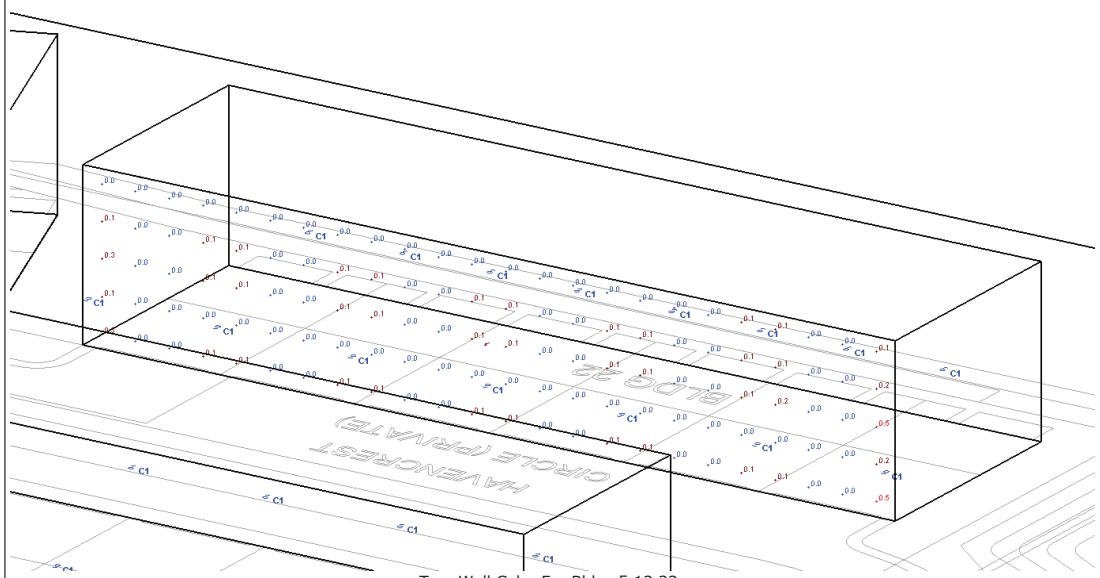
Typ. Wall Calcs For Bldgs 2,3,4,11,24,26,28

Statistics

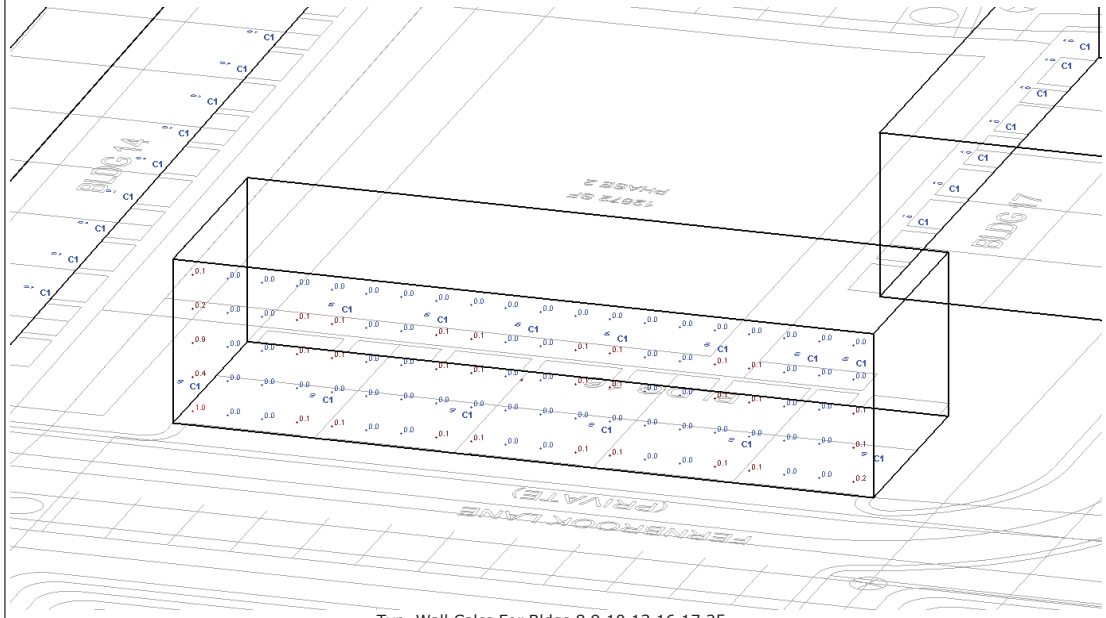
Description	Symbol	Avg	Max	Min	Max/Min	Avg/Min
Typ. Wall Calcs For Bldgs 1,6,7,14,15,18,19,20,21	+	0.2 fc	3.7 fc	0.0 fc	N/A	N/A
Typ. Wall Calcs For Bldgs 2,3,4,11,24,26,28	+	0.1 fc	1.0 fc	0.0 fc	N/A	N/A

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Typ. Wall Calcs For Bldgs 5,12,22



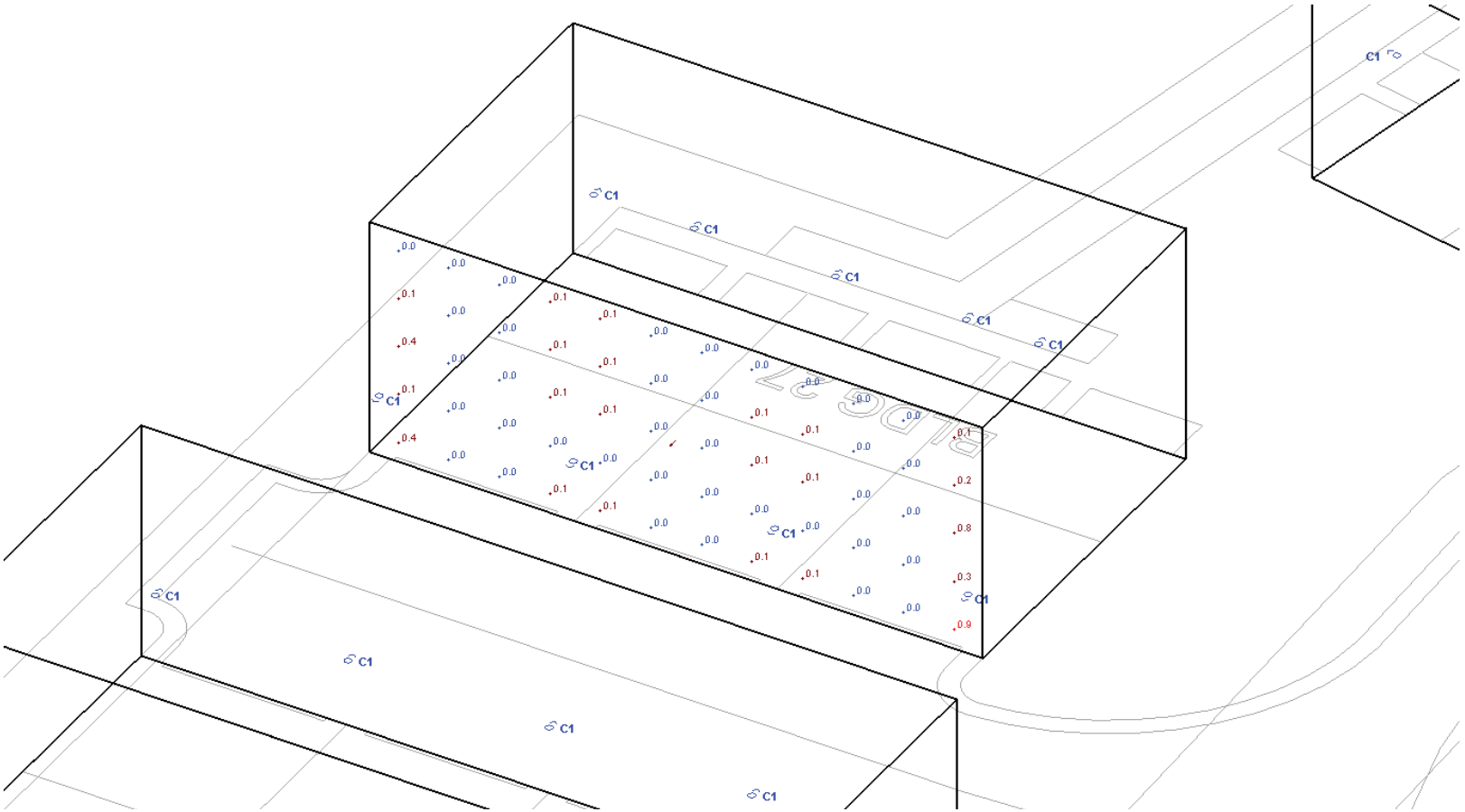
Typ. Wall Calcs For Bldgs 8,9,10,13,16,17,25

Statistics

Description	Symbol	Avg	Max	Min	Max/Min	Avg/Min
Typ. Wall Calcs For Bldgs 5,12,22	+	0.0 fc	0.5 fc	0.0 fc	N/A	N/A
Typ. Wall Calcs For Bldgs 8,9,10,13,16,17,25	+	0.1 fc	1.0 fc	0.0 fc	N/A	N/A

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Typ. Wall Calcs For Bldg 27

Statistics

Description	Symbol	Avg	Max	Min	Max/Min	Avg/Min
Wall Calcs For Bldg 27	+	0.1 fc	0.9 fc	0.0 fc	N/A	N/A

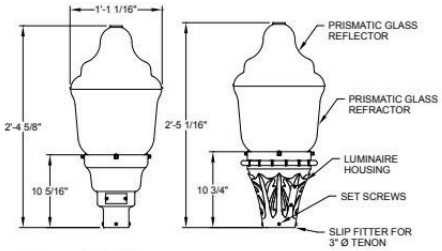
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EXTERIOR PHOTOMETRIC PLAN
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HOLOPHANE®
LEADER IN LIGHTING SOLUTIONS

Catalog Number	
Notes	Type





Maximum weight - 47 lbs
Maximum effective projected area - 1.38 sq. ft.

BAA BABA c SP us DLC LISTED PREMIUM DLC LISTED LED

GVD3

Granville Classic Standard LED3

SPECIFICATIONS

General Description
The GranVille Classic Standard LED3 is designed for use with traditional applications fitting 3" post top tenons. The traditional acorn-shaped luminaire, while reminiscent of the 1920's, contains a powerful, stalk-mounted Chip-On-Board LED platform with a precision optical system that maximizes post spacings while maintaining uniform illumination.

Mechanical Specifications
The luminaire housing shall:
- Be heavy grade A360 cast aluminum (aluminum with <1% copper)
- IP55 rated housing, provides enclosure for the electrical module
- Mount to slip-fitter that will accept 3" high by 2-7/8" to 3-1/8" O.D. pole tenon
- Provide four uniquely designed stainless steel spring clips, enclosed in a clear polyvinyl chloride sleeve and adjusted by 1/4-20 hex-head bolts that securely cradle the prismatic acrylic refractor. The same ¼-20 bolts also support the decorative rib and banding assembly.

The finish shall:
- Utilize a polyester power coat paint to ensure maximum durability
- Rigorous multi-stage pre-treating and painting process yields a finish that achieves a scribe creepage rating of 8 (per ASTM D1654) after over 5000 hours exposure to salt fog chamber (operated per ASTM B117) on standard and RAL finish options.
- RAL (RALxxxxSDCR) paint colors are Super Durable Corrosion Resistant, 80% gloss.

Electrical Specifications
The driver shall meet the following requirements:
- Certified by UL or CSA for wet locations
- A factory programmable electronic driver with 0-10V dimming control leads
- LEDs shall have a minimum of 70 CRI and available in 2700K, 3000K, 4000K, and 5000K CCT
- The electrical system shall be designed to meet ANSI/IEEE C62.41.2 and shall offer a 10kV/5kA surge protection, fail off, as standard with an upgradable 20kV/10kA surge protection, fail off with indicator light, option
- Lumen output can be customized prior to manufacturing by way of FPDxx Options
- The electrical components are mounted on an aluminum plate that is removeable with minimum use of tools.

Optical Specifications
The optical system is IP66 rated and consists of a precisely molded thermal resistant borosilicate glass refractor and top reflector mounted within the decorative glass optic. The top reflector redirects over 50% of the upward light into the controlling refractor while allowing a soft up-light component to define the traditional acorn shape of the luminaire. The lower refractor uses precisely molded prisms to maximize the pole spacings while maintaining uniform illuminance. Two refractors are available, designed for IES type III and V distributions. Lunar Optics shielding is available for asymmetric and symmetric distributions.

Control Options
The control options shall include, but not limited to, the following:
- Three (3) choices of button-style photocontrol kits specified to match voltage requirements: 120V, 208-277V, or 347V, and colored to match housing finish (480V kit not available).

Certification and Standards
- Luminaire shall be UL or CSA listed.
- Suitable for operation in an ambient temperature up to 40°C / 105°F per UL or CSA certification
- LM79 compliant
- DesignLights Consortium® (DLC) Premium qualified product and DLC qualified product. Not all versions of this product may be DLC Premium qualified or DLC qualified. Please check with the DLC Qualified Products List at www.designlights.org/QPL to confirm which versions are qualified.

Government Procurement
BAA – Buy America(n) Act: Product qualifies as a domestic end product under the Buy American Act as implemented in the FAR and DFARS. Product also qualifies as manufactured in the United States under DOT Buy America regulations.
BABA – Build America Buy America: Product qualifies as produced in the United States under the definitions of the Build America, Buy America Act.
Please refer to www.acuitybrands.com/resources/buy-american for additional information.

Warranty – 5 Years Limited
This is the only warranty provided and no other statements in this specification sheet create any warranty of any kind. All other express and implied warranties are disclaimed. Complete warranty terms located at: www.acuitybrands.com/support/warranty/terms-and-conditions

Note: Actual performance may differ as a result of end-user environment and application. All values are design or typical values, measured under laboratory conditions at 25 °C.

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Call a Lighting Expert 7 days a week, 8am to midnight for best pricing on ALL BRANDS: 866-344-3875!



Independence 1 Light 7 inch Black Outdoor Wall, Small

by **Kichler**
SKU: 9234BK
★★★★★ 11 Reviews

$76.97

Select Finish: Black

$76.97 *(100+ in stock)*
1 Add to Cart *Free Shipping & Returns!* Details

Product Specifications

Product Information
Brand: Kichler
Brand Category: Outdoor Wall
Shipping Method: Ground
SKU: 9234BK
UPC: 783927536783

Electrical and Operational Information
Lamping Included: Bulbs Not Included
Lamping Type: BR30
Primary Number of Bulbs: 1
Socket: E26 (Medium)
Total Number of Bulbs: 1
Voltage: 120
Wattage Max: 65.00

Dimensions and Measurements
Backplate/Canopy Height: 4.75
Backplate/Canopy Width: 5
Extension: 7
Height: 7
Weight: 0.95
Width: 4.75

Warranty and Specifications
Country of Origin: CN
Height from Center of Wall Opening: 3.5
Location Rating: Suitable for Wet Locations
UL Ratings: cETLus Listed Wet

Additional Details
Features:
- Slope Ceiling Kit: N
- Ceiling Wall Mount Included: N
- Install Glass Up or Down: N
- Low Ceiling Adaptable: N

Material: Aluminum

GB

PROVIDENCE MEADOWS
EXTERIOR PHOTOMETRIC PLAN
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10/13/2025
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#25-46077 V2

ROBERTSON BROTHERS PROVIDENCE PARK WEST

PROVIDENCE PRKWY
NOVI, MI 48374

SHERWOOD MASTER SET

ARCHITECT
4545 ARCHITECTURE | DESIGN
TIMOTHY FLINTOFF
2761 E. JEFFERSON, SUITE 302
DETROIT, MI 48207

CLIENT
ROBERTSON BROTHERS HOMES
6905 TELEGRAPH RD., SUITE 200
BLOOMFIELD HILLS, MI 48301

PROJECT DATA

BUILDING CODE AUTHORITY:
CITY OF NOVI

APPLICABLE CODES:

BUILDING CODE
ALSO KNOWN AS THE "MICHIGAN RESIDENTIAL BUILDING CODE"
2021 MICHIGAN RESIDENTIAL BUILDING CODE (MRC) AS AMENDED

MECHANICAL CODE
ALSO KNOWN AS THE "MICHIGAN MECHANICAL CODE"
2021 MICHIGAN MECHANICAL CODE AS AMENDED

PLUMBING CODE
ALSO KNOWN AS THE "MICHIGAN PLUMBING CODE"
2021 MICHIGAN PLUMBING CODE AS AMENDED

ELECTRICAL CODE
ALSO KNOWN AS THE "MICHIGAN ELECTRICAL CODE"
2023 NATIONAL ELECTRIC CODE (NEC) AS AMENDED & MICHIGAN AMMENDMENTS PART 8.

ENERGY CODE
2015 UNIFORM ENERGY CODE

BARRIER FREE REQUIREMENTS
AMERICANS WITH DISABILITIES ACT (ADA)
MBC-2015, CHAPTER 11
ICC / ANSI 117.1 - 2010, EXCEPT SECTION 611 & 707

PROJECT DESCRIPTION
RESIDENTIAL TOWNHOUSE BUILDINGS

BUILDING DATA:
STORIES: 3 STORIES

SPRINKLERED: NO

ENERGY EFFICIENCY
COMPLY WITH SECTION N102 OF THE 2015 MICHIGAN RESIDENTIAL CODE
CLIMATE ZONE: 5A

CEILING:	R-38
WOOD FRAMED WALL:	R-20 OR R-13(CAVITY)+R5(SHEATHING)
MASS WALL:	R-20/R-17
FLOOR:	R-20 OR FILL CAVITY, R-19 MIN.
SLAB:	R-10 (2'-0" DEEP)

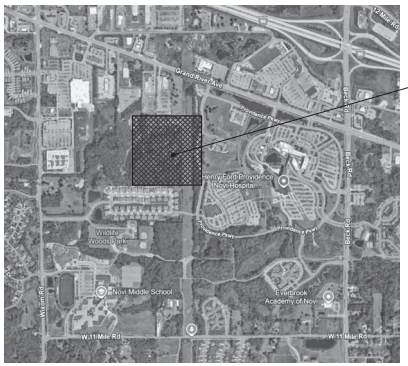
BUILDING HEIGHTS:

	FROM GRADE	CEILING HEIGHT
FIRST FLOOR	0'-8"	7'-10"
SECOND FLOOR	10'-0"	8'-10"
THIRD FLOOR	20'-4"	8'-0"
ROOF (MID-POINT)	33'-1"	
ALLOWABLE	35'-0" (MID-POINT)	

PARKING
GARAGE: 2 SPACES PER UNIT

BUILDING AREAS (CONDITIONED NET):

LEVEL	UNIT(NET)
FIRST FLOOR	227 NSF
SECOND FLOOR	680 NSF
THIRD FLOOR	737 NSF
TOTAL UNIT	1644 NSF



PROJECT LOCATION:
PROVIDENCE PARKWAY
NOVI, MI 48374

1 LOCATION PLAN

SHEET INDEX

TS1.1	TITLE SHEET
TS1.2	GENERAL NOTES
TS1.3	STANDARD DETAILS
TS1.4	STANDARD DETAILS
A1.0	TYPICAL UNIT PLANS
A1.1-3	3-UNIT BUILDING PLANS
A1.1-4	4-UNIT BUILDING PLANS
A1.1-5	5-UNIT BUILDING PLANS
A1.1-6	6-UNIT BUILDING PLANS
A1.1-8	8-UNIT BUILDING PLANS
A1.2-8	8-UNIT BUILDING PLANS
A2.0	TYPICAL UNIT REFLECTED CEILING PLANS AND POWER PLAN
A2.1	ELECTRICAL REFERENCE PLANS
A3.1-3	3-UNIT BUILDING EXTERIOR ELEVATIONS
A3.1-4	4-UNIT BUILDING EXTERIOR ELEVATIONS
A3.1-5	5-UNIT BUILDING EXTERIOR ELEVATIONS
A3.1-6	6-UNIT BUILDING EXTERIOR ELEVATIONS
A3.1-8	8-UNIT BUILDING EXTERIOR ELEVATIONS
A3.2-3	3-UNIT BUILDING EXTERIOR ELEVATIONS
A3.2-4	4-UNIT BUILDING EXTERIOR ELEVATIONS
A3.2-5	5-UNIT BUILDING EXTERIOR ELEVATIONS
A3.2-6	6-UNIT BUILDING EXTERIOR ELEVATIONS
A3.2-8	8-UNIT BUILDING EXTERIOR ELEVATIONS
A4.1	BUILDING SECTIONS
A4.2	WALL SECTIONS
A4.3	WALL SECTIONS
A4.5	DETAIL SECTIONS
A4.6	TYPICAL DEMISING WALL SECTION
S1.1	FOUNDATION AND STRUCTURAL FRAMING PLANS
S1.2	FOUNDATION AND STRUCTURAL FRAMING PLANS
S2.3	OVERALL BUILDING FOUNDATION PLAN
S2.4	OVERALL BUILDING FOUNDATION PLAN
S2.5	OVERALL BUILDING FOUNDATION PLAN
S2.6	OVERALL BUILDING FOUNDATION PLAN
S2.8	OVERALL BUILDING FOUNDATION PLAN
M1.0	HVAC LAYOUT PLANS

SYMBOL LEGEND

Drawing Navigation Symbols

Elevation Callout



Section Callout



Detail Callout



Other Symbols



ABBREVIATIONS

@	At
ACOUST	Acoustical
ACT	Acoustic Ceiling Tile
ADJ	Adjacent
AFF	Above Finish Floor
ALUM	Aluminum
ANOD	Anodized
BD	Board
BLDG	Building
BLK	Block
BLKG	Blocking
CEM	Cement
CJ	Control Joint
CLG	Ceiling
CL	Centerline
CO	Clean Out
COL	Column
CONC	Concrete
CG	Corner Guard
CONST	Construction
CONT	Continuous
CORR	Corrugated
CPT	Carpet
CT	Ceramic Tile
DET	Detail
DIA	Diameter
DIM	Dimension
DN	Down
DO	Door Opening
DR	Door
DWG	Drawing
EA	Each
ELEV	Elevation
EW	Each Way
EXG	Existing
EXIST	Existing
EXP	Expansion, Exposed
FD	Floor Drain
FDN	Foundation
FRP	Fiber Reinforced Panels
FIN	Finish
FLR	Floor
FO	Face Of
FOS	Face of Stud
FR	Frame
FTG	Footing
FV	Field Verify
GA	Gauge
GALV	Galvanized
GYP	Gypsum
HDW	Hardware
HM	Hollow Metal
HORIZ	Horizontal
HT	Height
ID	Inside Diamtere
INSUL	Insulation
INT	Interior
JT	Joint
LAV	Lavatory
LG	Long
LLO	Long Leg Outstanding
LLV	Long Leg Vertical
MAX	Maximum
MECH	Mechanical
MET	Metal
MEZZ	Mezzanine
MI	Miscellaneous Iron
MIN	Minimum
MISC	Miscellaneous
MO	Masonry Opening
NIC	Not In Contract
NTS	Not To Scale
OC	On Center
OD	Outside Diameter
OPNG	Opening
OPP	Opposite
PLG	Plate Glass
PLS	Plate Steel
PLAM	Plastic Laminate
PLAS	Plaster
PREFAB	Prefabricated
PROJ	Project, Projection
PSF	Pounds per Square Foot
PT	Paint, Point, Pressure Treated
R	Riser
RA	Return Air
RB	Rubber Base
RC	Roof Conductor
RCP	Reflected CEiling Plan
RD	Roof Drain
RF	Rubber Flooring
REINF	Reinforced, Reinforcing
REQD	Required
RFG	Roofing
RM	Room
RS	Roof Sump
RT	Rubber Tile
SAN	Sanitary
SCHED	Schedule
SHT	Sheet
SIM	Similar
SPEC	Specification
SS	Service Sink
STL	Steel
STD	Standard
STOR	Storage
STRUCT	Structural
SUSP	Suspended
SW	Switch
SYM	Symmetrical
T	Tread
T&B	Top and Bottom
TEL	Teelephone
TERR	Terrazzo
T&G	Tongue and Groove
THK	Thick, Thickness
THRES	Threshold
TOS	Top Of STeel
TYP	Typical
UC	Undercut
UNO	Unless Noted Otherwise
VB	Vinyl Base
VCT	Vinyl Composition Tile
VIF	Verify In Field
W	Wide
VERT	Vertical
WAINS	Wainscot
WC	Water Closet
WD WIN	Wood Window
WT	Wight
WWF	Welded Wire Fabric

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Issued for :
MASTER SET 10/03/2025

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TIMOTHY R. FLINTOFF JR.
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Drawn by :
JRM
Checked by :
JRM

Sheet Title :
TITLE SHEET

Project No. :
2025046

Sheet No. :
TS1.1

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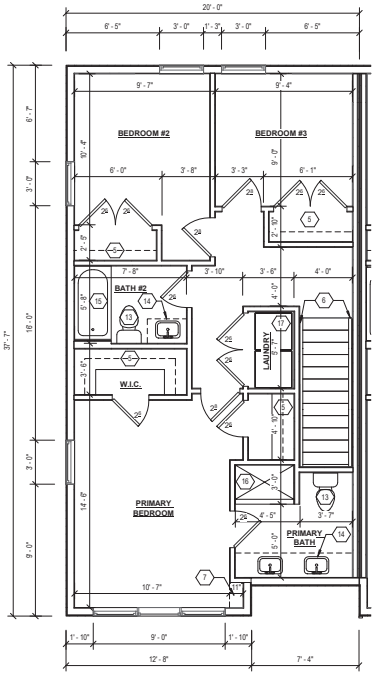
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1. THIS DRAWING IS DIAGRAMMATIC AND SHOULD BE USED TO DETERMINE THE DESIGN INTENT. THE CONTRACTOR IS RESPONSIBLE FOR THE COMPLETE SET OF WORK AS INDICATED AND SHALL FIELD VERIFY ALL WORK, COORDINATE ALL DRAWINGS / NEW WORK AND SHALL NOTIFY ARCHITECT IMMEDIATELY OF ANY DISCREPANCIES IN THE DOCUMENTS BEFORE PROCEEDING. FAILURE TO DO SO WILL RESULT IN THE CONTRACTOR TAKING FULL RESPONSIBILITY AND LIABILITY FOR SAID DISCREPANCIES.
2. CONTRACTOR TO VERIFY ALL DIMENSIONS IN FIELD. ANY DIMENSIONAL VARIANCES CAUSED BY ACTUAL WALL CONSTRUCTION OR LAYOUT MODIFICATIONS IN THE FIELD ARE RESPONSIBILITY OF CONTRACTOR.
3. WALL THICKNESS' ARE NOMINAL NOT ACTUAL DIMENSIONS. SEE FLOOR PLAN KEYNOTES FOR AWLL CONSTRUCTION.
4. ALL WORK SHALL BE DONE IN ACCORDANCE WITH ALL LOCAL, STATE, COUNTY CODE REGULATIONS, O.S.H.A., AND THE AMERICAN WITH DISABILITIES ACT (ADA). REFER TO THE CODE PLAN FOR MORE INFORMATION.
5. DO NOT BACKFILL WALLS UNTIL FLOOR DECKS ARE INSTALLED
6. ALL POSTS CONTINUOUS TO FOUNDATION
7. SHEAR WALLS TO BE PERSCRIPTIVE PER MBC 2015

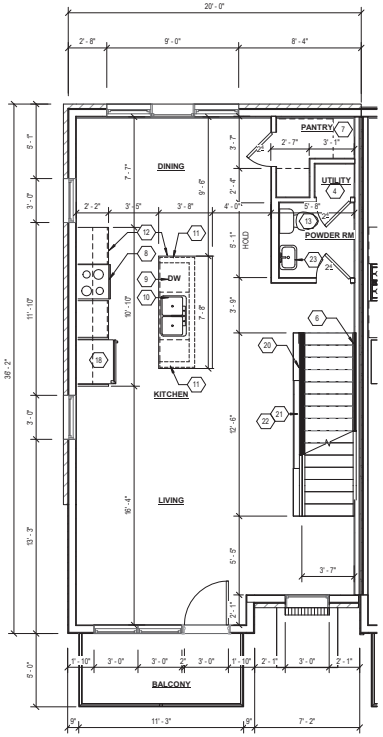
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(TYPICAL THIS SHEET ONLY)

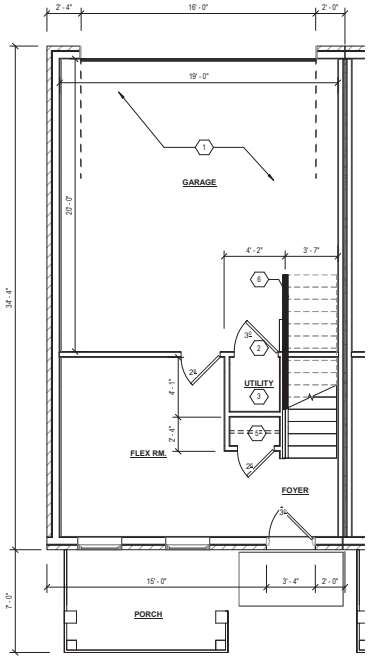
1. GARAGE FLOOR: CONC. SLAB ON GRADE. SLOPE TOWARD DOOR
2. INSULATED DOORS AT UTILITY CLOSET
3. FORCED AIR FURNACE. MECHANICAL CONTRACTOR TO COORDINATE EXHAUST ROUTING.
4. WATER HEATER
5. HANGING ROD AND SHELF @ 6'-0" A.F.F.
6. DECORATIVE WOOD HANDRAIL
7. BUILT-IN WALL SHELVING MILLWORK
8. GAS RANGE
9. UNDERCOUNTER DISHWASHER
10. PROVIDE AIRSWITCH IN COUNTERTOP FOR GARBAGE DISPOSAL
11. FINISHED PANEL AT EXPOSED SIDES OF ISLAND CABINETS
12. WOOD CABINETS WITH STONE COUNTERTOP. FINISHES TBD.
13. TOILET
14. VANITY WITH STONE COUNTERTOP. INSTALL FLOATING FRAMLESS MIRROR ABOVE BACKSPLASH.
15. TUB. SEE A1.1 FOR FINISH CHOICE
16. SHOWER. SEE A1.1 FOR FINISH CHOICE
17. INSTALL WASHING MACHINE WALL BOX IN LAUNDRY CLOSET.
18. REFRIGERATOR. PROVIDE WATERLINE FOR ICEMAKER/WATER DISPENSER
19. NOT USED
20. 3'-6" HIGH WALL WITH WOOD HANDRAIL
21. 50" LINEAR ELECTRIC FIREPLACE (OPTIONAL)
22. PACK OUT WALL 6" FOR ELECTRIC FIREPLACE (OPTIONAL)
23. PEDESTAL SINK. NO MIRROR TO BE INSTALLED
24. 2x4 PRIVACY WALL WITH 1/2" SHEATHING AND VINYL SIDING



3 THIRD FLOOR
SCALE: 1/4" = 1'-0"



2 SECOND FLOOR
SCALE: 1/4" = 1'-0"



1 GROUND FLOOR
SCALE: 1/4" = 1'-0"

UNIT SQUARE FOOTAGE	
GROUND FLOOR LEVEL	227 SQFT
SECOND LEVEL	680 SQFT
THIRD LEVEL	737 SQFT
TOTAL UNIT AREA:	1,644 SQFT

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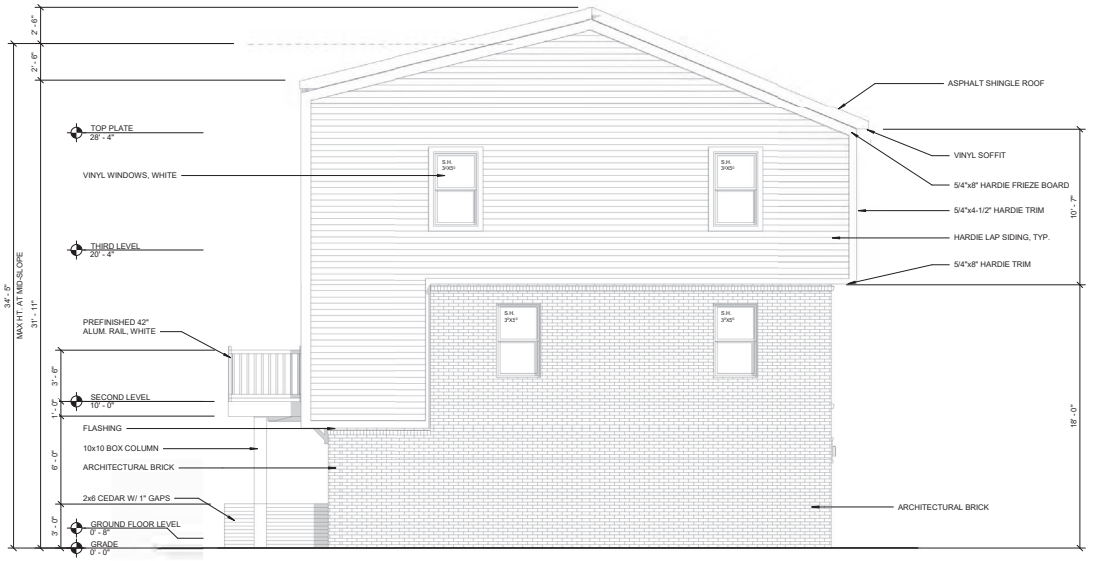
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JRM
Checked by :
JRM

Sheet Title :
TYPICAL UNIT PLANS

Project No. :
2025045

Sheet No. :
A1.0

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2 TYP. SIDE ELEVATION
SCALE: 1/4" = 1'-0"

GENERAL ELEVATION/SECTION NOTES:

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4. ALL FOUNDATIONS TO EXTEND 42" MIN. BELOW GRADE
5. ALL FOUNDATIONS ADJACENT TO EXIST. FND'S TO MATCH BOTTOM ON FOOTING ELEVATION.
6. UNDER NO CIRCUMSTANCES EXCAVATE BELOW BOTTOM OF EXIST. FND'S TO A MIN. INFLUENCE ZONE DELINEATED BY 1 VERTICAL, 2 HORIZONTAL LINE

NOTE: ALL WOOD TRIM IS TO BE WRAPPED IN ALUMINUM

ELEVATION MATERIAL BREAKDOWN

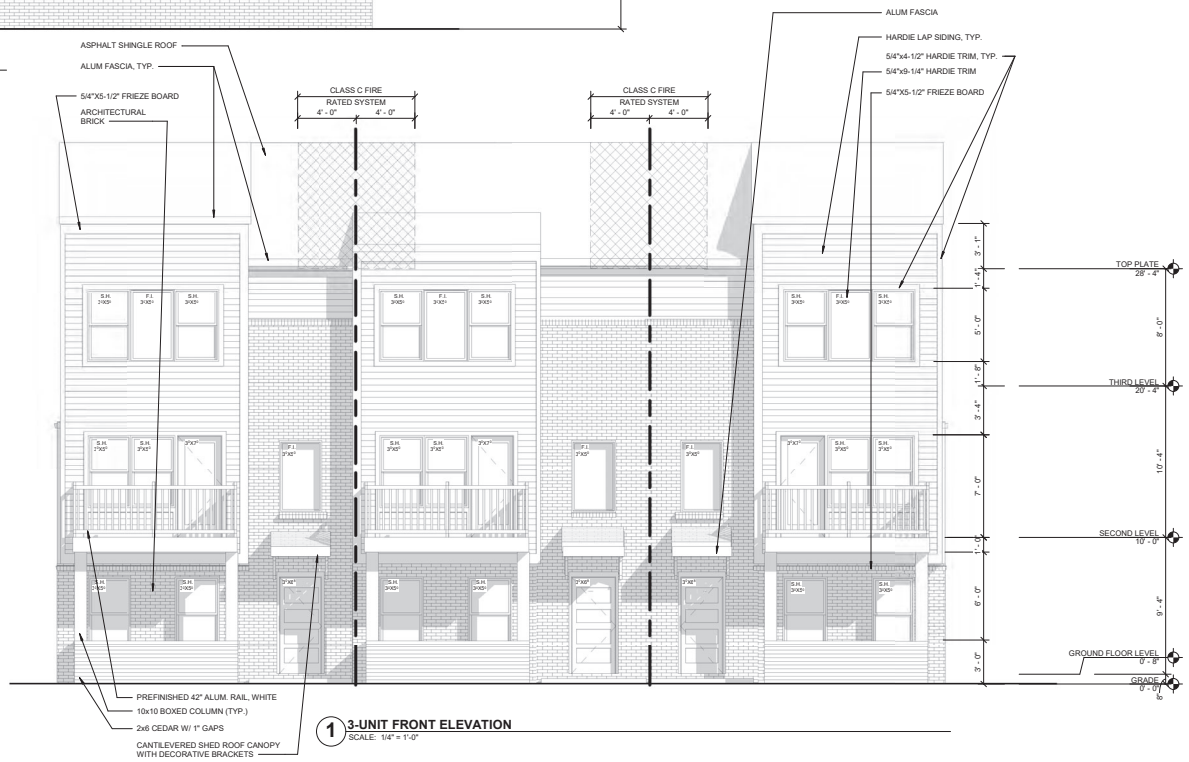
SIDE ELEVATION

TOTAL AREA:	1,173 SQFT	
BRICK AREA:	518 SQFT	44%
HARDIE SIDING AREA:	559 SQFT	48%
TRIM:	96 SQFT	8%

ELEVATION MATERIAL BREAKDOWN

3-UNIT BUILDING FRONT ELEVATION

TOTAL AREA:	1,732 SQFT	
BRICK AREA:	646 SQFT	37%
HARDIE LAP SIDING AREA:	590 SQFT	34%
TRIM:	138 SQFT	8%
ASPHALT SHINGLE AREA:	358 SQFT	21%



1 3-UNIT FRONT ELEVATION
SCALE: 1/4" = 1'-0"

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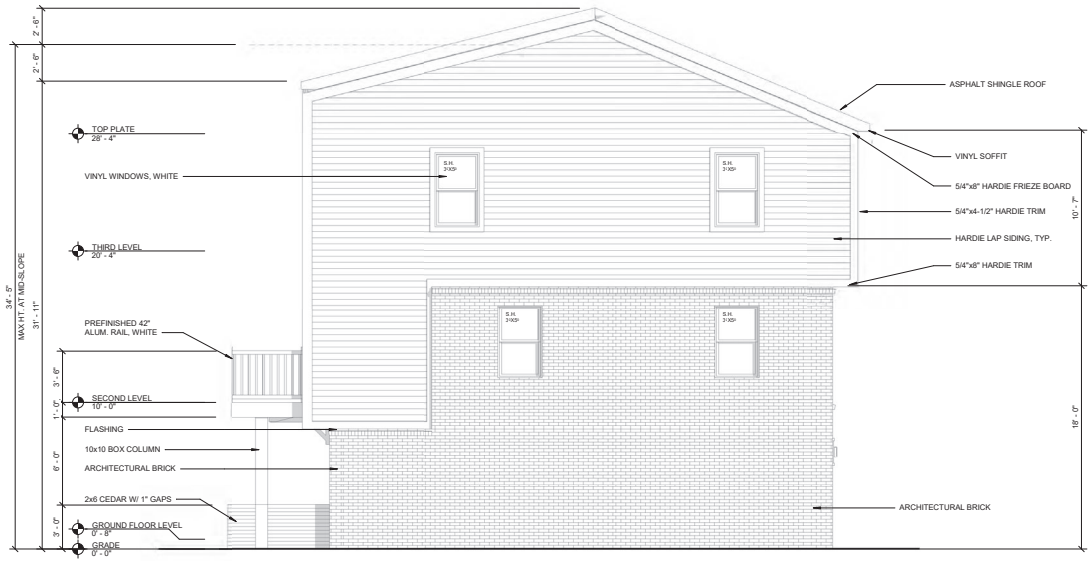
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Sheet Title :
3-UNIT BUILDING EXTERIOR ELEVATIONS

Project No. :
2025046

Sheet No. :
A3.1-3

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2 TYP. SIDE ELEVATION
SCALE: 1/4" = 1'-0"

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5. ALL FOUNDATIONS ADJACENT TO EXIST. FND'S TO MATCH BOTTOM ON FOOTING ELEVATION.
6. UNDER NO CIRCUMSTANCES EXCAVATE BELOW BOTTOM OF EXIST. FND'S TO A MIN. INFLUENCE ZONE DELINEATED BY 1 VERTICAL, 2 HORIZONTAL LINE

NOTE: ALL WOOD TRIM IS TO BE WRAPPED IN ALUMINUM

ELEVATION MATERIAL BREAKDOWN

SIDE ELEVATION

TOTAL AREA:	1,173 SQFT	
BRICK AREA:	518 SQFT	44%
HARDIE SIDING AREA:	559 SQFT	48%
TRIM:	96 SQFT	8%

ELEVATION MATERIAL BREAKDOWN

4-UNIT BUILDING FRONT ELEVATION

TOTAL AREA:	2,323 SQFT	
BRICK AREA:	882 SQFT	38%
HARDIE LAP SIDING AREA:	718 SQFT	31%
TRIM:	191 SQFT	8%
ASPHALT SHINGLE AREA:	532 SQFT	23%



1 4-UNIT FRONT ELEVATION
SCALE: 1/4" = 1'-0"

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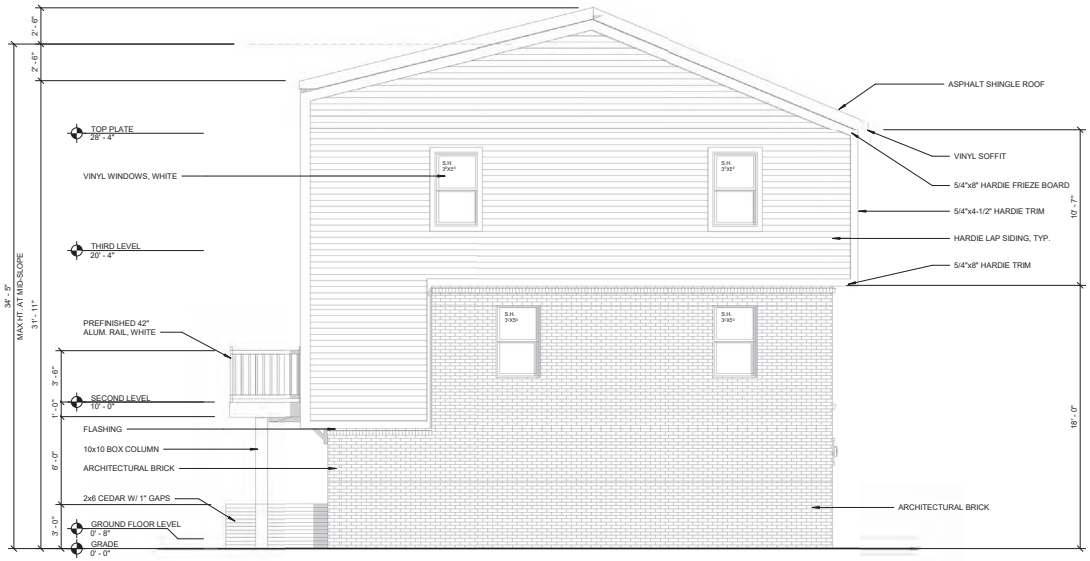
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Sheet Title :
4-UNIT BUILDING EXTERIOR ELEVATIONS

Project No. :
2025046

Sheet No. :
A3.1-4

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2 TYP. SIDE ELEVATION

SCALE: 1/4" = 1'-0"

GENERAL ELEVATION/SECTION NOTES:

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4. ALL FOUNDATIONS TO EXTEND 42" MIN. BELOW GRADE
5. ALL FOUNDATIONS ADJACENT TO EXIST. FND'S TO MATCH BOTTOM ON FOOTING ELEVATION.
6. UNDER NO CIRCUMSTANCES EXCAVATE BELOW BOTTOM OF EXIST. FND'S TO A MIN. INFLUENCE ZONE DELINEATED BY 1 VERTICAL, 2 HORIZONTAL LINE

NOTE: ALL WOOD TRIM IS TO BE WRAPPED IN ALUMINUM

ELEVATION MATERIAL BREAKDOWN

SIDE ELEVATION

TOTAL AREA:	1,173 SQFT	
BRICK AREA:	518 SQFT	44%
HARDIE SIDING AREA:	559 SQFT	48%
TRIM:	96 SQFT	8%

ELEVATION MATERIAL BREAKDOWN

5-UNIT BUILDING FRONT ELEVATION

TOTAL AREA:	2,900 SQFT	
BRICK AREA:	1,101 SQFT	38%
HARDIE LAP SIDING AREA:	882 SQFT	30%
TRIM:	190 SQFT	9%
ASPHALT SHINGLE AREA:	676 SQFT	23%



1 5-UNIT FRONT ELEVATION

SCALE: 1/4" = 1'-0"

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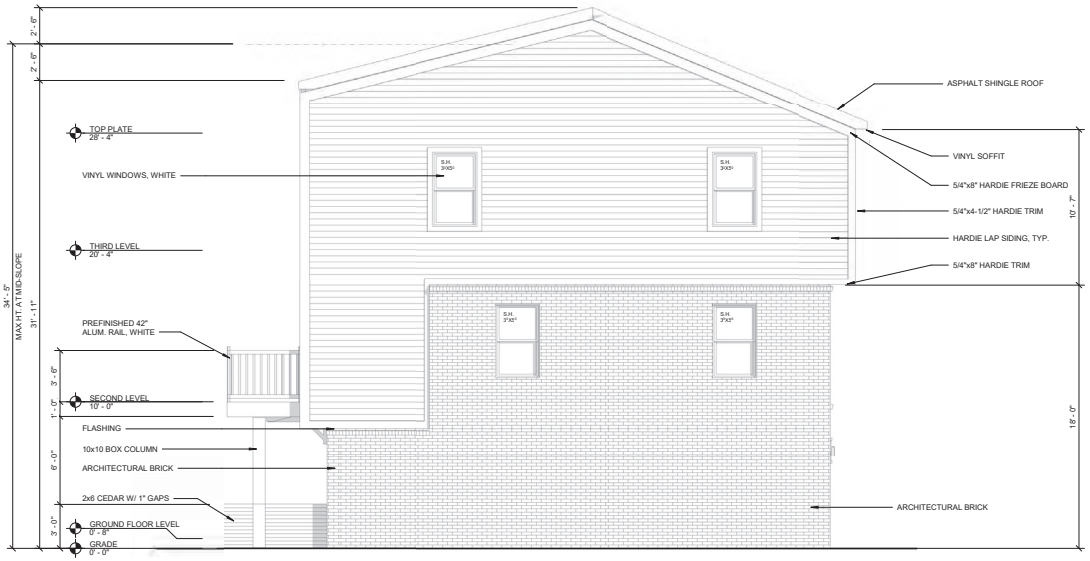
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Sheet Title :
5-UNIT BUILDING EXTERIOR ELEVATIONS

Project No. :
2025046

Sheet No. :
A3.1-5

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6. UNDER NO CIRCUMSTANCES EXCAVATE BELOW BOTTOM OF EXIST. FND'S TO A MIN. INFLUENCE ZONE DELINEATED BY 1 VERTICAL, 2 HORIZONTAL LINE

NOTE: ALL WOOD TRIM IS TO BE WRAPPED IN ALUMINUM

ELEVATION MATERIAL BREAKDOWN

SIDE ELEVATION

TOTAL AREA:	1,173 SQFT	
BRICK AREA:	518 SQFT	44%
HARDIE SIDING AREA:	559 SQFT	48%
TRIM:	96 SQFT	8%

ELEVATION MATERIAL BREAKDOWN

6-UNIT BUILDING FRONT ELEVATION

TOTAL AREA:	3,474 SQFT	
BRICK AREA:	1,320 SQFT	38%
HARDIE LAP SIDING AREA:	1,057 SQFT	30%
TRIM:	277 SQFT	8%
ASPHALT SHINGLE AREA:	820 SQFT	24%



2 TYP. SIDE ELEVATION
SCALE: 1/4" = 1'-0"

1 6-UNIT FRONT ELEVATION
SCALE: 1/4" = 1'-0"

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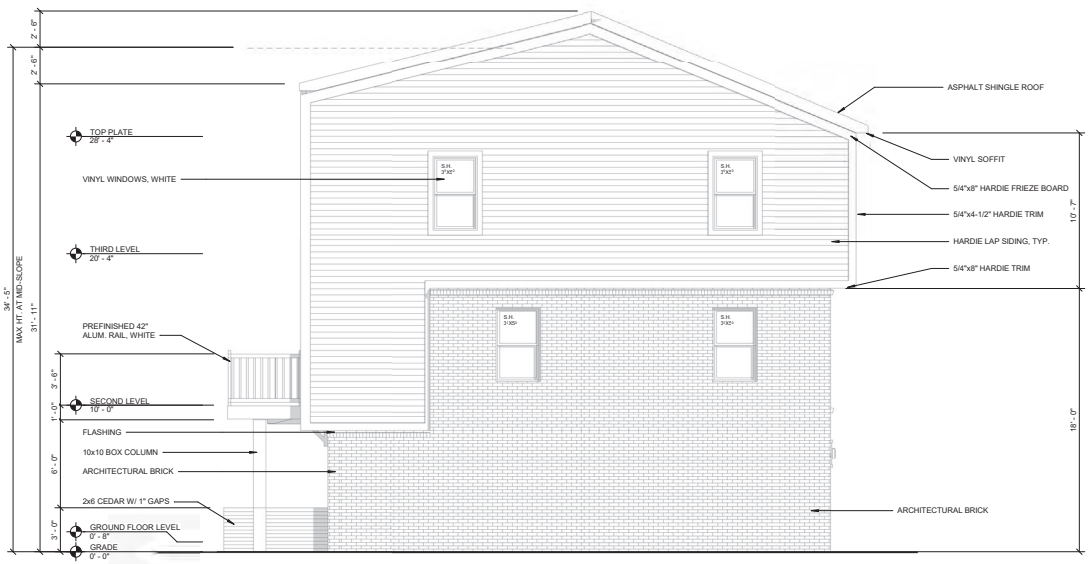
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Sheet Title :
6-UNIT BUILDING EXTERIOR ELEVATIONS

Project No. :
2025046

Sheet No. :
A3.1-6

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2 TYP. SIDE ELEVATION
SCALE: 1/4" = 1'-0"

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6. UNDER NO CIRCUMSTANCES EXCAVATE BELOW BOTTOM OF EXIST. FND'S TO A MIN. INFLUENCE ZONE DELINEATED BY 1 VERTICAL, 2 HORIZONTAL LINE

NOTE: ALL WOOD TRIM IS TO BE WRAPPED IN ALUMINUM

ELEVATION MATERIAL BREAKDOWN

SIDE ELEVATION

TOTAL AREA:	1,173 SQFT	
BRICK AREA:	518 SQFT	44%
HARDIE SIDING AREA:	559 SQFT	48%
TRIM:	96 SQFT	8%

ELEVATION MATERIAL BREAKDOWN

8-UNIT BUILDING FRONT ELEVATION

TOTAL AREA:	4,636 SQFT	
BRICK AREA:	1,767 SQFT	38%
HARDIE LAP SIDING AREA:	1,398 SQFT	30%
TRIM:	361 SQFT	8%
ASPHALT SHINGLE AREA:	1,110 SQFT	24%



1 8-UNIT FRONT ELEVATION
SCALE: 3/16" = 1'-0"

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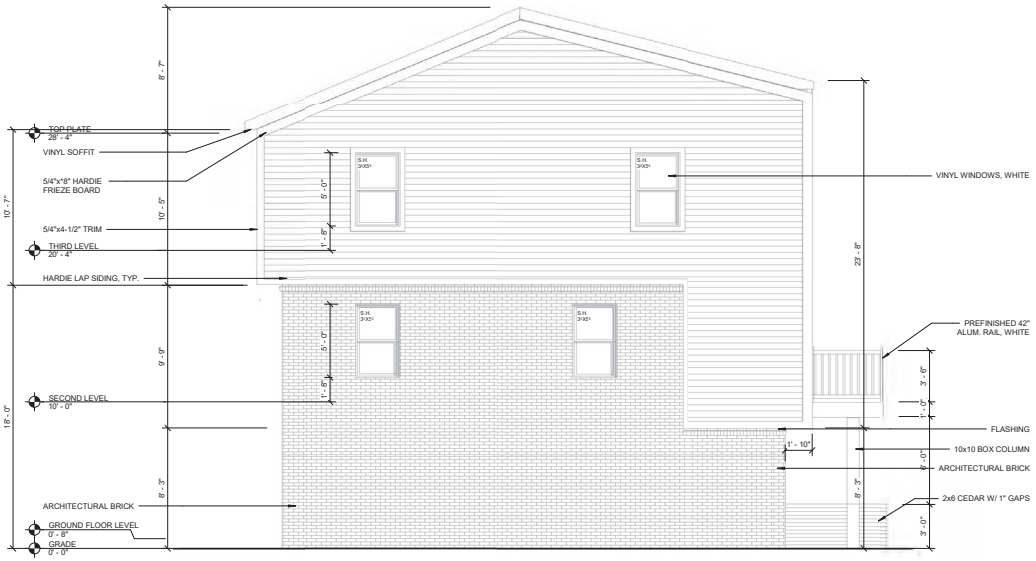
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Sheet Title :
8-UNIT BUILDING EXTERIOR ELEVATIONS

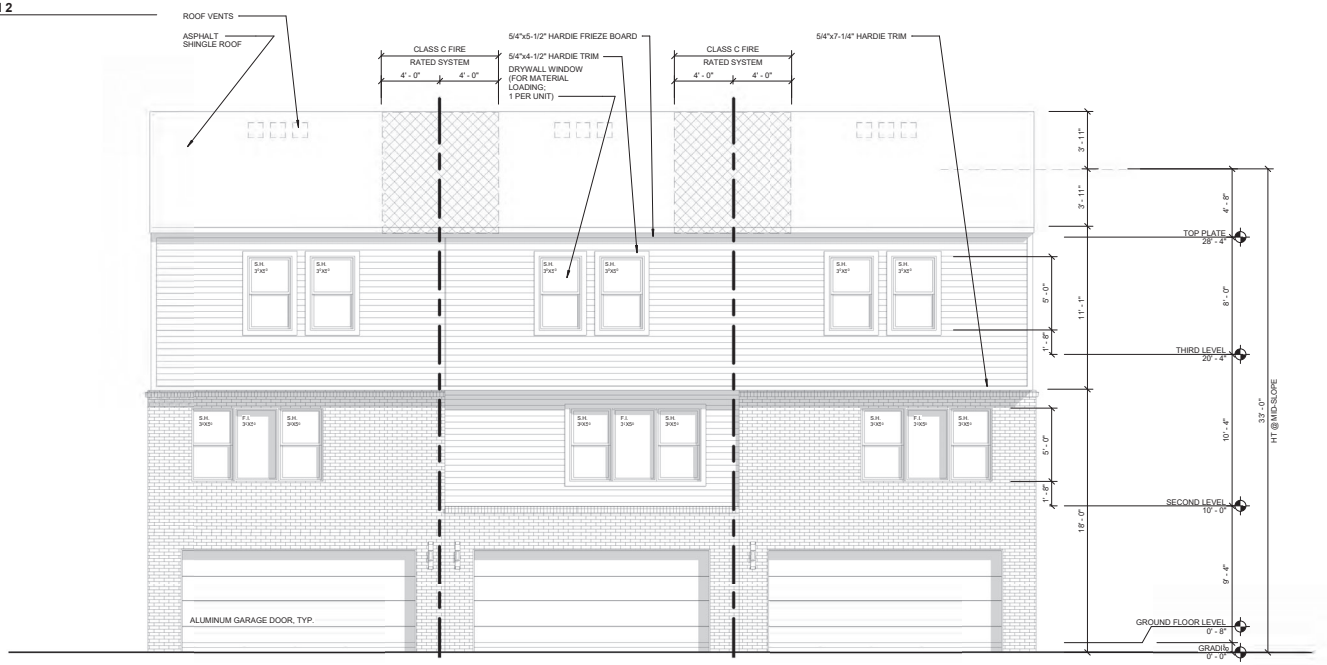
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2025046

Sheet No. :
A3.1-8

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2 SIDE ELEVATION 2
SCALE: 1/4" = 1'-0"



1 3-UNIT REAR ELEVATION
SCALE: 1/4" = 1'-0"

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5. ALL FOUNDATIONS ADJACENT TO EXIST. FND'S TO MATCH BOTTOM ON FOOTING ELEVATION.
6. UNDER NO CIRCUMSTANCES EXCAVATE BELOW BOTTOM OF EXIST. FND'S TO A MIN. INFLUENCE ZONE DELINEATED BY 1 VERTICAL, 2 HORIZONTAL LINE

NOTE: ALL WOOD TRIM IS TO BE WRAPPED IN ALUMINUM

ELEVATION MATERIAL BREAKDOWN

SIDE ELEVATION

TOTAL AREA:	1,173 SQFT	
BRICK AREA:	518 SQFT	44%
HARDIE SIDING AREA:	559 SQFT	48%
TRIM:	96 SQFT	8%

ELEVATION MATERIAL BREAKDOWN

3-UNIT BUILDING REAR ELEVATION

TOTAL AREA:	1,664 SQFT	
BRICK AREA:	497 SQFT	30%
HARDIE LAP SIDING AREA:	609 SQFT	37%
TRIM:	84 SQFT	5%
ASPHALT SHINGLE AREA:	474 SQFT	28%

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CONSULTANT:

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SHERWOOD MASTER SET

Issued for :
MASTER SET 10/03/2025

STATE OF MICHIGAN
TIMOTHY R. FLINTOFF JR.
ARCHITECT
No. 1301064068
LICENSED ARCHITECT

Drawn by : JRM
Checked by : JRM

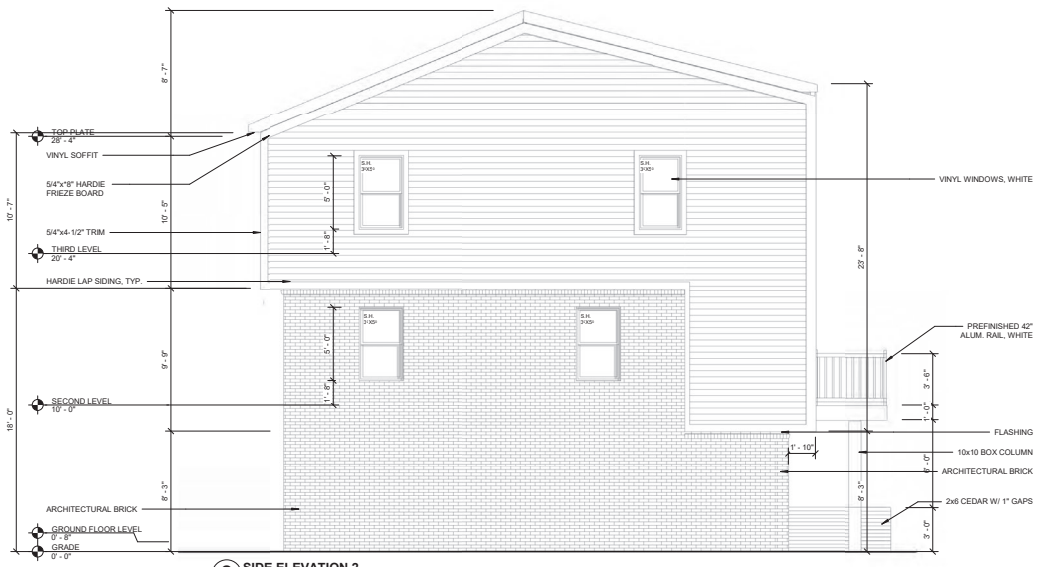
Sheet Title :
3-UNIT BUILDING
EXTERIOR
ELEVATIONS

Project No. :
2025046

Sheet No. :
A3.2-3

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BUILDER & DEVELOPER



2 SIDE ELEVATION 2
SCALE: 1/4" = 1'-0"

ELEVATION MATERIAL BREAKDOWN

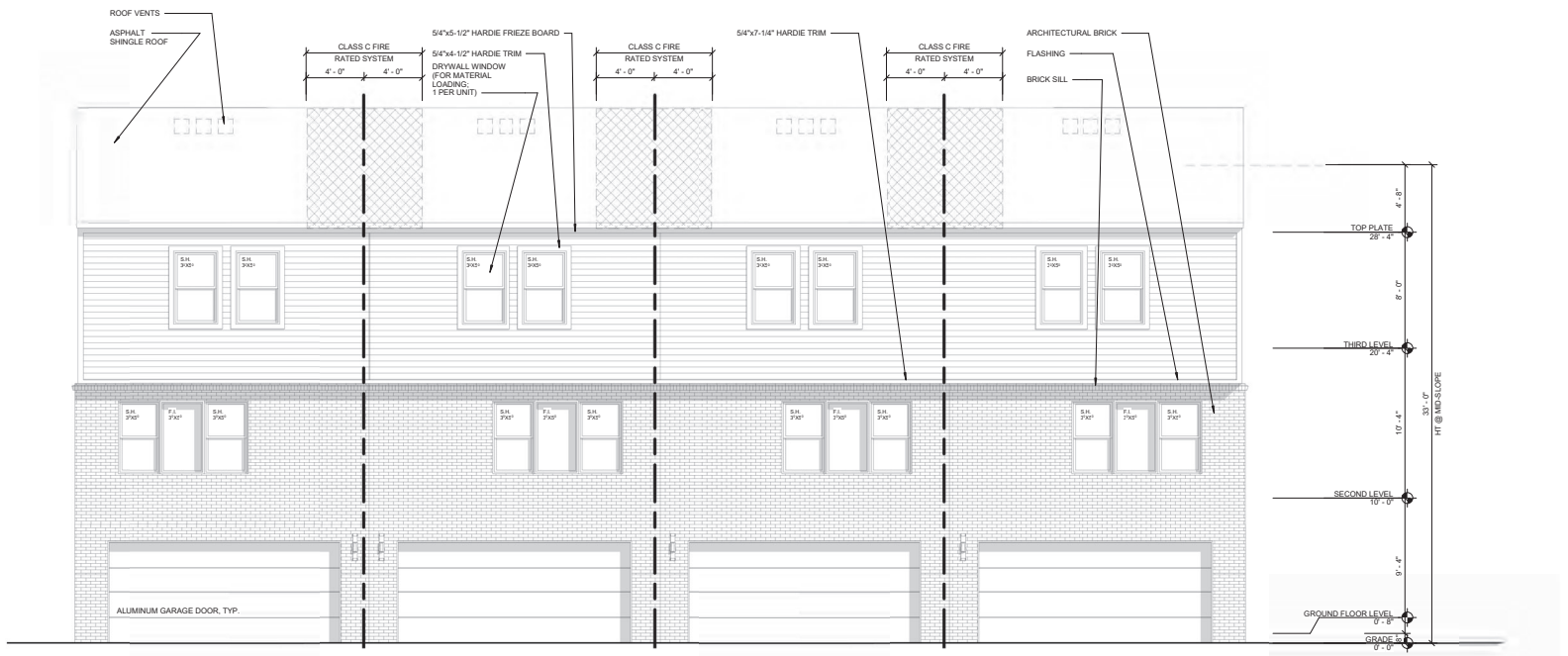
SIDE ELEVATION

TOTAL AREA:	1,173 SQFT	
BRICK AREA:	518 SQFT	44%
HARDIE SIDING AREA:	559 SQFT	48%
TRIM:	96 SQFT	8%

ELEVATION MATERIAL BREAKDOWN

4-UNIT BUILDING REAR ELEVATION

TOTAL AREA:	2,221 SQFT	
BRICK AREA:	820 SQFT	37%
HARDIE LAP SIDING AREA:	677 SQFT	30%
TRIM:	93 SQFT	5%
ASPHALT SHINGLE AREA:	631 SQFT	28%



1 4-UNIT REAR ELEVATION
SCALE: 1/4" = 1'-0"

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MASTER SET 10/03/2025

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LICENSED ARCHITECT

Drawn by :
JRM
Checked by :
JRM

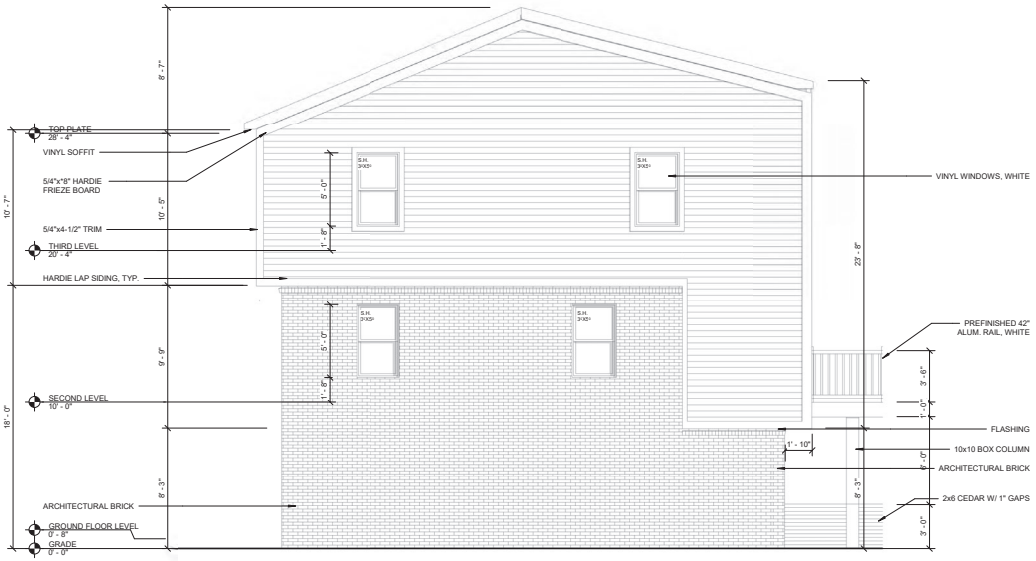
Sheet Title :
4-UNIT BUILDING
EXTERIOR
ELEVATIONS

Project No. :
2025046

Sheet No. :
A3.2-4

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BUILDER & TRADE CONTRACTOR



2 SIDE ELEVATION 2

SCALE: 1/4" = 1'-0"

GENERAL ELEVATION/SECTION NOTES:

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ELEVATION MATERIAL BREAKDOWN

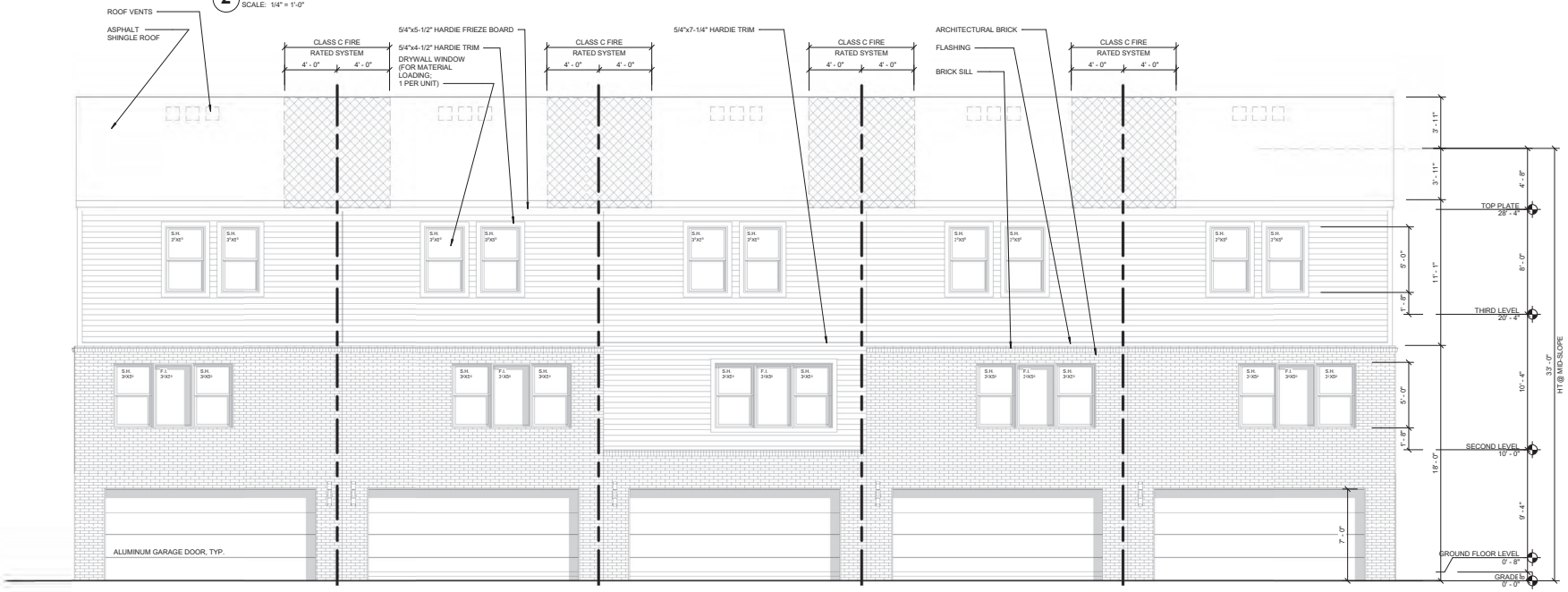
SIDE ELEVATION

TOTAL AREA:	1,173 SQFT	
BRICK AREA:	518 SQFT	44%
HARDIE SIDING AREA:	559 SQFT	48%
TRIM:	96 SQFT	8%

ELEVATION MATERIAL BREAKDOWN

5-UNIT BUILDING REAR ELEVATION

TOTAL AREA:	2,776 SQFT	
BRICK AREA:	907 SQFT	33%
HARDIE LAP SIDING AREA:	956 SQFT	34%
TRIM:	126 SQFT	5%
ASPHALT SHINGLE AREA:	787 SQFT	28%



1 5-UNIT REAR ELEVATION

SCALE: 1/4" = 1'-0"

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Issued for :

MASTER SET 10/03/2025

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TIMOTHY R. FLINTOFF JR.
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LICENSED ARCHITECT

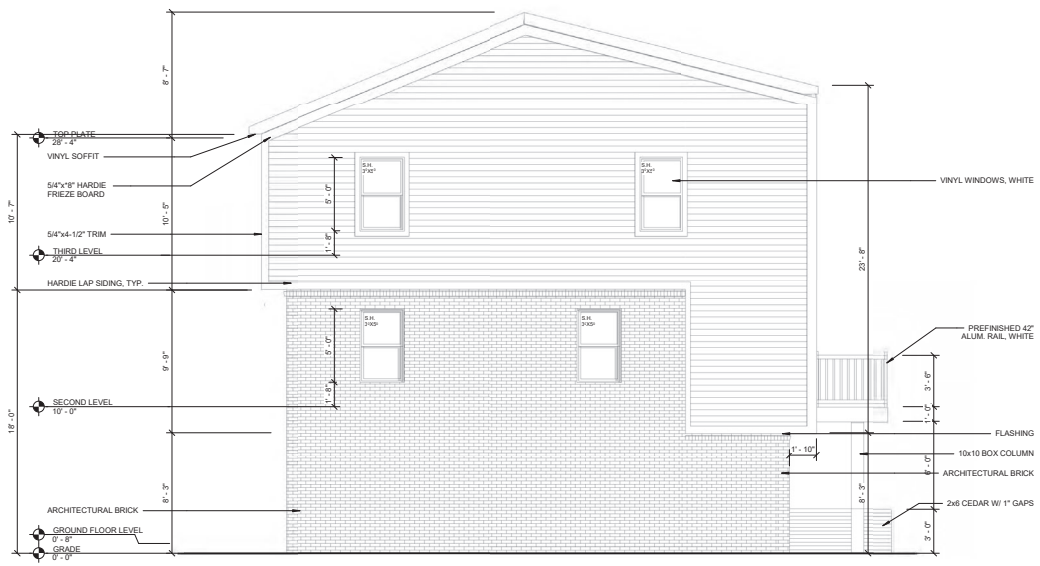
Drawn by : JRM
Checked by : JRM

Sheet Title :
5-UNIT BUILDING
EXTERIOR
ELEVATIONS

Project No. :
2025046

Sheet No. :
A3.2-5

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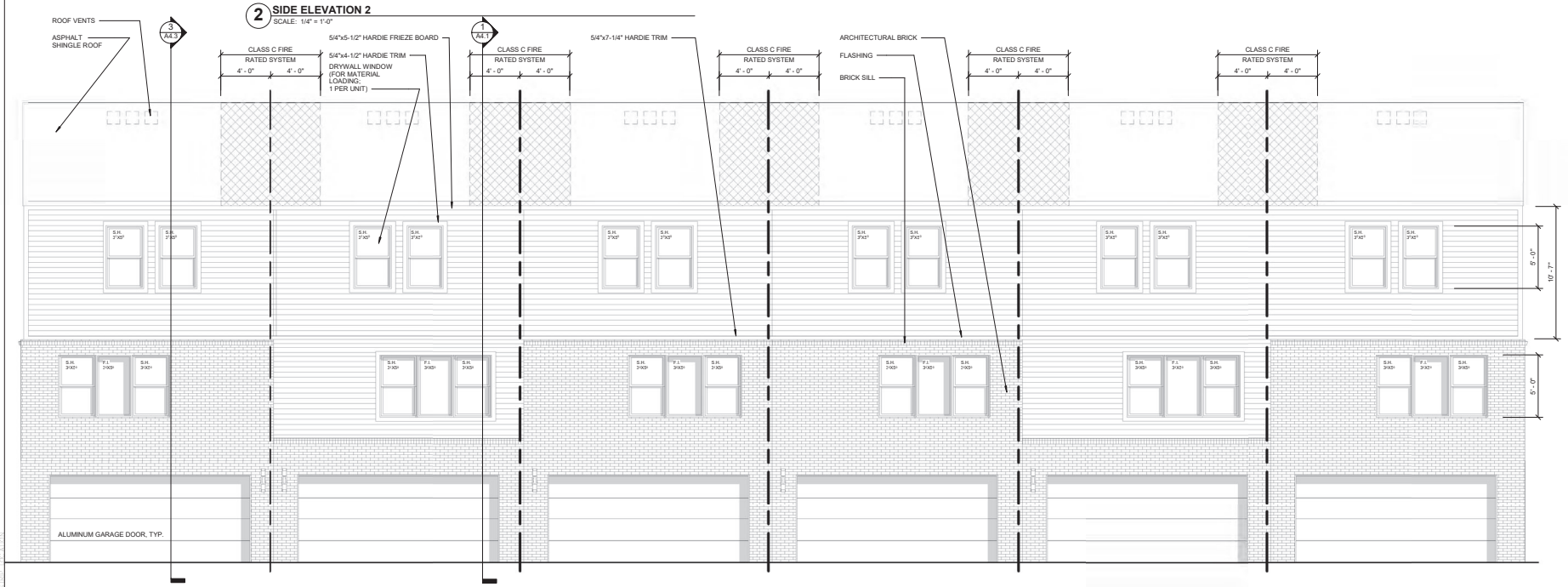
SIDE ELEVATION

TOTAL AREA:	1,173 SQFT	
BRICK AREA:	518 SQFT	44%
HARDIE SIDING AREA:	559 SQFT	48%
TRIM:	96 SQFT	8%

ELEVATION MATERIAL BREAKDOWN

6-UNIT BUILDING REAR ELEVATION

TOTAL AREA:	3,326 SQFT	
BRICK AREA:	998 SQFT	30%
HARDIE LAP SIDING AREA:	1,221 SQFT	37%
TRIM:	163 SQFT	5%
ASPHALT SHINGLE AREA:	944 SQFT	28%



2 SIDE ELEVATION 2
SCALE: 1/4" = 1'-0"

1 6-UNIT REAR ELEVATION
SCALE: 1/4" = 1'-0"

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Issued for :
MASTER SET 10/03/2025

STATE OF MICHIGAN
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LICENSED ARCHITECT

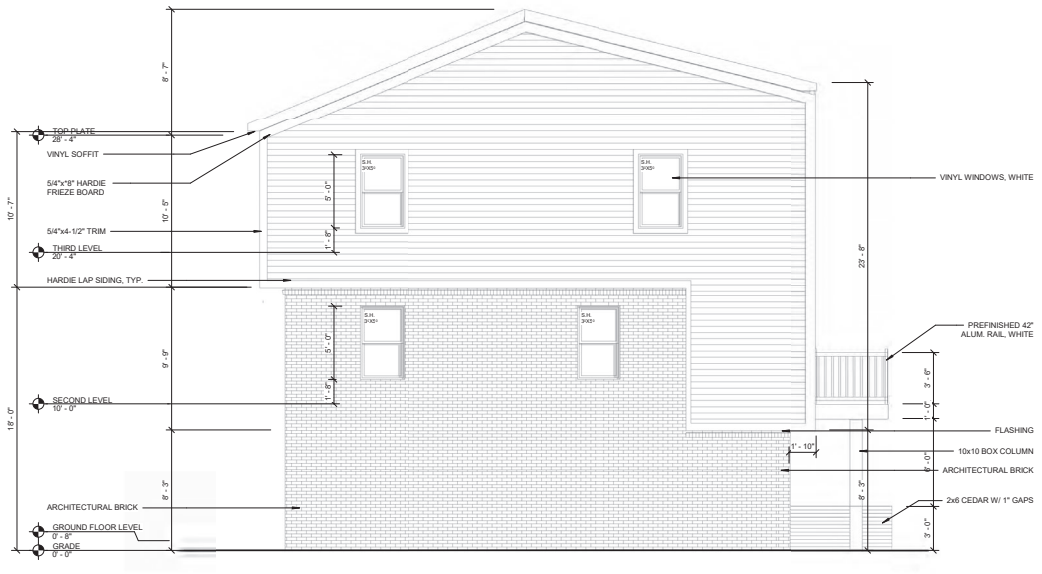
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ANJ
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ANJ

Sheet Title :
6-UNIT BUILDING
EXTERIOR
ELEVATIONS

Project No. :
2025046

Sheet No. :
A3.2-6

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2 SIDE ELEVATION 2
SCALE: 1/4" = 1'-0"

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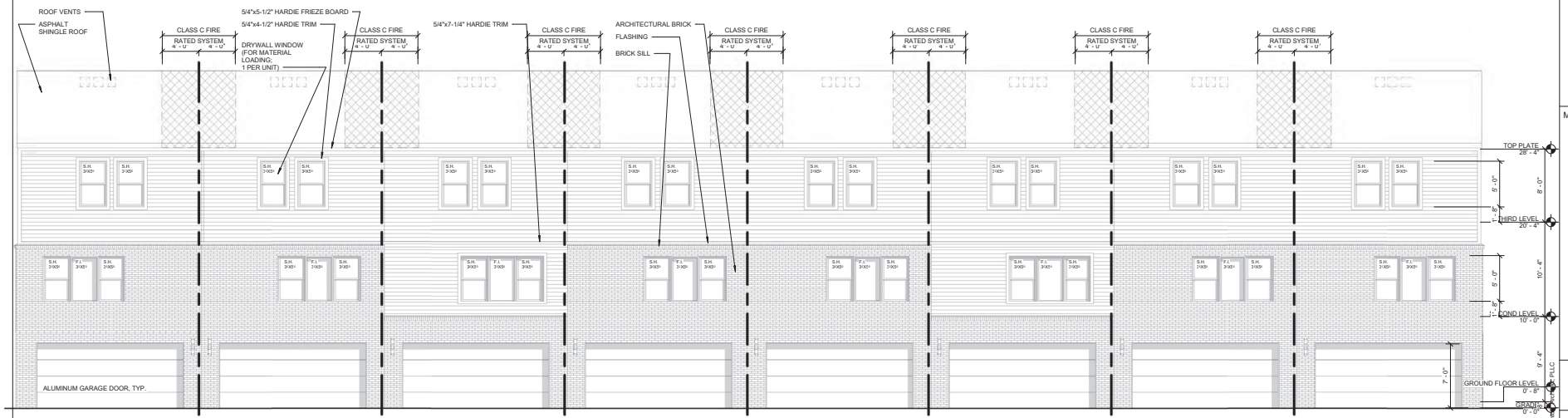
SIDE ELEVATION

TOTAL AREA:	1,173 SQFT	
BRICK AREA:	518 SQFT	44%
HARDIE SIDING AREA:	559 SQFT	48%
TRIM:	96 SQFT	8%

ELEVATION MATERIAL BREAKDOWN

8-UNIT BUILDING REAR ELEVATION

TOTAL AREA:	4,429 SQFT	
BRICK AREA:	1,402 SQFT	32%
HARDIE LAP SIDING AREA:	1,565 SQFT	35%
TRIM:	208 SQFT	5%
ASPHALT SHINGLE AREA:	1,254 SQFT	28%



1 8-UNIT REAR ELEVATION
SCALE: 3/16" = 1'-0"

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SHERWOOD MASTER SET

Issued for :
MASTER SET 10/03/2025

STATE OF MICHIGAN
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JRM
Checked by :
JRM

Sheet Title :
8-UNIT BUILDING
EXTERIOR
ELEVATIONS

Project No. :
2025046

Sheet No. :
A3.2-8

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PROJECT NARRATIVE

October 31, 2025

City of Novi
Planning Department

Re: **Providence Meadows** (Formerly Providence Park West) Concept PRO Site Plan Narrative Resubmittal
Property south of Grand River west of Providence Parkway
Parcel Numbers 22-17-101-012 and 22-17-101-010
Novi, MI

Dear Ms. Bell,

Thank you for your Plan Review Center Report dated August 21st, 2025. This Submittal Response Package focuses on the items necessary to advance our proposal to the Planning Commission for their review.

Whitehall Real Estate Interests and Robertson Brothers Homes are excited to present a site plan for concept PRO review, envisioning a vibrant residential community on property south of Grand River and west of Providence Parkway. This proposed development is thoughtfully designed as an extension of the Henry Ford Providence Hospital campus, providing much-needed housing while fostering a sense of community. Spanning approximately 31 acres, the site is planned as a high-quality, for-sale “missing middle” residential townhome community, offering convenient access to an adjacent employment center.

We received staff comments on August 21, 2025, and have since revised the plan in response. The feedback primarily focused on landscaping, buffering, and setbacks adjacent to the I-2 zoned properties to the northwest. Additionally, we have minimized impacts to the neighboring residential property to the south by modifying the wetland mitigation area. To address the industrial buffer, Phase 2 of the development has been reconfigured to provide a minimum 75-foot setback along the northern property line, with several buildings now oriented at a 90-degree angle to the adjacent I-2 uses. Buildings 22 and 23, located in the northwestern corner of the site, will maintain a 50-foot setback along the west property line. As a result of the building layout adjustments and the realignment of Harborfield Drive, both pocket parks within Phase 2 have increased in size. All

planning review comments have been addressed in a detailed response letter, along with separate response letters to the engineering and landscape reviews.

We held a neighborhood meeting on September 17th at Novi Middle School, with approximately 40 residents in attendance. Much of the discussion focused on the wetland mitigation on the southern perimeter. Due to the feedback from the neighbors most affected by the removal of existing trees in order to construct the wetland mitigation, the mitigation plan has been revised to pull a minimum of 60 feet away from the property line to provide a significant buffer to these homes. For information, Robertson and Whitehall have informed the attendees of this neighbor meeting that we will be meeting with them again on October 28th at the library.

The proposed development introduces 161 thoughtfully designed townhomes, transforming a site once intended for industrial use into a welcoming residential neighborhood that aligns seamlessly with the community's character. This represents a reduction of 2 units, as a result of the efforts to increase and improve the buffer along the northwestern perimeter.

By adding new residents, we intend to further support the retail and employment infrastructure that the City of Novi has worked hard to cultivate and provide an important residential component to the Henry Ford Providence Hospital campus and knit into the surrounding uses.

Zoning Justification

We are requesting the rezoning of the subject property (parcels 50-22-17-101-012 & 50-22-17-101-010) from I-1 (Light Industrial) to RM-2 (High-Density Mid-Rise Multiple-Family District) under a Planned Rezoning Overlay (PRO). While the 2017 Master Plan designates this area for research/office development, the current market conditions, surrounding land uses, and community housing needs strongly support a residential use on this site.

As stated in the 2025 Draft Master Plan, under the Housing Diversity section:

It is evident that the city is actively diversifying the housing typologies to further improve affordability and accessibility. It will be critical to adapt and match the current and upcoming housing stock with demand.

Furthermore, the Market Analysis section highlights the importance of Missing Middle Housing, including townhomes, duplexes, and other medium-density

options, to enhance both housing diversity and attainability. The master plan encourages directing new investment toward mid-size, well-designed housing types that integrate into existing neighborhoods while offering more attainable ownership opportunities. It also calls for incentivizing attainable infill development and supporting projects that provide affordable-rate units alongside higher-end housing to create a balanced and inclusive housing supply.

This proposal directly aligns with those objectives by transforming an underutilized industrial property into a thoughtfully planned, for-sale townhome community. The development will deliver attainable, high-quality housing options for Novi's growing workforce and advance the City's long-term vision for a more inclusive and sustainable residential market. In addition, there has been no meaningful market interest in industrial or office development on this site since its initial marketing in 2009, due in part to its limited frontage and visibility from Grand River Avenue. Conversely, demand for residential options, particularly attainable, for-sale housing, has increased significantly.

The proposed RM-2 zoning for the development of 161 for-sale townhomes provides a density of 6.54 dwelling units per net acre, well below the maximum permitted density of 15.6 dwelling units per net acre under RM-2. While RM-2 zoning permits more intense multi-family development than what is proposed, this plan is intentionally designed to be less dense and more compatible with surrounding land uses than typical RM-2 or I-1 projects. The proposed building height of 35 feet is less than the 40-foot maximum allowed under the current I1 zoning. As currently zoned, the site could support a variety of research, office, and light industrial uses, including wholesale operations, warehousing, and other industrial activities, all of which would be more intrusive to the site and surrounding areas than the proposed residential development.

To reinforce this lower-impact approach and meet the building requirements for RM-2, the PRO Agreement will propose conditions and design parameters that reduce intensity and establish high-quality standards for site layout, architectural design, and integration with the surrounding context.

Compatibility With Surrounding Land Use

The Planning Review of August 21, 2025 recognized that our proposed development "Would be consistent with the open space to the west and the existing Villas at Stonebrook development to the south. The use would be compatible with the adjacent hospital complex." Potential concerns were raised

regarding two parcels to the north which are currently zoned I-2 which would be adjacent to this residential development. However, a review of the recent rezonings and nearby land uses in this particular section of the city, including directly adjacent to the property, as well as other areas of the city, and a detailed review of the zoning ordinance itself, reveals that such concerns have not prevented other residential rezonings and can be adequately assuaged.

It must initially be recognized that these exact adjacency concerns did not prevent the residential use of the property to the immediate south of us from I-2 to Residential with a Planned Suburban Low-Rise (PSLR) overlay, which is now known as The Villas at Stonebrook. The Planning Review of our request points out that to rezone our parcel to Residential would thereafter place limits on the future development of the I-2 parcels to the north by limiting building structure height from 60 feet to 25 feet, prohibiting outside storage, and creating potential impacts on the residential use of noise and unsightly views. However, the approval of The Villas at Stonebrook's PSLR had the same impact to our property. Upon granting the PSLR development option to The Villas at Stonebrook, that rendered our I-1 parcel adjacent to Residential, and under the provisions of zoning ordinance building height on our parcel is now limited to 25 feet, setbacks were greatly increased, and the residents of The Villas at Stonebrook would be exposed to any negative impacts of noise/odor and unsightly views from future industrial development of our property. No buffers were required of the The Villas at Stonebrook development, unlike the significant buffering proposed by the Providence Meadows plan. It hardly seems fair to grant the residential PSLR development option to an I-2 zoned property, thereby limiting the development potential of our parcel as zoned, and now prohibit a rezoning of our parcel to Residential on the basis of those very same potential negative impacts.

Similarly, the approval of the rezoning to Residential of the Sakura development resulted in residential rezoning adjacent to existing I-1 property.

Indeed, the zoning ordinance itself recognizes that certain aspects of a particular development remove such concerns. Zoning ordinance section 3.14.5, regarding I-1 zoning districts (as applicable to I-2 zoning district pursuant to section 3.15.2) contains certain exceptions. Regarding building height, section 3.14.5.C provides "The maximum heights of any building constructed on a lot or site adjacent to a residential district shall be twenty-five (25) feet, except where there is a street, road, highway or freeway between said lot or site and the abutting residential district." We have revised the plan to reorient the buildings that previously fronted

onto the I-2 parcels and included a street between our development and the properties. A “street” is defined in the City of Novi Zoning Ordinance section 2.2 as “A dedicated public right-of-way other than an alley which affords the principle means of access to abutting property”. Therefore, our proposed development would include such a “street” which therefore removes the limitation of 25 feet in building height for the I-2 properties to the north.

We also propose to include adjacent to that street an 8’ to 10’ high earthen berm with a **double-row** of evergreen trees on top. Please note, such a berm is not required under the zoning ordinance as section 3.14.5.E provides “For I-1 districts, adjacent to any residential district, and earth berm and plantings are required, except that no additional berm shall be required along a street, road, highway or freeway that lies between said use and an abutting residential district.” Notwithstanding that a berm is not required we fully intend to construct such a berm which further minimizes and mitigates any sound and views of the I-2 properties to the north.

Section 3.6.2.H of the zoning ordinance provides that for I-2 districts a yard setback of 100 feet is required “Where a use abuts any residential district and is not separated therefrom by a thoroughfare as designated in the City’s Master Plan for Land Use. . .”. Again, we intend to develop a street between our development and the I-2 properties to the north. The City of Novi “Thoroughfare Master Plan” classifies a “thoroughfare” to include Local Roads. Moreover, the City of Novi 2025 Master Plan includes a map on page 66 which depicts the “roads” within the The Villas at Stonebrook development to the south of our parcel as a “local road”. Thus, the road to be developed is part of our parcel would be a “road” and thus a “thoroughfare” as designated in the city’s Master Plan for Land Use and thus the 100-foot setback set forth in zoning ordinance 3.6.2.H would not apply to the I-2 properties to the north.

Housing Need

This community is envisioned as a high-quality, for-sale residential neighborhood that addresses Novi’s clear shortage of attainable housing. It is designed to meet the growing demand for missing middle housing, especially amid rising costs and higher interest rates, by offering an attractive option for hospital associates and young professionals looking for convenient, well-located housing near major employment centers.

Situated adjacent to the Henry Ford Medical Campus and near key regional corridors, the development promotes sustainability by reducing commuting

distances and supporting a more balanced land use pattern within the city. Henry Ford Health supports the proposal, recognizing its mutual benefits: the project delivers essential housing for hospital employees, while future residents benefit from walkable access to nearby medical, retail, and commercial services. A letter of support from Henry Ford Health has been included to affirm their endorsement. With over 2,000 employees at the hospital, this housing option will serve a meaningful portion of the workforce. Following conversations with representatives from Henry Ford Health, the organization expressed its support for establishing a primary entrance off Providence Parkway. They view the project as a valuable addition to the campus, providing much-needed housing for nurses, physicians, and staff, and contributing to the long-term vitality of the area.

The development has also been thoughtfully designed to complement the character of Providence Parkway. Residential buildings are set back from the road to create a welcoming streetscape, while new green spaces and expanded paved walking trails enhance connectivity and promote wellness. In addition, the project will assume responsibility for a share of maintenance and upkeep along Providence Parkway, reinforcing its role as a collaborative, community-oriented extension of the medical campus.

The proposed Public Benefits we intend to provide are:

- **Public Trail Access Through the Site:** A pedestrian pathway will be constructed to provide public access from the future sidewalk paralleling Grand River Avenue through the development to Providence Parkway. This pathway will feature landscape plantings and offer scenic views of the site's natural features. Together, the sidewalk and pathway will create a vital connection between the Grand River corridor and the Henry Ford and ITC trail systems.
- **Trailhead Connection and Signage:** Development of a new trailhead that links to the larger Henry Ford and ITC trail system.
- **Attainable Housing option:** The development will offer 161 for-sale townhomes specifically designed to meet the demand for attainable housing in Novi. These homes will offer a more accessible price point for young professionals, first-time buyers, and essential workers, including nurses, doctors, and administrative staff employed at the adjacent Henry Ford Health campus.

- **Preservation of Wetlands and Woodlands:** The site has been carefully planned to minimize impacts on its natural features, including wetlands and woodlands, creating a balanced integration of residential living and nature. These areas will be permanently protected through a conservation easement, ensuring their preservation and ecological value for future residents and the broader community. Further, through meetings with adjacent homeowners, we have revised the plans to provide a 60' minimum natural buffer along the southern property line.

Proposed Deviations

Schedule of Regulations and Modifications Providence Meadows- Attached 2-Car Townhomes			
	RM-2 (RM-1 Supercedes per Section 3.8.1.B of the Zoning Ordinance)	**Providence Meadows**	**Deviations**
Principal Building Height to Midpoint	35'	34.2'	In Compliance
Max. Building Coverage	25%	10.3%	In Compliance
Usable Open Space	32,200 SF	50,764 SF	In Compliance
Min. Parking Spaces	403	403	In Compliance
Building Orientation (Sec. 3.8.2.D)	45 degrees	90 degrees	Requested Deviation
Min. Building Setbacks to West Boundary Line (Sec. 3.31.7.D)	75'	50'	Requested Deviation
Distance Between Buildings (Sec. 3.8.2.H)	Determined by Distance Formula	15'	Requested Deviations
Total number of rooms (Sec. 3.8.1. A & B)	536	644	Requested Deviation
Parking on Major and Minor Drives Parking Stall Setback (Sec. 5.10.1.B.iv-vi)	25'	15'	Requested Deviation
Parking along Curves (Sec. 5.10)	Parking on curves with more than a 230' radius	Parking on curves with less than 230' radius	Requested Deviation
Covered Bike Parking (Sec. 5.16.4)	When 20 or more bike parking spaces are required, 25% shall be covered spaces.	None	Requested Deviation
Parking Distance to Buildings (Sec. 3.8.2.F)	25'	<25'	Requested Deviation
Pedestrian Connectivity (Sec. 3.8.2.G)	5' sidewalks on both sides or private drive	Varying	Requested Deviation
Parking Lot Lighting (Sec. 5.7.3.J)	providing the minimum illumination necessary to ensure adequate vision and comfort.	Varying	Requested Deviation
Residential Developments (Sec. 5.7.3.O)	providing sufficient illumination at each entrance from major thoroughfare.	Varying	Requested Deviation

Landscape Deviations

1. Right-of-Way Landscaping (Sec. 5.5.3.B.ii) Deviation for the lack of required 3-foot berm along Grand River Avenue and Providence Parkway due to the existing natural areas to be preserved, and the presence of the ITC easement.
2. Right-of-Way Landscaping (Sec. 5.5.3.B.ii) Deviation to allow a deficiency in street trees along Grand River Avenue.
3. Right-of-Way Landscaping (Sec. 5.5.3.B.ii) Deviation to allow a deficiency in greenbelt landscaping along Grand River Avenue.
4. Right-of-Way Landscaping (Sec. 5.5.3.B.iii) Deviation to allow the use of existing trees as street trees along Providence Parkway access easement.
5. Right-of-Way Landscaping (Sec. 5.5.3.B.iii) Deviation to allow a deficiency in street trees along Harborfield Drive within the ITC easement.
6. Right-of-Way Landscaping (Sec. 5.5.3.B.ii) Deviation for the lack of greenbelt plantings along Providence Parkway.
7. Multi-Family Landscaping (Sec. 5.5.3.F.iii) Requested deviation for multi-family unit trees and foundation landscaping

The development is well-suited to its surroundings, benefiting from a context that supports residential use while maintaining appropriate buffers from neighboring properties. To the south, a recently constructed Pulte Homes community is separated from the proposed development by over 200 feet of protected wooded wetlands, ensuring privacy and a natural landscape transition. To the west, extensive wetlands and dense tree cover provide more than 1,200 feet of separation from the nearest commercial building, which is a Target store located off Wixom Road. To the northwest, two industrially zoned (I-2) properties fronting Grand River Avenue border the site; the proposed plan includes effective buffering to minimize visual and noise impacts from these uses. North of the site lies Grand River Avenue, located more than 500 feet from the nearest planned residential units, providing a substantial setback that minimizes exposure to road traffic. From within the development, a secondary access point will extend to Grand River Avenue, serving both as an emergency vehicle route and a pedestrian walkway. This connection will link directly to the existing sidewalk along Grand River, reinforcing the project's integration with the surrounding mixed-use corridor and extending pedestrian connections toward Novi's Town Center. To the northeast, a small office building accessed from Providence Parkway is separated from the site by existing wetlands, foliage, and the ITC easement, providing a substantial buffer between uses.

To the east, an existing north–south ITC utility corridor separates the site from Providence Parkway. Further east, across Providence Parkway, is the Henry

Ford Providence Hospital, our largest neighbor and a supporter of the development, recognizing the benefit of attainable housing for campus staff. To the southeast, a network of existing walking trails, including the ITC Corridor Trail and the Henry Ford trail system, connects the site to the greater Novi community, promoting active lifestyles and enhancing regional connectivity.

Site Constraints

Currently zoned I-1, the site was previously envisioned as a future business park. However, due to limited visibility from less than 200 feet of frontage on Grand River and its orientation toward Providence Parkway, the land naturally functions as an extension of the health campus. Moreover, there are many alternative sites along Grand River better suited for new build-to-suit light industrial properties with more advantageous locations and “pad-ready” status.

Despite professional marketing efforts by CBRE dating back to 2009, the site has attracted no serious interest for non-residential uses. In a letter addressed to Whitehall Real Estate Interests, the property’s current owner, CBRE details the site’s competitive disadvantages within the new-build light industrial market. Additionally, the office market remains under prolonged pressure due to long-term shifts in workplace trends following the pandemic. While some employees have returned to traditional office spaces, the overall market remains oversaturated. According to Cushman & Wakefield, Southeast Michigan’s office vacancy rate has climbed to 21%, as businesses continue to reimagine or downsize their office footprints. These broader market trends further demonstrate that an office or industrial use on this site is no longer viable (see the CBRE letter included).

Residential development remains the most compatible use, aligning well with the adjacent Pulte neighborhood and the nearby Rose senior housing community. This development represents a logical mixed-use extension of the Henry Ford/Providence master plan.

The plan has been thoughtfully designed to respond to a variety of physical and regulatory site constraints while enhancing natural features and creating an attractive living environment. A primary goal of the design has been to minimize impacts on the site’s regulated wetlands and wooded areas, preserving green space and ecological value for future residents to enjoy. Buildings have been strategically placed outside of wetland and wooded areas, and natural buffers are maintained throughout the site to support environmental integrity and

compatibility with surrounding uses. In particular, the buildings in the northwest portion of the site, adjacent to I-2 zoned industrial properties, are carefully sited away from wetlands and will be screened from the industrial uses with a substantial 8 to 10-foot-tall berm, planted with a double row of evergreen trees at the crest to provide year-round buffering. To further enhance screening, we have engaged with the owners of the Southeastern Equipment Company Inc. to establish a 25-foot landscape easement along the shared property line. They have conceptually agreed to the easement, which will result in a 75-foot building setback from the property line and an 100-foot setback to the edge of the proposed landscape easement.

The previously approved development included 0.74 acres of EGLE-regulated wetland impact; in comparison, the current plan requires only a fraction of that permitted impact, with no new EGLE disturbance beyond what has already been approved. The total impact to both City and EGLE-regulated wetlands is just 0.48 acres and is currently permitted by EGLE for this impact. In addition to wetlands, several additional site constraints have influenced the development layout. The site has less than 200 feet of frontage along Grand River Avenue, which severely restricts visibility and access, diminishing its viability for industrial or commercial use. This limitation reinforces the site's transition to residential use and supports the use of Providence Parkway as the primary point of access. As a private roadway serving the adjacent medical campus, access to Providence Parkway required coordination with Henry Ford Health. Fortunately, the hospital has confirmed its support for the proposed entrance, recognizing that the addition of residential units will have a minimal impact on traffic, as supported by the Fleis & Vandenbrink traffic study.

A north-south ITC utility corridor runs along the eastern edge of the site, limiting building placement and tree planting within the easement. Rather than viewing this as a constraint, the plan incorporates the corridor as a natural buffer and a location for an inviting landscaped entrance, including a pedestrian connection. Portions of the site also contain areas of historic fill, as documented in third-party environmental assessments. These subsurface conditions have been carefully evaluated, and the grading plan accounts for proper soil stability and drainage. Additional compatibility considerations were taken into account in the northwest area of the site, where adjacent I-2 zoning exists. Residential buildings in this area are intentionally set back and screened by existing vegetation to reduce potential land use conflicts.

Product Design





The home elevations are designed to create a high-quality aesthetic that establishes a distinct sense of place and community identity. We view the elevation design as an iterative process in collaboration with Staff and the Planning Commission and welcome ongoing discussions about this vision. The homes feature three-bedroom floor plans, each with a two-car attached garage. Designed as three-story attached townhomes. The units are approximately 1,600 square feet in size and are not stacked, which is highly preferred by homebuyers. Exteriors are finished with brick and Hardie Board siding, in a desirable earthy color scheme, representing a modern and attractive housing option. The

elevations have been slightly modified to meet the materiality requirements of Novi.

Trash collection will be managed similarly to a single-family neighborhood, with individual bins stored within the enclosed garages and set out for weekly City curbside pickup. All mechanical equipment will be ground-mounted and screened from view to maintain the community's clean and cohesive appearance.

Whitehall currently owns the property, and the development will be a joint venture between the organizations. Whitehall is a full-service commercial real estate firm engaged in the development, acquisition, and management of properties throughout the region. Robertson Homes has been building both condominium and single-family home developments in Southeastern Michigan since 1945. As an accredited new home builder, the company strives to create houses that not only meet standards for building excellence but also serve as places neighbors are proud to call home.

This development represents a unique opportunity to enhance the City's economic vitality by increasing property tax revenue, attracting new residents, and bolstering local businesses. It transforms underutilized land into a thriving community, aligning with the City of Novi's vision for sustainable growth and providing a needed housing element for hospital associates. By transforming an I-1 site that has faced significant development and competitive challenges, along with limited market demand over nearly two decades despite vigorous marketing efforts, this development represents a valuable addition to the City of Novi.

Please don't hesitate to reach out if any additional information is needed.

Thank you.

Respectfully,



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CC Gary Jonna, Whitehall Real Estate Interests
CC David Landry

PLANNING REVIEW

PLAN REVIEW CENTER REPORT

Planning Review

December 3, 2025

JZ25-24 Providence Meadows

Zoning Map Amendment No. 18.752

PETITIONER

Robertson Brothers Co., LLC

REVIEW TYPE

Revised PRO Concept Plan: Consideration of Eligibility
Rezoning Request from I-1 Light Industrial to RM-2 High-Density Multiple Family with a Planned Rezoning Overlay

PROPERTY CHARACTERISTICS

Section	17	
Site Location	South side of Grand River Avenue, west of Providence Pkwy;	
Site School District	Novi Community School District	
Current Site Zoning	I-1, Light Industrial	
Proposed Site Zoning	RM-2, High-Density Multiple Family	
Adjoining Zoning	North	I-2 General Industrial and B-3 General Business
	East	OST, Office Service Commercial
	West	I-1, Light Industrial
	South	PSLR Planned Suburban Low Rise, RA Residential Acreage
Current Site Use	Vacant	
Adjoining Uses	North	Heavy Machinery Sales/Rental (I-2), Vacant (B-3)
	East	Henry Ford Hospital/Medical Campus
	West	Vacant/Wetland Complex
	South	Attached Single Family Development
Site Size	Gross: 31.32 Acres; Net: 24.61 acres (Wetlands > 2: 6.71)	
Parcel ID's	22-17-101-010 and 22-17-101-012	
Plan Date	October 17, 2025	

PROJECT SUMMARY

The subject property is located on the south side of Grand River Avenue, west of Providence Parkway in Section 17 of the City of Novi. The property to be rezoned totals about 31.32 acres and contains a significant amount of regulated woodlands and wetland areas. The applicant is proposing to develop 161-units of for-sale townhomes. The development consists of two phases: Phase 1, with 88 units in 15 buildings; and Phase 2 with 73 units in 13 buildings. The development utilizes a private street network with one entrance off Providence Parkway, and one emergency-only access to Grand River Avenue. The applicant is requesting to rezone the site from Light Industrial (I-1) to High-Density Multiple Family (RM-2) 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 I-1 to RM-2), and the applicant submits a 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 consideration 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 Plan and 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 adjacent industrial uses, landscape deficiencies, and façade design issues. The identified benefits of rezoning are the provision of a public pathway through the property, creation of a trailhead on the Henry Ford Health property, and providing "attainable" housing within the City. The preservation of larger wetland and woodland areas could be considered a benefit to the public if they are permanently protected. The applicant should consider additional or modified benefits to the overall public.

REVIEW CONCERNS

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 the next submittal:

1. Supporting Documentation: The applicant has provided the following studies as part of their application packet
   a. **Narrative (10/21/25):** The statement provided states that "current market conditions, surrounding land uses, and community housing needs strongly support a residential use on this site." The applicant notes that there has not been interest from the industrial and office market in this location, due to factors such as limited frontage and visibility from Grand River Avenue. Their proposed community "is envisioned as a high-quality, for-sale residential neighborhood that addresses Novi's clear shortage of attainable housing." The applicant notes that Henry Ford Health supports the use of their private roadway, Providence Parkway, to serve as the main entrance of the new community.
   b. The statement also notes the conditions and deviations proposed, as well as public benefits. Those are detailed later in this review.
   c. **Traffic Impact Study (Fleis & Vandenbrink, 7/22/2025, rev. 9/5/25):** The City's review of the revised study notes that the change of use should result in significantly fewer vehicle trips on the traffic system compared to development as a medical office under I-1 standards (proposed use: 1,192 vehicles per day; Medical office: 2,574 vpd). A signal appears to be warranted at the intersection of Grand River Avenue and Providence Parkway. Because Providence Parkway is a private road it would be the responsibility of the road owner to provide this signal, with coordination with RCOC. See AECOM's review of the TIS for further comments.
   d. **Community Impact Statement (10/21/2025):** This document describes the property and its relationship to adjacent land uses. It also discusses the environmental features on the site, as well as open space and stormwater disposal strategies. Economic benefits, community and social impacts are mentioned. Finally, the impacts on City services and utilities are covered, including police and fire demand, utilities, and traffic/mobility networks. The permanent population estimate for the project is 326 people. **The statement has been revised to**

compare the proposed project with a potential Light Industrial development as it pertains to the demand on City utilities and services, as well as wetland/woodland impacts.

e. **Industrial Market Letter (CBRE, INC. undated):** The letter states that after more than 12 years of marketing the property for an office/light industrial user, there has not been any serious interest from this sector. They point out that there are several other sites in Novi that have lower land costs, more readily available utilities, and more visibility.
f. **Henry Ford Health Letter (dated 5/8/25):** The letter expresses support for the concept plan, stating that it would provide "viable, high-quality living options" for hospital associates wanting to live close to their workplace.
g. **EGLE Wetland Permit (Issued 4/11/23):** The applicant has provided a copy of the approved Wetland Permit for the site. Although the permit was issued in connection with a previous development proposal, the area of impact approved (0.74 acres) is for a larger disturbance area than the current plan proposes (0.48). Under the terms of the permit, 1.11 acre of wetland mitigation is to be provided. **EGLE will determine whether a new or revised permit is required.**
h. **Rezoning Sign Location Plan:** Wording and size of the required rezoning signage is indicated on sheet S-1 and meets the requirements. The location indicated on Grand River Avenue is approved. An additional sign is now shown along the Providence Parkway frontage, near where the proposed entrance to the community is proposed.

2. Future Land Use Map: The most recent adopted Master Plan (2025) and Future Land Use map indicates this area is planned for Industrial/Office use. **The applicant's request to allow multiple-family development in this area would be a significant departure from the future envisioned for this part of the City, with two immediately adjacent sites being used as general industrial with extensive outside storage. However, there is another residential development to the south (Villas at Stonebrook), so this would not be the only residential development in the area.**

3. Usable Open Space: Sheet C7 indicates areas of Usable Open Space Plan. The plan shows phase 1 would have 22,620 square feet and phase 2 would have 28,144 square feet. **These areas exceed the requirement by 29% and 93% respectively, which represents an enhancement of the project area beyond what could otherwise be required.**

4. Parking (Sec. *5.2.12.A & B)*: The number and size of the units proposed requires 403 parking spaces to be provided. The applicant has proposed 403 spaces over the two phases. The in-unit garages have 322 spaces, or 80% of the total parking. There are 14 spaces available on the garage aprons and the remaining spaces 18% of spaces are in small bays of guest parking placed around the site.

5. Wetland Mitigation: Chapter 12 of the City Code (Section 12-174(b)), indicates that any wetland in the City that meets one or more of the 10 criteria listed in that section would be considered essential, and therefore would be regulated. As described in the Wetland Review, each of the delineated wetlands on the site meet the criteria of providing wildlife habitat as well as flood and storm control. Wetland review notes that the proposed development appears to result in a total permanent wetland impact area of 0.53 acres out of the total 6.79 acres present on site. **Approximately 1.25 acres of on-site mitigation area is noted on the plan, which exceeds the 0.89 acre required according to City Code. The applicant states that EGLE's wetland permit required 1.23 acres of mitigation. The applicant should confirm with EGLE that they can continue to use the previous permit for a new proposed development. If the excess mitigation causes impacts to regulated woodlands, it may be desirable to scale back to preserve more woodlands. See detailed comments in the Wetland review letter.**

6. Buffer from Industrial Sites: The applicant proposes an 8-to10-foot tall berm with landscaping and a fence to provide the required buffer to the I-2 properties to the north. The grading plan shows a portions of the proposed berm would be on a neighboring property. A letter from

Southeastern Equipment Company is included, which states they support granting a 25-foot landscape easement on their property (22-17-101-015) to accommodate the berm slope. An 8-foot vinyl fence is also proposed on the north side of the berm, as well as along the western side of the property's panhandle. The landscape plan proposes a double row of large evergreen trees to be planted on the top of the berm, with additional deciduous trees on the slope of the berm. **It appears that the proposed plan could provide the 80-90% opacity screening between the uses, buffering each property from the negative impacts from the adjacency.**

7. Plan Review Chart: **The attached chart provides additional comments on many of the Ordinance review standards. Identified deviations from ordinance standards are listed in detail on pages 12-14 of this review letter.**

8. Summary of Other Reviews:
   a. **Engineering:** Engineering does not have an objection to the PRO Plan at this time. Negative impacts to public utilities are not expected with the requested change to residential use, however additional information on REUs will be needed to confirm this in the Formal PRO submittal.
   b. **Landscape: Landscape Review does not recommend approval of the rezoning and PRO Plan at this time.** Five deviations from landscape ordinance standards are needed for the current design – some supported by staff in due to conflicts with the ITC corridor easement. However, significant deficiencies in multi-family landscaping are *not supported by staff*. Modifications to the layout may be required to address this concern in the next submittal.
   c. **Traffic:** Traffic review recommends approval. Traffic review notes that the applicant would need a deviation for the parking areas on roads with a centerline radius less than 230-feet.
   d. **Traffic Study Review: The traffic study is recommended for conditional approval at this time**. Please see the review letter for additional comments to be addressed in subsequent submittals.
   e. **Woodlands: Woodland review does not recommend approval at this time.** Although the site is not shown on the Woodland Map, it has been determined areas of the site contain regulated woodlands. See review letter for detailed comments.
   f. **Wetlands:** Wetland review notes that the proposed development appears to result in a total permanent wetland impact area of 0.53 acres out of the total 6.79 acres present on site (~8%). The amount of required wetland mitigation is 0.88 acre, the plans propose to construct 1.24 acres of on-site mitigation.
   g. **Façade:** Façade notes that the elevations provided are now compliant with ordinance standards. **However, the designs do not achieve the PRO standard of resulting in an enhancement of the community. Additional high-quality materials and architectural features could be added to meet that higher standard.**
   h. **Fire**: Fire review does not have objections to the rezoning and general PRO Plan layout. Stated standards will be reviewed for conformance in the site plan submittal.

LAND USE AND ZONING: FOR SUBJECT PROPERTY AND ADJACENT PROPERTIES

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	I-1: Light Industrial	Vacant	Industrial/Office
Northern Parcels	B-3 General Business; I-2 General Industrial	Court House Construction Equipment Yards	Public/Quasi-Public

Eastern Parcels	OSC: Office Service Commercial	Medical Campus: Hospital, Offices and Hotel	Office, Service, Commercial
Western Parcels	I-1: Light Industrial	Towing facility/undeveloped wetland area	Industrial/Office
Southern Parcels	PSLR (Planned Suburban Low-Rise)	Attached Single Family	Suburban Low Rise

Figure 1: Current Zoning

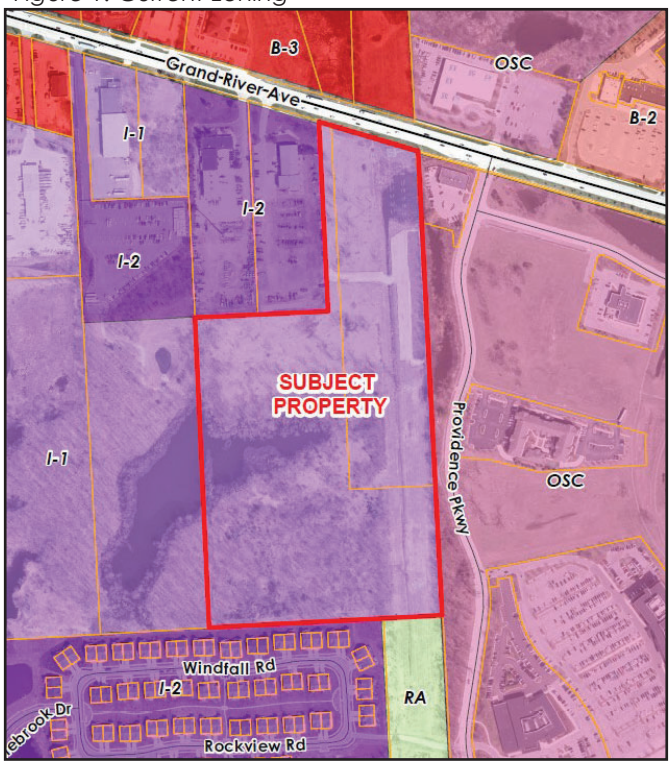
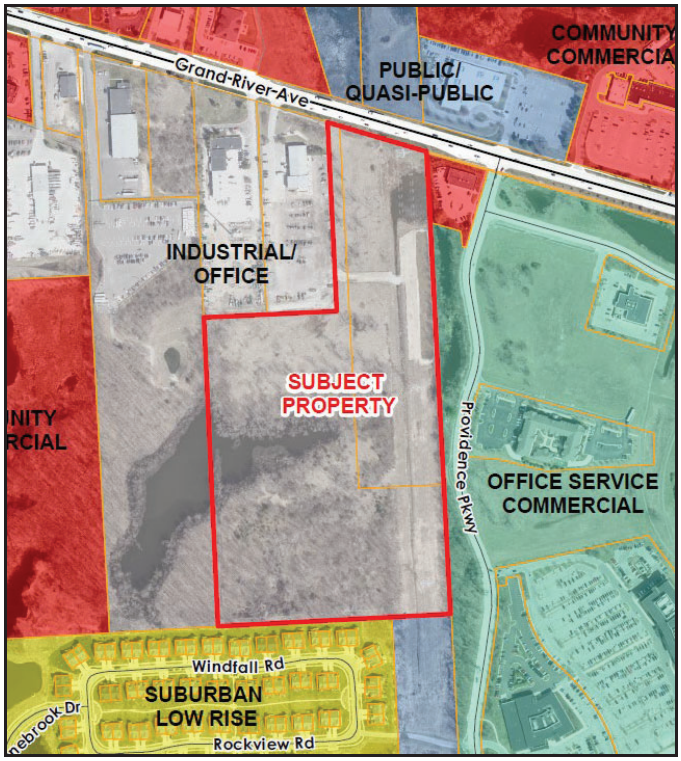


Figure 2: Future Land Use



Compatibility with Surrounding Land Use

The subject property is located along the west side of Providence Parkway, south of Grand River Avenue. The Henry Ford Health campus, zoned OSC, is adjacent to the east that contains Providence Hospital, multiple medical office buildings, a hotel, and other clinic buildings. Adjacent to the south is the Villas at Stonebrook community of duplex homes. The area to the west/northwest is zoned I-1 and I-2. The I-1 portion is an extension of the wetland complex that is undeveloped, while the I-2 area contains large heavy machinery yards for sales or rentals.

Potential negative impacts from noise and odors may be experienced by future residents, as well as unsightly views of the storage yards. In addition, the I-2 uses will become non-conforming uses, because in that district outside storage of any materials and equipment is prohibited when it abuts a residential district (Section 3.14.5). A berm with a minimum height of 10 feet is required between the residential and I-2 district, and all off-street parking, vehicular repair, delivery, loading/unloading and transport are to be no closer than 100 feet from the residential district. The maximum building height for the I-2 properties will be reduced to 25-feet, whereas currently they must not exceed 60 feet. While the current users will not be forced to change their current operations, if they seek to expand their building, or make other changes to their site, or if a new user purchases the property, they may be considered non-conforming and be restricted from expansion or redevelopment under the terms of Section 7.1 of the Zoning Ordinance.



Figure 3: Outside storage of heavy machinery on adjacent I-2 lots

To the northeast across Grand River Avenue is the Oakland County District Court. To the north is the ITC corridor and an undeveloped wetland area. The proposed use is not consistent with the surrounding existing uses to the northwest based on current Zoning requirements. However, it would be consistent with the open space to the west and the existing Villas at Stonebrook development to the south. The use would be compatible with the adjacent hospital complex. The setback between the proposed units and Grand River Avenue is a significant distance, so it is possible they won't be visible from the road.

The applicant's narrative notes that the target market of the proposed development is the workforce associated with the adjacent medical campus. The concept plan proposes a development of 161 units (density of 6.62 dwellings per net acre) for a mid-density multifamily development which is below the 15.6 maximum density allowed for three-bedroom units in the RM-2 zoning district. The buildings are grouped in 2 different clusters, arranged to allow for the preservation of extensive wetland and woodland areas on the site. The applicant is proposing a deviation to allow 50-foot setbacks along the western property line, which adjoins an undeveloped area. This area is not likely to be developed as it contains Hadley Towing's stormwater pond and significant wetland and woodland areas. The northern portion of this property is the subject of a PRO Agreement, so any additional development of the parcel may require City approval of an Amendment to that PRO Agreement. The plan has been revised to comply with the 75-foot setback requirement in all other locations.

The applicant proposes a 10-foot tall berm with landscaping to provide the required buffer to the I-2 properties to the north. An 8-foot vinyl fence is also proposed on the north side of the berm and along the western side of the panhandle of the property to buffer from the open storage use. The landscape plan proposes double rows of large evergreen trees to be planted on the top of the

berm, with additional deciduous trees on the slope of the berm. A letter from Southeastern Equipment Company is included that states they support granting a 25-foot landscape easement on their property (22-17-101-015) to accommodate some of the grading of the berm as well as the fence and some plantings.



Figure 3: Names of surrounding developments and businesses

The natural buffers in place will buffer the residential units from Villas at Stonebrook to the south, although wetland mitigation proposed there will remove some of the mature trees. The mitigation plan has been revised to leave a minimum 66-foot wide strip undisturbed adjacent to that community. The undisturbed woodland and wetland areas on the site, as well as the 200-foot ITC easement provides a wide buffer from other uses, as well as provide natural spaces contiguous with adjacent greenspace areas.

Comparison of Zoning Districts

The following table provides a comparison of the current (I-1) and proposed (RM-2) zoning classifications. It is not a direct comparison between the two uses, given that the two uses are clearly distinct from each other. It is a change of use from Office/Industrial to Residential. The requirements for building setbacks, buffering and lot coverage are also different between the two districts.

	I-1 (EXISTING)	RM-2 (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.	
Principal Permitted Uses	Professional office, office sales and service, medical offices; Publicly owned and operated parks, parkways and outdoor recreational facilities; Public or private health and fitness facilities and clubs; Research & Development, technical training and design of pilot/experimental products; Data processing & computer centers; Warehousing & wholesale establishments; Manufacturing; Industrial office sales, service and industrial office related uses; Trade or industrial schools; Laboratories experimental, film or testing; Greenhouses; Public utility, telephone exchange, electrical transformer stations and substations, etc. Public or private indoor, private outdoor recreation facilities; Pet boarding facilities; Veterinary hospitals and clinics; Motion picture, television, ratio and photographic production facilities; **See attached copy of Section 3.1.18.B for full list	Multiple-family dwellings; Independent and congregate elderly living facilities; Two-family dwellings; Shared elderly housing; One-family dwellings; Farms & greenhouses; Public parks, parkways, and outdoor recreation; Cemeteries; Home occupations; Family day care homes Keeping of horses and ponies (See Sec. 3.1.8.B for additional details)
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	Retail commercial services and office uses
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		45%
Usable Open Space	Not applicable	200 sf per unit
Building Height	40 feet	65 ft or 5 stories, whichever is less
Building Setbacks	Front: 40 feet Side: 20 feet Rear: 20 feet **Setback increased to 100-feet where adjacent to residential district	Front: 75 feet Rear: 75 feet Side: 75 feet Exterior side yard setbacks same as front yard
Parking Setbacks	Front: 20 feet	Front and exterior side: 75 feet

	I-1 (EXISTING)	RM-2 (PROPOSED)
See 3.6.2. for additional conditions	Rear: 10 feet Side: 10 feet Exterior side yard setbacks same as front **Setback increased to 100-feet where adjacent to residential district	Interior side/Rear: 20 feet

INFRASTRUCTURE & SERVICES

Engineering

The Staff Engineer has reviewed the rezoning request and expressed no concerns regarding sanitary sewer capacity and available water capacity. The impacts of RM-2 land use on the utilities in this area compared to development under the existing zoning will be evaluated when the applicant provides Residential Equivalent Units for both scenarios.

Traffic

City Traffic consultants reviewed the Traffic Study provided by the applicant, including the vehicle trips of the proposed use compared to the existing zoning. The proposed development is expected to result in 1,192 vehicles per day (VPD). Compared to a potential medical office/clinic under I-1 zoning, the proposed residential development would have 1,382 fewer trips per day. The TIS concludes that existing conditions indicate a traffic signal is warranted at the Grand River/Providence Parkway intersection with delays on Providence Parkway exceeding 4 minutes. Because the delay is on the private roadway, the property owner would be responsible for **The Traffic consultant's review of the TIS recommends coordination with the property owner (Henry Ford Health) to provide the signal installation, with coordination with RCOC for approvals.** See the TIS review letter for additional information.

Police & Fire

In the Community Impact Statement, the applicant has estimated police and fire responses based on comparable developments. In both cases, they estimate that a Medical Office Use would generate roughly double the number of calls compared to the proposed residential use.

NATURAL FEATURES

Wetlands: The survey shows 12 wetlands, ranging in size from 0.01 – 2.45 acres, with a total of 6.79 acres on-site. Chapter 12 of the City Code (Section 12-174(b)), indicates that any wetland in the City that meets one or more of the 10 criteria listed in that section would be considered essential, and therefore would be regulated. As described in the Wetland Review, each of the delineated wetlands on the site meet the criteria of providing wildlife habitat as well as flood and storm control. Wetland review notes that the proposed development appears to result in a total permanent wetland impact area of 0.53 acres out of the total present on site (~8%). **Approximately 1.24 acres of on-site mitigation area is noted on the plan, which exceeds the 0.89 acre required according to City Code. See detailed comments in the Wetland review letter.**

The applicant notes that approximately 6.71 acres of wetlands are regulated by the State of Michigan (EGLE). EGLE had previously approved a permit for the impact to 0.74 acres of wetland, for which 1.11 acres of wetland mitigation was being constructed on-site. The applicant states that EGLE's wetland permit required 1.23 acres of mitigation. The applicant should confirm with EGLE that they can continue to use the previous permit for a new proposed development with a different use and layout. If the excess mitigation causes impacts to regulated woodlands, it may be desirable to scale back to preserve more woodlands. See detailed comments in the Wetland review letter.

Woodlands: As noted in the plan set the site contains several heavily wooded areas. As noted in the Woodland Review, this parcel does not show any regulated areas on the City's Woodland map. The Woodland Map disclaims "Map information depicted is not intended to replace or substitute for any official or primary source. Specific determination of the limits of a regulated

woodland are made on a site-specific basis by the City's woodland consultant or Community Development staff." The City's Woodland Consultant "has determined that the majority of the trees on site should be considered regulated woodland due to the stand density and connectivity to other regulated woodland areas -- specifically, connection to regulated woodland areas west of the project parcel." The tree survey indicates there are a wide variety of species listed, including Pignut, Shagbark and Bitternut Hickory, Eastern Cottonwood, Bigtooth Aspen, Red and White Oak, Black Cherry, Black locust, Black walnut, Slippery and American Elm, Basswood, Silver, Sugar and Red Maple, and Pear. **The plans will need to be revised to calculate replacement credits under the Woodland Protection Ordinance. See Woodland review for a full list of comments to be addressed.**

Contamination History: The applicant states in the CIS that a Phase 1 Environmental Assessment was conducted in 2022, and found "a significant portion of the property was filled in the 1970s and 1980s with fill material which contained plastic, brick, glass, asphalt, metal, clay tile, and concrete. Filling activities appear to have ceased between 1987 and 1993." A Phase II ESA was conducted in July 2025, in which no elevated levels of contamination were found on the property.

DEVELOPMENT POTENTIAL

Like much of the City of Novi, this area was formerly agricultural land until at least 1950. Based on aerial imagery, the land was cleared in the 1970s which impacted the woodland and wetlands previously present. According to the Community Impact Statement, the property was used to dispose of construction debris in the 1970s-80s, as noted above. This activity ceased in the early 1990s, and since then the property appears to have been inactive, allowing trees and wetlands to reestablish themselves.

Development under the current I-1 zoning could result in a substantial amount of Office or Research & Development building space being constructed on this relatively large parcel. However, the entire eastern side of the property is encumbered with a 200-foot wide easement containing the International Transmission Company's (ITC) high voltage wires. No conceptual layouts or building sizes were included with the submittal for an I-1 development.

There have been a few conceptual development proposals submitted for the subject property in the last 30 years, but they never proceeded to a formal submittal. The most recent concept included approximately 75,000 square feet of medical office in two buildings. A development of this size required 426 parking spaces. The City is not aware of why the applicant did not move forward, but the height of one of the buildings would have exceeded the 25-foot height limit adjacent to the residential use to the south.

As indicated in the CBRE letter provided, there has been a lack of development interest for I-1-type uses on this site due to the lack of visibility from a major throughfare, more attractive locations, and the environmental factors on the subject property. The extensive presence of both woodland and wetland areas on this particular site are not attractive to OST development because of the development limitations and high costs associated with this site.

The site is adjacent to heavy industrial developments to the northwest, where the zoning will remain I-2. Some potential conflicts with the adjacent users could be the noise and disruption of truck traffic, including loading and unloading functions, on the future residents. The adjacent I-2 property owners may be affected in the future being adjacent to a residential zoning district. The I-2 uses will become non-conforming uses, because in that district outside storage of any materials and equipment is prohibited when it abuts a residential district (Section 3.14.5). All off-street parking, vehicular repair, delivery, loading/unloading and transport are to be no closer than 100 feet from the residential district. The maximum building height for the I-2 properties will be reduced to 25 feet, whereas currently they must not exceed 60 feet. While the current users will not be forced to change their operations, if they seek to expand their building, or make other changes to their site,

or if a new user purchases the property, they may be considered non-conforming and be restricted from expansion or redevelopment under the terms of Section 7.1 of the Zoning Ordinance.

The applicant has redesigned the site plan to place "roads" between the residential units and the I-2 uses. They state that the presence of this road removes the obligation of the I-2 land owners to comply with certain requirements presented when I-2 uses are adjacent to a residential district, including limitations on building height and greater setbacks. Section 3.14.5.C. states "The maximum heights of any building constructed on a lot or site adjacent to a residential district shall be 25 feet, except where there is a street, road, highway or freeway *between said lot or site and the abutting residential district* (emphasis added)." The "road" they added is within the residential district, and therefore not between the site and the residential district. It is also proposed to be a private roadway, and therefore does not meet the Ordinance definition of a street: "A dedicated public right-of-way other than an alley which affords the principle means of access to abutting property." In fact, Section 5.10 classifies these types of roads within a development as Major or Minor drives, which are to be built to "local street standards." It is clear the applicant does not want to cause negative impacts to the adjacent properties. However, staff does not see these small private drives as an effective solution to the compatibility issue.

To demonstrate a "worst case scenario": the Southeastern Equipment Company could repurpose or sell their I-2 zoned property to one of the more intensive uses permitted in that district, such as "Central Dry Cleaning Plant", or "Metal Plating, Buffing, Polishing & Molded Rubber Products," or even "Ready-mix or transit mix concrete operations." These uses do not have guidelines that prohibit their existence next to residential districts, or even require greater minimum distances from residential districts. From the perspective of the future residents investing in this development, the existing adjacency restrictions on height and distance would protect them from the worst of possible negative impacts. If the small roadways on the residential parcel were to exempt these uses from the adjacency protections, a 60-foot concrete silo could be built with a setback of just 50 feet from the property line. High-bay storage warehouses could be another use that would take advantage of being able to exceed the 25-foot height limit and locate at the 50-foot setback line. If this proposal is to be approved, the homeowners investing in this development should be afforded the protections of the Ordinance in locating next these potential future uses. In making the decision to rezone the property, City Council will need to weigh the impacts of locating residential uses there and the costs of that change on the I-2 property owners.

The applicant's narrative also lays out an argument that the approval of the Villas of Stonebrook project created the same negative impacts on this property that they will create on the I-2 properties. It is true that approving the use of the PSLR to develop residential uses created certain limitations on the eventual development of the I-1 subject property to the north in terms of building height, berm screening, setbacks and use limitations. However, as this property was not developed it did not render the property non-conforming.

The applicant provides some reasonable justification for the change of use to residential to meet demand for housing with a site that appears unsuitable to larger office-type uses. However, staff has concerns about the significant impact on surrounding properties, as well as the potential negative impacts to those families that choose to invest in these units.

Based on the feedback provided in the staff and consultant review letters, and any additional comments from the Planning Commission and City Council, the applicant should consider addressing those comments and revise the drawings accordingly before the formal PRO Concept submittal.

2025 MASTER PLAN FOR LAND USE: GOALS AND OBJECTIVES

The City has recently adopted the 2025 Master Plan. A map titled "Potential Opportunities" (page 94) indicates the subject site for new development.

The Future Land Use map designates the subject area and those to the north and west as Industrial/Office.

LIGHT INDUSTRIAL/OFFICE		
Purpose	This Industrial land use category designates property that is, or will be, used for research or light industrial uses including warehousing and wholesale activities. Industrial activities, such as processing, packaging, assembly, or treatment of finished or semi-finished products are found within this category.	
Regulated Uses	**Non-Residential** » Research and Development » Warehousing and Wholesale Establishments » Manufacturing » Laboratories » Data and Information Processing Centers » Medical Offices	**Residential** » None
Built Form	Buildings are typically single-site developments with support facilities, such as loading and unloading areas and docks. Often located along the CSX Rail corridor with access to major arterials and the Interstate. Buildings vary in size with maximum heights regulated to 40 feet.	

The Master Plan for Land Use does not anticipate residential uses of this property, so no density guidelines are provided on the plan.

The following Action Plan items (underlined) as listed in the Master Plan are applicable to the proposed development. **Please refer to staff comments in bold and revisions recommended in bold and underline.**

1. **General Goal A: Quality and Variety of Housing.** *The City of Novi is known for its high-quality residential neighborhoods. It should strive to ensure the availability of a wide range of attractive housing choices protected from noise, traffic, and other impacts of non-residential development. Encourage the development of neighborhood open space and neighborhood commercial goods and services to minimize motorized travel.*
    a. Amend the zoning ordinance to encourage "age-in-place" housing types, considering experts' recommendations, to include affordable options such as low-maintenance detached single-family homes, attached single-family homes and townhouses.
    b. Explore opportunities to increase housing density in the proposed mixed-use planned unit development area to create "walkable density" environments (A6). **The development proposes an 8-foot sidewalks along one side of the major private street, as well as utilizing the emergency access route to allow pedestrians and bikes to get to/from Grand River Avenue.**
2. **General Goal B: Community Identity.** *The City's identity is largely based on its high-quality residential neighborhoods and schools, destination retail and convention space, and its parks. The City should supplement that identity by enhancing the preservation of its historic resources and expanding its cultural opportunities. New development of land should continue to be of high-quality design and materials.*

a. Encourage the use of high-quality right-of-way plantings, site landscaping, and building materials to enhance the appearance of the community. **The proposed elevations are compliant with Façade Ordinance, however they do not meet the PRO definition of an enhancement to the community. The landscaping has been improved to comply with standards, however additional work should be done to further address all unsupported deviations.**
b. As development and redevelopment occur, incentivize the use of LEED-certified buildings, water resources, and energy-efficient best practices, and green infrastructure techniques through zoning and permit bonuses.

3. **General Goal C: Environmental Stewardship.** *The City of Novi is significantly enhanced by the preservation of natural resources in both residential and non-residential areas. Maintain public and private stewardship of the natural environment using low-impact development techniques.*
   a. Utilize a general Planned Unit Development ordinance provision to encourage the preservation of natural features, such as woodlands, wetlands, and wildlife habitats. **While the City does not currently have a PUD ordinance, the PRO ordinance provides a similar mechanism for the City to authorize a master-planned development tied to a rezoning. The applicant is proposing as a condition of the PRO protection of a significant portion of existing and mitigated woodland and wetland areas. One difference between the PRO, which requires an actual rezoning of the property to a residential district, and a traditional PUD, which doesn't necessarily change the underlying zoning like a PRO, is that its use here would not have the same negative effects on the adjacent I-2 parcels.**
   b. Implement the Active Mobility Plan's Near-Term Network recommendations to create continuous walking and biking networks to reach key destinations. **The Concept plan proposes to provide public pedestrian access from Grand River through the site to Providence Parkway. The existing pathway on Providence Parkway connects into the pedestrian network on the medical campus, which in turn connects to the City's ITC Trail and Beck Road. In addition, the applicant offers to build a new trailhead on the Henry Ford Health property. The conceptual details, shown on sheet L-15 of the plan set, include landscaping, a pergola with picnic table, a bike repair station, a dog waste bag station and trash receptacle. It is unclear who would take responsibility for ongoing maintenance of the trail head.**
   c. Implement the recommendations of the Active Mobility Plan with a focus on reducing vehicle miles traveled (VMT) and providing residents with alternative modes of transportation. **The 305 and 740 SMART bus lines have a stop just east of Providence Parkway on Grand River Avenue. This stop could be enhanced by having sheltered seating and bike racks to allow riders a more comfortable place to wait for the bus.**

4. **General Goal D: Infrastructure.** *Invest wisely in the ongoing maintenance and improvements to existing infrastructure, including utilities and the transportation network. Ensure that new development appropriately relates to the City's existing and planned infrastructure. Support the entire transportation network through the development and enhancement of non-motorized transportation facilities and amenities***.**
   a. Apply the Active Mobility Plan's Long-Term Network recommendations to public and private development projects to continue to enhance safety and connectivity of the non-motorized network. **The 305 and 740 SMART bus lines have a stop just east of Providence Parkway on Grand River Avenue.**

5. **General Goal E: Economic Development.** *The City's developed land, infrastructure, and natural resources are interconnected and collectively impact the daily lives of the City's residents and business owners. The City should strive to maintain the balance between the economy, the*

environment, and the community to ensure sustainable development that meets the needs of today while ensuring that the needs of future generations can be met.

2023 ACTIVE MOBILITY PLAN (AMP)

Grand River Avenue is classified as a multi-modal thoroughfare in the AMP. With the presence SMART bus routes along Grand River, one of the major objectives is connecting people to transit stops. With shopping and dining opportunities on the north side of Grand River, improving access to these destination is also a priority.

The applicant is proposing to construct the 402-foot missing pathway gap along their Grand River Avenue frontage, which is a *Near-term priority* in the AMP. To the west, there are two smaller gaps on the south side of Grand River, measuring 188-feet and 186-feet in length, which are also near-term priorities. Existing pathway to the east would connect this area to the Westmarket Square and Beck Road commercial areas. Another near-term priority in this area is a crosswalk treatment at the Providence Parkway and Grand River Avenue intersection. The recommendation for a Pedestrian Hybrid Beacon with Island would help get pedestrians across Grand River to access the SMART bus stops on either side of the road.

As identified priorities of the AMP, these recommendations should be considered by the applicant as potential public benefits.

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 could consider the following conditions to be included in the PRO Agreement:

1. Preservation of _____ acres of City regulated woodlands
2. Preservation of _____acres of City regulated wetlands
3. Density shall not exceed 6.62 dwelling units per acre (More limiting than the dwelling units per acre allowed in the RM-2 District)
4. Providing the community amenities shown in the PRO Plan
5. Dedication of ____ linear feet (or acres) of Right of Way
6. Building height will be limited to _____ feet.
7. The landscape plan will exceed the required 50% native species.
8. Specifying uses of land that will not be permitted (which are otherwise allowed in the RM-2 District.
9. Improvements or other measures to improve traffic congestion or vehicular movement with regard to existing conditions or conditions anticipated to result from the development.
10. Creation or preservation of public parkland or open space.

Additional conditions to be included in the PRO Agreement, if it should be approved, will likely be added during the review process.

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.*

The following benefits are suggested by the applicant as listed in their narrative **(Staff comments in Bold)**:

1. Public Trail Access Through the Site: A pedestrian pathway will be constructed to provide public access from the future sidewalk paralleling Grand River Avenue through the development to Providence Parkway. This pathway will feature landscape plantings and offer scenic views of the site's natural features. Together, the sidewalk and pathway will create a vital connection between the Grand River corridor and the Henry Ford and ITC trail systems. **The proposed pedestrian pathway will be parallel, and in very close proximity, to the existing sidewalk on Providence Parkway. Future homeowners may object to the public being able to walk or bike through their community and attempt to limit public access. The applicant should provide more details for how public access to this pathway would be protected in the long term. Alternatively, since the pathway does not offer a significant enhancement over the one on Providence Parkway, alternative benefits to the public could be considered such as those recommended in the Active Mobility Plan.**

2. Trailhead Connection and Signage: Development of a new trailhead that links to the larger Henry Ford and ITC trail system. **Staff agrees this would be an enhancement that would benefit the greater public. It may require a public access easement be granted by Henry Ford Health and indication of which party will be responsible for the maintenance of the improvements.**

3. Attainable Housing Option: The development will offer 163 for-sale townhomes specifically designed to meet the demand for attainable housing in Novi. These homes will offer a more accessible price point for young professionals, first-time buyers, and essential workers, including nurses, doctors, and administrative staff employed at the adjacent Henry Ford Health campus. **The applicant should provide more details about how attainability will be**

measured. Will a condition be offered in the PRO Agreement stating the units will not be sold above a certain price point, or some similar limitation to achieve "attainability"? If not, what assurance does the City have these would be anything other than fully market rate units, not necessarily fulfilling this representation?

4. Preservation of Wetlands and Woodlands: The site has been carefully planned to minimize impacts on its natural features, including wetlands and woodlands, creating a balanced integration of residential living and nature. These areas will be permanently protected through a conservation easement, ensuring their preservation and ecological value for future residents and the broader community. Further, through meetings with adjacent homeowners, we have revised the plans to provide a 60' minimum natural buffer along the southern property line. **The preservation of natural features and mitigated areas are considered a benefit to the public at large. However, the applicant should be sure to address regulated woodland comments in subsequent submittals.**

This is a PRO in which the applicant seeks both a rezoning and a number of ordinance deviations. In Staff's opinion the "overall benefit" to the community at large and the public are relatively minor while the detriments of the rezoning (in this case: impact to existing woodlands and wetlands, compatibility concerns with adjacent existing non-residential uses, and lack of required multifamily landscaping) seem significant. Nor does the proposal offer significant site-specific limitations that clearly deliver an overall enhancement of the area with this project that couldn't be achieved otherwise.

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 proposed PRO agreement would be considered by City Council only after tentative approval of the proposed concept plan and rezoning.

The Concept Plan submitted with an application for a rezoning with a PRO is not required to contain the same level of detail as a preliminary site plan. 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. However, it is not comprehensive. 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. **Staff comments are in bold.**

1. **Building Setbacks** *(Sec 3.1.7.D):* A Zoning Ordinance deviation is requested to reduce the building setbacks from 75 feet to 50 feet along the west property line. **Along the west side, it appears that many of the existing trees will be preserved to provide a buffer from the adjacent property. That portion of the abutting property contains a stormwater management pond, but is otherwise undeveloped.**

2. **Total Number of Rooms** (Sec. 3.8.1.A): A Zoning Ordinance deviation is requested to allow a greater number of rooms than the RM-2 District permits for buildings less than 4-stories (644 rooms proposed, 536 permitted). **The RM-2 district allows a greater number of rooms for buildings 4 stories or taller, with corresponding higher units. This deviation has been permitted previously, as the overall density permitted by the district is not exceeded.**

3. **Building Orientation** *(Sec. 3.8.2.D):* A Zoning Ordinance deviation is requested to revise the required orientation of the buildings from a minimum of 45 degrees in certain locations. This allows for a more uniform site layout, and the buildings parallel to the property lines are not immediately adjacent to other uses. **All buildings are either parallel or perpendicular to property lines abutting non-residential districts. This deviation has been requested and granted for many residential projects in the City in the last 5 years.**

4. **Distance between Buildings** *(Sec 3.8.2.H): A Zoning Ordinance deviation is requested to reduce the building separation distance from the calculated formula as shown on sheet C7 to a minimum of 15 feet.* **This deviation enables the layout of this project to fit within the available space while minimizing wetland and woodland impacts.**

5. **Parking along Major Drives** *(Sec. 5.10):* A Zoning Ordinance deviation is requested to allow for perpendicular parking on a major drive. **Perpendicular parking for guests is proposed toward the end of Harborfield Drive where traffic speeds should be low. The parking spaces will not cause any more disruption on the roadway than cars that will be backing out of the driveways.**

6. **Parking along Curves** (Sec. 5.10): A Zoning Ordinance deviation may be required to allow on-street parking on curves with less than a 230-foot centerline radius. **The applicant should review the areas where parking is in such curves and consider moving the spaces, or review to ensure a safe and adequate sight distance is provided.**

7. **Covered Bike Parking** (Sec. 5.16.4): When 20 or more bike parking spaces are required, 25% of the spaces shall be covered. The applicant requests a deviation**. Without a justification this deviation is not supported. Other developments have met this requirement by providing bike storage within the garages of the units, or providing a structure over one of the parking areas.**

8. **Parking Distance to Buildings** (Sec. 3.8.2.F): In some locations, off-street parking spaces are within 15 feet of the adjacent building. The ordinance requires 25-feet between parking spaces and a dwelling structure that contains openings involving living areas. **These locations generally occur near the sides of buildings. The elevations show there are no windows or openings on these side facades.**

9. **Pedestrian Connectivity** (Sec. 3.8.2.G): Five-foot sidewalks are required on both sides of private drives. It appears that an 8-foot sidewalk is proposed on only one side of Harborfield Drive. Other roadways have sidewalks at the "front" of the buildings. **Please provide the required sidewalks, or provide a justification for the deviation.**

10. **Parking Lot Lighting** (Section 5.7.3.J./5.7.3.O): Parking areas should be lit at a minimum 0.2 fc in residential districts for safety. The applicant requests a deviation from the requirement to provide lighting in the parking areas. **No justification is noted for the deviation. Staff suggests that bollard lighting could provide necessary lighting without being intrusive to residents.**

11. **Right-of-Way Landscaping** (Sec. 5.5.3.B.ii): A deviation for the lack of required 3-foot berm along Grand River Avenue and Providence Parkway due to the existing natural areas to be preserved, and the presence of the ITC easement. **This is supported by staff because the buildings and parking areas will not be close to the frontages.**

12. **Right-of-Way Landscaping** (Sec. 5.5.3.B.ii): A landscape deviation to allow a deficiency in street trees along Grand River Avenue. **This is supported by staff because of the presence of utility conflicts.**

13. **Right-of-Way Landscaping** (Sec. 5.5.3.B.ii): A landscape deviation to allow a deficiency in greenbelt landscaping on Grand River Avenue. **This is supported by staff for the area that falls within the ITC Easement.**

14. **Right-of-Way Landscaping** (Sec. 5.5.3.B.iii.): A landscape deviation to allow a deficiency in street trees along Providence Parkway access easement. **This may be supported by staff. Please add trees where possible and/or explain the need for the deviation if the required trees cannot be provided.**

15. **Right-of-Way Landscaping** (Sec. 5.5.3.B.iii.): A landscape deviation to allow a deficiency in street trees along Harborfield Drive within the ITC easement. **This is supported by staff.**

16. **Right-of-Way Landscaping** (Sec. 5.5.3.B.ii): A deviation for the lack of greenbelt plantings Providence Parkway. **This may be supported by staff. The applicant is asked to clearly identify the existing trees to remain and count toward the required tree count on the plan view and in the calculations, and add trees to remove any remaining deficiencies.**

17. **Multi-Family Landscaping** (Sec. 5.5.3.F.iii): A landscape deviation for the deficiency multi-family unit trees and foundation landscaping. **This deviation is not supported by staff as there are opportunities to more closely comply with the ordinance standards.**

See other review letters for deviations that have been identified other reviewers. Deviations from Ordinance standards may continue to be identified during the PRO Review process. 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.

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 I-1 (Light Industrial) to RM-2 (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.*

(Full text of the PRO ordinance, including Subsection C, is available here)

This item will be scheduled for initial review and comment on the PRO Plan as early as Wednesday, January 14, 2025. **Please advise staff whether this date is acceptable, and if so, ensure that the rezoning signage, as shown on the Rezoning Sign Detail (S-1), are posted in the appropriate**

locations indicated on the map no later than December 24, 2025, to give proper notice prior to the public hearing before the Planning Commission.

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: RM-2

Review Date: November 13, 2025
Review Type: Rev. Initial PRO Concept Plan
Project Name: **JZ25-24 Providence Meadows**
Location: S of Grand River, West of Providence Pkwy
Plan Date: October 17, 2025
Prepared by: Lindsay Bell, *AICP*, Senior Planner
E-mail: lbell@cityofnovi.org; **Phone:** (248) 347-0484

Bold	To be addressed before Planning Commission public hearing for PRO Concept
Underline	To be addressed with Preliminary Site Plan submittal
Bold and Underline	Possible deviations to be included as part of PRO agreement
Italics	Items to be noted

Item	Required Code	Proposed	Meets Code	Comments
Zoning and Use Requirements				
Master Plan *(adopted June 25, 2025)*	Office research development and technology	Multiple Family Residential (RM-2)	**No**	- **The proposed rezoning is not supported by the 2025 Master Plan in this location.** - Planning Commission recommendation & City Council approval of PRO Plan - City Council approval PRO agreement - Site Plan/Site Condo normal approval process
Area Study	The site does not fall under any special category	NA	NA	
Zoning *(Effective January 8, 2015)*	I-1 Light Industrial	RM-2 High-density Multiple Family with a PRO	**No**	
Uses Permitted (Sec 3.1.18.B & C)	Light Industrial Uses Sec. 3.1.18.B. - Principal Uses Permitted. Sec. 3.1.18.C. – Special Land Uses Permitted.	Sec. 3.1.8. Multi-Family Residential	**No**	*The proposed rezoning category would allow Multi-family uses.*
Phasing	If proposed, show proposed phasing lines on the plan. Each phase should be able to stand on its own with regards to utilities, open space, parking, etc	Plans show 2 phases	**TBD**	**Phasing proposed – each phase will need to be able to stand on its own as if developed independently**
Planned Rezoning Overlay Document Requirements (SDM link: *Site Plan & Development Manual)*				
Written Statement *(Site Plan & Development manual)* *The statement should describe the following*	Potential development under the proposed zoning and current zoning	Provided	**TBD**	**See Planning Review for discussion**
	Identified benefit(s) of the development	Proposed	**TBD**	**See Planning Review for discussion**
	Conditions proposed for inclusion in the PRO Agreement (i.e., Zoning Ordinance deviations, limitation on total units, etc)	Proposed	**TBD**	Any deviations identified, conditions that would be more limiting than typical RM-2 development

Item	Required Code	Proposed	Meets Code	Comments
Sign Location Plan *(Page 23,SDM)*	Installed within 15 days prior to public hearing Located along all road frontages	Provided	Yes	Location of signs is approved – see Planning Review for deadline to post **NOTE: the proposed Zoning District is RM-2 – please correct on sign mock-up**
Traffic Impact Study *(Site Plan & Development manual)*	A Traffic Impact Study as required by the City of Novi Site Plan and Development Manual.	Provided	Yes	**Refer to Traffic review letter for related comments**
Community Impact Statement *(Sec. 2.2)*	- Over 30 acres for permitted non-residential projects - Over 10 acres in size for a special land use - All residential projects with more than 150 units - A mixed-use development, staff shall determine	Provided	Yes	**See Planning Review for discussion**
Market Study	Optional: a Market study to provide a market demand analysis for the proposed project.	Letter from CBRE's Edward Wujek – not dated	**TBD**	**See Planning Review for discussion**
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 on Grand River Ave, where an emergency access connection is proposed	Yes	
Minimum Zoning Lot Size for each Unit: in Acres *(Sec 3.8.1)*	RM-1 and RM-2 Required Conditions	31.32 acres gross 24.61 acres net	Yes	
Minimum Zoning Lot Size for each Unit: Width in Feet *(Sec 3.8.1)*			NA	
Usable Open Space Area *(Sec 3.1.8.D)* *Article 2: Definitions*	200 sf of Minimum usable open space per dwelling unit For a total of 161 dwelling units, required Open Space: 32,200 SF (0.74 acre) Refer to definitions for Usable Open Space and Open Space	**Phase 1: 22,620 sf** Decks: 4,400 sf Pocket Parks: 18,220 sf **Phase 2: 28,144 sf** Decks: 3,650 sf Pocket Parks: 24,494 sf	Yes	**Proposed area exceeds requirement by 58% - this could be a condition of the PRO Agreement that is an enhancement**

Item	Required Code		Proposed	Meets Code	Comments
Maximum % of Lot Area Covered (By All Buildings)	*45%*		10.5%	Yes	**This could be a condition more limiting than requirements**
Building Height *(Sec. 3.20)*	65 ft. or 5 stories whichever is less		34.2 feet	Yes	**This could be a condition more limiting than requirements**
Minimum Floor Area per Unit *(Sec. 3.1.8.D)*	Efficiency	400 sq. ft.		NA	All units are 3-bedroom
	1 bedroom	500 sq. ft.		NA	
	2 bedroom	750 sq. ft.		NA	
	3 bedroom	900 sq. ft.	1,600 sf	Yes	
	4 bedroom	1,000 sq. ft.		NA	
Maximum Dwelling Unit Density/Net Site Area *(Sec. 3.1.8.D)* ***Per Sec. 3.8.2.B, all buildings less than four stories should comply with RM-1 regulations for limits on percent of 1-bedroom units and number of rooms.***	Efficiency	Max 5%		Yes	*See Sec. 3.8.1.A; in RM-2 District buildings less than 4 stories must meet RM-1 standards for room count and unit mix*
	1 bedroom	Max 20% 31.1du/ac			
	2 bedroom	20.7 du/ac			
	3+ bedroom	15.8 du/ac	6.54 du/ac proposed		
Residential Building Setbacks *(Sec 3.1.8.D)*					
Front @ Grand River	75 ft. (Sec. 3.6.B)		Exceeds	Yes	**Label minimum setbacks on plan**
Exterior Side at Providence Pkwy	75 ft.		~227 ft	Yes	
Side – North (abutting I-2)	75 ft.		75 ft	Yes	**Applicant requests a deviation for building setbacks from I-1 on west**
Side - West	75 ft.		50 ft	**No**	
Side - South	75 ft.		~227 ft	Yes	
Parking Setback *(Sec 3.1.8.D) (Sec 3.1.12.D)Refer to applicable notes in Sec 3.6.2*					
Front *(3.6.2.B)*	75 ft.		Exceeds	Yes	
Exterior side	75 ft.		Exceeds	Yes	
Side abutting I-2	20 ft.		Not labeled (~34 ft)	Yes	
Rear *(3.6.2.B)*	20 ft.		Exceeds	Yes	
Side *(3.6.2.B)*	20 ft.		Exceeds	Yes	
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.		Providence Pkwy	Yes	
Wetland/Waterco	A setback of 25ft from		Extensive wetland areas	**TBD**	**Refer to wetland review**

Item	Required Code	Proposed	Meets Code	Comments
urse Setback *(Sec 3.6.2.M)*	wetlands and from high watermark course shall be maintained	exist – some buffer impacts likely		**letter for more detail**
RM-1 and RM-2 Required Conditions *(Sec 3.8)*				
Total number of rooms *(Sec. 3.8.1.A & B)*	For RM-2 building less than four stories, RM-1 regulations apply; Total No. of rooms < Net site area in SF/2000 For RM-2 buildings, four stories or more: Total No. of rooms < Net site area in SF/700 *(1,531 rooms could be approved)*	1,072,011 sf/2000 = **536 rooms allowed** **Total number of rooms Proposed: 644**	**No**	*See Sec. 3.8.1.A; in RM-2 District buildings less than 4 stories must meet RM-1 standards for room count and unit mix* **Applicant requests a deviation for room count, increase of 20%.**
Public Utilities *(Sec. 3.8.1)*	All public utilities should be available	All public utilities are available	Yes	**Refer to Engineering review for more details**
Maximum Number of Units *(Sec. 3.8.1.A.ii)* *Applicable for RM-1 building and RM-2 buildings less than four stories*	Efficiency < 5 percent of the units	None	NA	
	1 bedroom units < 20 percent of the units	None	NA	
	Balance should be at least 2 bedroom units	Proposed	Yes	
Room Count per Dwelling Unit Size *(Sec. 3.8.1.C)* **An extra room such as den count towards an extra room*	**Dwelling Unit Size** / **Room Count ***			*Floorplans show 2-bd units with flex room and 3-bd units with flex room* *All units appear to be 4-room units as described below: 4x161 = 644*
	Efficiency / 1			
	1 bedroom / 2			
	2 bedroom / 3			
	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 shore line *(Sec. 3.8.2.A)*	A minimum of 150 feet along natural lake shore line is required.	No natural lake shore line exists within the property	NA	
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.	Proposed Private Drive	Yes	**Subject to City Council approval**
Maximum length of the buildings *(Sec. 3.8.2.C)*	A single building or a group of attached buildings cannot exceed 180 ft.	8-unit buildings are ~161 feet	Yes	

Item	Required Code	Proposed	Meets Code	Comments
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 abutting a residential district or major thoroughfare			
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.	Some Buildings do not meet the minimum requirement for 45-degree orientation – Buildings 6, 15, 16, 22 and 23 appear to not meet the minimum	**No**	**Applicant requests a deviation for building orientation for buildings noted.**
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	Parking areas and drive aisles are mostly internal to the site North side bordering I-2 not clear	Yes	**Please provide a calculation of the amount of drive aisle/parking on north boundary with I-2**
Off-Street Parking or related drives *(Sec. 3.8.2.F)* 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	15 feet proposed	**No**	**Applicant requests a deviation for distance from off-street parking to building.**
	No closer than 8 ft. for other walls or	Complies	Yes	
	No closer than 20 ft. from ROW and property line	Minimum of 20 ft. is maintained	Yes	**Provide measurements to verify compliance**
Pedestrian Connectivity *(Sec. 3.8.2.G)*	5 feet sidewalks on both sides of the Private drive are required to permit safe and convenient pedestrian access.	8-foot sidewalk on one side of Harborfield Dr, Other sidewalks from parking to front of units are 5 feet	**No**	**Applicant requests a deviation to provide sidewalk on only one side of private drive**
	Where feasible sidewalks shall be connected to other pedestrian features abutting the site.	Connects to sidewalk on Grand River Avenue and HFH campus pathway system	Yes	
	All sidewalks shall comply with barrier free design standards		**TBD**	Will be verified at Final Site Plan

Item	Required Code	Proposed	Meets Code	Comments
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	Provided – sheet C7	**No**	**Applicant requests a deviation for min distances between buildings as shown**
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.	15 ft indicated as minimum distance with corner to corner relationship	**No**	**Applicant requests a deviation for min distances between buildings**
Relationship between Streets *(Sec. 3.8.3.A)*	Proper relationship between local streets and any proposed service roads, driveways and parking areas to encourage pedestrian and vehicle safety	Appears to comply	Yes	
Architectural design and materials *(Sec. 3.8.3.B)*	All Development features of buildings and any accessory buildings (architectural design & façade materials) shall be clearly shown and identified	Elevations provided	Yes	**See Façade review for comments on materials and design**
Interrelated Streets *(Sec. 3.8.3.C)*	All roads, driveways, parking areas and open spaces shall be located and interrelated so as to minimize any adverse effects upon adjacent streets and properties	Appears to comply	Yes?	
Relationship between Buildings and uses *(Sec. 3.8.3.D)*	All buildings or building groupings shall be located so as to properly related one to the other and to uses on adjacent properties.	"Rear" of building oriented to streets does not offer an attractive street view, but is done in most townhome communities		
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 developments shall be built to City of Novi Design and Construction Standards for local street standards (twenty-eight (28) feet back-to-back width	Major and minor drive network shown	Yes	
Major Drives	– Width: 28 feet	Access drive from Providence Pkwy – Harborfield Drive 28-ft	Yes	

Item	Required Code	Proposed	Meets Code	Comments
		width		
Minor Drive	– Cannot exceed 600 feet – Width: 24 feet with no on-street parking – Width: 28 feet with parking on one side – Parking on two sides is not allowed – Needs turn-around if longer than 150 feet	Drives around buildings – all appear to be 24-ft	Yes	**Havencrest Circle and Laurelwood Lane exceed 600 ft – deviation required**
Parking on Major and Minor Drives	– Angled and perpendicular parking, permitted on minor drive, but not from a major drive; – minimum centerline radius: 100 feet – Adjacent parking and on-street parking shall be limited near curves with less than two-hundred thirty (230) feet of centerline radius	**Parking on minor drives and at end of Major drive** **Centerline radius**		**Perpendicular Parking on Major drive will require a deviation**
Driveways, Parking, Loading and Dumpster Requirements				
Number of Parking Spaces *(Sec.5.2.12.A & B)*	For 3 or more bedroom units: 2 ½ spaces each 161- 3 bedroom units: 408 spaces **TOTAL:** 403 spaces	Attached Garages, guest parking Phase 1: 220 Phase 2: 183 **TOTAL PROPOSED: 403**	Yes	**Clarify parking calculation that states "Parking = 14 x .5;"**
Landbank Parking *(Sec. 5. 2.14)*	Maximum number of Landbank spaces: 25% of required parking	Not proposed	NA	
Parking Space Dimensions and Maneuvering Lanes *(Sec. 5.3.2)*	- 90° Parking: 9 ft. x 19 ft. - 24 ft. two way drives - 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	- 17' x 9' proposed adjacent to 4" curbs - 24-foot min drive aisles	Yes	
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	Not applicable	NA	

Item	Required Code	Proposed	Meets Code	Comments
End Islands *(Sec. 5.3.12)*	- End islands with landscaping and raised curbs are required at the end of all parking bays that abut traffic circulation aisles. - The end islands shall generally be at least 8 feet wide, have an outside radius of 15 feet, and be constructed 3' shorter than the adjacent parking stall as illustrated in the Zoning Ordinance	Not applicable	NA	**Refer to Traffic comments.**
Barrier Free Spaces *Barrier Free Code*	To be determined once minimum required spaces determined	2 provided in each phase	**TBD**	**Refer to Building Code requirements to identify how many ADA accessible units are required and provide necessary Handicap spaces in those locations**
Barrier Free Space Dimensions *Barrier Free Code*	- 8' wide with an 8' wide access aisle for van accessible spaces - 8' wide with a 5' wide access aisle for regular accessible spaces	8' shown with 8' access aisle	Yes	
Barrier Free Signs *Barrier Free Code*	One sign for each accessible parking space.		**TBD**	Signage will be verified during site plan review
Minimum number of Bicycle Parking *(Sec. 5.16.1)*	One (1) space for each five (5) dwelling units For 161 units, 32 bike spaces are required	Phase 1 – 18 shown Phase 2 – 16 shown	Yes	
Bicycle Parking General requirements *(Sec. 5.16)*	No farther than 120 ft. from the entrance being served			
	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 Shall be accessible via 6 ft. paved sidewalk	U-rack shown 7 ft shown, but 2-foot car overhang would make 5-ft clear	Yes **No**	**Show width of sidewalk at rack locations – must be 6 ft clear of any car overhangs**
Bicycle Parking Lot layout *(Sec 5.16.6)*	Parking space width: 7 ft. One tier width: 11 ft. Two tier width: 18 ft. Maneuvering width: 4 ft.	Layout Detail shows 8 ft pad width, but dimension on Plan shows 6 ft	**No**	**Correct the dimensions shown on the plan to match the detail**

Item	Required Code	Proposed	Meets Code	Comments
	Parking space depth: 32 in			
Covered bike parking *(Sec 5.16.4)*	When 20 or more bike parking spaces are required, 25% shall be covered spaces	Not shown	**No**	**Applicant requests a deviation, Provide a min 7 spaces in covered locations – can be in unit garages**
Loading Spaces *Sec. 5.4.1*	- Every building involving receipt or distribution of vehicles or materials or merchandise there shall be provided and maintained adequate space for standing, loading and unloading to avoid undue interference with public use of ROW	None proposed	NA	
Accessory Use (Sec. 4.19)				
Accessory Buildings *Sec. 2.2. Definitions*	Any structure, either temporary or permanent, having a roof supported by columns or walls, and intended for the shelter, or enclosure of persons, animals, chattels, or property of any kind.	Not shown	NA	
Location: Accessory Building *Sec. 4.19.1.B*	They shall not be erected in any required front yard or in any required exterior side yard.	Not shown	NA	
Setbacks: Detached Accessory Building *Sec. 4.19.1.G*	- It shall not be located closer than ten (10) feet to any main building - It shall not be located closer than six (6) feet to any interior side lot or rear lot line.	Not shown	NA	
Height: Detached Accessory Building *Sec. 4.19.1.G*	The height equal to the maximum permitted height of the district; provided, if the accessory building exceeds one (1) story or fourteen (14) feet in height, the building shall be set back one (1) foot for each foot the building exceeds fourteen (14) feet in height.	Not shown	**TBD**	
Façade requirements for Carport Canopies *Sec. 5.15.12.b*	- Not greater than 12' tall - <40 ft width - Powder coated steel or aluminum material, neutral in color to	Not proposed	NA	

Item	Required Code	Proposed	Meets Code	Comments
	harmonize with primary buildings - Solar photo voltaic and EV charging integration strongly encouraged			
Canopies and Carports *Sec. 4.19.2.C*	Two or more carports permitted on any lot greater than 2 acres, provided they comply with accessory building setback and height	Not proposed	NA	
Maximum number of Accessory buildings *Sec. 4.19.1.J*	Lots less than 21,780 SF: 1 Lots more than 21,780 SF: 2		**TBD**	
Dumpster *Sec 4.19.2.F*	- Located in rear yard - Attached to the building or - No closer than 10 ft. from building if not attached - Not located in parking setback - If no setback, then it cannot be any closer than 10 ft, from property line. - Away from Barrier free Spaces	Not proposed	NA	
Dumpster Enclosure *Sec. 21-145. (c) Chapter 21 of City Code of Ordinances*	- Screened from public view - A wall or fence 1 ft. higher than height of refuse bin - And no less than 5 ft. on three sides - Posts or bumpers to protect the screening - Hard surface pad. - Screening Materials: Masonry, wood or evergreen shrubbery	Individual trash pick-up proposed	NA	
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	Unable to determine.	**TBD**	If information is not provided with PRO Plan, it is expected to comply at the time of Preliminary site plan review.
Roof top appurtenances screening	Roof top appurtenances shall be screened in accordance with applicable facade	Unable to determine.	**TBD**	If information is not provided with PRO Plan, it is expected to comply at the time of Preliminary

Item	Required Code	Proposed	Meets Code	Comments
	regulations, and shall not be visible from any street, road or adjacent property.			site plan review.
Accessory Structures *(Sec. 4.19.2)*	Anything constructed or erected, the use of which requires location on the ground or attachment to something having location on the ground. Flagpoles, solar structures, transformers and utility boxes	The plan does not appear to propose any other accessory structures	NA	Any future proposed structures are expected to comply with the requirements if not approved as part of the PRO plan
Sidewalks				
Active Mobility Plan	Complete sidewalk/pathway gaps on Grand River Ave, Crosswalk recommended at Providence Pkwy/Grand River, Bus stops on Grand River Ave	Required pathway at GRA would fill ~400 ft gap (8-ft min. width)	**TBD**	**See new Active Mobility Plan for other guidelines/recommendations, especially for Grand River Avenue**
Internal Sidewalks *Sec. 3.8.2.G*	Five foot sidewalks required on both sides of internal public or private drives	Sidewalk provided on one side of roads for most part.		**Deviation required for lack of sidewalk on one side of road**
Public Sidewalks *(Chapter 11, Sec.11-276(b))*	An 8-foot sidewalk is required along Grand River	Sidewalk proposed along Grand River Ave	Yes?	**Label the width of the sidewalks.**
Other Requirements				
Design and Construction Standards Manual	Land description, Sidwell number (metes and bounds for acreage parcel, lot number(s), Liber, and page for subdivisions).	Legal description provided		**Will be verified**
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).			**Please provide additional information as requested in this and other review letters**
Economic Impact	- Total cost of the proposed building & site improvements - Number of anticipated jobs created (during construction & after building is occupied, if known)	Provided in Community Impact Statement	Yes	

Item	Required Code	Proposed	Meets Code	Comments
Other Permits and Approvals				
Development/ Business Sign *(City Code Sec 28.3)*	Signage if proposed requires a permit.			For sign permit information contact Ordinance Division at **248-735-5678.**
Development and Street Names	Development and street names must be approved by the Street Naming Committee before Preliminary Site Plan approval	Application received		**Project and Street Name application; Contact Stacey Choi at 248-347-0475 to schedule consideration by the Committee**
Property Split or Combination	The proposed property split must be submitted to the Assessing Department for approval.		**TBD**	**Clarify if 2 parcels will be combined.** If proposed, the parcel combination should be completed prior to final stamping set 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	Not applicable at this moment	NA	PRO Agreement would need to be approved by the City Council if the Formal PRO Plan is tentatively approved
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	NA	If one is proposed, then a Master Deed draft shall be submitted prior to site plan Stamping Set approval.
Conservation easements	Conservation easements may be required for woodland/wetlands	Not applicable at this moment	NA	Documents may be required during Site Plan review process after the Concept PRO 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	Provided	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 – 3 community entry lights; lights on rear elevations	Yes	

Item	Required Code	Proposed	Meets Code	Comments
Residential Entryway lighting *Sec. 5.7*	One street light is required per entrance.	3 shown – one at Providence Pkwy entrance	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.	Provided	Yes	
Lighting Plan Elements *(Sec.5.7.2.A.ii)*	Specifications for all proposed & existing lighting fixtures	Provided	Yes	
	Photometric data	Provided	Yes	
	Fixture height	Provided	Yes	
	Mounting & design	Provided	Yes	
	Glare control devices *(Also see Sec. 5.7.3.D)*	Provided	Yes	
	Type & color rendition of lamps	Not shown for C1 fixtures	No	
	Hours of operation		NA	
Maximum Height *(Sec. 5.7.3.A)*	Height not to exceed maximum height of zoning district (or 25 ft. where adjacent to residential districts or uses.	14' max	Yes	
Required Conditions *(Sec. 5.7.3.B)*	- Electrical service to light fixtures shall be placed underground - Flashing light shall not be permitted - Only necessary lighting for security purposes & limited operations shall be permitted after a site's hours of operation			**Notes shall be added to the plan prior to site plan approval**
Indoor Lighting *(Sec. 5.7.3.H)*	- Indoor lighting shall not be the source of exterior glare or spillover			
Security Lighting *(Sec. 5.7.3.I)*	- All fixtures shall be located, shielded and aimed at the areas to be secured. - Fixtures mounted on the building and designed to illuminate the facade are preferred			
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	3000K shown	Yes	

Item	Required Code	Proposed	Meets Code	Comments
	than 3000 Kelvin			
Parking Lot Lighting *(Sec. 5.7.3.J)*	- Provide the minimum illumination necessary to ensure adequate vision and comfort. - Full cut-off fixtures shall be used to prevent glare and spillover.		**TBD**	**Deviation requested - Parking areas are not to be lit. This would cause a safety concern.**
Min. Illumination *(Sec. 5.7.3.L)*	Parking areas: 0.2 min	None		
	Loading & unloading areas: 0.4 min	None		
	Walkways: 0.2 min	None		
	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		NA	
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 fc shown	Yes	
Max. Illumination adjacent to Residential *(Sec. 5.7.3.M)*	- Fixture height not to exceed 25 feet - Cut off angle of 90 degrees or less - No direct light source shall be visible at the property line adjacent to residential at ground level - Maximum illumination at the prop line not to exceed 0.5 fc.	Complies	Yes	
Residential Developments *(Sec. 5.7.3.O)*	- Provide sufficient illumination (0.2 fc min) at each entrance from major thoroughfare - Residential projects may deviate from the min. illumination levels and uniformity requirements of 5.7.3.L so long as site lighting for parking lots, property lines and security lighting is provided		**TBD**	**Deviation requested by applicant. The parking areas and walkways throughout the site are unlit – this could create unsafe conditions, especially in winter months when it gets dark early.**

Item	Required Code	Proposed	Meets Code	Comments
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

PLAN REVIEW CENTER REPORT

November 10, 2025

Engineering Review

Providence Meadows
JZ25-0024

APPLICANT

Robertson Brothers

REVIEW TYPE

Revised Initial PRO

PROPERTY CHARACTERISTICS

- Site Location: West of Providence Parkway, South of Grand River Avenue
- Site Size: 31.32 acres
- Plan Date: 10/17/2025
- Design Engineer: SKE Group

PROJECT SUMMARY

- Proposed rezoning from I-1 to RM-2 under a PRO.
- Construction of approximately 161 residential townhomes spanning 28 buildings and associated parking. Site access would be provided via Providence Parkway (primary entrance) and Grand River Avenue (emergency access only).
- Water service would be provided by an 8-inch extension from the existing 8-inch water main stub at the proposed entrance off Providence Parkway and looped to the 12-inch water main on the north side of Grand River Avenue.
- Sanitary sewer service would be provided to phase 1 by an extension from the existing 10-inch sanitary sewer along the east side of Providence Parkway. Sanitary sewer service would be provided to phase 2 by an extension from the existing 15-inch sanitary sewer along the south side of Grand River Avenue.
- Storm water would be collected by a single storm sewer collection system and discharged to an on-site detention basin.

RECOMMENDATION

No objections regarding the applicant moving forward with the rezoning process.

Items that must be addressed at time of Formal PRO submittal:

1. Provide approximate REU's based on the **existing zoning versus the proposed zoning.** Update the sanitary sewer basis of design to reflect the proposed number of units. The unit factor for a 3-bedroom multifamily townhome should be1.0.
2. A detention basin calculation note on sheet C17 states that the site is all clay soil and no infiltration is feasible. However, the soil survey on the cover sheet shows that there is sandy loam throughout most of the site. If the soil survey is correct, consider on-site infiltration per Oakland County's standards. If soil borings indicate a different prominent soil type, provide borings for review.
3. Approval from RCOC for discharge of the detention basin to the RCOC right-of-way is required **prior to Formal PRO approval**. A ROW permit is not required until the site plan review process, but the applicant must have RCOC review and approve of the detention basin discharge point.
4. Approvals from DTE for encroaching on their 200-foot-wide easement and ITC for construction under their overhead wires are required **prior to Formal PRO approval**.

Items that must be addressed at time of site plan submittal:

COMMENTS

1. The City of Novi Survey Benchmarks Arch Map has recently been updated and benchmark 1714 no longer exists. Update this benchmark.
2. The site survey labels Providence Parkway as a public road, when it should be labeled as private.
3. Some of the traffic sign symbols on the plan do not match what is shown in the traffic control sign table. Revise as necessary.
4. Relocate any light poles within existing or proposed utility easements. Any permanent structures within public utility easements will require a license agreement.
5. Traffic signs in the Road Commission for Oakland County (RCOC) right-of-way will be installed by RCOC.
6. Provide a traffic control plan for the proposed road work activity.
7. Provide a construction materials table on the utility plan listing the quantity and material type for each utility (water, sanitary and storm) being proposed.
8. Provide a utility crossing table indicating that at least 18-inch vertical clearance will be provided, or that additional bedding measures will be utilized at points of conflict where adequate clearance cannot be maintained.
9. Provide a note stating if dewatering is anticipated or encountered during construction, then a dewatering plan must be submitted to the Engineering Division for review.
10. Generally, all proposed trees shall remain outside utility easements. Where proposed trees are required within a utility easement, the trees shall maintain a minimum 5-foot horizontal separation from water main and storm sewer and 10-foot horizontal separation from sanitary sewer.

11. The dedication of the master-planned right-of-way is requested for the frontage along Grand River Avenue. Label the additional right-of-way width (to meet 60-foot half-width right-of-way) to be dedicated as "proposed" right-of-way.
12. A Right-of-Way Permit will be required from the City of Novi and Oakland County.
13. **Only at the time of the printed Stamping Set submittal,** provide the City's standard detail sheets for water main (5 sheets), sanitary sewer (3 sheets), storm sewer (2 sheets), and paving (2 sheets). The most updated details can be found on the City's website under Engineering Standards and Construction Details.

WATER MAIN

14. Provide a profile for all proposed public water main 8-inch or larger.
15. Provide water main basis of design. Indicate material of main where connection is proposed.
16. Water Systems must have the ability to serve at least three thousand (3,000) gallons per minute in multi-family residential developments.
17. A tapping sleeve, valve and well is required at the connection to the existing water main.
18. In the general notes and on the profile, add the following note: "Per the Ten States Standards Article 8.8.3, one full 20-foot pipe length of water main shall be used whenever storm sewer or sanitary sewer is crossed, and the pipe shall be centered on the crossing, in order to ensure 10-foot separation between water main and sewers." Additionally, show the 20-foot pipe lengths on the profile.
19. A sealed set of utility plans along with the Michigan Department of Environment, Great Lakes & Energy (EGLE) permit application for water main construction, the Streamlined Water Main Permit Checklist, Contaminated Site Evaluation Checklist, Basis of Design, and an electronic version of the utility plan should be submitted to the Engineering Division for review, assuming no further design changes are anticipated. Utility plan sets shall include only the cover sheet, any applicable utility sheets, and the standard detail sheets.

IRRIGATION

20. If a common irrigation system is proposed, irrigation plans must be approved with site plan review process.

SANITARY SEWER

21. Specify what the 10-foot public utility easement is for on the easement plan (sheet C18).
22. Note on the construction materials table that 6-inch sanitary leads shall be a minimum SDR 23.5, and mains shall be SDR 26.
23. An electronic copy of the utility plans along with the Michigan Department of Environment, Great Lakes & Energy (EGLE) permit application, and the Streamlined Sanitary Sewer Permit Certification Checklist should be submitted to the Engineering Division for review, assuming no further design changes are anticipated. Utility plan sets shall include only the cover sheet, any applicable

utility sheets, and the standard detail sheets. It should be indicated with the application if an expedited EGLE review is requested. EGLE will charge a fee that can be paid directly to the State.

STORM SEWER

24. Provide a four-foot-deep sump and an oil/gas separator in the last storm structure prior to discharge to the storm water basin.
25. Provide profiles for all storm sewer 12-inch and larger. All storm pipes accepting surface drainage shall be 12-inch or larger.
26. Provide a storm sewer basis of design table.
27. Label the 10-year HGL on the storm sewer profiles and ensure the HGL remains at least 1-foot below the rim of each structure.
28. Illustrate all pipes intersecting storm structures on the storm profiles.
29. Provide a schedule listing the casting type, rim elevation, diameter, and invert sizes/elevations for each proposed, adjusted, or modified storm structure on the utility plan. Round castings shall be provided on all catch basins except curb inlet structures.
30. Show and label all roof conductors and show where they tie into the storm sewer.

STORM WATER MANAGEMENT PLAN

31. The Storm Water Management Plan (SWMP) for this development shall be designed in accordance with the Storm Water Ordinance and Chapter 5 of the **Engineering Design Manual (updated Jan 31, 2024).**
32. A detention basin calculation note on sheet C17 states that the site is all clay soil and no infiltration is feasible. However, the soil classifications map on the cover sheet shows that there is sandy loam throughout most of the site. If the soil survey is correct and infiltration test pits verify infiltration is possible, consider on-site infiltration per Oakland County's standards. If soil borings have already been completed, please provide this information.
33. Provide a soil boring in the vicinity of the storm water basin to determine soil conditions and to establish the high-water elevation of the groundwater table. Note the bottom of the detention facility must be a minimum of **three (3) feet** above the groundwater elevation. If soil borings have already been completed, please provide this information.
34. Provide calculations verifying the post-development runoff rate directed to the proposed receiving drainage course does not exceed the pre-development runoff rate for the site.
35. The SWMP must address the discharge of storm water off-site, and evidence of its adequacy must be provided. This should be done by comparing pre- and post-development discharge rates.
36. 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.

37. An adequate maintenance access route to the basin outlet structure and any other pretreatment structures shall be provided (15 feet wide, maximum running slope of 1V:5H, maximum cross slope of 3%, and able to withstand the passage of heavy equipment). Verify the access route does not conflict with proposed landscaping.
38. Provide a 5-foot-wide stone bridge/access route allowing direct access to the standpipe from the bank of the basin during high-water conditions (i.e. stone 6-inches above high water elevation). Provide a detail and/or note as necessary.
39. As part of the Storm Drainage Facility Maintenance Easement Agreement, provide an access easement for maintenance over the storm water detention system. Also, include an access easement to the detention area from the public road right-of-way.
40. A 4-foot-wide safety shelf is required one foot below the permanent water surface elevation within the basin.
41. A 25-foot vegetated buffer shall be provided around the perimeter of the storm water basin. This buffer cannot encroach onto adjacent lots or property.

PAVING & GRADING

42. Proposed bridge plans will need to be reviewed by city consultants at time of site plan submittal.
    a. Provide the manufacture's specifications and load calculations for the proposed bridge on Harborfield Drive prior to Final Site Plan approval.
43. A sidewalk is required on both sides of the private road. A Design and Construction Variance will be required if a sidewalk is only provided on one side.
44. The pathway along Grand River Avenue shall be 10 feet wide per the Active Mobility Plan.
45. Consider connecting the sidewalk along the front of the townhomes on Laurelwood Lane to the sidewalk along the northside of Gracewood Trail.
46. Consider finding ways to connect sidewalks where sidewalk ramps currently lead nowhere.
47. Provide a construction materials table on the Paving Plan listing the quantity and material type for each pavement cross-section being proposed.
48. Detectable warning plates are required at all barrier free ramps, hazardous vehicular crossings and other areas where the sidewalk is flush with the adjacent drive or parking pavement. The barrier-free ramps shall comply with current MDOT specifications for ADA Sidewalk Ramps. Provide the latest version of the MDOT standard detail for detectable surfaces.
49. Verify the slopes along the ingress/egress routing to the building from the barrier-free stalls. All barrier-free stalls shall comply with Michigan Barrier-Free regulations.
50. Provide at least 3-foot buffer distance between the sidewalk and any fixed objects, including hydrants, irrigation backflow devices, and light poles. Include a note on the plan where the 3-foot separation cannot be provided.
51. Per MDOT Special Provision for Crushed Concrete; the use of crushed concrete is prohibited on the project within 100 feet of any water course (stream, river,

county drain, etc.) and lake, regardless of the application of location of the water course or lake relative to the project limits. Add note to use 21AA crushed limestone base for any pavement within 100 feet of a water course.

52. Provide additional spot grades as necessary to demonstrate that a minimum 5-percent slope away from the building is provided for a minimum distance of ten feet around the perimeter of the building. The garage floor elevation for a few buildings appears to be lower than the pavement outside the building.
53. Move the street name labels on the grading sheets to make the spot grades more readable.
54. Provide an emergency access gate at the secondary access driveway's intersection with Grand River Avenue. The City's break-away gate detail (Figure VIII-K) can be found in Section 11-194 of the Code of Ordinances.
55. The minimum easement width for secondary access driveways shall be 25 feet.
56. Provide a note on the plan stating that the emergency access gate is to be installed and closed prior to the issuance of the first building permit in the subdivision.
57. Show proposed grades for all adjusted sanitary, water, and storm structures.
58. Site grading shall be limited to 1V:4H (25-percent), excluding landscaping berms.
59. The end islands shall conform to the City standard island design, or variations of the standard design, while still conforming to the standards as outlined in Section 5-18 Figure 5.3.12 of the Zoning ordinance (See Figure 5.3.12, i.e. 2' minor radius, 15' major radius, minimum 10' wide, 3' shorter than adjacent 19' stall).
60. Curbing and walks adjacent to the end of 17-foot stalls shall be reduced to 4-inches high (rather than the standard 6-inch height to be provided adjacent to 19-foot stalls). Additionally, 2-foot overhang should be provided adjacent to 17-foot parking stalls (show 2-foot overhang on paving sheets).
61. Provide the standard MDOT detail 'M' approach at the intersection of Harborfield Drive and Providence Parkway.
62. Provide top of wall and bottom of wall elevations for the proposed retaining walls.
    a. Retaining walls that are 48-inches or larger shall need a permit from Building Department.
    b. A retaining wall that has a grade change of 30" or more within a 3' horizontal distance from a walkway will require a guardrail.
63. Soil borings along Harborfield Drive will be required at 500-foot intervals per Section 11-195(d) of the Design and Construction Standards.
64. Per Section 26.5-35(h), a statement is required on any plan containing a private street with the following language: "City of Novi has no responsibility to improve or maintain the private streets contained within or private streets providing access to the property described in this [plan/plat]".

SOIL EROSION & SEDIMENT CONTROL

65. A SESC permit will be required at the time of site plan submittal.

OFF-SITE EASEMENTS

66. Any off-site utility easements anticipated must be executed **prior to Stamping Set Approval**. If you have not already done so, drafts of the easements and a recent title search shall be submitted to the Community Development Department as soon as possible for review and shall be approved by the Engineering Division and the City Attorney prior to executing the easements.
    a. Off-Site Title Policy
    b. Off-Site Sidewalk Easement (on property to the west)
    c. Off-Site Temporary Grading Easement (on property to the west)
67. Approval from the neighboring property owner for the work associated with the off-site sidewalk easement shall be forwarded to the Engineering Division **prior to Stamping Set approval**.

REQUIRED LEGAL DOCUMENTS

The following must be submitted with the Stamping Set during the site plan review process.

68. A draft copy of the Storm Drainage Facility Maintenance Easement Agreement (SDFMEA), as outlined in the Storm Water Management Ordinance, must be submitted to the Community Development Department. Once the agreement is approved by the City's Legal Counsel, this agreement will then be sent to City Council for approval/acceptance. The SDFMEA will then be recorded at the office of the Oakland County Register of Deeds. This document is available on our website.
69. A draft copy of the Emergency Access Easement for the proposed emergency access drive must be submitted to the Community Development Department.
70. A draft copy of the 20-foot-wide Watermain System Easement onsite must be submitted to the Community Development Department.
71. A draft copy of the 20-foot-wide Sanitary Sewer Easement onsite must be submitted to the Community Development Department.
72. A draft of the License Agreement will be required for any permanent structures within water or sanitary sewer easements.
73. A draft copy of the Warranty Deed for the additional proposed right-of-way along Grand River Avenue must be submitted for review and acceptance by the City.
74. Executed copies of approved off-site utility easements must be submitted.

To the extent this review letter addresses items and requirements that require the approval of or a permit from an agency or entity other than the City, this review shall not be considered an indication or statement that such approvals or permits will be issued.

Please contact Kate Purpura at (248) 735-5643 or email at kpurpura@cityofnovi.org with any questions.

Kate Purpura

Kate Purpura,
Project Engineer

cc: Lindsay Bell, Community Development
Humna Anjum, Engineering
Milad Alesmail, Engineering
Ben Croy, City Engineer

LANDSCAPE REVIEW

PLAN REVIEW CENTER REPORT
October 24, 2025
Providence Meadows
Revised Initial PRO Concept Plan - Landscape

Review Type | **Job #**
Initial PRO Concept Plan Landscape Review | JZ25-24

Property Characteristics
- Site Location: SE Corner of Grand River Ave and Beck Road
- Site Acreage: 31.32 ac.
- Site Zoning: I-1 – Proposed to be RM-2 with PRO
- Adjacent Zoning: North: I-1/Grand River, East: OSC, South: I-2 with PRO, West: I-1 (undeveloped wetland/woodland)
- Plan Date: 10/17/2025

Recommendation:
This project is **not recommended for approval** for the initial PRO plan.

LANDSCAPE DEVIATIONS REQUIRED FOR THE PROPOSED LAYOUT AND LANDSCAPING:
- Lack of greenbelt berms along Grand River and Providence Parkway – *supported by staff*
- Lack of street trees for Grand River and Providence Parkway – ***would be supported by staff for Grand River and possibly Providence Parkway if room for the required trees is not available.***
- Lack of greenbelt berm and landscaping in ITC easement along Grand River – *supported by staff*
- Significant deficiencies in multi-family landscaping – unit trees, interior drive trees and foundation landscaping – ***not supported by staff***
- Lack of street trees within the 220-foot frontage of Harborfield Drive within the ITC easement – *supported by staff*

Please revise the layout/design so the foundation landscaping is at the side of the building facing the drive. See the landscape chart for a more detailed comment regarding the layout.

Ordinance Considerations

Existing Trees (Sec 37 Woodland Protection, Preliminary Site Plan checklist #17 and LDM 2.3 (2))
1. Tree survey and chart are provided.
2. Woodland replacement calculations are provided but are incorrect. The woodland map does not show regulated woodlands on the site but that appears to be an error. An inspection by our environmental consultant determined the boundaries of the regulated woodland on the site and was referred to in their review but their suggestions were not followed. **Please revise the calculations based on their woodland boundary determination.**
3. Landscape credits for preserved trees outside of woodlands and wetlands may only be applied to required woodland replacements, not other landscape requirements.
4. Wetland impacts and proposed on-site mitigation are shown.
5. **See the Merjent letter for detailed reviews of the natural features on the property.**

Adjacent to Residential - Buffer (Zoning Sec. 5.5.3.B.ii and iii)

1. The property is adjacent to industrial property north of the site.
2. An 8-10 foot berm is provided, along with a double line of evergreen trees at the top of the berm and deciduous canopy trees at its base.
3. **Please add variation to the height of the berm, with the minimum height 10 feet.**

Adjacent to Public Rights-of-Way – Berm/Wall, Buffer and Street Trees (Zoning Sec. 5.5.3.B.ii, iii)

1. The required greenbelt width is provided for both frontages.
2. The required greenbelt plantings for the Grand River frontage outside of the ITC easement are provided.
3. The required berm is not provided along either frontage. **This requires a landscape deviation.** *As the developed portion of the site is far from the greenbelts the deviation would be supported by staff***.**
4. No berm or greenbelt landscaping is proposed along the Grand River frontage within the ITC easement**. This requires a landscape deviation.** *This would be supported by staff as the berm would serve no useful purpose and ITC does not allow the taller greenbelt plantings in the greenbelt.*
5. No street trees are proposed along Grand River due to utility conflicts in the right-of-way. **This requires a landscape deviation**. *It is supported by staff.*
6. The required greenbelt subcanopy trees are provided in the Providence Parkway access easement and it appears that existing trees to remain will meet the requirement for canopy trees. **This may require a landscape deviation**. *It would not be supported by staff.* **Please clearly identify the existing trees to remain and count toward the required tree count on the plan view and in the calculations and add trees to remove any remaining deficiencies.**
7. No street trees are provided in the Providence Parkway access easement. **A landscape deviation would be required**. *If it can be shown that there is insufficient room for the trees due to spatial constraints, utility conflicts or existing trees, it could be supported by staff.* **Please add trees where possible and/or explain the need for the deviation if the required trees can't be provided.**

Existing and proposed overhead and underground utilities, including hydrants. (LDM 2.e.(4))

1. All utilities and light posts are included on the landscape plan.
2. There are some areas within the site where the utility layout prevents the planting of some of the required interior drive trees. This is not acceptable. **Please revise the utility layout so all of the trees can be planted.**
3. Please add a note detailing the required spacing for trees from utility structures and utility lines to the plans – at least on L-1.

Parking Lot Landscaping

1. There are no parking lots on the site, only parking bays along one side of the street so the parking lot requirements can be met with interior drive trees.
2. **Please use Interior drive trees along the edges of the parking bays to help meet the interior drive requirements.**

Multi-family Residential Development Landscaping (*Zoning Sec. 5.5.3.F.iii*)

Multi-family Unit Trees (subsection (1))

1. There are 161 units so 483 trees are required.
2. A deduction of 65 trees appears to have been taken for landscape credits earned for preserved non-regulated trees – this is not allowed as woodland replacement credits can only be used against the woodland replacement requirement.
3. 62 trees are shown as being provided in the wetland mitigation areas. Please note that the multifamily unit trees can only be used to exceed the wetland mitigation landscaping requirements.

4. 356 trees are shown on the plan, including trees along the access drive and interior drives. **A landscape deviation is required for the deficiency.** *It would not be supported by staff.*
5. 66 shrubs are also shown on the plan but it is unclear if they are being used for credit. They may not be. Special consideration was given for the Sakura East project, but it is not a normal allowance.

Interior Drive Trees (subsection (2))

1. Only 45 of 85 trees required within the two sections are provided. **This requires a landscape deviation.** *It would not be supported by staff*.
2. No interior drive trees are shown along the east side of Harborfield Drive, outside of the ITC easement. Trees need to be provided along that section of road, but subcanopy trees should be used at a rate of 1.5 trees per canopy tree required since there are overhead wires there. **A landscape deviation would be required for the proposed deficiency.** *It would not be supported by staff.*
3. 2 interior drive canopy trees are also required along the north 70 lf of the west side of Harborfield Drive. Only multifamily unit trees are provided there. **Please change 2 of those multifamily unit trees to interior drive trees.**
4. **A landscape deviation is required to not provide street trees within the ITC easement (220lf of frontage).** *This deviation would be supported by staff as ITC wouldn't allow them*.
5. Please consider adding some sort of landscaping such as shrubs allowable by ITC along that frontage as an aesthetic improvement. An equivalent such as 6 shrubs per required multifamily unit tree would be allowed by staff to add this landscaping.
6. **There should be at least one street tree in front of buildings with 1-4 units and 2 in front of buildings longer than that to help provide shading of the site and create a more appealing streetscape.**

Building Foundation Landscaping (subsection (3))

1. 35% of the building frontage facing the interior drive must be landscaped.
2. None of the buildings have any landscaping proposed on the drive side of the buildings - it is all on the side of the buildings where no one but pedestrians walking around the buildings will see. This will not be attractive, especially when the buildings are 5 units or longer. **This configuration requires a landscape deviation**. *It will not be supported by staff.*
3. While it may not remove the need for a deviation, adding landscaping of some sort, preferably with some height, between units' garages, such as that shown on the image on the landscape chart, would improve the appearance of the site. **Please consider doing this**.

Plant List (LDM 4)

1. No plant list is provided or is required at this point in the process.
2. When plant identifications are assigned, please use species native to Michigan for at least 50% of the non-woodland replacement species used, and meet the required tree diversity requirements of the Landscape Design Manual (section 4).
3. When woodland replacement species are selected, they should be weighted heavily toward species that are removed.

Planting Notations and Details (LDM)

Provided

Storm Basin Landscape (Zoning Sec 5.5.3.E.iv and LDM 3)

The required landscaping is provided.

Irrigation (LDM 1.a.(1)(e) and 2.s)

1. The proposed landscaping must be provided with sufficient water to become established and survive over the long term.
2. Please provide an irrigation plan or note how this will be accomplished if an irrigation plan is not provided on 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.

Thank you for your consideration.

Rick Meader – Landscape Architect

LANDSCAPE REVIEW SUMMARY CHART – Revised Initial PRO Site Plan

Review Date: October 24, 2025
Project Name: PREAPP25-05: Providence Meadows
Plan Date: October 17, 2025
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 on the Preliminary Site Plan. Underlined items need to be addressed on the Final Site Plan.

LANDSCAPE DEVIATIONS REQUIRED FOR THE PROPOSED LAYOUT AND LANDSCAPING:

- Lack of greenbelt berms along Grand River and Providence Parkway – *supported by staff*
- Lack of street trees for Grand River and Providence Parkway – *would be supported by staff for Grand River and possibly Providence Parkway if room for the required trees is not available.*
- Lack of greenbelt berm and landscaping in ITC easement along Grand River – *supported by staff*
- Significant deficiencies in multi-family landscaping – *unit trees, interior drive trees and foundation landscaping – not supported by staff*
- Lack of street trees within the 220lf of Harborfield Drive frontage within the ITC easement – *supported by staff*

General Note: The layout is not desirable aesthetically. Most of the interior drives have no landscaping due to the structure of the buildings and lack of landscaping along the sides of the buildings which are most visible to residents and visitors. The requirement is for 35% of the buildings to have foundation landscaping on the sides of the buildings facing the drives. None of the buildings have any landscaping facing the drives. This creates a stark tunnel effect, especially where buildings are on both sides of the drive, similar to what was built in the residential sections of Sakura Novi. **Please work to correct this.**

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 • Addition to existing building greater than 25% increase in overall footage or 400 SF whichever is less. • 1"-20' minimum with proper North. Variations from this scale can be approved by LA	• Overall plan: 1"=80' • North/South plans: 1"=40' • Amenity plans: 1"=10' • Building foundation landscaping plan: 1"=10'	• Yes • Yes • Yes • Yes	
Owner/Developer Contact Information *(LDM 2.a.)*	Name, address and telephone number of the owner and developer or association	On title block	Yes	
Project Information *(LDM 2.d.)*	Name and Address	• On title block • Location map on L-1	Yes	

Item	Required	Proposed	Meets Code	Comments
Survey information *(LDM 2.c.)*	Legal description or boundary line survey	Alta and Topographic Survey Sheets C2-C6	Yes	
Landscape Architect contact information *(LDM 2.b.)*	Name, Address and telephone number of RLA/PLA/LLA who created the plan	William T. Krear – Land Design Studio	Yes	
Sealed by LA. *(LDM 2.g.)*	Requires original signature	Copy of seal and signature on the title block	Yes	
Miss Dig Note (800) 482-7171 *(LDM.3.a.(8))*	Show on all plan sheets	On landscape plans' title block	Yes	
EXISTING CONDITIONS				
Existing plant material Existing woodlands or wetlands *(LDM 2.e.(2), Sec 12, 37))*	• Show location type and size. • Label to be saved or removed. • Plan shall state if none exists.	• Tree Survey on Topographic Sheets C4-C6 • Tree charts are on Sheets L10-L14 • Woodland replacement calculations on Sheet L-1 • Regulated wetlands are shown on C2 • Wetland impacts are shown on C19	• Yes • Yes • Yes • Yes • Yes • Yes	**1. Although the City Woodland Map doesn't show any regulated woodlands on the site, the aerial view indicates that there are woodlands so there are likely many more regulated trees that require replacements and fewer trees that can be saved for credit than the calculations indicate.** **2. See Merjent letter for complete review of woodlands and wetlands.** 3. When woodland replacements are proposed, the species should be heavily weighted toward species that are removed. 4. Please add a note to the tree protection fence legend stating that the fence is to be installed at the critical root zone, not the edge of the tree symbol and draw the fencing on the plan showing that.

Item	Required	Proposed	Meets Code	Comments
Soil type *(LDM.2.r.)*	As determined by Soils survey of Oakland County	Soils are shown on Cover Sheet	Yes	
Zoning *(LDM 2.f.)*	Show site zoning and zoning of all adjacent parcels on the plans	**Proposed RM-2 with PRO** Zoning Map on Cover Sheet • Site: I-1 • North: I-2 • East: OSC • South: I-2 with PRO • West: I-1	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	Site dimensions are shown on Sheets C8-C10	Yes	All site elements are included on the landscape plans.
Existing and proposed utilities *(LDM 2.e.(4))*	• Overhead and underground utilities, including hydrants • Show all light posts on the landscape plan	• Utilities shown on Sheets C11-C13 • Utilities are shown on the landscape plans. • Overhead lines are indicated within ITC easement.	Yes	**1. If there will be any overhead lines within the development area, please show them clearly.** **2. If there will not be, please add a note on L-1 stating so.**
Proposed topography - 2' contour minimum *(LDM 2.e.(1))*	Provide proposed contours at 2' interval	• Proposed grades shown on Sheets C14-C16 • The same proposed contours are shown on the landscape plans	Yes	
Clear Zones *(LDM 2.e.(5))*	25 ft. corner clearance required. Refer to Zoning Sec 5.5.9	• A clear vision zone at Providence Parkway is shown on Sheet L-2 • A clear vision zone is also shown for Gracefield Lane at Harborfield Drive • No clear vision zones are shown for Havencrest Circle at Harborfield Drive.	No	1. **Please show the Providence Parkway right-of-way line.** 2. **Please reorient the clear vision zones to the right-of-way line per the Section 5.9 requirement that it be oriented at the right-of-way line, not back of curb.** 3. **All plantings taller than 30" should be outside of the clear vision zones**

Item	Required	Proposed	Meets Code	Comments
LANDSCAPING REQUIREMENTS				
Berms and ROW Planting				
• All berms shall have a maximum slope of 33%. Gradual slopes are encouraged. Show 1ft. contours • Berm should be located on lot line except in conflict with utilities. • Berms should be constructed with 6" of topsoil.				
Residential Adjacent to Non-residential (Sec 5.5.3.A) & (LDM 1.a)				
Berm requirements *(Zoning Sec 5.5.A)*	Multi-family Residential adjacent to Industrial property residential requires: • 10-15-foot-high landscaped berm with 6-foot-wide crest. • Opacity 80% winter, 90% summer.	An 8-10 foot berm is proposed between the development and the industrial properties to the north	No	**Please add variation to the height of the berm and keep the minimum height at 10 feet.**
Planting requirements *(LDM 1.a.)*	LDM Novi Street Tree List	A double row of large evergreen trees is proposed on top of the berm and deciduous trees are provided on the development side of the berm, toward the bottom.	Yes	
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)* ***(RM-2 with PRO)***				
Greenbelt width (2)(3) (5)	• Adj to parking: 20 ft • Not adj to parking: 34 ft	• Grand River: 540' • Providence Pkwy: 224'	• Yes • Yes	
Min. berm crest width	2 ft	• Grand River: 0' • Providence Pkwy: 0'	No	1. **A landscape waiver is required for the lack of berms.** 2. *As the buildings are well away from Providence Parkway and Grand River, the waiver would be supported by staff.* 3. **Another landscape deviation is requested for the lack of the required greenbelt berm or plantings within the ITC easement along Grand River.** *This deviation is supported by staff.*

Item	Required	Proposed	Meets Code	Comments
Min. berm height	3 ft	• Grand River: 0' • Providence Pkwy: 0'	No	**See above**
3' wall	(4)(7)	No wall is proposed		
Canopy deciduous or large evergreen trees (8, 9, 10)	1 tree per 35 lf **Grand River Ave:** (195-20)/35 = 5 trees **Providence Parkway:** (180-28)/35 = 4 trees	**Grand River Ave**: 5 trees **Providence Parkway:** 4 existing trees	Yes	**1.** Landscape credits may not be used toward greenbelt landscaping, but healthy existing trees within the greenbelt may count toward the requirement. It appears there are sufficient canopy trees at the Providence Parkway entrance to meet the requirement. **2. Please keep the tree numbers of the trees to count toward the requirement on Sheet L-2.**
Sub-canopy deciduous trees Notes (2)(10)	1 tree per 25 lf **Grand River Ave:** (195-20)/25 = 7 trees **Providence Parkway:** (180-28)/25 = 6 trees	**Grand River Ave**: 7 trees **Providence Parkway:** 6 trees	Yes	
Canopy deciduous trees in area between sidewalk and curb	1 tree per 35 lf **Grand River Ave:** (195-20)/35 = 5 trees **Providence Parkway:** (180-28)/35 = 4 trees	**Grand River Ave**: 0 trees **Providence Parkway:** 0 trees Existing trees may be used toward the requirement.	TBD	**1.** It appears there are utility conflicts in the Grand River ROW that would prevent the planting of the street trees**.** If the RCOC does not allow some or all of the required Grand River street trees, they do not need to be planted, but a copy of their decision must be provided to staff. **2.** It also appears that there is no room for street trees at the Providence Parkway entry, due to visibility conflicts or existing trees remaining in

Item	Required	Proposed	Meets Code	Comments
				areas where street trees could be planted. **A landscape deviation may be required for any deficiency in street trees in that area.** *If there is room for any of the required trees, it would not be supported by staff.*
Multi-Family Residential (Sec 5.5.3.F.iii)				
Multi-family Unit Trees *(Zoning Sec 5.5.3.E.ii.)*	• 3 deciduous canopy trees or large evergreen trees per dwelling unit on the first floor. • 161 units * 3 = 483 trees • Up to 25% of requirement can be subcanopy trees Multifamily unit trees can be used to meet parking lot requirements, but not interior drive requirements	• 356 trees on site • 62 trees in wetland mitigation areas per plan (not shown) • 66 shrubs presumably shown for credit • 195 tree credit from saved trees	No	**1.** Per the landscape design manual section 11.b(1)(f), the credits for preserved trees may only be used to offset woodland replacement credits, not multifamily unit trees. **2.** Multifamily unit trees may only be used in the wetland mitigation areas if they exceed the requirements for wetland mitigation. **3.** Multifamily unit trees may not be used to meet the detention pond tree requirement but woodland replacement trees may **4. A deficiency in the number of trees provided would require a landscape deviation.** *It would not be supported by staff.* **5.** Shrubs were only allowed for credit previous developments where room was not available for all of the trees required.

Item	Required	Proposed	Meets Code	Comments
				As there is room on the site, the shrubs shown cannot be used for unit tree credit. **6. Please add at least 65 more multifamily unit trees on the site.** **7.** Please show the 62 trees on the wetland plans.
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. • North section: 1620lf/35 = 46 trees • South section: 1380lf/35 = 39 trees • Harborfield Drive o East side, not in ITC easement: 780lf/35 = 22 trees o West side, not in ITC easement: 430lf/35 = 12 trees A landscape deviation would be supported to not plant the required street trees for the 220lf of Harborfield Drive within the ITC easement.	• North section: 15 trees • South section: 30 trees • Harborfield Drive: o East side: 0 trees o West side: 7 trees o ITC easement: 0 trees	• No • No • No	**1. Multifamily unit trees can't be used to meet the interior drive tree requirement.** **2. Trees must be within 15 feet of the curb to count as a street tree.** **3. All interior street trees must be deciduous canopy trees.** **4. A landscape deviation is required for the lack of street trees within the ITC easement.** *It would be supported by staff. While not required, adding some sort of landscaping acceptable to ITC along that frontage would be appreciated.* **5. There should be no less than 1 street tree in front of each building (preferably 2 in front of buildings with 5 units or more) – currently there are none.** **6. Subcanopy trees at a rate of 1.5 per required canopy tree should be planted along the east side of Harborside Drive outside of the ITC**

Item	Required	Proposed	Meets Code	Comments
				easement since there is an overhead wire there. **7. A landscape deviation would be required for the other shortages.** *It would not be supported by staff.*
Foundation Landscaping	35% of building façades facing the road must be landscaped (Note, for this calculation there is no deduction for doors or other entry points)	• No building has any foundation landscaping on the drive side of the buildings, as is required by the ordinance. • The foundation landscaping provided would only be seen by people walking on the paths in front of the buildings, which is not the intent of the ordinance.	No	**1. Please add the required foundation landscaping** **2. A landscape deviation is required for the proposed scheme**. *It would not be supported by staff.* **3. While the deviation would likely still be required, the elevations indicate that there is 4 feet between unit garage doors where some landscaping could be proposed, such as the image below. At a bare minimum, such landscaping needs to be provided.**
Parking Area Landscape Requirements (Zoning Sec 5.5.3.C & LDM 5)				
General requirements *(LDM 1.c)*	• Clear sight distance within parking islands • No evergreen trees	There are no parking lots on the plan, only one-sided bays along the drives with endcap islands – no blocking vegetation is indicated	TBD	Please do not plant anything taller than 24" in parking lot islands, except canopy trees.
Name, type and number of ground cover (LDM 1.c.(5))	As proposed on planting islands	No	TBD	Please indicate groundcovers for entire site with labels or hatching.
General *(Zoning Sec 5.5.3.C)*				
Parking lot Islands *(a, b. i)*	• A minimum of 200 SF to qualify • 200sf landscape space per tree	• There are no parking lots, only single-sided bays • No dimensions or	TBD	**Please widen any islands not 10 feet wide as measured at the backs of curb to 10 feet**

Item	Required	Proposed	Meets Code	Comments
	planted on the island. • 6" curbs • Islands minimum width 10' BOC to BOC	area labels are provided to show whether the islands are sufficiently sized but it appears that the islands with trees are.		**so trees can be planted in them.**
Curbs and Parking stall reduction *(c)*	Parking stall can be reduced to 17' with 4" curb adjacent to a sidewalk of minimum 7 ft.	It appears all spaces are 17' long	Yes	
Contiguous space limit *(i)*	Maximum of 15 contiguous spaces	No bay is more than 12 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% = A sf	• Only single-sided parking areas are proposed • Interior drive trees may be used along the edges of the bays instead of parking lot perimeter trees	Yes	
B = Total square footage of additional paved vehicular use areas over 50,000 SF x 1 %	B = x SF x 1% = B sf	NA		**See above**
All Categories				
C = A+B Total square footage of landscaped islands	A + B = C SF	NA		**See above**
D = C/200 Number of canopy trees required	C/200 = D Trees	NA		**See above**
Parking Lot Perimeter Trees	• 1 Canopy tree per 35 lf • Sub-canopy trees can be used under overhead utility lines. • Perimeter within 20 feet of a building does not need to be included in the basis	• Only single-sided parking areas are proposed • Interior drive trees may be used along the edges of the bays instead of parking lot perimeter trees	Yes	
Parking land banked	NA	None		
Miscellaneous Landscaping Requirements				
Plantings around Fire	• No plantings with	• There don't	• Yes	**Please adjust the utility**

Item	Required	Proposed	Meets Code	Comments
Hydrant *(d)*	matured height greater than 12' within 10 ft. of fire hydrants, manholes, catch basins other utility structures or sanitary lines. • Trees should not be planted within 5 feet of other underground lines.	appear to be any trees planted too close to utility structures, including fire hydrants. • There are stretches of interior drives where utility lines prevent the planting of the required trees.	• No	**layout and/or lights to remove conflicts and provide room for the required trees.**
Landscaped area *(g)*	Areas not dedicated to parking use or driveways exceeding 100 sq. ft. shall be landscaped	None indicated	TBD	Please landscape per requirement
Name, type and number of ground cover (LDM 1.c.(5))	As proposed on planting islands	None indicated except at detention ponds	TBD	Please indicate groundcovers no later than the final site plans.
Snow deposit *(LDM.2.q.)*	Show leave snow deposit areas on plan in locations where landscaping won't be damaged	Many are indicated		
Transformers/Utility boxes *(LDM 1.e from 1 through 5)*	• A minimum of 2 ft. separation between box and the plants • Ground cover below 4" is allowed up to pad. • No plant materials within 8 ft. from the doors	• No utility boxes or utility box landscaping is shown • The utility box screening detail is included on L-15.	TBD	**1.** Please show transformers and other utility boxes when their locations are determined. **2.** If box locations are not determined by final site plans, add a note to plan stating that all utility boxes are to be landscaped per the detail. **3.** Please add an allowance of 10 shrubs per box on the plant list and label as such
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 at 10 ft away from the permanent water line. • Canopy trees must be located at 1 per 35lf of	• 28 canopy trees • Shrubs with adequate coverage • 2 native seed mixes	Yes	

Item	Required	Proposed	Meets Code	Comments
	the pond rim 10 feet away from the permanent water level • 10" to 14" tall grass along sides of basin • Refer to wetland for basin mix • Include seed mix details on landscape plan			
Landscape Notes and Details– Utilize City of Novi Standard Notes				
Plant List (LDM 4) – Include all cost estimates				
Quantities and sizes		No plant list is given	TBD	**Provide a plant list on the landscape plans no later than Final Site Plans, but preferably sooner.**
Root type		No plant list is given	TBD	**See above**
Botanical and common names	• At least 50% of plant species used, not including seed mixes or woodland replacement trees, must be species native to Michigan. • As more than 200 trees will be planted, no more than 10% shall be of one species and no more than 15% shall be of one genus • The tree diversity requirement does not apply to woodland replacement trees	No plant list is provided	TBD	**See above**
Type and amount of lawn		No	No	Need for final site plan
Cost estimate (LDM 2.t)	For all new plantings, mulch and sod as listed on the plan	No	No	Need for final site plan
Planting Details/Info (LDM 2.i) – Utilize City of Novi Standard Details				
Canopy Deciduous Tree	Refer to LDM for detail drawings	Yes	Yes	
Evergreen Tree		Yes	Yes	
Shrub		Yes	Yes	
Multi-stem tree		Yes	Yes	
Perennial/ Ground Cover		Yes	Yes	

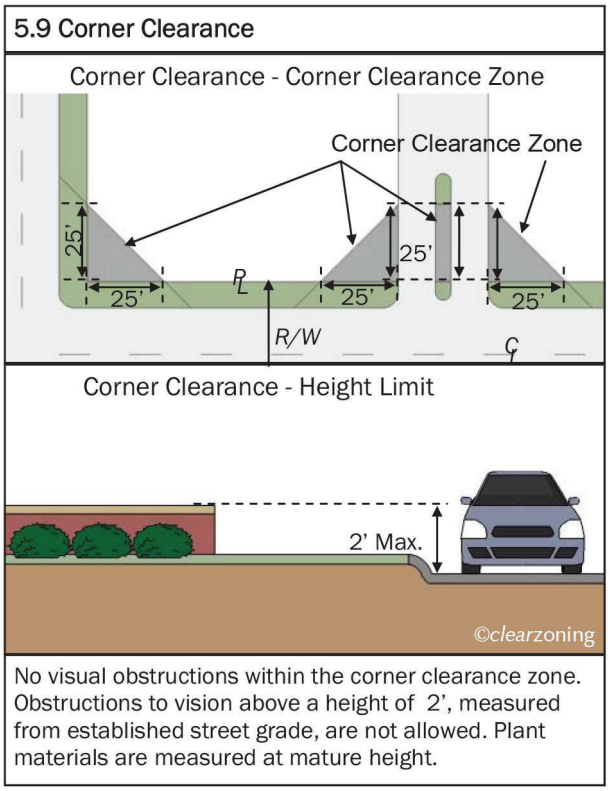
Item	Required	Proposed	Meets Code	Comments
Tree stakes and guys	Wood stakes, fabric guys.	Yes	Yes	
Cross-Section of Berms (LDM 2.j)				
Slope, height and width	• Label contour lines • Maximum 33% slope • Constructed of loam • 6" top layer of topsoil	• A large berm is proposed on the north edge of the property. • No cross section is provided.	TBD	Provide a detail on the landscape plans no later than the final site plans.
Type of Ground Cover		No	NA	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	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	• No retaining walls are proposed • Entry walls are proposed at the Providence Parkway entrance.	TBD	Provide dimensioned wall details for the signs in the final site plans.
Walls greater than 3 ½ ft. should be designed and sealed by an Engineer		No	No	If the walls are taller than 3 ½ feet, please have an engineer design, sign and seal.
Notes (LDM 2.i) – Utilize City of Novi Standard Details				
Installation date *(LDM 2.l. & Zoning Sec 5.5.5.B)*	• Provide intended date • Between Mar 15 – Nov 15	Yes	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. • Include a minimum one cultivation in June, July and August for the 2-year warranty period.	Yes	Yes	
Plant source *(LDM 2.n & LDM 3.a.(2))*	Shall be northern nursery grown, No.1 grade.	Yes	Yes	

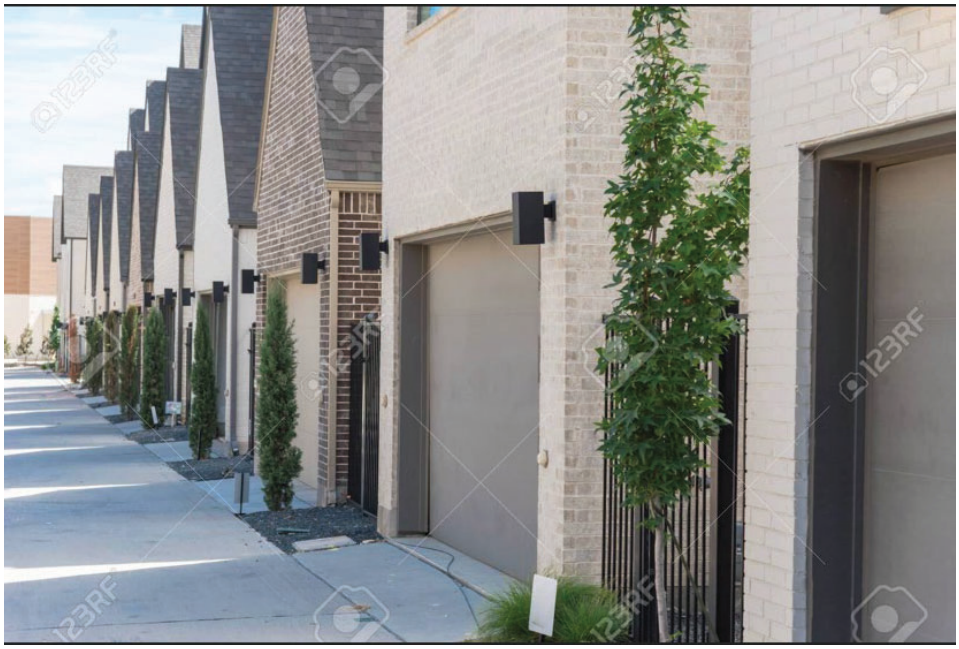
Item	Required	Proposed	Meets Code	Comments
Establishment period *(Zoning Sec 5.5.6.B)*	**2 yr. Guarantee**	Yes	Yes	
Approval of substitutions. *(Zoning Sec 5.5.5.E)*	City must approve any substitutions in writing prior to installation.	Yes	Yes	
Miscellaneous Landscape Requirements (LDM 3)				
General Conditions *(LDM 3.a)*	Plant materials shall not be planted within 4 ft. of property line	A note has been added to the plans near the property lines	Yes	
Irrigation plan *(LDM 2.s.)*	A fully automatic irrigation system and a method of draining is required with Final Site Plan	No		**1.** Please add an irrigation plan or information as to how plants will be watered sufficiently for establishment and long-term survival to the final site plans. **2.** The plan should meet the requirements listed at the end of this chart. **3.** If xeriscaping is used, please provide information about plantings included.
Other information *(LDM 2.u)*	Required by Planning Commission	NA		
Landscape tree credit *(LDM11.b.(d))*	• Substitutions to landscape standards for preserved canopy trees outside woodlands/ wetlands should be approved by LA. • Refer to Landscape tree Credit Chart in LDM	• 195 credits are shown as being earned • 6 credits are shown being used to offset woodland replacements required. • It appears that xx credits were also used for multifamily unit trees.	• TBD • TBD • No	1. Landscape tree credits may only be applied against required woodland replacement trees, not other landscape requirements. 2. As noted above, the woodland map incorrectly shows no regulated woodlands on this property, and a lot of the trees being removed are from areas that may be considered regulated woodland. **3. Please see the review by Merjent for the previous submittal and revise**

Item	Required	Proposed	Meets Code	Comments
				the chart, woodland calculations and determine what is actually regulated woodland. **4. Please revise the plans per the woodland determination and the limitation on the uses of the credits.**
Plant Sizes for ROW, Woodland replacement and others *(LDM 11.b)*	• Canopy Deciduous shall be 3" and sub-canopy deciduous shall be 2.5" caliper. • Refer to LDM section 11.b for more details	No plant list is provided	No	**Include correct sizes on plant list.**
Plant size credit *(LDM11.b)*	NA	None taken		
Prohibited Plants *(LDM 11.b)*	Do not use any plants on the Prohibited Species List	None indicated		
Recommended trees for planting under overhead utilities *(LDM 3.e)*	Label the distance from the overhead utilities	• Overhead lines are shown within the ITC easement and along the west edge of it. • No trees are proposed within the easement or along the east side of Harborfield Drive.	TBD	No trees are shown along the east side of Harborfield Drive but **subcanopy trees should be used along there.**
Collected or Transplanted trees *(LDM 3.f)*		None indicated		
Nonliving Durable Material: Mulch *(LDM 4)*	• Trees shall be mulched to 3" depth and shrubs, groundcovers to 2" depth • Specify natural color, finely shredded hardwood bark mulch. • Include in cost estimate. • Refer to section for additional information	Mulch is shown on the planting details	Yes	

NOTES:
1. This table is a working summary chart and is 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

Item	Required	Proposed	Meets Code	Comments
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

- Any booster pump installed to connect the project's irrigation system to an existing irrigation system must be downstream of the RPZ.
- The RPZ must be installed in accordance with the 2015 Michigan Plumbing Code.
- The RPZ must be installed in accordance with the manufacture installation instructions for winterization that includes drain ports and blowout ports.
- The RPZ must be installed a minimum of 12-inches above FINISHED grade.
- Attached is a handout that addresses winterization installation requirements to assist with this.
- A plumbing permit is required.
- The assembly must be tested after installation with results recorded on the City of Novi test report form.

WOODLAND & WETLAND REVIEW

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November 10, 2025

Lindsay Bell
Planner – Community Development
City of Novi
45175 Ten Mile Road
Novi, MI 48375

Submitted electronically to lbell@cityofnovi.org

Re: Providence Meadows Townhomes Revised Initial Planned Rezoning Overlay Woodland and Wetland Review (JZ25-24)

Dear Lindsay,

Merjent, Inc. (Merjent) has conducted a review of the Revised Initial Planned Rezoning Overlay (PRO) for the Providence Meadows Townhomes (Project), prepared by Seiber Keast Lehner (Applicant; date 10/17/2025). A landscape portion of the submittal was prepared by LAND Design Studio and is dated 10/17/2025. Merjent reviewed the plan for conformance with the City of Novi's (City) Woodland Protection Ordinance, Chapter 37, and Wetlands and Watercourse Protection Ordinance, Chapter 12 Article V. The Project is located southwest of the intersection of Providence Parkway and Grand River Avenue (parcels 50-22-17-101-010 and 50-22-17-101-012) in Section 17 of the City of Novi (site). The site contains City-regulated woodlands (**Figure 1**) and City-regulated wetlands (**Figure 2**).

Woodlands

Woodland Recommendation: Merjent **does not recommend approval** of the Providence Meadows revised Initial PRO. Woodland Review comments have been provided below to meet the requirements of the Woodland Protection Ordinance. The following Woodland Regulations apply to this site:

Woodland Regulation	Required
Woodland Permit (Chapter 37, Section 37-26)	Required
Tree Replacement (Chapter 37, Section 37-8)	Required
Tree Protection (Fence; Chapter 37, Section 37-9)	Required
Woodland Conservation Easement (Chapter 37-30[e])	Required

Please note – the comments below have been preserved from the August 2025 Initial PRO Review and have not been altered. The applicant should address these comments in a future submittal.

Woodland Review Comments

1. City-regulated woodlands, as identified on the City of Novi Woodlands interactive map website, are not depicted as being present onsite. However, it should be noted that both the woodlands and property limits depicted on the City map are considered approximations. Additionally, the City of Novi Woodland interactive map disclaims that "Map information depicted is not intended to replace or substitute for any

official or primary source. Specific determination of the limits of a regulated woodland are made on a site-specific basis by the City's woodland consultant or Community Development staff."

a. Merjent conducted a site visit on August 12, 2025 to review the site conditions relative to the Initial PRO submittal. Site photographs are included in **Attachment A**. The on-site conditions do no reflect the conditions listed in the City's Woodland map and the project parcels may have been missed during the initial City woodland inventory mapping. Multiple tree tags were found affixed to individual trees on-site, indicating that multiple tree surveys have occurred at the site. Additionally, pursuant to Section 37-2 and Section 37-4 of Chapter 37, Woodlands Protection, woodland areas can be identified by additional features such as soil quality, habitat quality, tree species and diversity, health and vigor of tree stand, understory species and quality, presence of wildlife, and other factors such as the value of the woodland area as a scenic asset, wind block, noise buffer, healthy environment, and the value of historic or specimen trees. Based on the site visit conducted on August 12, 2025, Merjent has determined that the majority of the trees on-site should be considered regulated woodland due to the stand density and connectivity to other regulated woodland areas – specifically, connection to regulated woodland areas west of the project parcel. Merjent has discussed this issue with the City of Novi's Landscape Architect and Geospatial Application Services Manager, and it is likely that the parcel(s) may have been missed when creating the original regulated woodland layer.
b. An updated outline of regulated woodland areas is provided in **Figure 1** and the shapefile (.shp) has been provided to the City of Novi and can be provided to the applicant upon request. The regulated woodland area on-site is relatively consistent with the "Tree Line" and "Heavily Wooded Area" provided on Sheet C2 in the Site Plan.

Pursuant to Chapter 37, Section 37-28, an accurate woodland survey should be provided and be accompanied by a separate key identifying the location of all trees eight inches at diameter at breast height (DBH) and greater, by size, common, genus and species names (i.e. Red Maple/*Acer rubrum*), and condition. Such information shall be provided by a registered landscape architect, certified arborist, or registered forester, through an onsite inspection, who must verify the contents by seal and/or registration number with signature, whichever applies. The dripline of affected trees shall be clearly indicated on the plan (see Comment 7).

2. When a proposed site plan is located within a regulated woodland, any tree proposed for removal with a diameter at breast height (DBH) greater than or equal to eight inches will require tree replacement and a Woodland Use Permit per Section 37-8. This also applies to any tree that will be preserved, but where impacts to critical root zones are proposed.

3. Regardless of the presence of regulated woodlands onsite, a Woodland Use Permit is required to perform construction on any site containing the removal of trees larger than 36 inches DBH.

4. The plan has not summarized any impacts to regulated woodlands on-site. However, to implement the proposed project, it will require the loss of forested areas, which could impact overall forest stand quality in nearby areas. A **Woodland Use Permit** is required to perform construction on any site containing regulated woodlands. **Merjent is unable to determine the number of regulated trees that are proposed for removal based on the site plan provided.**

5. **Woodland Replacement**. Based on a review of the plan, Merjent is unable to determine the number of Woodland Replacements required. The number of trees to be cut that have a DBH of eight inches or more should be summarized by replacement category (Section 37-8) on the plan, in a style similar or equivalent to the table provided below.

Tree Size (DBH, inches)	Number of Trees	Ratio Replacement/Removed Tree	Total Replacements Required
8-11	#	1	#
12-20	#	2	#
21-29	#	3	#
30+	#	4	#
Multi-stem	#	Sum of Stem DBH/8 (rounded up)	#
Total	**Sum**	**-**	**Sum**

   a. The current provided site plan listed only shows six required replacements. The number of replacements required should be revisited based on the presence of regulated woodlands on-site.

6. A replacement plan and cost estimate for the tree replacement will be necessary prior to final site plan approval by the City. Woodland replacement credits can be provided by:
   a. Planting the woodland tree replacement credits on-site.
      i. For tree replacement credits that will be planted on-site, a financial guarantee of $400/tree replacement credit is required to ensure the planting of the on-site woodland replacement credits. The financial guarantee would be released after trees have been planted and approved by the City of Novi. The financial guarantee will be released after trees have been planted and approved by the City of Novi, and applicants must request a tree planting inspection.
      ii. Woodland replacements shall be guaranteed for two growing seasons after the applicant's installation and the City's acceptance. A two-year maintenance bond in the amount of 25% of the value of the trees, but in no case less than $1,000, shall be required to ensure the continued health of the trees following acceptance.
   b. Payment to the City of Novi Tree Fund at a non-refundable rate of $400/woodland replacement credit.
   c. Combination of on-site tree planting and payment (non-refundable) into the City of Novi Tree Fund ($400/woodland replacement credit).

   The applicant has not proposed planting trees on-site for the impacts nor has proposed payment into the City of Novi Tree Fund. The applicant should clarify impacts to woodland areas (Comments 1, 5, and 6)

7. **Critical root zone**. Accurate critical root zones must be depicted on the site plan for all regulated trees within 50 feet of the proposed grading or construction activities. Section 37-2 defines a critical root zone as a circular area around a tree with a radius measured to the tree's longest dripline radius plus one foot.

a. The applicant has not accurately depicted critical root zones on the site plan. This will be necessary for Final Site Plan Approval and can be addressed in the site plan review process should this project receive a future PRO approval.

8. 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.
    a. Pursuant to Chapter 37, Section 37-9, the location and extent of tree protection fence should be added to the site plan prior to final site plan approval.
        i. Tree fence locations should protect critical root zones, and if not, these trees will be considered as fully impacted.
    b. Appropriate Tree Protection Details are required to be added to the site plan prior to final site plan approval.

9. **Woodland Replacement Inspection** (if tree replacements are planted on-site) – The Applicant is responsible for walking the entire site to confirm that all woodland replacement trees/shrubs have been planted on-site according to the approved site plan stamping set. If any material is missing, dead or dying, replacements should be made prior to requesting the inspection. The applicant should also provide an as-built landscape plan if the trees planted do not match the species and/or location shown on the approved site plan stamping set. 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.

10. **Woodland Guarantee Inspection** (if tree replacements are planted on-site) **–** Prior to requesting the 2-year woodland guarantee inspection, the Applicant is responsible for walking the entire site to confirm that all plant 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 2-year guarantee 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.

    If the woodland replacements, street trees, or landscaping guarantee period is scheduled to end during the period when inspections are not conducted (November 15th – April 15th) the Applicant is responsible for contacting the Bond Coordinator and Woodland/Landscape Inspector in the late summer/early fall prior to the 2-year expiration to schedule an inspection.

11. If tree replacements are planted on-site, 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.

Wetlands

Wetland Recommendation: Merjent **recommends approval** of the Providence Meadows Townhomes Initial PRO based on the comments provided below.

Merjent visited the Site on August 12, 2025 to observe the conditions on-site relative to the provided Initial PRO Plan. Merjent found conditions on-site consistent with the plan. Photos from the site visit are included in **Attachment A**. 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 Merjent's opinion that all wetlands on-site provide the functional characteristics of stormwater storage capacity and/or wildlife habitat. Accordingly, the wetlands on-site meet the criteria for essential wetlands as noted above.

Upon review of published resources, the Site appears to contain or immediately borders:

- ☒ City-regulated wetlands, as identified on the City of Novi interactive map website. Note that both wetland and property limits depicted on the City's map are considered approximations (**Figure 2**).
- ☒ Wetlands that are regulated by the Michigan Department of Environment, Great Lakes, and Energy (EGLE).
- ☒ 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 (provided in pre-app review). NWI and MIRIS wetlands are identified by the associated governmental bodies' interpretation of topographic data and aerial photographs.
- ☒ Hydric (wetland) soil as mapped by the U.S. Department of Agriculture, Natural Resources Conservation Service, as identified on the EGLE Wetlands Viewer interactive map website (provided in pre-app review).

Permits and Regulatory Status

Due to the comments below, the following wetland-related items will be required for this project:

Item	Required/Not Required
Wetland Permit (specify Non-minor or Minor)	Required, non-minor
Wetland Mitigation	Required
Environmental Enhancement Plan	Required, mitigation plan
Wetland Buffer Authorization	Required
EGLE Wetland Permit	Required*
Wetland Conservation Easement	Required

*EGLE is the final authority over wetlands and water resources in the State of Michigan.

Wetland Review Comments

1. Impacts have been proposed to five wetlands on-site, totaling approximately 0.528 acre loss of wetland. The impacts are summarized below.

Table 1. Wetland Summary and Impact Table

Wetland ID	Classification*	Acres On-site	Wetland Impact Area (acre)	Wetland Impact Volume (cu. yd.)	Permanent Buffer Impact Area (acre)	Temporary Buffer Impact Area (acre)	Temporary Buffer Impact Volume (cu. yd.)	Permanent Buffer Impact Volume (cu. yd.)
A1	Emergent/scrub-shrub/forested	2.45	0.00	0.00	0.00	0.22	363	0.00
C2	Emergent/scrub-shrub/forested	0.03	0.00	0.00	0.00	0.00	0.00	0.00
C3/D3	Emergent/scrub-shrub/forested	1.64	0.008	27	0.00	0.52	507 (cut)	0.00
D4	Emergent/scrub-shrub/forested	0.38	0.00	0.00	0.00	0.40	605 (cut)	0.00
B5/C5	Emergent/scrub-shrub/forested	0.01	0.00	0.00	0.00	0.00	0.00	0.00
B6	Emergent/scrub-shrub/forested	0.13	0.00	0.00	0.00	0.00	0.00	0.00
B7	Emergent/scrub-shrub/forested	0.02	0.00	0.00	0.00	0.00	0.00	0.00
B8	Emergent/scrub-shrub/forested	0.12	0.00	0.00	0.00	0.00	0.00	0.00
A9/B9	Emergent/scrub-shrub	1.83	0.35	1,762	0.47	0.00	0.00	1,824
A11	Emergent/scrub-shrub/forested	0.10	0.10	484	0.26	0.00	0.00	839
A10	Emergent/scrub-shrub/forested	0.04	0.04	547 (cut)	0.06	0.00	0.00	1,410 (cut)
A13	Emergent/scrub-shrub/forested	0.04	0.03	34	0.12	0.00	0.00	193
Total	-	**6.79**	**0.528**	**1,867 (fill) 547 (cut)**	**0.91**	**1.14**	**363 (fill) 1,112 (cut)**	**2,856 (fill) 1,410 (cut)**

*Classification per Sheet C19

Requested Edit/Clarification: On Sheet C19, the symbology for wetland buffer impact and wetland mitigation in the wetland disturbance legend is reversed and should be fixed to reflect the symbology in the plan. Additionally, it is assumed that all wetland impacts are permanent. However, if any wetland impacts are temporary, please note as such in the site plan (i.e., on sheet C19 in the column headers of wetland impacts).

2. In addition to wetlands, the City of Novi regulates wetland and watercourse buffers/setbacks. Section 3.6 (2[M]) of the Zoning Ordinance, Schedule of Regulations, 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 buffer/setback limit is 25 horizontal feet, regardless of grade change.
    a. Appropriate setbacks have been incorporated into the site plans. Additionally, buffer impact types should be provided for all impacts (see **Table 1**).

b. If possible, wetland buffer impacts should be reduced to the maximum extent practicable to avoid additional natural resource impacts and to allow for maintenance of a buffer area that will not be allowed to be mowed or altered by future potential residents.

3. The City of Novi requires the boundary lines of any watercourses or wetlands on the Site to be clearly flagged or staked and such flagging/staking shall remain in place throughout the conduct of permit activity. During Merjent's site visit on August 12, 2025 it was noted that no flagging from the delineation was present. The site will need to be re-flagged during the site plan review process, and prior to granting a Wetland Use Permit, the wetlands should be verified as being accurately staked or flagged.

4. The cost to perform any wetland protection and restoration shall be listed on the site plan, per Chapter 26.5, Section 26.5-7 (b) of the City of Novi Code of Ordinances. A **Wetland Financial Performance Guarantee** in the amount of 120% of the cost to perform any wetland protection, restoration, and development will be collected prior to the granting of a Wetland Use Permit.

5. When a project permanently impacts 0.25 acre or more of essential wetland, the City of Novi requires mitigation at a ratio of 2:1 for forested wetlands and 1.5:1 for emergent and scrub-shrub wetlands. Current wetland classifications in **Table 1** above reflect the classifications noted on Sheet C19. Because of the extent of mixed forested wetlands on-site, a conservative ratio of 2:1 has been used for most wetlands. The total proposed impact to City-regulated wetlands is approximately 0.528 acre. It should be noted that the emergent/scrub-shrub wetland A9/B9 can be granted a ratio of 1.5:1. The applicant has provided 1.24 acres of mitigation, which exceeds the amount of mitigation required.

6. According to the City Ordinance Section 12-176 (Mitigation), "Mitigation shall be provided onsite where practical and beneficial to the wetland resources. If onsite mitigation is not practical and beneficial, mitigation in the immediate vicinity, within the same watershed, may be considered. Mitigation at other locations within the city will only be considered when the above options are impractical."
    a. The applicant is required to provide 0.881 acre of mitigation on-site and has proposed 1.24 acres.
    b. City-regulated mitigations will follow the City of Novi Mitigation Performance Standards (**Attachment B**), which are similar to EGLE's typical Mitigation Performance Standards.
    c. During the preliminary site plan review process, the applicant will need to provide a conceptual mitigation plan. The conceptual mitigation plan should contain the following information:
        - The location of the proposed wetland mitigation site in relation to the proposed The Grove site. A location map for the mitigation site should be provided with the nearest crossroads and/or identifiable landmarks.
        - The total acreage and ecological type of the wetland that will be created and/or expanded.
        - A brief description of existing conditions at the proposed mitigation site. Existing conditions include but are not limited to, general topography, soils, vegetation, and any existing hydrology.
        - A brief description of the method with which the mitigated wetland will be created and/or expanded. A detailed engineering design is not required, but the source of water for the mitigated wetland should be identified.
    d. For final site plan approval, the applicant will need to provide all required criteria stated in Section 12-176 in the final site plan or appended to the final site plan review submission.

7. The Applicant is encouraged to provide wetland conservation easements for any areas of remaining wetland and 25-foot wetland buffer. The Applicant shall provide wetland conservation easements as directed by the City of Novi Community Development Department for any areas of proposed wetland mitigation areas (if necessary). Additionally, EGLE may request conservation easements around remaining wetlands on-site if a permit is required from EGLE. This requirement would be unrelated to the requirements of the City of Novi Wetland Use Permit. 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 Wetland Use Permit.
    a. An existing conservation easement is present northeast of the site associated with an off-site mitigation for the Innova Apartment Complex and south of the site associated with the Villas of Stonebrook. A map of conservation easements is provided as **Attachment C**.

8. The applicant has provided a copy of the EGLE-approved permit for the proposed project, which expires in 2028.

Should you have any questions or concerns with this review, please contact me via email at jason.demoss@merjent.com or via phone at (619) 944-3835.

Sincerely,

Merjent, Inc.

Jason DeMoss, PWS
Environmental Consultant

Enclosures:

Figure 1 – City of Novi Woodlands Map
Figure 2 – City of Novi Wetlands Map
Attachment A – Site Photos
Attachment B – City of Novi Wetland Mitigation Performance Standards
Attachment C – Conservation Easement Map

CC:
Barb McBeth, City of Novi, bmcbeth@cityofnovi.org
Rick Meader, City of Novi, rmeader@cityofnovi.org
Stacey Choi, City of Novi, schoi@cityofnovi.org
Matt Pudlo, Merjent, matt.pudlo@merjent.com

Figure 1. City of Novi Regulated Woodlands Map


City of Novi Woodlands
Providence Park West
Legend
On-site confirmed woodland
The Grand Diner
The Goddard School of Novi (Grand River)
Firehouse Subs Grand Promenade
Outback Steakhouse
Grand River Ave
Sunbelt Rentals
Sam's Club
Providence Pkwy
Grand River
PrimeCare on Wixom
Target
Windfall Rd
Villas at Stonebrook by Pulte Homes
Villas at Stonebrook
Rockview Rd
Google Earth
N
1000 ft

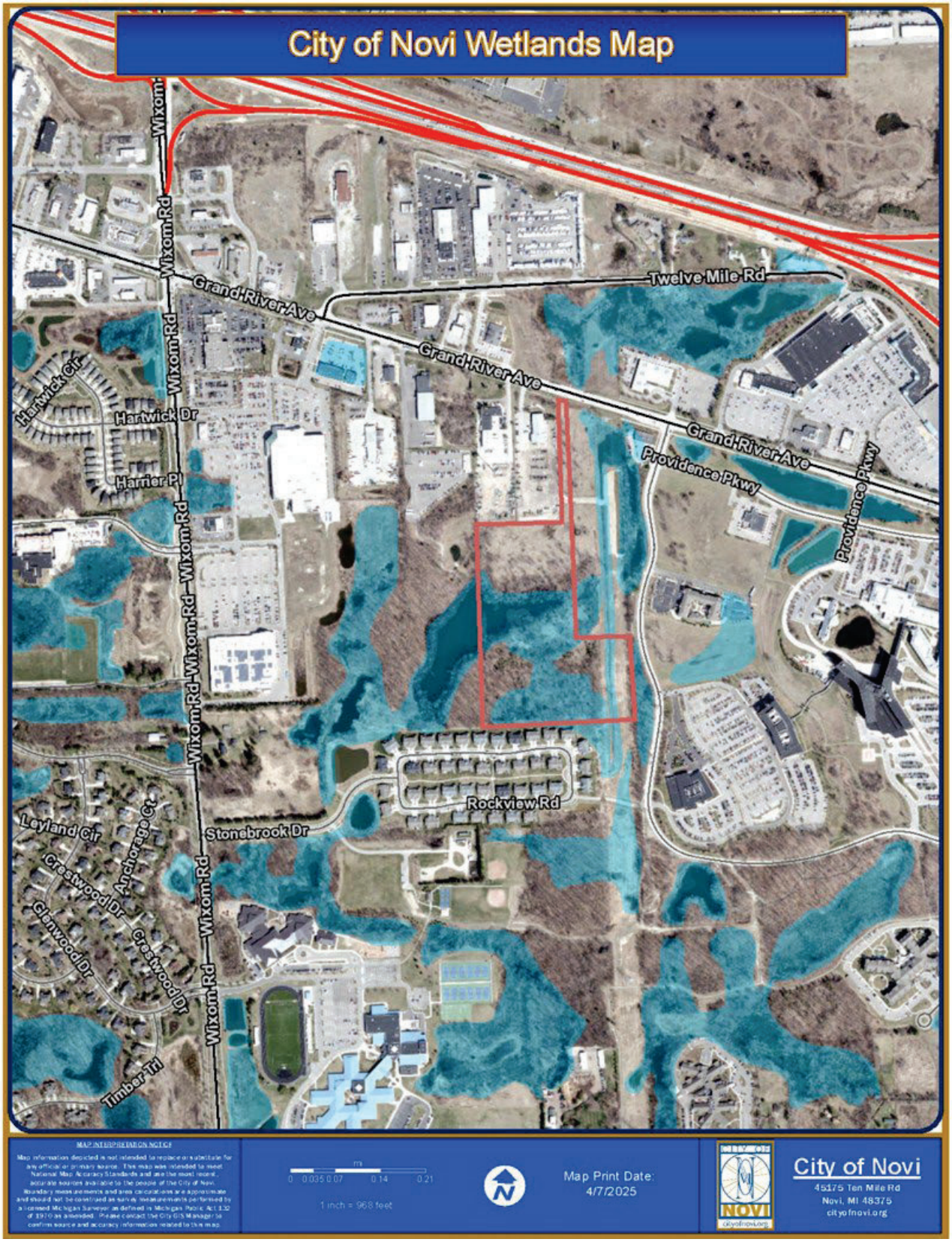
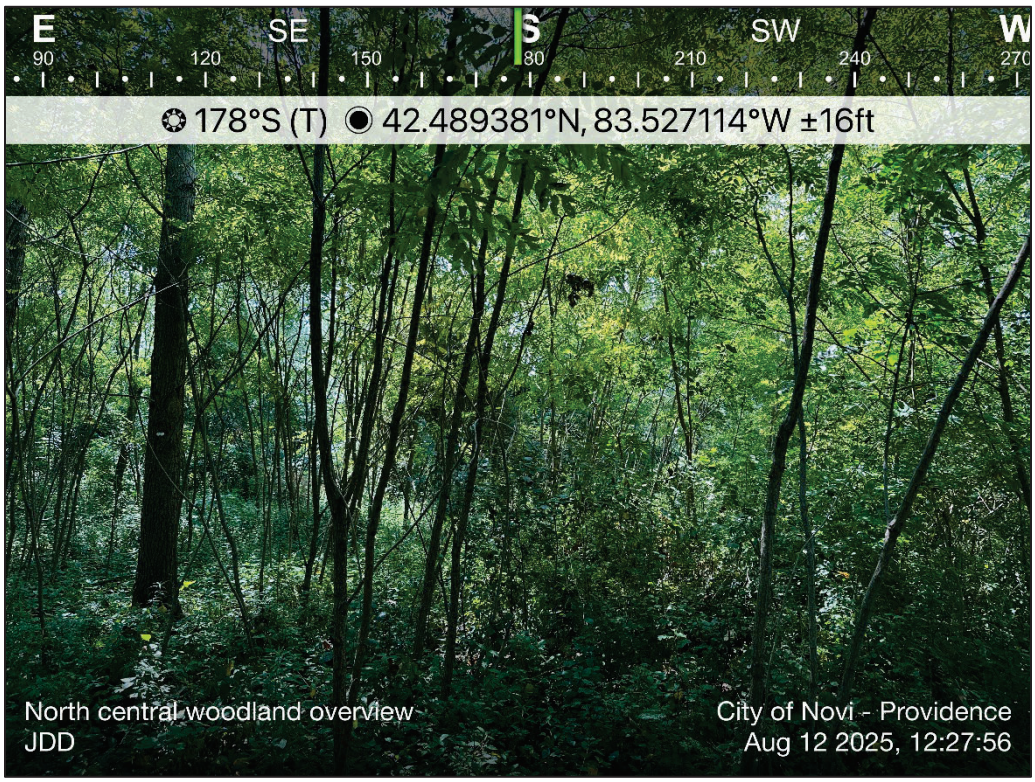


Figure 2. City of Novi Regulated Wetlands Map
Approximate Site boundary is shown in Red.
Approximate Regulated Wetland areas are shown in blue.

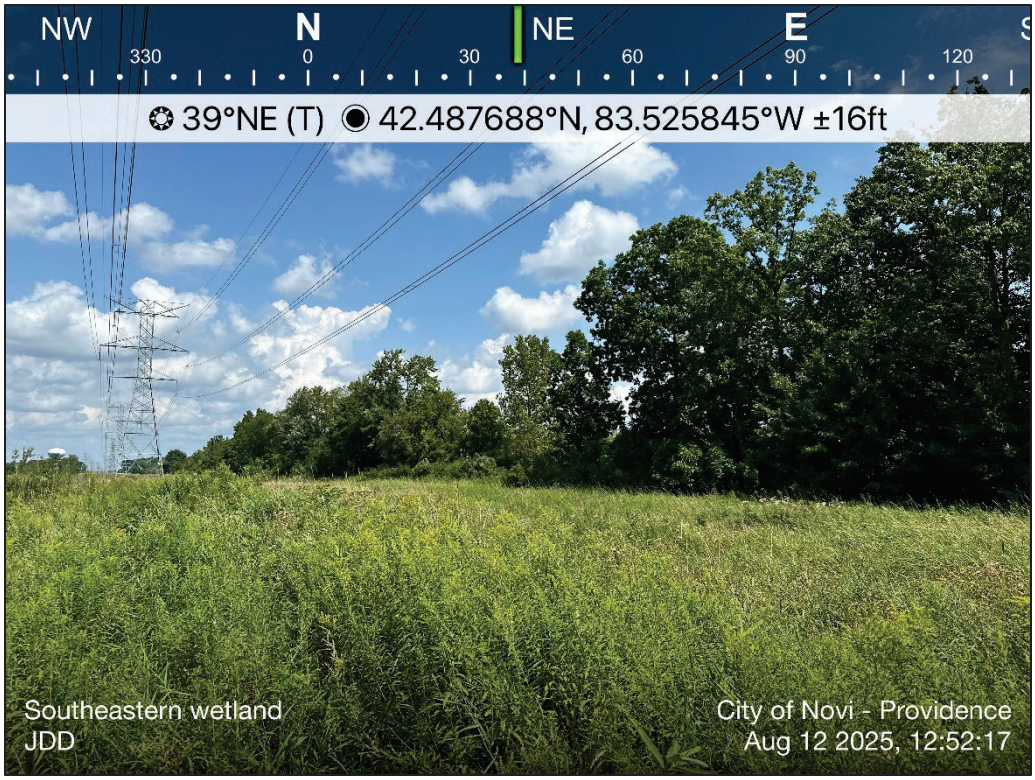
Attachment A
Site Photographs



Overview of the northern non-regulated woodland opening



Overview of the north-central woodland area



Overview of southeastern wetland area (not flagged)



Overview of southern woodland area



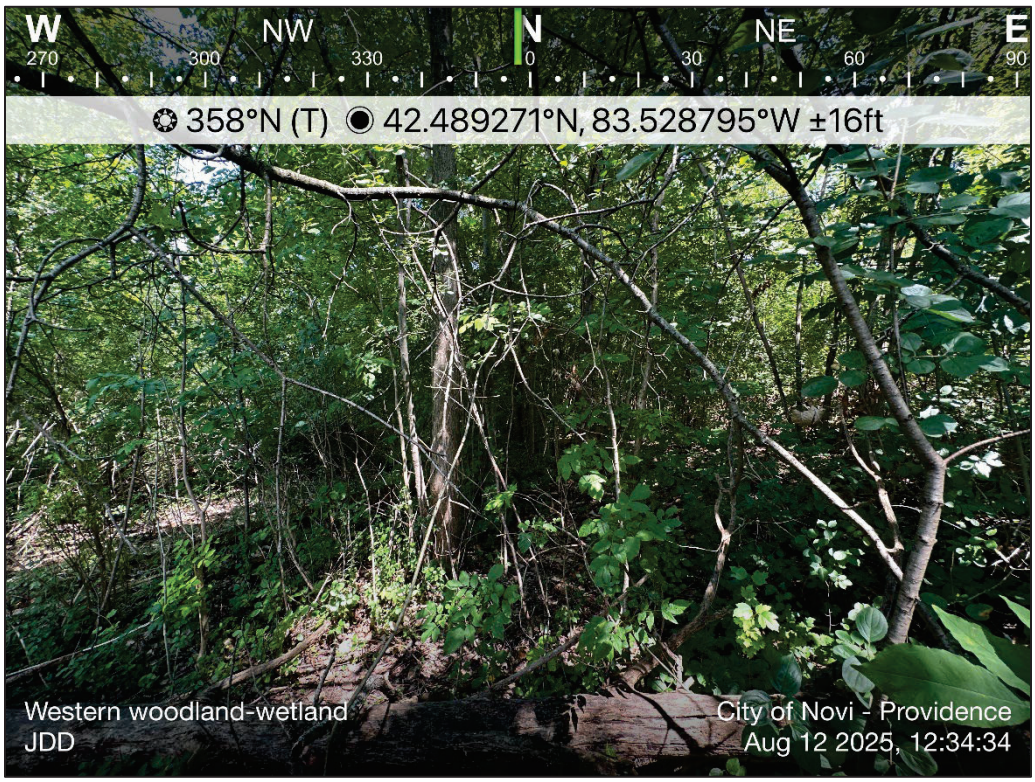
Overview of southern woodland area



Overview of typical tree tags on-site (Tree 3621)



Overview of typical tree tags on-site (Tree 3628)



Overview of western wetland and woodland area



Overview of western wetland and woodland area



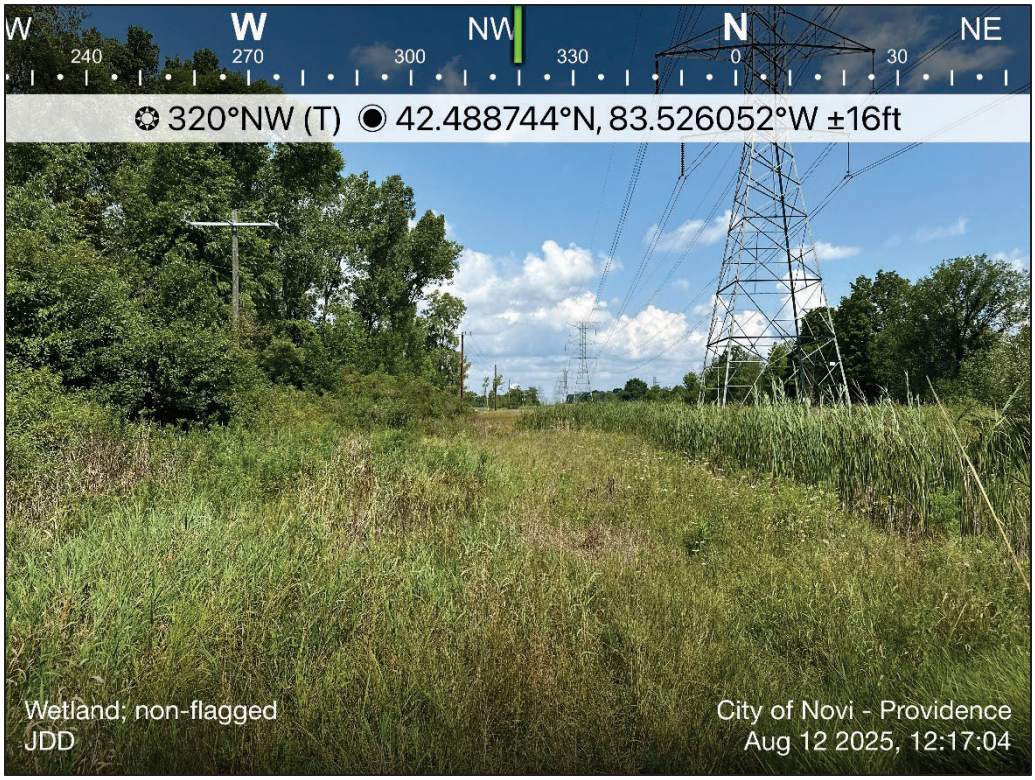
Overview of mowed and non-flagged wetland



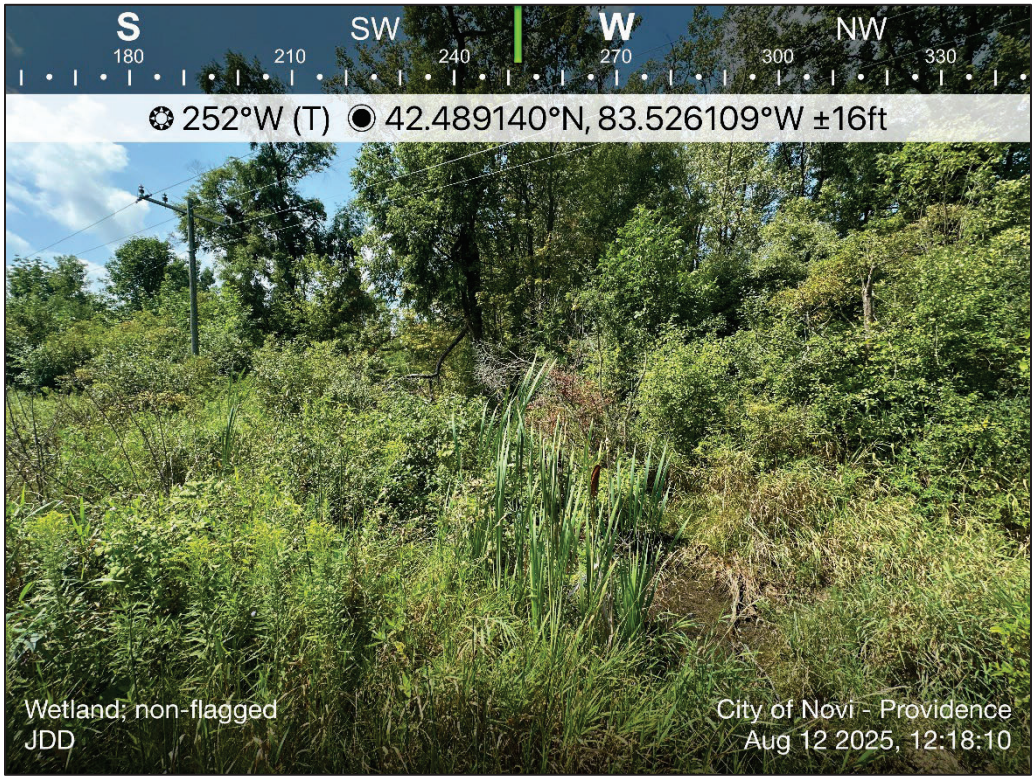
Overview of non-flagged wetland



Overview of non-flagged wetland



Overview of non-flagged wetland



Overview of non-flagged wetland



Overview of non-flagged wetland

Attachment B
City of Novi Wetland Mitigation Performance Standards

a. Construction has been completed in accordance with the City of Novi's approved plans and specifications included in the permit and mitigation plan (and associated approved site plan).

b. The mitigation wetland is characterized by the presence of water at a frequency and duration sufficient to support a predominance of wetland vegetation and the wetland types specified at the end of the monitoring period. The monitoring period will follow the U.S. Army Corps of Engineers definition of the growing season as stated in the 1987 *Wetland Delineation Manual*:

    i. "The portion of the year when soil temperatures at 19.7 inches (50 cm) below the soil surface are higher than biological zero (5°C [41°F]). For ease of determination, this period can be approximated by the number of frost-free days."

    ii. "Estimating starting and ending dates for the growing season are based on 28°F (-2.2°C) air temperature thresholds at a frequency of five years in 10."

c. A layer of high-quality topsoil, from the A horizon of an organic or loamy surface texture soil, is placed (or exists) over the entire wetland mitigation area at a minimum thickness of six inches.

d. The mitigation wetland shall be free of oil, grease, debris, and all other contaminants.

e. A minimum of six wildlife habitat structures, consisting of at least three types, have been placed per acre of mitigation wetland. At least 50 percent of each structure shall extend above the normal water level. The types of acceptable wildlife habitat structures are:

    i. Tree stumps laid horizontally within the wetland area. Acceptable stumps shall be a minimum of six feet long (log and root ball combined) and 12 inches in diameter.

    ii. Logs laid horizontally within the wetland area. Acceptable logs shall be a minimum of 10 feet long and six inches in diameter.

    iii. Whole trees laid horizontally within the wetland area. Acceptable whole trees shall have all of their fine structure left intact (i.e., not trimmed down to major branches for installation), be a minimum of 20 feet long (tree and root ball), and a minimum of 12 inches in diameter.

    iv. Snags which include whole trees left standing that are dead or dying, or live trees that will be flooded and die, or whole trees installed upright into the wetland. A variety of tree species should be used for the creation of snag habitat. Acceptable snags shall be a minimum of 20 feet tall (above the ground surface) and a minimum of 12 inches in diameter at breast height. Snags should be grouped together to provide mutual functional support as nesting, feeding, and perching sites.

    v. Sand mounds at least 18 inches in depth and placed so that they are surrounded by a minimum of 30 feet of water measuring at least 18 inches in depth. The sand mound shall have at least a 200 square foot area that is 18 inches above the projected high-water level and oriented to receive maximum sunlight.

f. The mean percent cover of native wetland species in the herbaceous layer at the end of the monitoring period is not less than:

    i. 60 percent for emergent wetland.

    ii. 80 percent for scrub-shrub wetland.

iii. 80 percent for forested wetland.

g. Extensive areas of open water and submergent vegetation areas having no emergent and/or rooted floating vegetation shall not exceed 20 percent of the mitigation wetland area. Extensive areas of bare soil shall not exceed five percent of the mitigation wetland area. For the purposes of these performance standards, extensive refers to areas greater than 0.01 acre (436 square feet) in size.

h. The total percent cover of wetland species in each plot shall be averaged for plots taken in the same wetland type to obtain a mean percent cover value for each wetland type. For the purposes of this standard, total percent cover is the percent cover of the ground surface covered by vegetation, bare soil, and open water, when viewed from above. Total percent cover cannot exceed 100 percent. Plots within identified extensive open water and submergent areas, bare soil areas, and areas without a predominance of wetland vegetation shall not be included in this average. Wetland species refers to species listed as facultative and wetter (FAC, FACW, OBL) on the U.S. Army Corps of Engineer's 2020 Regional Plant List (version 3.5) for the Midwest Region.

i. The mitigation wetland supports a predominance of wetland (hydrophytic) vegetation (as defined in the 2010 U.S. Army Corps of Engineers “Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Midwest Region [Version 2.0]”) in each vegetative layer, represented by a minimum number of native wetland species, at the end of the monitoring period. The minimum number of native wetland species per wetland type shall not be less than:

   i. 15 species within the emergent wetland.

   ii. 15 species within the scrub-shrub wetland.

   iii. 15 species within the forested wetland.

   The total number of native wetland plant species shall be determined by a sum of all species identified in sample plots of the same wetland type.

j. At the end of the monitoring period, the mitigation wetland supports a minimum of:

   i. 300 individual surviving, established, and free-to-grow trees per acre in the forested wetland that are classified as native wetland species and consisting of at least three different species.

   ii. 300 individual surviving, established, and free-to-grow shrubs per acre in the scrub-shrub wetland that are classified as native wetland species and consisting of at least four different species.

   iii. *Optional*: Eight native wetland species of grasses, sedges, or rushes per acre in the wet meadow wetland.

k. Physiognomic classification of trees and shrubs shall be in accordance with the most updated resource from the following list:

   i. The Michigan Floristic Quality Assessment

   ii. Michigan Flora (also referred to as the University of Michigan Herbarium)

   iii. The U.S. Army Corps of Engineer's Regional Plant List for the Midwest Region.

l. The mean percent cover of invasive species including, but not limited to, *Phragmites australis* (Common Reed), *Lythrum salicaria* (Purple Loosestrife), and *Phalaris arundinacea* (Reed Canary Grass) shall in combination be limited to no more than 10 percent within each wetland type. Invasive species shall not dominate the vegetation in any extensive area of the mitigation wetland. A more exhaustive list of invasive species that are known to be in Michigan can be found on the State of Michigan’s Invasive Species plant list (https://www.michigan.gov/invasives/id-report/plants)

If the mean percent cover of invasive species is more than 10 percent within any wetland type or if there are extensive areas of the mitigation wetland in which an invasive species is one of the dominant plant species, the permittee shall submit an evaluation of the problem to the City of Novi and/or the. If the permittee determines that it is infeasible to reduce the cover of invasive species to meet the above performance standard, the permittee must submit an assessment of the problem, a control plan, and the projected percent cover that can be achieved for review by the City of Novi. Based on this information, the City of Novi may approve an alternative invasive species standard. Any alternative invasive species standard must be approved in writing by the City of Novi.

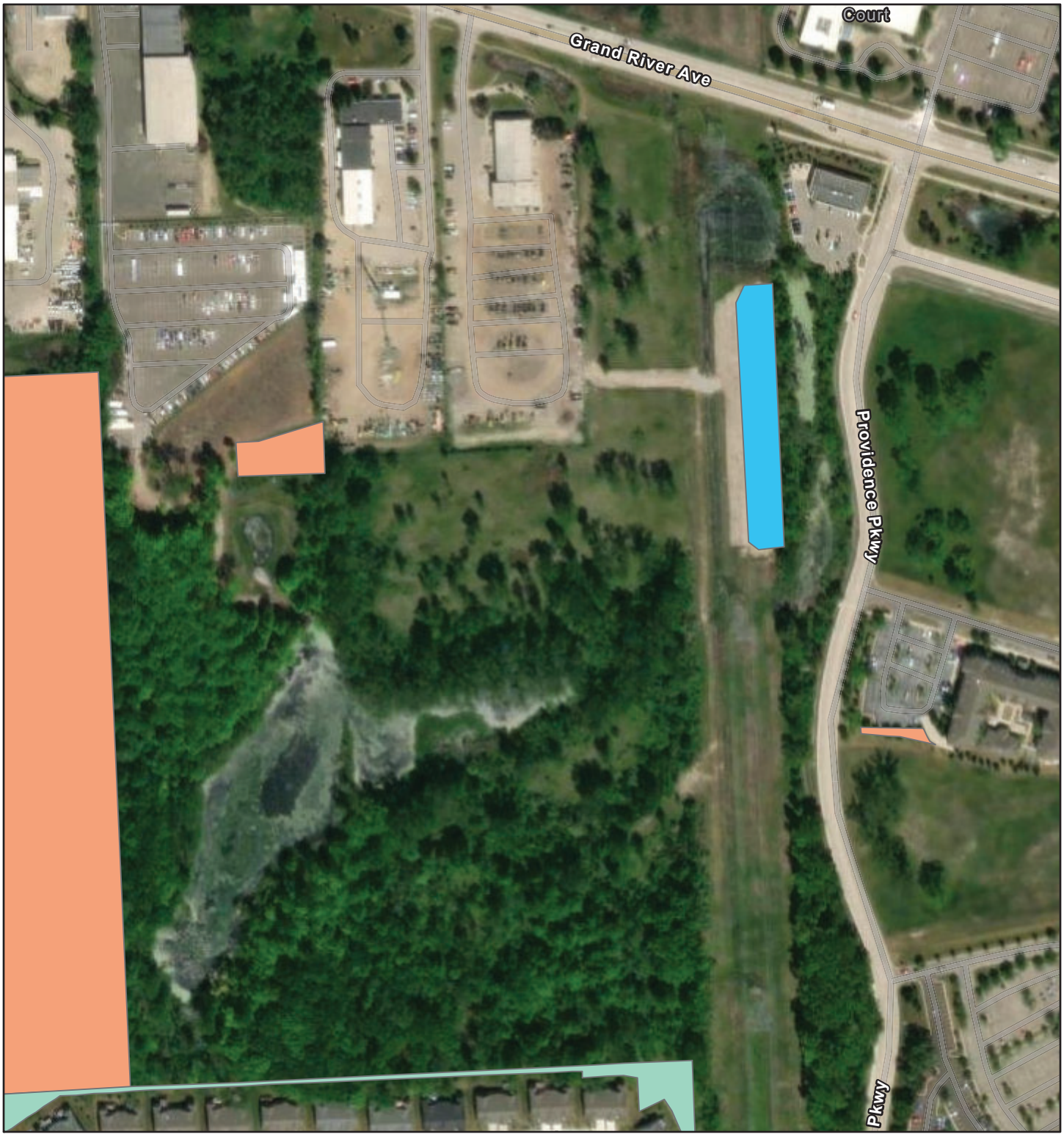
If the mitigation wetland does not satisfactorily meet these standards by the end of the monitoring period, or is not satisfactorily progressing during the monitoring period, the permittee will be required to take corrective

Consultant review of Monitoring Reports will be split into the following sections:

1. Vegetation
2. Invasive Species
3. Hydrology
4. Wildlife Observations
5. Topsoil
6. Pollutants
7. Signage
8. Wetland Recommendations (as applicable)
    a. Financial Guarantee Release

Attachment C
Conservation Easement Map

City of Novi Conservation Easements



8/14/2025

Conservation Easement

- Wetland
- Open Space Preservation
- Other

World Imagery

Low Resolution 15m Imagery

High Resolution 60cm Imagery

High Resolution 30cm Imagery

Citations

1:4,523

0 0.03 0.06 0.11 mi

0 0.04 0.09 0.18 km

Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, (c) OpenStreetMap contributors, and the GIS User Community, Maxar

TRAFFIC REVIEW

AECOM
39575 Lewis Dr, Ste. 400
Novi
MI, 48377
USA
aecom.com

Project name:
JZ25-24 – Providence Park West Initial PRO Traffic Review

To:
Barbara McBeth, AICP
City of Novi
45175 10 Mile Road
Novi, Michigan 48375

From:
AECOM

Date:
August 13, 2025

CC:
Lindsay Bell, Humna Anjum, Diana Shanahan, Dan Commer, Milad Alesmail, Stacey Choi, Kate Purpura

Memo

Subject: JZ25-24 – Providence Park West Initial PRO Traffic Review

The initial PRO site plan was reviewed to the level of detail provided, and AECOM recommends **approval** as long as the comments provided below are adequately addressed to the satisfaction of the City.

GENERAL COMMENTS

1. The applicant, Robertson Brothers Home, is proposing 163 townhomes.
2. The development is located on the west side of Providence Parkway, south of Grand River Avenue. Providence Parkway is classified as a private street and Grand River Avenue is under the jurisdiction of the Road Commission for Oakland County (RCOC).
3. The site is zoned I-1 (Light Industrial). The applicant is proposing to change zoning to RM-2 (High-Density Multiple Family) with PRO.
4. The following traffic-related waivers may be required if revisions are not made to the plans:
    a. Parking along street with centerline radius less than 230'.

TRAFFIC IMPACTS

1. AECOM performed an initial trip generation based on the ITE Trip Generation Manual, 11th Edition, as follows.

    ITE Code: 220 – Multifamily Housing (Low-Rise)
    Development-specific Quantity: 163 Units
    Zoning Change: I-1 to RM-2 PRO

Trip Generation Summary	Estimated Trips	Estimated Peak-Direction Trips	City of Novi Threshold	Above Threshold?
AM Peak-Hour Trips	73	55	100	No
PM Peak-Hour Trips	91	57	100	No
Daily (One-Directional) Trips	1099	-	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**
Rezoning Traffic Impact Study (RTIS)	Trips are above the threshold of City standards, and the site will be rezoned from non-residential to residential.
Traffic Impact Statement (TIS)	The applicant submitted a TIS that was reviewed under a separate letter.

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 the 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	25' and 15' at emergency access drive	Met	
2	Driveway Width | O Figure IX.3	28' and 20' at emergency access drive	Met	
3	Driveway Taper | O Figure IX.11			
3a	Taper length	None proposed	N/A	
3b	Tangent	None proposed	N/A	
4	Emergency Access | O 11-194.a.19	2 access points	**Partially Met**	The applicant should get approval for the proposed removable bollards at each end of the emergency access road instead of the standard emergency break-away gate.
5	Driveway sight distance | O Figure VIII-E	500' minimum	Met	
6	Driveway spacing	-	N/A	Proposed driveway not on a major arterial.
6a	Same-side | O 11.216.d.1.d			
6b	Opposite side | O 11.216.d.1.e			

EXTERNAL SITE ACCESS AND OPERATIONS				
No.	**Item**	**Proposed**	**Compliance**	**Remarks**
7	External coordination (Road agency)	Not indicated	**Inconclusive**	Coordination with RCOC will be required for work along Grand River Avenue.
8	External Sidewalk | Master Plan & EDM	8' proposed	Met	
9	Sidewalk Ramps | EDM 7.4 & R-28-K	Indicated and detail provided	Met	
10	Any Other Comments:	The rezoning sign detail on sheet C7 states zoning change proposed to "RM-1" instead of "RM-2".		

INTERNAL SITE OPERATIONS				
No.	**Item**	**Proposed**	**Compliance**	**Remarks**
11	Loading zone | ZO 5.4	-	N/A	
12	Trash receptacle | ZO 5.4.4	Curbside trash pick-up indicated	Met	
13	Emergency Vehicle Access	Not indicated	**Inconclusive**	Provide emergency vehicle turning movements in future submittal.
14	Maneuvering Lane | ZO 5.3.2	24' and 28'	Met	
15	End islands | ZO 5.3.12	Dimensioned	Met	
15a	Adjacent to a travel way			
15b	Internal to parking bays			
16	Parking spaces | ZO 5.2.12	411 including garage spaces		See Planning review letter.
17	Adjacent parking spaces | ZO 5.5.3.C.ii.p	<15 spaces per bay	Met	
18	Parking space length | ZO 5.3.2	17'	Met	
19	Parking space Width | ZO 5.3.2	9'	Met	
20	Parking space front curb height | ZO 5.3.2	4" in detail	**Partially Met**	4" required in front of 17' parking spaces, 6" required everywhere else
21	Accessible parking – number | ADA	1 proposed in each phase	**Not Met**	36 and 42 guest spaces provided, 2 accessible spaces required for 26-50 total number of parking spaces. The applicant could provide an accessible space at each pocket park.
22	Accessible parking – size | ADA	8' with 8' aisle	Met	
23	Number of Van-accessible space | ADA	1 proposed in each phase	Met	
24	Bicycle parking			

INTERNAL SITE OPERATIONS				
No.	**Item**	**Proposed**	**Compliance**	**Remarks**
24a	Requirement | ZO 5.16.1	18 proposed in phase 1, 16 proposed in phase 2	Met	
24b	Location | ZO 5.16.1	Multiple locations indicated	Met	
24c	Clear path from Street | ZO 5.16.1	Not indicated, 6' required	**Inconclusive**	Provide in future submittal.
24d	Height of rack | ZO 5.16.5.B	3'	Met	
24e	Other (Covered / Layout) | ZO 5.16.1, Text Amendment 18.301	Provided	**Partially Met**	2' outside dimension does not meet 4' standard in Text Amendment 18.301.
25	Sidewalk – min 5' wide | Master Plan	Partially dimensioned	**Partially Met**	Provide dimensions of all sidewalks in future submittal. Note 7' wide sidewalk minimum required in front of 17' parking spaces to account for 2' overhang.
26	Sidewalk ramps | EDM 7.4 & R-28-K	Indicated and detail provided	Met	
27	Sidewalk – distance back of curb | EDM 7.4	6'	Met	
28	Cul-De-Sac | O Figure VIII-F	Partially dimensioned	**Partially Met**	Dimension width to ensure it meets the standard shown in Figure VIII-F.
29	Minor/Major Drives | ZO 5.10	28' wide, ≥100' radius	Met	**Per Section 5.10.1.B.iv – "Adjacent parking and on-street parking shall be limited near curves with less than 230' centerline radius". The applicant could review the areas where parking is in a curve with a centerline radius of less than 230' to ensure a safe and adequate sight distance is provided. An administrative waiver may be required.**
30	Turnaround | ZO 5.10	Partially dimensioned	**Partially Met**	Dimension all radii in future submittal.
31	Any Other Comments:			

SIGNING AND STRIPING				
No.	**Item**	**Proposed**	**Compliance**	**Remarks**
32	Signing: Sizes | MMUTCD	Provided	Met	

SIGNING AND STRIPING				
No.	**Item**	**Proposed**	**Compliance**	**Remarks**
33	Signing table: quantities and sizes	Provided	**Partially Met**	Label size of R2-1 sign in table. Label all signs on site plan instead of "typ". Could provide pedestrian crossing signs (W11-2/W16-7p) at mid-block crosswalks.
34	Signs 12" x 18" or smaller in size shall be mounted on a galvanized 2 lb. U-channel post | MMUTCD	Provided	Met	
35	Signs greater than 12" x 18" shall be mounted on a galvanized 3 lb. or greater U-channel post | MMUTCD	Provided	Met	
36	Sign bottom height of 7' from final grade | MMUTCD	Provided	Met	
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	Provided	Met	
38	FHWA Standard Alphabet series used for all sign language | MMUTCD	Provided	Met	
39	High-Intensity Prismatic (HIP) sheeting to meet FHWA retro-reflectivity | MMUTCD	Provided	Met	
40	Parking space striping notes	Provided	Met	
41	The international symbol for accessibility pavement markings | ADA	Provided	Met	
42	Crosswalk pavement marking detail	Provided	Met	
43	Any Other Comments:			

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, PE
Project Manager

TRAFFIC IMPACT STUDY REVIEW

AECOM
39575 Lewis Drive Suite 400
Novi, MI 48377
USA
aecom.com

Project name:
Providence Parkway Development TIS Review
From:
AECOM

Date:
November 12, 2025

To:
Barbara McBeth, AICP
City of Novi
45175 10 Mile Road
Novi, Michigan 48375

CC:
Lindsay Bell, Diana Shanahan, Dan Commer, Humna Anjum

Memo

Subject: Providence Parkway Development TIS Review

The updated Traffic Impact Study was reviewed to the level of detail provided, and AECOM recommends **approval with conditions, as indicated,** of the Traffic Impact Study unless signal installation is coordinated with the private developer.

The previous review letter is attached as **Appendix A**.

COMMENTS

1. Study state that "Review of the ITE land use descriptions indicates that the Warehouse (LUC 150) and Research and Development (LUC 760) use generates the highest number of trips and best matches the uses defined by the Ordinance and permitted by right under the existing I-1 zoning."
    a. **Review does not agree with this statement in the TIS report, as Medical Offices are a principle permitted use in the I-1 district.** Typically, Medical Offices are the most intense land use within I-1. Please recalculate and establish the most intense land use for trip generation comparison and revise the report.

       Updated report: comment has been addressed, and the trip generation calculation for Medical-Dental Office Building has been added to Table 4.

2. **The proposed zoning units should utilize the approved maximum units per PRO agreement instead of 382 dwelling units. Please revise the report with the maximum dwelling units approved by PRO.**

   Updated report: comment has been addressed, and an updated Table 4 is included in the report.

3. Applicant states that the westbound shared through/right movement is operating at a failing LOS at the intersection of Grand River Avenue and Beck Road; however, the westbound approach consists of a dedicated left-turn lane. Two through lanes and one dedicated right-turn lane. The applicant should correct the lane usage.
    a. **Please update in the resubmission of the report.**

       Updated report: comment has been addressed.

4. A signal warrant was conducted at the intersection of Grand River Avenue and Providence Parkway under the existing traffic volumes, and a signal with a permissive/protected EB/WB left-turn phase was warranted and recommended by the applicant.

a. **Per P.217/218 left turn phase analysis, the eastbound left turn does not meet the criteria. Please revise the report and resubmit it for approval.**

Updated report: Report text matches the analysis in the appendix. However, the westbound left-turn protected/permissive phasing warrant is met.

5. "It is recommended that RCOC consider the installation of a signal at this intersection to accommodate the existing traffic volumes."
    a. Please refer to the RCOC comments for the signal warrant: Although the westerly intersection of Grand River Ave and Providence Park Dr meets warrants for signalization, **RCOC has no plans to signalize this intersection**. **The delays observed at this intersection occur on Providence Park Dr, a private roadway. Since the delays occur on this private roadway, the costs of signalizing this intersection would be the responsibility of the private property owners not the RCOC.**
        i. RCOC may consider permitting signalization at this intersection.

a. Please remove this recommendation in the revised report in consultation with RCOC and resubmit it for approval.

Updated report: Recommendation of RCOC to install a signal has been removed due to a private roadway.

b. Please add a section/conclusion on coordination with the private roadway owner and direction on signalizing the referred location. Please clarify if there is any impact from the queues from this development on the circulation and access to the hospital in case of stop-controlled traffic control.

c. Update the report to reflect the impact of traffic using the signal at the east on Grand River Avenue/West Market Square, if signalization at the intersection referenced in point C is not pursued.

Updated report: The report does not include any coordination or agreement regarding the installation of a signal at the private roadway recommended by the study. Without this signal, the study concludes that the average vehicle delay on the northbound approach will exceed 4 minutes.
Condition for approval before moving forward to the next stage:
It is critical that an agreement and action plan for the signal installation at this location be finalized with the private roadway owner, and approvals be coordinated with RCOC.

Should the City or applicant have questions regarding this review, they should contact AECOM for further clarification.

Sincerely,

AECOM

Carlie delaPaz
Traffic Engineer

Saumil Shah
Project Manager

AECOM
39575 Lewis Drive Suite 400
Novi, MI 48377
USA
aecom.com

Project name:
Providence Parkway Development
TIS Review
From:
AECOM

Date:
August 18, 2025

To:
Barbara McBeth, AICP
City of Novi
45175 10 Mile Road
Novi, Michigan 48375

CC:
Lindsay Bell, Diana Shanahan, Dan Commer,
Humna Anjum

Memo

Subject: Providence Parkway Development TIS Review

The Traffic Impact Study was reviewed to the level of detail provided, and AECOM recommends **denial** of the Traffic Impact Study; the applicant should review the comments provided below and provide a revised study to the City.

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 generally located on the southwest quadrant of the Grand River Avenue and Beck Road intersection.
3. The proposed access plan includes one (1) full access driveway located off Providence Parkway with emergency vehicle access provided via Grand River Avenue.
4. The development consists of 163 single-family attached dwelling units.

BACKGROUND DATA

1. The following roadways were included in the study:
    a. Grand River Avenue: East/West, 50 mph, 5-lanes with two lanes of travel in each direction and a two-way left turn lane (TWLTL).
    b. Wixom Road: North/South
        i. South of Grand River Avenue: 35 mph, 4-lanes with two northbound lanes, one southbound lane, and a center TWLTL.
        ii. North of Grand River Avenue: 45 mph, 5-lanes with two lanes of travel in each direction and a TWLTL.
    c. Beck Road: North/South
        i. South of Providence South Drive: 45 mph, 3-lanes with one lane of travel in each direction and a TWLTL.
        ii. Between Providence South Drive and Grand River Avenue: 45 mph, 4-lanes with one northbound lane, two southbound lanes, and a center TWLTL.
        iii. North of Grand River Avenue: 40 mph, 4-lanes with two lanes of travel in each direction.
    d. 12 Mile Road: East/West, 55 mph, 2-lanes with one lane of travel in each direction.
    e. Providence Parkway: Loop around Providence Hospital Campus, 25 mph, 3-lanes with one lane of travel in each direction and a center TWLTL.
    f. Providence South Drive: East/West
        i. West of Beck Road: 4-lane divided cross-section with two lanes of travel in each direction.
        ii. East of Beck Road: 2-lanes with one lane of travel in each direction.
    g. W. Market Square: North/South, 2-lanes with one lane of travel in each direction.

2. Turning movement counts were taken on Tuesday, June 24, 2025.
    a. AM peak hour was identified as 8:00 AM to 9:00 AM and the PM peak hour was identified as 4:30 PM to 5:30 PM.
    b. Novi Schools were not in session when the counts were taken, however, historical SCATS data was obtained and evaluated, and the results showed the collected traffic volumes were higher than the historical school day volumes. Therefore, no adjustments were applied.

EXISTING (2025) CONDITIONS

1. Grand River Avenue and Wixom Road experienced the following failing LOS:
    a. AM Peak Hour:
        i. LOS F – Westbound left-turn and northbound left-turn movements
        ii. LOS E – Eastbound left-turn, northbound shared through/right, and southbound left-turn movements
        iii. Significant queues were observed for the eastbound left-turn, northbound through/right, and southbound left-turn throughout the AM peak hour.
        iv. Queues observed for the westbound/northbound left-turn movements but were processed through the intersections within 1-2 cycle lengths.
    b. PM Peak Hour:
        i. LOS F – Westbound left-turn movements, northbound approach, and southbound approach.
        ii. LOS E – Eastbound left-turn movements and the westbound right-turn movements.
        iii. Throughout the PM peak hour long queues were observed for the eastbound left-turn, westbound through, and northbound through/right movements.
        iv. Queues were observed but dissipated throughout the PM peak hour for the westbound left-turn & right-turn, northbound left-turn and the southbound left-turn movements.
2. Grand River Avenue and 12-Mile Road experienced the following failing LOS:
    a. AM Peak Hour:
        i. LOS E – Northbound shared through/right and southbound left-turn movements.
    b. PM Peak Hour:
        i. LOS E – Northbound left-turn movement.
3. Grand Avenue and Providence Parkway experienced the following failing LOS:
    a. PM Peak Hour:
        i. LOS E – Southbound approach
        ii. LOS F – Northbound shared through/left movement
4. Grand River Avenue and W. Market Square experienced the following failing LOS:
    a. AM Peak Hour:
        i. LOS E – Southbound left-turn movement
5. Grand River Avenue and Beck Road experienced the following failing LOS:
    a. AM Peak Hour:
        i. LOS E – Westbound/northbound/southbound left-turn movements
        ii. Queues observed for the eastbound left-turn, northbound shared through/right, and southbound left-turn movements, but were processed through the intersections within 1-2 cycle lengths.
    b. PM Peak Hour:
        i. LOS E – All left-turn, westbound right-turn, and the northbound shared through/right movements
        ii. Throughout the majority of the peak hour, long queues were observed for the eastbound left-turn and westbound right-turn movements.
        iii. Queues were observed but dissipated throughout the peak hour for the westbound left-turn, northbound shared through/right, and southbound left-turn movements.
6. Beck Road and Providence South Drive experienced the following failing LOS:
    a. AM Peak Hour:
        i. LOS E – Eastbound left-turn movement

BACKGROUND CONDITIONS 2033

1. An annual growth rate of 0.5% was applied to the existing traffic to determine the 2033 build year data, based on the SEMCOG population and employment forecasts.
2. One background development was identified within the vicinity of the project (El Car Wash – 48648 Grand River Avenue).
    a. Projected trip generated by the background development was applied to the study roadway network.
3. The LOS was impacted in a negative manner at the following intersection movements:
    a. Grand River Avenue & Wixom Road: PM Peak Hour – Eastbound left-turn (E to F)
        i. Change of 17.0 seconds
    b. Grand River Avenue & Providence Parkway: AM Peak Hour – Northbound through/left (D to E)
        i. Change of 5.8 seconds
    c. Grand River Avenue & Beck Road: AM Peak Hour – Northbound through/right (D to E)
        i. Change of 0.9 seconds
    d. Grand River Avenue & Beck Road: PM Peak Hour – Northbound left-turn (E to F)
        i. Change of 1.8 seconds

TRIP GENERATION

1. ITE Trip Generation Manual, 11th Edition was utilized to calculate the trip generation. Land Use Code 215 Single-Family Attached Housing fitted curve was used.
    a. 1,192 trips daily
    b. 79 trips in the AM peak hour (20 In and 59 Out)
    c. 94 trips in the PM peak hour (55 In and 39 Out)
2. The subject property is proposed to be rezoned from I-1 (Light Industrial District) zoning to RM-2 (High-Density, Mid-Rise Multiple Family District) zoning.
3. Study state that “Review of the ITE land use descriptions indicates that the Warehouse (LUC 150) and Research and Development (LUC 760) use generates the highest number of trips and best matches the uses defined by the Ordinance and permitted by right under the existing I-1 zoning.”
    a. **Review does not agree with this statement in the TIS report, as Medical Offices are a principle permitted use in the I-1 district.** Typically, Medical Offices are the most intense land use within I-1. Please recalculate and establish the most intense land use for trip generation comparison and revise the report.
4. **The proposed zoning units should utilize the approved maximum units per PRO agreement instead of 382 dwelling units. Please revise the report with the maximum dwelling units approved by PRO.**

SITE TRIP DISTRIBUTION

1. Trip distribution was calculated based on the proposed site access plan, existing peak hour traffic patterns, and methodologies published by ITE.
    a. The largest portion of traffic is assumed to be entering/exiting to the north via Beck Road.

FUTURE (2033) CONDITIONS

1. The future conditions analysis indicates the proposed site driveway is expected to operate at an acceptable LOS during both peak periods.
2. Applicant states that the westbound shared through/right movement is operating at a failing LOS at the intersection of Grand River Avenue and Beck Road; however, the westbound approach consists of a dedicated left-turn lane. Two through lanes and one dedicated right-turn lane. The applicant should correct the lane usage.
    a. Please update in the resubmission of the report.
3. All approaches and movements are expected to operate in a similar manner to the background condition analysis with the exception of the following:
    a. Grand River Avenue & Wixom Road: PM Peak Hour – Westbound left-turn movement (LOS F: +5.3 sec)

   b. Grand River Avenue & Providence Parkway: AM Peak Hour – Northbound shared through/left movement (LOS F: +18.4 sec)
   c. Grand River Avenue & Providence Parkway: PM Peak Hour – Southbound approach (LOS F: +14.0 sec)
   d. Grand River Avenue & Beck Road: PM Peak Hour – Westbound right movement (LOS F: +3.2 sec) and northbound through/right movement (LOS E: +4.7 sec)
4. The site driveways are expected to operate at LOS A during the AM peak period and LOS B during the PM peak period.

MITIGATION MEASURES EVALUATION

1. Grand River Avenue Intersections (Wixom Road and Beck Road)
   a. Applicant states the recent improvements to the I-96 flex lanes are anticipated to reduce the demand on the Grand River corridor.
   b. No mitigation measures were recommended.
2. Grand River Avenue & Providence Parkway
   a. A signal warrant was conducted at the intersection in accordance with the current MMUTCD. A signal is warranted under existing traffic volumes.
   b. Left-turn phasing criteria were analyzed at this intersection under the existing conditions, which resulted in a permissive/protected phase for the eastbound and westbound left-turn movements.
   c. The applicant recommends a signal with left turn phasing at the intersection to mitigate the delay.
3. Mitigation measures under the future year conditions showed an improvement in the LOS at the intersection of Grand River Avenue & Providence Parkway. All movements are projected to operate under acceptable LOS during both peak hours with the recommended mitigation.

CONCLUSIONS

1. The existing conditions indicate all study intersections have at least one or more approaches/movements operating at a failing LOS.
2. The background conditions indicated that all approaches and movements at the study intersections are projected to operate in a similar manner to the existing conditions with the exception of the following:
   a. Grand River Avenue & Wixom Road
   b. Grand River Avenue & Providence Parkway
   c. Grand River Avenue & Beck Road
3. The build conditions indicated that all approaches and movements at the study intersections are projected to operate in a similar manner to the background conditions with the exception of the following:
   a. Grand River Avenue & Wixom Road
   b. Grand River Avenue & Providence Parkway
   c. Grand River Avenue & Beck Road
4. No mitigation measures were recommended at the intersections of Wixom Road and Beck Road along the Grand River Avenue corridor.
5. A signal warrant was conducted at the intersection of Grand River Avenue and Providence Parkway under the existing traffic volumes, and a signal with a permissive/protected EB/WB left-turn phase was warranted and recommended by the applicant.
   a. Per P.217/218 left turn phase analysis, the eastbound left turn does not meet the criteria. Please revise the report and resubmit it for approval.

RECOMMENDATIONS

The study recommended the following:

1. The site-generated traffic volumes will be less than typical variations (+/-5%) in daily traffic volumes.
2. “It is recommended that RCOC consider the installation of a signal at this intersection to accommodate the existing traffic volumes.”
   a. Please refer to the RCOC comments for the signal warrant.

b. **Please remove this recommendation in the revised report in consultation with RCOC and resubmit it for approval.**
c. **Please add a section/conclusion on coordination with the private roadway owner and direction on signalizing the referred location. Please clarify if there is any impact from the queues from this development on the circulation and access to the hospital in case of stop-controlled traffic control.**
d. **Update the report to reflect the impact of traffic using the signal at the east on Grand River Avenue/West Market Square, if signalization at the intersection referenced in point C is not pursued.**

COMMENTS FROM RCOC

1. There is no mention of the proposed site traffic modifying their travel route to use the already existing signalized intersection east of Grand River and Providence Park Drive. It is my opinion that traffic will utilize a signalized intersection when it is readily available, if delays are significant enough, or if roadway users see a safety benefit.

2. Although the westerly intersection of Grand River Ave and Providence Park Dr meets warrants for signalization, **RCOC has no plans to signalize this intersection**. **The delays observed at this intersection occur on Providence Park Dr, a private roadway. Since the delays occur on this private roadway, the costs of signalizing this intersection would be the responsibility of the private property owners not the RCOC.**
    a. RCOC may consider permitting signalization at this intersection.

3. The TIS states that both the east and westbound approaches at this intersection meet permissive/protect left turn warrants, only the westbound approach meets left turn warrants.

Should the City or applicant have questions regarding this review, they should contact AECOM for further clarification.

Sincerely,

AECOM

Carlie delaPaz	Saumil Shah	Sarah Binkowski, PE, PTOE
Traffic Engineer	Project Manager	Michigan Traffic Engineering Manager

FAÇADE REVIEW

DRN & ASSOCIATES, ARCHITECTS, PC
Phone: (248) 880-6523
E-Mail: dnecci@drnarchitects.com
Web: drnarchitects.com
50850 Applebrooke Dr., Northville, MI 48167

November 10, 2025

Façade Review Status:
Section 5.15 - Approved, Full Compliance
PRO Section 7.13 – Not Approved

City of Novi Planning Department
45175 W. 10 Mile Rd.
Novi, MI 48375-3024

Attn: Ms. Barb McBeth – City Planner

Re: FACADE ORDINANCE
Providence Meadows (FKA Park West) JZ25-24, Revised Initial PRO
Façade Region: 1 Zoning District - Current: I-1, Proposed: PRO RM-1.

Dear Ms. McBeth:

The following Facade Review is based on the drawings prepared by 4545 Architecture dated 10/3/25. This project is subject to the Façade Ordinance Section 5.15, and the Planned Rezoning Overlay Ordinance (PRO) Section 7.13. The percentages of materials proposed for each façade are as shown in the tables below. Materials in non-compliance are highlighted.

3 Unit Building	Front	Left	Right	Rear	Ordinance Maximum (Minimum)
Brick	37%	44%	44%	30%	100% (30% Minimum)
Cement Fiber Siding, Horizontal	34%	48%	48%	37%	50%
Trim	8%	8%	8%	5%	15%
Asphalt Shingles	21%	0%	0%	28%	50% (Footnote 14)

4 Unit Building	Front	Left	Right	Rear	Ordinance Maximum (Minimum)
Brick	38%	44%	44%	37%	100% (30% Minimum)
Cement Fiber Siding, Horizontal	31%	48%	48%	30%	50%
Trim	8%	8%	8%	5%	15%
Asphalt Shingles	23%	0%	0%	28%	50% (Footnote 14)

5 Unit Building	Front	Left	Right	Rear	Ordinance Maximum (Minimum)
Brick	38%	44%	44%	33%	100% (30% Minimum)
Cement Fiber Siding, Horizontal	30%	48%	48%	34%	50%
Trim	9%	8%	8%	5%	15%
Asphalt Shingles	23%	0%	0%	28%	50% (Footnote 14)

6 Unit Building	Front	Left	Right	Rear	Ordinance Maximum (Minimum)
Brick	38%	44%	44%	30%	100% (30% Minimum)
Cement Fiber Siding, Horizontal	30%	48%	48%	37%	50%
Trim	8%	8%	8%	5%	15%
Asphalt Shingles	24%	0%	0%	28%	50% (Footnote 14)

8 Unit Building	Front	Left	Right	Rear	Ordinance Maximum (Minimum)
Brick	38%	44%	44%	32%	100% (30% Minimum)
Cement Fiber Siding, Horizontal	30%	48%	48%	35%	50%
Trim	8%	8%	8%	5%	15%
Asphalt Shingles	24%	0%	0%	28%	50% (Footnote 14)

Façade Ordinance 5.15 - As shown above all facades are in full compliance with the Façade Ordinance. A Section 9 Waiver is not required for this project.

Rezoning Overlay Ordinance (PRO) Section 7.13 Section 7.13.2.D.ii.a of the PRO Ordinance requires that the application shall result in an enhancement of the project as compared to the existing zoning and that such enhancement would be unlikely in the absence of the use of a PRO." We believe that the proposed design lacks sufficient percentages of high-quality materials such as brick or stone and lacks the architectural features and attention to detail such as gable rooflines, return cornices, patterned siding and ornamental trim that would be necessary to meet the higher standard required by the PRO Ordinance.

Sincerely,
DRN & Associates, Architects PC

Douglas R. Necci, AIA

FIRE REVIEW

October 29, 2025

TO: Barbara McBeth - City Planner
Lindsay Bell - Plan Review Center
Dan Commer – Plan Review Center
Diana Shanahan – Plan Review Center
Stacey Choi – Planning Assistant

RE: Providence Park West (revised)
JZ25-24

Project Description:
Build 33 Multi-tenant residential structures off Providence Parkway

Comments:

- **Corrected on 10/29/25** - Plan Set page C-20 was CORRECTED for revised for Fire Truck turning radii and is now acceptable.
- 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))***
- **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.
- When the property has limited frontage along external arterials, or topographic conditions on the external arterials reduce sight line distances so that a secondary access point cannot be established which will provide safe ingress and egress, the City shall require access roads for emergency vehicles, where feasible. A secondary access driveway shall be a minimum of twenty (20 feet in width and paved to provide all-weather access and shall be designed to support a vehicle of thirty-five (35) tons. Minimum easement width for secondary access driveways shall be twenty-five (25) feet. A permanent "break-away" gate shall be provided at the secondary access driveway's intersection with the public roadway in accordance with Figure VIII-K of the Design and Construction Standards. To discourage non-emergency vehicles, emergency access roads shall be designated by signage as for emergency access only, shall be separated from the other roadways by mountable curbs, and shall utilize entrance radii designed to permit emergency vehicles while discouraging non-emergency traffic. ***(D.C.S. Sec 11-194 (a)(19))***
- 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

CITY COUNCIL

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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

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))***
- 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)***
- No part of a commercial, industrial, or multiple residential area shall be more than 300 feet from a hydrant. ***(D.C.S. Sec. 11-68 (f)(1)c.1)***
- 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.
- The building address is to be posted facing the street throughout construction. The address is to be at least 3 inches high on a contrasting background. Note this on all plans.
- Prior to construction above the foundation of all multi-residential buildings and single-family dwellings, all roads are to be paved. Note this on all plans.

<u>Recommendation</u>:
The Fire Dept. does not have any objections, as long as the above comments are met for final review.

Sincerely,

Andrew Copeland – Fire Marshal
City of Novi Fire Department

cc: file

APPLICANT RESPONSE LETTERS

January 7, 2026

City of Novi
Planning Department

Re: **Providence Meadows** PRO Concept Plan Resubmittal
PRO Concept Plan Resubmittal Review Response Letter
Property south of Grand River west of Providence Parkway
Parcel Numbers 22-17-101-012 and 22-17-101-010
Novi, MI

Dear Ms. Bell,

Thank you for your Plan Review Center Report dated December 3, 2025. This Submittal Response letter focuses on the items necessary to address in advance of the Planning Commission's review of the initial submittal and eligibility of the rezoning request.

Whitehall Real Estate Interests and Robertson Brothers Homes are excited to present a site plan for concept PRO review, envisioning a vibrant residential community on property south of Grand River and west of Providence Parkway. This proposed development is thoughtfully designed as an extension of the Henry Ford Providence Hospital campus, providing much-needed housing while fostering a sense of community. Spanning approximately 31 acres, the site is planned as a high-quality, for-sale “missing middle” residential townhome community, offering convenient access to an adjacent employment center.

The proposed RM-2 zoning for the development of 161 for-sale townhomes provides a density of 6.54 dwelling units per net acre, well below the maximum permitted density of 15.6 dwelling units per net acre under RM-2. While RM-2 zoning permits more intense multi-family development than what is proposed, this plan is intentionally designed to be less dense and more compatible with surrounding land uses than typical RM-2 or I-1 projects. The proposed building height of 35 feet is less than the 40-foot maximum allowed under the current I1 zoning. As currently zoned, the site could support a variety of research, office, and light industrial uses, including wholesale operations, warehousing, and other industrial activities, all of which would be more intrusive to the site and surrounding areas than the proposed residential development.

To reinforce this lower-impact approach and meet the building requirements for RM-2, the PRO Agreement will propose conditions and design parameters that reduce intensity and establish high-quality standards for site layout, architectural design, and integration with the surrounding context.

Responses to Plan Review Center Report comments are provided in blue below.

Zoning and Use Requirements

Master Plan (adopted July 25, 2025)

- Required Code: Office research development and technology
- Proposed: Multiple-Family Residential (RM-2)

The proposed rezoning is not supported by the 2025 Master Plan in this location.

According to the 2025 Draft Master Plan, the Housing Diversity section notes that "the City is actively diversifying housing typologies to further improve affordability and accessibility" and emphasizes the need to ensure future housing supply aligns with market demand. The Market Analysis builds on this, identifying Missing Middle Housing (e.g. townhomes) as essential to enhancing both diversity and attainability within Novi's housing stock. The plan also calls for policies that promote attainable infill development and support projects offering affordable-rate units alongside higher-end housing to achieve a balanced, inclusive market. This proposal directly advances those objectives. We believe RM-2 zoning is a supported transitional use based on the surrounding uses (refer to the project narrative). The parcel has historically been ignored for its potential as a residential use, and it has been demonstrated that there is no realistic potential for development under the existing future land use designation.

Zoning (Effective January 8, 2015)

- Required Code: I-1 Light Industrial
- Proposed: RM-2 High-density Multiple Family with a PRO

Planning Commission recommendation & City Council approval of PRO Concept Plan, City Council approval, PRO agreement, Site Plan or Plat normal approval process

Understood

Uses Permitted (Sec 3.1.18.B & C)

- Required Code: Light Industrial Uses Sec. 3.1.18.B. - Principal Uses

Permitted.
- Proposed: (Sec 3.1.8) Multi-Family Residential

The proposed rezoning category would allow multi-family uses.

See zoning justification herein.

Uses Permitted (Sec 3.1.18.B & C)
- Required Code: Light Industrial Uses Sec. 3.1.18.B. - Principal Uses Permitted. Sec. 3.1.18.C. – Special Land Uses Permitted.
- Proposed: Plans show 2 phases

Phasing proposed – each phase will need to be able to stand on its own as if developed independently

Each phase is designed to function independently and will stand on its own if developed separately. The separation of the phases is intentional and has been fully considered during the planning process. Refer to the phase delineation on the plans. The usable open space in both phase exceeds the requirement which represents an enhancement of the project area beyond what could otherwise be required.

Planned Rezoning Overlay Document Requirements

Written Statement- The statement should describe the following:
- Potential development under the proposed zoning and current zoning.
- Identified benefit(s) of the development
- Conditions proposed for inclusion in the PRO Agreement (i.e., Zoning Ordinance deviations,
- Proposed: Proposed
- **Provide more information comparing impact of potential development under I-1 Zoning to proposed development**
- **See Planning Review for discussion**
- **Any deviations identified, conditions that would be more limiting than typical RM-2 dev**

See the submitted community impact statement, providing a more detailed comparison between the underlying I-1 use and the proposed development. The proposed benefits of the project are as follows:

Public Trail Access through the site: This improvement enhances walkability between Grand River Avenue, Providence Parkway, and the regional trail system while supporting the City's Active Mobility goals. We believe this will be a quality benefit to the community and future residents of the development. We acknowledge staff's concern regarding long-term public access to the proposed pedestrian pathway. The pathway will be protected through provisions within the HOA

Master Deed, and the PRO Agreement will prohibit gating or any future restriction of public use. While generally parallel to Providence Parkway, the pathway provides a distinct park-like trail loop through preserved natural features, offering a lower-stress pedestrian experience and an alternative internal connection not provided by the existing sidewalk.

Trailhead Connection and Signage: This is a proposed wayfinding and public refuge amenity to be built offsite along Providence Parkway. At the appropriate time we will work with the hospital to obtain a public access easement as they have been very supportive of this proposal.

Attainable Housing Option: The attainability of the proposed homes is evaluated relative to the existing housing supply in Novi. The planned townhomes are expected to be priced well below many single-family homes, which currently represent a significant portion of the city's housing inventory. As a result, the development introduces a more attainable homeownership opportunity that helps diversify the local housing market. The community is envisioned as a high quality, for sale residential neighborhood that directly addresses Novi's documented shortage of attainable housing and responds to growing demand for missing middle housing. In the context of rising construction costs and higher interest rates, the project offers an attractive and practical option for hospital associates and young professionals seeking convenient, well-located housing near major employment centers.

Under the previous I-1 medical office plan, an EGLE Wetland Permit required a mitigation area stretching to the southern property line; however, our revised plan intentionally pulls back that area, leaving a minimum 66-foot wide strip undisturbed adjacent to The Villas at Stonebrook community. When this improvement to the plan was unveiled to the adjacent property owners during our second neighborhood meeting, it was very well-received and appreciated for providing an additional buffer.

The proposed PRO provides meaningful public benefits that are well aligned with the site's unique opportunities and constraints. The project delivers attainable for-sale housing in proximity to major employment centers, preserves and enhances natural features through thoughtful site design, a public trailhead, and introduces new pedestrian connections that improve neighborhood walkability. Collectively, these elements represent a balanced and context-sensitive approach that advances community goals while making productive use of an underutilized property.

See the project narrative for a comprehensive list of identified deviations and conditions that would be more limiting than

typical RM-2 dev. We have revised our Requested Deviations to include all listed in the review letter. See Sheet C7

Sign Location Plan

- Required Code: Installed within 15 days prior to public hearing located along all road frontages
- Proposed: Provided
- **NOTE: the proposed Zoning District is RM-2 – please correct on sign mock-up**

The proposed zoning district RM-2 has been corrected on the sign mock-up, and the signs were posted in the appropriate locations on December 18th.

Traffic Impact Study

- Required Code: A Traffic Impact Study as required by the City of Novi Site Plan and Development Manual.
- Proposed: Provided

Refer to Traffic review letter for related comments

A draft Traffic Impact Study (TIS) 7/22/2025 was previously supplied a subsequently a revised TIS (dated 9/5/25), which addresses reflects the change of use should result in significantly fewer vehicle trips on the traffic system compared to development as a medical office under I-1 standards (proposed use: 1,192 vehicles per day; Medical office: 2,574 vpd). The traffic impact study was further updated on December 15th (attached).

Community Impact Statement *(Sec. 2.2)*

- Required Code: Over 30 acres for permitted non-residential projects
  - Over 10 acres in size for a special land use
  - All residential projects with more than 150 units
  - A mixed-use development, staff shall determine
- Proposed: All Residential projects with more than 150 units.

See Planning Review for discussion

The statement compares the proposed project with a potential Light Industrial development as it pertains to the demand on City utilities and services, as well as wetland/woodland impacts.

Market Study

- Optional: a Market study to provide a market demand analysis for the proposed project.
- Proposed: Letter from CBRE's Edward Wujek- not dated

See Planning Review for discussion

The letter from CBRE dated 4/11/2025 provides detail regarding the lack of interest for the property based on the existing zoning.

Usable Open Space Area (Sec 3.1.8.D) Article 2: Definitions

- Required Code: 200 sf of Minimum usable open space per dwelling unit For a total of 161 dwelling units, required Open Space: 32,200 SF (0.75 acre)
- Proposed: Phase 1: 22,620 sf / Decks: 4,400 sf / Pocket Parks: 18,220 sf
- Phase 2: 28,144 sf / Decks: 3,650 sf / Pocket Parks: 24,494 sf

Proposed area exceeds requirement by 58% - this could be a condition of the PRO Agreement that is an enhancement

Understood and agreed

Maximum % of Lot Area Covered (By All Buildings)

- Required Code: 45%
- **Proposed: 10.5%**

This could be a condition more limiting than requirements

Understood and agreed. This has been included in the Schedule of Regulations and Modifications table herein

Building Height (Sec. 3.20)

- Required Code: 65 ft. or 5 stories whichever is less
- **Proposed: 34.2 feet**

This could be a condition more limiting than requirements

Understood and agreed. This has been included in the Schedule of Regulations and Modifications table herein. We propose a building height limitation of 35' to the building midpoint as a condition of approval.

Residential Building Setbacks (Sec 3.1.8.D)

- Required Code: 75 ft Front @ Grand River
- Proposed: Exceeds

Label minimum setbacks on plan

Labels for minimum setbacks will be added to plans.

- Required Code: 75 ft Side- North (abutting I-2) and West
- Proposed: 50 ft

Applicant requests a deviation for building setbacks from I-1 on west

Understood, this is a requested deviation. Note that the only deviation is along undevelopable land that is either wetland or storm pond, and there will be no impacts to existing property owners or to future residents.

Wetland/Watercourse Setback *(Sec 3.6.2.M)*

- Required Code: A setback of 25ft from wetlands and from high watermark course shall be maintained
- Proposed: Impacts likely

Refer to wetlands review letter for more detail

Appropriate setbacks have been incorporated into the site plans. Refer to the Engineering Response Letter regarding the Wetland Mitigation.

RM-1 and RM-2 Required Conditions *(Sec 3.8)*

Total number of rooms

- Required Conditions: For RM-2 building less than four stories, RM-1 regulations apply; Total No. of rooms < Net site area in SF/2000. For RM-2 buildings, four stories or more: Total No. of rooms < Net site area in SF/700
- Proposed: 991,426 sf/2000 = 496 rooms allowed. Total number of rooms Proposed: 652

Applicant requests a deviation for room count, increase of 20%.

Understood. This remains a requested deviation, now proposing 644 rooms. If the buildings were increased by one story the deviation would not be needed. We believe limiting the height to 3 stories and 35' to the midpoint to fit contextually with existing developments is justification for the deviation in room count.

Public Utilities

- Required: All public utilities should be available
- Proposed: All public utilities are available

Refer to Engineering review for more details

Understood and responded to under separate cover.

Structure frontage

- Required: Each structure in the dwelling group shall front either on a dedicated public street or approved private drive.
- Proposed: Proposed private drive

Subject to City Council approval
Understood

Building Orientation (Sec. 3.8.2.D)

- Required Code: 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.
- Proposed: Some Buildings do not meet the minimum requirement for 45-degree orientation- Buildings 1, 2, 6, and 16-19 appear to not meet the minimum

Applicant requests a deviation for building orientation for buildings noted
Understood. See plans for building orientation. The purpose of the deviation is to allow for a townhome style development that fits more contextually than a large scale apartment complex.

Yard setback restrictions (Sec. 3.8.2.E)

- Required Code: Within any front, side or rear yard, off-street parking, maneuvering lanes, service drives or loading areas cannot exceed 30% of yard area.
- Proposed: Parking areas and drive aisles are mostly internal to the site North side bordering I-2 not clear.

Please provide a calculation of the amount of drive aisle/parking on north boundary with I-2
Calculations will be provided to show not exceeding 30% of the yard area.

Off-Street Parking or related drives (Sec. 3.8.2.F)

- Required Code: No closer than 25 ft. to any wall of a dwelling structure that contains openings involving living areas or No closer than 8 ft. for other walls or No closer than 20 ft. from ROW and property line
- 15 feet proposed

Applicant requests a deviation for distance from off-street parking to building.
Understood, this is a requested deviation to limit impact to natural features. Additional measurements will be added to plans.

Pedestrian Connectivity (Sec. 3.8.2.G)

- Required Code: 5 feet sidewalks on both sides of the Private drive are required to permit safe and convenient pedestrian access.
- Proposed: 8-foot Sidewalk on one side of Harborfield Dr, Other sidewalks

from parking to front of units are 5 feet

Applicant requests a deviation to provide sidewalk on only one side of private drive

This will continue to be a deviation requested in order to limit impact to the natural features, including wetlands.

Minimum Distance between the buildings *(Sec. 3.8.2.H)*

- Required Code: 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.
- Proposed: 15 ft indicated as minimum distance with corner to corner relationship.

Applicant requests a deviation for min. distances between buildings

Requested deviation is to provide 15 feet between buildings, which is typical of a townhome style community. This enables the layout of this project to fit within the available space while minimizing wetland and woodland impacts.

Architectural design and materials *(Sec. 3.8.3.B)*

- Required Code: All Development features of buildings and any accessory buildings (architectural design & façade materials) shall be clearly shown and identified.
- Proposed: Elevations provided

See Façade review for comments on materials and design

The plans have been revised to fully comply with the City's architectural requirements, and no deviations are being requested. We believe the proposed building facades reflect an attractive, modern design that will enhance the surrounding community. We have offered townhomes with a similar façade design in comparable high-quality markets, where they have been very well received.

Minor Drive

- Required Code: Cannot exceed 600 feet
- Width: 24 feet with no onstreet parking
- Width: 28 feet with parking on one side
- Parking on two sides is not allowed
- Needs turn-around if longer than 150 feet
- Proposed: Drives around buildings all appear to be 24-ft

Havencrest Circle and Laurelwood Lane exceed 600 ft – deviation required

Understood, this is a requested deviation.

Parking on Major and Minor Drives

- Required Code: Angled and perpendicular parking, permitted on minor drive, but not from a major drive;
- minimum centerline radius: 100 feet
- Adjacent parking and on-street parking shall be limited near curves with less than two-hundred thirty (230) feet of centerline radius
- Proposed: Parking on minor drives and at end of Major drives. Centerline radius

Perpendicular Parking on Major drive will require a deviation

Understood, this is a requested deviation

Number of Parking Spaces (Sec.5.2.12.A & B)

- Required Code: For 3 or more bedroom units: 2 ½ spaces each 161- 3 bedroom units: 408 spaces TOTAL: 403 spaces
- Proposed: Attached garages, guest parking Phase 1: 220 / Phase 2: 183 / Total proposed: 403

Clarify parking calculation that states "Parking = 14 x .5;"

A note has been added to the calculations indicating Buildings 9-11 provide driveway apron parking, 14 units each providing .5 spaces.

End Islands (Sec. 5.3.12)

- Required Code: End Islands with landscaping and raised curbs are required at the end of all parking bays that abut traffic circulation aisles. The end islands shall generally be at least 8 feet wide, have an outside radius of 15 feet, and be constructed 3' shorter than the adjacent parking stall as illustrated in the Zoning Ordinance
- Proposed: NA

Refer to Traffic comments.

This requirement appears to have been met.

Barrier Free Spaces

- Required Code: To be determined once minimum required spaces determined
- Proposed: 2 provided in each phase

Refer to Building Code requirements to identify how many ADA accessible units are required and provide necessary Handicap spaces in those locations

Understood. 2 additional HC spaces have been added per Code.

Barrier Free Signs

- Required: One sign for each accessible parking space
- Proposed: Not shown yet

Signage will be verified during site plan review

Understood

Bicycle Parking General requirements *(Sec 5.16.1)*

- Required Code: Shall be accessible via 6 ft paved sidewalk.
- Proposed: 7 ft shown, but 2-foot car overhang would make 5-ft clear

Show width of sidewalk at rack locations – must be 6 ft clear of any car overhangs

Understood, dimensions to be added to plans.

Bicycle Parking Lot layout *(Sec 5.16.6)*

- Required Code: Parking space width: 7 ft. One tier width: 11 ft. Two tier width: 18 ft. Maneuvering width: 4 ft.
- Proposed: Layout Detail shows 8 ft pad width, but dimension on Plan shows 6 ft

Correct the dimensions shown on the plan to match the detail

Layout will be updated to be 8 ft pad.

Covered bike parking

- Required Code: When 20 or more bike parking spaces are required, 25% shall be covered spaces
- Proposed: Not shown

Applicant requests a deviation, Provide a min 7 spaces in covered locations – can be in unit garages

We propose 1 bike parking space in each garage.

Active Mobility Plan

- Required Code: Complete sidewalk/pathway gaps on Grand River Ave, Crosswalk recommended at Providence Pkwy/Grand River, Bus stops on Grand River Ave
- Proposed: Required pathway at GRA would fill ~400 ft gap (8-ft min. width)

See new Active Mobility Plan for other guidelines/recommendations, especially for Grand River Avenue

Understood. The PRO Plan aligns with the updated Active Mobility Plan guidelines and takes into consideration the recommendations provided. We are open to discussions with the city on additional ways to meet the guidelines.

Internal Sidewalks *(Sec. 3.8.2.G)*

- Required Code: Five-foot sidewalks required on both sides of internal public or private drives
- Proposed: Sidewalk provided on one side of roads for most part.

Deviation required for lack of sidewalk on one side of road

This is a requested deviation from the requirement to provide 5-foot sidewalks on both sides of private drives in order to protect the natural features of the property.

Public Sidewalks *(Chapter 11, Sec.11-276(b))*

- Required Code: An 8-foot sidewalk is required along Grand River
- Proposed: Sidewalk proposed along Grand River Ave

Label the width of the sidewalks.

The sidewalk along Grand River is proposed to be 8' wide.

General layout and dimension of proposed physical improvements

- Required Code: 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).
- Proposed: NA

Please provide additional information as requested in this and other review letters

Information on the general layout and dimensions of the proposed physical improvements is covered in the plans, narrative, and accompanying response letters

Development and Street Names

- Required Code: Development and street names must be approved by the Street Naming Committee before Preliminary Site Plan approval
- Proposed: Application received

Project and Street Name application; Contact Stacey Choi at 248-347- 0475 to schedule consideration by the Committee

A response letter regarding the proposed street and project names was received on August 21, 2025. The proposed street names are consistent with those approved by the committee. The project name has also been updated to the committee's recommended name, Providence Meadows.

Parking Lot Lighting

- Required Code: Provide the minimum illumination necessary to ensure adequate vision and comfort.
- Full cut-off fixtures shall be used to prevent glare and spillover.
- Proposed: NA

Parking areas are not to be lit. This would cause a safety concern.

A deviation has been requested, in order to comply with dark sky best practices. As noted, the units themselves will have coach lighting which provides adequate lighting for safety and security and is typical of other townhome style developments.

Residential Developments (Sec. 5.7.3.O)

- Required Code: Provide sufficient illumination (0.2 fc min) at each entrance from major thoroughfare
- Residential projects may deviate from the min. illumination levels and uniformity requirements of 5.7.3.L so long as site lighting for parking lots, property lines and security lighting is provided
- Proposed: NA

Deviation requested by applicant. The parking areas and walkways throughout the site are unlit – this could create unsafe conditions, especially in winter months when it gets dark early.

A deviation for lighting has been requested. As stated above, the units themselves will have coach lighting which provides adequate lighting for safety and security as is typical in townhome style developments.

The proposed Public Benefits we intend to provide are:

- **Public Trail Access Through the Site:** A pedestrian pathway will be constructed to provide public access from the future sidewalk paralleling Grand River Avenue through the development to Providence Parkway. This pathway will feature landscape plantings and offer scenic views of the site's natural features. Together, the sidewalk and pathway will create a vital connection between the Grand River corridor and the Henry Ford and ITC trail systems.
- **Trailhead Connection and Signage:** Development of a new trailhead that links to the larger Henry Ford and ITC trail system.
- **Attainable Housing option:** The development will offer 161 for-sale townhomes specifically designed to meet the demand for attainable housing in Novi. These homes will offer a more accessible price point for young professionals, first-time buyers, and essential workers, including nurses, doctors, and administrative staff employed at the adjacent Henry Ford Health campus.
- **Preservation of Wetlands and Woodlands:** The site has been carefully planned to minimize impacts on its natural features, including wetlands

and woodlands, creating a balanced integration of residential living and nature. These areas will be permanently protected through a conservation easement, ensuring their preservation and ecological value for future residents and the broader community. Further, through meetings with adjacent homeowners, we have revised the plans to provide a 60' minimum natural buffer along the southern property line.

Proposed Deviations

Schedule of Regulations and Modifications Providence Meadows- Attached 2-Car Townhomes			
	RM-2 (RM-1 Supercedes per Section 3.8.1.B of the Zoning Ordinance)	Providence Meadows	Deviations
Principal Building Height to Midpoint	35'	34.2'	In Compliance
Max. Building Coverage	25%	10.3%	In Compliance
Usable Open Space	32,200 SF	50,764 SF	In Compliance
Min. Parking Spaces	403	403	In Compliance
Building Orientation (Sec. 3.8.2.D)	45 degrees	90 degrees	Requested Deviation
Min. Building Setbacks to West Boundary Line (Sec. 3.31.7.D)	75'	50'	Requested Deviation
Distance Between Buildings (Sec. 3.8.2.H)	Determined by Distance Formula	15'	Requested Deviations
Total number of rooms (Sec. 3.8.1. A & B)	536	644	Requested Deviation
Parking on Major and Minor Drives Parking Stall Setback (Sec. 5.10.1.B.iv-vi)	25'	15'	Requested Deviation
Parking along Curves (Sec. 5.10)	Parking on curves with more than a 230' radius	Parking on curves with less than 230' radius	Requested Deviation
Covered Bike Parking (Sec. 5.16.4)	When 20 or more bike parking spaces are required, 25% shall be covered spaces.	None	Requested Deviation
Parking Distance to Buildings (Sec. 3.8.2.F)	25'	<25'	Requested Deviation
Pedestrian Connectivity (Sec. 3.8.2.G)	5' sidewalks on both sides or private drive	Varying	Requested Deviation
Parking Lot Lighting (Sec. 5.7.3.J)	providing the minimum illumination necessary to ensure adequate vision and comfort.	Varying	Requested Deviation
Residential Developments (Sec. 5.7.3.O)	providing sufficient illumination at each entrance from major thoroughfare.	Varying	Requested Deviation

Landscape Deviations

1. Right-of-Way Landscaping (Sec. 5.5.3.B.ii) Deviation for the lack of required 3-foot berm along Grand River Avenue and Providence Parkway due to the existing natural areas to be preserved, and the presence of the ITC easement.
2. Right-of-Way Landscaping (Sec. 5.5.3.B.ii) Deviation to allow a deficiency in street trees along Grand River Avenue.

3. Right-of-Way Landscaping (Sec. 5.5.3.B.ii) Deviation to allow a deficiency in greenbelt landscaping along Grand River Avenue.
4. Right-of-Way Landscaping (Sec. 5.5.3.B.iii) Deviation to allow the use of existing trees as street trees along Providence Parkway access easement.
5. Right-of-Way Landscaping (Sec. 5.5.3.B.iii) Deviation to allow a deficiency in street trees along Harborfield Drive within the ITC easement.
6. Right-of-Way Landscaping (Sec. 5.5.3.B.ii) Deviation for the lack of greenbelt plantings along Providence Parkway.
7. Multi-Family Landscaping (Sec. 5.5.3.F.iii) Requested deviation for multi-family unit trees and foundation landscaping

Product Design





The home elevations are designed to create a high-quality aesthetic that establishes a distinct sense of place and community identity. We view the elevation design as an iterative process in collaboration with Staff and the Planning Commission and welcome ongoing discussions about this vision. The homes feature three-bedroom floor plans, each with a two-car attached garage. Designed as three-story attached townhomes. The units are approximately 1,600 square feet in size and are not stacked, which is highly preferred by homebuyers. Exteriors are finished with brick and Hardie Board siding, in a desirable earthy color scheme, representing a modern and attractive housing option. The elevations have been modified to meet the materiality requirements of Novi and no longer require a design waiver.

Please don't hesitate to reach out if any additional information is needed.

Thank you.

Respectfully



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tloughrin@robertsonhomes.com

CC Gary Jonna, Whitehall Real Estate Interests
CC David Landry

Jason M. Emerine, PE
Robert J. Emerine, PE
Jason A. Rickard, PE

December 29, 2025

City of Novi
45175 Ten Mile Road
Novi, Michigan 48375

Attention: **Lindsay Bell, Senior Planner**

Regarding: **JZ 25-24**
Providence Meadows

Please find below a detailed response to the Comprehensive Review packet that was received by SKE Group for the Providence Meadows Project on December 3, 2025. The responses have been addressed according to the specific review letters received.

Planning Review

Review Concerns

5. Wetland Mitigation – Under the approved EGLE wetland mitigation plan 1.23 acres were required and we are proposing to comply with the permit. We will confirm with EGLE if a new plan is required. If allowable the mitigation can be reduced to the minimum required area which would preserve more woodlands.

Planning Review Chart:

Sign Location Plan – The proposed Zoning District will be updated to RM-2.
Residential Building Setbacks – Labels for minimum setbacks will be added to plans.
Yard Setback Restrictions – Calculations will be provided to show not exceeding 30% of the yard area.
Off-Street Parking or drives – Additional measurements will be added to plans.
Number of Parking Spaces - A note has been added to the calculations indicating Buildings 9-11 provide driveway apron parking, 14 units each providing .5 spaces.
Barrier Free Spaces – 2 additional HC spaces have been added per Code.
Bicycle Parking Lot Layout – Layout will be updated to be 8 ft pad.
Covered Bike Parking – We can propose 1 covered bike parking space in each garage.
Public Sidewalks – The sidewalk along Grand River is proposed to be 8’ wide.

Engineering Review

1. Based on existing zoning the Site would yield approximately 130,000 sf of building with the approximate REU’s being 52. We will update the plans for the sanitary sewer basis of design.
2. Based on the soils report the boring logs show mostly clay soils which makes infiltration difficult.
3. We have added a note stating that RCOC approval is required for detention basin discharge.
4. We have added a note stating that DTE approval is required for the construction under the overhead power lines.

All other comments will be addressed at the time of Final Site Plan.

Wetland Review

1. We have added to the wetland chart the area of temporary buffer impact.
2. This site has an EGLE wetland permit in place. All wetlands have been delineated and agreed upon with EGLE.
3. The cost to perform any wetland protection and restoration will be added to the Site Plan submittal.

Sincerely,
SKE Group LLC



Jason A. Rickard, PE

Providence Meadows
Landscape Response Letter – Revised PRO Concept
12.22.2025

To whom it may concern,

Land Design Studio has received the Combined Review Letters and Charts related to the revised Providence Meadows plans (formerly Providence Park West), project number JZ 25-24. Please see the following responses as they relate to the various comments within the letters and charts:

Planning Review Letter – dated December 03, 2025

Natural Features:

- Wetlands: Approximately 1.24 acres of on-site mitigation area is noted on the plan, which exceeds the 0.89 acres required according to City Code. The applicant should confirm with EGLE that they can continue to use the previous permit for a new proposed development with a different use and layout. If the excess mitigation causes impacts to regulated woodlands, it may be desirable to scale back the preserve more woodlands.
  Response: The Development Team is pursuing answers to the questions posed regarding the existing EGLE permit. Additionally, the Team is analyzing potential ways reduce or reconfigure the proposed wetland mitigation areas in order to save existing trees.

- Woodlands: The City's Woodland Consultant "has determined that the majority of the trees on site should be considered regulated woodland due to the stand density and connectivity to other regulated woodland areas – specifically, connection to regulated woodland areas west of the project parcel". The plans will need to be revised to calculate replacement credits under the Woodland Protection Ordinance.
  Response: An initial Tree Replacement Analysis indicates that the City's Woodland Consultant's determination will lead to an unexpected replacement increase of approximately 750 trees. This is a departure from the information presented in the published Regulated Woodland Map which was relied upon for preparation of the plans for review, and further was not indicated as regulated woodlands in any preapplication review comments provided to us. Our position is that the City had clearly conveyed that the parcel was not considered to contain regulated woodlands and as such the additional tree requirement should not be imposed.

Ordinance Deviations:

- Item 14: A landscape deviation to allow a deficiency in street trees along Providence Parkway access easement. This may be supported by Staff. Please add trees where possible and/or explain the need for the deviation if the required trees cannot be provided.
  Response: The Providence Parkway entrance to this proposed community is provided via an agreement with Henry Ford Health and affords the project one 60' wide access easement, flanked by two 60' wide landscape easements. The entirety of the 60' width access easement is filled with the newly proposed access road, existing community sidewalk with new crosswalk, proposed community sidewalk, proposed entrance light, existing underground cables, and area precluded from use due to clear view triangles. The two 60' width landscape easements are likewise encumbered by existing trees, underground cables, underground telecommunication cables, and existing community sidewalk. The proposed improvements in these easements also includes masonry walls, the northern of which will support the community sign panel. The proposed landscape includes 6 ornamental trees and utilizing 4 Existing Trees towards the landscape requirements. Specifically, the following trees are used as street trees:
  - Tree 103902 10" Red Maple Good Condition
  - Tree 103906 8" Pear Good Condition
  - Tree 103915 28" Bur Oak Good Condition
  - Tree 103917 12"/16" Sugar Maple Good Condition

  To conclude, between the existing hardscape, the existing utilities, the existing trees, the proposed entrance road, the proposed sidewalk, the currently proposed ornamental trees, the limitation from the clear view triangle, and the intended visibility of the community sign, there is no more room to add the requisite trees within the limited space provided to the project by Henry Ford Health.

- Item 16: A deviation for the lack of greenbelt plantings along Providence Parkway. This may be supported by staff. The applicant is asked to clearly identify the existing trees to remain and count towards the required tree count on the plan view and in the calculations, and add trees to remove any remaining deficiencies.
  Response: Information was added to the landscape requirement calculations on Sheet L-1 and hatching was added to the 4 existing trees intended to satisfy the canopy tree requirement on Sheet L-2. More specific information, including the above limitation information, and better hatching will be added to the plans for more clarity on the matter.

- Item 17: A landscape deviation for the deficiency in multi-family unit trees and foundation landscaping. This deviation is not supported by staff as there are opportunities to more closely comply with the ordinance standards.
  Response: The previously submitted plans included the correct number of multi-family unit trees. Per our conversation with Rick Meader, the following information and solutions were discussed and will be included in future landscape plans:
    - The "shrubs" identified in the Landscape Review Letter are actually proposed columnar trees. In our discussion, it was determined that columnar trees, as proposed, would count as subcanopy trees, which are allowable at a 1.5/1 ratio towards requirements. Additionally, the Design Team will diversify the proposed columnar trees to include columnar evergreens, also to be counted as subcanopy trees.
    - The Design Team is working to determine whether the 62 trees proposed in the Wetland Mitigation Area will be allowed per EGLE.

  At this time the Design Team will not be implementing the suggested 4' width landscape islands between the townhome garages. Such islands would create a difficult growing condition for landscape material and winter maintenance issues throughout the community.

Engineering Review Letter – dated November 10, 2025

Comments:

- Item 10: Generally, all proposed trees shall remain outside utility easements. Where proposed trees are required within a utility easement, the trees shall maintain a minimum 5-foot horizontal separation from a water main and storm sewer and 10-foot horizontal separation from sanitary sewer.
  Response: Effort has been made to keep as many trees outside of utility easements as possible, however, due to the required quantity of trees on this site, trees need to be placed within easement to avoid deficiencies. When proposed in an easement, the above required horizontal separations have been adhered to. A note has been added to Sheet L-1 detailing these separation requirements.

Storm Water Management Plan:

- Item 41: A 25-foot vegetated buffer shall be provided around the perimeter of the storm water basin. This buffer cannot encroach onto adjacent lots or property.
  Response: According to the City of Novi Landscape Design Manual, Part 1, Section 3d: the 25' vegetated area required shall be measured from the permanent water level, not the perimeter of the pond. The proposed pond adheres to this 25' vegetated area.

Landscape Review Letter – dated October 24, 2025

Landscape Deviations required for the proposed layout and landscaping:

- Lack of street trees for Grand River and Providence Parkway – would be supported by Staff for Grand River and possibly for Providence Parkway if room for the required trees is not available.
  Response: See response in Planning Review Letter portion of this Response Letter.

- Significant deficiencies in multi-family landscaping – unit trees, interior drive trees, and foundation landscaping – not supported by staff.
  Response: See response in Planning Review Letter portion of this Response Letter.

- Please revise the layout/design so the foundation landscaping is at the side of the building facing the drive.
  Response: The portion of the building that faces the drive is the "rear"/garage side of the building. The Development Team has explored the possibility of adding small landscape islands between the garage doors, but has opted not to pursue them at this time. The small width of the islands would not be conducive to tree placement and make it difficult for shrub and perennial establishment as well. Additionally, winter maintenance and significant salt accrual would further damage landscaping included in the islands.

Ordinance Considerations:

Existing Trees

- Item 2: Woodland replacement calculations are provided but are incorrect. The woodland map does not show regulated woodlands on the site but that appears to be an error. An inspection by our environmental consultant determined the boundaries of the regulated woodland on site and was referred to in their review but their suggestions were not followed. Please revise the calculations based on that determination.
  Response: An initial Tree Replacement Analysis indicates that the City's Woodland Consultant's determination will lead to an unexpected replacement increase of approximately 750 trees. This is a departure from the information presented in the published Regulated Woodland Map which was relied upon for preparation of the plans for review, and further was not indicated as regulated woodlands in any preapplication review comments provided to us. Our position is that the City had clearly conveyed that the parcel was not considered to contain regulated woodlands and as such the additional tree requirement should not be imposed.

- Item 3: Landscape credits for preserved trees outside of woodlands and wetlands may only be applied to required woodland replacements, not other landscape requirements.
  Response: The landscape calculations have been revised and the plans have been updated accordingly.

Adjacent to Residential – Buffer

- Item 3: Please add variation to the height of the berm, with the minimum height being 10 feet.
  Response: The berm is proposed to undulate. There is not enough room for the minimum height to be 10'.

Adjacent to Public Rights-of-Way – Berm/Wall, Buffer and Street Trees

- Item 6: The required greenbelt subcanopy trees are provided in the Providence Parkway acess easement and it appears that existing trees to remain will meet the requirement for canopy trees. This may require a landscape deviation. It would not be supported by Staff. Please clearly identify the existing trees to remain and count towards the required tree count on the plan view and in the calculations and add trees to remove any remaining deficiencies.
  Response: Information had been added to the landscape requirement calculations on Sheet L-1 and hatching had been added to the 4 existing trees intended to satisfy the canopy tree requirement on Sheet L-2. Better notes and hatching will be used to identify the existing trees intended to satisfy the Providence Parkway requirements. These trees are all located in the landscape easement.

- Item 7: No street trees are provided in the Providence Parkway access easement. A landscape deviation would be required. If it can be shown that there is insufficient room for the trees due to spatial constraints, utility conflicts or existing trees, it could be supported by staff. Please add trees where possible and/or explain the need for the deviation if the required trees can't be provided.
  Response: See response in Planning Review Letter portion of this Response Letter.

Existing and proposed overhead and underground utilities, including hydrants

- Item 2: There are some areas within the site where the utility layout prevents the planting of some of the required interior drive trees. This is not acceptable. Please revise the utility layout so all of the trees can be planted.
  Response: LDS will work with the project engineer to coordinate the revised location of the Interior Drive Trees and to resolve any conflicts between the Interior Drive Trees and proposed utilities.

- Item 3: Please add a note detailing the required spacing for trees from utility structures and utility lines to the plans – at least on L-1.
  Response: The requested tree-utility separation requirements was added to Sheet L-1.

Parking Lot Landscaping

- Item 2: Please use Interior Drive Trees along the edges of the parking bays to help meet the interior drive requirements.
  Response: The next plan submittal will include revised calculations for interior drive trees and revised locations for proposed trees, including trees placed in the requested locations along parking bays.

Multi-Family Residential Development Landscaping

Multi-family Unit Trees

- Item 3: Please note that the multifamily unit trees can only be used to exceed the wetland mitigation landscaping requirements.
  Response: The existing EGLE permit requires the construction of both emergent and scrub-shrub wetland typologies. No trees are required for the mitigation areas so all trees in these areas are counted towards the muti-family tree requirement. As noted above, The Design Team is working to determine whether the trees proposed in the Wetland Mitigation Area will be allowed per EGLE.

- Item 4: 356 trees are shown on the plan, including trees along the access drive and interior drives. A landscape deviation is required for the deficiency. It would not be supported by staff.
  Response: As discussed with Staff, until a time comes that the trees in the wetland mitigation area are disallowed, the 62 proposed trees will be counted as viable and towards the multi-unit tree requirement. Additionally, the 70 "shrubs" indicated in Item 5 below are columnar trees. In discussion with Staff, it was determined that these trees would be counted as subcanopy trees at a rate of 1.5:1. This would yield a deficiency of 18 trees. 18 trees will be added to the Plan for the next submittal, removing the need for a deviation.

- Item 5: 66 shrubs are also shown on the plan but it is unclear if they are being used for credit. They may not be. Special consideration was given for the Sakura East project, but it is not a normal allowance.
  Response: See the above response

Interior Drive Trees

- Item 1: Only 45 of 85 trees required within the two sections are provided. This requires a landscape deviation. It would not be supported by staff.
  Response: LDS has discussed with Staff specifically which drives and parking bays will be counted towards this requirement. The correct number of required interior drive trees will be added on the next submittal, removing the need for a deviation.

- Item 2: No interior drive trees are shown along the east side of Harborfield Drive, outside of the ITC easement. Trees need to be provided along that section of road, but subcanopy trees should be used at a rate of 1.5 trees per canopy tree required since there are overhead wires. A landscape deviation would be required for the proposed deficiency. It would not be supported by Staff.
  Response: Trees can be added in the requested locations, as long as they are located outside the existing DTE easement and with the correct setback from the proposed water main and fire hydrants along this section of drive.

- Item 3: 2 interior drive canopy trees are also required along the north 70 lf of the west side of Harborfield Drive. Only multifamily unit trees are provided there. Please change 2 of those multifamily unit trees to interior drive trees.
  Response: The requested area will receive 2 interior drive trees.

- Item 5: Please consider adding some sort of landscaping such as shrubs allowable by ITC along that frontage as an aesthetic improvement. An equivalent such as 6 shrubs per required multi-family tree would be allowed by staff to add this landscaping.
  Response: It is the intention of the Development Team to make this entry drive as aesthetically pleasing as possible, as allowable by ITC. We are working with ITC to see what would be allowable within their easement. Further details pursuant to this will be included in future Site Plan submittals.

- Item 6: There should be at least one street tree in front of buildings with 1-4 units and 2 in front of buildings longer than that to help provide shading of the site and create a more appealing streetscape.
  Response: The portion of the building that faces the drive is the "rear"/garage side of the building. The Development Team has explored the possibility of adding small landscape islands between the garage doors, but has opted not to pursue them at this time. The small width of the islands would not be conducive to tree placement and make it difficult for shrub and perennial establishment as well. Additionally, winter maintenance and significant salt accrual would further damage landscaping included in the islands.

Building Foundation Landscaping

- Item 2: None of the buildings have any landscaping proposed on the drive side of the buildings – it is all on the side of the buildings where no one but pedestrians walking around the buildings will see. This will not be attractive, especially when the buildings are 5 units or longer. This configuration requires a landscape deviation. It will not be supported by staff.
  Response: See the above "Interior Street Trees – Item 6" response.

- Item 3: While it may not remove the need for a deviation, adding landscaping of some sort, preferably with some height, between units' garages, such as that shown on the image on the landscape chart, would improve the appearance of the site. Please consider doing this.
  Response: See the above "Interior Street Trees – Item 6" response.

Landscape Review Chart – dated October 24, 2025

<u>Existing Conditions</u>

- Existing plant material/Existing woodlands or wetlands: Although the City Woodland Map doesn't show any regulated woodlands on the site, the aerial view indicates that there are woodlands so there are likely many more regulated trees that require replacements and fewer trees that can be saved for credit than the calculations indicate.
- **Response:** An initial Tree Replacement Analysis indicates that the City's Woodland Consultant's determination will lead to an unexpected replacement increase of approximately 750 trees. This is a departure from the information presented in the published Regulated Woodland Map which was relied upon for preparation of the plans for review, and further was not indicated as regulated woodlands in any preapplication review comments provided to us. Our position is that the City had clearly conveyed that the parcel was not considered to contain regulated woodlands and as such the additional tree requirement should not be imposed.

<u>Proposed Improvements</u>

- Existing and proposed utilities: If there will be any overhead lines within the development area, please show them clearly. If there will not be, please add a note on L-1 stating so.
  Response: No overhead lines are proposed within the development area, only existing ones. The requested note will be added to Sheet L-1 on future submissions.

- Clear Zones: Please show the Providence Parkway right-of-way line. Please reorient the clear vision zone to the right-of-way line per the Section 5.9 requirement that it be oriented at the right-of-way line, not back of curb.
  Response: The clear vision zones will be reoriented to the Providence Parkway ROW as requested.

Landscaping Requirements

Residential Adjacent to Non-residential

- Berm Requirements: Please add variation to the height of the berm and keep the minimum height at 10 feet.
  Response: The proposed berm includes variation to the height. There is not enough room for the minimum height to be 10'.

ROW Landscape Screening Requirements Chart

- Canopy deciduous or large evergreen trees: Please keep the tree numbers of the trees to count toward the requirement on Sheet L-2.
  Response: The greenbelt and tree requirement calculations will be moved to Sheet L-2 on future submittals as requested.

- Canopy deciduous trees in area between sidewalk and curb: If the RCOC does not allow some or all of the required Grand River street trees, they do not need to be planted, but a copy of their decision must be provided to staff. It also appears that there is no room for street trees at the Providence Parkway entry. A landscape deviation may be required for any deficiency in street trees in that area.
  Response: The Development Team will coordinate with RCOC on allowable tree placement along Grand River Avenue. A copy of their determination will be provided to staff upon receipt. Please see response in Planning Review Letter portion of this Response Letter for details related to Providence Parkway entry landscape.

Multi-family Residential

- Multi-family Unit Trees: Multifamily unit trees may only be used in the wetland mitigation areas if they exceed the requirements for wetland mitigation. A deficiency in the number of trees provided would require a landscape deviation. It would not be supported by staff. Shrubs were only allowed for credit on previous developments where room was not available for all of the trees required. As there is room on the site, the shrubs shown cannot be used for unit tree credit. Please add 65 more multifamily unit trees on the site.
  Response: Please see the response to "Multifamily Unit Trees – Item 4" in the Landscape Review Letter portion of this Response Letter for details.

- Interior Street Landscaping: Multifamily unit trees can't be used to meet the interior drive tree requirement. Trees must be within 15 feet of the curb to count as street trees. All interior drive trees must be deciduous canopy trees. A landscape deviation is required for lack of street trees within the ITC easement. It would be supported by staff. There should be no less than 1 street tree in front of each building (preferably 2 in front of buildings with 5 units or more) – currently there are none. Subcanopy trees at a rate of 1.5 per required canopy tree should be planted along the east side of Harborfield Drive outside of the ITC easement since there is an overhead wire there. A landscape deviation would be required for the other shortages. It would not be supported by Staff.
  Response: Please see all responses to "Interior Drive Trees" in the Landscape Review Letter portion of this Response Letter for details.

- Foundation Landscaping: Please add the required foundation landscaping. A landscape deviation is required for the proposed scheme. It would not be supported by Staff. While the deviation would likely still be required, the elevations indicate that there is 4 feet between unit garage doors where some landscaping could be proposed. At a bare minimum, such landscaping needs to be provided.
  Response: The portion of the building that faces the drive is the "rear"/garage side of the building. The Development Team has explored the possibility of adding small landscape islands between the garage doors, but has opted not to pursue them at this time. The small width of the islands would not be conducive to tree placement and make it difficult for shrub and perennial establishment as well. Additionally, winter maintenance and significant salt accrual would further damage landscaping included in the islands.

<u>Parking Area Landscape Requirements</u>

- Parking lot islands: Please widen any islands not 10 feet wide as measured at the backs of curb to 10 feet so trees can be planted in them.
  Response: The Design Team is reviewing this request and will make adjustments as possible.

<u>Miscellaneous Landscaping Requirements</u>

- Plantings around Fire Hydrant: Please adjust utility layout and/or lights to remove conflicts and provide room for the required trees.
  Response: LDS will work with the project engineer to coordinate the revised location of the Interior Drive Trees and to resolve any conflicts between the Interior Drive Trees and proposed utilities.

<u>Landscape Notes and Details – Utilize City of Novi Standard Notes</u>

- Quantities and sizes: Provide a plant list on the landscape plans no later than Final Site Plans, but preferably sooner.
  Response: A plant list including all required information will be provided at the required stage in the site plan process.

Woodland and Wetland Review Letter – dated November 10, 2025

Woodland Review Comments:

- Item 4: The plan has not summarized any impacts to regulated woodlands on-site. However, to implement the proposed project, it will require the loss of forested areas, which could impact overall forest stand quality in nearby areas. A woodland use permit is required to perform construction on any site containing regulated woodlands. Merjent is unable to determine the number of regulated trees that are proposed for removed based on the site plan provided.
  Response: An initial Tree Replacement Analysis indicates that the City's Woodland Consultant's determination will lead to an unexpected replacement increase of approximately 750 trees. This is a departure from the information presented in the published Regulated Woodland Map which was relied upon for preparation of the plans for review, and further was not indicated as regulated woodlands in any preapplication review comments provided to us. Our position is that the City had clearly conveyed that the parcel was not considered to contain regulated woodlands and as such the additional tree requirement should not be imposed.

- Item 5 Woodland Replacement: The number of trees to be cut that have a DBH of eight inches or more should be summarized by replacement category on the plan, in a style similar or equivalent to the table provided below.
  Response: A table including the same information is provided on Sheet L-1.

- Item 6: A replacement plan and cost estimate for the tree replacement will be necessary prior to final site plan approval by the City. Woodland replacement credits can be provided by:
    a. Planting the woodland tree replacement credits on-site.
        i. For tree replacement credits that will be planted on-site, a financial guarantee of $400/tree replacement credit is required to ensure the planting of the on-site woodland replacement credits. The financial guarantee would be released after trees have been planted and approved by the City of Novi. The financial guarantee will be released after trees have been planted and approved by the City of Novi, and applicants must request a tree planting inspection.
        ii. Woodland replacements shall be guaranteed for two growing seasons after the applicant's installation and the City's acceptance. A two-year maintenance bond in the amount of 25% of the value of the trees, but in no case less than $1,000, shall be required to ensure the continued health of the trees following acceptance.
    b. Payment to the City of Novi Tree Fund at a non-refundable rate of $400/woodland replacement credit.
    c. Combination of on-site tree planting and payment (non-refundable) into the City of Novi Tree Fund ($400/woodland replacement credit).

  The applicant has not proposed planting trees on-site for the impacts nor has proposed payment into the City of Novi Tree Fund. The applicant should clarify impacts to woodland areas.
  Response: An initial Tree Replacement Analysis indicates that the City's Woodland Consultant's determination will lead to an unexpected replacement increase of approximately 750 trees. This is a departure from the information presented in the published Regulated Woodland Map which was relied upon for preparation of the plans for review, and further was not indicated as regulated woodlands in any preapplication review comments provided to us. Our position is that

the City had clearly conveyed that the parcel was not considered to contain regulated woodlands and as such the additional tree requirement should not be imposed.

- Item 7: **Critical root zone**. Accurate critical root zones must be depicted on the site plan for all regulated trees within 50 feet of the proposed grading or construction activities. Section 37-2 defines a critical root zone as a circular area around a tree with a radius measured to the tree's longest dripline radius plus one foot.
    a. The applicant has not accurately depicted critical root zones on the site plan. This will be necessary for Final Site Plan Approval and can be addressed in the site plan review process should this project receive a future PRO approval.

  Response: According to Chapter 37 Woodland Protection, Article 1, Section 37-4.c.3, "On any parcel containing any degree of regulated woodland, the applicant shall provide site plan documentation showing the locations, species, size and condition of all trees of either-inch caliper or larger." Per ordinance, our tree survey, between the plan information and tree matrix, include all required information.

- Item 8: A woodland fence guarantee of $6,000 is required per Chapter 26.5-37. The financial guarantee shall be paid prior to issuance of the City of Novi Woodland Use Permit.
  Response: The guarantee shall be paid at the appropriate time in the development process.

- Item 9: Woodland Replacement Inspection (if tree replacements are planted on-site) – The Applicant is responsible for walking the entire site to confirm that all woodland replacement trees/shrubs have been planted on-site according to the approved site plan stamping set. If any material is missing, dead or dying, replacements should be made prior to requesting the inspection. The applicant should also provide an as-built landscape plan if the trees planted do not match the species and/or location shown on the approved site plan stamping set. 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.
  Response: All above items will be handled at the appropriate time in the site plan and construction permit processes.

Thank you for your consideration of the project and we hope the above answers meet with your approval.

Sincerely,



Eric James, Landscape Architect
LAND Design Studio

FLEIS&VANDENBRINK
DESIGN. BUILD. OPERATE.

December 17, 2025

VIA EMAIL: tloughrin@robertsonhomes.com

Tim Loughrin
Robertson Brothers Homes
6905 Telegraph, Suite 200
Bloomfield Hills, MI 48301

RE: Response to Comments – Providence Parkway Residential Development TIS

Fleis & VandenBrink (F&V) staff have completed this letter in response to comments provided by the City of Novi Traffic Engineering Consultant (AECOM) and RCOC in their letter dated November 12, 2025, regarding their review of the updated F&V Traffic Impact Study (TIS) report, dated September 5, 2025. AECOM indicated that several of the comments had been addressed with the previous TIS revision; therefore, these comments were excluded from this response letter. The remaining comments provided by AECOM/RCOC related to the September 5, 2025, traffic study and the corresponding F&V responses are summarized herein.

AECOM Comment #4: *A signal warrant was conducted at the intersection of Grand River Avenue and Providence Parkway under the existing traffic volumes, and a signal with a permissive/protected EB/WB left-turn phase was warranted and recommended by the applicant.*

a. *Per P.217/218 left turn phase analysis, the eastbound left turn does not meet the criteria. Please revise the report and resubmit it for approval.*

   Updated report: Report text matches the analysis in the appendix. However, the westbound left-turn protected/permissive phasing warrant is met.

F&V Response: RCOC has indicated that there are no plans to signalize the Grand River Avenue & Providence Parkway intersection; therefore, permissive/protected left-turn phasing was not evaluated.

AECOM Comment #5a: *"It is recommended that RCOC consider the installation of a signal at this intersection to accommodate the existing traffic volumes." Please refer to the RCOC comments for the signal warrant: Although the westerly intersection of Grand River Ave and Providence Park Dr meets warrants for signalization, RCOC has no plans to signalize this intersection. The delays observed at this intersection occur on Providence Park Dr, a private roadway. Since the delays occur on this private roadway, the costs of signalizing this intersection would be the responsibility of the private property owners not the RCOC. RCOC may consider permitting signalization at this intersection. Please remove this recommendation in the revised report in consultation with RCOC and resubmit it for approval.*

Updated report: Recommendation of RCOC to install a signal has been removed due to a private roadway.

F&V Response: The traffic study was revised, as noted by RCOC in their review to consider that site-generated vehicles will modify their travel route to use the existing signalized intersection at West Market Square, east of Providence Park Drive; the impact is summarized in the revised traffic study. The results shows that the existing traffic generated at this intersection meets the signal warrant criteria; however, RCOC has indicated that there are no plans for signalization of this intersection to accommodate the existing traffic volumes.

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AECOM Comment #5b: ***Please add a section/conclusion on coordination with the private roadway owner and direction on signalizing the referred location. Please clarify if there is any impact from the queues from this development on the circulation and access to the hospital in case of stop-controlled traffic control.***

F&V Response: The TIS has been revised to include a vehicle queuing evaluation along Providence Parkway at the stop-controlled study intersection with Grand River Avenue.

AECOM Comment #5c: *Update the report to reflect the impact of traffic using the signal at the east on Grand River Avenue/West Market Square, if signalization at the intersection referenced in point C is not pursued.*

F&V Response: The TIS was updated to reflect the site-generated traffic using the existing signalized intersection at Grand River Avenue & W. Market Street, in order to avoid the existing delays for the northbound left-turn traffic at the stop-controlled intersection of Grand River Avenue & Providence Parkway.

Please let me know if you have any further questions or comments regarding the letter.

Sincerely,

FLEIS & VANDENBRINK

Jacob Swanson

Jacob Swanson, PE, PTOE
Traffic Engineer

COMMUNITY IMPACT STATEMENT

October 21, 2025

City of Novi Planning Department

Re: **Providence Meadows** Community Impact Statement
Property south of Grand River west of Providence Parkway
Parcel Numbers 22-17-101-012 and 22-17-101-010
Novi, MI

Community Impact Statement

This Community Impact Statement provides a comparative analysis between the current residential proposal and the previous medical office proposal, referred to as *West Park*. The West Park plan envisioned two medical office buildings totaling approximately 150,000 square feet under the existing I-1 zoning. As a vetted and engineered plan, it serves as an accurate benchmark for assessing the potential impacts of an I-1 use on this property.

The current residential proposal utilizes the same EGLE wetland permit originally obtained for the West Park plan. However, the proposed residential development results in significantly reduced overall environmental impacts, despite operating under the same approved EGLE wetland impact plan.

1. Public Safety Impact

Expected Annual Number of Police Responses:
Residential Proposed: Based on comparable residential townhome developments, we estimate approximately 25–35 police responses annually, primarily related to domestic matters, minor property complaints, or traffic-related incidents.
Medical Office Use: We estimate 50–70 police responses annually

Expected Annual Number of Fire Responses:
Residential Proposal: We estimate approximately 5–10 fire department responses annually, including medical calls, minor fire alarms, or system checks. These estimates are informed by response rates for similar-sized developments in comparable communities.

Medical Office Use: We estimate 10-20 annual responses, which may include system alarms or vehicle incidents

2. **Employment Impact**

Estimated Number of Permanent Employees (on-site staff, maintenance, etc.):
Residential Proposed: While the community is primarily residential, a small number of ongoing property management and maintenance roles (approx. 2–4 jobs) may be created.
Medical Office use: A 150,000-square-foot medical office campus would support approximately 400–500 full-time and part-time employees

Estimated Number of Construction Jobs Created:
Residential Proposed: The project is anticipated to support approximately 75–100 full-time equivalent construction jobs during peak construction.
Medical Office Use: Could support 150–200 full-time equivalent construction jobs at peak construction.

3. **City Performance Standards Compliance (Zoning Ordinance Section 5.14)**

Residential Proposed: The project will comply with all applicable Performance Standards outlined in Section 5.14 of the Zoning Ordinance. This includes requirements related to noise, lighting, vibration, emissions, and general operational impacts.
Medical Office Use: While a medical office development would comply with the City's performance standards, its operational characteristics, including continuous HVAC systems, rooftop mechanical equipment, large vehicle activity, and extended-hour lighting, would create a significantly higher baseline of noise, light, and vibration impacts compared to the proposed residential plan. In addition, the City's noise thresholds for nonresidential uses permit considerably higher sound levels than those allowed in residential districts.

5.14.10.A.ii Weighted Sound Level Limit Decibels			
Receiving Zoning Districts			
Residential		Non-Residential and Mixed Use	
Night-Time Hours Decibels	Day Time Hours Decibels	Night-Time Hours Decibels	Day Time Hours Decibels
55	60	70	75

4. **Utility Demand**

Residential Proposed:
Estimated Number of Sewer Taps: 161 (one per unit)
Estimated Number of Water Taps: 163 (one per unit and two irrigation taps)

Peak Hour Water Demand: Based on assuming an average of two (2) residents per unit, the peak water demand is estimated to be between 3,400 to 4,100 gallons per hour.
Min/Max Operating Pressures: Estimated to be between 30-35 PSI

Medical Office Use:
Estimated Number of Sewer Taps: 2
Estimated Number of Water Taps: 2
Peak Hour Water Demand: Estimated at approximately 18,000–22,000 gallons per hour
Min/Max Operating Pressures: Estimated to be between 40-50 PSI

5. Relationship to Surrounding Uses

The development is well-suited to its surroundings, benefiting from a context that supports residential use while maintaining appropriate buffers from neighboring properties. To the south, a recently constructed Pulte Homes community is separated from the proposed development by over 200 feet of wooded wetlands, ensuring privacy and a natural landscape transition. To the west, extensive wetlands and dense tree cover provide more than 1,200 feet of separation from the nearest commercial building, which is a Target store located off Wixom Road. To the northwest, two industrially zoned (I-2) properties fronting Grand River Avenue border the site; the proposed plan includes effective buffering to minimize visual and noise impacts from these uses. North of the site lies Grand River Avenue, located more than 500 feet from the nearest planned residential units, providing a substantial setback that minimizes exposure to road traffic. From within the development, a secondary access point will extend to Grand River Avenue, serving both as an emergency vehicle route and a pedestrian walkway. This connection will link directly to the existing sidewalk along Grand River, reinforcing the project's integration with the surrounding mixed-use corridor and extending pedestrian connections toward Novi's Town Center. To the northeast, a small office building accessed from Providence Parkway is separated from the site by existing wetlands, foliage, and the ITC easement, providing a substantial buffer between uses.

To the east, an existing north–south ITC utility corridor buffers the site from Providence Parkway. Further east, across Providence Parkway, is the Henry Ford Providence Hospital, our largest neighbor and a strong supporter of the development, recognizing the benefit of attainable housing for campus staff. To the southeast, a network of existing walking trails, including the ITC Corridor Trail and the Henry Ford trail system, connects the site to the greater Novi community, promoting active lifestyles and enhancing regional connectivity.

6. Proposed Land Use

Spanning approximately 31 acres, the site is planned as a high-quality, for-sale “missing middle” residential townhome community, zoned RM-2 under a PRO Agreement. The proposed development introduces 161 thoughtfully designed townhomes, transforming a site once intended for industrial use into a welcoming residential neighborhood that aligns seamlessly with the community's character.

Site Constraints

Currently zoned I-1, the site was previously envisioned as a future business park. However, due to limited visibility from less than 200 feet of frontage on Grand River and its orientation toward Providence Parkway, the land naturally functions as an extension of the health campus. Moreover, there are many alternative sites along Grand River better suited for new build-to-suit light industrial properties with more advantageous locations and “pad-ready” status.

Despite professional marketing efforts by CBRE dating back to 2009, the site has attracted no serious interest for non-residential uses. In a letter addressed to Whitehall Real Estate Interests, the property’s current owner, CBRE details the site’s competitive disadvantages within the new-build light industrial market. Additionally, the office market remains under prolonged pressure due to long-term shifts in workplace trends following the pandemic. While some employees have returned to traditional office spaces, the overall market remains oversaturated. According to Cushman & Wakefield, Southeast Michigan’s office vacancy rate has climbed to 21%, as businesses continue to reimagine or downsize their office footprints. These broader market trends further demonstrate that an office or industrial use on this site is no longer viable (see the CBRE letter included).

7. Environmental Factors and Impacts

Natural Features on Site: The site contains both EGLE-regulated and City-regulated wetlands, most of which are being preserved and enhanced as part of the proposed residential development. While there are no regulated woodlands on site, much of the existing wooded areas are being retained to enhance natural screening and support the broader goal of preserving the site's natural features.

Temporary & Permanent Impacts: The previously approved wetland permits for the 150,000 sq ft of Medical Office space allowed for impacts to 0.74 acres of EGLE-regulated wetlands and 0.84 acres of City-regulated wetlands. The current plan significantly reduces these impacts, with no new disturbance to EGLE-regulated wetlands. Under the current proposal, only 0.48 acres of the total 6.71 acres of regulated wetlands will be impacted. This 0.48-acre impact includes both

EGLE-regulated and City-regulated wetlands (see EGLE Wetland Permit and City of Novi included)

Hazardous/Toxic Materials (Manufacture, Use, or Storage):

Residential Proposed: There are no hazardous or toxic materials currently on site, and none are proposed as part of the development. Phase I and Phase II environmental assessments have been completed and thoroughly reviewed to confirm the site's environmental suitability.

Medical Office Use: I-1 uses carry greater potential for the storage or use of hazardous substances, such as oils, solvents, or cleaning agents, depending on tenants. Additional containment and monitoring could be required.

Underground Storage Tanks: None proposed and none existing on site.

Environmental Use/Contamination History: According to a PM Environmental Phase I ESA conducted in February 2022, a significant portion of the property was filled in the 1970s and 1980s with fill material which contained plastic, brick, glass, asphalt, metal, clay tile, and concrete. Filling activities appear to have ceased between 1987 and 1993, and the property has consisted of vacant land since that time. The results of a Phase II ESA conducted in July of 2025 indicate that there are no elevated levels of contamination on the property for residential use.

Potential Wildlife Impacts:

Residential Proposed: The project avoids major disruption to wildlife corridors, with green space and natural buffers maintained around wetland areas.

Medical Office Use: This would in a greater overall impact on the site and, consequently, more extensive effects on existing wildlife. An I-1 use would continue to disturb natural habitats through elevated levels of noise, lighting, and overall activity. Furthermore, the presence of large buildings and expansive parking areas, as opposed to several smaller residential structures, would create a more substantial barrier to wildlife movement and feeding patterns across the property.

8. Social Impacts

Displacement of Existing Occupants: None; the site is currently undeveloped and vacant.

Traffic Impacts:

Residential Proposed: Per the traffic study led by Fleis & Vandenbrink, dated 9/5/25, the following was concluded:

The results of the traffic Impact Study indicate the proposed residential development is expected to have a negligible impact on the surrounding roadway network and study intersections. The site-generated traffic volumes will fall within the normal daily fluctuations of traffic, estimated to be within plus or minus five percent. A traffic signal is already warranted and recommended at the Grand River Avenue and Providence Parkway intersection based on existing 2025 traffic volumes, and the additional trips generated by the proposed development will not affect that finding or the recommendation for signal installation.

Medical Office Use: Trip generation for a 150,000-square-foot medical office use would be substantially higher, estimated at approximately 3,600 daily trips (based on ITE Land Use Code 720 – Medical-Dental Office Building). In contrast to the residential use, an industrial use would generate a greater proportion of truck and service vehicle traffic.

- **Site Amenities**: The plan includes green spaces, internal sidewalks, connection of the sidewalk parallel to Grand River Ave, an interior walking path to Grand River, and enhanced trail connectivity.
- **Permanent Population Increase**: *326 (Assuming 2 residents per unit)*

Medical Office Use: approximately 400-500 daytime employees

In summary, this proposal represents a responsible, high-quality reuse of an underutilized site that aligns with current housing demands, integrates well with adjacent land uses, and offers meaningful public benefits. The proposed development contributes to Novi's long-term vision for balanced, sustainable growth, while providing essential housing for the healthcare workforce and broader community.

Please don't hesitate to reach out if any additional information is needed at this time.

Thank you.

Respectfully,



Tim Loughrin | VP of Land Acquisition
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REZONING TRAFFIC IMPACT STUDY

MEMO

FLEIS&VANDENBRINK
DESIGN. BUILD. OPERATE.

VIA EMAIL tloughrin@robertsonhomes.com

To:	**Robertson Brothers Homes**
From:	**Julie Kroll, PE, PTOE** **Mary Flanagan, EIT** **Fleis & VandenBrink Engineering**
Date:	**July 22, 2025** **Revised September 5, 2025**
Re:	**Providence Parkway Development** **Novi, MI** **Traffic Impact Study**

1 INTRODUCTION

This memorandum presents the results of the Traffic Impact Study (TIS) for the proposed residential development in Novi, Michigan. The project site is located adjacent to the west side of the Providence Hospital Campus, which is generally located in the southwest quadrant of the Grand River Avenue & Beck Road intersection, as shown in the attached **Figure 1**. The proposed development plan includes the construction of a residential development, on property that is currently vacant. Site access is proposed via one (1) full access driveway on Providence Parkway, with emergency vehicle access provided via Grand River Avenue. The City of Novi has required A TIS for this project, as part of the site plan approval process.

The scope of work for this study was developed based on Fleis & VandenBrink's (F&V) knowledge of the study area, understanding of the development program, accepted traffic engineering practice, professional experience, and the methodologies published by the Institute of Transportation Engineers (ITE). The study analyses were completed using Synchro/SimTraffic (Version 12) traffic analysis software. Sources of data for this study include F&V subconsultant Quality Counts, LLC (QC), the City of Novi, the Road Commission for Oakland County (RCOC), the Southeast Michigan Council of Governments (SEMCOG), the Michigan Department of Transportation (MDOT), and ITE.

2 BACKGROUND DATA

2.1 EXISTING ROAD NETWORK

The lane use and traffic control at the study intersections is shown in the attached **Figure 2** and the study roadways are further described below. For the purpose of this study, all minor streets and driveways were assumed to have an operating speed of 25 miles per hour (mph), unless otherwise noted.

Grand River Avenue generally runs in the east / west directions, adjacent to the north side of the project site. The study section of roadway is under the jurisdiction of RCOC, is classified as a *Minor Arterial*, and has a posted speed limit of 50-mph. Grand River Avenue, adjacent to the project site, provides a typical five-lane cross-section, with two (2) lanes of travel in each direction and a center two-way left-turn lane (TWLTL).

- At the signalized study intersection with Wixom Road, the study section of Grand River Avenue widens to provide an exclusive westbound right-turn lane.
- At the study intersections with 12-Mile Road, Providence Parkway, and W. Market Square, Grand River Avenue widens to provide exclusive eastbound right-turn lanes.

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- At the signalized study intersection with Beck Road, Grand River Avenue widens to provide dual (2) eastbound left-turn lanes and an exclusive westbound right-turn lane.

Wixom Road runs in the north / south directions, approximately 2,000-feet west of the project site. The study section of roadway is classified as a *Minor Arterial* and has an Annual Average Daily Traffic (AADT) volume of approximately 8,840 (MDOT 2024) vehicles per day (vpd).

- South of Grand River Avenue – Wixom Road is under the jurisdiction of the City of Novi, has a posted speed limit of 35-mph, and provides a four-lane cross-section, with two (2) northbound lanes of travel, one (1) southbound lane of travel, and a center TWLTL. At the signalized study intersection with Grand River Avenue, Wixom Road widens to provide an exclusive southbound right-turn lane.
- North of Grand River Avenue – Wixom Road is under the jurisdiction of RCOC, has a posted speed limit of 45-mph, and provides a typical five-lane cross-section, with two (2) lanes of travel in each direction and a center TWLTL.

Beck Road runs in the north / south directions, approximately ½-mile east of the project site. The study section of roadway is classified as a *Minor Arterial,* with an AADT volume of approximately 37,675 vpd (MDOT 2024).

- South of Providence South Drive / Central Park Boulevard – Beck Road is under the jurisdiction of the City of Novi, has a posted speed limit of 45-mph, and provides a typical three-lane cross-section, with one (1) lane of travel in each direction and a center TWLTL. At the study intersection with Providence South Drive / Central Park Boulevard, Beck Road widens to provide a northbound right-turn lane.
- Between Providence South Drive / Central Park Boulevard and Grand River Avenue – Beck Road is under the jurisdiction of the City of Novi, has a posted speed limit of 45-mph, and provides a four-lane cross-section, with one (1) northbound lane of travel, two (2) southbound lanes of travel, and a center TWLTL. At the signalized study intersection with Grand River Avenue, Beck Road widens to provide an additional northbound through lane.
- North of Grand River Avenue – Beck Road is under the jurisdiction of RCOC, has a posted speed limit of 40-mph, and provides a typical four-lane cross-section, with two (2) lanes of travel in each direction. At the signalized study intersection with Grand River Avenue, southbound Beck Road widens to provide dual (2) left-turn lanes and an exclusive right-turn lane.

12-Mile Road generally runs in the east / west directions, approximately ¼-mile north of the project site. The study section of roadway is under the jurisdiction of RCOC, is classified as a *Major Collector,* has an AADT volume of approximately 4,236 vpd (MDOT 2024), and has an assumed prima-facie speed limit of 55-mph. The study section of 12-Mile Road provides a typical two-lane cross-section, with one (1) lane of travel in each direction. At the signalized study intersection with Grand River Avenue, 12-Mile Road widens to provide exclusive left-turn lanes in both directions.

Providence Parkway runs in a loop around the Providence Hospital Campus, adjacent to the east side of the project site. The study section of roadway is a private road, has a posted speed limit of 25-mph, and provides a three-lane cross-section, with one (1) lane of travel in each direction and a center TWLTL.

Providence South Drive / Central Park Boulevard runs in the east / west directions, approximately ½-mile east of the project site. The study section of roadway is a private road. West of Beck Road, Providence South Drive provides a median divided, four-lane cross-section, with two (2) lanes of travel in each direction. East of Beck Road, Central Park Boulevard provides a two-lane cross-section, with one (1) lane of travel in each direction. At the signalized study intersection with Beck Road, Central Park Boulevard widens to provide an exclusive westbound left-turn lane.

W. Market Square generally runs in the north / south directions, approximately ¼-mile east of the project site. The study section of roadway is a private road. The study section of W. Market Square provides a typical two-lane cross-section, with one (1) lane of travel in each direction. At the signalized study intersection with Grand River Avenue, W. Market Square widens to provide exclusive left-turn lanes in both directions.

2.2 EXISTING TRAFFIC VOLUMES

F&V subconsultant QC collected existing weekday peak hour Turning Movement Count (TMC) data on Tuesday, June 24, 2025, during the AM (7:00 AM to 9:00 AM) and PM (4:00 PM to 6:00 PM) peak periods.

Additionally, 12-hour (7:00 AM to 7:00 PM) TMC data was collected at the study intersection of Grand River Avenue & Providence Parkway, as noted below. The study intersections are summarized below:

- Grand River Avenue & Wixom Road
- Grand River Avenue & Providence Parkway (12-hour)
- Grand River Avenue & Beck Road
- Grand River Avenue & 12-Mile Road
- Grand River Avenue & W. Market Square
- Beck Road & Providence Parkway

During the collection of the TMC data, Peak Hour Factors (PHFs), pedestrian and bicycle volumes, and commercial truck percentages were recorded and used in the traffic analysis. The peak hours for the study intersections were utilized and the traffic volumes were carried through the roadway network and balanced upwards at the proposed site driveway. At locations where access is provided between study intersections, "dummy node" intersections were used to account for sink / source volumes. Therefore, the traffic volumes used in the analysis and shown in the attached traffic volume figures may not match the raw traffic volumes shown in the data collection.

The weekday AM and PM peak hours for the adjacent study roadway network were observed to generally occur between 8:00 AM to 9:00 AM and 4:30 PM to 5:30 PM, respectively. The existing 2025 peak hour traffic volumes utilized for this analysis are shown in the attached **Figure 3**.

The data collection was performed in accordance with the Novi Site Development Manual requirements, during a typical weekday, non-holiday week with normal weather. However, Novi Schools were not in session when the data collection was performed; therefore, historical traffic volume data was reviewed to determine if adjustments to the weekday AM and PM peak hour traffic volumes were necessary to consider the impacts of school traffic volumes. Historical traffic counts from RCOC's Sydney Coordinated Adaptive Traffic System (SCATS) database were obtained at the signalized study intersections during typical weekdays while Novi schools were in session. The traffic data was compared with the data collection and the results showed that the traffic volumes collected in June 2025 were *higher* than the historical SCATS traffic volume data when school was in session. Therefore, the traffic volume data collection performed in June was utilized in the analysis and no adjustments were applied.

F&V also obtained the current signal timing permits from RCOC for the signalized intersections within the study roadway network. All of the signalized study intersections operate on RCOC's Sydney Coordinated Adaptive Traffic System (SCATS); therefore, only the baseline timings (mins, clearance, peds, push buttons, etc.) from the permits were utilized in the study. The signal timings were optimized for each scenario studied, in order to reflect the real time optimizations to accommodate the traffic volumes observed by the approach lane detectors. All applicable background data referenced in this memorandum is attached.

3 EXISTING CONDITIONS (2025)

Existing peak hour vehicle delays and Levels of Service (LOS) were calculated at the study intersections using Synchro/SimTraffic (Version 12) traffic analysis software. This analysis was based on the existing lane use and traffic control shown in the attached **Figure 2**, the existing peak hour traffic volumes shown in the attached **Figure 3**, and the methodologies presented in the *Highway Capacity Manual, 7th Edition* (HCM7).

Descriptions of LOS "A" through "F", as defined in the HCM, are attached. Typically, LOS D is considered acceptable, with LOS A representing minimal delay and LOS F indicating failing conditions. Additionally, SimTraffic network simulations were reviewed to evaluate network operations and vehicle queues. The results of the existing conditions analysis are attached and summarized in **Table 1**.

The results of the existing conditions analysis indicates that all approaches and movements at the study intersections are currently operating acceptably, at LOS D or better during both the AM and PM peak hours, with the exception of the following:

Grand River Avenue & Wixom Road

- During the AM peak hour: The westbound and northbound left-turn movements are both currently operating at LOS F. Additionally, the eastbound left-turn, northbound shared through-right, and southbound left-turn movements are all currently operating at LOS E.

  Review of SimTraffic network simulation indicates poor operations during the AM peak hour; long vehicle queues were observed for the eastbound left-turn, northbound shared through-right, and southbound left-turn movements, throughout the majority of the AM peak hour. Additionally, periods of

vehicle queueing was observed for the westbound and northbound left-turn movements; however, these queues were observed to be processed through the signalized intersection within 1-2 cycle lengths and were not present throughout the AM peak hour.

- During the PM peak hour: The westbound left-turn and through movements, the northbound approach, and the southbound left-turn movement are all currently operating at LOS F. Additionally, the eastbound left-turn and westbound right-turn movements are both currently operating at LOS E.

  Review of SimTraffic network simulation indicates poor operations during the PM peak hour; long vehicle queues were observed for the eastbound left-turn, westbound through, and northbound shared through-right movements, throughout the majority of the peak hour. Additionally, periods of vehicle queueing was observed for the westbound left-turn, westbound right-turn, northbound left-turn, and southbound left-turn movements; however, all of these queues were observed to dissipate and were not present throughout the PM peak hour.

Grand River Avenue & 12-Mile Road

- During the AM peak hour: The northbound shared through-right and southbound left-turn movements are both currently operating at LOS E.
- During the PM peak hour: The northbound left-turn movement is currently operating at LOS E.

  Review of SimTraffic network simulation indicates generally acceptable operations during both peak periods. The majority of vehicle queues along minor street approaches were observed to be serviced within each cycle length, leaving minimal residual vehicle queueing.

Grand River Avenue & Providence Parkway

- During the PM peak hour: The northbound shared through-left lane is currently operating at LOS F. Additionally, the southbound approach is currently operating at LOS E.

Grand River Avenue & W. Market Square

- During the AM peak hour: The southbound left-turn movement is currently operating at LOS E.

  Review of SimTraffic network simulation indicates acceptable operations during both peak periods. All of the southbound left-turn vehicle queues were observed to be processed through the signalized intersection within each cycle length, leaving no residual queueing.

Grand River Avenue & Beck Road

- During the AM peak hour: The westbound, northbound, and southbound left-turn movements are currently operating at LOS E.

  Review of SimTraffic network simulation indicates poor operations during the AM peak hour. Periods of vehicle queues were observed for the eastbound left-turn, northbound shared through-right, and southbound left-turn movements; however, these queues were observed to be processed through the signalized intersection within 1-2 cycle lengths and were not present throughout the AM peak hour.

- During the PM peak hour: All left-turn movements, the westbound right-turn movement, and northbound shared through-right movements are currently operating at LOS E.

  Review of SimTraffic network simulation indicates poor operations during the PM peak hour; long vehicle queues were observed for the eastbound left-turn and westbound right-turn movements, throughout the majority of the peak hour. Additionally, periods of vehicle queueing was observed for the westbound left-turn, northbound shared through-right, and southbound left-turn movements; however, these queues were observed to dissipate and were not present throughout the peak period.

Beck Road & Providence South Drive / Central Park Boulevard

- During the AM peak hour: The eastbound left-turn movement is currently operating at LOS E.

  Review of SimTraffic network simulation indicates acceptable operations during both peak periods. The vehicle queues along minor street approaches were observed to be serviced within each cycle length, leaving no residual vehicle queueing.

Table 1: Existing Intersection Operations

Intersection		Control	Approach	Existing Conditions			
				AM Peak		PM Peak	
				Delay (s/veh)	LOS	Delay (s/veh)	LOS
1	Grand River Avenue & Wixom Road	Signalized	EBL	74.3	E	73.0	E
			EBTR	31.2	C	28.3	C
			WBL	82.0	F	81.0	F
			WBT	46.2	D	81.3	F
			WBR	30.0	C	68.2	E
			NBL	88.2	F	88.4	F
			NBTR	74.7	E	88.2	F
			SBL	71.5	E	91.2	F
			SBT	31.3	C	54.1	D
			SBR	20.8	C	21.6	C
			Overall	**48.9**	**D**	**60.6**	**E**
2	Grand River Avenue & 12-Mile Road	Signalized	EBL	6.5	A	16.8	B
			EBT	15.5	B	21.6	C
			EBR	11.6	B	17.6	B
			WBL	9.9	A	16.5	B
			WBTR	13.7	B	25.3	C
			NBL	54.9	D	55.9	E
			NBTR	58.9	E	47.9	D
			SBL	57.9	E	53.0	D
			SBTR	54.0	D	47.8	D
			Overall	**18.8**	**B**	**27.3**	**C**
3	Grand River Avenue & Providence Parkway	Stop (Minor)	EBL	8.1	A	0.0*	A
			WBL	10.1	B	9.2	A
			NBTL	34.4	D	80.6	F
			NBR	9.4	A	10.3	B
			SB	16.5	C	36.9	E
4	Grand River Avenue & W. Market Square	Signalized	EBL	3.9	A	8.1	A
			EBT	19.8	B	19.4	B
			EBR	15.8	B	13.8	B
			WBL	6.4	A	13.7	B
			WBTR	1.3	A	2.2	A
			NBL	54.4	D	53.3	D
			NBTR	51.0	D	41.5	D
			SBL	56.5	E	52.1	D
			SBTR	52.6	D	44.7	D
			Overall	**15.1**	**B**	**17.3**	**B**

Intersection		Control	Approach	Existing Conditions			
				AM Peak		PM Peak	
				Delay (s/veh)	LOS	Delay (s/veh)	LOS
5	Grand River Avenue & Beck Road	Signalized	EBL	54.3	D	59.0	E
			EBTR	16.0	B	20.1	C
			WBL	70.1	E	77.7	E
			WBT	36.1	D	40.8	D
			WBR	29.6	C	57.7	E
			NBL	65.6	E	79.4	E
			NBTR	54.1	D	55.4	E
			SBL	63.2	E	58.0	E
			SBT	36.2	D	47.0	D
			SBR	28.4	C	24.8	C
			Overall	**41.1**	**D**	**46.7**	**D**
6	Beck Road & Providence South Drive / Central Park Boulevard	Signalized	EBL	57.5	E	54.6	D
			EBTR	51.5	D	48.2	D
			WBL	53.0	D	50.6	D
			WBTR	53.4	D	44.7	D
			NBL	5.8	A	12.2	B
			NBT	8.9	A	12.1	B
			NBR	3.8	A	6.5	A
			SBL	6.6	A	8.3	A
			SBT	8.7	A	15.9	B
			SBR	4.8	A	6.1	A
			Overall	**12.8**	**B**	**19.0**	**B**

**Indicates no vehicle volume present*

4 BACKGROUND CONDITIONS (2033)

4.1 BACKGROUND GROWTH

Historical population and employment community profile data was obtained for the City of Novi from the Southeast Michigan Council of Governments (SEMCOG) database, in order to calculate an annual background growth rate to project the existing 2025 peak hour traffic volumes to the site buildout year of 2033. Population and employment projections from 2020 to 2050 were reviewed and indicates average annual growth rates of approximately 0.37% and 0.39%, respectively. Therefore, an annual background growth rate of **0.5%** per year was applied to the existing traffic volumes to calculate the projected traffic volumes at site buildout.

In addition to the background traffic growth, it is important to account for traffic that will be generated by approved developments within the vicinity of the study area that are currently under construction or will be within the buildout year of 2033. The following development was identified by the City of Novi within the study area and was included as background traffic:

- El Car Wash – 48648 Grand River Avenue

Information regarding the proposed El Car Wash development trip generation is attached for reference. The projected trips generated by the background development were applied to the study roadway network. The calculated background peak hour traffic volumes were combined with the site generated traffic from the adjacent background development, in order to forecast the background 2033 peak hour traffic volumes, ***without the proposed development***, as shown in the attached **Figure 4**.

4.2 Background Operations

Background peak hour vehicle delays and LOS ***without the proposed development*** were calculated at the study intersections based on the existing lane use and traffic control shown in the attached **Figure 2**, the background peak hour traffic volumes shown in the attached **Figure 4**, and the methodologies presented in the HCM7. The results of the background conditions analysis are attached and summarized in **Table 2**.

Table 2: Background Intersection Operations

Intersection		Control	Approach	Existing Conditions				Background Conditions				Difference			
				AM Peak		PM Peak		AM Peak		PM Peak		AM Peak		PM Peak	
				Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS
1	Grand River Avenue & Wixom Road	Signal	EBL	74.3	E	73.0	E	73.8	E	90.0	F	-0.5	-	17.0	E→F
			EBTR	31.2	C	28.3	C	33.9	C	30.0	C	2.7	-	1.7	-
			WBL	82.0	F	81.0	F	80.3	F	77.9	E	-1.7	-	-3.1	F→E
			WBT	46.2	D	81.3	F	50.1	D	90.9	F	3.9	-	9.6	-
			WBR	30.0	C	68.2	E	32.0	C	71.4	E	2.0	-	3.2	-
			NBL	88.2	F	88.4	F	86.8	F	82.2	F	-1.4	-	-6.2	-
			NBTR	74.7	E	88.2	F	74.3	E	95.0	F	-0.4	-	6.8	-
			SBL	71.5	E	91.2	F	73.5	E	92.7	F	2.0	-	1.5	-
			SBT	31.3	C	54.1	D	30.1	C	54.3	D	-1.2	-	0.2	-
			SBR	20.8	C	21.6	C	19.3	B	22.7	C	-1.5	C→B	1.1	-
			Overall	**48.9**	**D**	**60.6**	**E**	**49.4**	**D**	**65.7**	**E**	**0.5**	**-**	**5.1**	**-**
2	Grand River Avenue & 12-Mile Road	Signal	EBL	6.5	A	16.8	B	6.9	A	18.5	B	0.4	-	1.7	-
			EBT	15.5	B	21.6	C	16.4	B	22.7	C	0.9	-	1.1	-
			EBR	11.6	B	17.6	B	12.1	B	18.1	B	0.5	-	0.5	-
			WBL	9.9	A	16.5	B	10.9	B	18.4	B	1.0	A→B	1.9	-
			WBTR	13.7	B	25.3	C	14.5	B	26.9	C	0.8	-	1.6	-
			NBL	54.9	D	55.9	E	54.7	D	55.6	E	-0.2	-	-0.3	-
			NBTR	58.9	E	47.9	D	58.8	E	47.3	D	-0.1	-	-0.6	-
			SBL	57.9	E	53.0	D	57.9	E	52.7	D	0.0	-	-0.3	-
			SBTR	54.0	D	47.8	D	53.7	D	47.2	D	-0.3	-	-0.6	-
			Overall	**18.8**	**B**	**27.3**	**C**	**19.4**	**B**	**28.3**	**C**	**0.6**	**-**	**1.0**	**-**
3	Grand River Avenue & Providence Parkway	Stop (Minor)	EBL	8.1	A	0.0*	A	8.2	A	0.0*	A	0.1	-	0.0	-
			WBL	10.1	B	9.2	A	10.3	B	9.4	A	0.2	-	0.2	-
			NBTL	34.4	D	80.6	F	40.2	E	125.2	F	5.8	D→E	44.6	-
			NBR	9.4	A	10.3	B	9.5	A	10.5	B	0.1	-	0.2	-
			SB	16.5	C	36.9	E	17.8	C	47.8	E	1.3	-	10.9	-
4	Grand River Avenue & W. Market Square	Signal	EBL	3.9	A	8.1	A	4.4	A	8.6	A	0.5	-	0.5	-
			EBT	19.8	B	19.4	B	21.6	C	19.9	B	1.8	B→C	0.5	-
			EBR	15.8	B	13.8	B	16.9	B	13.8	B	1.1	-	0.0	-
			WBL	6.4	A	13.7	B	6.7	A	14.9	B	0.3	-	1.2	-
			WBTR	1.3	A	2.2	A	2.6	A	2.4	A	1.3	-	0.2	-
			NBL	54.4	D	53.3	D	54.3	D	53.2	D	-0.1	-	-0.1	-
			NBTR	51.0	D	41.5	D	50.7	D	40.9	D	-0.3	-	-0.6	-
			SBL	56.5	E	52.1	D	56.3	E	51.8	D	-0.2	-	-0.3	-
			SBTR	52.6	D	44.7	D	52.3	D	44.2	D	-0.3	-	-0.5	-
			Overall	**15.1**	**B**	**17.3**	**B**	**16.4**	**B**	**17.5**	**B**	**1.3**	**-**	**0.2**	**-**

Intersection		Control	Approach	Existing Conditions				Background Conditions				Difference			
				AM Peak		PM Peak		AM Peak		PM Peak		AM Peak		PM Peak	
				Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS
5	Grand River Avenue & Beck Road	Signal	EBL	54.3	D	59.0	E	53.5	D	60.8	E	-0.8	-	1.8	-
			EBTR	16.0	B	20.1	C	18.2	B	22.6	C	2.2	-	2.5	-
			WBL	70.1	E	77.7	E	69.5	E	78.9	E	-0.6	-	1.2	-
			WBT	36.1	D	40.8	D	38.3	D	44.4	D	2.2	-	3.6	-
			WBR	29.6	C	57.7	E	31.3	C	75.0	E	1.7	-	17.3	-
			NBL	65.6	E	79.4	E	65.3	E	81.2	F	-0.3	-	1.8	E→F
			NBTR	54.1	D	55.4	E	55.0	E	55.0	D	0.9	D→E	-0.4	E→D
			SBL	63.2	E	58.0	E	64.0	E	57.8	E	0.8	-	-0.2	-
			SBT	36.2	D	47.0	D	35.8	D	47.1	D	-0.4	-	0.1	-
			SBR	28.4	C	24.8	C	27.8	C	23.9	C	-0.6	-	-0.9	-
			Overall	**41.1**	**D**	**46.7**	**D**	**41.7**	**D**	**49.7**	**D**	**0.6**	**-**	**3.0**	**-**
6	Beck Road & Providence South Drive / Central Park Boulevard	Signal	EBL	57.5	E	54.6	D	57.4	E	55.0	D	-0.1	-	0.4	-
			EBTR	51.5	D	48.2	D	51.1	D	47.7	D	-0.4	-	-0.5	-
			WBL	53.0	D	50.6	D	52.7	D	50.2	D	-0.3	-	-0.4	-
			WBTR	53.4	D	44.7	D	52.9	D	44.2	D	-0.5	-	-0.5	-
			NBL	5.8	A	12.2	B	6.3	A	14.0	B	0.5	-	1.8	-
			NBT	8.9	A	12.1	B	9.6	A	13.0	B	0.7	-	0.9	-
			NBR	3.8	A	6.5	A	4.0	A	6.7	A	0.2	-	0.2	-
			SBL	6.6	A	8.3	A	7.2	A	9.0	A	0.6	-	0.7	-
			SBT	8.7	A	15.9	B	9.2	A	17.8	B	0.5	-	1.9	-
			SBR	4.8	A	6.1	A	4.9	A	6.4	A	0.1	-	0.3	-
			Overall	**12.8**	**B**	**19.0**	**B**	**13.3**	**B**	**20.2**	**C**	**0.5**	**-**	**1.2**	**B→C**

**Indicates no vehicle volume. Note: Decreased delays are the result of improved progression, SCATs optimizations, and/or HCM methodologies.*

The results of the background conditions analysis indicates that all approaches and movements at the study intersections will continue to operate in a manner similar to the existing conditions analysis, with minimal increase in delays and the following additional impact to LOS:

Grand River Avenue & Wixom Road

- During the PM peak hour: The eastbound left-turn movement is expected to operate at LOS F.

  Review of SimTraffic network simulation indicates poor operations during both peak periods. During the PM peak hour, long eastbound left-turn queues were observed throughout the PM peak hour.

Grand River Avenue & Providence Parkway

- During the AM peak hour: The northbound shared through-left lane is expected to operate at LOS E.

Grand River Avenue & Beck Road

- During the AM peak hour: The northbound shared through-right is expected to operate at LOS E.
- During the PM peak hour: The northbound left-turn movement is expected to operate at LOS F.

  Review of SimTraffic network simulations continues to indicate generally acceptable operations during the AM peak period and poor operations during the PM peak period. Periods of long vehicle queues were observed for the northbound shared through-right movement during the AM peak hour and for the northbound left-turn movement during the PM peak hour; however, these queues were observed to dissipate and were not present throughout the peak periods.

5 TRIP GENERATION

5.1 SITE TRIP GENERATION

The proposed development includes the construction of a residential development. The number of weekday peak hour (AM and PM) and daily vehicle trips generated that would be generated by the proposed development were calculated based on the data published by ITE in the *Trip Generation Manual, 11th Edition*. The site trip generation forecast for the proposed development is summarized in **Table 3**.

Table 3: Trip Generation Summary

Land Use	ITE Code	Amount	Units	Average Daily Traffic (vpd)	AM Peak Hour (vph)			PM Peak Hour (vph)		
					In	Out	Total	In	Out	Total
Single-Family Attached	215	163	DU	1,192	20	59	79	55	39	94

5.2 REZONING ANALYSIS

The proposed development includes the construction of a residential development. As part of the planned development project, the subject property is proposed to be rezoned from the existing I-1 (Light Industrial District) zoning to the proposed RM-2 (High Density, Mid-Rise Multiple-Family District) zoning, with a Planned Rezoning Overlay (PRO).

A trip generation comparison was performed to evaluate the maximum potential development plan under the existing I-1 zoning, as compared to the proposed development that would be permitted under the proposed RM-2 zoning classification with the PRO. The land uses that are permitted under each zoning classification were matched to the representative land uses within the ITE *Trip Generation, 11th Edition*.

Existing Zoning (I-1)

- The City of Novi Ordinance definition of uses permitted under the I-1 zoning includes: medical offices, research and development centers, warehousing, manufacturing, public utility buildings, private/public parks, and recreational facilities.
- Review of the ITE land use descriptions indicate that the Medical-Dental Office Building (Within / Near Hospital Campus) (LUC 720) and Research and Development (LUC 760) use generates the highest number of trips and best matches the uses defined by the Ordinance and permitted by right under the existing I-1 zoning.

Proposed Zoning (RM-2)

- The City of Novi Ordinance definition of uses permitted under the proposed RM-2 includes: multiple family dwellings, family day care homes, and public park uses.
- The Single-Family Attached (LUC 215) land use with the expected number of trips generated by the proposed development was included for the proposed RM-2 zoning.

The number of weekday peak hour (AM and PM) and daily vehicle trips that would be generated by the existing and proposed zoning classifications were forecast based on data published by ITE in the *Trip Generation Manual, 11th Edition*. Therefore, the maximum development trip generation comparison for the existing zoning classification and the proposed zoning classifications is summarized in **Table 4**.

Table 4: Rezoning Trip Generation Comparison

Zoning	Land Use	ITE Code	Amount	Units	Average Daily Traffic (vpd)	AM Peak Hour			PM Peak Hour		
						In	Out	Total	In	Out	Total
Existing Zoning (I-1)	Medical-Dental Office Building (Within / Near Hospital Campus)	720	75,930	SF	2,574	166	39	205	56	168	224
	Research and Development Center	760	75,930	SF	984	75	17	92	14	75	89
Proposed Zoning (RM-2 with PRO)	Single-Family Attached Housing	215	163	DU	1,192	20	59	79	55	39	94
Max for existing zoning (I-1)					***2,574***	***166***	***39***	***205***	***56***	***168***	***224***

Difference	**-1,382**	**-146**	**20**	**-126**	**-1**	**-129**	**-130**

6 SITE TRIP DISTRIBUTION

The vehicular trips that would be generated by the proposed development were assigned to the study roadway network based on the proposed site access plan, the existing peak hour traffic patterns in the adjacent roadway network, and the methodologies published by ITE. The adjacent street traffic volumes were used to develop the vehicle trip distribution; it was assumed that the existing adjacent street traffic volumes in the AM are home-to-work based trips and are work-to-home based trips in the PM. Therefore, the vehicle trip distribution assumes trips are leaving the study network during the AM peak hour and then entering the study network during the PM peak hour. The ITE trip distribution methodology assumes that new trips will return to their direction of origin. The site distribution is summarized in **Table 5**.

Table 5: Trip Distribution Summary

To/From	via	AM	PM
East	Grand River Avenue	16%	19%
West	Grand River Avenue	16%	19%
North	Wixom Road	21%	20%
South	Wixom Road	9%	10%
North	Beck Road	25%	20%
South	Beck Road	13%	12%
Total		**100%**	**100%**

The vehicular traffic volumes shown in **Table 3** were distributed to the study roadway network according to the distributions shown in **Table 5**. The site-generated trips from the proposed development, shown in the attached **Figure 5**, were added to the background peak hour traffic volumes shown in the attached **Figure 4**, in order to calculate the future peak hour traffic volumes, ***with the addition of the proposed development***. Future peak hour traffic volumes are shown in the attached **Figure 6**.

7 FUTURE CONDITIONS (2033)

7.1 FUTURE OPERATIONS

Future peak hour vehicle delays and LOS ***with the proposed development*** were calculated at the study intersections and proposed site driveway based on the proposed lane use and traffic control shown in the attached **Figure 2**, the future peak hour traffic volumes shown in the attached **Figure 6**, and the methodologies presented in the HCM7. The future conditions analysis results are attached and summarized in **Table 6**.

The results of the future conditions analysis indicates that the proposed site driveway intersection is expected to operate acceptably, at LOS D or better, during both peak periods. Additionally, all approaches and movements at the study intersections are expected to continue to operate in a manner similar to the background conditions analysis, with the following additional impacts to LOS:

Grand River Avenue & Wixom Road

- During the PM peak hour: The westbound left-turn movement is expected to operate at LOS F.

Grand River Avenue & Providence Parkway

- During the AM peak hour: The northbound shared through-left lane is expected to operate at LOS F.
- During the PM peak hour: The southbound approach is expected to operate at LOS F.

Grand River Avenue & Beck Road

- During the PM peak hour: The westbound right-turn movement is expected to operate at LOS F. Additionally, the northbound shared through-right movement is expected to operate at LOS E.

Review of SimTraffic network simulations throughout the study roadway network indicates similar operations to those observed during the background conditions analysis. Periods of vehicle queueing were observed throughout the signalized study intersections.

Table 6: Future Intersection Operations

Intersection		Control	Approach	Background Conditions				Future Conditions				Difference			
				AM Peak		PM Peak		AM Peak		PM Peak		AM Peak		PM Peak	
				Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS
1	Grand River Avenue & Wixom Road	Signal	EBL	73.8	E	90.0	F	75.2	E	97.4	F	1.4	-	7.4	-
			EBTR	33.9	C	30.0	C	34.7	C	31.0	C	0.8	-	1.0	-
			WBL	80.3	F	77.9	E	78.6	E	83.2	F	-1.7	F→E	5.3	E→F
			WBT	50.1	D	90.9	F	50.7	D	90.8	F	0.6	-	-0.1	-
			WBR	32.0	C	71.4	E	32.5	C	69.6	E	0.5	-	-1.8	-
			NBL	86.8	F	82.2	F	86.8	F	89.3	F	0.0	-	7.1	-
			NBTR	74.3	E	95.0	F	74.5	E	97.4	F	0.2	-	2.4	-
			SBL	73.5	E	92.7	F	73.7	E	94.5	F	0.2	-	1.8	-
			SBT	30.1	C	54.3	D	29.9	C	53.0	D	-0.2	-	-1.3	-
			SBR	19.3	B	22.7	C	19.1	B	22.9	C	-0.2	-	0.2	-
			Overall	**49.4**	**D**	**65.7**	**E**	**49.8**	**D**	**67.3**	**E**	**0.4**	**-**	**1.6**	**-**
2	Grand River Avenue & 12-Mile Road	Signal	EBL	6.9	A	18.5	B	7.2	A	18.9	B	0.3	-	0.4	-
			EBT	16.4	B	22.7	C	16.4	B	22.9	C	0.0	-	0.2	-
			EBR	12.1	B	18.1	B	12.1	B	18.1	B	0.0	-	0.0	-
			WBL	10.9	B	18.4	B	11.1	B	19.1	B	0.2	-	0.7	-
			WBTR	14.5	B	26.9	C	14.6	B	27.2	C	0.1	-	0.3	-
			NBL	54.7	D	55.6	E	54.7	D	55.6	E	0.0	-	0.0	-
			NBTR	58.8	E	47.3	D	58.8	E	47.3	D	0.0	-	0.0	-
			SBL	57.9	E	52.7	D	57.9	E	52.7	D	0.0	-	0.0	-
			SBTR	53.7	D	47.2	D	53.7	D	47.2	D	0.0	-	0.0	-
			Overall	**19.4**	**B**	**28.3**	**C**	**19.4**	**B**	**28.5**	**C**	**0.0**	**-**	**0.2**	**-**
3	Grand River Avenue & Providence Parkway	Stop (Minor)	EBL	8.2	A	0.0*	A	8.2	A	0.0*	A	0.0	-	0.0	-
			WBL	10.3	B	9.4	A	10.4	B	9.7	A	0.1	-	0.3	-
			NBTL	40.2	E	125.2	F	58.6	F	247.1	F	18.4	E→F	121.9	-
			NBR	9.5	A	10.5	B	9.7	A	10.7	B	0.2	-	0.2	-
			SB	17.8	C	47.8	E	18.9	C	61.8	F	1.1	-	14.0	E→F
4	Grand River Avenue & W. Market Square	Signal	EBL	4.4	A	8.6	A	4.2	A	8.6	A	-0.2	-	0.0	-
			EBT	21.6	C	19.9	B	21.1	C	20.0	C	-0.5	-	0.1	B→C
			EBR	16.9	B	13.8	B	16.3	B	13.8	B	-0.6	-	0.0	-
			WBL	6.7	A	14.9	B	7.1	A	15.2	B	0.4	-	0.3	-
			WBTR	2.6	A	2.4	A	2.0	A	2.6	A	-0.6	-	0.2	-
			NBL	54.3	D	53.2	D	54.3	D	53.2	D	0.0	-	0.0	-

Intersection		Control	Approach	Background Conditions				Future Conditions				Difference			
				AM Peak		PM Peak		AM Peak		PM Peak		AM Peak		PM Peak	
				Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS
			NBTR	50.7	D	40.9	D	50.7	D	40.9	D	0.0	-	0.0	-
			SBL	56.3	E	51.8	D	56.3	E	51.8	D	0.0	-	0.0	-
			SBTR	52.3	D	44.2	D	52.3	D	44.2	D	0.0	-	0.0	-
			Overall	**16.4**	**B**	**17.5**	**B**	**16.0**	**B**	**17.5**	**B**	**-0.4**	**-**	**0.0**	**-**
5	Grand River Avenue & Beck Road	Signal	EBL	53.5	D	60.8	E	52.6	D	58.6	E	-0.9	-	-2.2	-
			EBTR	18.2	B	22.6	C	18.4	B	22.8	C	0.2	-	0.2	-
			WBL	69.5	E	78.9	E	69.4	E	78.9	E	-0.1	-	0.0	-
			WBT	38.3	D	44.4	D	38.9	D	45.4	D	0.6	-	1.0	-
			WBR	31.3	C	75.0	E	31.9	C	78.2	F	0.6	-	3.2	E→F
			NBL	65.3	E	81.2	F	65.3	E	82.2	F	0.0	-	1.0	-
			NBTR	55.0	E	55.0	D	55.0	E	59.7	E	0.0	-	4.7	D→E
			SBL	64.0	E	57.8	E	64.0	E	57.7	E	0.0	-	-0.1	-
			SBT	35.8	D	47.1	D	35.8	D	47.1	D	0.0	-	0.0	-
			SBR	27.8	C	23.9	C	27.4	C	23.8	C	-0.4	-	-0.1	-
			Overall	**41.7**	**D**	**49.7**	**D**	**41.7**	**D**	**50.6**	**D**	**0.0**	**-**	**0.9**	**-**
6	Beck Road & Providence South Drive / Central Park Boulevard	Signal	EBL	57.4	E	55.0	D	57.4	E	54.9	D	0.0	-	-0.1	-
			EBTR	51.1	D	47.7	D	51.7	D	48.1	D	0.6	-	0.4	-
			WBL	52.7	D	50.2	D	53.5	D	50.8	D	0.8	-	0.6	-
			WBTR	52.9	D	44.2	D	52.9	D	44.2	D	0.0	-	0.0	-
			NBL	6.3	A	14.0	B	6.4	A	14.4	B	0.1	-	0.4	-
			NBT	9.6	A	13.0	B	9.6	A	13.0	B	0.0	-	0.0	-
			NBR	4.0	A	6.7	A	4.0	A	6.7	A	0.0	-	0.0	-
			SBL	7.2	A	9.0	A	7.2	A	9.0	A	0.0	-	0.0	-
			SBT	9.2	A	17.8	B	9.2	A	18.2	B	0.0	-	0.4	-
			SBR	4.9	A	6.4	A	4.9	A	6.5	A	0.0	-	0.1	-
			Overall	**13.3**	**B**	**20.2**	**C**	**13.5**	**B**	**20.5**	**C**	**0.2**	**-**	**0.3**	**-**
7	Providence Parkway & Site Drive	Stop (Minor)	EB	N/A				11.1	B	11.1	B	N/A			
			NBL					7.9	A	7.5	A				
			SB					Free							

**Indicates no vehicle volume. Note: Decreased delays are the result of improved progression, SCATs optimizations, and/or HCM methodologies.*

7.2 Future Operations with Improvements

In order to improve the adjacent study roadway network operations, mitigation measures were investigated. The mitigations included geometric improvements, signal timing optimizations, and traffic control modifications. The investigated improvements and their impact on the intersection operations are discussed below:

Grand River Avenue Intersections (Wixom Road & Beck Road)

The signalized study intersections on Grand River Avenue at Wixom Road and at Beck Road were reviewed, in order to determine if any mitigation measures could be considered at the intersection to improve the existing, background, or future traffic operations.

Both intersections are operating with the SCATs signals; therefore, real time signal optimization is occurring at these intersections. The intersection geometry was reviewed to determine if there were any feasible improvements that could be implemented. This review showed that the intersections are fully built out and

there is limited ROW available for adding intersection capacity. It is recommended that RCOC continue to monitor the intersection operations. The recent improvements to the I-96 with the flex lanes is anticipated to reduce the demand on the Grand River Avenue and improve the corridor operations overall.

- **Therefore, no mitigation measures are recommended at the Wixom Road and Beck Road signalized study intersection.**

Grand River Avenue & Providence Parkway

A traffic signal was evaluated at the Grand River Avenue & Providence Parkway intersection, in order to determine if a traffic signal is warranted and recommended at this intersection. The analysis was performed in accordance with the current *Michigan Manual on Uniform Traffic Control Devices* (MMUTCD), which documents the guidelines by which traffic signal control may or should be considered. F&V evaluated the following criteria for the existing, background, and future traffic volumes at this study intersection. Additionally, based on the major roadway speed limit exceeding 40 mph, the study intersections were evaluated with the 70% factor. The signal warrant analysis criteria are discussed below and summarized in **Table 7**; the warrant analysis charts are attached.

Warrant 1 (8-Hour Vehicular Volumes)

According to the MMUTCD, Warrant 1, Condition A is intended for application at locations where a large volume of intersecting traffic is the principal reason to consider installing a traffic signal. Condition B is intended for application where Condition A is not satisfied and where the major street traffic volume is so heavy that traffic on a minor intersecting street suffers excessive delay or conflict in entering the major street. It is intended that Warrant 1 be treated as a single warrant, where Warrant 1 is satisfied if either Conditions A or B are met.

Warrant 2 (4-Hour Vehicular Volumes)

The Four-Hour signal warrant condition is intended to be applied where the volume of intersecting traffic is the principal reason to consider installing a traffic signal. The need for a signal shall be considered if, for each of any four hours of an average day, the approach volumes fall above the applicable curve in Figure 4C-2.

Warrant 3 (Peak Hour)

The Peak Hour signal warrant condition is intended for use at a location where traffic conditions are such that for a minimum of 1 hour of an average day, the minor-street traffic suffers undue delay when entering or crossing the major street. The need for a traffic control signal shall be considered if on any hour of an average day, the approach volumes fall above the applicable curve in Figure 4C-4.

Warrant 7 (Crash Experience)

The Crash Experience warrant conditions are intended to be applied where the severity and frequency of crashes are the principal reasons to consider a traffic control signal. F&V completed a crash review for the study intersection, based on three years (2021-2023) of historical crash data, obtained from the Michigan Traffic Crash Facts (MTCF) website.

Summary

- **The results of the signal warrant analysis indicates that a traffic signal is warranted and recommended at this intersection with the existing traffic volumes.**

Table 7: Signal Warrant Analysis Summary

Warrant		Existing Conditions (2025)	Background Conditions (2033)	Future Conditions (2033)
Warrant 1: Eight Hour		YES	YES	YES
Condition A	*Hours Met*	1	1	3
	Warrant Met	NO	NO	NO
Condition B	*Hours Met*	9	9	11
	Warrant Met	YES	YES	YES

Warrant		Existing Conditions (2025)	Background Conditions (2033)	Future Conditions (2033)
Warrant 2: Four-Hour	*Hours Met*	8	9	10
	Warrant Met	YES	YES	YES
Warrant 3: Peak-Hour	*Hours Met*	7	7	9
	Warrant Met	YES	YES	YES
Warrant 7: Crash Experience	*Warrant Met*	NO	NO	NO

Left-turn Phasing

The left-turn phasing criteria was also evaluated with the addition of the signalized operations. The analysis was performed using the MDOT left-turn phasing spreadsheet and the results of the evaluation are shown on the attached criteria, which indicates that permissive / protected left-turn phasing is warranted *only* for the westbound left-turn movements. Therefore, only permissive left-turn phasing recommended at this intersection.

Grand River Avenue & Providence Parkway-With Improvements

The future peak hour vehicle delays and LOS, ***with the proposed development traffic and recommended mitigation measures***, were calculated based on the proposed lane use and traffic control shown in the attached **Figure 2**, the future peak hour traffic volumes shown in the attached **Figure 6**, and the methodologies presented in the HCM7. The future improvements analysis results are attached and summarized in **Table 8**.

Table 8: Future Intersection Operations with Improvements

Intersection		Control	Approach	Future Conditions				Future Conditions w/ IMP				Difference			
				AM Peak		PM Peak		AM Peak		PM Peak		AM Peak		PM Peak	
				Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS
3	Grand River Avenue & Providence Parkway	Stop (Minor) Signal [IMP]	EBL	8.2	A	0.0*	A	0.1	A	0.0*	A	-8.1	-	0.0	-
			EBT	Free				0.2	A	0.4	A	0.2	-	0.4	-
			EBR					0.2	A	0.1	A	0.2	-	0.1	-
			WBL	10.4	B	9.7	A	1.7	A	0.7	A	-8.7	B→A	-9.0	-
			WBTR	Free				0.3	A	0.4	A	0.3	-	0.4	-
			NBTL	58.6	F	247.1	F	53.7	D	49.1	D	-4.9	F→D	-198.0	F→D
			NBR	9.7	A	10.7	B	62.7	E	50.4	D	53.0	A→E	39.7	B→D
			SB	18.9	C	61.8	F	51.0	D	51.9	D	32.1	C→D	-9.9	F→D
			[Overall]	**N/A**				**6.4**	**A**	**8.6**	**A**	**N/A**			

**Indicates no vehicle volume present*

The results of the future improvements analysis shows that the addition of a traffic signal at this intersection will allow the intersection to operate at acceptable LOS. It was noted that during the AM peak hour the northbound right-turn movement is expected to operate at LOS E with the addition of the traffic signal operations. Further review of SimTraffic network simulation indicates acceptable operations during both peak periods. The LOS E and associated delays for this movement to identified due to the long cycle length (120 seconds), in conjunction with low volumes of vehicles on the minor street approach, the random arrival of vehicles.

8 CONCLUSIONS

The conclusions of this TIS are as follows:

1. Existing Conditions (2025)

- The results of the existing conditions analysis indicates that ALL study intersection currently have at least one (1) or more approaches and movements operating at LOS E and/or LOS F, during the AM and/or PM peak periods.
- Review of SimTraffic network simulations indicates periods of long vehicle queues at all signalized study intersections. Some vehicle queues were observed to dissipate and were not present throughout the peak hour, while other vehicle queues were observed to persist throughout the peak periods.

2. Background Conditions (2033)

- A conservative annual background growth rate of **0.50%** per year was utilized to project the existing 2025 traffic volumes to the site buildout year of 2033. The following background development was also identified by the City of Novi and was included within this study as background traffic:
  - El Car Wash – *48648 Grand River Avenue*
- The results of the background conditions analysis indicates that all approaches and movements at the study intersections will continue to operate in a manner similar to the existing conditions, with additional impacts to LOS at the following study intersections:
  - Grand River Avenue & Wixom Road
  - Grand River Avenue & Beck Road
  - Grand River Avenue & Providence Parkway

3. Future Conditions (2033)

- The results of the future conditions analysis indicates that the proposed site driveway intersection is expected to operate acceptably, at LOS D or better, during both peak periods. Additionally, all approaches and movements at the study intersections are expected to continue to operate in a manner similar to the background conditions analysis, with additional impacts to LOS at the following study intersections:
  - Grand River Avenue & Wixom Road
  - Grand River Avenue & Beck Road
  - Grand River Avenue & Providence Parkway

4. Future Conditions with Improvements

- The signalized study intersections on Grand River Avenue at Wixom Road and at Beck Road were reviewed, in order to determine if any mitigation measures could be considered at the intersection to improve the existing, background, or future traffic operations. This review showed that the intersections are fully built out and there is limited ROW available for adding intersection capacity. It is recommended that RCOC continue to monitor the intersection operations. The recent improvements to I-96 with the flex lanes is anticipated to reduce the demand on the Grand River Avenue and improve the overall intersection and corridor operations.
- A traffic signal is warranted and recommended at Grand River Avenue & Providence Parkway with the existing traffic volumes.

9 RECOMMENDATIONS

The recommendations of this TIS are summarized as follows:

- The proposed development is expected to have a negligible impact on the study roadway network and study intersections. The site-generated traffic volumes from the proposed residential development will be less than typical variations (+/- 5%) in daily traffic volumes.
- A traffic signal is currently warranted and recommended at the Grand River Avenue & Providence Parkway with the existing 2025 traffic volumes. The projected site-generated traffic volumes will not impact the results or recommendation for a traffic signal at this intersection.

Any questions related to this memorandum, study, analysis, and/or results should be addressed to Fleis & VandenBrink.



I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Michigan.

Julie M. Kroll
2025.09.05
18:10:30 -04'00'

Attachments: Figures 1 – 6
Proposed Site Plan
Traffic Volume Data
Signal Timing Permits
SEMCOG Data
Synchro / SimTraffic Results
Signal / Left-turn Phasing Warrants



FIGURE 1

SITE LOCATION

PROVIDENCE PARKWAY TIS - NOVI, MI

LEGEND

ROADS

SITE LOCATION

NORTH

SCALE: NOT TO SCALE

F&V

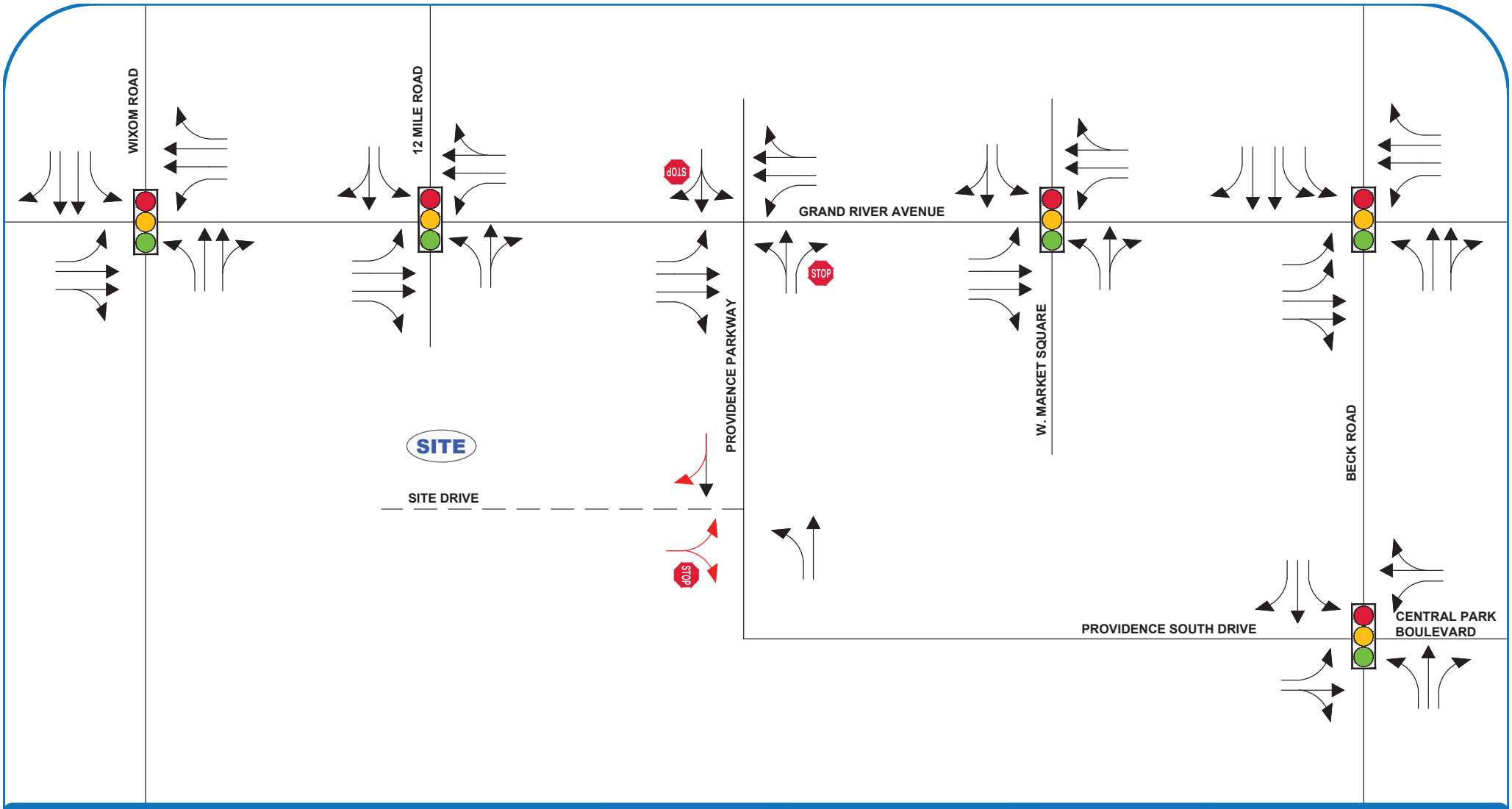


FIGURE 2

LANE USE AND TRAFFIC CONTROL

PROVIDENCE PARKWAY TIS - NOVI, MI

LEGEND

- ROADS
- PROPOSED ROADS
- LANE USE
- PROPOSED LANE USE
- SIGNALIZED INTERSECTION
- UNSIGNALIZED INTERSECTION

NORTH

SCALE: NOT TO SCALE

F&V

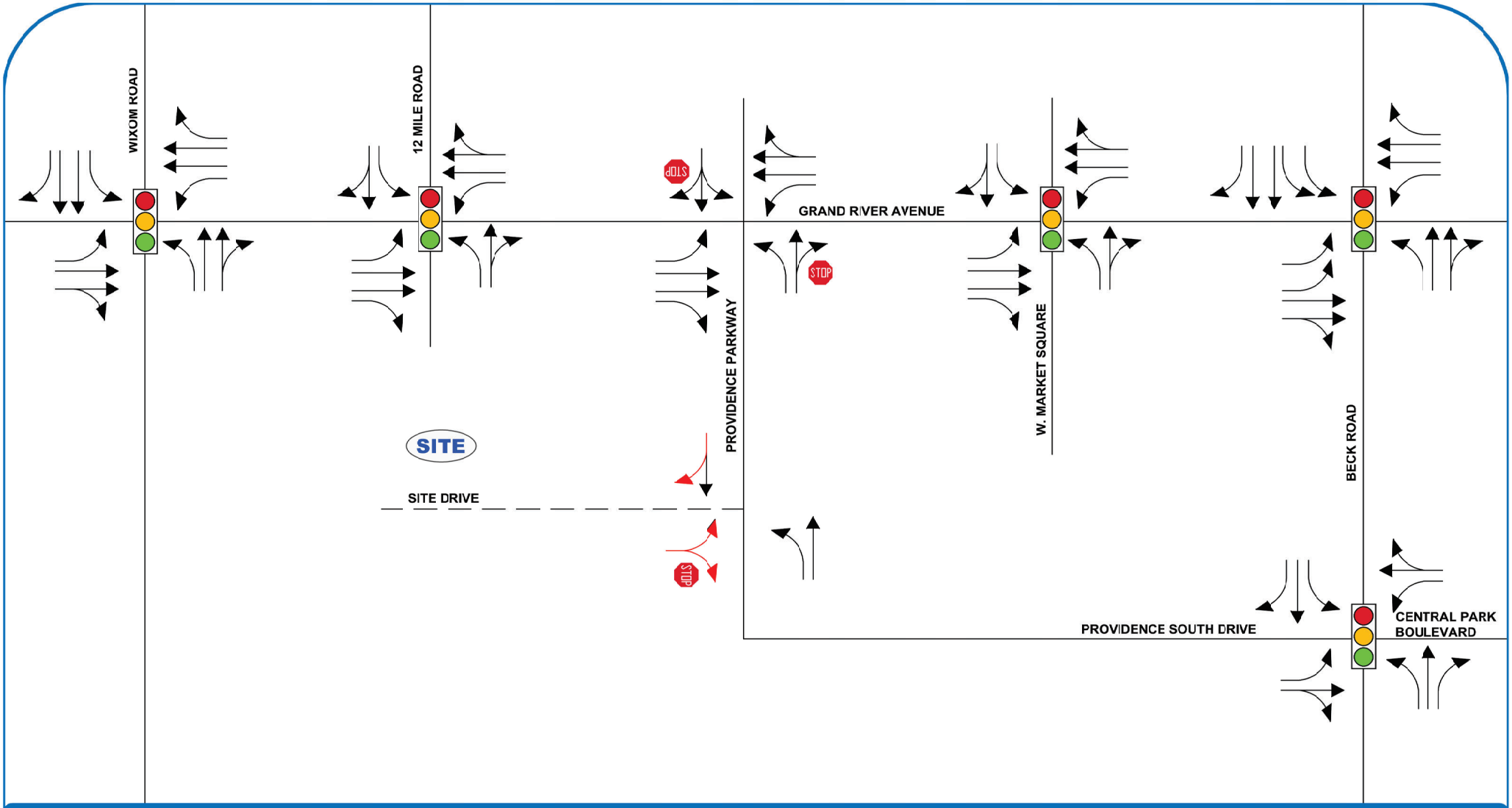


FIGURE 2

LANE USE AND TRAFFIC CONTROL

PROVIDENCE PARKWAY TIS - NOVI, MI

LEGEND

- ROADS
- PROPOSED ROADS
- LANE USE
- PROPOSED LANE USE
- SIGNALIZED INTERSECTION
- UNSIGNALIZED INTERSECTION

NORTH
SCALE: NOT TO SCALE

F&V

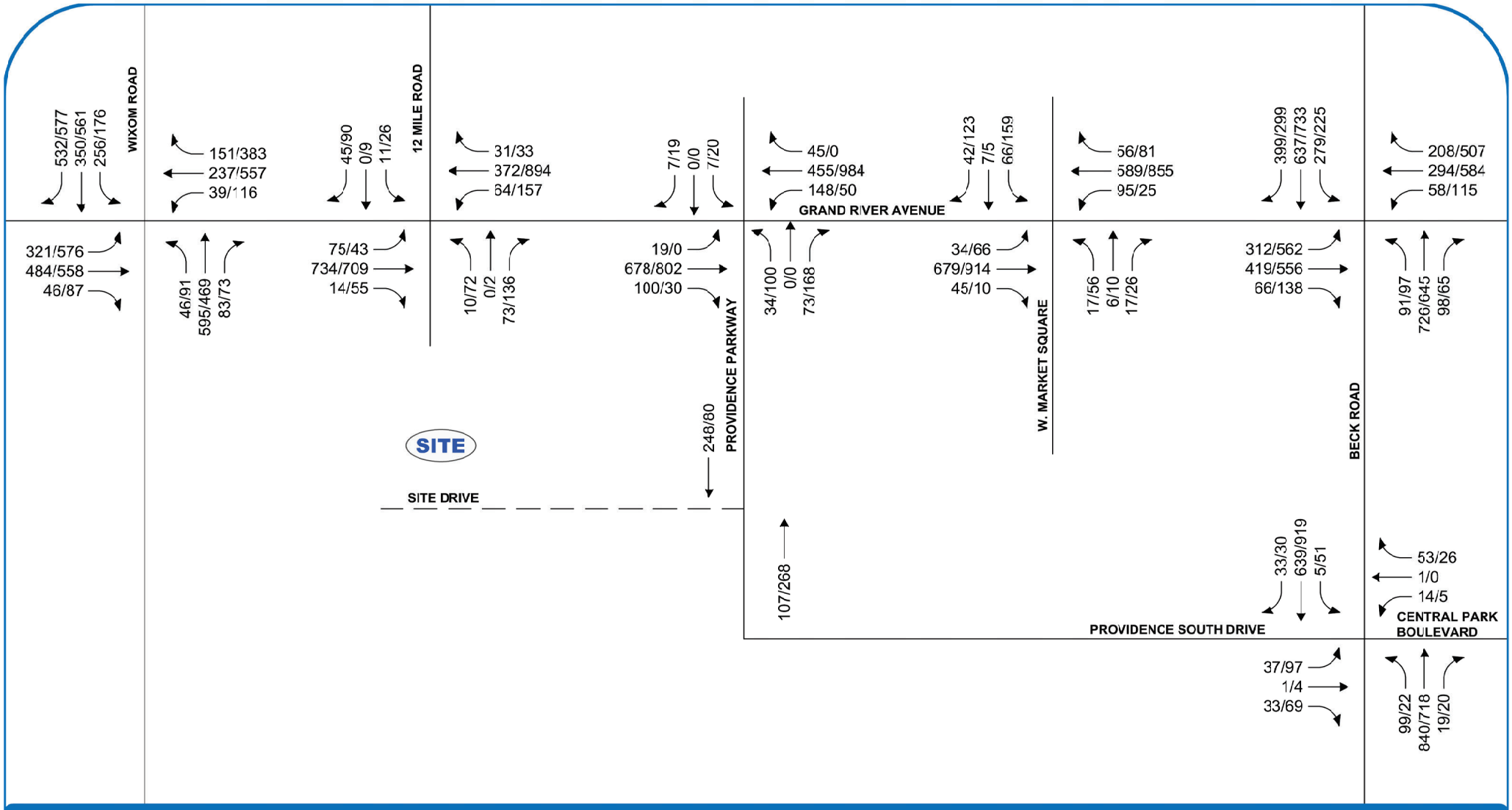


FIGURE 3
EXISTING TRAFFIC VOLUMES (2025)

PROVIDENCE PARKWAY TIS - NOVI, MI

LEGEND

- ROADS
- PROPOSED ROADS
- TRAFFIC VOLUMES (AM/PM)

NORTH
SCALE: NOT TO SCALE

F&V

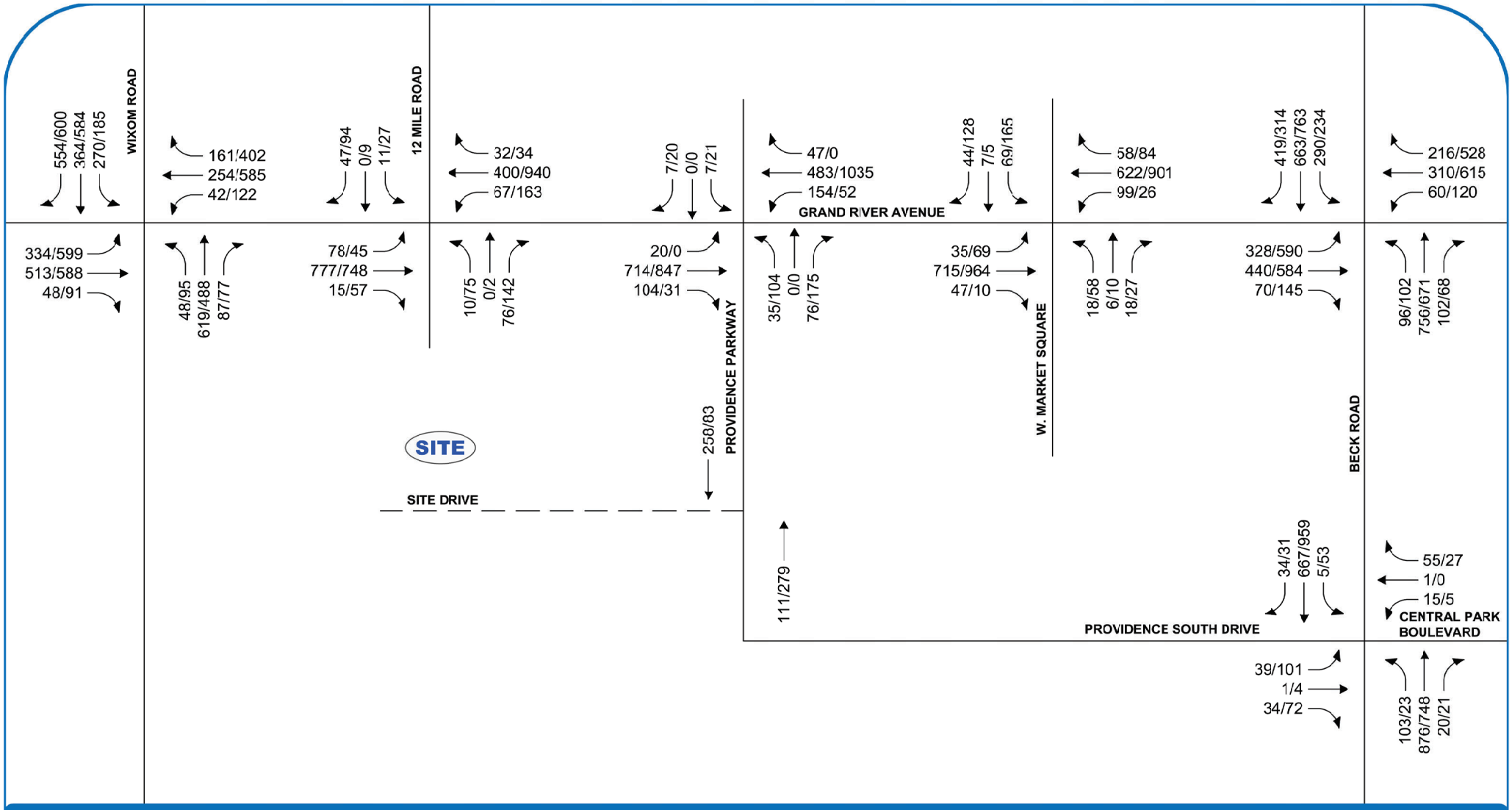


FIGURE 4
BACKGROUND TRAFFIC VOLUMES (2033)

PROVIDENCE PARKWAY TIS - NOVI, MI

LEGEND

- ROADS
- PROPOSED ROADS
- TRAFFIC VOLUMES (AM/PM)

NORTH
SCALE: NOT TO SCALE

F&V

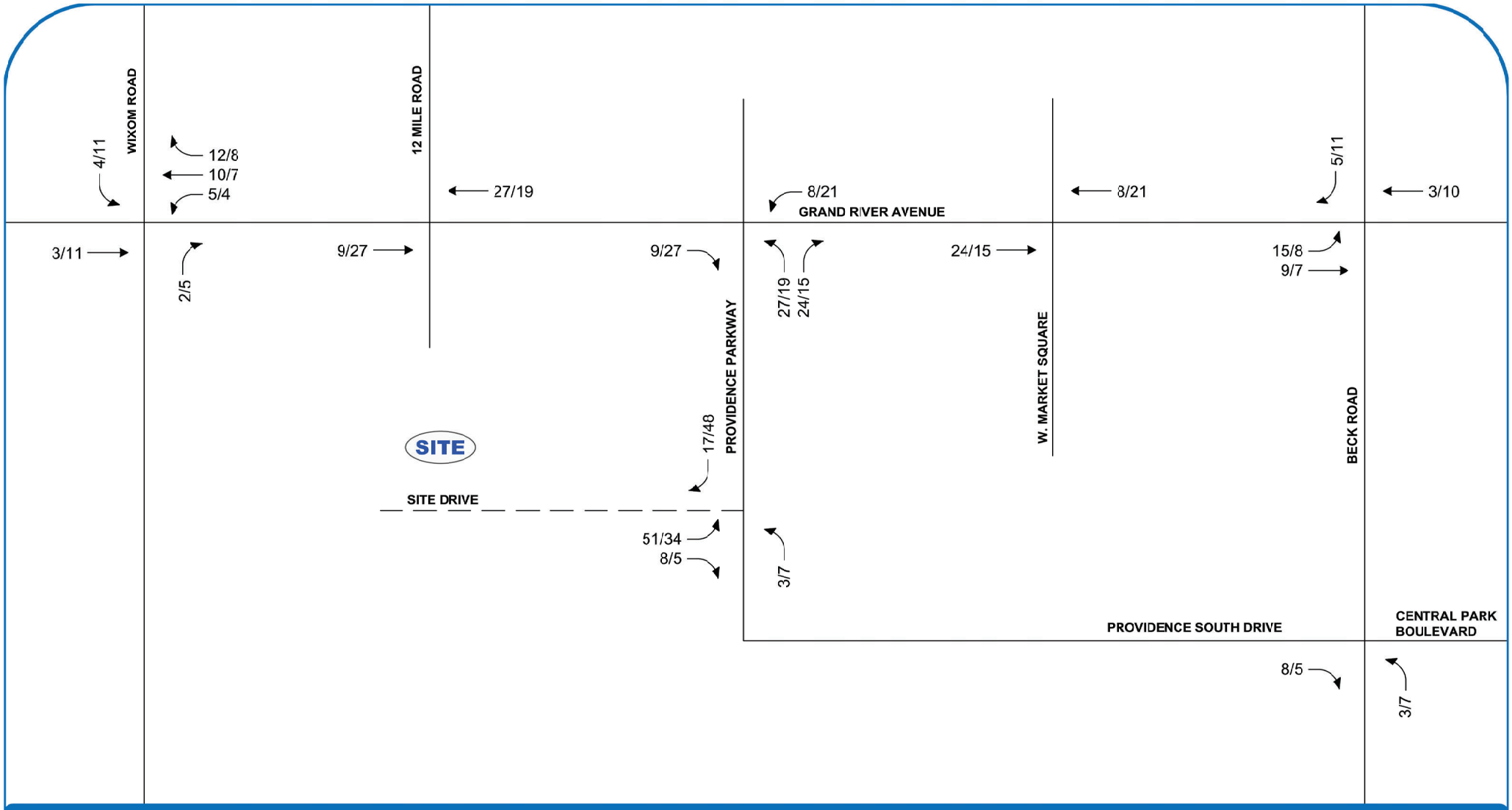


FIGURE 5
SITE-GENERATED TRAFFIC VOLUMES

PROVIDENCE PARKWAY TIS - NOVI, MI

LEGEND

ROADS

PROPOSED ROADS

TRAFFIC VOLUMES (AM/PM)

NORTH
SCALE: NOT TO SCALE

F&V

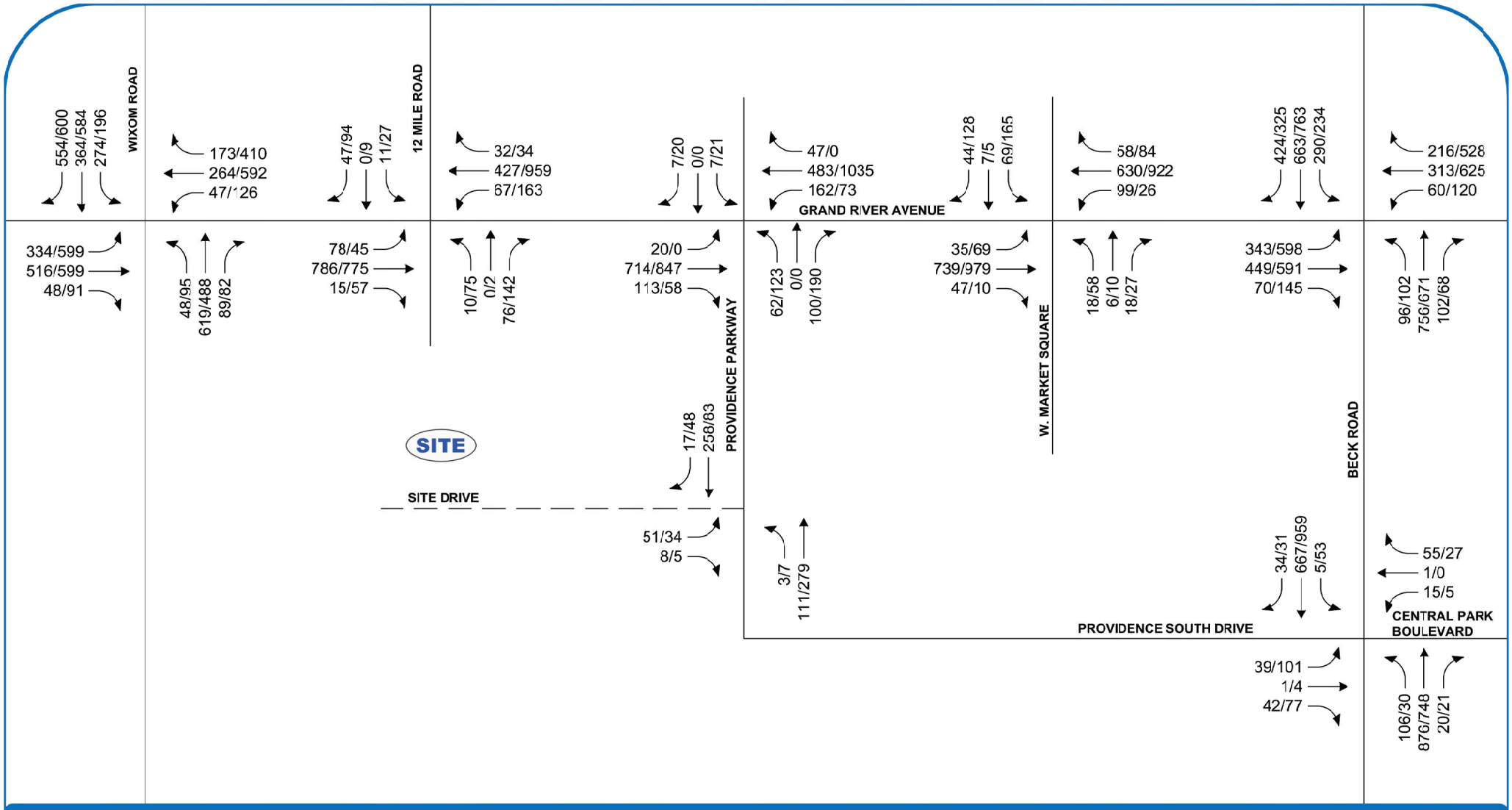


FIGURE 6
FUTURE TRAFFIC VOLUMES (2033)

PROVIDENCE PARKWAY TIS - NOVI, MI

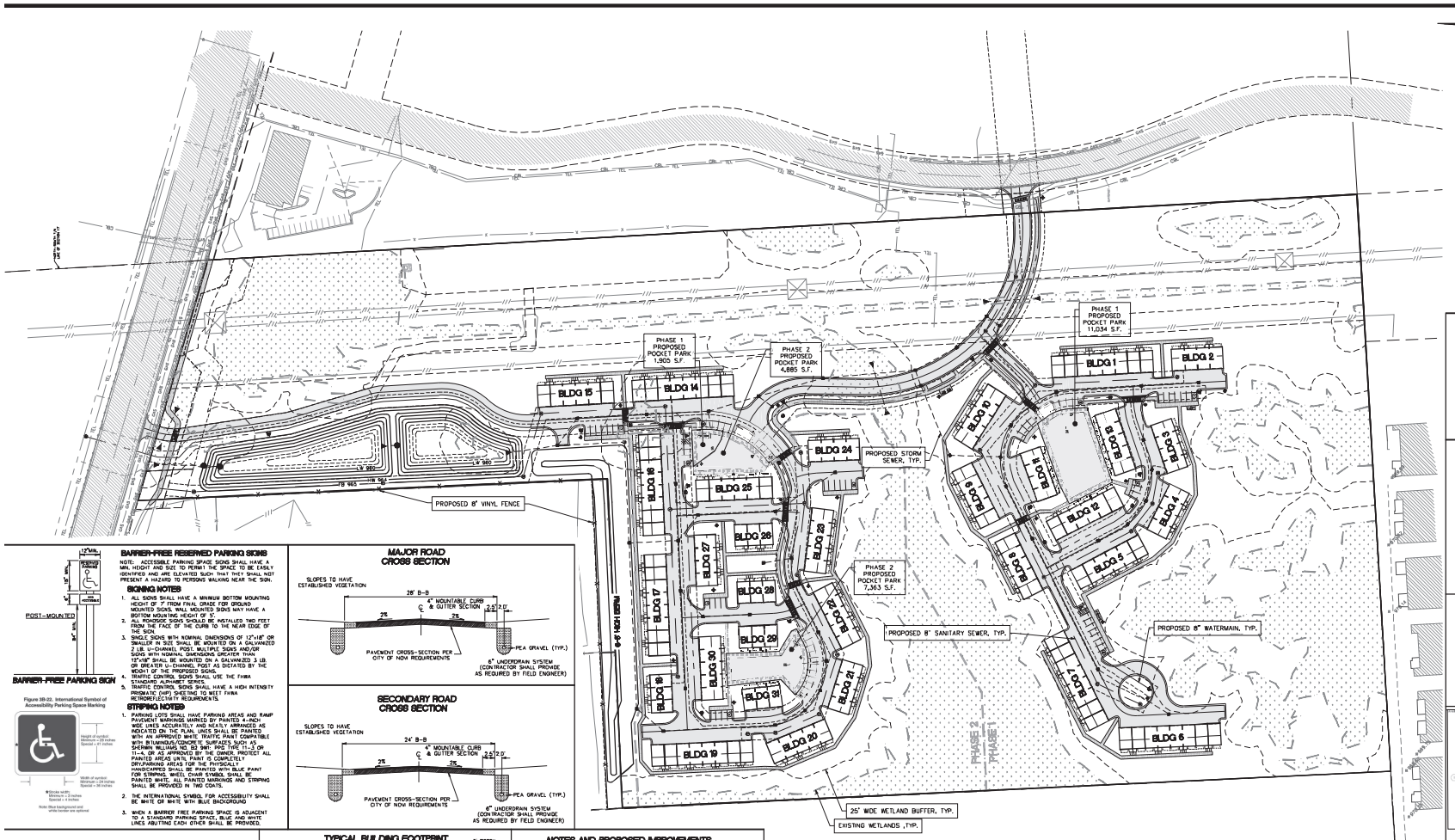
LEGEND

- ROADS
- PROPOSED ROADS
- TRAFFIC VOLUMES (AM/PM)

NORTH
SCALE: NOT TO SCALE

F&V

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GRAPHIC SCALE
80 0 40 80 160
(IN FEET)
1" = 80'

CROSSWALK DETAIL



NOTES:
1. WANDERING LINES SHALL BE 12" WIDE
2. LONGITUDINAL LINES SHALL BE 24" WIDE.
3. ALL STRIPING TO BE WHITE PAINT OR APPROVED EQUAL.

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Civil Engineering | Land Development | Surveying
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Novi, MI 48375 | 248.536.5600
17000 Kercheval, Suite 210
St. Clair Shores, MI 48080
586.778.2010
www.sklmi.com

SUBMITTAL DATE:

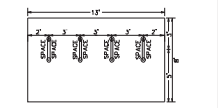
NO.	REVISION	DATE

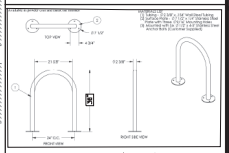


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8 BIKES RACK PARKING LAYOUT





INVERTED 'U' BIKE RACK
NOT TO SCALE

PROJECT NUMBER: 24-269
PROJECT MANAGER: R. SCOTT
DRAWN BY: -
DESIGNED BY: J. RICHARD
OFFICE: FARMINGTON HILLS

CLIENT INFO:
ROBERTSON HOMES
6905 TELEGRAPH ROAD, SUITE 200
BLOOMFIELD HILLS, MICHIGAN
947.257.5956

PROJECT NAME:
PROVIDENCE PARKWAY
PART OF SECTION 7
T1N., R.8E., CITY OF NOVI, OAKLAND COUNTY, MI

SHEET TITLE:
OVERALL SITE PLAN

PAGE No.
C7

BARRIER-FREE PARKING SIGN

Figure 3B-22. International Symbol of Accessibility Parking Space Marking

BARRIER-FREE RESERVED PARKING SIGNS

NOTE: ACCESSIBLE PARKING SPACE SIGNS SHALL HAVE A MIN. HEIGHT AND SIZE TO PERMIT THE SPACE TO BE EASILY IDENTIFIED AND ARE ELEVATED SUCH THAT THEY SHALL NOT PRESENT A HAZARD TO PERSONS WALKING NEAR THE SIGN.

SIGNING NOTES

1. ALL SIGNS SHALL HAVE A MINIMUM BOTTOM MOUNTING HEIGHT OF 7' FROM FINAL GRADE FOR GROUND MOUNTED SIGNS. WALL MOUNTED SIGNS MAY HAVE A BOTTOM MOUNTING HEIGHT OF 5'.
2. ALL ROADSIDE SIGNS SHOULD BE INSTALLED TWO FEET FROM THE FACE OF THE CURB TO THE NEAR EDGE OF THE SIGN.
3. SMALL SIGNS WITH NOMINAL DIMENSIONS OF 12"x18" OR SMALLER IN SIZE SHALL BE MOUNTED ON A GALVANIZED 2 LB. U-CHANNEL POST. MULTIPLE SIGNS AND/OR SIGNS WITH NOMINAL DIMENSIONS GREATER THAN 12"x18" SHALL BE MOUNTED ON A GALVANIZED 3 LB. OR GREATER U-CHANNEL POST AS DICTATED BY THE WEIGHT OF THE PROPOSED SIGNS.
4. TRAFFIC CONTROL SIGNS SHALL USE THE FHWA STANDARD ALPHABET SERIES.
5. TRAFFIC CONTROL SIGNS SHALL HAVE A HIGH INTENSITY PRISMATIC (HIP) SHEETING TO MEET FHWA RETROREFLECTIVITY REQUIREMENTS.

STRIPING NOTES

1. PARKING LOTS SHALL HAVE PARKING AREAS AND RAMP PAVEMENT MARKINGS MARKED BY PAINTED 4-INCH WIDE LINES ACCURATELY AND NEATLY ARRANGED AS INDICATED ON THE PLAN. LINES SHALL BE PAINTED WITH AN APPROVED WHITE TRAFFIC PAINT COMPATIBLE WITH BITUMINOUS/CONCRETE SURFACES SUCH AS SHERWIN WILLIAMS NO. B3 W41; PPG TYPE 11-3 OR 11-4, OR AS APPROVED BY THE OWNER. PROTECT ALL PAINTED AREAS UNTIL PAINT IS COMPLETELY DRY/HARDENED. ALL PAINTED MARKINGS AND HANDICAPPING SHALL BE PAINTED WITH BLUE PAINT FOR STRIPING. WHEEL CHAIR SYMBOL SHALL BE PAINTED WHITE. ALL PAINTED MARKINGS AND STRIPING SHALL BE PROVIDED IN TWO COATS.
2. THE INTERNATIONAL SYMBOL FOR ACCESSIBILITY SHALL BE WHITE OR WHITE WITH BLUE BACKGROUND
3. WHEN A BARRIER FREE PARKING SPACE IS ADJACENT TO A STANDARD PARKING SPACE, BLUE AND WHITE LINES ABUTTING EACH OTHER SHALL BE PROVIDED.

MAJOR ROAD CROSS SECTION

SECONDARY ROAD CROSS SECTION

BUILDING COVERAGE

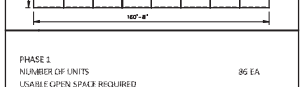
MAXIMUM PERMITTED LOT COVERAGE	25%
PROPOSED LOT COVERAGE	10.5%

PARKING CALCULATIONS

PARKING REQUIRED PER SEC. 5.2.12.A
2.5 SPACES REQUIRED FOR EACH UNIT HAVING 3 OR MORE BEDROOMS

PHASE 1	
NUMBER OF UNITS	86 EA
PARKING REQUIRED	215 SPACES
PARKING PROVIDED	
ATTACHED GRAGE PARKING	172 SPACES
DRIVE WAY PARKING	14 UNITS
PARKING = 14 X .5	7 SPACES
GUEST PARKING	36 SPACES
ADA SPACES PROVIDED	1 SPACES
TOTAL PARKING PROVIDED	215 SPACES
PHASE 2	
NUMBER OF UNITS	77 EA
PARKING REQUIRED	193 SPACES
PARKING PROVIDED	
ATTACHED GRAGE PARKING	154 SPACES
GUEST PARKING	42 SPACES
ADA SPACES PROVIDED	1 SPACES
TOTAL PARKING PROVIDED	196 SPACES

TYPICAL BUILDING FOOTPRINT



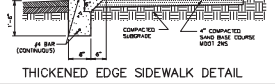
PHASE 1	
NUMBER OF UNITS	86 EA
USABLE OPEN SPACE REQUIRED	
200 SF PER UNIT	17200 SF
USABLE OPEN SPACE PROVIDED	
UNIT DECKS (50 SF)	4300 SF
POCKET PARKS	12939 SF
TOTAL	17239 SF
PHASE 2	
NUMBER OF UNITS	77 EA
USABLE OPEN SPACE REQUIRED	
200 SF PER UNIT	15400 SF
USABLE OPEN SPACE PROVIDED	
UNIT DECKS (50 SF)	3850 SF
POCKET PARKS	12248 SF
TOTAL	16098 SF

NOTES AND PROPOSED IMPROVEMENTS

1. MUNICIPAL SEWER TO BE PROVIDED BY CONNECTING TO AN EXISTING 8" SANITARY SEWER FROM EXISTING PHASES TO THE SOUTH.
2. MUNICIPAL WATER TO BE PROVIDED BY CONNECTING TO AN EXISTING 20" WATER MAIN LOCATED ON THE SOUTH SIDE OF TWELVE MILE ROAD, ALSO CONNECTING TO AN EXISTING 8" WATER MAIN LOCATED ON 12 OAKS DRIVE.
3. STORM WATER DETENTION SHALL BE PROVIDED IN THE REGIONAL 12 OAKS BASIN.
4. 6' WIDE CONCRETE SIDEWALKS SHALL BE CONSTRUCTED AS SHOWN.
5. ALL ROADWAYS TO BE PRIVATE.
6. A CITY OF NOVI RIGHT-OF-WAY PERMIT IS REQUIRED FOR WORK WITHIN ANY PUBLIC ROAD RIGHT-OF-WAY.
7. ALL SIDEWALKS AND SIDEWALK RAMPS SHALL A.D.A. COMPLIANT.
8. ALL WORK SHALL CONFORM TO THE CURRENT CITY OF NOVI STANDARDS AND SPECIFICATIONS.
9. PROP. WATER MAIN AND PROP. SANITARY SEWER TO BE CENTERLINE OF 20' WIDE PUBLIC EASEMENT.
10. TRASH TO BE PICKED UP BY CURBSIDE PICK UP.
11. NO ACCESSORY STRUCTURES ARE PROPOSED.

BICYCLE PARKING

BICYCLE PARKING REQUIRED PER SECTION 5.15.1	
ONE SPACE FOR EACH 5 UNITS	
PHASE 1	
NUMBER OF UNITS	86 EA
BICYCLE PARKING REQUIRED	17.2 EA
BICYCLE PARKING PROVIDED	18 EA
PHASE 2	
NUMBER OF UNITS	77 EA
BICYCLE PARKING REQUIRED	15.4 EA
BICYCLE PARKING PROVIDED	16 EA



THICKENED EDGE SIDEWALK DETAIL

SITE DATA

EXISTING ZONING	I-1
PROPOSED ZONING	RM-2 WITH PRO
GROSS ACRES	31.32 AC
WETLANDS	6.71 AC
NET ACRES	24.61 AC
NUMBER OF BUILDING	31 EA
NUMBER OF UNITS	163 EA
ALL UNITS HAVE 3 BEDROOMS (4 ROOMS)	
NUMBER OF ROOMS	700 ROOMS
2000 SF PER ROOM	1,400,000 SF
PROPOSED DENSITY	6.62 UNITS/AC

MINIMUM DISTANCE BETWEEN BUILDINGS

$$S_w = \frac{1}{2}\left(L_1 + 2\left(L_2 + \sqrt{H_1 \times H_2}\right)\right)$$

SPACE BETWEEN BUILDINGS	L_1	L_2	H_1	H_2	MIN. WIDTH REQUIRED	PROPOSED SPACING	PRO. DEVIATION
1 AND 2	54.33	37.35	37.35	37.83	76.68	76.90	YES
2 AND 4	22.16	17.26	37.35	37.83	71.38	76.90	YES
4 AND 5	59.38	26.72	37.35	37.83	70.86	76.90	YES
6 AND 7	3.99	4.03	37.35	37.83	76.27	76.27	YES
7 AND 8	54.33	36.12	37.35	37.83	76.68	82.10	YES
8 AND 9	23.33	29.28	37.35	37.83	70.86	76.90	YES
9 AND 10	3.54	7.84	37.35	37.83	77.73	76.90	YES
10 AND 12	54.29	37.35	37.35	37.83	76.33	76.90	YES
11 AND 13	54.33	36.33	37.35	37.83	76.68	76.90	YES
16 AND 17	54.33	36.33	37.35	37.83	76.68	76.90	YES
17 AND 19	54.33	36.33	37.35	37.83	76.68	76.90	YES
18 AND 20	27.92	18.88	37.35	37.83	70.03	76.90	YES
20 AND 21	8.52	21.98	37.35	37.83	70.34	77.73	YES
21 AND 23	59.06	18.64	37.35	37.83	76.43	76.90	YES
22 AND 23	29.15	19.78	37.35	37.83	70.58	77.69	YES
26 AND 27	20.53	20.52	37.35	37.83	70.86	76.90	YES
27 AND 29	3.67	3.65	37.35	37.83	76.49	76.90	YES
28 AND 30	20.35	20.33	37.35	37.83	70.86	76.90	YES
30 AND 31	54.75	37.83	37.35	37.83	76.73	76.90	YES

4' TALL x 6' WIDE REZONING SIGN DETAIL

ZONING CHANGE PROPOSED FROM I-1 TO RM-1 WITH PRO
Min. 8" high letters
FOR MORE INFORMATION CALL:
NOVI COMMUNITY DEVELOPMENT DEPARTMENT 248-347-0475
Min. 4" high letters

PUBLIC BENEFIT

REQUESTED DEVIATIONS

SIGN QUANTITIES

SYMBOL	DESCRIPTION	QUANTITY	PANEL POST
R1	R1-1 30"x30" "STOP" SIGN	--	--
	R1-2 30" "HELD" SIGN	--	--
	12" D.S.- 1 STREET NAME ATOP SIGN	--	--
R2	R2-1(25) "25 MPH SPEED LIMIT" SIGN	--	--
	12"x 18" V.A. BARRIER SIGN (R7-8)	--	--
	8"x 12" VAN ACCESSIBLE SIGN (R7-8P)	--	--
	"NO PARKING FIRE LANE" (R8-3) IN ACCORDANCE WITH SEC. 15-98 (a)(1).	--	--
	"NO OUTLET" (W14-2) 30"x30"	--	--

STOP

NO OUTLET
W14-2

SIGNAGE NOTES

1. STREET NAME SIGNS SHOULD BE PLACED A TOP THE INTERSECTION POST.
2. STREET-NAME SIGN SHALL COMPLY WITH THE CITY OF NOVI DESIGN STANDARDS.
3. ALL TRAFFIC SIGNAGE SHALL COMPLY WITH THE CURRENT MMUTCD STANDARDS.
4. SIGNS 12"x18" OR SMALLER IN SIZE SHALL BE MOUNTED ON A GALVANIZED 2 LB. U-CHANNEL POST.
5. SIGNS GREATER THAN 12"x18" SHALL BE MOUNTED ON A GALVANIZED 3 LB. OR GREATER U-CHANNEL POST.
6. SIGNS BOTTOM HEIGHT OF 7' FROM FINAL GRADE.
7. SIGNING SHALL BE PLACED 2' FROM THE FACE OF THE CURB OR EDGE OF THE NEAREST SIDEWALK TO THE NEAR EDGE OF THE SIGN.
8. FHWA STANDARD ALPHABET SERIES USED FOR ALL SIGN LANGUAGE.
9. HIGH INTENSITY PRISMATIC (HIP) SHEETING TO MEET FHWA RETRO-REFLECTIVITY.

PROPOSED LEGEND

	SANITARY SEWER
	WATER MAIN
	STORM SEWER
	SILT FENCE
	TREE PROTECTION FENCE
	WETLAND
1000	CONTOUR
	CURB AND GUTTER
S	SANITARY MANHOLE
	STORM MANHOLE
	STORM CATCH BASIN
	END SECTION
	FIRE HYDRANT
	VALVE IN WELL
	PAVEMENT (ASPHALT)
	PAVEMENT (CONCRETE SIDEWALK)
1000.00	DIRECTION SURFACE WATER FLOW
	GRADE

Background Trip Generation (El Car Wash – 48648 Grand River Avenue)

Land Use	ITE Code	Amount	Units	Average Daily Traffic (vpd)	AM Peak Hour (vph)			PM Peak Hour (vph)		
					In	Out	Total	In	Out	Total
Automated Car Wash	948	1	Tunnel	780	39	39	78	39	39	78
Pass-By (50% AM, 50% PM)				*390*	*19*	*19*	*38*	*19*	*19*	*38*
New Trips				390	20	20	40	20	20	40

Traffic Count (TCDS)

Home | Locate | Locate All | Email This | Auto-Locate:

Disclaimer: The Michigan Department of Transportation (MDOT) works with individual agencies (cities/villages, counties, metropolitan planning organizations (MPOs), regional planning organizations (RPOs), and other areas of MDOT) to identify existing traffic count programs and/or traffic data. ... more

List View | All DIRs | Report Center

Record 1 of 1 Goto Record go

Location ID	63-5578	MPO ID	54393
Type	SPOT	HPMS ID	
On NHS	No	On HPMS	No
LRS ID	0639102	LRS Loc Pt.	0.2643035
SF Group	Urban Non State (2025)	Route Type	
AF Group	NoFactor (2025)	Route	
GF Group	Urban Non State (2025)	Active	Yes
Class Dist Grp	NTL_5 (2025)	Category	Primary
Seas Clss Grp			
WIM Group			
QC Group	Default		
Fnct'l Class	(5) Major Collector	Milepost	
Located On	12 MILE RD		
Loc On Alias			
EAST OF	Grand River Ave		

More Detail

STATION DATA

Directions: 2-WAY | EB | WB

AADT

	Year	AADT	DHV-30	K %	D %	PA	BC	Src
	2024	4,236[3]				4,114 (97%)	122 (3%)	Grown from 2023
	2023	4,215[3]				4,102 (97%)	113 (3%)	Grown from 2022
	2022	4,124[3]				4,006 (97%)	118 (3%)	Grown from 2021
	2021	4,120[3]				3,869 (94%)	251 (6%)	Grown from 2020
	2020	3,616[3]				3,364 (93%)	252 (7%)	Grown from 2019

|<< < > >>| 1-5 of 9

VOLUME COUNT

	Date	Int	Total
No Data			

VOLUME TREND

Year	Annual Growth
2024	0%
2023	2%
2022	0%
2021	14%
2020	-15%
2019	0%
2018	0%
2017	4%

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Traffic Count (TCDS)

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List View | All DIRs | Report Center

Record 1 of 1 Goto Record go

Location ID	63-5094	MPO ID	58431
Type	SPOT	HPMS ID	
On NHS	Yes	On HPMS	No
LRS ID	0656605	LRS Loc Pt.	3.855
SF Group	Urban Non State (2025)	Route Type	
AF Group	NoFactor (2025)	Route	
GF Group	Urban Non State (2025)	Active	Yes
Class Dist Grp	NTL_3 (2025)	Category	Primary
Seas Clss Grp			
WIM Group			
QC Group	Default		
Fnct'l Class	(3) Other Principal Arterial	Milepost	
Located On	BECK RD		
Loc On Alias			
	BETWEEN I-96 INT AND GRAND RIVER (IN NOVI)		

More Detail

STATION DATA

Directions: 2-WAY | NB | SB

AADT

	Year	AADT	DHV-30	K %	D %	PA	BC	Src
	2024	37,675[3]		8	55	36,657 (97%)	1,018 (3%)	Grown from 2023
	2023	37,488[3]		8	55	36,213 (97%)	1,275 (3%)	Grown from 2022
	2022	36,681[3]		8	55	35,544 (97%)	1,137 (3%)	Grown from 2021
	2021	36,644[3]		8	55	35,580 (97%)	1,064 (3%)	Grown from 2020
	2020	32,161	2,421	8	55	31,085 (97%)	1,076 (3%)	

|<< < > >>| 1-5 of 9

VOLUME COUNT

	Date	Int	Total
	Tue 7/7/2020	15	32,161
	Wed 9/21/2016	60	38,067
	Tue 9/20/2016	60	37,684
	Mon 9/19/2016	60	37,689

VOLUME TREND

Year	Annual Growth
2024	0%
2023	2%
2022	0%
2021	14%
2020	-18%
2019	-1%
2018	0%
2017	4%

CLASSIFICATION

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Traffic Count (TCDS)

Home | Locate | Locate All | Email This | Auto-Locate:

Disclaimer: The Michigan Department of Transportation (MDOT) works with individual agencies (cities/villages, counties, metropolitan planning organizations (MPOs), regional planning organizations (RPOs), and other areas of MDOT) to identify existing traffic count programs and/or traffic data. ... more

List View | All DIRs | Report Center

Record 1 of 1 Goto Record go

Location ID	63-5220	MPO ID	
Type	SPOT	HPMS ID	1_2_125_083
On NHS	No	On HPMS	Yes
LRS ID	4104142	LRS Loc Pt.	7.5902621
SF Group	Urban Non State (2025)	Route Type	
AF Group	NoFactor (2025)	Route	
GF Group	Urban Non State (2025)	Active	Yes
Class Dist Grp	NTL_4 (2025)	Category	Primary
Seas Clss Grp			
WIM Group			
QC Group	Default		
Fnct'l Class	(4) Minor Arterial	Milepost	
Located On	GRAND RIVER AVE		
Loc On Alias			
WEST OF	Wixom Road		

More Detail

STATION DATA

Directions: 2-WAY | NW 1 | SE 1

AADT

	Year	AADT	DHV-30	K %	D %	PA	BC	Src
	2025	19,361				17,794 (92%)	1,566 (8%)	
	2024	21,264[3]		8	56	20,669 (97%)	595 (3%)	Grown from 2023
	2023	21,158[3]		8	56	20,588 (97%)	570 (3%)	Grown from 2022
	2022	20,703[3]		8	56	20,102 (97%)	601 (3%)	Grown from 2021
	2021	20,682	1,728	8	56	19,425 (94%)	1,257 (6%)	

|<< < > >>| 1-5 of 10

VOLUME COUNT

	Date	Int	Total
	Thu 6/5/2025	15	18,993
	Wed 6/4/2025	15	19,729
	Wed 9/15/2021	15	20,929
	Tue 9/14/2021	15	20,434
	Tue 6/5/2018	15	23,844
	Mon 6/4/2018	15	24,099
	Wed 2/10/2016	60	23,803
	Tue 2/9/2016	60	22,560
	Wed 11/13/2013	60	19,334
	Tue 11/12/2013	60	18,657

VOLUME TREND

Year	Annual Growth
2025	-9%
2024	1%
2023	2%
2022	0%
2021	2%
2020	-15%
2019	-1%
2018	-1%
2017	4%

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List View | All DIRs | Report Center

Record 1 of 1 Goto Record go

Location ID	63-5543	MPO ID	40562
Type	SPOT	HPMS ID	
On NHS	No	On HPMS	No
LRS ID	0639101	LRS Loc Pt.	1.593282
SF Group	Urban Non State (2025)	Route Type	
AF Group	NoFactor (2025)	Route	
GF Group	Urban Non State (2025)	Active	Yes
Class Dist Grp	NTL_4 (2025)	Category	Primary
Seas Clss Grp			
WIM Group			
QC Group	Default		
Fnct'l Class	(4) Minor Arterial	Milepost	
Located On	WIXOM RD		
Loc On Alias			
NORTH OF	11 Mile Rd		

More Detail

STATION DATA

Directions: 2-WAY | NB | SB

AADT

	Year	AADT	DHV-30	K %	D %	PA	BC	Src
	2024	8,840[3]				8,591 (97%)	249 (3%)	Grown from 2023
	2023	8,796[3]				8,557 (97%)	239 (3%)	Grown from 2022
	2022	8,607[3]				8,356 (97%)	251 (3%)	Grown from 2021
	2021	8,598[3]				8,193 (95%)	405 (5%)	Grown from 2020
	2020	7,546[3]				7,183 (95%)	363 (5%)	Grown from 2019

|<< < > >>| 1-5 of 9

VOLUME COUNT

	Date	Int	Total
No Data			

VOLUME TREND

Year	Annual Growth
2024	1%
2023	2%
2022	0%
2021	14%
2020	-15%
2019	0%
2018	0%
2017	4%

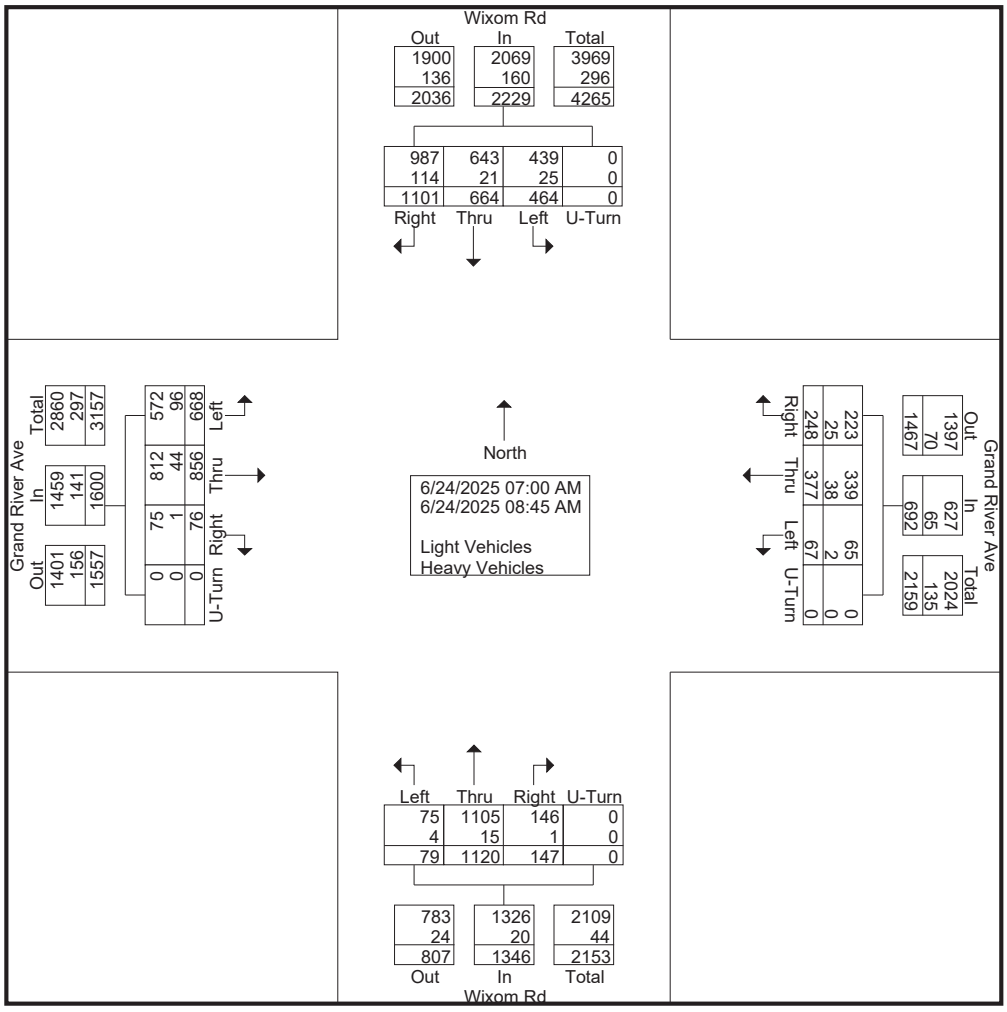
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TRUE DATA TO IMPROVE MOBILITY

File Name : 17137201 - Wixom Rd -- Grand River Ave
Site Code : 17137201
Start Date : 6/24/2025
Page No : 1

Groups Printed- Light Vehicles - Heavy Vehicles

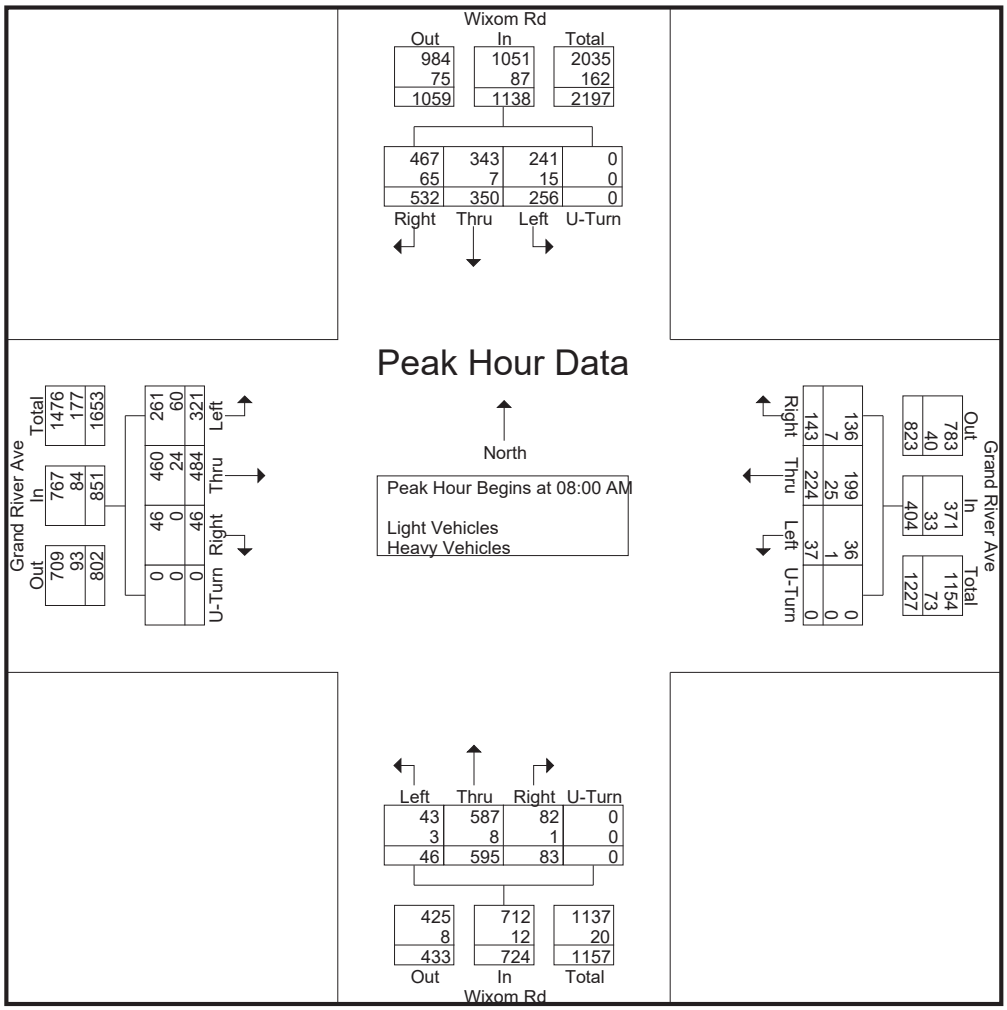
	Grand River Ave Eastbound					Grand River Ave Westbound					Wixom Rd Northbound					Wixom Rd Southbound					
Start Time	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Int. Total
07:00 AM	97	75	12	0	184	3	33	20	0	56	6	111	9	0	126	45	60	126	0	231	597
07:15 AM	79	86	2	0	167	7	36	24	0	67	11	131	6	0	148	48	52	130	0	230	612
07:30 AM	78	122	5	0	205	8	37	32	0	77	8	139	20	0	167	66	110	135	0	311	760
07:45 AM	93	89	11	0	193	12	47	29	0	88	8	144	29	0	181	49	92	178	0	319	781
Total	347	372	30	0	749	30	153	105	0	288	33	525	64	0	622	208	314	569	0	1091	2750
08:00 AM	100	123	11	0	234	8	49	29	0	86	13	164	10	0	187	66	66	146	0	278	785
08:15 AM	82	99	11	0	192	6	49	45	0	100	9	146	23	0	178	61	89	127	0	277	747
08:30 AM	70	120	13	0	203	10	62	31	0	103	12	135	24	0	171	65	90	130	0	285	762
08:45 AM	69	142	11	0	222	13	64	38	0	115	12	150	26	0	188	64	105	129	0	298	823
Total	321	484	46	0	851	37	224	143	0	404	46	595	83	0	724	256	350	532	0	1138	3117
Grand Total	668	856	76	0	1600	67	377	248	0	692	79	1120	147	0	1346	464	664	1101	0	2229	5867
Apprch %	41.8	53.5	4.8	0		9.7	54.5	35.8	0		5.9	83.2	10.9	0		20.8	29.8	49.4	0		
Total %	11.4	14.6	1.3	0	27.3	1.1	6.4	4.2	0	11.8	1.3	19.1	2.5	0	22.9	7.9	11.3	18.8	0	38	
Light Vehicles	572	812	75	0	1459	65	339	223	0	627	75	1105	146	0	1326	439	643	987	0	2069	5481
% Light Vehicles	85.6	94.9	98.7	0	91.2	97	89.9	89.9	0	90.6	94.9	98.7	99.3	0	98.5	94.6	96.8	89.6	0	92.8	93.4
Heavy Vehicles	96	44	1	0	141	2	38	25	0	65	4	15	1	0	20	25	21	114	0	160	386
% Heavy Vehicles	14.4	5.1	1.3	0	8.8	3	10.1	10.1	0	9.4	5.1	1.3	0.7	0	1.5	5.4	3.2	10.4	0	7.2	6.6



TRUE DATA TO IMPROVE MOBILITY

File Name : 17137201 - Wixom Rd -- Grand River Ave
Site Code : 17137201
Start Date : 6/24/2025
Page No : 2

	Grand River Ave Eastbound					Grand River Ave Westbound					Wixom Rd Northbound					Wixom Rd Southbound					
Start Time	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	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	**100**	123	11	0	**234**	8	49	29	0	86	**13**	**164**	10	0	187	**66**	66	**146**	0	278	785
08:15 AM	82	99	11	0	192	6	49	**45**	0	100	9	146	23	0	178	61	89	127	0	277	747
08:30 AM	70	120	**13**	0	203	10	62	31	0	103	12	135	24	0	171	65	90	130	0	285	762
08:45 AM	69	**142**	11	0	222	**13**	**64**	38	0	**115**	12	150	**26**	0	**188**	64	**105**	129	0	**298**	**823**
Total Volume	321	484	46	0	851	37	224	143	0	404	46	595	83	0	724	256	350	532	0	1138	3117
% App. Total	37.7	56.9	5.4	0		9.2	55.4	35.4	0		6.4	82.2	11.5	0		22.5	30.8	46.7	0		
PHF	.803	.852	.885	.000	.909	.712	.875	.794	.000	.878	.885	.907	.798	.000	.963	.970	.833	.911	.000	.955	.947
Light Vehicles	261	460	46	0	767	36	199	136	0	371	43	587	82	0	712	241	343	467	0	1051	2901
% Light Vehicles	81.3	95.0	100	0	90.1	97.3	88.8	95.1	0	91.8	93.5	98.7	98.8	0	98.3	94.1	98.0	87.8	0	92.4	93.1
Heavy Vehicles	60	24	0	0	84	1	25	7	0	33	3	8	1	0	12	15	7	65	0	87	216
% Heavy Vehicles	18.7	5.0	0	0	9.9	2.7	11.2	4.9	0	8.2	6.5	1.3	1.2	0	1.7	5.9	2.0	12.2	0	7.6	6.9

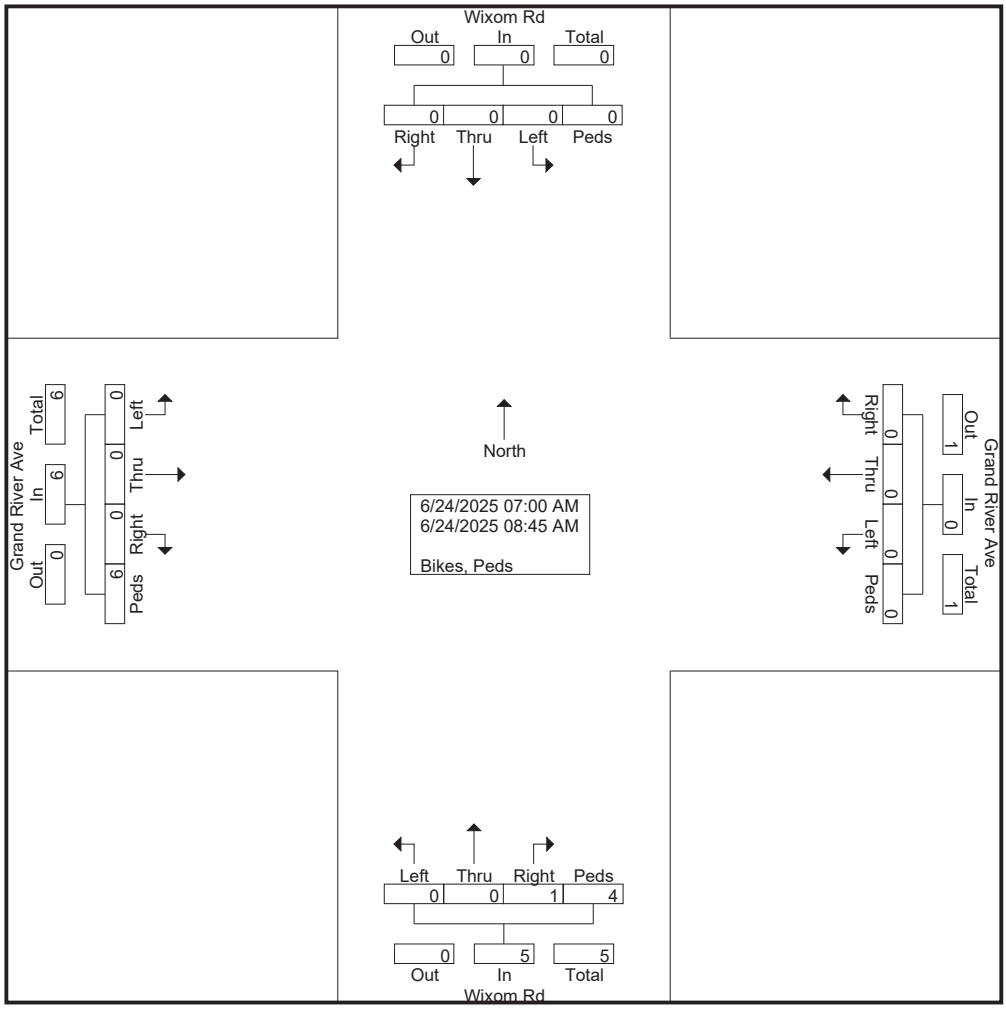


TRUE DATA TO IMPROVE MOBILITY

File Name : 17137201 - Wixom Rd -- Grand River Ave
Site Code : 17137201
Start Date : 6/24/2025
Page No : 1

Groups Printed- Bikes, Peds

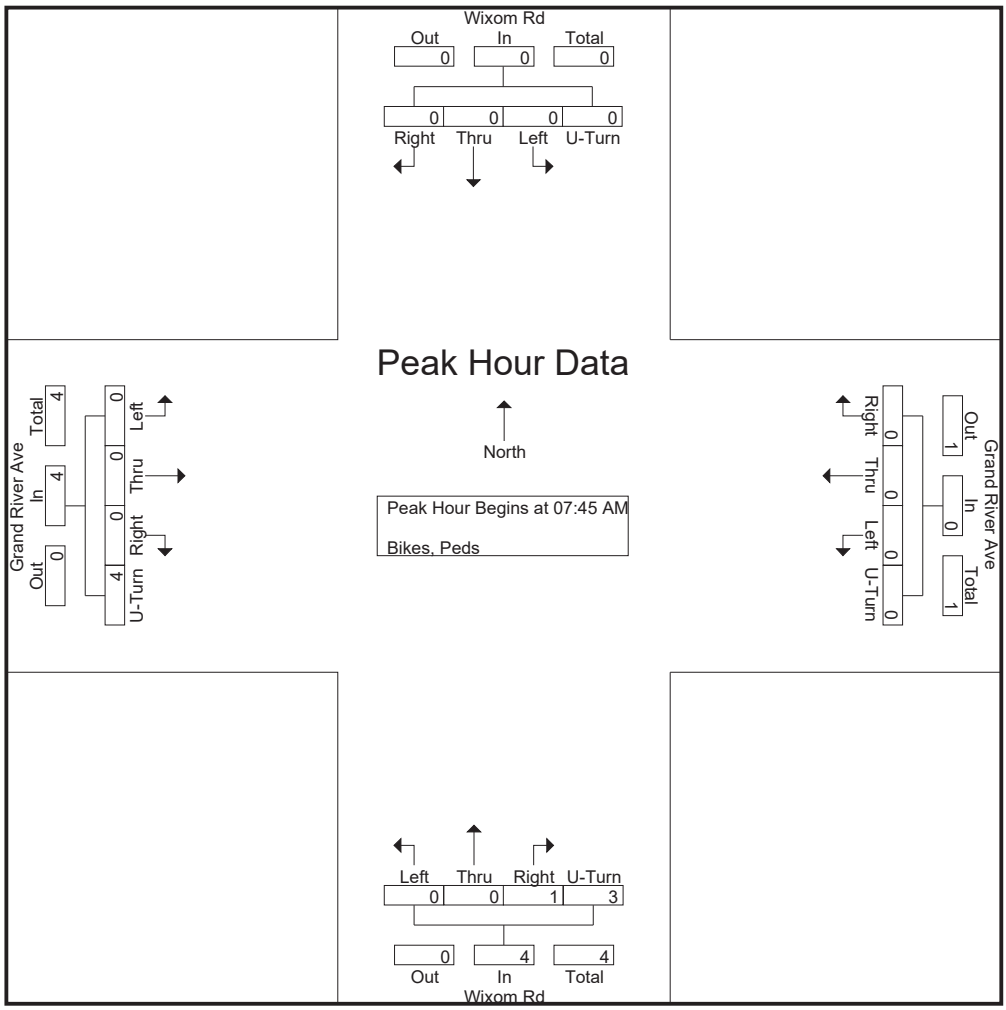
	Grand River Ave Eastbound					Grand River Ave Westbound					Wixom Rd Northbound					Wixom Rd Southbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
07:00 AM	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
07:15 AM	0	0	0	1	1	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	2
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Total	0	0	0	3	3	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	4
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
08:30 AM	0	0	0	1	1	0	0	0	0	0	0	0	1	3	4	0	0	0	0	0	5
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	3	3	0	0	0	0	0	0	0	1	3	4	0	0	0	0	0	7
Grand Total	0	0	0	6	6	0	0	0	0	0	0	0	1	4	5	0	0	0	0	0	11
Apprch %	0	0	0	100		0	0	0	0		0	0	20	80		0	0	0	0		
Total %	0	0	0	54.5	54.5	0	0	0	0	0	0	0	9.1	36.4	45.5	0	0	0	0	0	



TRUE DATA TO IMPROVE MOBILITY

File Name : 17137201 - Wixom Rd -- Grand River Ave
Site Code : 17137201
Start Date : 6/24/2025
Page No : 2

	Grand River Ave Eastbound					Grand River Ave Westbound					Wixom Rd Northbound					Wixom Rd 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 07:45 AM																					
07:45 AM	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	**2**	**2**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
08:30 AM	0	0	0	1	1	0	0	0	0	0	0	0	**1**	**3**	**4**	0	0	0	0	0	**5**
Total Volume	0	0	0	4	4	0	0	0	0	0	0	0	1	3	4	0	0	0	0	0	8
% App. Total	0	0	0	100		0	0	0	0		0	0	25	75		0	0	0	0		
PHF	.000	.000	.000	.500	.500	.000	.000	.000	.000	.000	.000	.000	.250	.250	.250	.000	.000	.000	.000	.000	.400

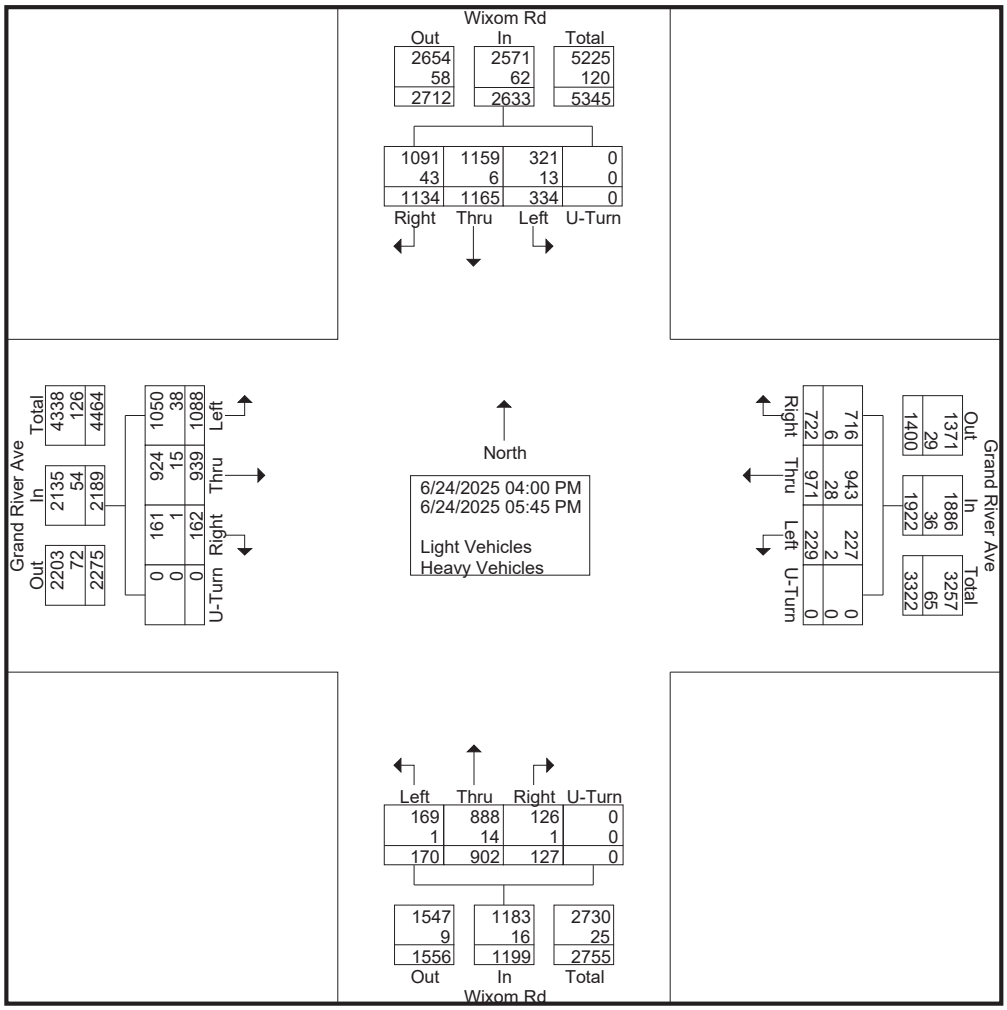


TRUE DATA TO IMPROVE MOBILITY

File Name : 17137202 - Wixom Rd -- Grand River Ave
Site Code : 17137202
Start Date : 6/24/2025
Page No : 1

Groups Printed- Light Vehicles - Heavy Vehicles

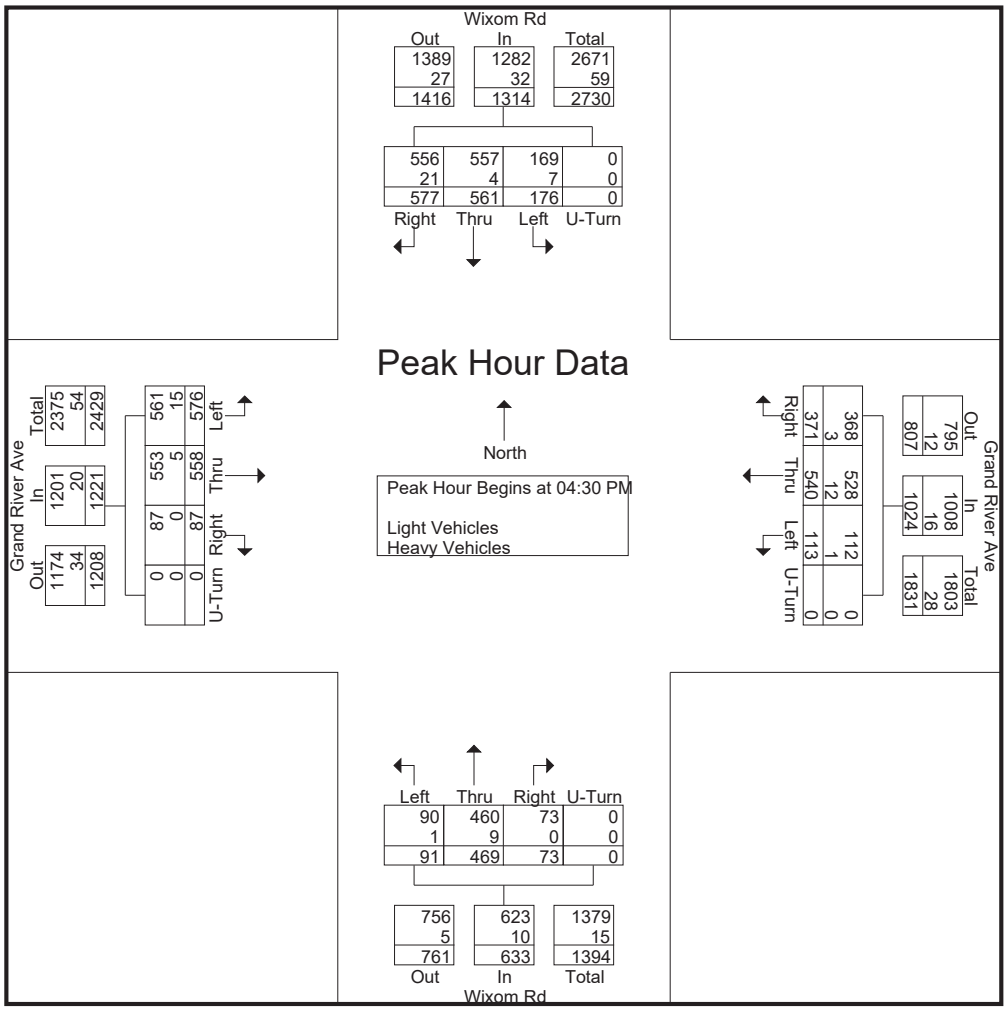
	Grand River Ave Eastbound					Grand River Ave Westbound					Wixom Rd Northbound					Wixom Rd Southbound					
Start Time	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Int. Total
04:00 PM	144	107	22	0	273	28	107	99	0	234	23	122	14	0	159	38	129	127	0	294	960
04:15 PM	141	107	14	0	262	29	123	97	0	249	19	107	13	0	139	54	169	124	0	347	997
04:30 PM	138	157	26	0	321	20	121	91	0	232	32	106	23	0	161	48	142	135	0	325	1039
04:45 PM	152	127	12	0	291	39	137	110	0	286	16	101	20	0	137	37	138	142	0	317	1031
Total	575	498	74	0	1147	116	488	397	0	1001	90	436	70	0	596	177	578	528	0	1283	4027
05:00 PM	165	155	25	0	345	29	136	96	0	261	18	128	16	0	162	41	145	157	0	343	1111
05:15 PM	121	119	24	0	264	25	146	74	0	245	25	134	14	0	173	50	136	143	0	329	1011
05:30 PM	116	92	26	0	234	31	107	84	0	222	23	105	15	0	143	32	158	163	0	353	952
05:45 PM	111	75	13	0	199	28	94	71	0	193	14	99	12	0	125	34	148	143	0	325	842
Total	513	441	88	0	1042	113	483	325	0	921	80	466	57	0	603	157	587	606	0	1350	3916
Grand Total	1088	939	162	0	2189	229	971	722	0	1922	170	902	127	0	1199	334	1165	1134	0	2633	7943
Apprch %	49.7	42.9	7.4	0		11.9	50.5	37.6	0		14.2	75.2	10.6	0		12.7	44.2	43.1	0		
Total %	13.7	11.8	2	0	27.6	2.9	12.2	9.1	0	24.2	2.1	11.4	1.6	0	15.1	4.2	14.7	14.3	0	33.1	
Light Vehicles	1050	924	161	0	2135	227	943	716	0	1886	169	888	126	0	1183	321	1159	1091	0	2571	7775
% Light Vehicles	96.5	98.4	99.4	0	97.5	99.1	97.1	99.2	0	98.1	99.4	98.4	99.2	0	98.7	96.1	99.5	96.2	0	97.6	97.9
Heavy Vehicles	38	15	1	0	54	2	28	6	0	36	1	14	1	0	16	13	6	43	0	62	168
% Heavy Vehicles	3.5	1.6	0.6	0	2.5	0.9	2.9	0.8	0	1.9	0.6	1.6	0.8	0	1.3	3.9	0.5	3.8	0	2.4	2.1



TRUE DATA TO IMPROVE MOBILITY

File Name : 17137202 - Wixom Rd -- Grand River Ave
Site Code : 17137202
Start Date : 6/24/2025
Page No : 2

	Grand River Ave Eastbound					Grand River Ave Westbound					Wixom Rd Northbound					Wixom Rd Southbound					
Start Time	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	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	138	**157**	**26**	0	321	20	121	91	0	232	**32**	106	**23**	0	161	48	142	135	0	325	1039
04:45 PM	152	127	12	0	291	**39**	137	**110**	0	**286**	16	101	20	0	137	37	138	142	0	317	1031
05:00 PM	**165**	155	25	0	**345**	29	136	96	0	261	18	128	16	0	162	41	**145**	**157**	0	**343**	**1111**
05:15 PM	121	119	24	0	264	25	**146**	74	0	245	25	**134**	14	0	**173**	**50**	136	143	0	329	1011
Total Volume	576	558	87	0	1221	113	540	371	0	1024	91	469	73	0	633	176	561	577	0	1314	4192
% App. Total	47.2	45.7	7.1	0		11	52.7	36.2	0		14.4	74.1	11.5	0		13.4	42.7	43.9	0		
PHF	.873	.889	.837	.000	.885	.724	.925	.843	.000	.895	.711	.875	.793	.000	.915	.880	.967	.919	.000	.958	.943
Light Vehicles	561	553	87	0	1201	112	528	368	0	1008	90	460	73	0	623	169	557	556	0	1282	4114
% Light Vehicles	97.4	99.1	100	0	98.4	99.1	97.8	99.2	0	98.4	98.9	98.1	100	0	98.4	96.0	99.3	96.4	0	97.6	98.1
Heavy Vehicles	15	5	0	0	20	1	12	3	0	16	1	9	0	0	10	7	4	21	0	32	78
% Heavy Vehicles	2.6	0.9	0	0	1.6	0.9	2.2	0.8	0	1.6	1.1	1.9	0	0	1.6	4.0	0.7	3.6	0	2.4	1.9

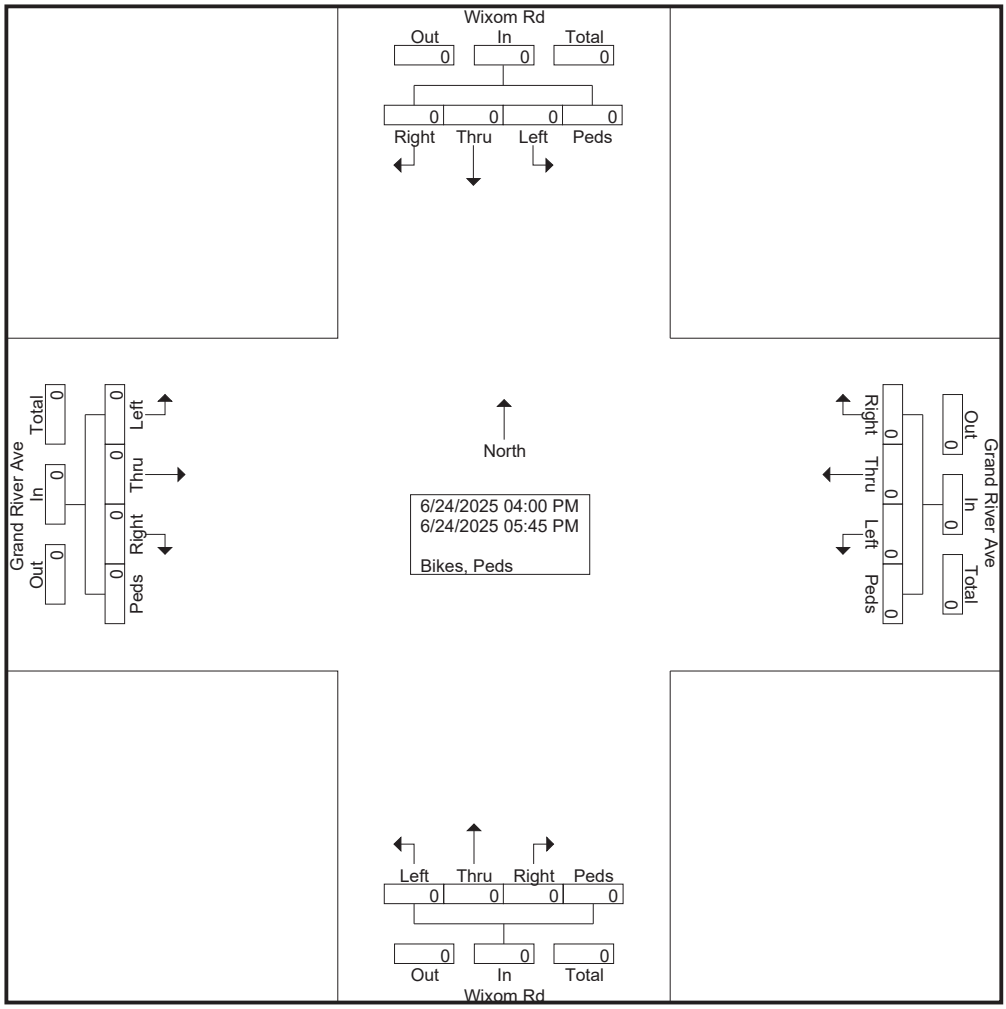


TRUE DATA TO IMPROVE MOBILITY

File Name : 17137202 - Wixom Rd -- Grand River Ave
Site Code : 17137202
Start Date : 6/24/2025
Page No : 1

Groups Printed- Bikes, Peds

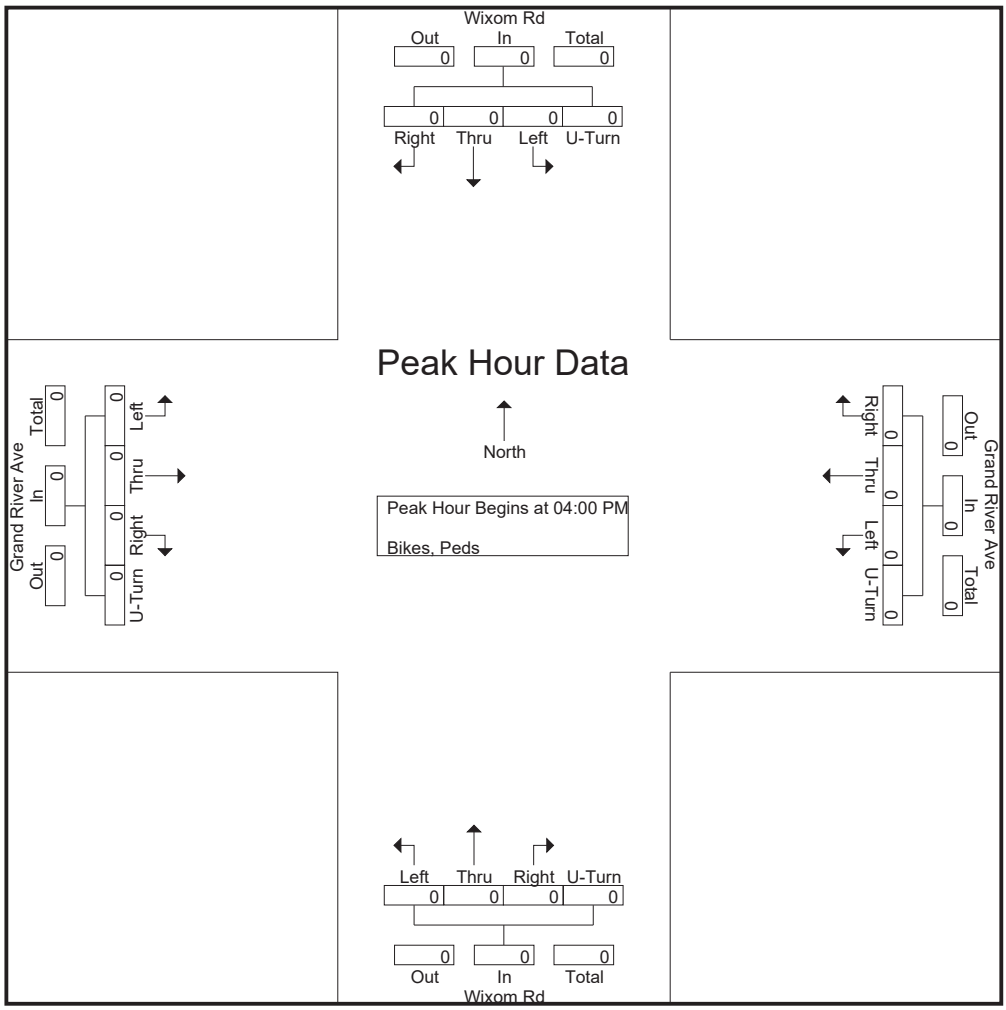
	Grand River Ave Eastbound					Grand River Ave Westbound					Wixom Rd Northbound					Wixom Rd Southbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Apprch %	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		
Total %																					



TRUE DATA TO IMPROVE MOBILITY

File Name : 17137202 - Wixom Rd -- Grand River Ave
Site Code : 17137202
Start Date : 6/24/2025
Page No : 2

	Grand River Ave Eastbound					Grand River Ave Westbound					Wixom Rd Northbound					Wixom Rd 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 04:00 PM																					
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

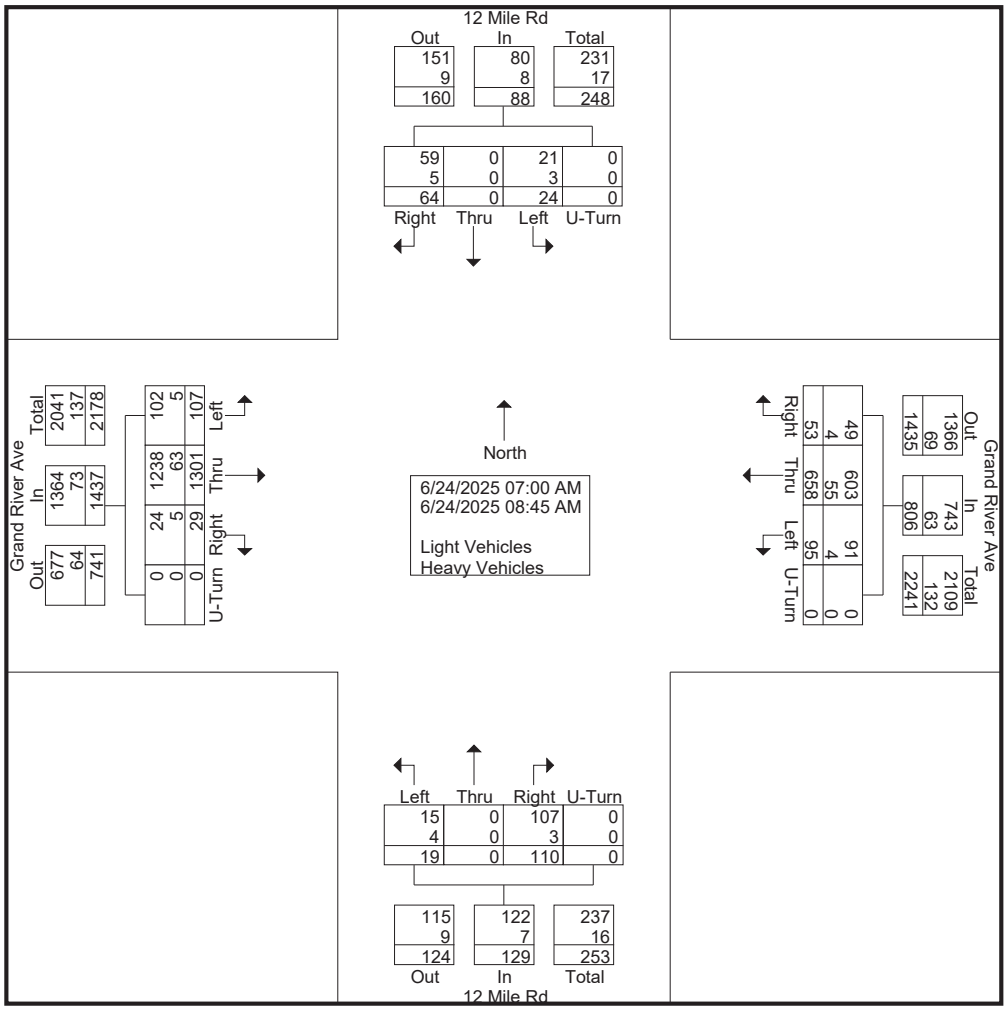


TRUE DATA TO IMPROVE MOBILITY

File Name : 17137203 - 12 Mile Rd -- Grand River Ave
Site Code : 17137203
Start Date : 6/24/2025
Page No : 1

Groups Printed- Light Vehicles - Heavy Vehicles

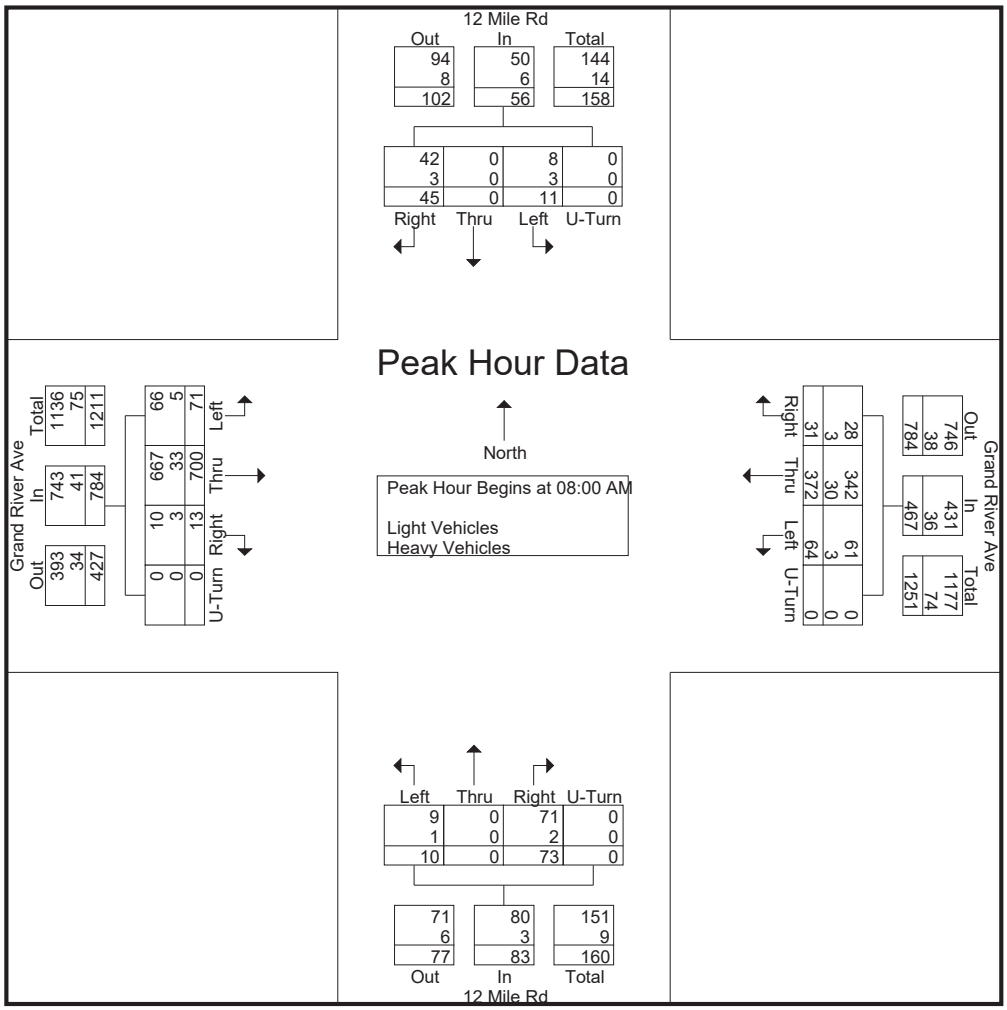
	Grand River Ave Eastbound					Grand River Ave Westbound					12 Mile Rd Northbound					12 Mile Rd Southbound					
Start Time	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Int. Total
07:00 AM	8	118	2	0	128	7	59	4	0	70	1	0	6	0	7	1	0	3	0	4	209
07:15 AM	8	140	5	0	153	7	65	5	0	77	2	0	7	0	9	2	0	3	0	5	244
07:30 AM	9	178	5	0	192	5	79	9	0	93	6	0	9	0	15	6	0	7	0	13	313
07:45 AM	11	165	4	0	180	12	83	4	0	99	0	0	15	0	15	4	0	6	0	10	304
Total	36	601	16	0	653	31	286	22	0	339	9	0	37	0	46	13	0	19	0	32	1070
08:00 AM	18	155	5	0	178	14	85	7	0	106	2	0	12	0	14	3	0	5	0	8	306
08:15 AM	16	163	4	0	183	14	94	5	0	113	1	0	17	0	18	4	0	10	0	14	328
08:30 AM	18	175	1	0	194	17	87	8	0	112	3	0	20	0	23	2	0	14	0	16	345
08:45 AM	19	207	3	0	229	19	106	11	0	136	4	0	24	0	28	2	0	16	0	18	411
Total	71	700	13	0	784	64	372	31	0	467	10	0	73	0	83	11	0	45	0	56	1390
Grand Total	107	1301	29	0	1437	95	658	53	0	806	19	0	110	0	129	24	0	64	0	88	2460
Apprch %	7.4	90.5	2	0		11.8	81.6	6.6	0		14.7	0	85.3	0		27.3	0	72.7	0		
Total %	4.3	52.9	1.2	0	58.4	3.9	26.7	2.2	0	32.8	0.8	0	4.5	0	5.2	1	0	2.6	0	3.6	
Light Vehicles	102	1238	24	0	1364	91	603	49	0	743	15	0	107	0	122	21	0	59	0	80	2309
% Light Vehicles	95.3	95.2	82.8	0	94.9	95.8	91.6	92.5	0	92.2	78.9	0	97.3	0	94.6	87.5	0	92.2	0	90.9	93.9
Heavy Vehicles	5	63	5	0	73	4	55	4	0	63	4	0	3	0	7	3	0	5	0	8	151
% Heavy Vehicles	4.7	4.8	17.2	0	5.1	4.2	8.4	7.5	0	7.8	21.1	0	2.7	0	5.4	12.5	0	7.8	0	9.1	6.1



TRUE DATA TO IMPROVE MOBILITY

File Name : 17137203 - 12 Mile Rd -- Grand River Ave
Site Code : 17137203
Start Date : 6/24/2025
Page No : 2

	Grand River Ave Eastbound					Grand River Ave Westbound					12 Mile Rd Northbound					12 Mile Rd Southbound					
Start Time	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	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	18	155	**5**	0	178	14	85	7	0	106	2	0	12	0	14	3	0	5	0	8	306
08:15 AM	16	163	4	0	183	14	94	5	0	113	1	0	17	0	18	**4**	0	10	0	14	328
08:30 AM	18	175	1	0	194	17	87	8	0	112	3	0	20	0	23	2	0	14	0	16	345
08:45 AM	**19**	**207**	3	0	**229**	**19**	**106**	**11**	0	**136**	**4**	0	**24**	0	**28**	2	0	**16**	0	**18**	**411**
Total Volume	71	700	13	0	784	64	372	31	0	467	10	0	73	0	83	11	0	45	0	56	1390
% App. Total	9.1	89.3	1.7	0		13.7	79.7	6.6	0		12	0	88	0		19.6	0	80.4	0		
PHF	.934	.845	.650	.000	.856	.842	.877	.705	.000	.858	.625	.000	.760	.000	.741	.688	.000	.703	.000	.778	.845
Light Vehicles	66	667	10	0	743	61	342	28	0	431	9	0	71	0	80	8	0	42	0	50	1304
% Light Vehicles	93.0	95.3	76.9	0	94.8	95.3	91.9	90.3	0	92.3	90.0	0	97.3	0	96.4	72.7	0	93.3	0	89.3	93.8
Heavy Vehicles	5	33	3	0	41	3	30	3	0	36	1	0	2	0	3	3	0	3	0	6	86
% Heavy Vehicles	7.0	4.7	23.1	0	5.2	4.7	8.1	9.7	0	7.7	10.0	0	2.7	0	3.6	27.3	0	6.7	0	10.7	6.2

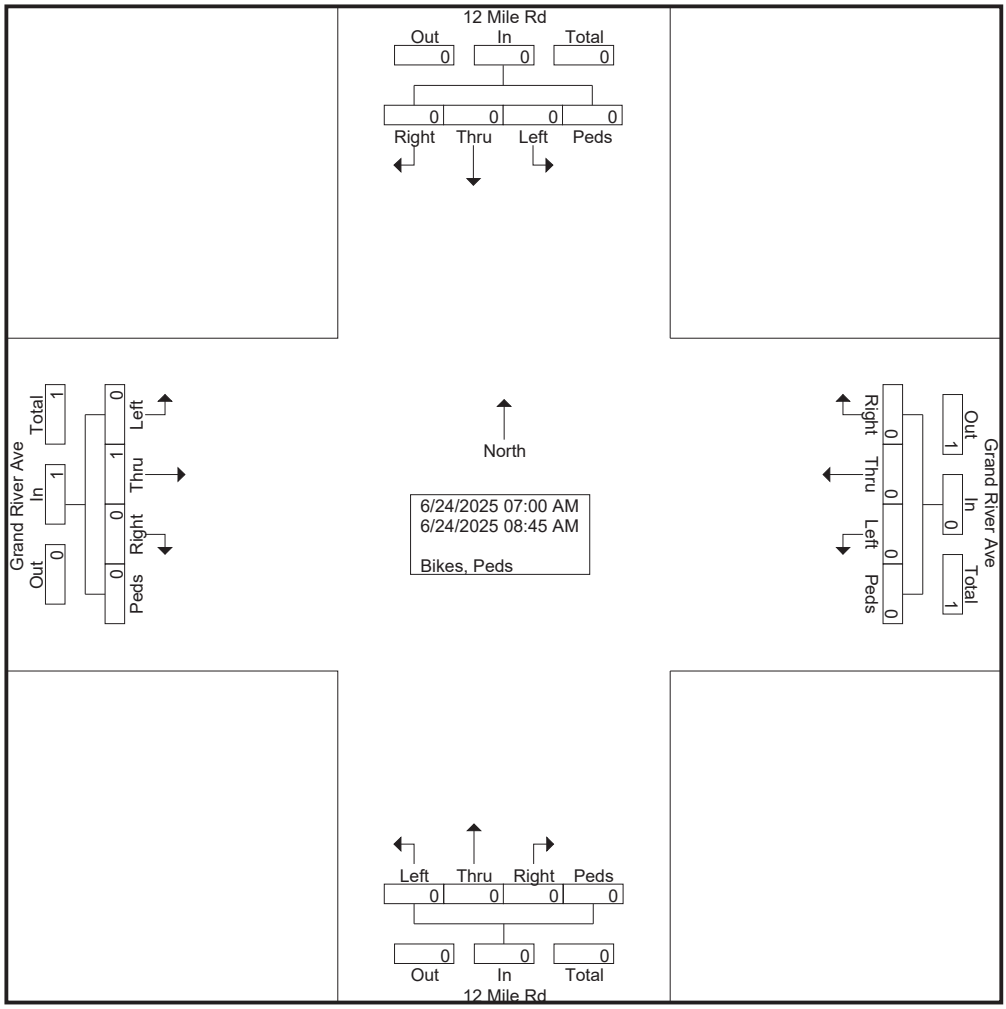


TRUE DATA TO IMPROVE MOBILITY

File Name : 17137203 - 12 Mile Rd -- Grand River Ave
Site Code : 17137203
Start Date : 6/24/2025
Page No : 1

Groups Printed- Bikes, Peds

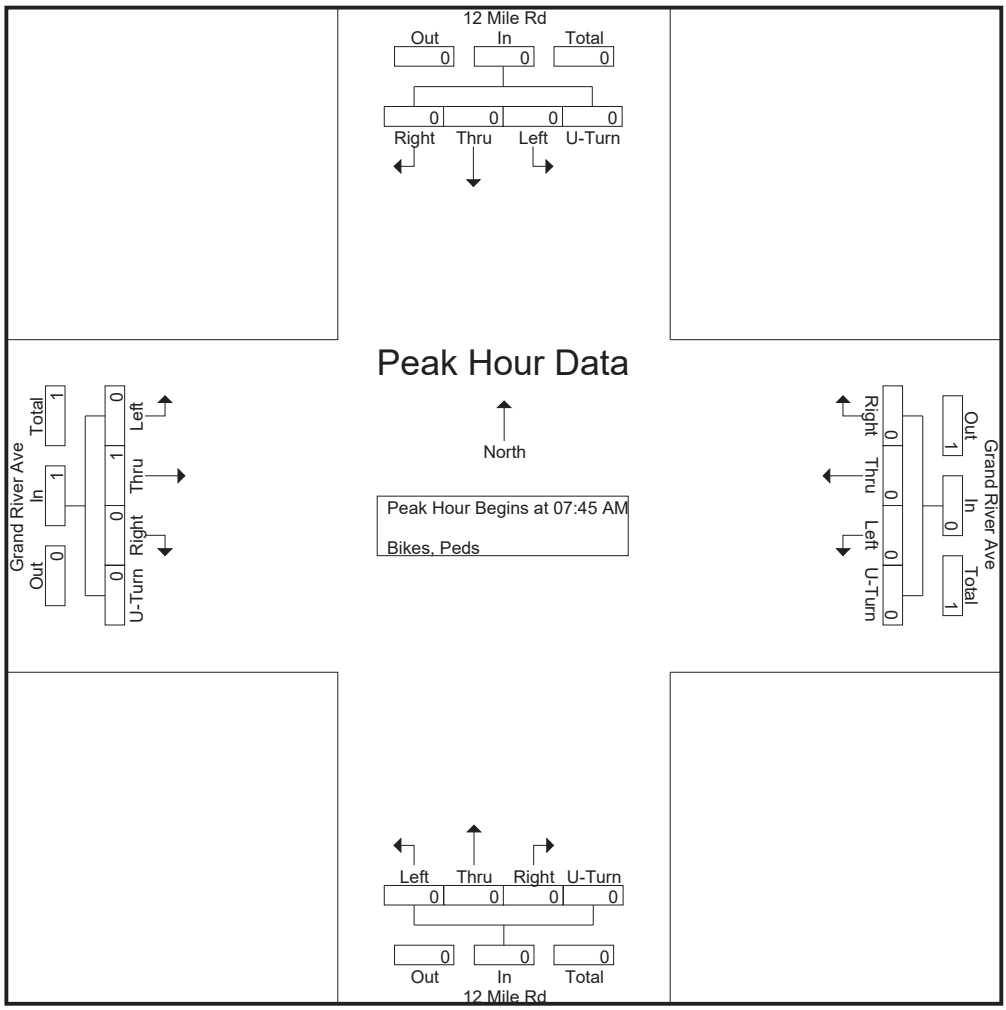
	Grand River Ave Eastbound					Grand River Ave Westbound					12 Mile Rd Northbound					12 Mile Rd Southbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Grand Total	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Apprch %	0	100	0	0		0	0	0	0		0	0	0	0		0	0	0	0		
Total %	0	100	0	0	100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	



TRUE DATA TO IMPROVE MOBILITY

File Name : 17137203 - 12 Mile Rd -- Grand River Ave
Site Code : 17137203
Start Date : 6/24/2025
Page No : 2

	Grand River Ave Eastbound					Grand River Ave Westbound					12 Mile Rd Northbound					12 Mile Rd 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 07:45 AM																					
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	**1**	0	0	**1**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**
Total Volume	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
% App. Total	0	100	0	0		0	0	0	0		0	0	0	0		0	0	0	0		
PHF	.000	.250	.000	.000	.250	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.250

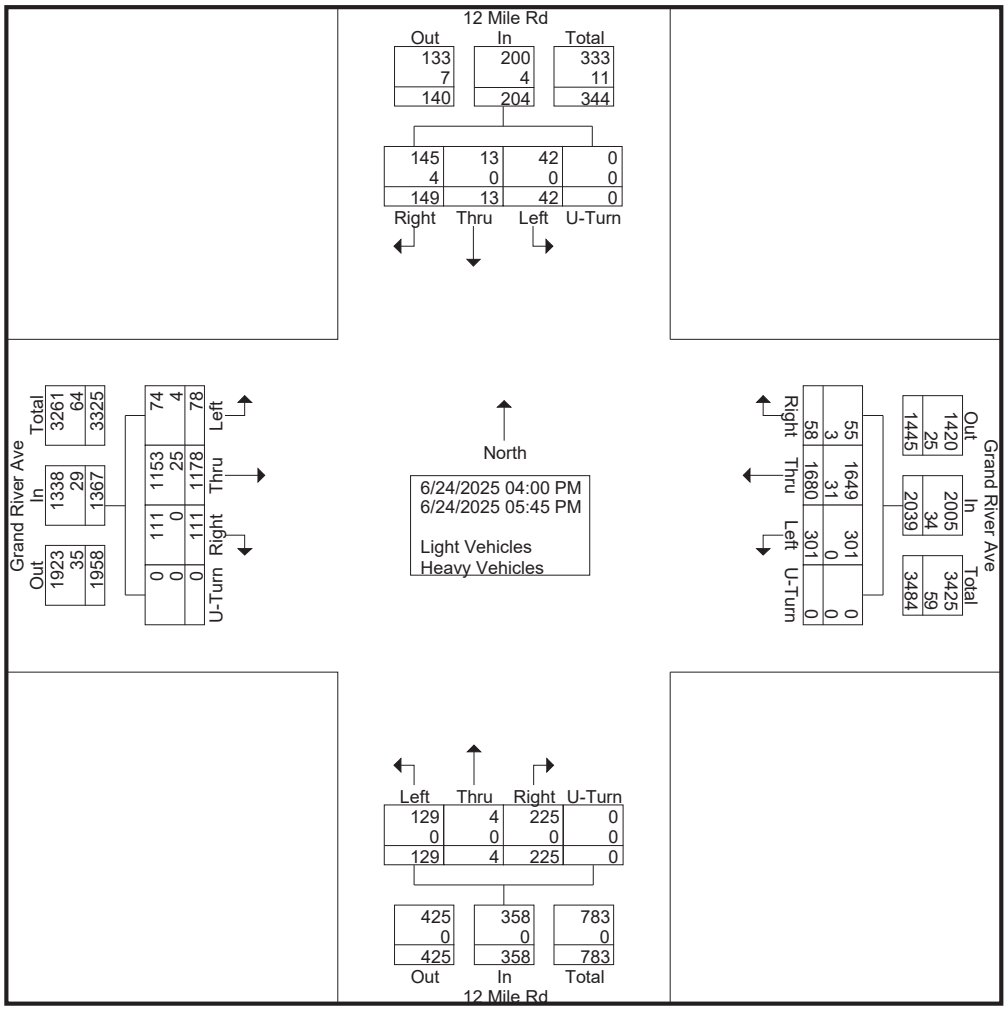


TRUE DATA TO IMPROVE MOBILITY

File Name : 17137204 - 12 Mile Rd -- Grand River Ave
Site Code : 17137204
Start Date : 6/24/2025
Page No : 1

Groups Printed- Light Vehicles - Heavy Vehicles

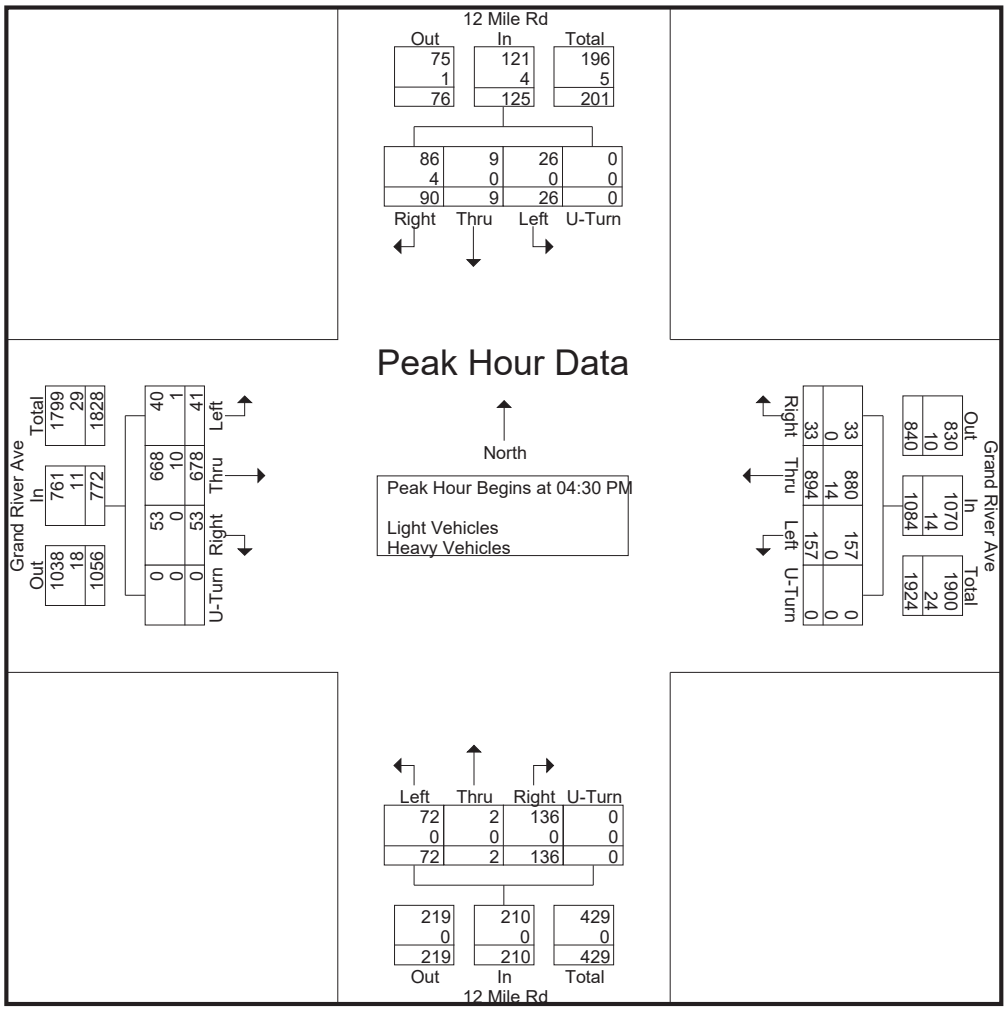
	Grand River Ave Eastbound					Grand River Ave Westbound					12 Mile Rd Northbound					12 Mile Rd Southbound					
Start Time	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Int. Total
04:00 PM	13	133	16	0	162	26	225	15	0	266	18	1	25	0	44	3	0	18	0	21	493
04:15 PM	11	137	17	0	165	46	207	6	0	259	13	1	23	0	37	6	0	16	0	22	483
04:30 PM	13	178	11	0	202	44	229	6	0	279	19	2	30	0	51	6	1	17	0	24	556
04:45 PM	10	159	17	0	186	40	243	12	0	295	16	0	34	0	50	7	5	33	0	45	576
Total	47	607	61	0	715	156	904	39	0	1099	66	4	112	0	182	22	6	84	0	112	2108
05:00 PM	9	181	15	0	205	45	215	10	0	270	17	0	39	0	56	5	1	28	0	34	565
05:15 PM	9	160	10	0	179	28	207	5	0	240	20	0	33	0	53	8	2	12	0	22	494
05:30 PM	9	127	13	0	149	36	185	1	0	222	13	0	22	0	35	5	3	17	0	25	431
05:45 PM	4	103	12	0	119	36	169	3	0	208	13	0	19	0	32	2	1	8	0	11	370
Total	31	571	50	0	652	145	776	19	0	940	63	0	113	0	176	20	7	65	0	92	1860
Grand Total	78	1178	111	0	1367	301	1680	58	0	2039	129	4	225	0	358	42	13	149	0	204	3968
Apprch %	5.7	86.2	8.1	0		14.8	82.4	2.8	0		36	1.1	62.8	0		20.6	6.4	73	0		
Total %	2	29.7	2.8	0	34.5	7.6	42.3	1.5	0	51.4	3.3	0.1	5.7	0	9	1.1	0.3	3.8	0	5.1	
Light Vehicles	74	1153	111	0	1338	301	1649	55	0	2005	129	4	225	0	358	42	13	145	0	200	3901
% Light Vehicles	94.9	97.9	100	0	97.9	100	98.2	94.8	0	98.3	100	100	100	0	100	100	100	97.3	0	98	98.3
Heavy Vehicles	4	25	0	0	29	0	31	3	0	34	0	0	0	0	0	0	0	4	0	4	67
% Heavy Vehicles	5.1	2.1	0	0	2.1	0	1.8	5.2	0	1.7	0	0	0	0	0	0	0	2.7	0	2	1.7



TRUE DATA TO IMPROVE MOBILITY

File Name : 17137204 - 12 Mile Rd -- Grand River Ave
Site Code : 17137204
Start Date : 6/24/2025
Page No : 2

	Grand River Ave Eastbound					Grand River Ave Westbound					12 Mile Rd Northbound					12 Mile Rd Southbound					
Start Time	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	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	**13**	178	11	0	202	44	229	6	0	279	19	**2**	30	0	51	6	1	17	0	24	556
04:45 PM	10	159	**17**	0	186	40	**243**	**12**	0	**295**	16	0	34	0	50	7	**5**	**33**	0	**45**	**576**
05:00 PM	9	**181**	15	0	**205**	**45**	215	10	0	270	17	0	**39**	0	**56**	5	1	28	0	34	565
05:15 PM	9	160	10	0	179	28	207	5	0	240	**20**	0	33	0	53	**8**	2	12	0	22	494
Total Volume	41	678	53	0	772	157	894	33	0	1084	72	2	136	0	210	26	9	90	0	125	2191
% App. Total	5.3	87.8	6.9	0		14.5	82.5	3	0		34.3	1	64.8	0		20.8	7.2	72	0		
PHF	.788	.936	.779	.000	.941	.872	.920	.688	.000	.919	.900	.250	.872	.000	.938	.813	.450	.682	.000	.694	.951
Light Vehicles	40	668	53	0	761	157	880	33	0	1070	72	2	136	0	210	26	9	86	0	121	2162
% Light Vehicles	97.6	98.5	100	0	98.6	100	98.4	100	0	98.7	100	100	100	0	100	100	100	95.6	0	96.8	98.7
Heavy Vehicles	1	10	0	0	11	0	14	0	0	14	0	0	0	0	0	0	0	4	0	4	29
% Heavy Vehicles	2.4	1.5	0	0	1.4	0	1.6	0	0	1.3	0	0	0	0	0	0	0	4.4	0	3.2	1.3

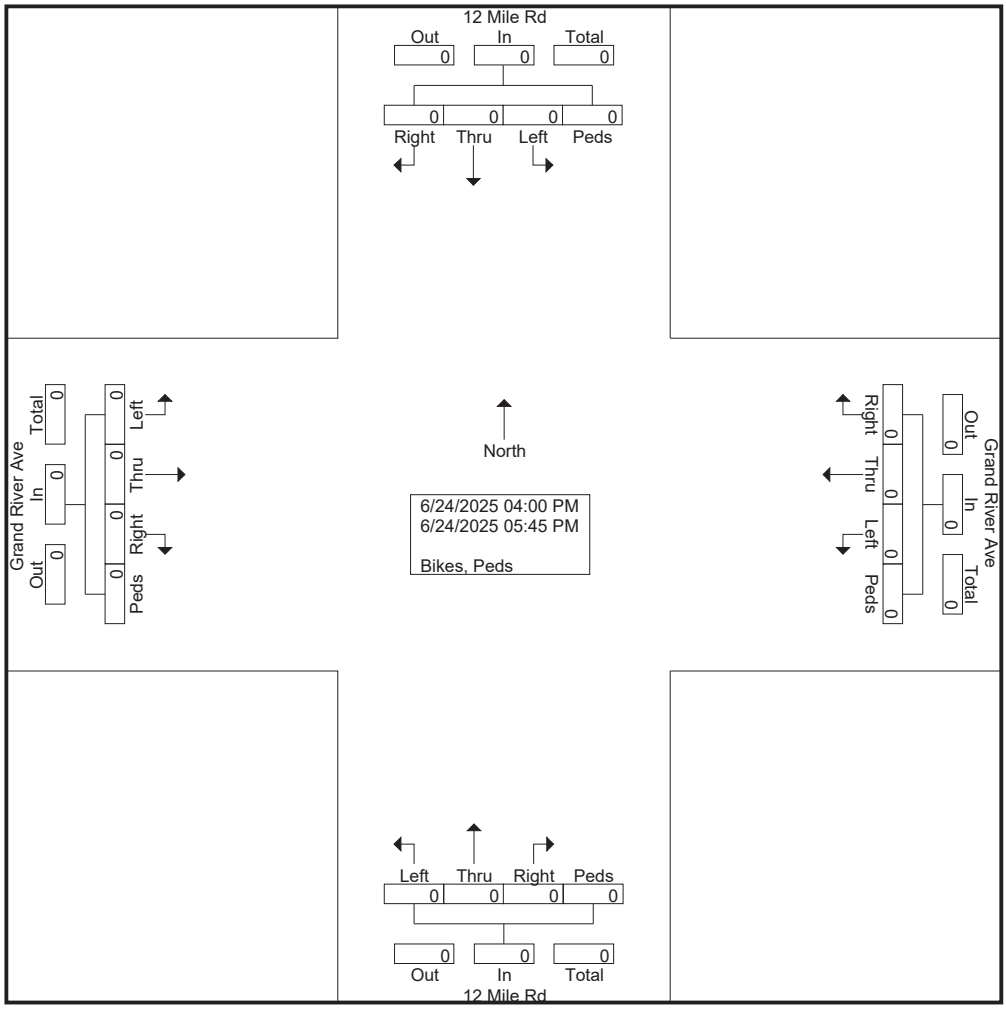


TRUE DATA TO IMPROVE MOBILITY

File Name : 17137204 - 12 Mile Rd -- Grand River Ave
Site Code : 17137204
Start Date : 6/24/2025
Page No : 1

Groups Printed- Bikes, Peds

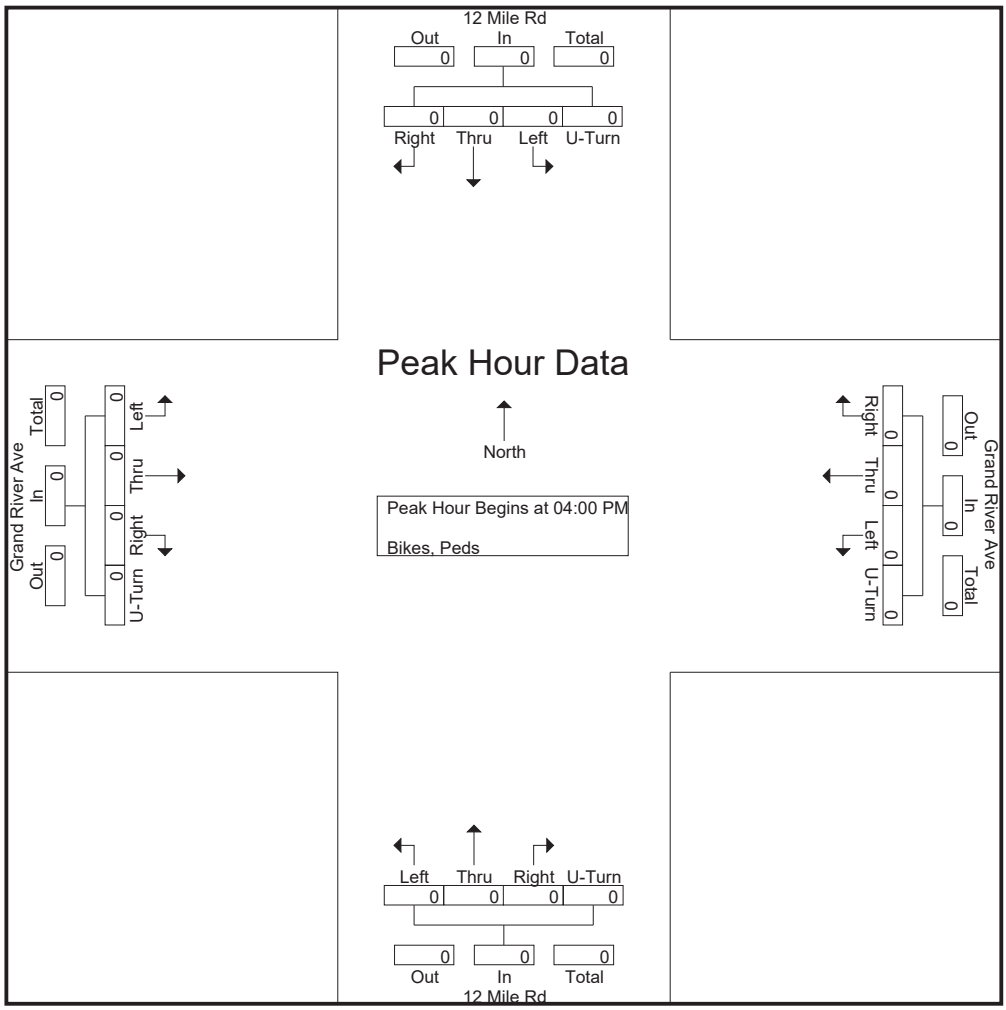
	Grand River Ave Eastbound					Grand River Ave Westbound					12 Mile Rd Northbound					12 Mile Rd Southbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Apprch %	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		
Total %																					



TRUE DATA TO IMPROVE MOBILITY

File Name : 17137204 - 12 Mile Rd -- Grand River Ave
Site Code : 17137204
Start Date : 6/24/2025
Page No : 2

	Grand River Ave Eastbound					Grand River Ave Westbound					12 Mile Rd Northbound					12 Mile Rd 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 04:00 PM																					
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

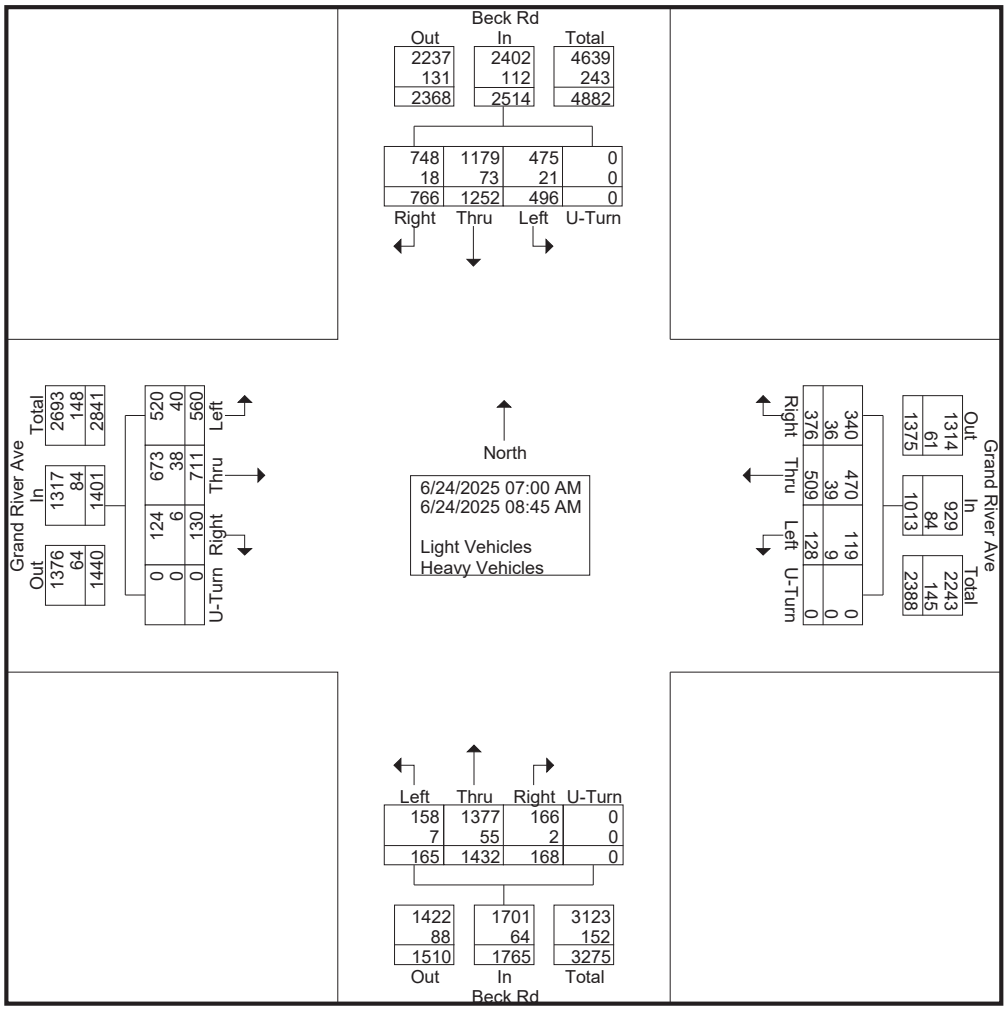


TRUE DATA TO IMPROVE MOBILITY

File Name : 17137205 - Beck Rd -- Grand River Ave
Site Code : 17137205
Start Date : 6/24/2025
Page No : 1

Groups Printed- Light Vehicles - Heavy Vehicles

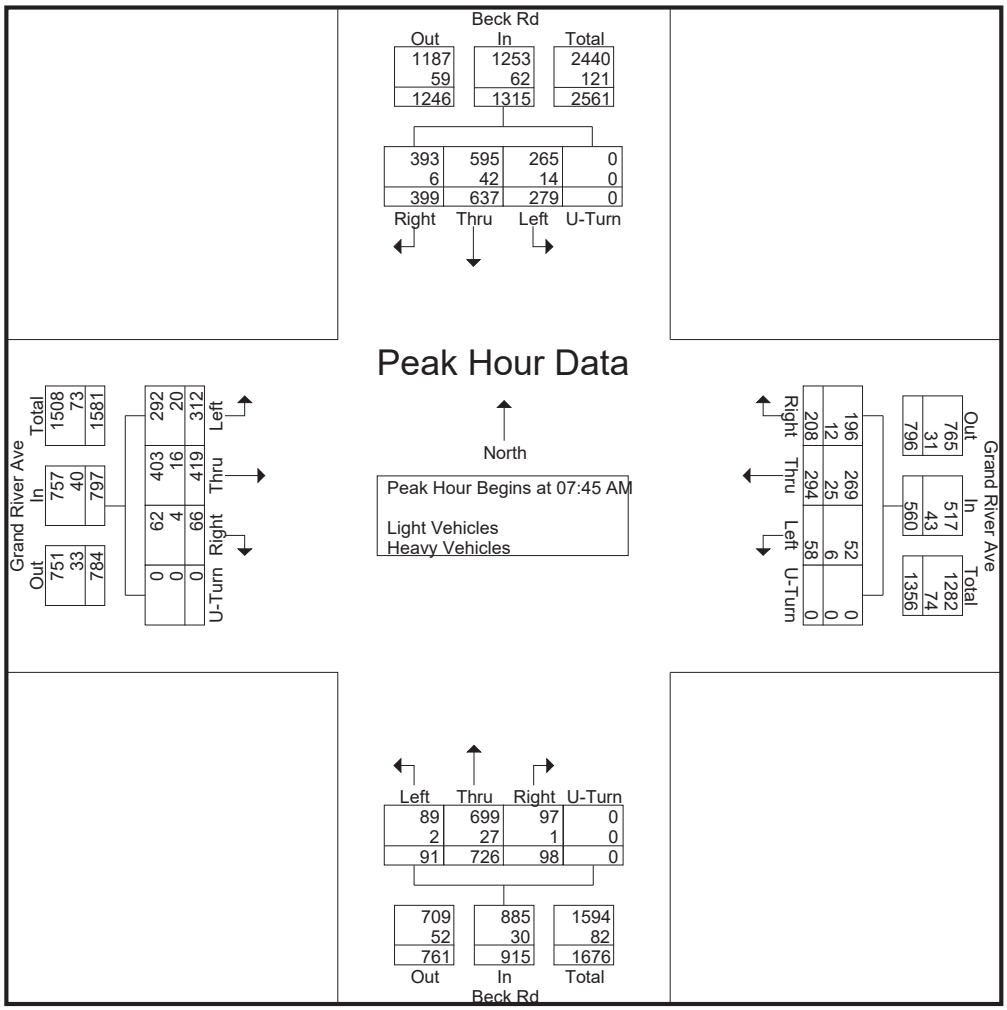
	Grand River Ave Eastbound					Grand River Ave Westbound					Beck Rd Northbound					Beck Rd Southbound					
Start Time	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Int. Total
07:00 AM	36	41	11	0	88	21	38	28	0	87	15	174	11	0	200	39	135	78	0	252	627
07:15 AM	43	69	19	0	131	18	55	43	0	116	11	178	11	0	200	44	131	91	0	266	713
07:30 AM	75	84	12	0	171	15	55	47	0	117	19	204	28	0	251	65	172	89	0	326	865
07:45 AM	84	98	10	0	192	12	68	66	0	146	23	172	24	0	219	70	183	104	0	357	914
Total	238	292	52	0	582	66	216	184	0	466	68	728	74	0	870	218	621	362	0	1201	3119
08:00 AM	66	109	13	0	188	14	69	52	0	135	24	185	24	0	233	40	148	91	0	279	835
08:15 AM	75	93	20	0	188	17	99	48	0	164	21	198	29	0	248	71	142	104	0	317	917
08:30 AM	87	119	23	0	229	15	58	42	0	115	23	171	21	0	215	98	164	100	0	362	921
08:45 AM	94	98	22	0	214	16	67	50	0	133	29	150	20	0	199	69	177	109	0	355	901
Total	322	419	78	0	819	62	293	192	0	547	97	704	94	0	895	278	631	404	0	1313	3574
Grand Total	560	711	130	0	1401	128	509	376	0	1013	165	1432	168	0	1765	496	1252	766	0	2514	6693
Apprch %	40	50.7	9.3	0		12.6	50.2	37.1	0		9.3	81.1	9.5	0		19.7	49.8	30.5	0		
Total %	8.4	10.6	1.9	0	20.9	1.9	7.6	5.6	0	15.1	2.5	21.4	2.5	0	26.4	7.4	18.7	11.4	0	37.6	
Light Vehicles	520	673	124	0	1317	119	470	340	0	929	158	1377	166	0	1701	475	1179	748	0	2402	6349
% Light Vehicles	92.9	94.7	95.4	0	94	93	92.3	90.4	0	91.7	95.8	96.2	98.8	0	96.4	95.8	94.2	97.7	0	95.5	94.9
Heavy Vehicles	40	38	6	0	84	9	39	36	0	84	7	55	2	0	64	21	73	18	0	112	344
% Heavy Vehicles	7.1	5.3	4.6	0	6	7	7.7	9.6	0	8.3	4.2	3.8	1.2	0	3.6	4.2	5.8	2.3	0	4.5	5.1



TRUE DATA TO IMPROVE MOBILITY

File Name : 17137205 - Beck Rd -- Grand River Ave
Site Code : 17137205
Start Date : 6/24/2025
Page No : 2

	Grand River Ave Eastbound					Grand River Ave Westbound					Beck Rd Northbound					Beck Rd Southbound					
Start Time	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	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 07:45 AM																					
07:45 AM	84	98	10	0	192	12	68	**66**	0	146	23	172	24	0	219	70	**183**	**104**	0	357	914
08:00 AM	66	109	13	0	188	14	69	52	0	135	**24**	185	24	0	233	40	148	91	0	279	835
08:15 AM	75	93	20	0	188	**17**	**99**	48	0	**164**	21	**198**	**29**	0	**248**	71	142	104	0	317	917
08:30 AM	**87**	**119**	**23**	0	**229**	15	58	42	0	115	23	171	21	0	215	**98**	164	100	0	**362**	**921**
Total Volume	312	419	66	0	797	58	294	208	0	560	91	726	98	0	915	279	637	399	0	1315	3587
% App. Total	39.1	52.6	8.3	0		10.4	52.5	37.1	0		9.9	79.3	10.7	0		21.2	48.4	30.3	0		
PHF	.897	.880	.717	.000	.870	.853	.742	.788	.000	.854	.948	.917	.845	.000	.922	.712	.870	.959	.000	.908	.974
Light Vehicles	292	403	62	0	757	52	269	196	0	517	89	699	97	0	885	265	595	393	0	1253	3412
% Light Vehicles	93.6	96.2	93.9	0	95.0	89.7	91.5	94.2	0	92.3	97.8	96.3	99.0	0	96.7	95.0	93.4	98.5	0	95.3	95.1
Heavy Vehicles	20	16	4	0	40	6	25	12	0	43	2	27	1	0	30	14	42	6	0	62	175
% Heavy Vehicles	6.4	3.8	6.1	0	5.0	10.3	8.5	5.8	0	7.7	2.2	3.7	1.0	0	3.3	5.0	6.6	1.5	0	4.7	4.9

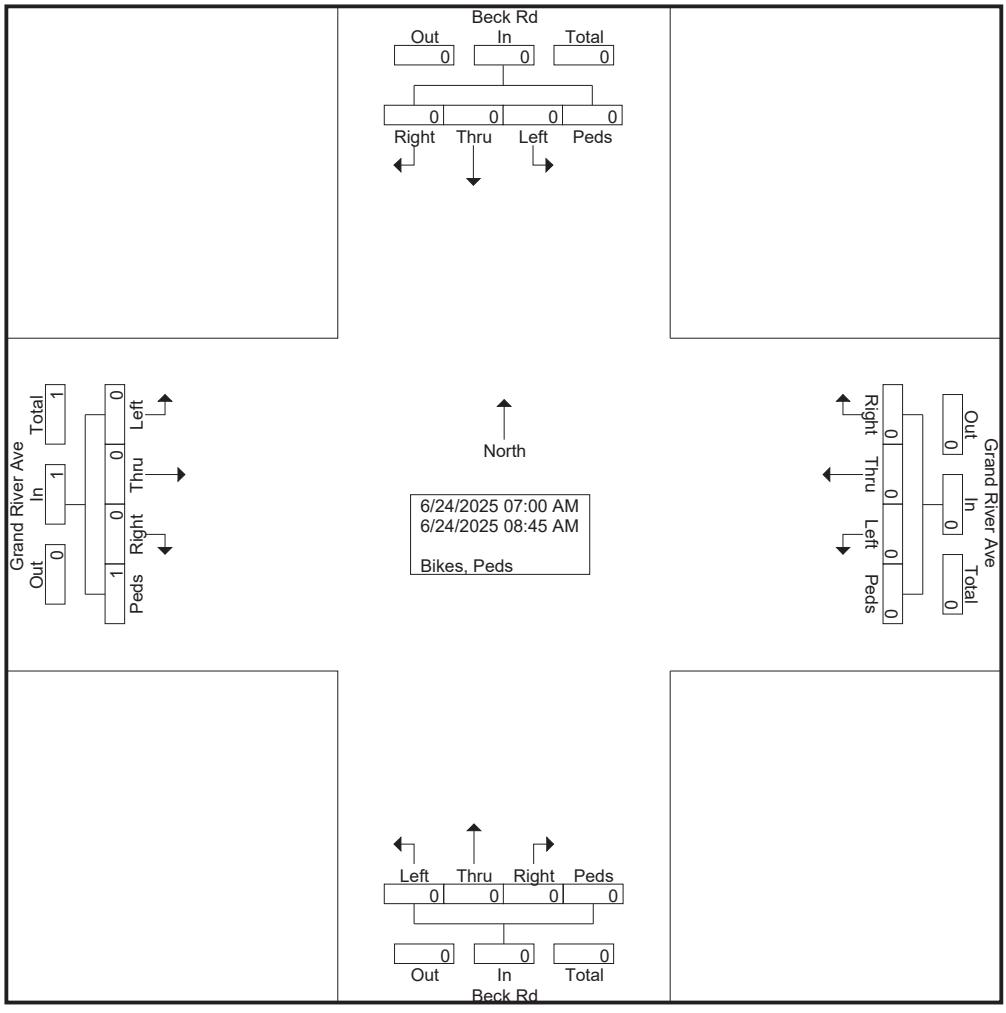


TRUE DATA TO IMPROVE MOBILITY

File Name : 17137205 - Beck Rd -- Grand River Ave
Site Code : 17137205
Start Date : 6/24/2025
Page No : 1

Groups Printed- Bikes, Peds

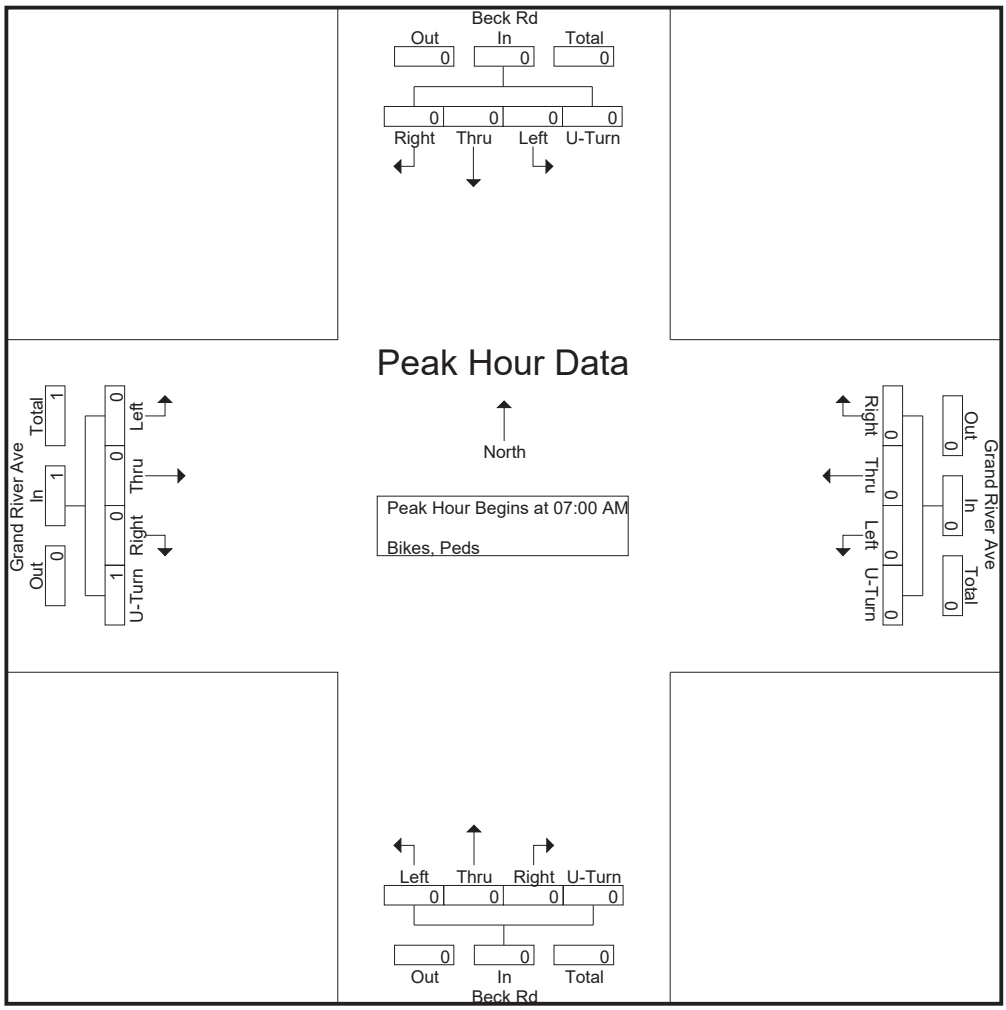
	Grand River Ave Eastbound					Grand River Ave Westbound					Beck Rd Northbound					Beck Rd Southbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
07:00 AM	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Apprch %	0	0	0	100		0	0	0	0		0	0	0	0		0	0	0	0		
Total %	0	0	0	100	100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	



TRUE DATA TO IMPROVE MOBILITY

File Name : 17137205 - Beck Rd -- Grand River Ave
Site Code : 17137205
Start Date : 6/24/2025
Page No : 2

	Grand River Ave Eastbound					Grand River Ave Westbound					Beck Rd Northbound					Beck Rd 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	0	0	0	**1**	**1**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
% App. Total	0	0	0	100		0	0	0	0		0	0	0	0		0	0	0	0		
PHF	.000	.000	.000	.250	.250	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.250

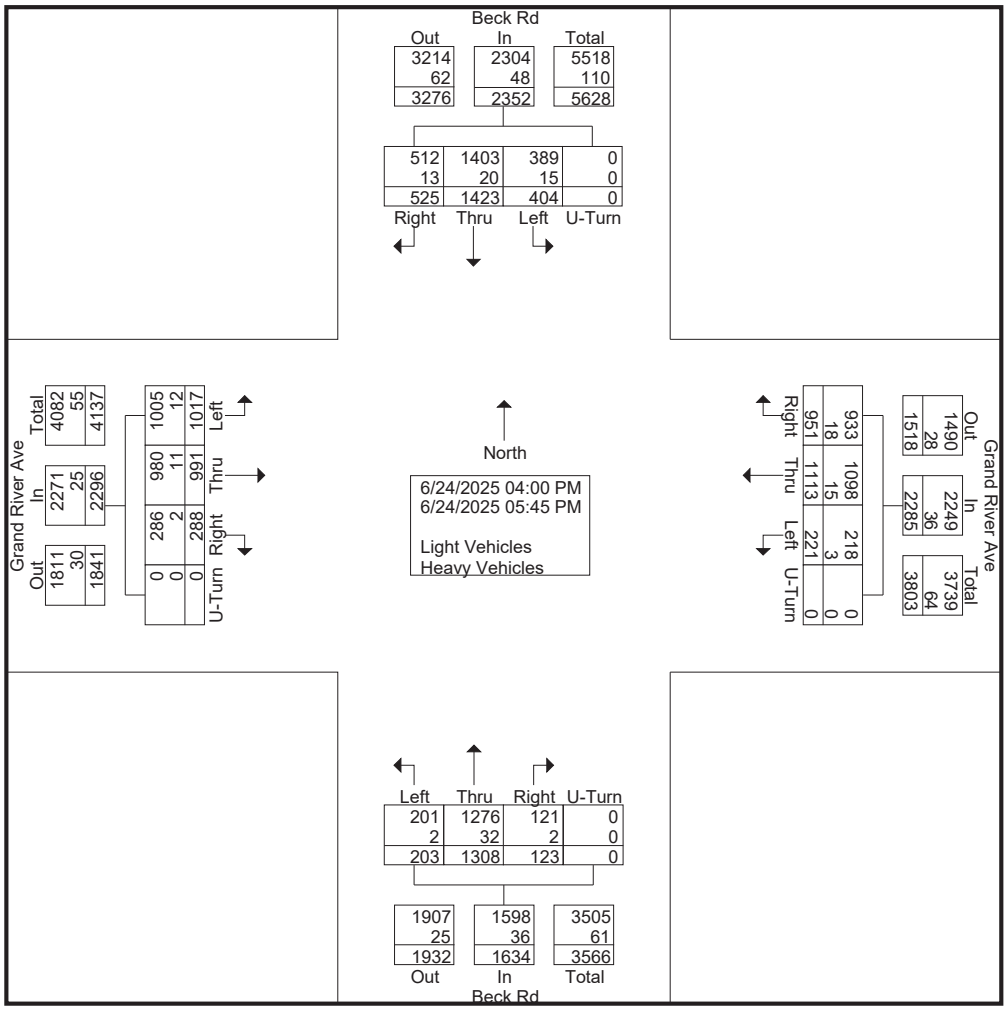


TRUE DATA TO IMPROVE MOBILITY

File Name : 17137206 - Beck Rd -- Grand River Ave
Site Code : 17137206
Start Date : 6/24/2025
Page No : 1

Groups Printed- Light Vehicles - Heavy Vehicles

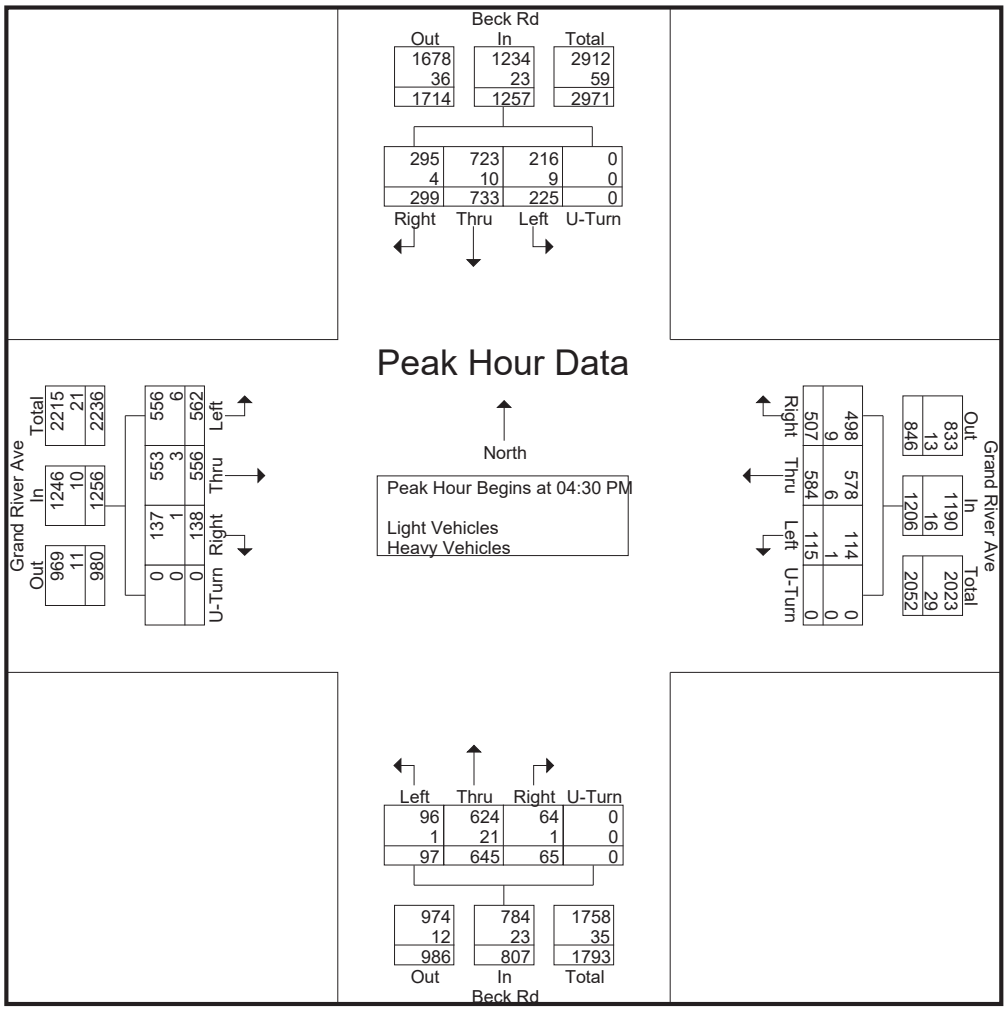
	Grand River Ave Eastbound					Grand River Ave Westbound					Beck Rd Northbound					Beck Rd Southbound					
Start Time	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Int. Total
04:00 PM	128	131	39	0	298	38	139	144	0	321	31	178	12	0	221	38	164	69	0	271	1111
04:15 PM	110	103	30	0	243	24	142	149	0	315	23	143	13	0	179	46	164	57	0	267	1004
04:30 PM	146	155	22	0	323	38	144	145	0	327	21	144	17	0	182	44	166	66	0	276	1108
04:45 PM	163	128	30	0	321	24	161	121	0	306	31	158	10	0	199	43	182	88	0	313	1139
Total	547	517	121	0	1185	124	586	559	0	1269	106	623	52	0	781	171	676	280	0	1127	4362
05:00 PM	130	150	38	0	318	25	145	136	0	306	23	167	18	0	208	66	202	68	0	336	1168
05:15 PM	123	123	48	0	294	28	134	105	0	267	22	176	20	0	218	72	183	77	0	332	1111
05:30 PM	124	121	44	0	289	17	128	90	0	235	26	155	17	0	198	42	161	46	0	249	971
05:45 PM	93	80	37	0	210	27	120	61	0	208	26	187	16	0	229	53	201	54	0	308	955
Total	470	474	167	0	1111	97	527	392	0	1016	97	685	71	0	853	233	747	245	0	1225	4205
Grand Total	1017	991	288	0	2296	221	1113	951	0	2285	203	1308	123	0	1634	404	1423	525	0	2352	8567
Apprch %	44.3	43.2	12.5	0		9.7	48.7	41.6	0		12.4	80	7.5	0		17.2	60.5	22.3	0		
Total %	11.9	11.6	3.4	0	26.8	2.6	13	11.1	0	26.7	2.4	15.3	1.4	0	19.1	4.7	16.6	6.1	0	27.5	
Light Vehicles	1005	980	286	0	2271	218	1098	933	0	2249	201	1276	121	0	1598	389	1403	512	0	2304	8422
% Light Vehicles	98.8	98.9	99.3	0	98.9	98.6	98.7	98.1	0	98.4	99	97.6	98.4	0	97.8	96.3	98.6	97.5	0	98	98.3
Heavy Vehicles	12	11	2	0	25	3	15	18	0	36	2	32	2	0	36	15	20	13	0	48	145
% Heavy Vehicles	1.2	1.1	0.7	0	1.1	1.4	1.3	1.9	0	1.6	1	2.4	1.6	0	2.2	3.7	1.4	2.5	0	2	1.7



TRUE DATA TO IMPROVE MOBILITY

File Name : 17137206 - Beck Rd -- Grand River Ave
Site Code : 17137206
Start Date : 6/24/2025
Page No : 2

	Grand River Ave Eastbound					Grand River Ave Westbound					Beck Rd Northbound					Beck Rd Southbound					
Start Time	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	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	146	**155**	22	0	**323**	**38**	144	**145**	0	**327**	21	144	17	0	182	44	166	66	0	276	1108
04:45 PM	**163**	128	30	0	321	24	**161**	121	0	306	**31**	158	10	0	199	43	182	**88**	0	313	1139
05:00 PM	130	150	38	0	318	25	145	136	0	306	23	167	18	0	208	66	**202**	68	0	**336**	**1168**
05:15 PM	123	123	**48**	0	294	28	134	105	0	267	22	**176**	**20**	0	**218**	**72**	183	77	0	332	1111
Total Volume	562	556	138	0	1256	115	584	507	0	1206	97	645	65	0	807	225	733	299	0	1257	4526
% App. Total	44.7	44.3	11	0		9.5	48.4	42	0		12	79.9	8.1	0		17.9	58.3	23.8	0		
PHF	.862	.897	.719	.000	.972	.757	.907	.874	.000	.922	.782	.916	.813	.000	.925	.781	.907	.849	.000	.935	.969
Light Vehicles	556	553	137	0	1246	114	578	498	0	1190	96	624	64	0	784	216	723	295	0	1234	4454
% Light Vehicles	98.9	99.5	99.3	0	99.2	99.1	99.0	98.2	0	98.7	99.0	96.7	98.5	0	97.1	96.0	98.6	98.7	0	98.2	98.4
Heavy Vehicles	6	3	1	0	10	1	6	9	0	16	1	21	1	0	23	9	10	4	0	23	72
% Heavy Vehicles	1.1	0.5	0.7	0	0.8	0.9	1.0	1.8	0	1.3	1.0	3.3	1.5	0	2.9	4.0	1.4	1.3	0	1.8	1.6

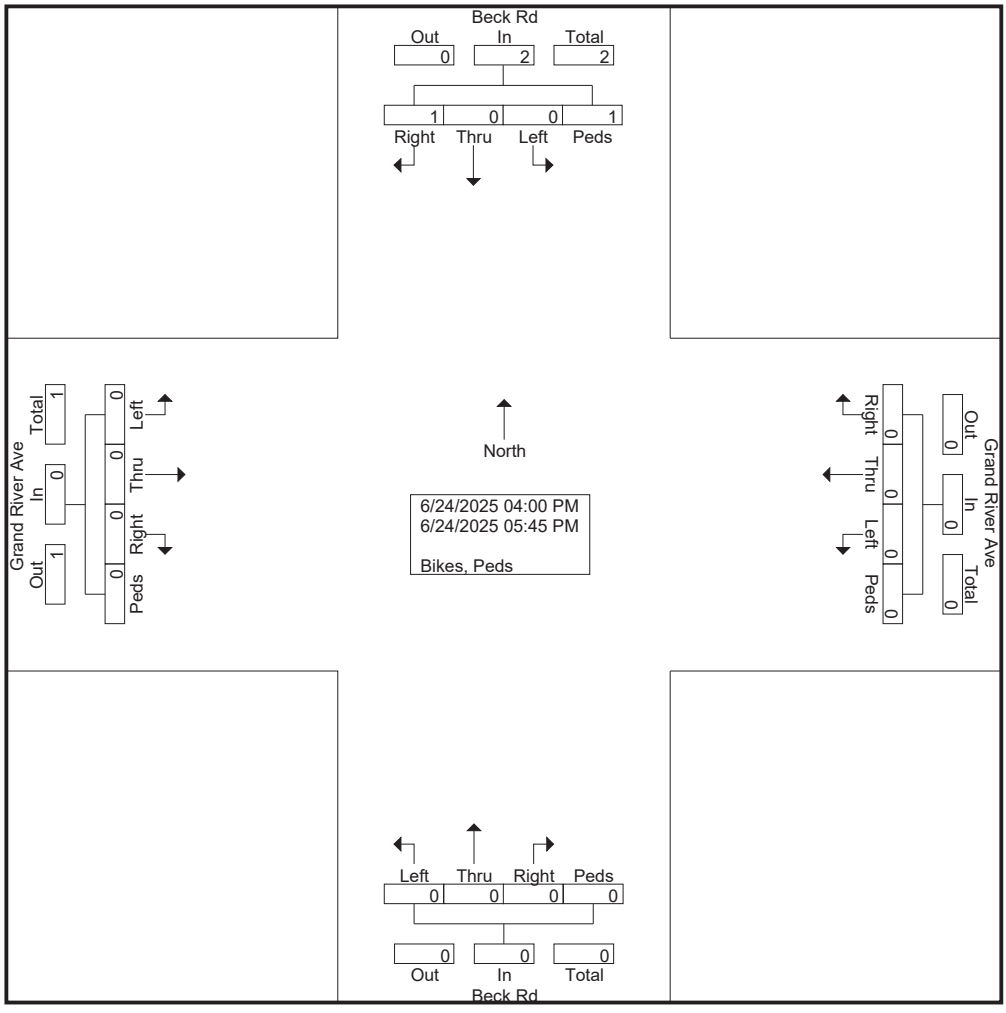


TRUE DATA TO IMPROVE MOBILITY

File Name : 17137206 - Beck Rd -- Grand River Ave
Site Code : 17137206
Start Date : 6/24/2025
Page No : 1

Groups Printed- Bikes, Peds

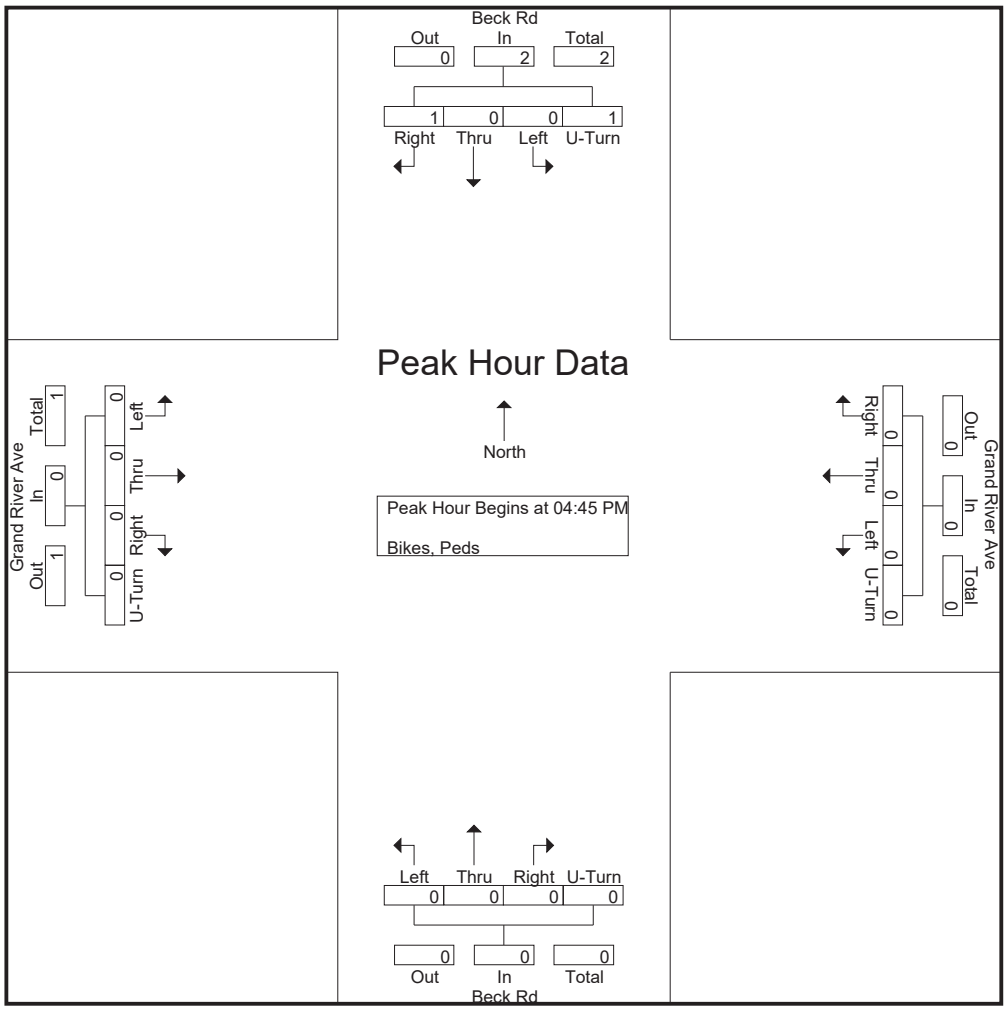
	Grand River Ave Eastbound					Grand River Ave Westbound					Beck Rd Northbound					Beck Rd Southbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	2	2
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	2	2
Apprch %	0	0	0	0		0	0	0	0		0	0	0	0		0	0	50	50		
Total %	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	50	50	100	



TRUE DATA TO IMPROVE MOBILITY

File Name : 17137206 - Beck Rd -- Grand River Ave
Site Code : 17137206
Start Date : 6/24/2025
Page No : 2

	Grand River Ave Eastbound					Grand River Ave Westbound					Beck Rd Northbound					Beck Rd 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	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**	**1**	**1**
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**	0	1	1
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	2	2
% App. Total	0	0	0	0		0	0	0	0		0	0	0	0		0	0	50	50		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.250	.250	.500	.500

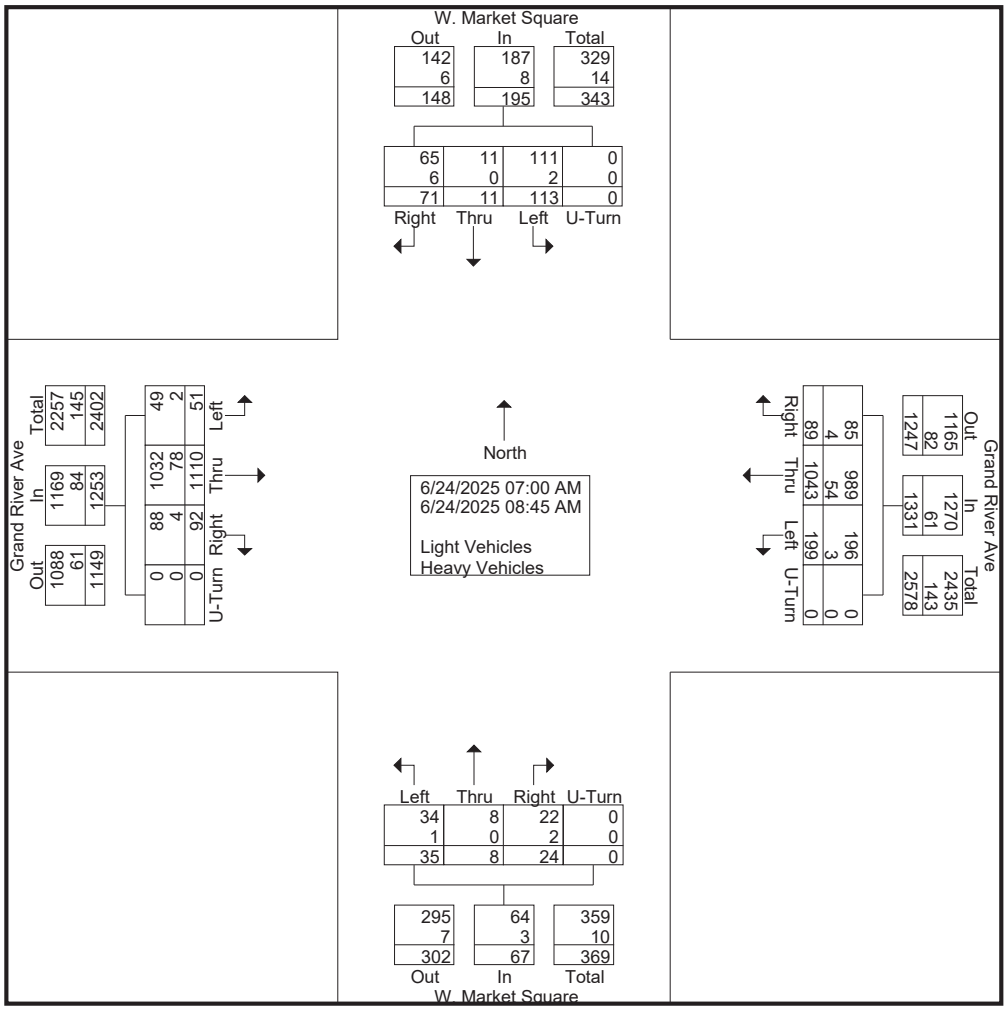


TRUE DATA TO IMPROVE MOBILITY

File Name : 17137207 - W. Market Square -- Grand River Ave
Site Code : 17137207
Start Date : 6/24/2025
Page No : 1

Groups Printed- Light Vehicles - Heavy Vehicles

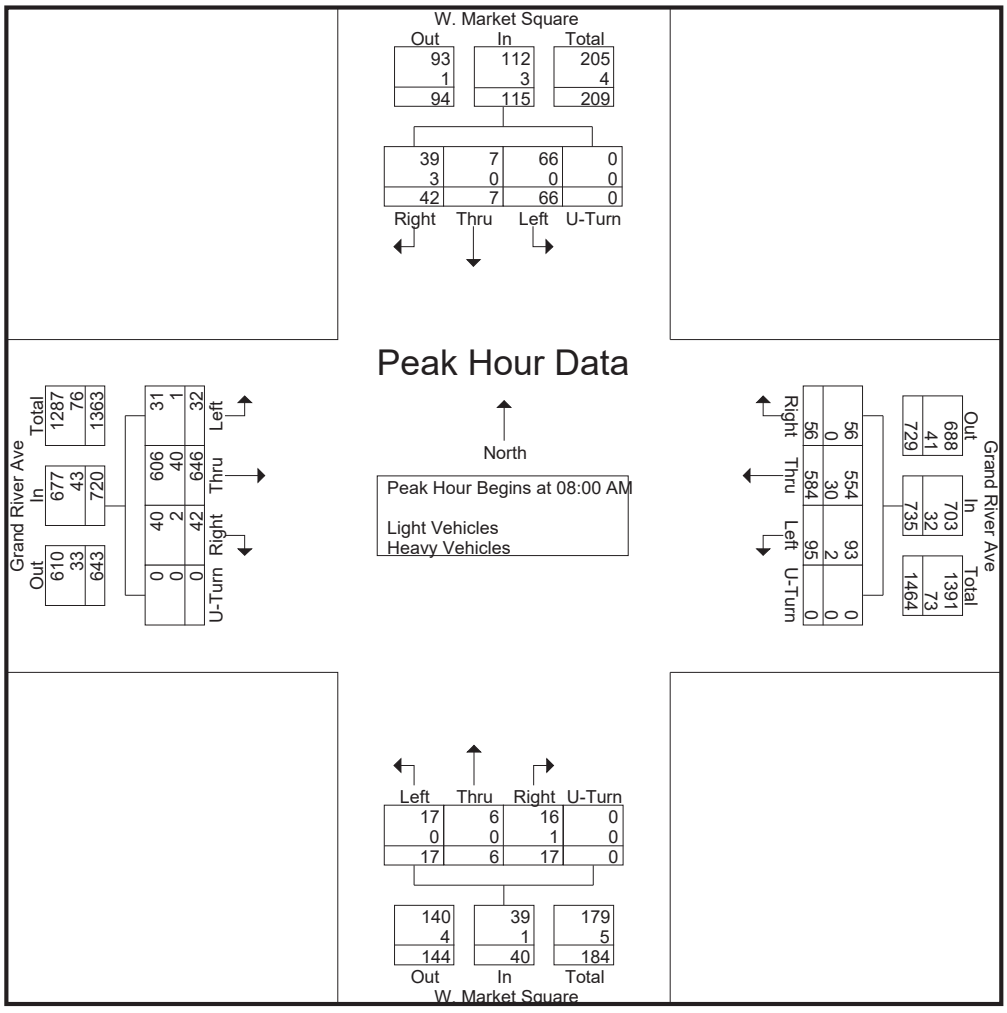
	Grand River Ave Eastbound					Grand River Ave Westbound					W. Market Square Northbound					W. Market Square Southbound					
Start Time	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Int. Total
07:00 AM	4	76	9	0	89	19	101	6	0	126	1	1	2	0	4	4	0	8	0	12	231
07:15 AM	2	111	13	0	126	27	101	8	0	136	4	0	1	0	5	8	2	4	0	14	281
07:30 AM	7	143	17	0	167	29	122	8	0	159	5	1	0	0	6	14	1	10	0	25	357
07:45 AM	6	134	11	0	151	29	135	11	0	175	8	0	4	0	12	21	1	7	0	29	367
Total	19	464	50	0	533	104	459	33	0	596	18	2	7	0	27	47	4	29	0	80	1236
08:00 AM	4	145	12	0	161	17	137	16	0	170	3	2	3	0	8	14	1	6	0	21	360
08:15 AM	7	148	13	0	168	32	146	17	0	195	5	0	4	0	9	11	2	16	0	29	401
08:30 AM	8	175	8	0	191	27	134	12	0	173	5	2	7	0	14	24	1	8	0	33	411
08:45 AM	13	178	9	0	200	19	167	11	0	197	4	2	3	0	9	17	3	12	0	32	438
Total	32	646	42	0	720	95	584	56	0	735	17	6	17	0	40	66	7	42	0	115	1610
Grand Total	51	1110	92	0	1253	199	1043	89	0	1331	35	8	24	0	67	113	11	71	0	195	2846
Apprch %	4.1	88.6	7.3	0		15	78.4	6.7	0		52.2	11.9	35.8	0		57.9	5.6	36.4	0		
Total %	1.8	39	3.2	0	44	7	36.6	3.1	0	46.8	1.2	0.3	0.8	0	2.4	4	0.4	2.5	0	6.9	
Light Vehicles	49	1032	88	0	1169	196	989	85	0	1270	34	8	22	0	64	111	11	65	0	187	2690
% Light Vehicles	96.1	93	95.7	0	93.3	98.5	94.8	95.5	0	95.4	97.1	100	91.7	0	95.5	98.2	100	91.5	0	95.9	94.5
Heavy Vehicles	2	78	4	0	84	3	54	4	0	61	1	0	2	0	3	2	0	6	0	8	156
% Heavy Vehicles	3.9	7	4.3	0	6.7	1.5	5.2	4.5	0	4.6	2.9	0	8.3	0	4.5	1.8	0	8.5	0	4.1	5.5



TRUE DATA TO IMPROVE MOBILITY

File Name : 17137207 - W. Market Square -- Grand River Ave
Site Code : 17137207
Start Date : 6/24/2025
Page No : 2

	Grand River Ave Eastbound					Grand River Ave Westbound					W. Market Square Northbound					W. Market Square Southbound					
Start Time	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	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	4	145	12	0	161	17	137	16	0	170	3	**2**	3	0	8	14	1	6	0	21	360
08:15 AM	7	148	**13**	0	168	**32**	146	**17**	0	195	**5**	0	4	0	9	11	2	**16**	0	29	401
08:30 AM	8	175	8	0	191	27	134	12	0	173	5	2	**7**	0	**14**	**24**	1	8	0	**33**	411
08:45 AM	**13**	**178**	9	0	**200**	19	**167**	11	0	**197**	4	2	3	0	9	17	**3**	12	0	32	**438**
Total Volume	32	646	42	0	720	95	584	56	0	735	17	6	17	0	40	66	7	42	0	115	1610
% App. Total	4.4	89.7	5.8	0		12.9	79.5	7.6	0		42.5	15	42.5	0		57.4	6.1	36.5	0		
PHF	.615	.907	.808	.000	.900	.742	.874	.824	.000	.933	.850	.750	.607	.000	.714	.688	.583	.656	.000	.871	.919
Light Vehicles	31	606	40	0	677	93	554	56	0	703	17	6	16	0	39	66	7	39	0	112	1531
% Light Vehicles	96.9	93.8	95.2	0	94.0	97.9	94.9	100	0	95.6	100	100	94.1	0	97.5	100	100	92.9	0	97.4	95.1
Heavy Vehicles	1	40	2	0	43	2	30	0	0	32	0	0	1	0	1	0	0	3	0	3	79
% Heavy Vehicles	3.1	6.2	4.8	0	6.0	2.1	5.1	0	0	4.4	0	0	5.9	0	2.5	0	0	7.1	0	2.6	4.9

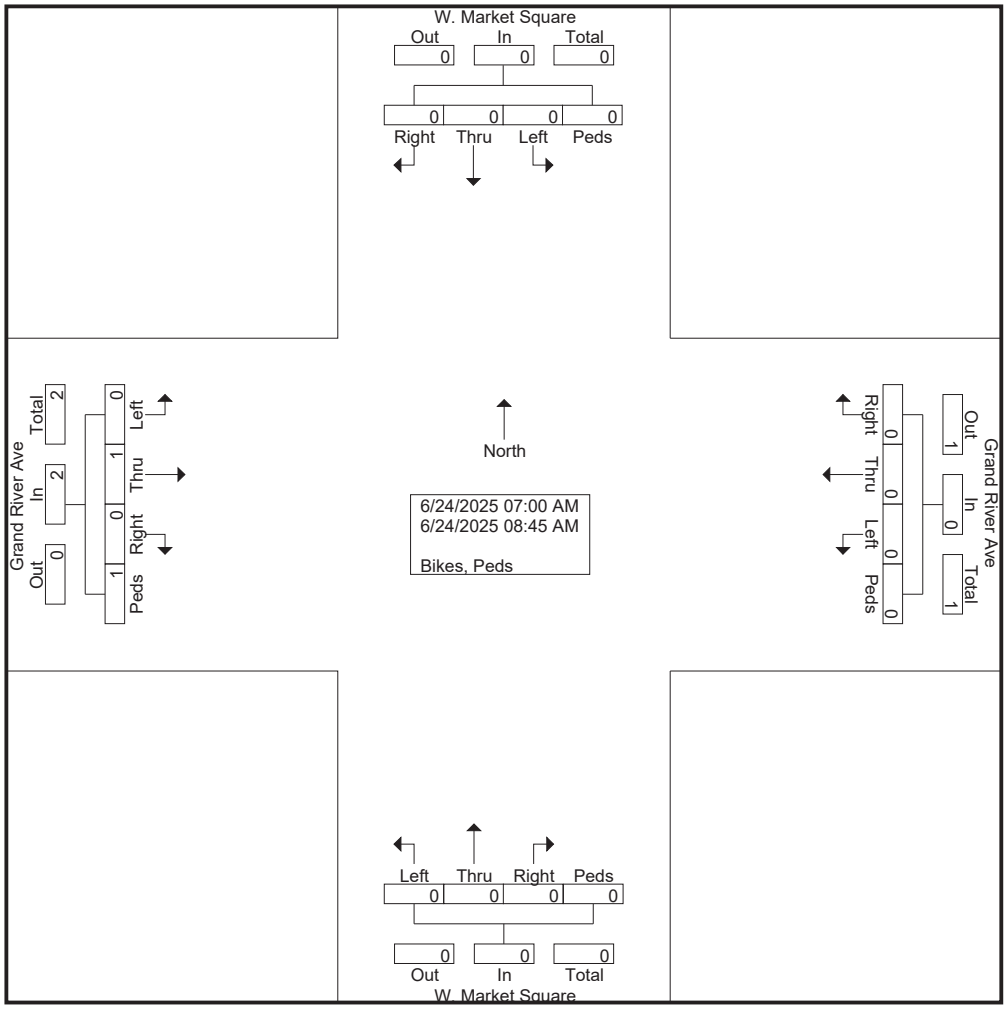


TRUE DATA TO IMPROVE MOBILITY

File Name : 17137207 - W. Market Square -- Grand River Ave
Site Code : 17137207
Start Date : 6/24/2025
Page No : 1

Groups Printed- Bikes, Peds

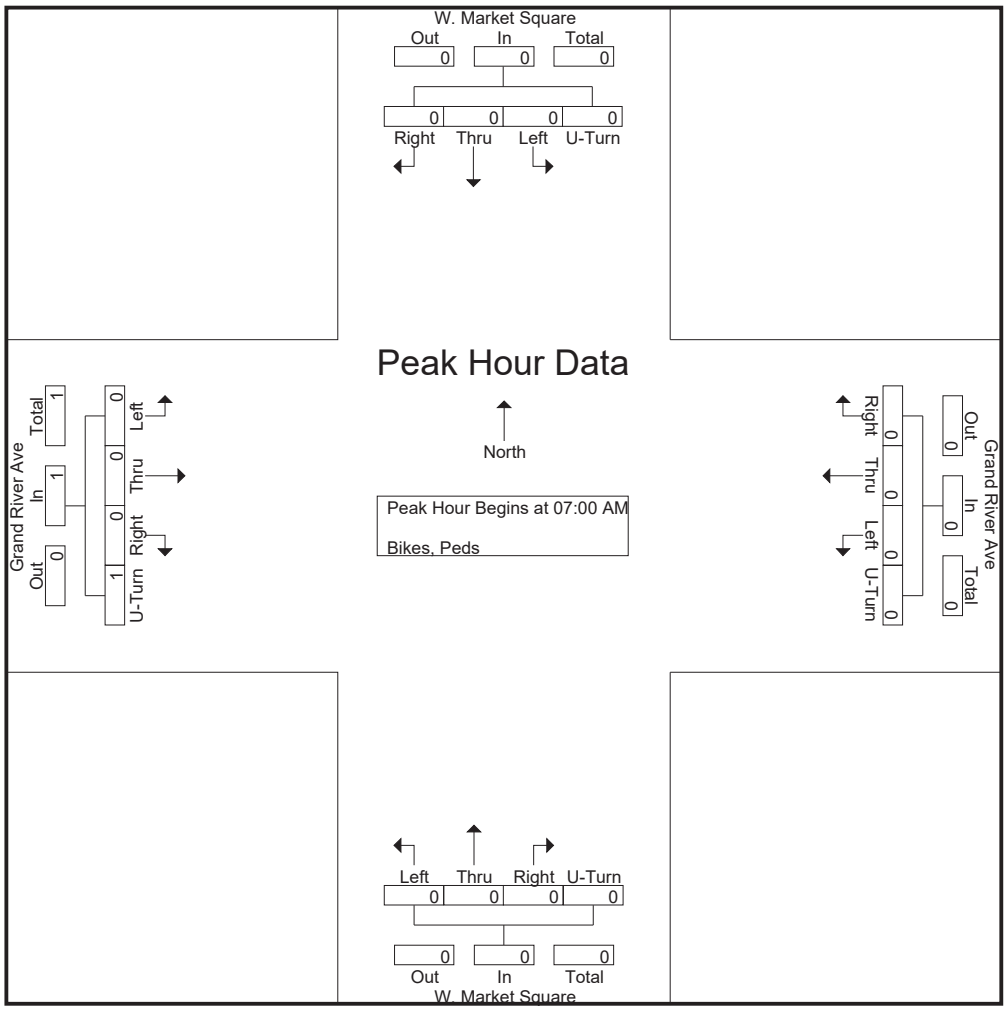
	Grand River Ave Eastbound					Grand River Ave Westbound					W. Market Square Northbound					W. Market Square Southbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Grand Total	0	1	0	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Apprch %	0	50	0	50		0	0	0	0		0	0	0	0		0	0	0	0		
Total %	0	50	0	50	100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	



TRUE DATA TO IMPROVE MOBILITY

File Name : 17137207 - W. Market Square -- Grand River Ave
Site Code : 17137207
Start Date : 6/24/2025
Page No : 2

	Grand River Ave Eastbound					Grand River Ave Westbound					W. Market Square Northbound					W. Market Square 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	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	**1**	**1**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
% App. Total	0	0	0	100		0	0	0	0		0	0	0	0		0	0	0	0		
PHF	.000	.000	.000	.250	.250	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.250

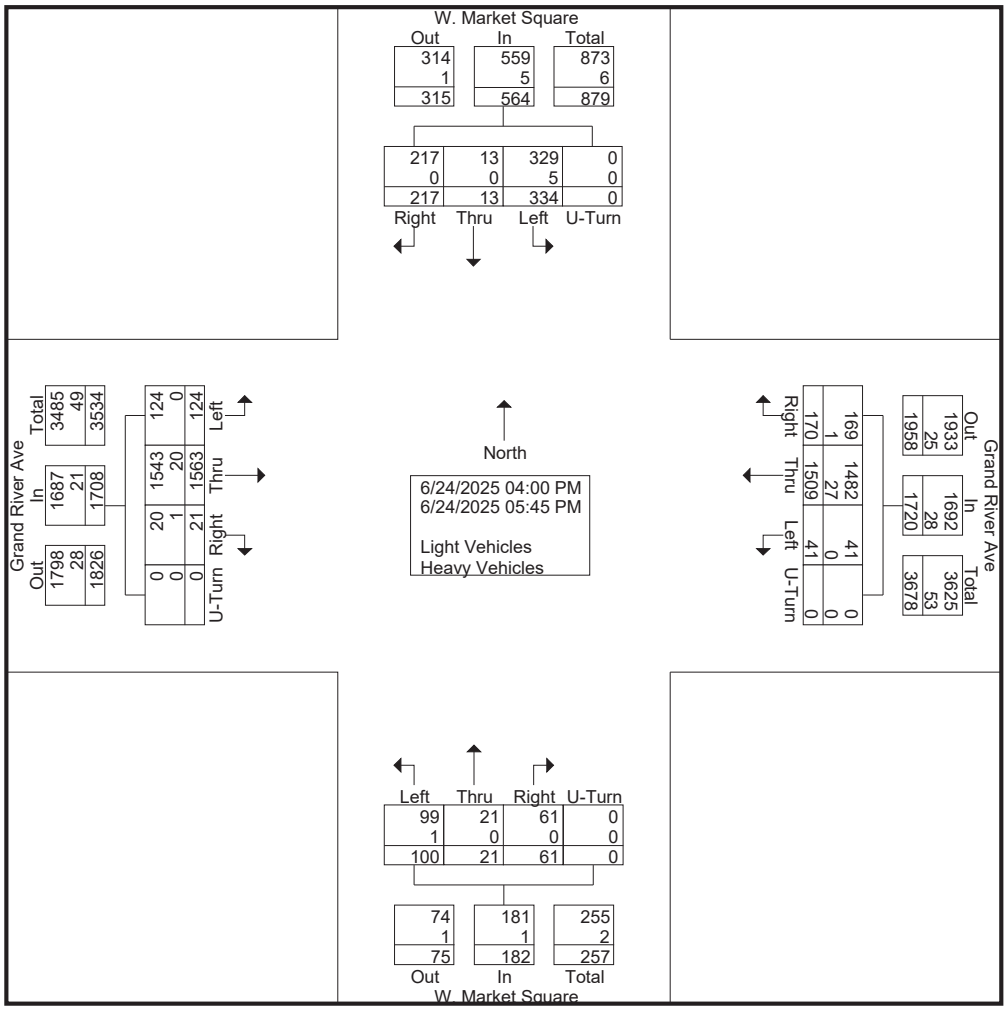


TRUE DATA TO IMPROVE MOBILITY

File Name : 17137208 - W. Market Square -- Grand River Ave
Site Code : 17137208
Start Date : 6/24/2025
Page No : 1

Groups Printed- Light Vehicles - Heavy Vehicles

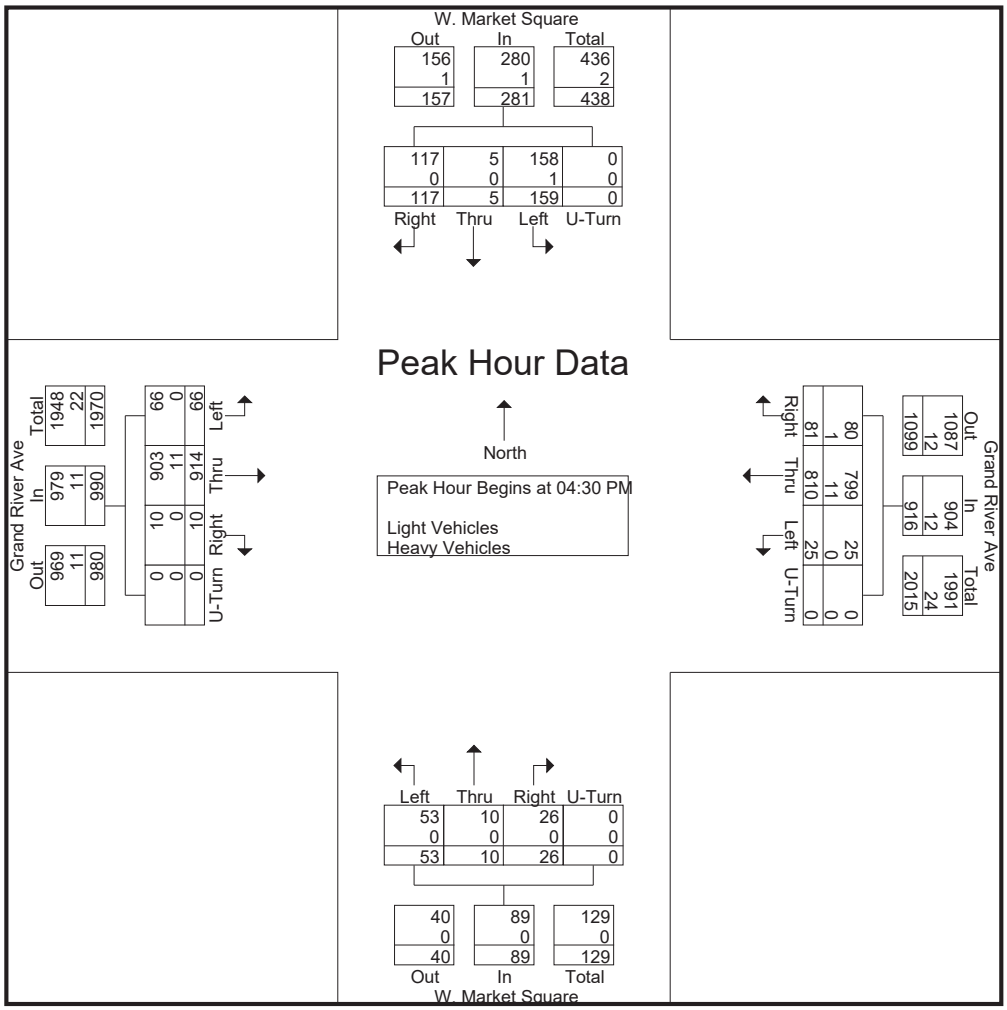
	Grand River Ave Eastbound					Grand River Ave Westbound					W. Market Square Northbound					W. Market Square Southbound					
Start Time	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Int. Total
04:00 PM	12	188	4	0	204	4	199	20	0	223	23	5	19	0	47	33	2	20	0	55	529
04:15 PM	20	167	1	0	188	6	184	16	0	206	14	5	9	0	28	39	1	24	0	64	486
04:30 PM	14	247	5	0	266	7	187	26	0	220	21	3	14	0	38	37	1	32	0	70	594
04:45 PM	16	229	1	0	246	4	245	18	0	267	10	0	3	0	13	37	1	23	0	61	587
Total	62	831	11	0	904	21	815	80	0	916	68	13	45	0	126	146	5	99	0	250	2196
05:00 PM	13	236	2	0	251	7	202	16	0	225	16	5	3	0	24	39	3	27	0	69	569
05:15 PM	23	202	2	0	227	7	176	21	0	204	6	2	6	0	14	46	0	35	0	81	526
05:30 PM	17	164	2	0	183	3	163	28	0	194	6	1	5	0	12	53	2	22	0	77	466
05:45 PM	9	130	4	0	143	3	153	25	0	181	4	0	2	0	6	50	3	34	0	87	417
Total	62	732	10	0	804	20	694	90	0	804	32	8	16	0	56	188	8	118	0	314	1978
Grand Total	124	1563	21	0	1708	41	1509	170	0	1720	100	21	61	0	182	334	13	217	0	564	4174
Apprch %	7.3	91.5	1.2	0		2.4	87.7	9.9	0		54.9	11.5	33.5	0		59.2	2.3	38.5	0		
Total %	3	37.4	0.5	0	40.9	1	36.2	4.1	0	41.2	2.4	0.5	1.5	0	4.4	8	0.3	5.2	0	13.5	
Light Vehicles	124	1543	20	0	1687	41	1482	169	0	1692	99	21	61	0	181	329	13	217	0	559	4119
% Light Vehicles	100	98.7	95.2	0	98.8	100	98.2	99.4	0	98.4	99	100	100	0	99.5	98.5	100	100	0	99.1	98.7
Heavy Vehicles	0	20	1	0	21	0	27	1	0	28	1	0	0	0	1	5	0	0	0	5	55
% Heavy Vehicles	0	1.3	4.8	0	1.2	0	1.8	0.6	0	1.6	1	0	0	0	0.5	1.5	0	0	0	0.9	1.3



TRUE DATA TO IMPROVE MOBILITY

File Name : 17137208 - W. Market Square -- Grand River Ave
Site Code : 17137208
Start Date : 6/24/2025
Page No : 2

	Grand River Ave Eastbound					Grand River Ave Westbound					W. Market Square Northbound					W. Market Square Southbound					
Start Time	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	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	14	**247**	**5**	0	**266**	**7**	187	**26**	0	220	**21**	3	**14**	0	**38**	37	1	32	0	70	**594**
04:45 PM	16	229	1	0	246	4	**245**	18	0	**267**	10	0	3	0	13	37	1	23	0	61	587
05:00 PM	13	236	2	0	251	7	202	16	0	225	16	**5**	3	0	24	39	**3**	27	0	69	569
05:15 PM	**23**	202	2	0	227	7	176	21	0	204	6	2	6	0	14	**46**	0	**35**	0	**81**	526
Total Volume	66	914	10	0	990	25	810	81	0	916	53	10	26	0	89	159	5	117	0	281	2276
% App. Total	6.7	92.3	1	0		2.7	88.4	8.8	0		59.6	11.2	29.2	0		56.6	1.8	41.6	0		
PHF	.717	.925	.500	.000	.930	.893	.827	.779	.000	.858	.631	.500	.464	.000	.586	.864	.417	.836	.000	.867	.958
Light Vehicles	66	903	10	0	979	25	799	80	0	904	53	10	26	0	89	158	5	117	0	280	2252
% Light Vehicles	100	98.8	100	0	98.9	100	98.6	98.8	0	98.7	100	100	100	0	100	99.4	100	100	0	99.6	98.9
Heavy Vehicles	0	11	0	0	11	0	11	1	0	12	0	0	0	0	0	1	0	0	0	1	24
% Heavy Vehicles	0	1.2	0	0	1.1	0	1.4	1.2	0	1.3	0	0	0	0	0	0.6	0	0	0	0.4	1.1

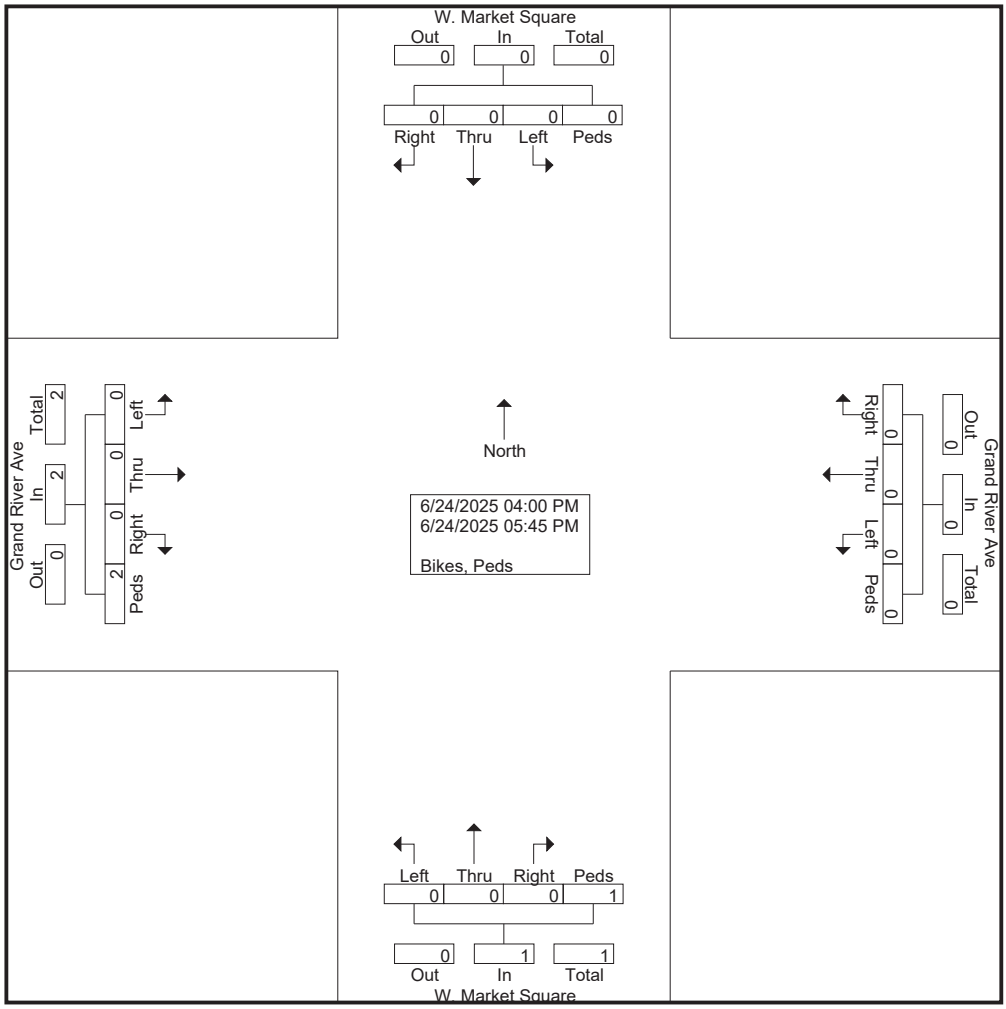


TRUE DATA TO IMPROVE MOBILITY

File Name : 17137208 - W. Market Square -- Grand River Ave
Site Code : 17137208
Start Date : 6/24/2025
Page No : 1

Groups Printed- Bikes, Peds

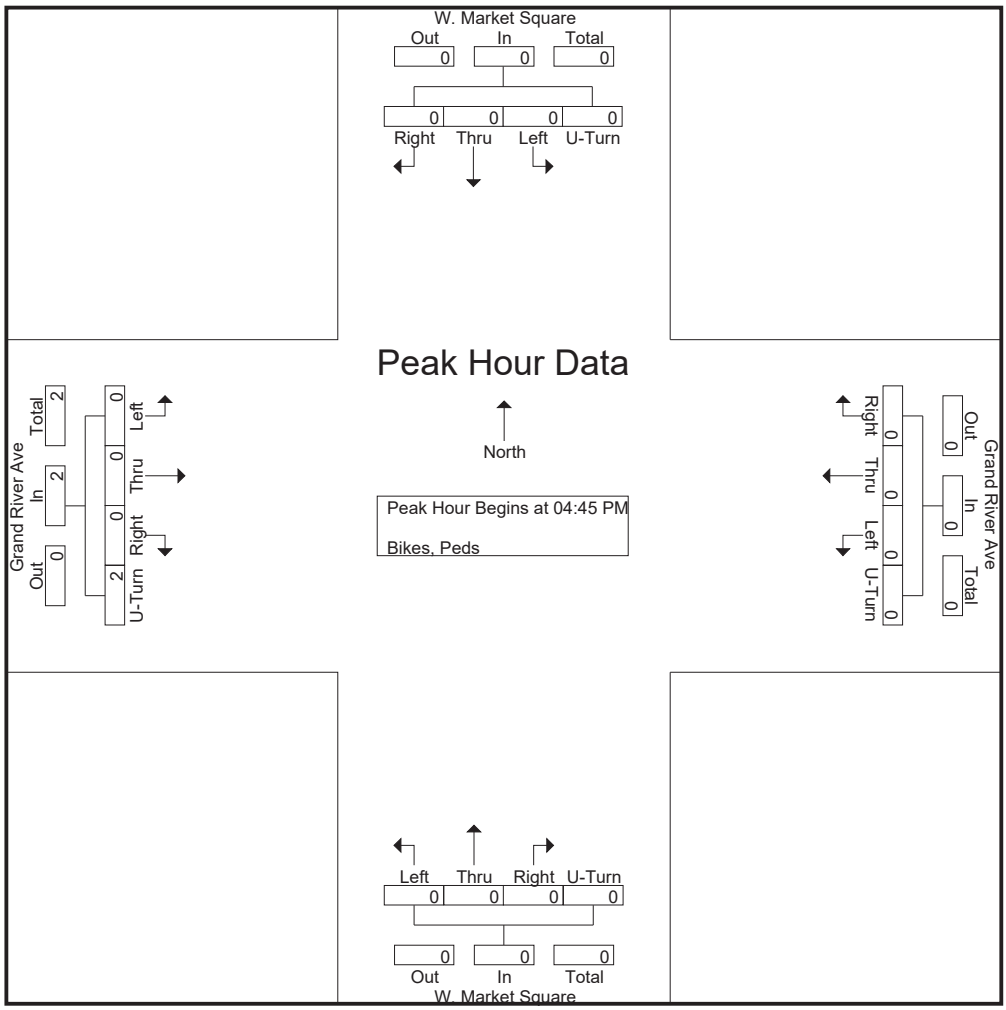
	Grand River Ave Eastbound					Grand River Ave Westbound					W. Market Square Northbound					W. Market Square Southbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	1
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	1
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Grand Total	0	0	0	2	2	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	3
Apprch %	0	0	0	100		0	0	0	0		0	0	0	100		0	0	0	0		
Total %	0	0	0	66.7	66.7	0	0	0	0	0	0	0	0	33.3	33.3	0	0	0	0	0	



TRUE DATA TO IMPROVE MOBILITY

File Name : 17137208 - W. Market Square -- Grand River Ave
Site Code : 17137208
Start Date : 6/24/2025
Page No : 2

	Grand River Ave Eastbound					Grand River Ave Westbound					W. Market Square Northbound					W. Market Square 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	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	**2**	**2**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**2**
Total Volume	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
% App. Total	0	0	0	100		0	0	0	0		0	0	0	0		0	0	0	0		
PHF	.000	.000	.000	.250	.250	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.250

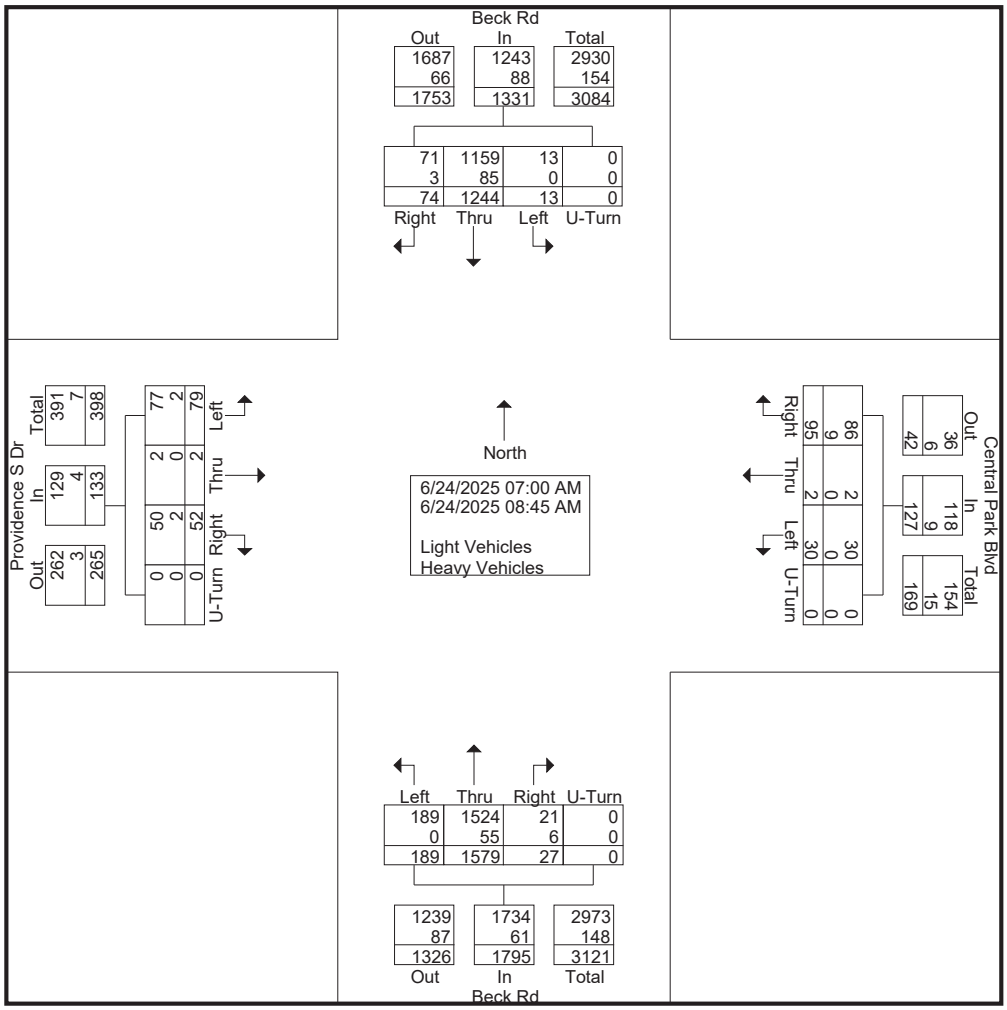


TRUE DATA TO IMPROVE MOBILITY

File Name : 17137209 - Beck Rd -- Providence S Dr_Central Park Blvd
Site Code : 17137209
Start Date : 6/24/2025
Page No : 1

Groups Printed- Light Vehicles - Heavy Vehicles

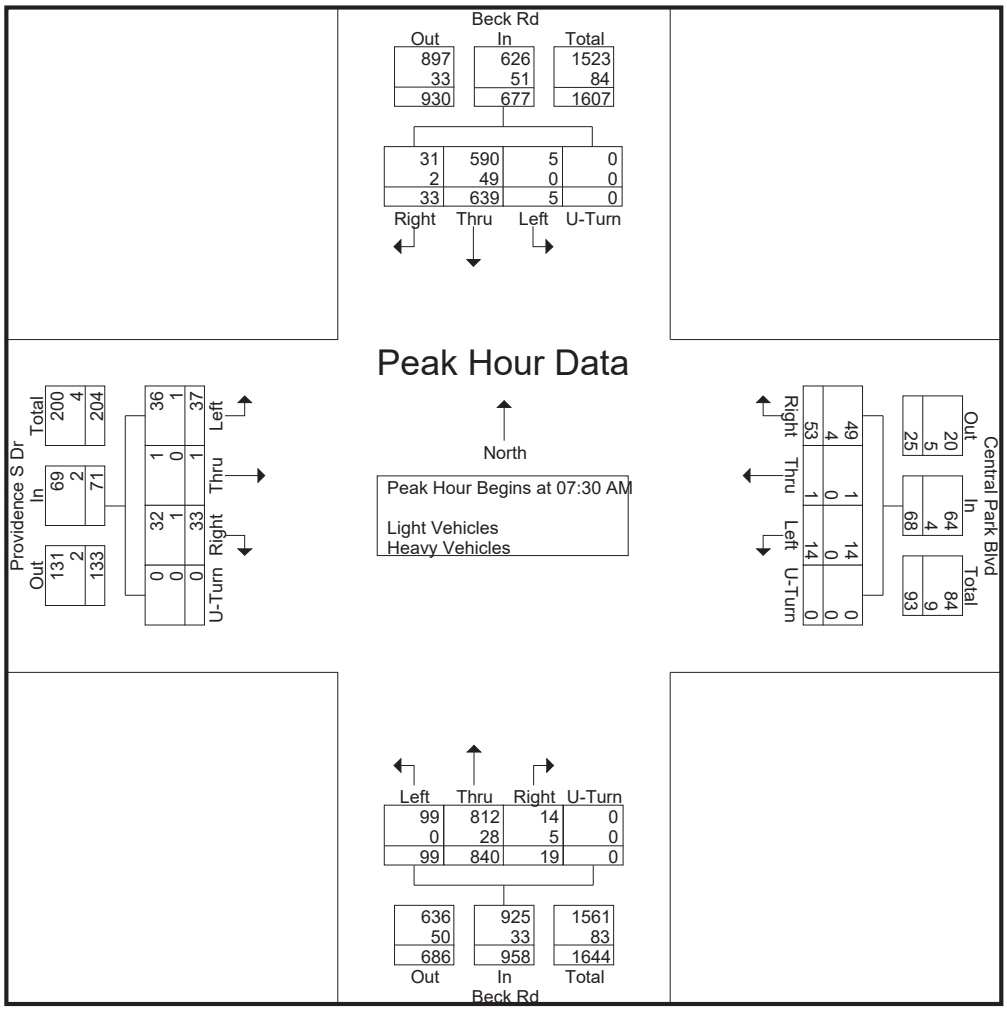
	Providence S Dr Eastbound					Central Park Blvd Westbound					Beck Rd Northbound					Beck Rd Southbound					
Start Time	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Int. Total
07:00 AM	13	0	4	0	17	4	0	6	0	10	16	180	0	0	196	2	123	10	0	135	358
07:15 AM	20	0	4	0	24	4	0	8	0	12	23	184	1	0	208	0	145	7	0	152	396
07:30 AM	14	1	9	0	24	2	0	14	0	16	26	222	8	0	256	4	166	8	0	178	474
07:45 AM	10	0	7	0	17	4	0	18	0	22	32	182	6	0	220	0	179	4	0	183	442
Total	57	1	24	0	82	14	0	46	0	60	97	768	15	0	880	6	613	29	0	648	1670
08:00 AM	4	0	8	0	12	5	1	11	0	17	24	219	2	0	245	0	139	12	0	151	425
08:15 AM	9	0	9	0	18	3	0	10	0	13	17	217	3	0	237	1	155	9	0	165	433
08:30 AM	4	0	8	0	12	5	0	15	0	20	20	191	5	0	216	3	159	12	0	174	422
08:45 AM	5	1	3	0	9	3	1	13	0	17	31	184	2	0	217	3	178	12	0	193	436
Total	22	1	28	0	51	16	2	49	0	67	92	811	12	0	915	7	631	45	0	683	1716
Grand Total	79	2	52	0	133	30	2	95	0	127	189	1579	27	0	1795	13	1244	74	0	1331	3386
Apprch %	59.4	1.5	39.1	0		23.6	1.6	74.8	0		10.5	88	1.5	0		1	93.5	5.6	0		
Total %	2.3	0.1	1.5	0	3.9	0.9	0.1	2.8	0	3.8	5.6	46.6	0.8	0	53	0.4	36.7	2.2	0	39.3	
Light Vehicles	77	2	50	0	129	30	2	86	0	118	189	1524	21	0	1734	13	1159	71	0	1243	3224
% Light Vehicles	97.5	100	96.2	0	97	100	100	90.5	0	92.9	100	96.5	77.8	0	96.6	100	93.2	95.9	0	93.4	95.2
Heavy Vehicles	2	0	2	0	4	0	0	9	0	9	0	55	6	0	61	0	85	3	0	88	162
% Heavy Vehicles	2.5	0	3.8	0	3	0	0	9.5	0	7.1	0	3.5	22.2	0	3.4	0	6.8	4.1	0	6.6	4.8



TRUE DATA TO IMPROVE MOBILITY

File Name : 17137209 - Beck Rd -- Providence S Dr_Central Park Blvd
Site Code : 17137209
Start Date : 6/24/2025
Page No : 2

	Providence S Dr Eastbound					Central Park Blvd Westbound					Beck Rd Northbound					Beck Rd Southbound					
Start Time	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	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	**14**	**1**	**9**	0	**24**	2	0	14	0	16	26	**222**	**8**	0	**256**	**4**	166	8	0	178	**474**
07:45 AM	10	0	7	0	17	4	0	**18**	0	**22**	**32**	182	6	0	220	0	**179**	4	0	**183**	442
08:00 AM	4	0	8	0	12	**5**	**1**	11	0	17	24	219	2	0	245	0	139	**12**	0	151	425
08:15 AM	9	0	9	0	18	3	0	10	0	13	17	217	3	0	237	1	155	9	0	165	433
Total Volume	37	1	33	0	71	14	1	53	0	68	99	840	19	0	958	5	639	33	0	677	1774
% App. Total	52.1	1.4	46.5	0		20.6	1.5	77.9	0		10.3	87.7	2	0		0.7	94.4	4.9	0		
PHF	.661	.250	.917	.000	.740	.700	.250	.736	.000	.773	.773	.946	.594	.000	.936	.313	.892	.688	.000	.925	.936
Light Vehicles	36	1	32	0	69	14	1	49	0	64	99	812	14	0	925	5	590	31	0	626	1684
% Light Vehicles	97.3	100	97.0	0	97.2	100	100	92.5	0	94.1	100	96.7	73.7	0	96.6	100	92.3	93.9	0	92.5	94.9
Heavy Vehicles	1	0	1	0	2	0	0	4	0	4	0	28	5	0	33	0	49	2	0	51	90
% Heavy Vehicles	2.7	0	3.0	0	2.8	0	0	7.5	0	5.9	0	3.3	26.3	0	3.4	0	7.7	6.1	0	7.5	5.1

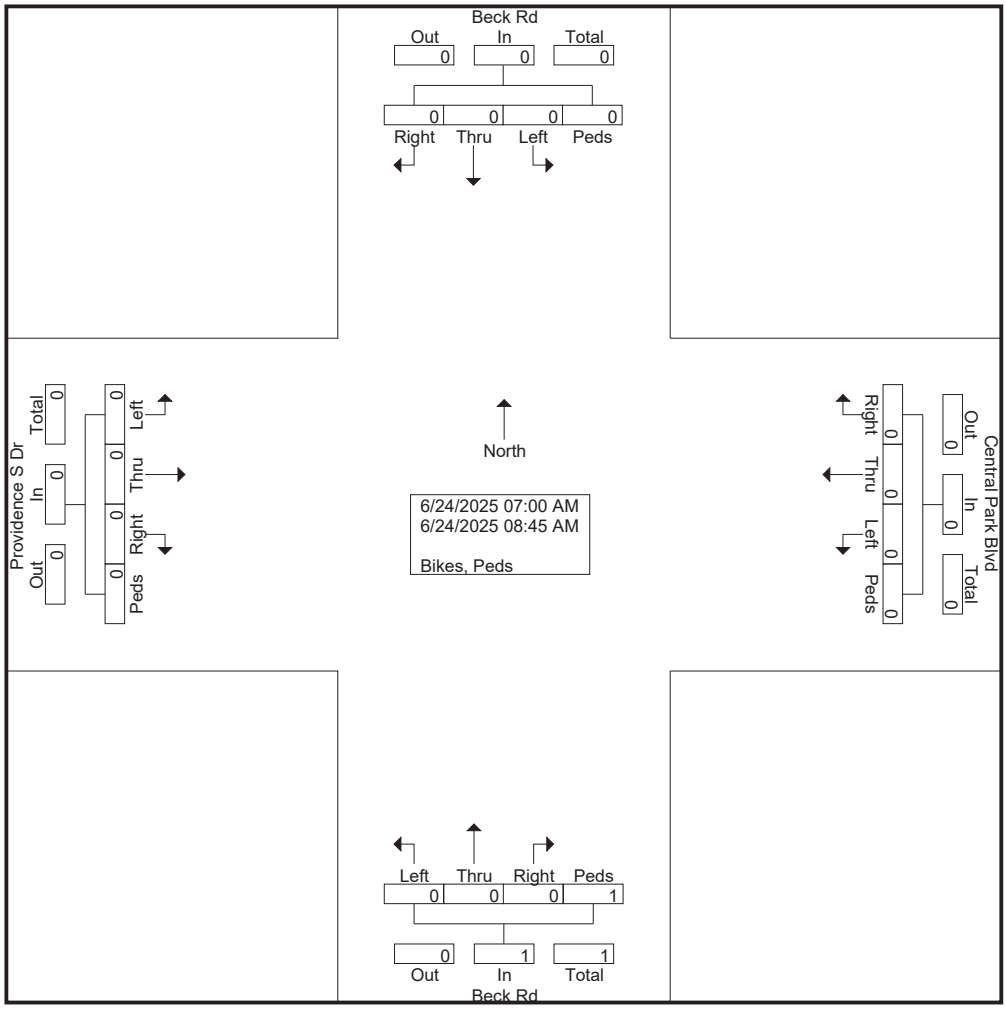


TRUE DATA TO IMPROVE MOBILITY

File Name : 17137209 - Beck Rd -- Providence S Dr_Central Park Blvd
Site Code : 17137209
Start Date : 6/24/2025
Page No : 1

Groups Printed- Bikes, Peds

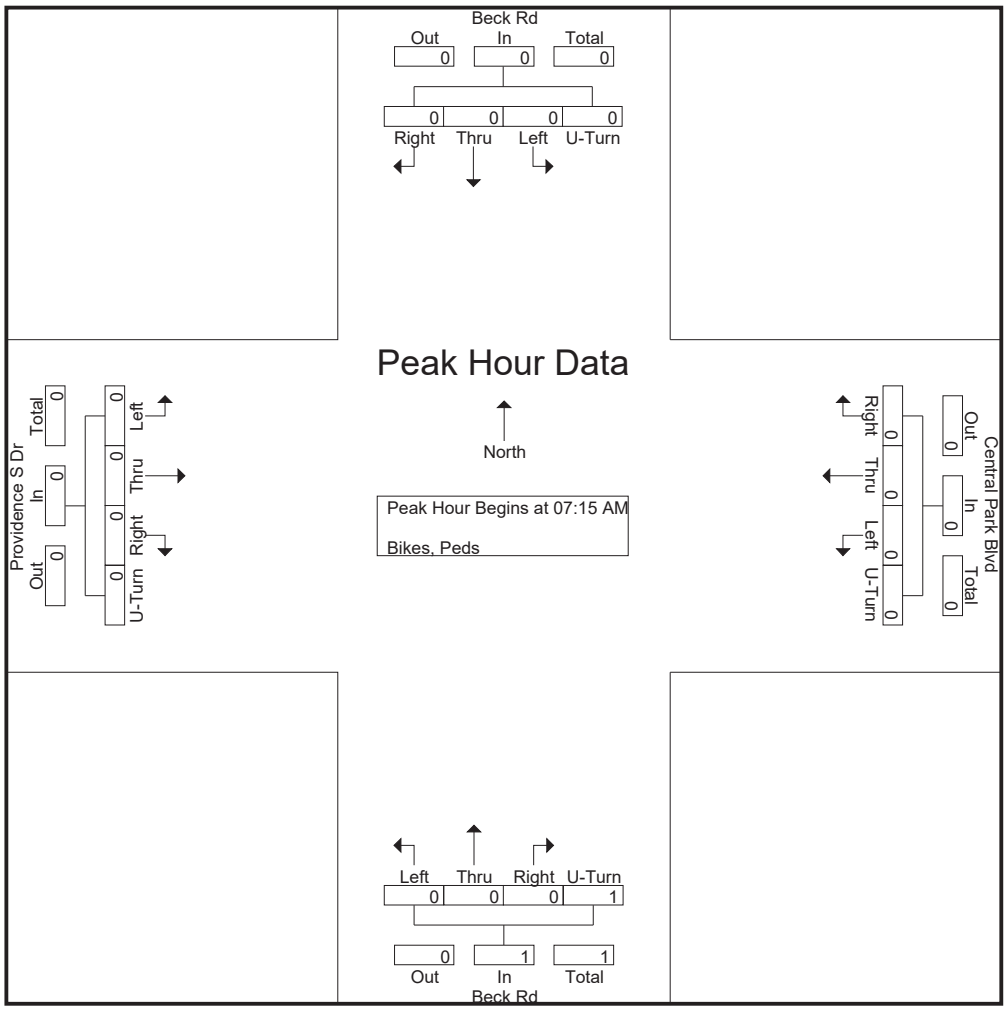
	Providence S Dr Eastbound					Central Park Blvd Westbound					Beck Rd Northbound					Beck Rd Southbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	1
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	1
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	1
Apprch %	0	0	0	0		0	0	0	0		0	0	0	100		0	0	0	0		
Total %	0	0	0	0	0	0	0	0	0	0	0	0	0	100	100	0	0	0	0	0	



TRUE DATA TO IMPROVE MOBILITY

File Name : 17137209 - Beck Rd -- Providence S Dr_Central Park Blvd
Site Code : 17137209
Start Date : 6/24/2025
Page No : 2

	Providence S Dr Eastbound					Central Park Blvd Westbound					Beck Rd Northbound					Beck Rd 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 07:15 AM																					
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**	**1**	0	0	0	0	0	**1**
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	1
% App. Total	0	0	0	0		0	0	0	0		0	0	0	100		0	0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.250	.250	.000	.000	.000	.000	.000	.250

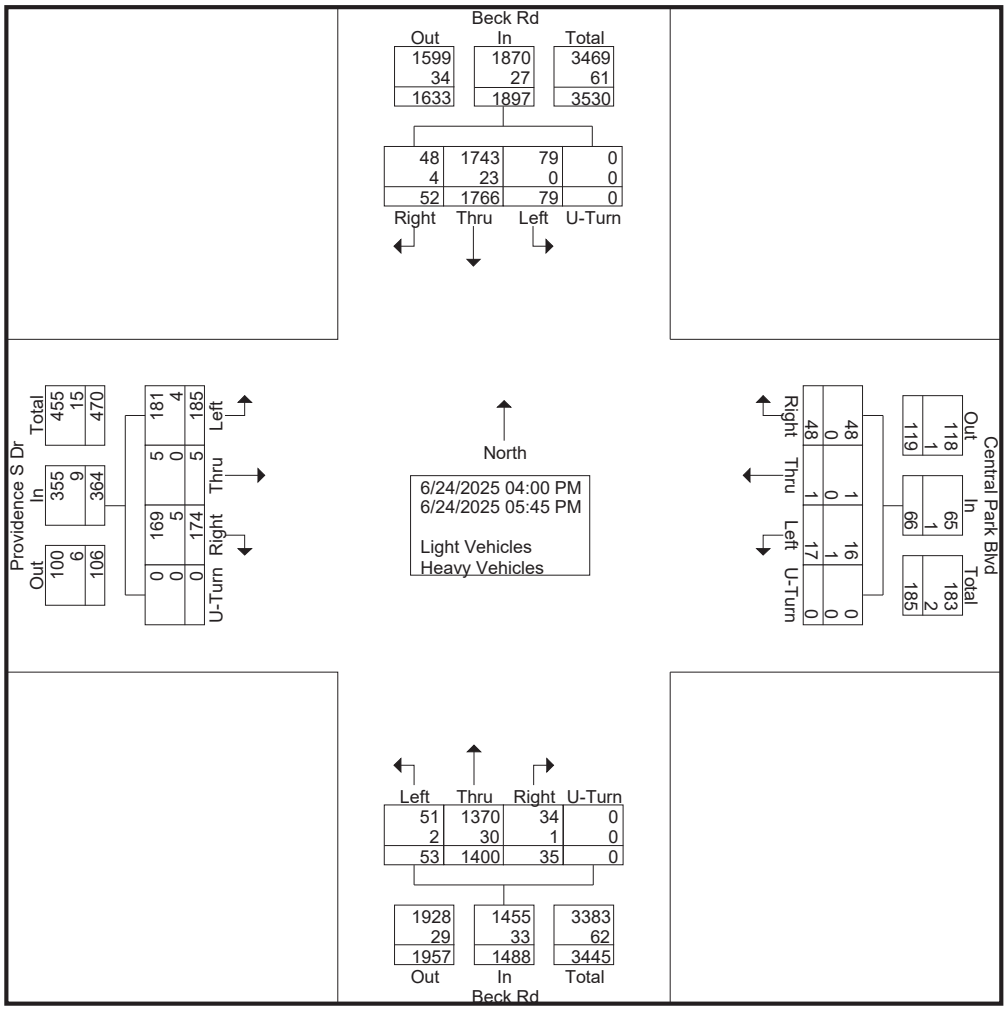


TRUE DATA TO IMPROVE MOBILITY

File Name : 17137210 - Beck Rd -- Providence S Dr_Central Park Blvd
Site Code : 17137210
Start Date : 6/24/2025
Page No : 1

Groups Printed- Light Vehicles - Heavy Vehicles

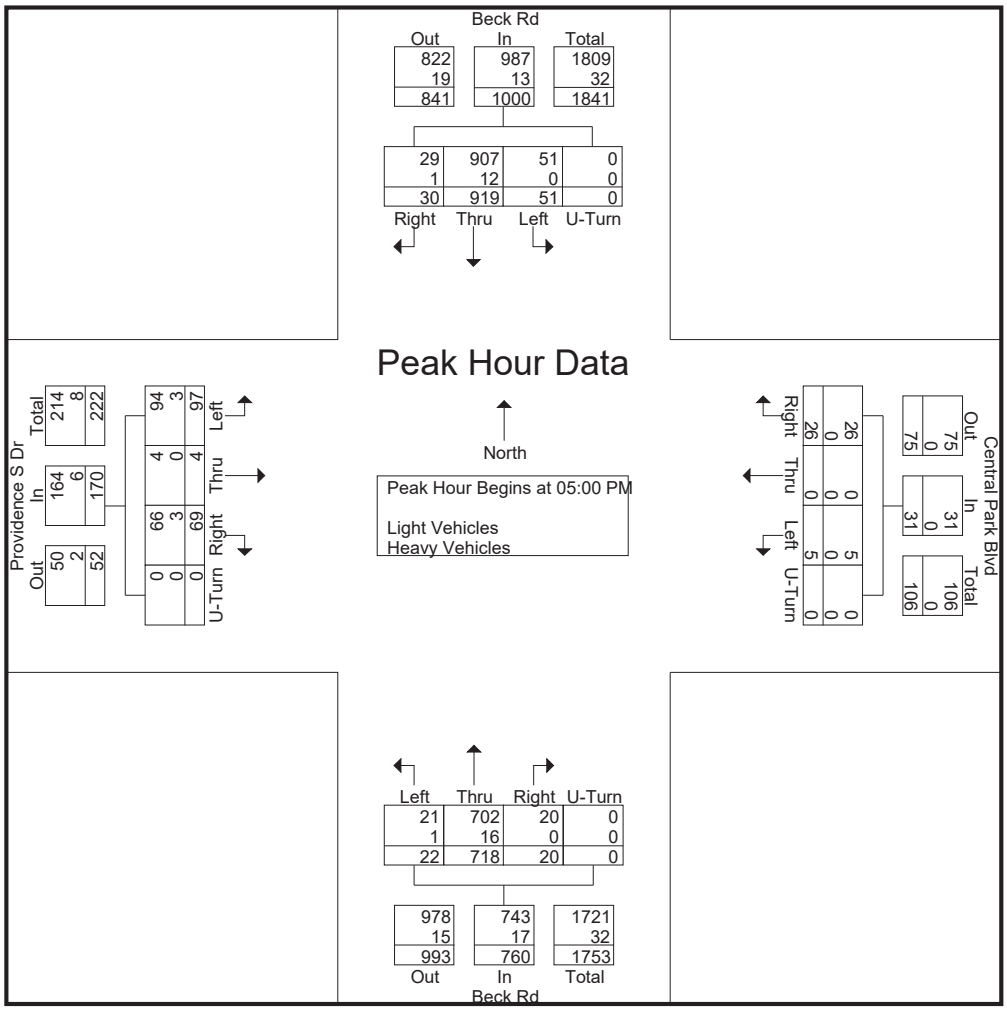
	Providence S Dr Eastbound					Central Park Blvd Westbound					Beck Rd Northbound					Beck Rd Southbound					
Start Time	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Int. Total
04:00 PM	35	0	35	0	70	0	0	6	0	6	9	163	1	0	173	6	222	4	0	232	481
04:15 PM	17	0	23	0	40	7	1	6	0	14	10	170	1	0	181	10	194	7	0	211	446
04:30 PM	22	0	27	0	49	1	0	6	0	7	6	161	8	0	175	4	216	7	0	227	458
04:45 PM	14	1	20	0	35	4	0	4	0	8	6	188	5	0	199	8	215	4	0	227	469
Total	88	1	105	0	194	12	1	22	0	35	31	682	15	0	728	28	847	22	0	897	1854
05:00 PM	35	2	29	0	66	2	0	4	0	6	4	184	6	0	194	11	250	13	0	274	540
05:15 PM	22	0	16	0	38	1	0	4	0	5	9	168	7	0	184	10	237	6	0	253	480
05:30 PM	19	1	15	0	35	1	0	9	0	10	6	181	5	0	192	12	208	5	0	225	462
05:45 PM	21	1	9	0	31	1	0	9	0	10	3	185	2	0	190	18	224	6	0	248	479
Total	97	4	69	0	170	5	0	26	0	31	22	718	20	0	760	51	919	30	0	1000	1961
Grand Total	185	5	174	0	364	17	1	48	0	66	53	1400	35	0	1488	79	1766	52	0	1897	3815
Apprch %	50.8	1.4	47.8	0		25.8	1.5	72.7	0		3.6	94.1	2.4	0		4.2	93.1	2.7	0		
Total %	4.8	0.1	4.6	0	9.5	0.4	0	1.3	0	1.7	1.4	36.7	0.9	0	39	2.1	46.3	1.4	0	49.7	
Light Vehicles	181	5	169	0	355	16	1	48	0	65	51	1370	34	0	1455	79	1743	48	0	1870	3745
% Light Vehicles	97.8	100	97.1	0	97.5	94.1	100	100	0	98.5	96.2	97.9	97.1	0	97.8	100	98.7	92.3	0	98.6	98.2
Heavy Vehicles	4	0	5	0	9	1	0	0	0	1	2	30	1	0	33	0	23	4	0	27	70
% Heavy Vehicles	2.2	0	2.9	0	2.5	5.9	0	0	0	1.5	3.8	2.1	2.9	0	2.2	0	1.3	7.7	0	1.4	1.8



TRUE DATA TO IMPROVE MOBILITY

File Name : 17137210 - Beck Rd -- Providence S Dr_Central Park Blvd
Site Code : 17137210
Start Date : 6/24/2025
Page No : 2

	Providence S Dr Eastbound					Central Park Blvd Westbound					Beck Rd Northbound					Beck Rd Southbound					
Start Time	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	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	**35**	**2**	**29**	0	**66**	**2**	0	4	0	6	4	184	6	0	**194**	11	**250**	**13**	0	**274**	**540**
05:15 PM	22	0	16	0	38	1	0	4	0	5	**9**	168	**7**	0	184	10	237	6	0	253	480
05:30 PM	19	1	15	0	35	1	0	**9**	0	**10**	6	181	5	0	192	12	208	5	0	225	462
05:45 PM	21	1	9	0	31	1	0	9	0	10	3	**185**	2	0	190	**18**	224	6	0	248	479
Total Volume	97	4	69	0	170	5	0	26	0	31	22	718	20	0	760	51	919	30	0	1000	1961
% App. Total	57.1	2.4	40.6	0		16.1	0	83.9	0		2.9	94.5	2.6	0		5.1	91.9	3	0		
PHF	.693	.500	.595	.000	.644	.625	.000	.722	.000	.775	.611	.970	.714	.000	.979	.708	.919	.577	.000	.912	.908
Light Vehicles	94	4	66	0	164	5	0	26	0	31	21	702	20	0	743	51	907	29	0	987	1925
% Light Vehicles	96.9	100	95.7	0	96.5	100	0	100	0	100	95.5	97.8	100	0	97.8	100	98.7	96.7	0	98.7	98.2
Heavy Vehicles	3	0	3	0	6	0	0	0	0	0	1	16	0	0	17	0	12	1	0	13	36
% Heavy Vehicles	3.1	0	4.3	0	3.5	0	0	0	0	0	4.5	2.2	0	0	2.2	0	1.3	3.3	0	1.3	1.8

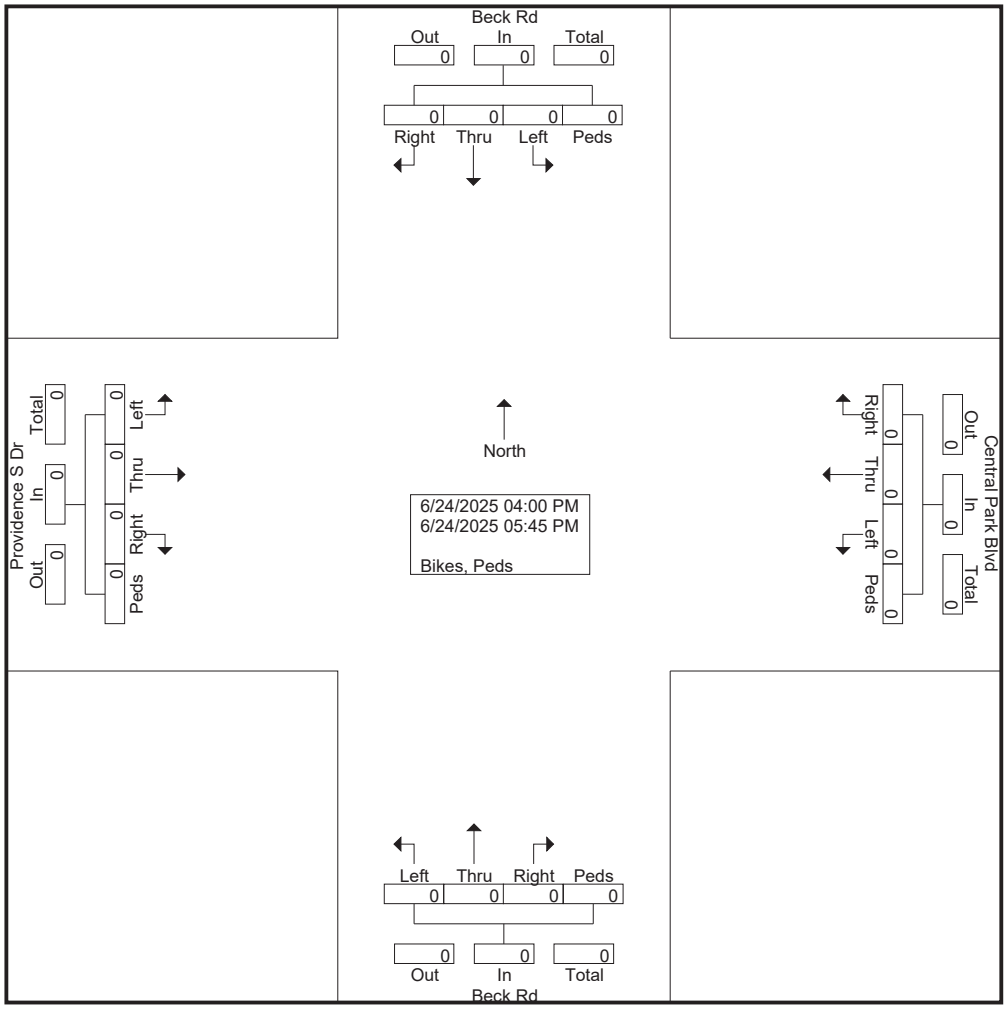


TRUE DATA TO IMPROVE MOBILITY

File Name : 17137210 - Beck Rd -- Providence S Dr_Central Park Blvd
Site Code : 17137210
Start Date : 6/24/2025
Page No : 1

Groups Printed- Bikes, Peds

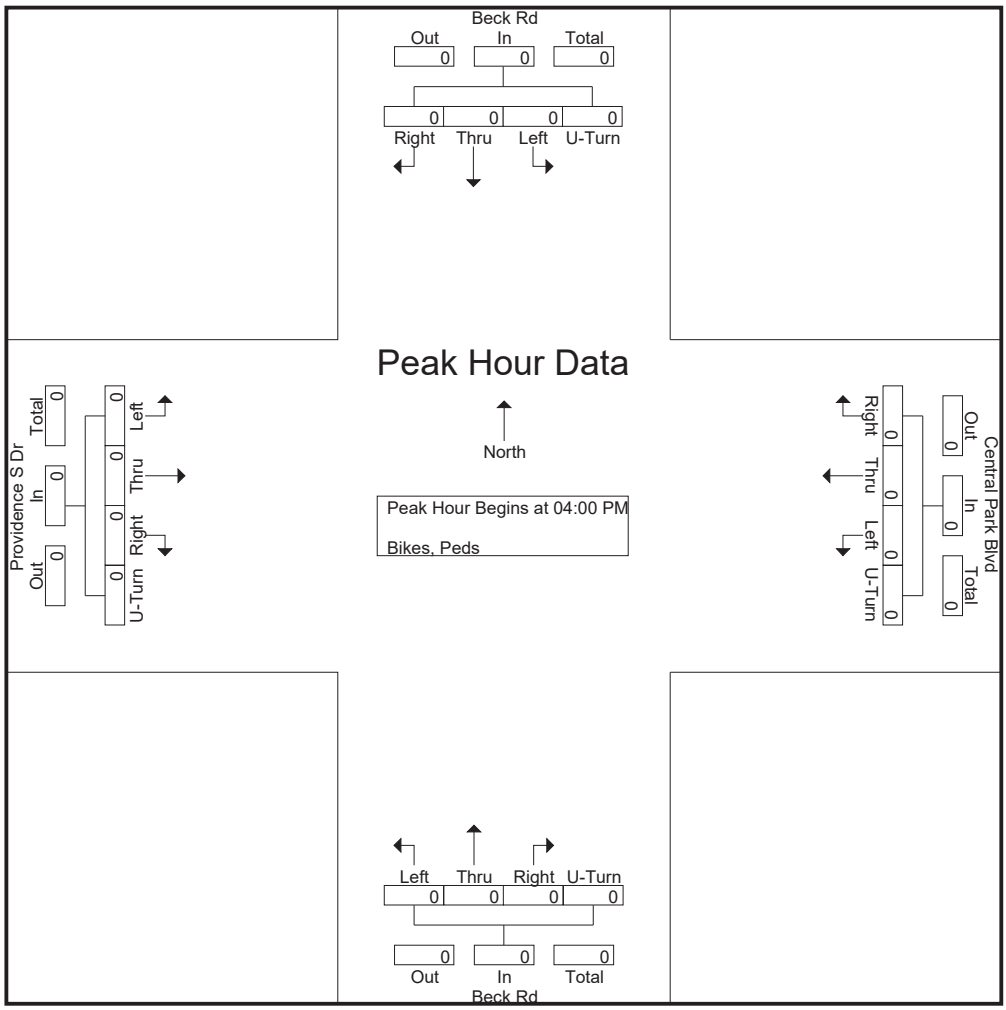
	Providence S Dr Eastbound					Central Park Blvd Westbound					Beck Rd Northbound					Beck Rd Southbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Apprch %	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		
Total %																					



TRUE DATA TO IMPROVE MOBILITY

File Name : 17137210 - Beck Rd -- Providence S Dr_Central Park Blvd
Site Code : 17137210
Start Date : 6/24/2025

	Providence S Dr Eastbound					Central Park Blvd Westbound					Beck Rd Northbound					Beck Rd 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 04:00 PM																					
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000



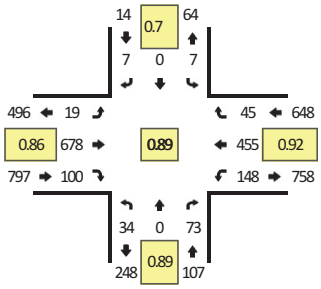
Type of peak hour being reported: User-Defined

Method for determining peak hour: Total Entering Volume

LOCATION: Providence Pkwy -- Grand River Ave
CITY/STATE: Novi, MI

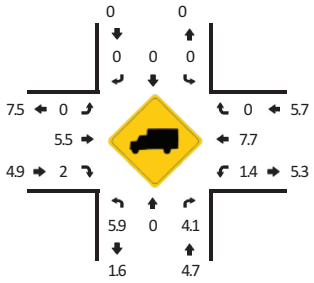
QC JOB #: 17137211
DATE: Tue, Jun 24 2025

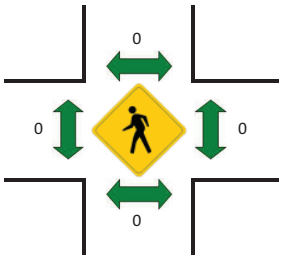
Peak-Hour: 8:00 AM -- 9:00 AM
Peak 15-Min: 8:45 AM -- 9:00 AM

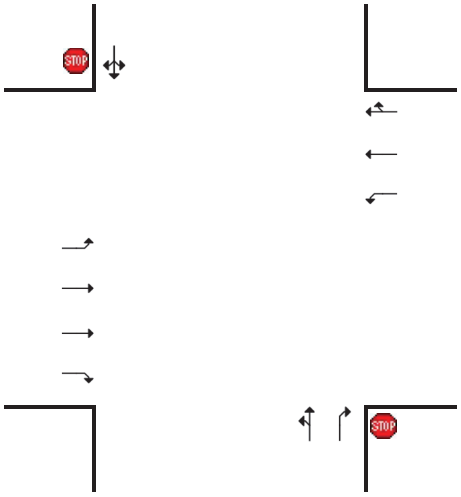


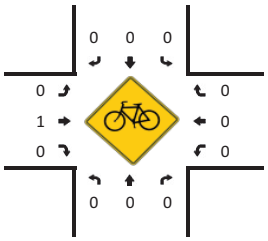


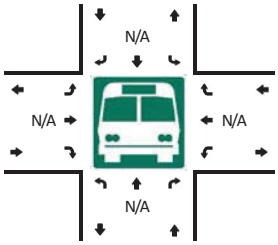
TRUE DATA TO IMPROVE MOBILITY

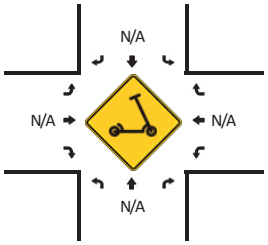












15-Min Count Period Beginning At	Providence Pkwy (Northbound)				Providence Pkwy (Southbound)				Grand River Ave (Eastbound)				Grand River Ave (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	5	0	6	0	0	0	0	0	1	90	16	0	33	75	2	0	228	
7:15 AM	3	0	8	0	0	0	1	0	0	112	29	0	38	75	3	0	269	
7:30 AM	5	0	14	0	0	0	0	0	3	165	27	0	41	97	5	0	357	
7:45 AM	8	0	21	0	0	0	0	0	8	133	34	0	35	90	16	0	345	1199
8:00 AM	7	0	16	0	0	0	0	0	1	148	25	0	42	98	9	0	346	1317
8:15 AM	9	0	17	0	2	0	2	0	2	161	23	0	52	115	10	0	393	1441
8:30 AM	9	0	19	0	2	0	3	0	8	174	23	0	27	111	12	0	388	1472
8:45 AM	9	0	21	0	3	0	2	0	8	195	29	0	27	131	14	0	439	1566
9:00 AM	17	0	30	0	3	0	0	0	8	156	21	0	28	135	6	0	404	1624
9:15 AM	11	0	39	0	4	0	5	0	9	142	17	0	36	147	5	0	415	1646
9:30 AM	17	0	37	0	7	0	6	0	2	162	22	0	32	133	5	0	423	1681
9:45 AM	11	0	43	0	5	0	6	0	2	168	20	0	33	131	5	0	424	1666
10:00 AM	27	0	31	0	1	0	8	0	4	148	23	0	21	116	3	0	382	1644
10:15 AM	15	0	27	0	6	0	4	0	3	141	23	0	33	136	3	0	391	1620
10:30 AM	18	0	32	0	7	0	2	0	1	134	18	0	26	130	5	0	373	1570
10:45 AM	19	0	31	0	2	0	3	0	1	137	30	0	28	142	3	0	396	1542
11:00 AM	16	0	37	0	4	0	3	0	0	144	16	0	23	128	3	0	374	1534
11:15 AM	18	1	46	0	7	0	5	0	1	162	15	0	15	170	3	0	443	1586
11:30 AM	15	1	32	0	9	1	6	0	2	172	12	0	21	198	1	0	470	1683
11:45 AM	22	0	49	0	1	1	1	0	1	187	21	0	22	205	3	0	513	1800
12:00 PM	18	0	45	0	9	0	7	0	5	225	10	0	19	185	4	0	527	1953
12:15 PM	28	0	29	0	4	0	6	0	3	195	17	0	18	240	7	0	547	2057
12:30 PM	15	0	32	0	8	1	8	0	2	225	28	0	21	187	3	0	530	2117
12:45 PM	13	0	28	0	2	0	3	0	5	193	24	0	22	208	7	0	505	2109
1:00 PM	14	0	31	0	1	0	4	0	2	181	11	0	23	175	5	0	447	2029
1:15 PM	10	0	32	0	1	0	3	0	3	172	21	0	29	184	2	0	457	1939
1:30 PM	13	0	25	0	0	0	4	0	5	160	7	0	18	196	5	0	433	1842
1:45 PM	20	0	33	0	4	0	3	0	5	155	18	0	21	168	9	0	436	1773
2:00 PM	15	0	31	0	4	1	2	0	5	166	14	0	30	181	8	0	457	1783
2:15 PM	13	0	29	0	5	0	3	0	1	169	11	0	24	202	2	0	459	1785
2:30 PM	19	0	35	0	2	0	5	0	2	189	23	0	28	189	4	0	496	1848
2:45 PM	19	0	33	0	1	0	3	0	1	161	8	0	11	187	8	0	432	1844
3:00 PM	17	1	44	0	6	0	6	0	0	165	12	0	10	207	5	0	473	1860
3:15 PM	20	0	32	0	4	0	5	0	2	191	16	0	13	209	5	0	497	1898
3:30 PM	16	0	26	0	5	0	3	0	3	150	10	0	17	214	6	0	450	1852
3:45 PM	25	0	35	0	11	0	4	0	2	167	9	0	15	192	4	0	464	1884
4:00 PM	16	0	43	0	10	0	9	0	1	164	4	0	11	231	2	0	491	1902
4:15 PM	32	0	47	0	4	0	3	0	0	161	8	0	19	227	0	0	501	1906

15-Min Count Period Beginning At	Providence Pkwy (Northbound)				Providence Pkwy (Southbound)				Grand River Ave (Eastbound)				Grand River Ave (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:30 PM	26	0	46	0	15	0	13	0	0	215	5	0	14	235	0	0	569	2025
4:45 PM	26	0	41	0	0	0	2	0	0	194	10	0	10	272	0	0	555	2116
5:00 PM	16	0	34	0	1	0	1	0	0	225	7	0	7	250	0	0	541	2166
5:15 PM	14	0	31	0	1	0	0	0	0	201	5	0	14	213	0	0	479	2144
5:30 PM	9	0	34	0	2	0	3	0	0	158	6	0	10	210	0	0	432	2007
5:45 PM	6	0	16	0	0	0	0	0	0	125	2	0	5	189	1	0	344	1796
6:00 PM	9	0	18	0	0	0	0	0	0	160	4	0	3	160	0	0	354	1609
6:15 PM	4	0	5	0	0	0	0	0	0	127	2	0	5	165	1	0	309	1439
6:30 PM	5	0	16	0	1	0	0	0	0	122	7	0	3	164	0	0	318	1325
6:45 PM	3	0	10	0	0	0	0	0	0	124	6	0	1	161	0	0	305	1286

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	36	0	84	0	12	0	8	0	32	780	116	0	108	524	56	0	1756
Heavy Trucks	0	0	4		0	0	0		0	32	0		0	36	0		72
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 7/9/2025 9:33 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

TRUE DATA TO IMPROVE MOBILITY

File Name : 17137211 - Providence Pkwy -- Grand River Ave
Site Code : 17137211
Start Date : 6/24/2025
Page No : 1

Groups Printed- Light Vehicles - Heavy Vehicles

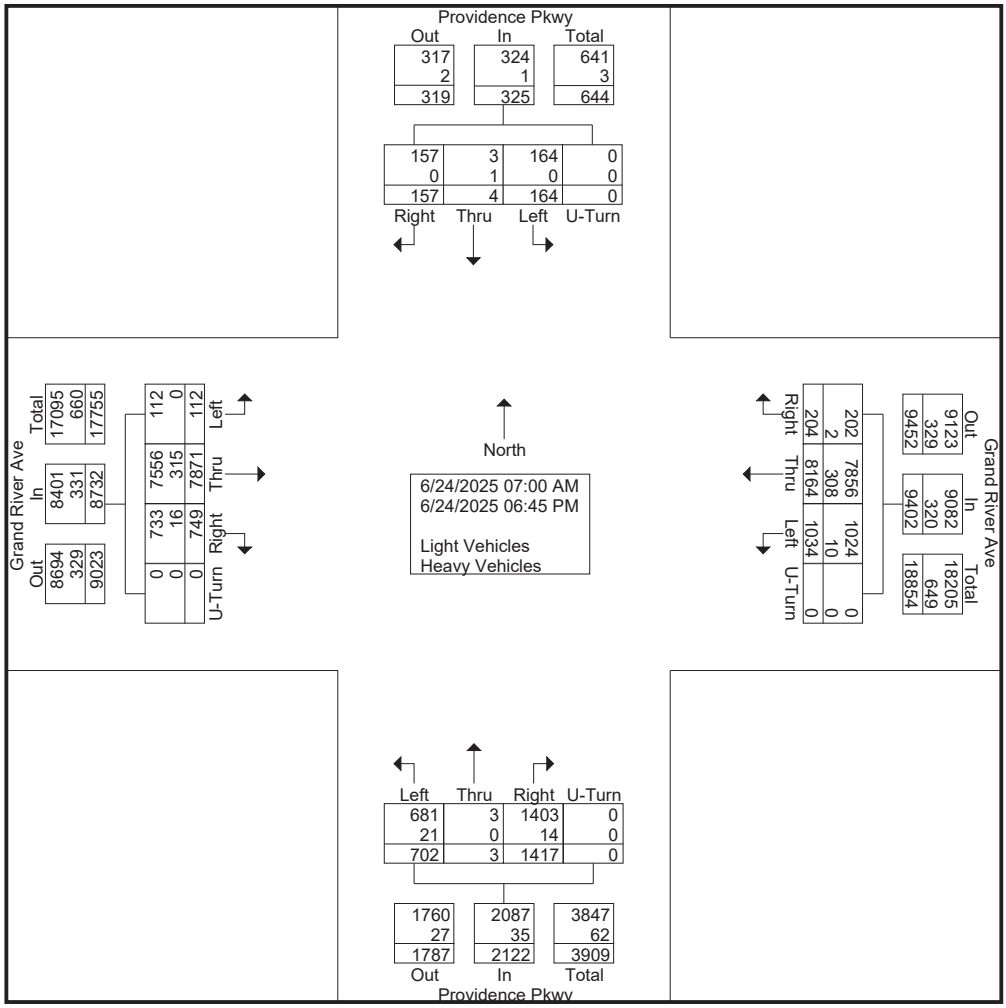
	Grand River Ave Eastbound					Grand River Ave Westbound					Providence Pkwy Northbound					Providence Pkwy Southbound					
Start Time	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Int. Total
07:00 AM	1	90	16	0	107	33	75	2	0	110	5	0	6	0	11	0	0	0	0	0	228
07:15 AM	0	112	29	0	141	38	75	3	0	116	3	0	8	0	11	0	0	1	0	1	269
07:30 AM	3	165	27	0	195	41	97	5	0	143	5	0	14	0	19	0	0	0	0	0	357
07:45 AM	8	133	34	0	175	35	90	16	0	141	8	0	21	0	29	0	0	0	0	0	345
Total	12	500	106	0	618	147	337	26	0	510	21	0	49	0	70	0	0	1	0	1	1199
08:00 AM	1	148	25	0	174	42	98	9	0	149	7	0	16	0	23	0	0	0	0	0	346
08:15 AM	2	161	23	0	186	52	115	10	0	177	9	0	17	0	26	2	0	2	0	4	393
08:30 AM	8	174	23	0	205	27	111	12	0	150	9	0	19	0	28	2	0	3	0	5	388
08:45 AM	8	195	29	0	232	27	131	14	0	172	9	0	21	0	30	3	0	2	0	5	439
Total	19	678	100	0	797	148	455	45	0	648	34	0	73	0	107	7	0	7	0	14	1566
09:00 AM	8	156	21	0	185	28	135	6	0	169	17	0	30	0	47	3	0	0	0	3	404
09:15 AM	9	142	17	0	168	36	147	5	0	188	11	0	39	0	50	4	0	5	0	9	415
09:30 AM	2	162	22	0	186	32	133	5	0	170	17	0	37	0	54	7	0	6	0	13	423
09:45 AM	2	168	20	0	190	33	131	5	0	169	11	0	43	0	54	5	0	6	0	11	424
Total	21	628	80	0	729	129	546	21	0	696	56	0	149	0	205	19	0	17	0	36	1666
10:00 AM	4	148	23	0	175	21	116	3	0	140	27	0	31	0	58	1	0	8	0	9	382
10:15 AM	3	141	23	0	167	33	136	3	0	172	15	0	27	0	42	6	0	4	0	10	391
10:30 AM	1	134	18	0	153	26	130	5	0	161	18	0	32	0	50	7	0	2	0	9	373
10:45 AM	1	137	30	0	168	28	142	3	0	173	19	0	31	0	50	2	0	3	0	5	396
Total	9	560	94	0	663	108	524	14	0	646	79	0	121	0	200	16	0	17	0	33	1542
11:00 AM	0	144	16	0	160	23	128	3	0	154	16	0	37	0	53	4	0	3	0	7	374
11:15 AM	1	162	15	0	178	15	170	3	0	188	18	1	46	0	65	7	0	5	0	12	443
11:30 AM	2	172	12	0	186	21	198	1	0	220	15	1	32	0	48	9	1	6	0	16	470
11:45 AM	1	187	21	0	209	22	205	3	0	230	22	0	49	0	71	1	1	1	0	3	513
Total	4	665	64	0	733	81	701	10	0	792	71	2	164	0	237	21	2	15	0	38	1800
12:00 PM	5	225	10	0	240	19	185	4	0	208	18	0	45	0	63	9	0	7	0	16	527
12:15 PM	3	195	17	0	215	18	240	7	0	265	28	0	29	0	57	4	0	6	0	10	547
12:30 PM	2	225	28	0	255	21	187	3	0	211	15	0	32	0	47	8	1	8	0	17	530
12:45 PM	5	193	24	0	222	22	208	7	0	237	13	0	28	0	41	2	0	3	0	5	505
Total	15	838	79	0	932	80	820	21	0	921	74	0	134	0	208	23	1	24	0	48	2109
01:00 PM	2	181	11	0	194	23	175	5	0	203	14	0	31	0	45	1	0	4	0	5	447
01:15 PM	3	172	21	0	196	29	184	2	0	215	10	0	32	0	42	1	0	3	0	4	457
01:30 PM	5	160	7	0	172	18	196	5	0	219	13	0	25	0	38	0	0	4	0	4	433
01:45 PM	5	155	18	0	178	21	168	9	0	198	20	0	33	0	53	4	0	3	0	7	436
Total	15	668	57	0	740	91	723	21	0	835	57	0	121	0	178	6	0	14	0	20	1773
02:00 PM	5	166	14	0	185	30	181	8	0	219	15	0	31	0	46	4	1	2	0	7	457
02:15 PM	1	169	11	0	181	24	202	2	0	228	13	0	29	0	42	5	0	3	0	8	459
02:30 PM	2	189	23	0	214	28	189	4	0	221	19	0	35	0	54	2	0	5	0	7	496
02:45 PM	1	161	8	0	170	11	187	8	0	206	19	0	33	0	52	1	0	3	0	4	432
Total	9	685	56	0	750	93	759	22	0	874	66	0	128	0	194	12	1	13	0	26	1844
03:00 PM	0	165	12	0	177	10	207	5	0	222	17	1	44	0	62	6	0	6	0	12	473
03:15 PM	2	191	16	0	209	13	209	5	0	227	20	0	32	0	52	4	0	5	0	9	497
03:30 PM	3	150	10	0	163	17	214	6	0	237	16	0	26	0	42	5	0	3	0	8	450
03:45 PM	2	167	9	0	178	15	192	4	0	211	25	0	35	0	60	11	0	4	0	15	464
Total	7	673	47	0	727	55	822	20	0	897	78	1	137	0	216	26	0	18	0	44	1884
04:00 PM	1	164	4	0	169	11	231	2	0	244	16	0	43	0	59	10	0	9	0	19	491
04:15 PM	0	161	8	0	169	19	227	0	0	246	32	0	47	0	79	4	0	3	0	7	501
04:30 PM	0	215	5	0	220	14	235	0	0	249	26	0	46	0	72	15	0	13	0	28	569
04:45 PM	0	194	10	0	204	10	272	0	0	282	26	0	41	0	67	0	0	2	0	2	555
Total	1	734	27	0	762	54	965	2	0	1021	100	0	177	0	277	29	0	27	0	56	2116

TRUE DATA TO IMPROVE MOBILITY

File Name : 17137211 - Providence Pkwy -- Grand River Ave
Site Code : 17137211
Start Date : 6/24/2025
Page No : 2

Groups Printed- Light Vehicles - Heavy Vehicles

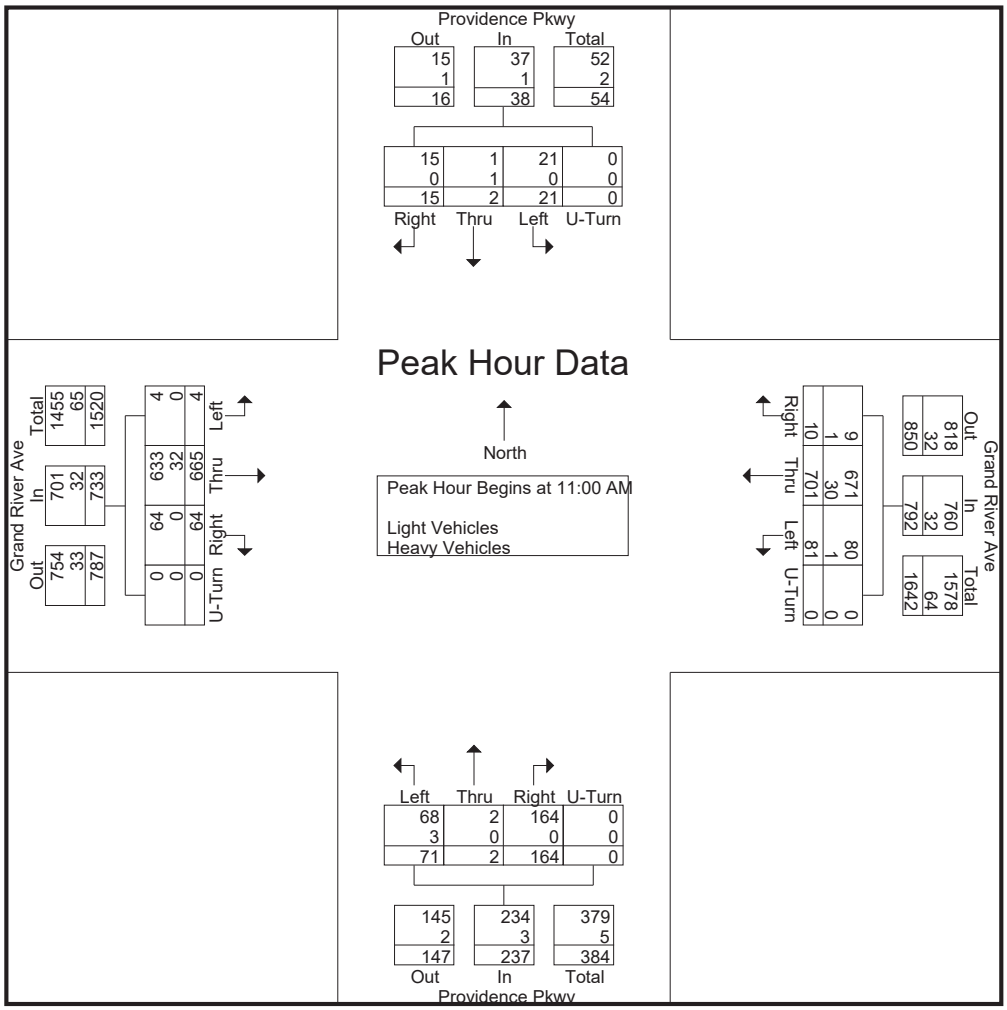
	Grand River Ave Eastbound					Grand River Ave Westbound					Providence Pkwy Northbound					Providence Pkwy Southbound					
Start Time	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Int. Total
05:00 PM	0	225	7	0	232	7	250	0	0	257	16	0	34	0	50	1	0	1	0	2	541
05:15 PM	0	201	5	0	206	14	213	0	0	227	14	0	31	0	45	1	0	0	0	1	479
05:30 PM	0	158	6	0	164	10	210	0	0	220	9	0	34	0	43	2	0	3	0	5	432
05:45 PM	0	125	2	0	127	5	189	1	0	195	6	0	16	0	22	0	0	0	0	0	344
Total	0	709	20	0	729	36	862	1	0	899	45	0	115	0	160	4	0	4	0	8	1796
06:00 PM	0	160	4	0	164	3	160	0	0	163	9	0	18	0	27	0	0	0	0	0	354
06:15 PM	0	127	2	0	129	5	165	1	0	171	4	0	5	0	9	0	0	0	0	0	309
06:30 PM	0	122	7	0	129	3	164	0	0	167	5	0	16	0	21	1	0	0	0	1	318
06:45 PM	0	124	6	0	130	1	161	0	0	162	3	0	10	0	13	0	0	0	0	0	305
Total	0	533	19	0	552	12	650	1	0	663	21	0	49	0	70	1	0	0	0	1	1286
Grand Total	112	7871	749	0	8732	1034	8164	204	0	9402	702	3	1417	0	2122	164	4	157	0	325	20581
Apprch %	1.3	90.1	8.6	0		11	86.8	2.2	0		33.1	0.1	66.8	0		50.5	1.2	48.3	0		
Total %	0.5	38.2	3.6	0	42.4	5	39.7	1	0	45.7	3.4	0	6.9	0	10.3	0.8	0	0.8	0	1.6	
Light Vehicles	112	7556	733	0	8401	1024	7856	202	0	9082	681	3	1403	0	2087	164	3	157	0	324	19894
% Light Vehicles	100	96	97.9	0	96.2	99	96.2	99	0	96.6	97	100	99	0	98.4	100	75	100	0	99.7	96.7
Heavy Vehicles	0	315	16	0	331	10	308	2	0	320	21	0	14	0	35	0	1	0	0	1	687
% Heavy Vehicles	0	4	2.1	0	3.8	1	3.8	1	0	3.4	3	0	1	0	1.6	0	25	0	0	0.3	3.3



TRUE DATA TO IMPROVE MOBILITY

File Name : 17137211 - Providence Pkwy -- Grand River Ave
Site Code : 17137211
Start Date : 6/24/2025
Page No : 3

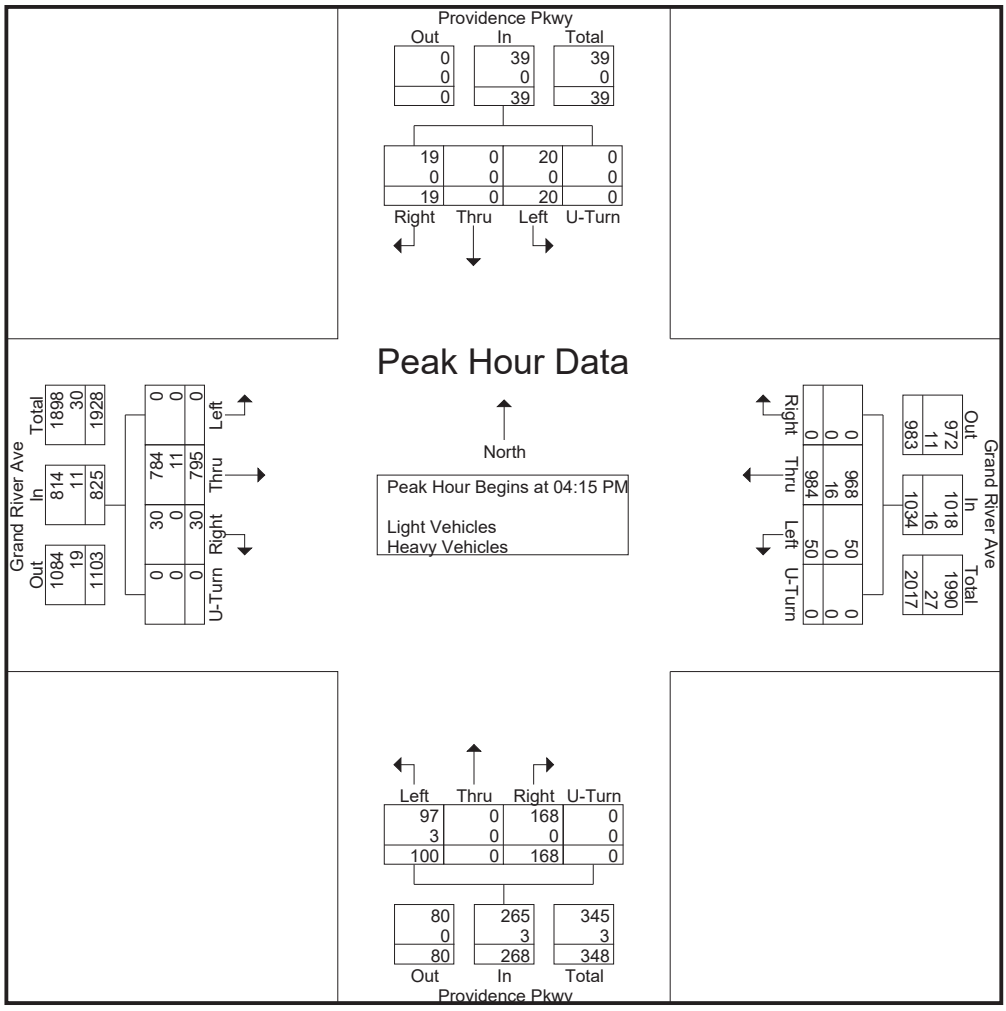
	Grand River Ave Eastbound					Grand River Ave Westbound					Providence Pkwy Northbound					Providence Pkwy Southbound					
Start Time	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 11:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 11:00 AM																					
11:00 AM	0	144	16	0	160	**23**	128	**3**	0	154	16	0	37	0	53	4	0	3	0	7	374
11:15 AM	1	162	15	0	178	15	170	3	0	188	18	**1**	46	0	65	7	0	5	0	12	443
11:30 AM	**2**	172	12	0	186	21	198	1	0	220	15	1	32	0	48	**9**	**1**	**6**	0	**16**	470
11:45 AM	1	**187**	**21**	0	**209**	22	**205**	3	0	**230**	**22**	0	**49**	0	**71**	1	1	1	0	3	**513**
Total Volume	4	665	64	0	733	81	701	10	0	792	71	2	164	0	237	21	2	15	0	38	1800
% App. Total	0.5	90.7	8.7	0		10.2	88.5	1.3	0		30	0.8	69.2	0		55.3	5.3	39.5	0		
PHF	.500	.889	.762	.000	.877	.880	.855	.833	.000	.861	.807	.500	.837	.000	.835	.583	.500	.625	.000	.594	.877
Light Vehicles	4	633	64	0	701	80	671	9	0	760	68	2	164	0	234	21	1	15	0	37	1732
% Light Vehicles	100	95.2	100	0	95.6	98.8	95.7	90.0	0	96.0	95.8	100	100	0	98.7	100	50.0	100	0	97.4	96.2
Heavy Vehicles	0	32	0	0	32	1	30	1	0	32	3	0	0	0	3	0	1	0	0	1	68
% Heavy Vehicles	0	4.8	0	0	4.4	1.2	4.3	10.0	0	4.0	4.2	0	0	0	1.3	0	50.0	0	0	2.6	3.8



TRUE DATA TO IMPROVE MOBILITY

File Name : 17137211 - Providence Pkwy -- Grand River Ave
Site Code : 17137211
Start Date : 6/24/2025
Page No : 4

	Grand River Ave Eastbound					Grand River Ave Westbound					Providence Pkwy Northbound					Providence Pkwy Southbound					
Start Time	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 12:00 PM to 06:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:15 PM																					
04:15 PM	0	161	8	0	169	**19**	227	0	0	246	**32**	0	**47**	0	**79**	4	0	3	0	7	501
04:30 PM	0	215	5	0	220	14	235	0	0	249	26	0	46	0	72	**15**	0	**13**	0	**28**	**569**
04:45 PM	0	194	**10**	0	204	10	**272**	0	0	**282**	26	0	41	0	67	0	0	2	0	2	555
05:00 PM	0	**225**	7	0	**232**	7	250	0	0	257	16	0	34	0	50	1	0	1	0	2	541
Total Volume	0	795	30	0	825	50	984	0	0	1034	100	0	168	0	268	20	0	19	0	39	2166
% App. Total	0	96.4	3.6	0		4.8	95.2	0	0		37.3	0	62.7	0		51.3	0	48.7	0		
PHF	.000	.883	.750	.000	.889	.658	.904	.000	.000	.917	.781	.000	.894	.000	.848	.333	.000	.365	.000	.348	.952
Light Vehicles	0	784	30	0	814	50	968	0	0	1018	97	0	168	0	265	20	0	19	0	39	2136
% Light Vehicles	0	98.6	100	0	98.7	100	98.4	0	0	98.5	97.0	0	100	0	98.9	100	0	100	0	100	98.6
Heavy Vehicles	0	11	0	0	11	0	16	0	0	16	3	0	0	0	3	0	0	0	0	0	30
% Heavy Vehicles	0	1.4	0	0	1.3	0	1.6	0	0	1.5	3.0	0	0	0	1.1	0	0	0	0	0	1.4



TRUE DATA TO IMPROVE MOBILITY

File Name : 17137211 - Providence Pkwy -- Grand River Ave
Site Code : 17137211
Start Date : 6/24/2025
Page No : 1

Groups Printed- Bikes, Peds

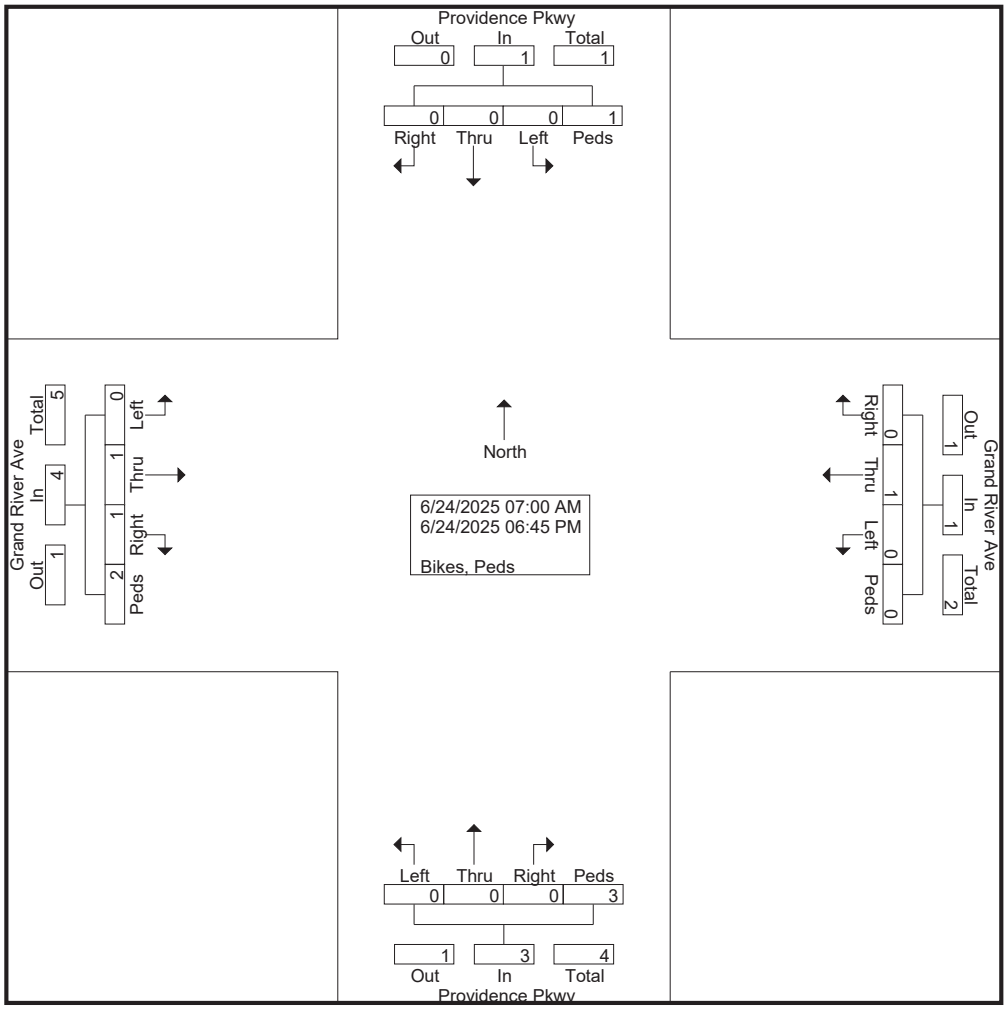
	Grand River Ave Eastbound					Grand River Ave Westbound					Providence Pkwy Northbound					Providence Pkwy Southbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
09:00 AM	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	2
09:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	1
09:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
09:45 AM	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Total	0	0	0	2	2	0	0	0	0	0	0	0	0	1	1	0	0	0	1	1	4
10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	1
01:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	1
02:00 PM	0	0	1	0	1	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	2
02:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	1	0	1	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	2
03:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:15 PM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1
03:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

TRUE DATA TO IMPROVE MOBILITY

File Name : 17137211 - Providence Pkwy -- Grand River Ave
Site Code : 17137211
Start Date : 6/24/2025
Page No : 2

Groups Printed- Bikes, Peds

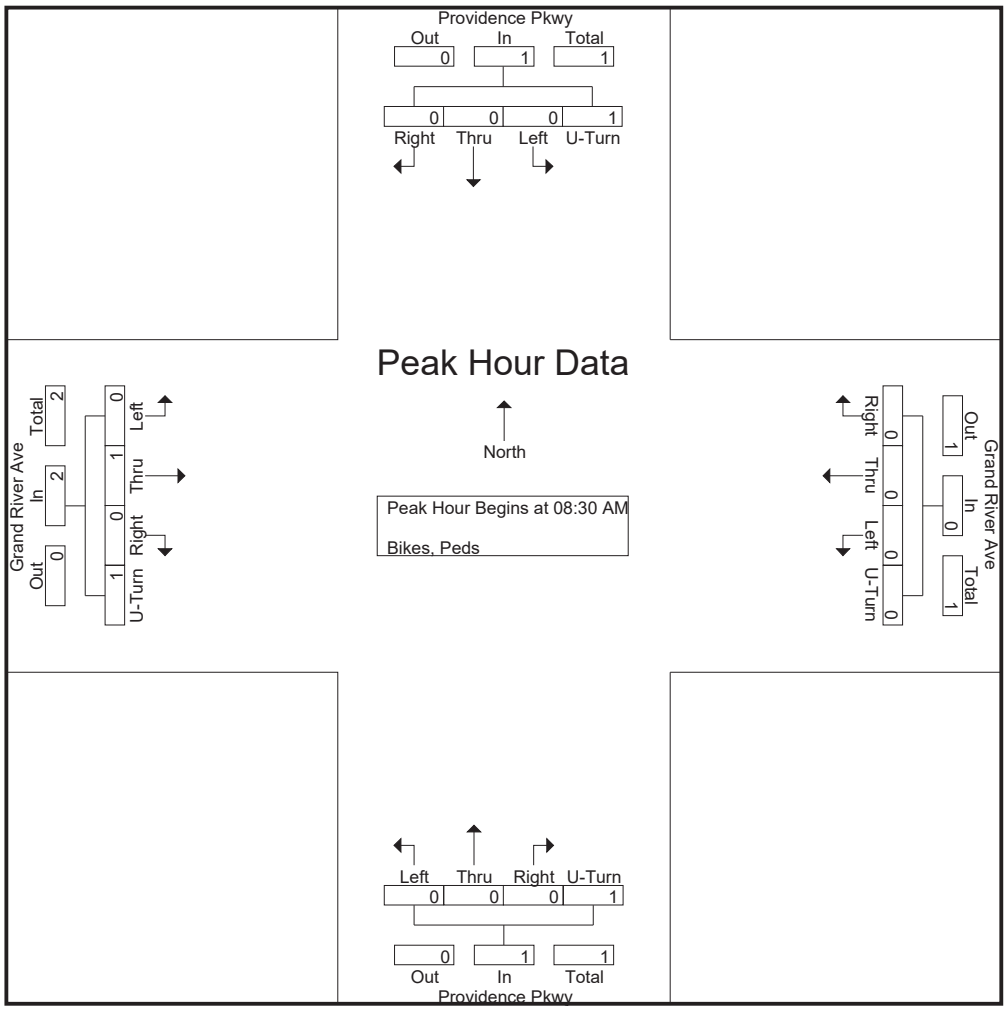
	Grand River Ave Eastbound					Grand River Ave Westbound					Providence Pkwy Northbound					Providence Pkwy Southbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	1	1	2	4	0	1	0	0	1	0	0	0	3	3	0	0	0	1	1	9
Apprch %	0	25	25	50		0	100	0	0		0	0	0	100		0	0	0	100		
Total %	0	11.1	11.1	22.2	44.4	0	11.1	0	0	11.1	0	0	0	33.3	33.3	0	0	0	11.1	11.1	



TRUE DATA TO IMPROVE MOBILITY

File Name : 17137211 - Providence Pkwy -- Grand River Ave
Site Code : 17137211
Start Date : 6/24/2025
Page No : 3

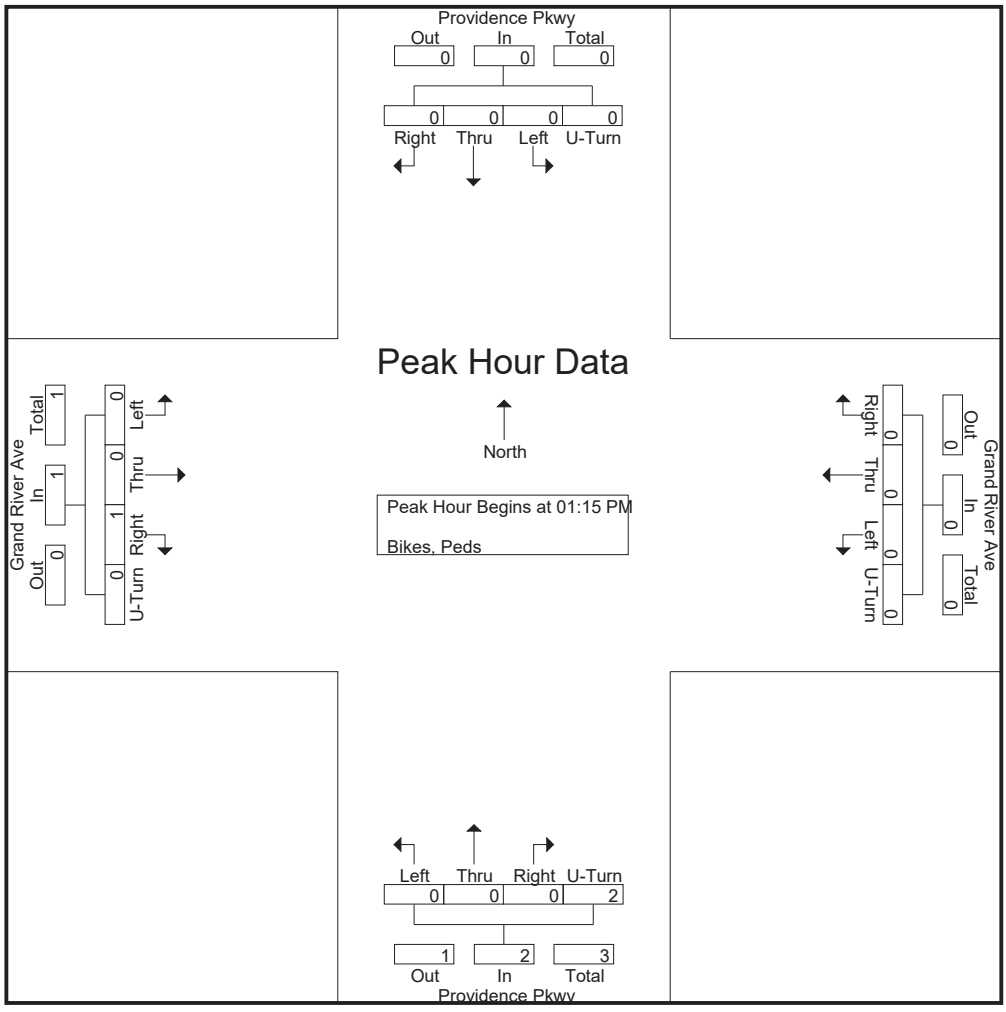
	Grand River Ave Eastbound					Grand River Ave Westbound					Providence Pkwy Northbound					Providence Pkwy Southbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 11:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 08:30 AM																					
08:30 AM	0	**1**	0	0	**1**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
09:00 AM	0	0	0	**1**	1	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**	**1**	**2**
09:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**	**1**	0	0	0	0	0	1
Total Volume	0	1	0	1	2	0	0	0	0	0	0	0	0	1	1	0	0	0	1	1	4
% App. Total	0	50	0	50		0	0	0	0		0	0	0	100		0	0	0	100		
PHF	.000	.250	.000	.250	.500	.000	.000	.000	.000	.000	.000	.000	.000	.250	.250	.000	.000	.000	.250	.250	.500



TRUE DATA TO IMPROVE MOBILITY

File Name : 17137211 - Providence Pkwy -- Grand River Ave
Site Code : 17137211
Start Date : 6/24/2025
Page No : 4

	Grand River Ave Eastbound					Grand River Ave Westbound					Providence Pkwy Northbound					Providence Pkwy 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 12:00 PM to 06:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 01:15 PM																					
01:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**	**1**	0	0	0	0	0	1
01:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:00 PM	0	0	**1**	0	**1**	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	**2**
Total Volume	0	0	1	0	1	0	0	0	0	0	0	0	0	2	2	0	0	0	0	0	3
% App. Total	0	0	100	0		0	0	0	0		0	0	0	100		0	0	0	0		
PHF	.000	.000	.250	.000	.250	.000	.000	.000	.000	.000	.000	.000	.000	.500	.500	.000	.000	.000	.000	.000	.375



OAKLAND COUNTY ROAD COMMISSION
TRAFFIC - SAFETY DEPARTMENT
SIGNAL WORK ORDER

LOCATION: Grand River & Wixom DATE 5/22/23

CITY/TOWNSHIP: Wixom BY: Dawn Bierlein

COUNTY#: ~~441~~ 12 STATE#: _____ CHARGES: 00012J

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 _____

Road Commission For
Oakland County

_____ CHANGE HOURS OF OPERATION:

OLD: _____ MAY 26 2023

NEW: _____

_____ REPROGRAM TBC

Traffic Operations

_____ INSTALL INTERCONNECT: _____ TBC _____ MINITROL _____ TONE

_____ MBT OK: _____ YES _____ NO

_____ NO CHANGE - RECORD CORRECTION

X OTHER: Build and install TS2 cabinet, with SCATS controller, TX54 Digi, PCTEL antenna, and CCTV.

Requires a checksum change. Gridsmart cameras to be installed at a later date. CABINET HIT

(Rev 1) * CONSTRUCTION TIMING - I-96 DETOUR *

APPROVED BY: _____ DATE: 5/22/23

DATE INSTALLED: 5/23/23

INSTALLED BY: Kimmel, Bergen

INTERSECTION :- 12 GRAND RIVER & WIXOM
DESCRIPTION PROMS :- X00020R / F4808
CONTROLLER TYPE :- STANDARD PERSONALITY CONTROLLER
SOFTWARE :- MOD 52 SCATS
PHYSICAL INPUTS :-

PHYSICAL INPUTS :-

1. SB WIXOM LT (LK)
2. SB WIXOM LT ADV (LK)
3. SB WIXOM THRU L (LK)
4. SB WIXOM THRU R (LK)
5. SB WIXOM RT (LK)
6. EB GRAND RIVER LT (LK)
7. EB GRAND RIVER LT ADV (LK)
8. EB GRAND RIVER THRU L (LK)
9. EB GRAND RIVER THRU R (LK)
10. NB WIXOM LT (LK
11. NB WIXOM LT ADV (LK)
12. NB WIXOM THRU L (LK)
13. NB WIXOM THRU R (LK)
14. WB GRAND RIVER LT (LK)
15. WB GRAND RIVER LT ADV (LK)
16. WB GRAND RIVER THRU L (LK)
17. WB GRAND RIVER THRU R (LK)
18. WB GRAND RIVER RT (LK)

NOTE: ALL DETECTORS ARE GRIDSMART

PED 2: WB GRAND RIVER (N.Leg) Ped (WA) P.B.
PED 4: SB WIXOM (W.Leg) Ped (WB) P.B.
PED 6: EB GRAND RIVER (S.Leg) Ped (WC) P.B
PED 8: NB WIXOM (E.Leg) Ped (WD) P.B.

APPROACHES :-

A APPR 1 : EB GRAND RIVER
B APPR 1 : NB WIXOM LT
C APPR 1 : NB WIXOM
D APPR 1 : EB GRAND RIVER LT

A APPR 2 : WB GRAND RIVER
B APPR 2 : SB WIXOM LT
C APPR 2 : SB WIXOM
D APPR 2 : WB GRAND RIVER 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. WB GRAND RIVER (N.Leg) Ped P.B.
4. SB WIXOM (W.Leg) Ped P.B.
6. EB GRAND RIVER (S.Leg) Ped P.B.
8. NB WIXOM (E.Leg) Ped P.B.

SPECIAL FEATURES :-
Personality revision is 1 (=A).

A STAGE HAS A PERMANENT DEMAND
DEMAND FOR STAGES B,C,D IN FLEXI AND ISOLATED. SET XSF9 (XH=1) TO DISABLE.

Night Flash code: Set Y+ to activate the night flash in Flexilink.

Pedestrians have automatic introduction using SCATS Y- 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

BACKPANEL :- SIZE P44-16 **TS2** CABINET

Load Switch 1:	EB GRAND RIVER LT; SB Wixom RT	CL & BR	FLR
Load Switch 2:	WB GRAND RIVER	A	FLR
Load Switch 3:	NB WIXOM LT	DL	FLR
Load Switch 4:	SB WIXOM	B	FLR
Load Switch 5:	WB GRAND RIVER LT	AL	FLR
Load Switch 6:	EB GRAND RIVER	C	FLR
Load Switch 7:	SB WIXOM LT; WB GRAND RIVER RT	BL & AR	FLR
Load Switch 8:	NB WIXOM	D	FLR
Load Switch 9:	WB GRAND RIVER (N.Leg) Ped	WA	
Load Switch 10:	SB WIXOM (W.Leg) Ped	WB	
Load Switch 11:	EB GRAND RIVER (S.Leg) Ped	WC	
Load Switch 12:	NB WIXOM (E.Leg) Ped	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: Channel 1,2,3,4,5,6,7,8,9,10,11,12
R+Y: Channel 1,2,3,4,5,6,7,8
G+Y: Channel 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:
1-5,1-6,1-11,2-5,2-6,2-9,2-11,3-7,3-8,3-12,
4-7,4-8,4-10,4-12,5-9,6-9,6-11,7-10,8-10,
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
(116 Siemens cabinet/17 Econolite cabinet)

```
*********************************
* CONTROLLER INFORMATION SHEET *
*     FOR SITE NO.    12       *
*         Dawn Bierlein        *
*  DATE :    22-MAY-2023       *
*********************************
```

CHECKSUMS
TIMES: 9D/235
PERS: 48/110
TOTAL: D5/325

FLEXILINK PLAN DATA

Intersection # 12 **State #** _____ **Date:** 05/22/23 **Prepared By:** Dawn Bierlein

Intersection: GRAND RIVER & WIXOM **City:** WIXOM/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		80	130	120	140	90			
1	A		0	0	0	0	0			
2	B		26	34	46	50	29			
3	C		40	52	62	68	43			
4	D		66	94	106	116	72			
5	E									
6	F									
7	G									
8	R-									
9	R+									
10	Y-		0	0	0	0	0			
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	GRAND RIVER THRU	10.0	30.0		4.7	1.7	3.0	1.2	10.0
B	WIXOM LT	5.0	10.0		4.3	2.5	4.5	1.2	10.0
C	WIXOM THRU	10.0	30.0		4.3	2.5	3.0	1.2	10.0
D	GRAND RIVER LT	5.0	30.0		4.7	1.7	3.0	1.2	10.0
E									
F									
G									

	Day	Hours	Plan#
SC1	8	6:00	2
SC2	8	9:00	2
SC3	8	15:00	4
SC4	8	19:00	5
SC5	13	10:00	2
SC6	13	18:00	5
SC7	14	0:00	5
SC8			
SC9			
SC10			

Pedestrian Crossing Times

Direction	Walk	CL 1	CL 2
GRAND RIVER NLEG PED	8.0	25.0	3.4
WIXOM WLEG PED	7.0	21.0	3.8
GRAND RIVER SLEG PED	7.0	22.0	3.4
WIXOM ELEG PED	7.0	21.0	3.8

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 Gridsmart Detectors BIU #1

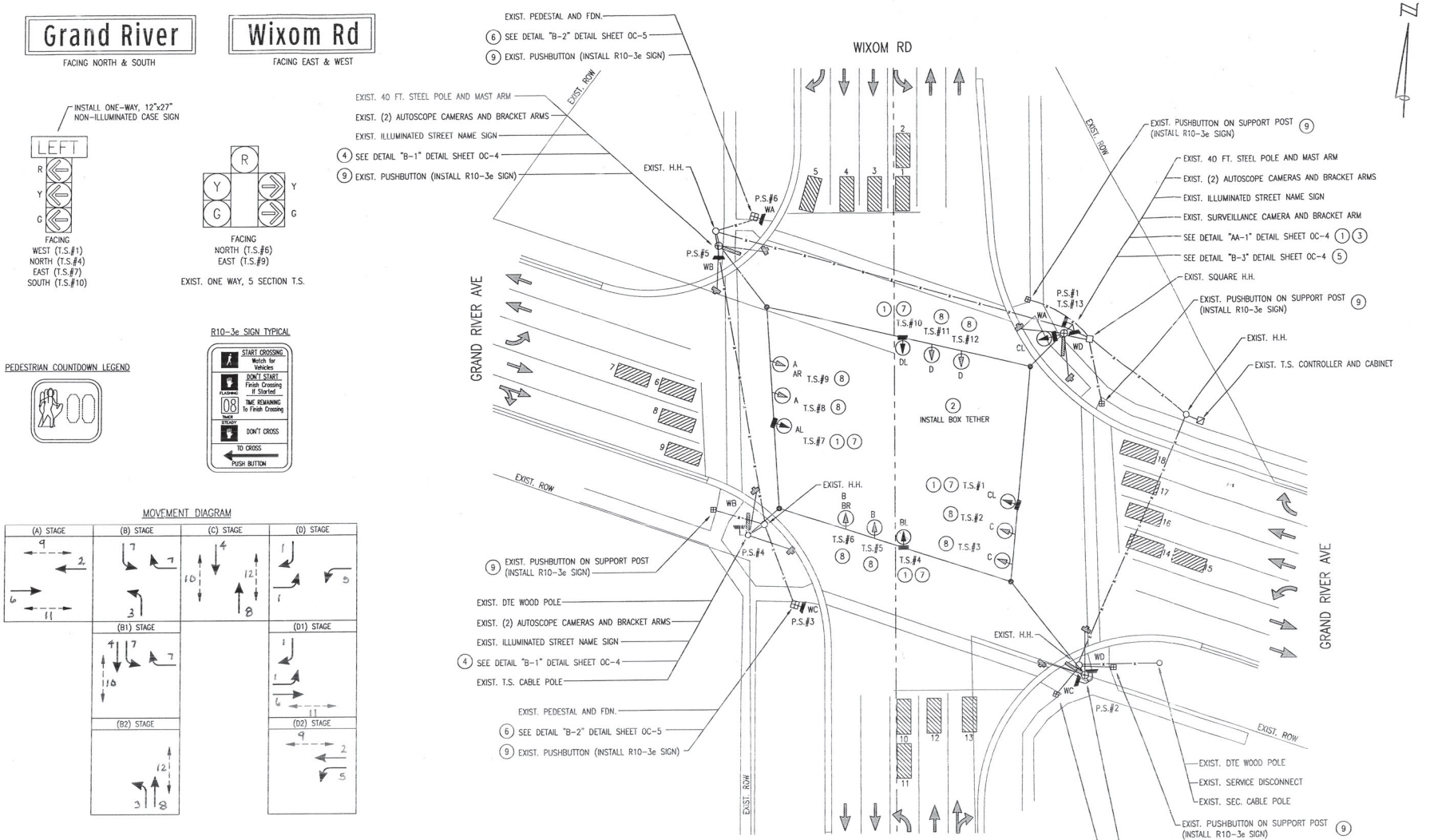
CO#12 Grand River& Wixom

Detector # on print	Description	Phase	Output
1	SB WIXOM LT	7	1
2	SB WIXOM LT ADV	7	2
3	SB WIXOM THRU L	4	3
4	SB WIXOM THRU R	4	4
5	SB WIXOM RT	4	5
6	EB GRAND RIVER LT	1	6
7	EB GRAND RIVER LT ADV	1	7
8	EB GRAND RIVER THRU L	6	8
9	EB GRAND RIVER THRU R	6	9
10	NB WIXOM LT	3	10
11	NB WIXOM LT ADV	3	11
12	NB WIXOM THRU L	8	12
13	NB WIXOM THRU R	8	13
14	WB GRAND RIVER LT	5	14
15	WB GRAND RIVER LT ADV	5	15
16	WB GRAND RIVER THRU L	2	16

TS2 Gridsmart Detectors BIU #2

CO#28 10 Mile & Lahser

Detector # on print	Description	Phase	Output
17	WB GRAND RIVER THRU R	2	17
18	WB GRAND RIVER RT	2	18
			19
			20
			21
			22
			23
			24
			25
			26
			27
			28
			29
			30
			31
			32



PLAN

SCALE: 1"=40' (11"X17")

NO.	ITEM	QUANTITIES
(1)	Case Sign, One Way, 12 inch by 27 inch, Non-Illuminated, RCOC	5 Ea
(2)	Tether Wire, Box, RCOC	1 Ea
(3)	TS, One Way Bracket Arm Mtd (LED)	1 Ea
(4)	TS, Pedestrian, One Way Bracket Arm Mtd (LED) Countdown	2 Ea
(5)	TS, Pedestrian, Two Way Bracket Arm Mtd (LED) Countdown	2 Ea
(6)	TS, Pedestrian, One Way Pedestal Mtd (LED) Countdown	2 Ea
* (7)	TS, One Way Span Wire Mtd (LED)	4 Ea
(8)	Backplate, Retrofit, RCOC	8 Ea
(9)	Sign, Type IIIB	11 Sft

* SHALL BE PROVIDED WITH BACKPLATE WITH RETROREFLECTIVE BORDER. PAYMENT SHALL BE INCLUDED IN THE TRAFFIC SIGNAL PAY ITEMS AND WILL NOT PAID FOR SEPARATELY.

THE WIRING OF THE NEW PED. AND VEH. SIGNALS SHALL BE AS DIRECTED BY THE RCOC FIELD ENGINEER.

APPROACH SPEEDS:	
N.BD.	35 MPH
S.BD.	45 MPH
E.BD.	50 MPH
W.BD.	50 MPH

CO. 12
ATS 436

Know what's below. Call before you dig.

OHM
ARCHITECTS ENGINEERS PLANNERS
34000 Plymouth Road
Livonia, MI 48150
P (734) 522-6711 | F (734) 522-6427
OHM-ADVISORS.COM

REVISIONS

ROAD COMMISSION FOR OAKLAND COUNTY
RCOC TRAFFIC SIGNAL MODERNIZATIONS AT 8 LOCATIONS 2021 (PROJECT #002021-1)
TRAFFIC SIGNAL CONSTRUCTION PLAN

DATE	PROJ NUMBER	PROJ MGR	CADD	COUNTY	CITY/VILLAGE/TOWNSHIP	SCALE	H: 1"=40'	V: NONE	HORZ DATUM	VERT DATUM
2/24/2021	0175184705	KWB	SAM	OAKLAND	VARIOUS					N/A

SHEET 37 OF 49

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DRAWING PATH: P:\0195_0200\0175184705_2019_RCATS\Drawings\CivilSignals\18510SIG_COVER.dwg Feb 08, 2021 - 4:08pm

OAKLAND COUNTY ROAD COMMISSION
TRAFFIC - SAFETY DEPARTMENT
SIGNAL WORK ORDER

LOCATION: Grand River & Beck DATE: 1-27-20

CITY/TOWNSHIP: NOVI BY: T CREECH

COUNTY#: 213 STATE#: — CHARGES: 00213G

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.....																			

X CHANGE BREAKOUT OR EPROM: Change Pers → REV 11

_____ CHANGE HOURS OF OPERATION: (ALL RED, Ped times)

OLD: _____

NEW: _____

ROAD COMMISSION FOR OAKLAND COUNTY

FEB 24 2020

TRAFFIC OPERATIONS

_____ REPROGRAM TBC

_____ INSTALL INTERCONNECT: _____ TBC _____ MINITROL _____ TONE

_____ MBT OK: _____ YES _____ NO

_____ NO CHANGE - RECORD CORRECTION

X OTHER: Requires a checksum change

APPROVED BY: _____ DATE: 2/18/20

DATE INSTALLED: 2/20/2020

INSTALLED BY: JAMES OBERTS

INTERSECTION :- 213 GRAND RIVER & BECK
DESCRIPTION PROMS :- X00020R / F4808
CONTROLLER TYPE :- STANDARD PERSONALITY CONTROLLER
SOFTWARE TYPE :- MOD 52 SCATS
INPUTS :-

1. NB BECK LT (LK)
2. NB BECK LT ADV (LK)
3. NB BECK L (LK)
4. NB BECK R (LK)
5. WB GRAND RIVER LT (LK)
6. WB GRAND RIVER LT ADV (LK)
7. WB GRAND RIVER L (LK)
8. WB GRAND RIVER R (LK)
9. WB GRAND RIVER RT (LK)
10. SB BECK LT L (LK)
11. SB BECK LT ADV L (LK)
12. SB BECK LT R (LK)
13. SB BECK LT ADV R (LK)
14. SB BECK L (LK)
15. SB BECK R (LK)
16. SB BECK RT (LK)
17. EB GRAND RIVER LT L (LK) (BACKPANEL VD1 101)
18. EB GRAND RIVER LT ADV L (LK) (BACKPANEL VD2 109)
19. EB GRAND RIVER LT R (LK) (BACKPANEL VD3 123)
20. EB GRAND RIVER LT ADV R (LK) (BACKPANEL VD4 131)
21. EB GRAND RIVER L (LK) (BACKPANEL VD5 145)
22. EB GRAND RIVER R (LK) (BACKPANEL VD6 153)
23. OPTICOM 2 (BACKPANEL VD7 167)
24. OPTICOM 1 (BACKPANEL VD8 175)

NOTE :- ALL DETECTORS ARE AUTOSCOPE (2008 CAMERAS).

PED 2: GRAND RIVER PED NORTH P.B. (WA)
PED 4: BECK PED WEST P.B. (WB)
PED 6: GRAND RIVER PED SOUTH P.B. (WC)
PED 8: BECK PED EAST P.B. (WD)

APPROACHES :-

A APPR 1 : EB GRAND RIVER	A APPR 2 : WB GRAND RIVER
B APPR 1 : NB BECK LT	B APPR 2 : SB BECK LT
C APPR 1 : NB BECK	C APPR 2 : SB BECK
D APPR 1 : EB GRAND RIVER LT	D APPR 2 : WB GRAND RIVER 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:-
1. -
2. GRAND RIVER PED NORTH
3. -
4. BECK PED WEST
5. -
6. GRAND RIVER PED SOUTH
7. -
8. BECK PED EAST

SPECIAL FEATURES :-
The personality revision number is currently 11 (=K).

A STAGE HAS A PERMANENT DEMAND.
DEMAND FOR STAGES B, C, D IN FLEXI & ISOLATED. SET XSF8 (XL Value = 80) TO DISABLE.

Night Flash code: Set Y+ to activate the night flash in Flexilink

Opticom 1 calls A stage. Opticom 2 calls C stage.

TSM15 EVP MINIMUM TIME
TSM16 EVP ALARM TIME

UPS on Standby Warning
MSS9 (bit $10) is sent if UPS falls back to battery operation
Input used is detector 24

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

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.

BACKPANEL :- SIZE P44-12

LOAD SWITCH	1:	EB GRAND RIVER LT	CL	FLR
		SB BECK RT (G,A)	BR	-
LOAD SWITCH	2:	WB GRAND RIVER	A	FLR
LOAD SWITCH	3:	NB BECK LT	DL	FLR
LOAD SWITCH	4:	SB BECK	B	FLR
LOAD SWITCH	5:	WB GRAND RIVER LT	AL	FLR
LOAD SWITCH	6:	EB GRAND RIVER	C	FLR
LOAD SWITCH	7:	SB BECK LT	BL	FLR
		WB GRAND RIVER RT (G,A)	AR	-
LOAD SWITCH	8:	NB BECK	D	FLR
LOAD SWITCH	9:	GRAND RIVER PED NORTH	WA	
LOAD SWITCH	10:	BECK PED WEST	WB	
LOAD SWITCH	11:	GRAND RIVER PED SOUTH	WC	
LOAD SWITCH	12:	BECK PED EAST	WD	

JUMPERS :-
189-190,191-192,193-194,195-196,197-198,199-200,201-202,207-208,211-212,
213-214,215-216,217-218,219-220,221-222,223-224,229-230,233-234,235-236,
237-238,239-240,241-242,243-244,245-246,251-252,255-256,257-258,259-260,
261-262,263-264,265-266,267-268,273-274,298-302,321-322,323-324,325-326,
327-328,329-PB1,334-335,343-344,345-346,347-348,349-350,351-PB1,356-357,
365-366,367-368,369-370,371-372,373-PB1,378-379,387-388,389-390,391-392,
393-394,395-PB1,400-401.

SIGNAL MONITOR :- 1-5,1-6,2-5,2-6,3-7,3-8,4-7,4-8.
ALL SWITCHES OFF EXCEPT: DUAL SELECT A&B; G&Y ENABLE;
SSM 1, 2, 3, 4, 5, 6, 7, 8.
MINIMUM FLASH = 4+2+1.

```
*********************************
* CONTROLLER INFORMATION SHEET *
*      FOR SITE NO.    213     *
*           T CREECH           *
*      DATE : 27-JAN-2020      *
*********************************
```

CHECKSUMS
TIMES: 32 / 062
PERS: 4F / 117
TOTAL: 7D / 175

FLEXILINK PLAN DATA

Intersection # 213 **State #** _____ **Date:** 01/27/20 **Prepared By:** T. Creech

Intersection: Beck & Grand River **City:** Novi

Hours of Operation: 7 Days: 24 Hours **Approved By:** R. Jones

Hours of Flashing: None

		PL0	PL1	PL2	PL3	PL4	PL5	PL6	PL7	PL8
0	CL		100	120	120					
1	A		0	0	0					
2	B		30	35	37					
3	C		48	55	59					
4	D		80	92	96					
5	E									
6	F									
7	G									
8	R-									
9	R+									
10	Y-		47	109	20					
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	Grand River	10.0	40.0		4.7	2.3	3.0	1.2	10.0
B	Beck LT	5.0	25.0		4.3	2.5	3.0	1.2	10.0
C	Beck	10.0	40.0		4.3	2.5	3.0	1.2	10.0
D	Grand River LT	5.0	25.0		4.7	2.3	3.0	1.2	10.0
E									
F									
G									

SC1	Day	Hours	Plan#
SC2	14	0:00	1
SC3	8	6:00	2
SC4	8	9:00	1
SC5	8	15:00	3
SC6	8	19:00	1
SC7			
SC8			
SC9			
SC10			

Pedestrian Crossing Times

Direction	Walk	CL 1	CL 2
Grand River Ped North (Ped 2)	7.0	24.0	4.0
Beck Ped West (Ped 4)	7.0	17.0	3.8
Grand River Ped South (Ped 6)	7.0	24.0	4.0
Beck Ped East (Ped 8)	7.0	22.0	3.8

TSM15 = Opticom Min Alarm Time = 30
TSM16 = Opticom Max Alarm Time = 200

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

Autoscope 37-Pin Male Output Harness (33457G2) Wiring

Autoscope A

Autoscope Output Harness Pins #1 & #20 to Logic Common & Pins #18 & # 37 to +24 VDC CO#213

Camera Number	EIM Switch Position	EIM LED#	Output Harness Pin#	D-Conn Pin (1,2,..)	Vehicle Detector No.		Detector Description	Phase No. (1,2,3,...)
					D-Conn format (9,10,...)	On Print (1,2,..)		
1	1	1	29	1	9	1	NB BECK LT	3
	1	2	30	2	10	2	NB BECK LT ADV	3
	1	3	31					
	1	4	32					
	1	5	33					
	1	6	34					
	1	7	35					
	1	8	36					
2	2	1	10	3	11	3	NB BECK L	8
	2	2	11	4	12	4	NB BECK R	8
	2	3	12					
	2	4	13					
	2	5	14					
	2	6	15					
	2	7	16					
	2	8	17					
3	3	1	21	5	13	5	WB GRAND RIVER LT	5
	3	2	22	6	14	6	WB GRAND RIVER LT ADV	5
	3	3	23					
	3	4	24					
	3	5	25					
	3	6	26					
	3	7	27					
	3	8	28					
4	4	1	2	7	15	7	WB GRAND RIVER L	2
	4	2	3	8	16	8	WB GRAND RIVER R	2
	4	3	4	9	17	9	WB GRAND RIVER RT	2
	4	4	5					
	4	5	6					
	4	6	7					
	4	7	8					
	4	8	9					

Autoscope 37-Pin Female Input Harness (33457G3) Wiring

EIM Switch Position	EIM LED#	Input Harness Pin#	Phase Status Input From +24 VDC	Backpanel Terminal Position and Number
5	1	29	Phase 8 Green	LS 8 Green 265
5	1	30	Phase 7 Green	
5	1	31	Phase 6 Green	
5	1	32	Phase 5 Green	LS 5 Green 237
5	1	33	Phase 4 Green	
5	1	34	Phase 3 Green	LS 3 Green 215
5	1	35	Phase 2 Green	LS 2 Green 199
5	1	36	Phase 1 Green	
6	2	10	Phase 8 Red	LS 8 Red 261
6	2	11	Phase 7 Red	
6	2	12	Phase 6 Red	
6	2	13	Phase 5 Red	LS 5 Red 233
6	2	14	Phase 4 Red	
6	2	15	Phase 3 Red	LS 3 Red 211
6	2	16	Phase 2 Red	LS 2 Red 195
6	2	17	Phase 1 Red	

Autoscope 37-Pin Male Output Harness (33457G2) Wiring

Autoscope B

Autoscope Output Harness Pins #1 & #20 to Logic Common & Pins #18 & # 37 to +24 VDC CO#213

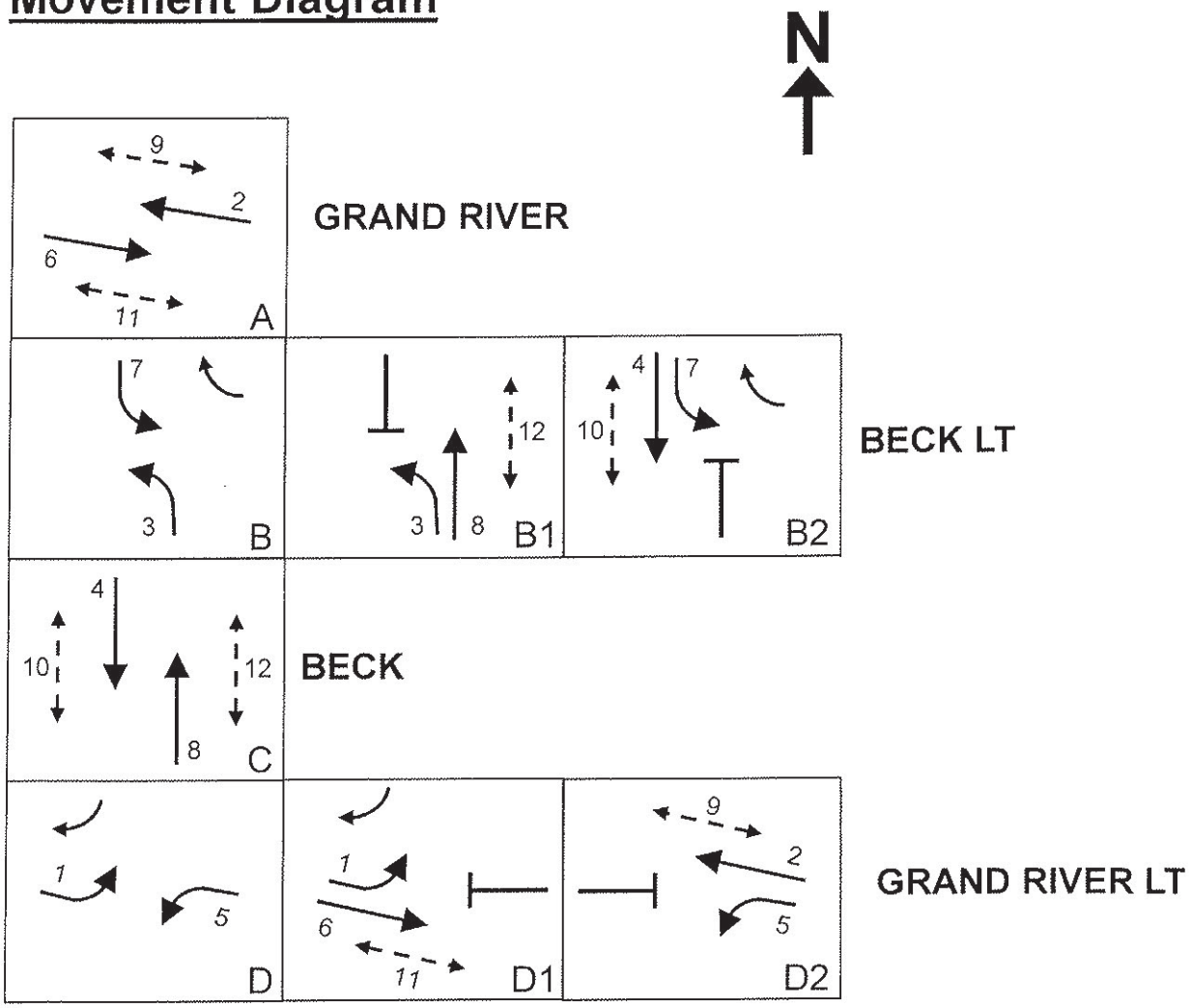
Camera Number	EIM Switch Position	EIM LED#	Output Harness Pin#	D-Conn Pin (1,2,..)	Vehicle Detector No. D-Conn format (9,10,...)	Vehicle Detector No. On Print (1,2,..)	Detector Description	Phase No (1,2,3,...)
1	1	1	29	10	18	10	SB BECK LT L	7
	1	2	30	11	19	11	SB BECK LT ADV L	7
	1	3	31	12	20	12	SB BECK LT R	7
	1	4	32	13	21	13	SB BECK LT ADV R	7
	1	5	33					
	1	6	34					
	1	7	35					
	1	8	36					
2	2	1	10	14	22	14	SB BECK L	4
	2	2	11	15	23	15	SB BECK R	4
	2	3	12	16	24	16	SB BECK RT	4
	2	4	13					
	2	5	14					
	2	6	15					
	2	7	16					
	2	8	17					
3	3	1	21	BACKPANEL VD1 (101)		17	EB GRAND RIVER LT L	1
	3	2	22	BACKPANEL VD2 (109)		18	EB GRAND RIVER LT ADV L	1
	3	3	23	BACKPANEL VD3 (123)		19	EB GRAND RIVER LT R	1
	3	4	24	BACKPANEL VD4 (131)		20	EB GRAND RIVER LT ADV R	1
	3	5	25					
	3	6	26					
	3	7	27					
	3	8	28					
4	4	1	2	BACKPANEL VD5 (145)		21	EB GRAND RIVER L	6
	4	2	3	BACKPANEL VD6 (153)		22	EB GRAND RIVER R	6
	4	3	4					
	4	4	5					
	4	5	6					
	4	6	7					
	4	7	8					
	4	8	9					

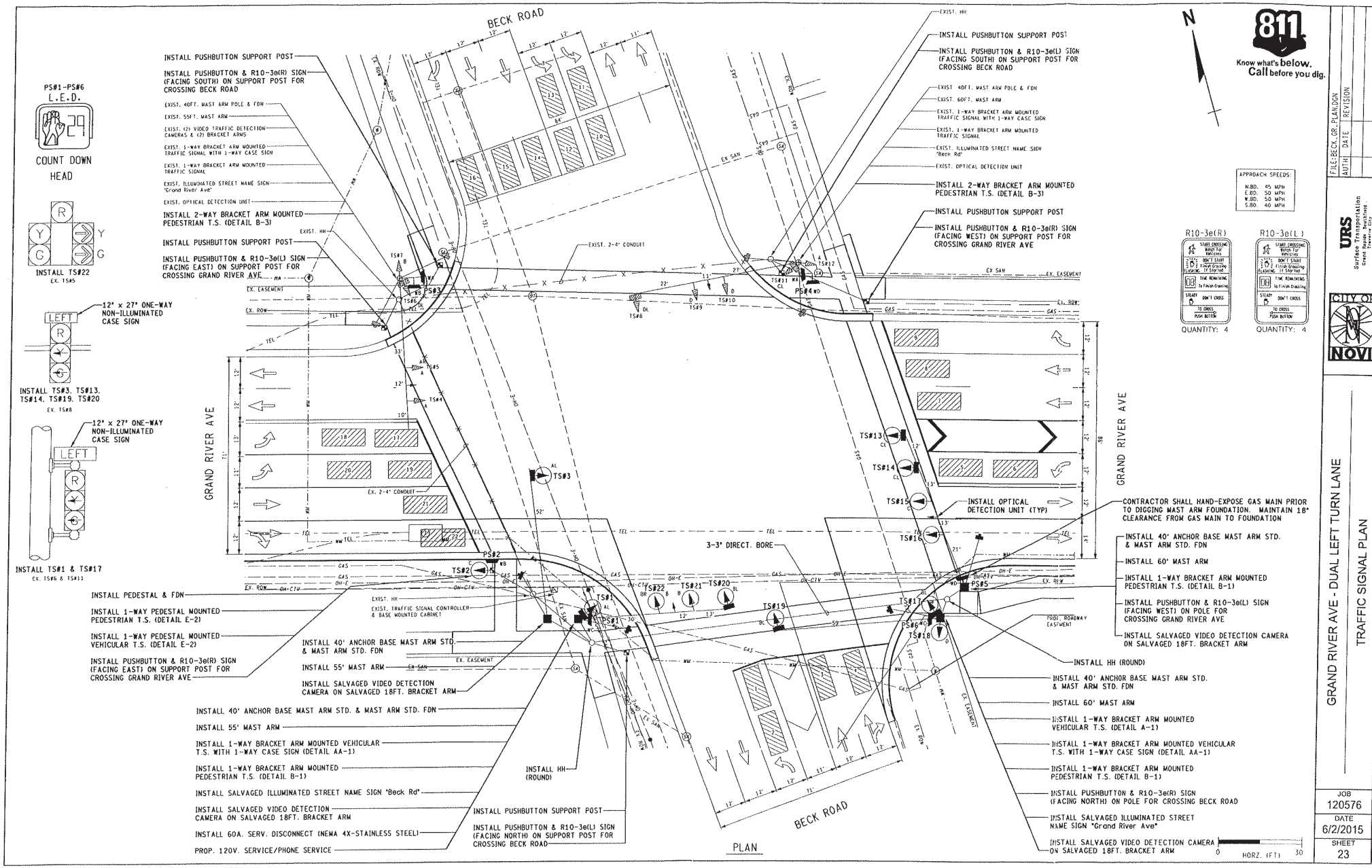
Autoscope 37-Pin Female Input Harness (33457G3) Wiring

EIM Switch Position	EIM LED#	Input Harness Pin#	Phase Status Input From +24 VDC	Backpanel Terminal Position and Number
5	1	29	Phase 8 Green	
5	1	30	Phase 7 Green	LS 7 Green 259
5	1	31	Phase 6 Green	LS 6 Green 243
5	1	32	Phase 5 Green	
5	1	33	Phase 4 Green	LS 4 Green 221
5	1	34	Phase 3 Green	
5	1	35	Phase 2 Green	
5	1	36	Phase 1 Green	LS 1 Green 193
6	2	10	Phase 8 Red	
6	2	11	Phase 7 Red	LS 7 Red 255
6	2	12	Phase 6 Red	LS 6 Red 239
6	2	13	Phase 5 Red	
6	2	14	Phase 4 Red	LS 4 Red 217
6	2	15	Phase 3 Red	
6	2	16	Phase 2 Red	
6	2	17	Phase 1 Red	LS 1 Red 189

#213 – GRAND RIVER & BECK

- **Movement Diagram**





FILE: BECK_GR_PLAN.DGN
AUTH: DATE: REVISION:

URS
Surface Transportation
Grand Rapids, Michigan
Traverse City

CITY OF NOVI

GRAND RIVER AVE - DUAL LEFT TURN LANE

TRAFFIC SIGNAL PLAN

JOB 120576
DATE 6/2/2015
SHEET 23

OAKLAND COUNTY ROAD COMMISSION
TRAFFIC - SAFETY DEPARTMENT
SIGNAL WORK ORDER

LOCATION: Grand River & 12 Mile/Novi Promendale DATE: 1/12/21

CITY/TOWNSHIP: Novi/Wixom BY: ELA

COUNTY#: 1016 STATE#: — CHARGES: 01016 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.....																			

X CHANGE BREAKOUT OR EPROM: Rev 1

_____ CHANGE HOURS OF OPERATION:

OLD: _____

NEW: _____ APR 29 2021

_____ REPROGRAM TBC

_____ INSTALL INTERCONNECT: _____ TBC _____ MINITROL _____ TONE

_____ MBT OK: _____ YES _____ NO

_____ NO CHANGE - RECORD CORRECTION

X OTHER: Build & install TS2 P44-16 cabinet with Opticom, Push Buttons & 2004 AS Detection. USE EXISTING DIGI
* Requires a checksum change * Cabinet Hit

APPROVED BY: _____ DATE: 2/1/21

DATE INSTALLED: 4/26/21

INSTALLED BY: S-8

INTERSECTION :- 1016 GRAND RIVER & 12 MILE/NOVI PROMENADE
DESCRIPTION PROMS :- X01016D / F3806
CONTROLLER TYPE :- STANDARD PERSONALITY CONTROLLER
SOFTWARE TYPE :- TS2 MOD 60 SCATS

INPUTS :-
1. WB GRAND RIVER LT (NLK)
2. WB GRAND RIVER LT ADV (NLK)
3. WB GRAND RIVER L (LK)
4. WB GRAND RIVER R (LK)
5. SB 12 MILE LT (LK)
6. SB 12 MILE(3 SEC,LK)
7. EB GRAND RIVER LT (NLK)
8. EB GRAND RIVER LT ADV (NLK)
9. EB GRAND RIVER L (LK)
10. EB GRAND RIVER R (LK)
11. EB GRAND RIVER RT (LK)
12. NB NOVI PROMENADE LT (LK)
13. NB NOVI PROMENADE (3 SEC,LK)

NOTE: All detection is Autoscope (2004 Cameras).

Opticom 1: TB2 PREEMPT INPUT 3 (CALLS EB & WB GRAND RIVER).

PED 2:	WB GRAND RIVER NLeg PED	P.B.
PED 4:	SB 12 MILE WLeg PED	P.B.
PED 6:	GRAND RIVER SLeg PED	P.B.
PED 8:	NB NOVI PROMENADE ELeg PED	P.B.

APPROACHES :-

A APP 1 : WB Grand River L,R	A APP 2 : EB Grand River L,R,RT
B APP 1 : WB Grand River LT LT,;LT ADV	B APP 2 : EB Grand River LT LT,LT ADV
C APP 1 : SB 12 Mile L,R	C APP 2 : NB Novi Promenade L,R

FLEXIDATA :-

SEQUENCE	A,B,C	A,B,C
AUTO REL		
R- REL	A	A
R+ REL	B	B
Q- REL	C	C
Q+ REL		

PEDESTRIANS :-
1. NO PED 1
2. WB Grand River NLeg PED (P-)
3. NO PED 3
4. SB 12 Mile WLeg PED (P-)
5. NO PED 5
6. EB Grand River SLeg PED (P+)
7. NO PED 7
8. NB Novi Promenade ELeg PED (P+)

SPECIAL FEATURES :-

Personality revision is 1 (=A).

A STAGE HAS A PERMANENT DEMAND.
DEMAND FOR STAGES B,C,D IN FLEXI AND ISOLATED, SET ZNEG TO DISABLE.

WB GRAND RIVER LT has flashing red display (filter) in A stage(s).
EB GRAND RIVER LT has flashing red display (filter) in A stage(s).

Pedestrians have automatic introduction using SCATS Y-.
Night Flash code: Set Y+ to activate the night flash in Flexilink.

Opticom 1 calls A stage.
GRAND RIVER PED introduction is suppressed when OPTICOM is active

BACKPANEL FOR TS2 P44-16 CABINET:

LOAD SWITCH 1 -EB GRAND RIVER LT	CL	FLR
LOAD SWITCH 2 -WB GRAND RIVER	A	FLA
LOAD SWITCH 4 -SB 12 MILE	B	FLR
LOAD SWITCH 5 -WB GRAND RIVER LT	AL	FLR
LOAD SWITCH 6 -EB GRAND RIVER	C	FLA
LOAD SWITCH 8 -NB NOVI PROMENADE	D	FLR
LOAD SWITCH 9 -GRAND RIVER PED NORTH	WA	
LOAD SWITCH 10-12 MILE PED WEST	WB	
LOAD SWITCH 11-GRAND RIVER PED SOUTH	WC	
LOAD SWITCH 12-NOVI PROMENADE PED EAST	WD	

MMU: (MENU : SET/VIEW CONFIG)

Field Check Enable	Channel 1: G, Y, R Channel 2: G, Y, R Channel 4: G, Y, R Channel 5: G, Y, R Channel 6: G, Y, R Channel 8: G, Y, R
Dual Indication Enable:	R+G: Channel 1,2,4,5,6,8,9,10,11,12 R+Y: Channel 1,2,4,5,6,8 G+Y: Channel 1,2,4,5,6,8
Red Fail Enable:	Enable: Channel 1,2,4,5,6,8
Y & R Clearance Disable:	Channel 1,2,4,5,6,8 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, 6-9, 6-11 4-8, 4-10, 4-12, 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.  1016       *
*         E LABIANO            *
*    DATE :- 12-JAN-2021       *
*********************************
```

CHECKSUMS:
Times 7D / 175
Pers ED / 355
Total 90 / 220

FLEXILINK PLAN DATA

Intersection # 1016 **State #** _____ **Date:** 01/12/21 **Prepared By:** ELA

Intersection: Grand River & 12 Mile / Novi Promenade; **City:** Novi

Hours of Operation: 7 Days: 24 Hours **Approved By:** R. Jones

Hours of Flashing: NONE

		PL0	PL1	PL2	PL3	PL4	PL5	PL6	PL7	PL8
0	CL		80	120	120					
1	A		0	0	0					
2	B		53	80	80					
3	C		65	100	95					
4	D									
5	E									
6	F									
7	G									
8	R-									
9	R+									
10	Of (Y-)		5	5	5					
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	Grand River	10.0	40.0		4.7	1.8	3.0	1.2	10.0
B	Grand River LT	5.0	20.0		4.7	1.8	3.0	1.2	10.0
C	12 Mile	7.0	20.0		3.5	2.5	3.0	1.2	10.0
D									
E									
F									
G									

	Day	Hours	Plan#
SC1	8	6:00	2
SC2	8	9:00	1
SC3	8	15:00	3
SC4	8	19:00	1
SC5	13	10:00	2
SC6	13	18:00	1
SC7	14	0:00	1
SC8			
SC9			
SC10			

Pedestrian Crossing Times

Direction	Walk	CL 1	CL 2
Grand River Ped (North leg)	7.0	14.0	3.5
12 Mile Ped (West leg)	7.0	16.0	3.0
Grand River Ped (South leg)	7.0	14.0	3.5
12 Mile Ped (East leg)	7.0	16.0	3.0

Normal Operating Mode

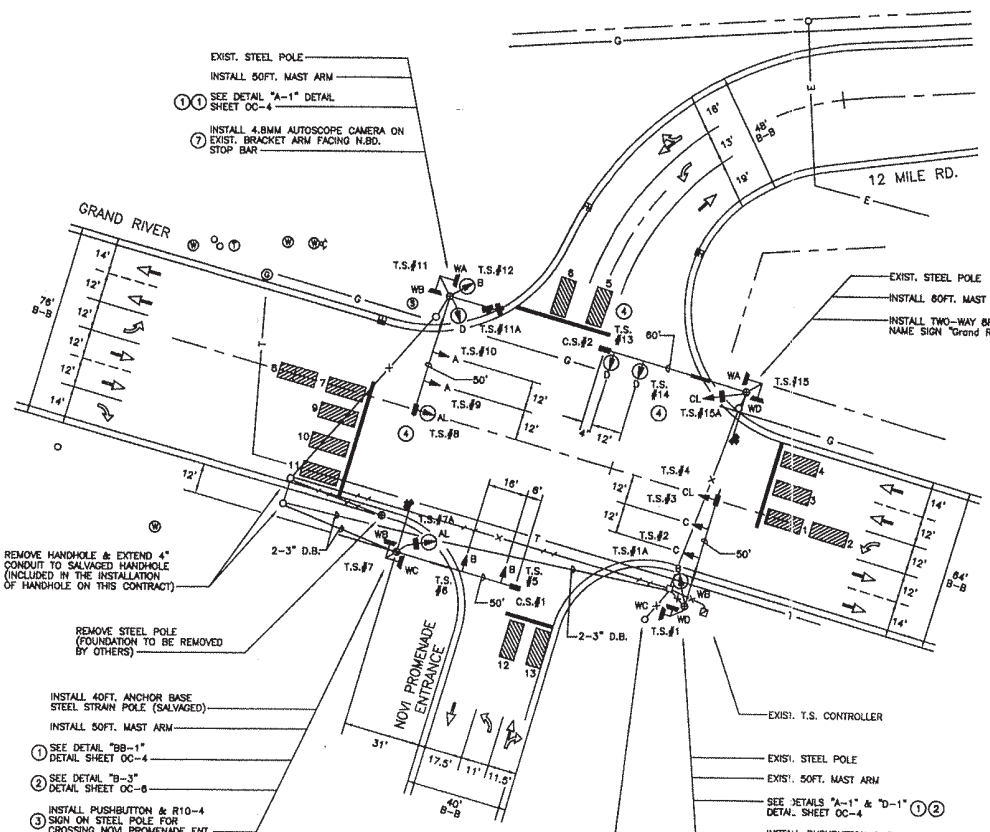
Isolated	Flexilink	Masterlink	Master Isolated	Flexi Isolated
		X		

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

Autoscope 2004

Camera Number	EIM Switch Position	EIM LED#	Vehicle Detector No.	Detector Description	Phase No. (1,2,3,...)
1	1	1	1	WB GRAND RIVER LT	5
	1	2	2	WB GRAND RIVER LT ADV	5
	1	3	3	WB GRAND RIVER L	2
	1	4	4	WB GRAND RIVER R	2
	1	5			
	1	6			
	1	7			
	1	8			
2	2	1	5	SB 12 MILE L T	4
	2	2	6	SB 12 MILE	4
	2	3			
	2	4			
	2	5			
	2	6			
	2	7			
	2	8			
3	3	1	7	EB GRAND RIVER LT	1
	3	2	8	EB GRAND RIVER LT ADV	1
	3	3	9	EB GRAND RIVER L	6
	3	4	10	EB GRAND RIVER R	6
	3	5	11	EB GRAND RIVER RT	6
	3	6			
	3	7			
	3	8			
4	4	1	12	NB NOVI PROMENADE LT	8
	4	2	13	NB NOVI PROMENADE	8
	4	3			
	4	4			
	4	5			
	4	6			
	4	7			
	4	8			



FINAL PLAN
SCALE: 1"=50'

CASE SIGN LEGEND

ONLY | FACING NORTH | FACING SOUTH (BLANK)

⑥ INSTALL TWO-WAY, 24"X30" ILLUMINATED CASE SIGN C.S.#1

CASE SIGN LEGEND

(BLANK) FACING NORTH | ONLY FACING SOUTH

⑧ INSTALL TWO-WAY, 24"X30" ILLUMINATED CASE SIGN C.S.#2

LIST OF MATERIALS

NO.	ITEM	QUANTITIES	CODE NO.
①	1-WAY BRACKET ARM MOUNTED TRAFFIC SIGNAL (LED)	4 EACH	6917050
②	2-WAY BRACKET ARM MOUNTED PEDESTRIAN T.S. (LED)	2 EACH	6917050
③	PUSHBUTTON & SIGN	2 EACH	6910287
④	1-WAY MAST ARM MOUNTED TRAFFIC SIGNAL (LED)	3 EACH	6917050
⑤	ONE-WAY CASE SIGN, 12"X27"	2 EACH	6910300
⑥	TWO-WAY CASE SIGN, 24"X30"	2 EACH	6910304
⑦	AUTOSCOPE CAMERA	1 EACH	6917050
	DIRECT BURIAL CONDUIT, 2-3"	210 LIN. FT.	6917001
	REMOVE HANDHOLE	1 EACH	6910176
	HANDHOLE, ROUND (SALVAGED)	1 EACH	6917050
*	MAST ARM	3 EACH	6910417
	REMOVE STEEL POLE	1 EACH	6910016
*	ANCHOR BASE STEEL STRAIN POLE, 40FT. (SALVAGED)	1 EACH	6917050
*	ANCHOR BASE STEEL STRAIN POLE FOUNDATION	1 EACH	6910426
*	TWO-WAY ILLUMINATED STREET NAME SIGN, 8FT.	1 EACH	6917050

*SEE GENERAL INFORMATION SHEET

LOAD	AMPS	WATTS
SIGNALS	0	0
CASE SIGNS	0	0

REVISIONS

TRAFFIC-SAFETY DEPARTMENT

GRAND RIVER & 12 MILE RD. / NOVI PROMENADE ENT.
CO. ATS

MANSELL ASSOCIATES INC.
ENGINEERING CONSULTANTS
33605 Grand River
Farmington, MI. 48335
(248) 473-7070

DATE	DRAWN BY	APPROVED	JOB NO.	PROJECT NAME	SHEET NO.
9-10-02	MAN		M3316Arev	T.S. MODERNIZATION	3 OF 4

OAKLAND COUNTY ROAD COMMISSION
TRAFFIC - SAFETY DEPARTMENT
SIGNAL WORK ORDER

LOCATION: Grand River & West Market Square DATE: 12/14/17

CITY/TOWNSHIP: Wixom / Novi BY: E Labiano

COUNTY#: 1099 STATE#: _____ CHARGES: 78 010990

PLEASE PERFORM THE FOLLOWING:

_____ ELECTRICAL DEVICE: ____ INSTALL _____ MODERNIZE _____ MAINTENANCE

_____ UNDERGROUND: _____

OAKLAND COUNTY

_____ EDISON OK: _____ YES _____ NO JOB#: _____

JAN 9 2018

_____ COORDINATE W/DISTRICT 7: _____

TRAFFIC OPERATIONS

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

X NO CHANGE - RECORD CORRECTION C.I.S. OPTICOM note

X OTHER: _____

APPROVED BY: _____ DATE: 12/18/17

DATE INSTALLED: 1/5/18

INSTALLED BY: DAVE JAMES

BACKPANEL P44-12 CABINET

LOAD SWITCH 1 -EB GRAND RIVER LT	CL	FLR
LOAD SWITCH 2 -WB GRAND RIVER	A	FLA
LOAD SWITCH 4 -SB WEST MARKET SQUARE	B	FLR
LOAD SWITCH 5 -WB GRAND RIVER LT	AL	FLR
LOAD SWITCH 6 -EB GRAND RIVER	C	FLA
LOAD SWITCH 8 -NB PROVIDENCE	D	FLR
LOAD SWITCH 9 -WB GRAND RIVER PED	WA	
LOAD SWITCH 10-WEST MARKET PED	WB	
LOAD SWITCH 11-EB GRAND RIVER PED	WC	
LOAD SWITCH 12-NB PROVIDENCE PED	WD	

JUMPERS
189-190,191-192,193-194,195-196,197-198,199-200,201-202,207-208,217-218,
219-220,221-222,223-224,229-230,233-234,235-236,237-238,239-240,241-242,
243-244,245-246,251-252,261-262,263-264,265-266,267-268,273-274,298-302,
321-322,323-324,325-326,327-328,329-PB1,334-335,343-PB1,347-348,349-350,
351-PB1,356-357,365-366,367-368,369-370,371-372,373-PB1,378-379,387-PB1,
391-392,393-394,395-PB1,400-401.

SIGNAL MONITOR: 1-5,2-6,4-8.
ALL SWITCHES OFF EXCEPT: DUAL SELECT A&B; G&Y ENABLE; SSM 1,2,4,5,6,8.
MINIMUM FLASH = 4+2+1 (7)

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*******************************
* CONTROLLER INFORMATION SHEET *
*     FOR SITE NO.  1099       *
*        T. CREECH             *
*    DATE :- 4-AUG-2017        *
*******************************
```

CHECKSUMS:
TI: F1 / 361
PERS: 3C / 074
Total: CD / 315

FLEXILINK PLAN DATA

Intersection # 1099 **State #** .- **Date:** 08/04/17 **Prepared By:** T. Creech

Intersection: Grand River & West Market Square **City:** Wixom / Novi

Hours of Operation: 7 Days: 6:00am to 11:00 pm **Approved By:** Rachel Jones

Hours of Flashing: 7 Days: 11:00pm to 6:00am

		PL0	PL1	PL2	PL3	PL4	PL5	PL6	PL7	PL8
0	CL		100	120	120					
1	A		0	0	0					
2	B		59	74	69					
3	C		80	95	90					
4	D									
5	E									
6	F									
7	G									
8	R-									
9	R+									
10	Of (Y-)		20	75	5					
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	GRAND RIVER THRU	10.0	40.0	9.0	4.7	1.6	3.0	1.2	10.0
B	EB GRAND RIVER LT/THRU	3.0	20.0		4.7	1.6	3.0	1.2	10.0
C	WEST MARKET	5.0	20.0		3.5	2.5	3.0	1.2	10.0
D									
E									
F									
G									

	Day	Hours	Plan#
SC1	14	0:00	0
SC2	14	23:00	0
SC3	13	6:00	1
SC4	8	6:00	2
SC5	8	9:00	1
SC6	8	15:00	3
SC7	8	19:00	1
SC8			
SC9			
SC10			

Pedestrian Crossing Times

Direction	Walk	CL 1	CL 2
WB Grand River Ped (N leg)	9.0	9.0	3.3
SB West Market Ped (W leg)	7.0	18.0	3.0
EB Grand River Ped (S leg)	9.0	9.0	3.3
NB Providence Ped (E leg)	7.0	12.0	3.0

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

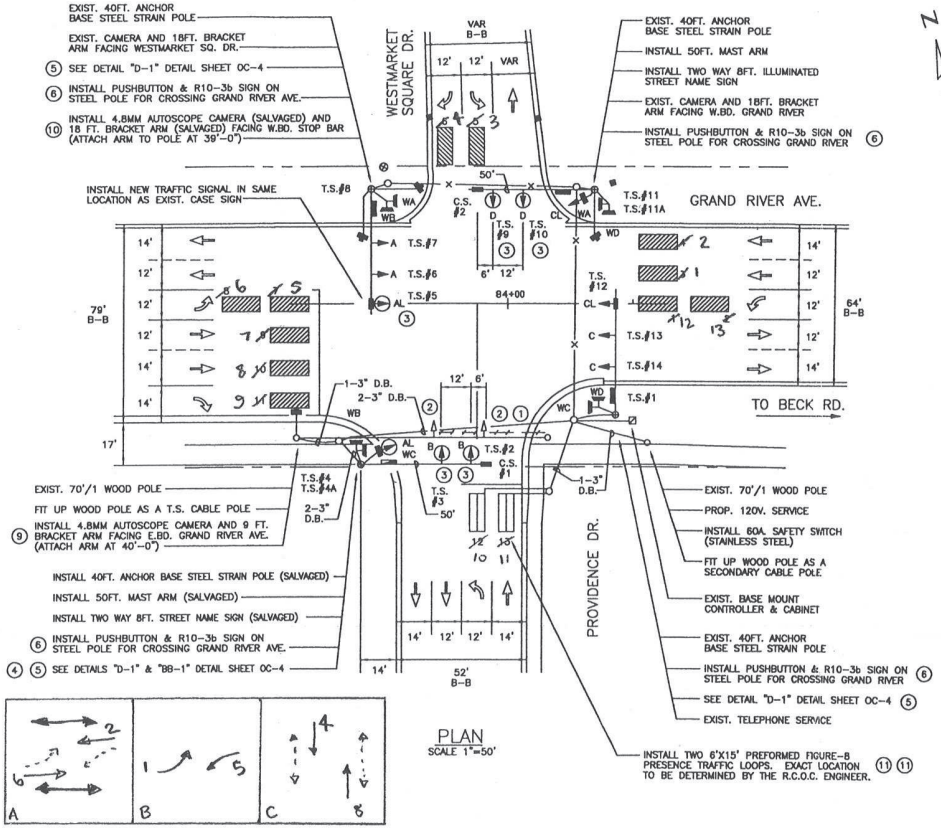
D Connector Form for Mod 52 w/Loops

Intersection Name: _____

County No: 1099

Date: 2/9/2016

Detector # on Print	Detector Description	D-Conn Term #	D-Conn Description	Phase
		1	Det. 9	
		2	Det. 10	
		3	Det. 11	
		4	Det. 12	
		5	Det. 13	
		6	Det. 14	
		7	Det. 15	
		8	Det. 16	
		9	Det. 17	
10	NB Providence LT	10	Det. 18	8
11	NB Providence	11	Det. 19	8
		12	Det. 20	
		13	Det. 21	
		14	Det. 22	
		15	Det. 23	
		16	Det. 24	
		Backpanel		
		Backpanel		
		Backpanel		
		Backpanel		
		Backpanel		
		Backpanel		
		Backpanel		
		Backpanel		



LIST OF MATERIALS			
NO.	ITEM	QUANTITIES	CODE NO.
(1)	Span Wire, Rem	1 Ea	8200141
(2)	TS, Span Wire Mtd, Rem	2 Ea	8200182
(3)	TS, One Way Mast Arm Mtd (LED)	5 Ea	8207050
(4)	TS, One Way Bracket Arm Mtd (LED)	1 Ea	8207050
(5)	TS, Pedestrian, Two Way Bracket Arm Mtd (LED)	3 Ea	8207050
(6)	Pushbutton & Sign	4 Ea	8200121
(7)	Case Sign, One Way, 12 inch by 27 inch	2 Ea	8200005
(8)	Case Sign, Two Way, 24 inch by 30 inch	2 Ea	8200007
(9)	Autoscope Camera (2004)	1 Ea	8207050
(10)	Autoscope Camera (2004), Salv	1 Ea	8207050
(11)	Traffic Loop, Presence, Preformed	2 Ea	8207050
	Conduit, DB, 1, 3 Inch	75 Ft	8190029
	Conduit, DB, 2, 3 inch	110 Ft	8190032
	Hh, Round	2 Ea	8190260
	Strain Pole, Steel, Anchor Base, 40 feet, Salv	1 Ea	8200160
	Strain Pole, Steel, Anchor Fdn	1 Ea	8200165
	Two Way Illuminated Street Name Sign, 8 feet	1 Ea	8207050
	Two Way Illuminated Street Name Sign, 8 feet, Salv	1 Ea	8207050
	Mast Arm	1 Ea	8100280
	Mast Arm, Salv	1 Ea	8207050
	Bracket Arm, Clamp On, 9 feet	1 Ea	8207050
	Bracket Arm, Clamp On, 18 feet, Salv	1 Ea	8207050
	Wood Pole, Fit Up, Sec Cable Pole	1 Ea	8190495
	Wood Pole, Fit Up, TS Cable Pole	1 Ea	8190501
	Safety Switch	1 Ea	8200130
	Cable, Sec, 600V, 1, 2/C#4 w/ 1-#6 Ground	75 Ft	8197001

ALL TRAFFIC AND PEDESTRIAN SIGNALS SHALL BE REWIRED TO CORRESPOND TO THE PHASING SHOWN ON THIS PLAN. PAYMENT FOR THIS WORK SHALL BE INCLUDED IN THE INSTALLATION OF TRAFFIC SIGNALS AND SHALL NOT BE PAID FOR SEPARATELY.

ALL MAST ARMS, MAST ARM STANDARDS, DECORATIVE TOPS, STREET NAME SIGNS, MOUNTING HARDWARE, CONTROLLER CABINETS AND STREET LIGHT ASSEMBLIES SHALL BE PAINTED TO MATCH VALMONT'S DARK GREEN COLOR #923.

ALL NEW MAST ARMS INSTALLED ON THIS SHEET SHALL MEET AASHTO CATEGORY 3 STANDARDS AS DETERMINED BY AASHTO AND R.C.O.C.

PROP. 120V. SERVICE BY DETROIT EDISON.
CONTACT MR. CARL FORD (248) 486-6272.
EST. COST TO CONTRACTOR IS $1000.00

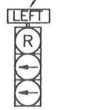
TIME OF REMOVAL OF TEMPORARY T.S. & INSTALLATION OF FINAL T.S. SHALL BE COORDINATED WITH THE ENGINEER.

CASE SIGN LEGEND



FACING SOUTH (C.S.#1) NORTH (C.S.#2)
FACING NORTH (C.S.#1) SOUTH (C.S.#2)
INSTALL TWO-WAY, 24"X30" ILLUMINATED CASE SIGN (8) (8)

(7) (7) INSTALL ONE-WAY, 12"X27" ILLUMINATED CASE SIGN



FACING LEFT TURN LANE (T.S.#4A) EAST (T.S.#5)

ROAD COMMISSION FOR OAKLAND COUNTY FORCE ACCOUNT CHARGES (ESTIMATED) WILL BE $9800.00. CONTACT R.C.O.C. FOR DETAILED COSTS.

LOAD	AMPS	WATTS
SIGNALS	0	0
CASE SIGNS	0	0

DATE	REVISIONS
5-23-05	FINAL STAMPING SET

ROAD COMMISSION FOR OAKLAND COUNTY
TRAFFIC-SAFETY DEPARTMENT

GRAND RIVER & WESTMARKET SQUARE
CO 1099 (WEST OF BECK RD.) ATS

MANSELL ASSOCIATES INC.
ENGINEERING CONSULTANTS
33008 Grand River
Farmington, MI. 48336
(248) 473-7070

HRC
Hubbell, Roth & Clark, Inc.
CONSULTING CIVIL ENGINEERS
PHONE: (248) 338 8241
FAX (Int. Fixed) (248) 454-8313
FAX (Dist. Fixed) (248) 338 2080
WEB SITE http://www.hrc-engr.com
555 HULET DRIVE
BLOOMFIELD HILLS, MICH.
P.O. BOX 824
48303-0824

DATE	DRAWN BY	APPROVED	JOB NO.	PROJECT NAME	SHEET NO.
4-14-05	AWS		M4088A	T.S. MODERNIZATION	4 OF 7

OAKLAND COUNTY ROAD COMMISSION
TRAFFIC - SAFETY DEPARTMENT
SIGNAL WORK ORDER

LOCATION: Beck & Providence south Dr. DATE: 11-28-18

CITY/TOWNSHIP: NOVI BY: T CREECH

COUNTY#: 1282 STATE#: — CHARGES: 78 01282 0

PLEASE PERFORM THE FOLLOWING:

_____ ELECTRICAL DEVICE: ____ INSTALL _____ MODERNIZE _____ MAINTENANCE

ROAD COMMISSION OF OAKLAND COUNTY

_____ UNDERGROUND: _____

_____ EDISON OK: _____ YES _____ NO JOB#: _____

DEC 11 2018

_____ COORDINATE W/DISTRICT 7: _____

TRAFFIC OPERATIONS

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.....																			

X CHANGE BREAKOUT OR EPROM: REV 3

_____ CHANGE HOURS OF OPERATION:

OLD: _____

NEW: _____

_____ REPROGRAM TBC

_____ INSTALL INTERCONNECT: _____ TBC _____ MINITROL _____ TONE

_____ MBT OK: _____ YES _____ NO

_____ NO CHANGE - RECORD CORRECTION

X OTHER: Smart Monitor included in paperwork.

APPROVED BY: _____ DATE: 11/28/18

DATE INSTALLED: 12/6/18

INSTALLED BY: D-8

INTERSECTION :- 1282 BECK & PROVIDENCE SOUTH DR / CENTRAL PARK BLVD
DESCRIPTION PROMS :- X00020R / F4808
CONTROLLER TYPE :- STANDARD PERSONALITY CONTROLLER
SOFTWARE :- MOD 52 SCATS w/FYA

PHYSICAL INPUTS :-

1. PROVIDENCE SOUTH DR LT (LK)
2. PROVIDENCE SOUTH DR THRU/RT (LK)
3. NB BECK LT (NL)
4. NB BECK LT ADV (NL)
5. NB BECK C (LK)
6. NB BECK RT (LK)
7. CENTRAL PARK BLVD LT (LK)
8. CENTRAL PARK BLVD RT (LK)
9. SB BECK LT (NL)
10. SB BECK LT ADV (NL)
11. SB BECK C (LK)
12. SB BECK RT (LK)

NOTE: ALL DETECTORS ARE SOLO CAMERAS.

24. Opticom 1 (Backpanel VD8 (D9))

PED 2: BECK PED ELEG (WA) WFG
PED 4: PROVIDENCE SOUTH DR PED NLEG (WB) P.B.
PED 6: BECK PED WLEG (WC) WFG
PED 8: PROVIDENCE SOUTH DR PED SLEG (WD) P.B.

APPROACHES :-

A APPR 1 : NB BECK	A APPR 2 : SB BECK
B APPR 1 : CENTRAL PARK BLVD	B APPR 2 : PROVIDENCE SOUTH DR
C APPR 1 : NB BECK LT	C APPR 2 : SB BECK LT
C APPR 3 : SB BECK	C APPR 4 : NB BECK

FLEXIDATA:-

SEQUENCE	A,B,C	A,B,C
AUTO REL		
R- REL	A	A
R+ REL	B	B
Q- REL	C	C
Q+ REL		
LOOKAHEAD		

PEDESTRIANS:-

1. P1
2. P2 (BECK ELEG)
3. P3
4. P4 (PROVIDENCE SOUTH DR NLEG)
5. P5
6. P6 (BECK WLEG)
7. P7
8. P8 (PROVIDENCE SOUTH DR SLEG)

SPECIAL FEATURES :-

Controller Software must be 2070/M52 S15 or later (VC=5)
The personality revision number is currently 3 (=C).

Ped outputs mapped to phases as follows: ped 2 = 18, ped 4 = 20, ped 6 = 22 and ped 8 = 24. VC5 software reports them as mapped.

Left turns are permissive to NCHRP flshing yellow recommendation. Signal groups 9 and 11 provide flashing yellow (green aspect), yellow and red, i.e. upper aspects of 4 section turn display. Signal groups 1 and 5 provide the green (bottom) aspect, i.e. turn arrow.

A STAGE HAS A PERMANENT DEMAND
DEMAND FOR STAGES B AND C IN FLEXI AND ISOLATED. SET XSF8 TO DISABLE.
Opticom 1 calls A Stage.

Signal Group 1 and 5 non-locked detectors will not call stage C directly. If XSF7 is set signal Group 1 & 5 detectors calls stage B and then stage C. Auto walk call - in SCATS use XSF3 (on flexi sheet, XL=4) - if set ped 2 and 6 will always be called (means constant cycle to B stage to service walks).

IN MASTERLINK AND FLEXILINK:
Z- ON CAUSES C1 TURN TO APPEAR AND HOLD IN C STAGE
Z+ ON CAUSES C2 TURN TO APPEAR AND HOLD IN C STAGE
Z- & Z+ ON CAUSES BOTH TURNS TO APPEAR AND HOLD IN C

Flash rate for FYA is set with Timesettings 28 and 29.
TSM28=0.6 (on rate), TSM29=0.4 (off rate)

Backpanel for size P44-16 cabinet:

Load Switch 1:	SB BECK LT (G: green arrow)	CL	-
Load Switch 2:	NB BECK	A	FLA
Load Switch 4:	CENTRAL PARK BLVD	B	FLR
Load Switch 5:	NB BECK LT (G: green arrow)	AL	-
Load Switch 6:	SB BECK	C	FLA
Load Switch 8:	PROVIDENCE SOUTH DR	D	FLR
Load Switch 9:	SB BECK LT	CL	FLA
(OLA)	G: flashing yellow arrow, Y: yellow arrow, R: red arrow		
Load Switch 11:	NB BECK LT	AL	FLA
(OLC)	G: flashing yellow arrow, Y: yellow arrow, R: red arrow		
Load Switch 13:	BECK PED ELEG	WA	
Load Switch 14:	PROVIDENCE SOUTH DR PED NLEG	WB	
Load Switch 15:	BECK PED WLEG	WC	
Load Switch 16:	PROVIDENCE SOUTH DR PED SLEG	WD	

Jumpers:
A28-A29,A34-A35,A37-A38,A43-A44,B28-B29,B34-B35,B37-B38,B43-B44,B52-B53,
B55-B56,B58-B59,B61-B62,C56-PB9,D22-D26,D56-PB9,10R-PB10,12R-PB12.

MMU: (MENU : SET/VIEW CONFIG)

Dual Indication Enable:	R+G: Channel 2,4,6,8,9,11 R+Y: Channel 2,4,6,8,9,11 G+Y: Channel 1,2,4,5,6,8,9,11
Red Fail Enable:	Enable: Channel 2,4,6,8,9,11
Y & R Clearance Disable:	Channel 2,4,6,8,9,11 Enabled
Flashing Yellow Arrow:	Enable: Channel Pair 1-9, 5-11
Unit Options:	All OFF except: Recurrent pulse Program Memory Card LED Guard
Program Card:	Compatible Channels: 1-5, 1-6, 1-9, 1-11, 2-5, 2-6, 2-9, 2-11, 4-8, 5-9, 5-11, 6-9, 6-11, 9-11. Min Flash Time: 4+2+1 Min Yellow Change Disable: None Voltage Monitor Latch: NONE

```
********************************* CHECKSUMS
* CONTROLLER INFORMATION SHEET * TIMES C3 / 303
*     FOR SITE NO.   1282      * PERS  D4 / 324
*         T CREECH             * TOTAL 17 / 027
*    DATE :  28-NOV-2018       *
*********************************
```

FLEXILINK PLAN DATA

Intersection # 1282 **State #** _____ **Date:** 11/28/18 **Prepared By:** T Creech

Intersection: Beck & Providence South Dr / Central Park Blvd **City:** Novi

Hours of Operation: 7 Days: 6am - 11pm **Approved By:** Rachel Jones

Hours of Flashing: 7Days: 11pm - 6am

		PL0	PL1	PL2	PL3	PL4	PL5	PL6	PL7	PL8
0	CL		100	120	120					
1	A		0	0	0					
2	B		68	80	80					
3	C		86	104	104					
4	D									
5	E									
6	F									
7	G									
8	R-									
9	R+									
10	Of (Y-)		82	41	71					
11	Y+	C								
12	Z-									
13	Z+									
14	Q-									
15	Q+									
16	XH									
17	XL		4	4	4					

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	Beck	10.0	60.0		4.3	1.7	3.0	1.0	6.0
B	Providence South Dr	7.0	20.0		3.5	2.5	3.0	1.0	6.0
C	Beck LT	4.0	15.0		4.3	1.7	3.0	1.0	6.0
D									
E									
F									
G									

	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	23:00	0
SC6	14	0:00	0
SC7	13	6:00	1
SC8			
SC9			
SC10			

Pedestrian Crossing Times

Direction	Walk	CL 1	CL 2
Beck Ped Eleg (Ped 2)	7.0	4.0	4.3
Providence Ped Nleg (Ped 4)	7.0	16.0	3.5
Beck Ped Wleg (Ped 6)	7.0	4.0	4.3
Providence Ped Sleg (Ped 8)	7.0	14.0	3.5

Flash rate Timesettings TSM28=0.6 (on rate); TSM29=0.4 (off rate)
XL value = 4 (XSF 3 is enabled)

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

Autoscope SOLO

Mod 50
CO# 1282

Mini-Hub II Detector Port Master
Front Panel Input/Output Pin Assignment

The Mini-Hub II has inputs and outputs available through the front panel **Input/ Output** connector and through the back edge connector. The pin assignments for the Mini-Hub II front connector are listed in the following table. Edge connector pins are identified by **NUMBER** on the component (front) side of the board. Edge connector pins are identified by **LETTER** on the backside of board.

Cam# ###	Mini-Hub II conn.	Edge conn.	Front Harness	Description	D-Conn. Term #	D- Conn. Detector Descript.	On Print Detector number	Phase
1	Output 1 LED	F	1	EB Providence South Dr LT	1	Det. 9	1	8
1	Output 2 LED	W	14	EB Providence South Dr	2	Det. 10	2	8
2	Output 3 LED	S	2	NB Beck LT	3	Det. 11	3	5
2	Output 4 LED	Y	15	NB Beck LT ADV	4	Det. 12	4	5
2	Output 5 LED	(JP1)4	3	NB Beck	5	Det. 13	5	2
2	Output 6 LED	(JP7)5	16	NB Beck RT	6	Det. 14	6	2
3	Output 7 LED	(JP2)8	4	WB Central Park Blvd LT	7	Det. 15	7	4
3	Output 8 LED	(JP8)9	17	WB Central Park Blvd	8	Det. 16	8	4
4	Output 9 LED	(JP3)13	5	SB Beck LT	9	Det. 17	9	1
4	Output 10 LED	(JP9)14	18	SB Beck LT ADV	10	Det. 18	10	1
4	Output 11 LED	(JP4)17	6	SB Beck	11	Det. 19	11	6
4	Output 12 LED	(JP10)18	19	SB Beck RT	12	Det. 20	12	6
	Output 13 LED		7					
	Output 14 LED		20					
	Output 15 LED		8					
	Output 16 LED		21					
	Input 1 LED	(JP5)1	9	LS 1-9 Red C39				
	Input 2 LED	(JP11)2	22	LS 2 Red C30				
	Input 3 LED	(JP6)3	10					
	Input 4 LED	(JP12)10	23	LS 4 Red C36				
	Input 5 LED		11	LS 5-11 Red D39				
	Input 6 LED		24	LS 6 Red D30				
	Input 7 LED		12					
	Input 8 LED	(withJP14*)	25	LS 8 Red D36				

*Input 8 with JP14 inserted becomes 24VDC through Input/ Output Connector on front panel.
Logic Ground is the GREY (pin 13) wire form Input/ Output connector on front panel.

Chapter 5
Connecting Solo MVP Power and Communications Cables

Usually, the Solo cable (the "pigtail" cable from the Solo MVP) is spliced to a Branch Cable, either in a junction box or in the hand-hole at the pole base. The Branch cable runs from the splice point to the cabinet, and terminates to the ACIP. Use the chart below (copy the blank table provided in Appendix A) to record which pairs of the Solo cable are spliced to the Branch cable pairs. For Branch cable lengths of 300 ft or less, a separate cable to power the Solo Pro is not normally necessary.

Be sure to use splicing methods and materials appropriate for low voltage communications splicing. When splicing is completed, properly seal the splice.

When the branch cables are brought into the cabinet, label each cable, starting with cable 1 from the Solo MVP viewing Phases 2 and 5, and working clockwise around the intersection, labeling cables 2, 3, and 4.

Terminate the cables to the ACIP in the same order. Taking care to assign the Sensor numbers (in the Autoscope Properties Editor) in the same order as the cables are terminated will facilitate easier maintenance and troubleshooting.

An example is shown in the table below. In this example, a separate power cable is shown. In installations where a 6-pair branch cable is used, power and communications are usually combined in one cable.

A blank copy of this table is provided for duplication in Appendix A.

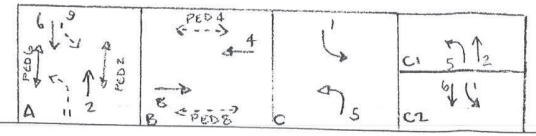
DRAIN WIRE of Solo MVP to WHT of GRN/WHI pair
then at CABINET WHI to Shield of BRANCH CABLE
to Ground Lug
INTERFACE PANEL.

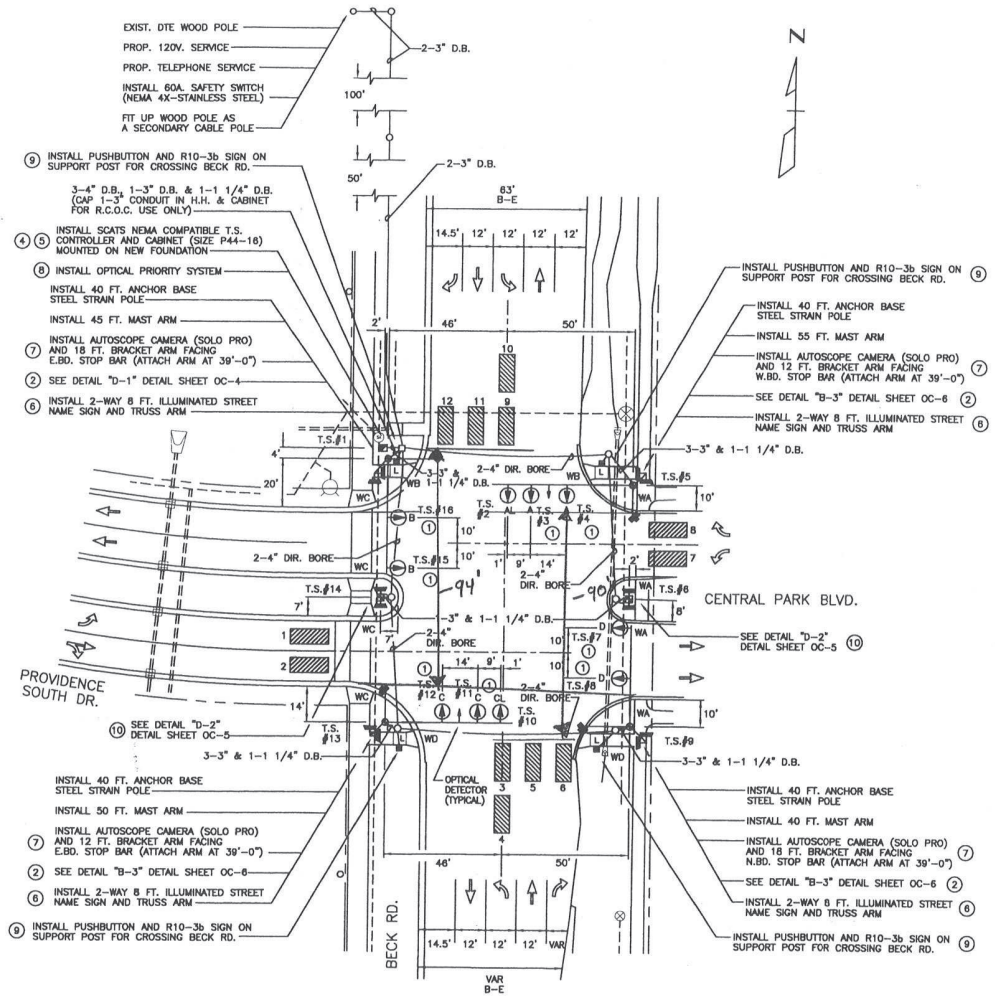
Appendix A
Solo System-Wide Interconnections

Duplicate the following table to keep track of all Solo MVP connections:

Solo MVP ____ (write in sensor number)			Branch Power Cable (write in wire color)	Branch Communications Cable (write in wire colors)			Communications Interface Panel	
PIN	PAIR COLOR	WIRE COLOR	WIRE COLOR	PAIR	PAIR COLOR	WIRE COLOR	SIGNAL	TERMINAL
A	BRN/BLK	* BRN *	BRN		BRN/WHI	BRN	24V PWR	1
B	BRN/BLK	* BLK *	WHI		BRN/WHI	WHI	24V RTN	2
N	----	*GRN/YEL*	GRN		GRN/WHI	GRN	EARTH GND	3
P	BLU/BLK	BLU	BLU	1	BLU/WHI	BLU	SUP RX+	4
U	BLU/BLK	BLK	WHT	1	BLU/WH	WHI	SUP RX-	5
D	RED/BLK	RED	RED	2	RED/BLU	RED	SUP TX+	6
R	RED/BLK	BLK	BLU	2	RED/BLU	BLU	SUP TX-	7
F	YEL/BLK	YEL	ORG	3	ORG/WHT	ORG	DET+	8
E	YEL/BLK	BLK	WHT	3	ORG/WHT	WHT	DET-	9
J	WHI/BLK	WHI	GREY	4	GREY/WHI	GREY	VIDEO+	10
H	WHI/BLK	BLK	WHT	4	GREY/WHI	WHI	VIDEO-	11

* IS SEPERATE POWER FEED BRN — BLK
BLK — WHT





PLAN
SCALE 1"=20'

APPROACH SPEEDS:
N & S BD. ~~40~~ 45 MPH

N



FACING
SOUTH (T.S.#2)
NORTH (T.S.#10)
INSTALL 1-WAY, 4-SECTION LEFT TURN T.S.

NOTES:
1. ALL MAST ARM STANDARD FOUNDATION SURFACES SHALL BE LEVEL, IN ORDER TO ACCEPT THE BASE ASSEMBLY.
2. ALL PEDESTRIAN SIGNALS SHALL BE COUNTDOWN TYPE ON THIS PROJECT.

PUSHBUTTON SUPPORT NOTES:
1. USE 1-1 1/4" D.B. CONDUIT FROM SUPPORT POST TO H.H.
2. EXACT LOCATION OF SUPPORT POST SHALL BE DETERMINED BY THE ENGINEER.
3. SHALL MEET ADA GUIDELINES.

CONTACT MR.TIM GARDNER, D.E. CO.
(734) 397-4307 PRIOR TO INSTALLATION OF TRAFFIC SIGNALS.
EST. COST TO CONTRACTOR IS $500.00

ROAD COMMISSION FOR OAKLAND COUNTY FORCE ACCOUNT CHARGES (ESTIMATED) WILL BE $40,500.00.
CONTACT R.C.O.C. FOR DETAILED COSTS.

NO.	ITEM	QUANTITIES
(1)	TS, One Way Mast Arm Mtd (LED)	8 Ea
(2)	TS, Pedestrian, Two Way Bracket Arm Mtd (LED) Countdown	4 Ea
(3)	TS, One Way Mast Arm Mtd, Four Sect (LED)	2 Ea
* (4)	Controller and Cabinet, Solid State Actuated	1 Ea
(5)	Controller and Cabinet, Solid State Actuated, Delivered	1 Ea
* (6)	Illuminated Street Name Sign, Two Way, 8 feet (LED)	4 Ea
(7)	Autoscope Camera (Solo Pro)	4 Ea
(8)	Optical Priority Control System	1 Ea
(9)	Pushbutton and Sign, Modified	4 Ea
(10)	TS, Pedestrian, Two Way Pedestal Mtd (LED) Countdown	2 Ea
	Pushbutton Support Post	4 Ea
	Conduit, DB, 1, 1 1/4 Inch	85 Ft
	Conduit, DB, 1, 3 Inch	305 Ft
	Conduit, DB, 2, 3 Inch	30 Ft
	Conduit, DB, 3, 4 Inch	5 Ft
	Hh, Round	7 Ea
	Hh, Square	1 Ea
	Conduit, Directional Bore, 2, 4 Inch	210 Ft
	Controller Fdn, Base Mount	1 Ea
*	Pedestal, Alum	2 Ea
	Pedestal, Fdn	2 Ea
* **	Mast Arm Standard, 40 feet	4 Ea
	Mast Arm Standard Fdn	4 Ea
*	Mast Arm	4 Ea
*	Bracket Arm, Clamp On, 12 feet	2 Ea
*	Bracket Arm, Clamp On, 18 feet	2 Ea
	Safety Switch	1 Ea
	Wood Pole, Fit Up, Sec Cable Pole	1 Ea
	Cable, Sec, 600V, 1, 2/C#4 w/#6 Ground	350 Ft

* SEE GENERAL INFORMATION SHEET
** PAY ITEM INCLUDES DECORATIVE BASE AND FINIAL

LOAD	AMPS	WATTS
SIGNALS	0	0
CASE SIGNS	0	0

12-6-07 FINAL STAMPING
DATE REVISIONS

ROAD COMMISSION
TRAFFIC-SAFETY DEPARTMENT

BECK & PROVIDENCE SOUTH DR.
CO 1282 ATS

MANSELL ASSOCIATES INC.
ENGINEERING CONSULTANTS
33900 Grand River
Farmington, MI. 48335
(248) 473-7070

HRC
HUBBELL, ROTH & CLARK, INC
Consulting Engineers
PHONE: (248) 454-6000
FAX (Tel Prov): (810) 454-8114
FAX (Tel Prov): (810) 555-5555
555 HULET DRIVE P.O. BOX 824
BLOOMFIELD HILLS, MICH. 48303-0824
WEB SITE: http://www.hrc-engr.com

DATE	DRAWN BY	APPROVED	JOB NO.	PROJECT NAME	SHEET NO.
12/5/07	AWS		M4284	PROVIDENCE HOSPITAL	3

Scale 1" = 40' x 1.25
95' @ 45mph ⇒ 4.3/1.7

SEMCOG | Southeast Michigan Council of Governments

Community Profiles

YOU ARE VIEWING DATA FOR:

City of Novi

45175 W 10 Mile Rd
Novi, MI 48375-3024
http://www.cityofnovi.org

SEMCOG MEMBER

Census 2020 Population: 66,243
Area: 31.2 square miles

VIEW COMMUNITY EXPLORER MAP VIEW 2020 CENSUS MAP

Population and Households

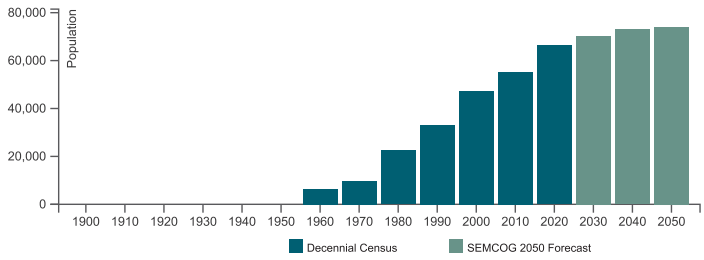
Link to American Community Survey (ACS) Profiles: **Select a Year** 2019-2023 **Social** | **Demographic**

Population and Household Estimates for Southeast Michigan, 2024

Historic Population and Employment by Minor Civil Division, Southeast Michigan

Population Forecast

POPULATION:



Note for City of Novi : Incorporated as of the 1970 Census from Village of Novi. Population numbers prior to 1970 are of the village. The Village of Novi was incorporated in 1958 from the majority of Novi Township. Population numbers not available before 1960 as area was part of Novi Township.

Population and Households

Population and Households	Census 2020	Census 2010	Change 2010-2020	Pct Change 2010-2020	SEMCOG Jul 2023	SEMCOG 2050
Total Population	66,243	55,224	11,019	20.0%	68,080	74,081
Group Quarters Population	332	360	-28	-7.8%	604	763
Household Population	65,911	54,864	11,047	20.1%	67,476	73,318
Housing Units	27,863	24,226	3,637	15.0%	28,613	-
Households (Occupied Units)	26,458	22,258	4,200	18.9%	27,710	29,484
Residential Vacancy Rate	5.0%	8.1%	-3.1%	-	3.2%	-
Average Household Size	2.49	2.46	0.03	-	2.44	2.49

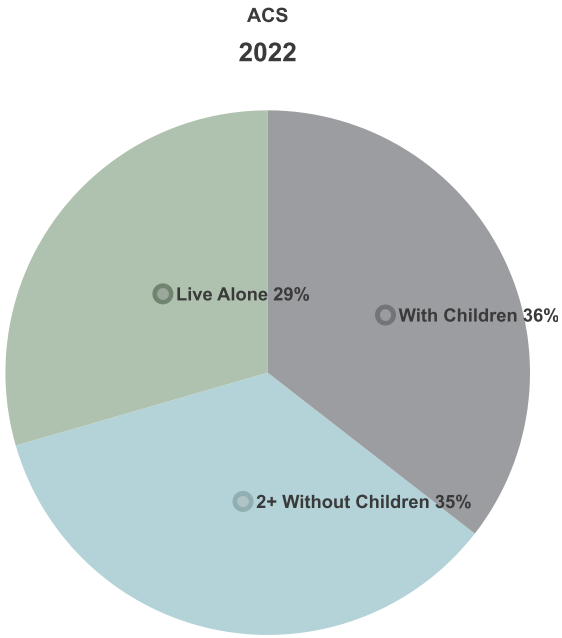
Source: **U.S. Census Bureau**, **2018-2022 American Community Survey 5-Year Estimates**, and **SEMCOG 2050 Regional Development Forecast**

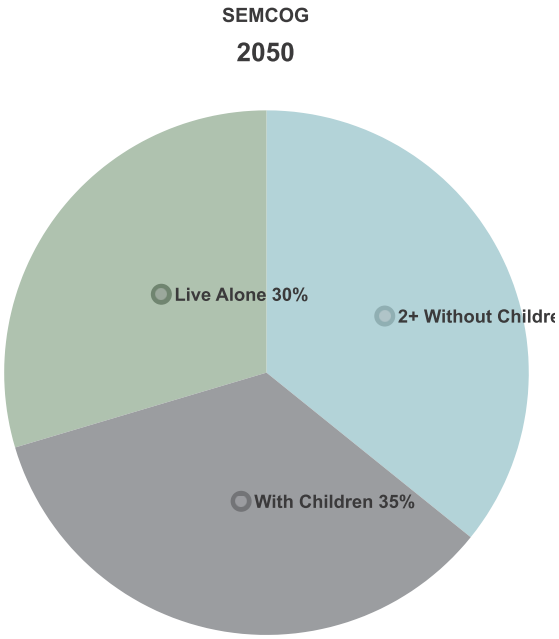
Components of Population Change

Components of Population Change	2010-2020 Avg.	2020-2022 Avg.
Natural Increase (Births - Deaths)	186	39
Births	622	594
Deaths	436	555
Net Migration (Movement In - Movement Out)	916	131
Population Change (Natural Increase + Net Migration)	1,102	170

Source: **Michigan Department of Community Health Vital Statistics**, **U.S. Census Bureau**, and SEMCOG

Household Types





SEMCOG | Southeast Michigan Council of Governments

Community Profiles

YOU ARE VIEWING DATA FOR:

City of Novi

45175 W 10 Mile Rd
Novi, MI 48375-3024
http://www.cityofnovi.org

SEMCOG MEMBER

Census 2020 Population: 66,243
Area: 31.2 square miles

VIEW COMMUNITY EXPLORER MAP VIEW 2020 CENSUS MAP

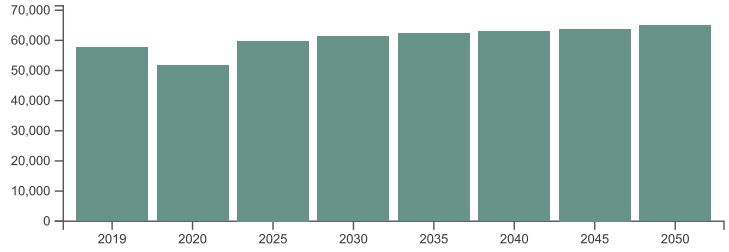
Economy & Jobs

Link to American Community Survey (ACS) Profiles: **Select a Year** 2019-2023 **Economic**

Historic Population and Employment by Minor Civil Division, Southeast Michigan

Forecasted Jobs

NUMBER OF J
64,985



Note: The base year for the employment forecast is 2019, as 2020 employment was artificially low due to the COVID recession.

Source: **SEMCOG 2050 Regional Development Forecast**

Forecasted Jobs by Industry Sector

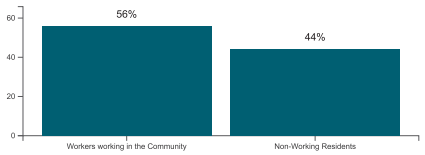
Forecasted Jobs By Industry Sector	2019	2020	2025	2030	2035	2040	2045	2050	Change 2019-2050	Pct Change 2019-2050
Natural Resources, Mining, & Construction	2,219	2,200	3,029	3,015	2,991	2,906	2,831	2,840	621	28%
Manufacturing	4,670	4,239	4,627	4,575	4,344	4,101	3,935	3,913	-757	-16.2%
Wholesale Trade	3,118	2,929	3,139	3,197	3,288	3,266	3,202	3,138	20	0.6%
Retail Trade	7,892	6,944	7,207	6,823	6,338	6,029	5,777	5,623	-2,269	-28.8%
Transportation, Warehousing, & Utilities	1,418	1,410	1,667	1,701	1,747	1,751	1,774	1,783	365	25.7%
Information & Financial Activities	6,576	6,145	7,173	7,806	8,290	8,615	8,922	9,254	2,678	40.7%
Professional and Technical Services & Corporate HQ	8,452	7,940	9,299	9,800	10,237	10,599	11,019	11,441	2,989	35.4%
Administrative, Support, & Waste Services	3,477	3,026	3,421	3,565	3,729	3,854	3,960	4,107	630	18.1%
Education Services	2,212	2,060	2,213	2,286	2,347	2,362	2,379	2,398	186	8.4%
Healthcare Services	7,679	7,095	7,941	8,216	8,579	8,969	9,388	9,839	2,160	28.1%
Leisure & Hospitality	7,103	5,217	7,105	7,275	7,317	7,335	7,346	7,405	302	4.3%
Other Services	2,137	1,851	2,247	2,373	2,429	2,452	2,499	2,513	376	17.6%
Public Administration	719	682	718	732	736	732	732	731	12	1.7%
Total Employment Numbers	57,672	51,738	59,786	61,364	62,372	62,971	63,764	64,985	7,313	12.7%

Note: The base year for the employment forecast is 2019, as 2020 employment was artificially low due to the COVID recession.

Source: **SEMCOG 2050 Regional Development Forecast**

Daytime Population

Daytime Population	ACS 2022
Workers working in the Community	36,078
Non-Working Residents	28,531
Age 15 and under	12,980
Not in labor force	14,353
Unemployed	1,198
Daytime Population	64,609



Source: **2018-2022 American Community Survey 5-Year Estimates**. For additional information, visit SEMCOG's **Interactive Commuting Patterns Map**

Note: The number of residents attending school outside Southeast Michigan is not available. Likewise, the number of students commuting into Southeast Michigan to attend school is also not known.

Household Income

Income (in 2022 dollars)	ACS 2010	ACS 2022	Change 2010-2022	Percent Change 2010-2022
Median Household Income	$107,571	$110,588	$3,017	2.8%
Per Capita Income	$56,969	$60,396	$3,427	6%

Source: **U.S. Census Bureau**, **2006-2010 and 2018-2022 American Community Survey 5-Year Estimates**

Level of Service Criteria for Stop Sign Controlled Intersections

The level of service criteria are given in Exhibit 20-2. As used here, control delay is defined as the total elapsed time from the time a vehicle stops at the end of the queue until the vehicle departs from the stop line; this time includes the time required for the vehicle to travel from the last-in-queue position to the first-in-queue position, including deceleration of vehicles from free-flow speed to the speed of vehicles in queue.

The average total delay for any particular controlled movement is a function three (capacity) factors: distribution of gaps in the major-street traffic stream, driver judgment in selecting gaps through which to execute the desired maneuvers, and the follow-up headways required by each driver in a queue.

The basic capacity model assumes gaps in the conflicting movements are randomly distributed. When traffic signals are present on the major street, upstream of the subject intersection, flows may not be random but will likely have some platoon structure. Although the procedures in this chapter provide a method for approximating the operations of a TWSC intersection with an upstream signal, the operations of such an intersection is arguably best handled by including it in a complete simulation

Exhibit 20-2. Level of Service Criteria for Stop-Controlled Intersections (Motor Vehciles)

LEVEL OF SERVICE	AVERAGE CONTROL DELAY (sec/veh)
A	$\leq$ 10
B	> 10 and $\leq$ 15
C	> 15 and $\leq$ 25
D	> 25 and $\leq$ 35
E	> 35 and $\leq$ 50
F	> 50

Average total delay less than 10 sec/veh is defined as Level of Service (LOS) A. Follow-up times of less than 5 sec have been measured when there is no conflicting traffic for a minor street movement, so control delays of less than 10 sec/veh are appropriate for low flow conditions. A total delay of 50 sec/veh is assumed as the break point between LOS E and F.

The LOS criteria for TWSC intersections differ somewhat from the criteria used in Chapter 19 for signalized intersections, primarily because user perceptions differ among transportation facility types. The expectation is that a signalized intersection is designed to carry higher traffic volumes and will present greater delay than an unsignalized intersection. Additionally, several driver behavior considerations combine to make delays at signalized intersections less onerous than at unsignalized intersections. For example, drivers at signalized intersections are able to relax during the red interval, where drivers on the minor approaches to unsignalized intersections must remain attentive to the task of identifying acceptable gaps and vehicle conflicts. Also, there is often much more variability in the amount of delay experienced by individual drivers at unsignalized than signalized intersections. For these reasons, it is considered that the total delay threshold for any given level of service is less for an unsignalized intersection than for a signalized intersection.

LOS F exists when there are insufficient gaps of suitable size to allow a side street demand to cross safely through a major street traffic stream. This level of service is generally evident from extremely long total delays experienced by side street traffic and by queueing on the minor approaches. The method, however, is based on a constant critical gap size - that is, the critical gap remains constant, no matter how long the side street motorist waits. LOS F may also appear in the form of side street vehicles' selecting smaller-than-usual gaps. In such cases, safety may be a problem and some disruption to the major traffic stream may result. It is important to note that LOS F may not always result in long queues but may result in adjustments to normal gap acceptance behavior. The latter is more difficult to observe on the field than queueing, which is more obvious.

Source: Highway Capacity Manual, 6th Edition. Transportation Research Board, National Research Council

Level of Service for Signalized Intersections

Level of service for signalized intersections is defined in terms of delay, which is a measure of driver discomfort and frustration, fuel consumption, and lost travel time. LOS can be characterized for the entire intersection, each intersection approach, and each lane group. Specifically, level-of-service (LOS) criteria are stated in terms of the average stopped delay per vehicle. The criteria are given in Exhibit 19-8. Delay may be measured in the field or estimated using procedures presented later in this chapter. Delay is a complex measure and is dependent on a number of variables, including the quality of progression, the cycle length, the green ratio, and the v/c ratio for the lane group in question.

LOS A describes operations with a control delay of 10 s/veh or less. This level is typically assigned when the volume-to-capacity ratio is low and either progression is extremely favorable or the cycle length is very short. If LOS A is the result of favorable progression, most vehicles arrive during a green indication and travel through the intersection without stopping.

LOS B describes operations with control delay between 10 and 20 s/veh. This level is typically assigned when the volume-to-capacity ratio is low and either progression is highly favorable or the cycle length is short. More vehicles stop than with LOS A.

Exhibit 19.8. Level-of-Service Criteria for Signalized Intersections (Motorized Vehicles)

LEVEL OF SERVICE	STOPPED DELAY PER VEHICLE (SEC)
A	≤10.0
B	> 10.0 and ≤20.0
C	> 20.0 and ≤ 35.0
D	> 35.0 and ≤ 55.0
E	> 55.0 and ≤ 80.0
F	>80.0

1. If the v/c ratio for a lane group exceeds 1.0, a LOS F is assigned to the individual lane group. LOS for approach-based and intersection-wide assessments are determined solely by the control delay.

LOS C describes operations with control delay between 20 and 35 s/veh. This level is typically assigned when progression is favorable or the cycle length is moderate. Individual *cycle failures* (i.e. one or more queued vehicles are not able to depart as a result of insufficient capacity during the cycle) may begin to appear at this level. The number if vehicle stopping is significant, although many vehicles still pass through the intersection without stopping.

LOS D describes operations with control delay between 35 and 55 s/veh. This level is typically assigned when when the volume-to-capacity ratio is high and either progression is ineffective or the cycle length is long. Many vehicles stop and individual cycle failures are noticeable.

LOS E describes operations with control delay between 55 and 80 s/veh. This level is typically assigned when when the volume-to-capacity ratio is high, progression is unfavorable, and the cycle length is long. Individual cycle failures are frequent.

LOS F describes operations with control delay exceeding 80 s/veh or a volume-to-capacity ratio greater than 1.0. This level, considered to be unacceptable to most drivers, often occurs with over-saturation, that is, when arrival flow rates exceed the capacity of the intersection. This level is typically assigned when the volume-to-capacity ratio is high, progression is very poor, and the cycle length is long. Most cycles fail to clear the queue.

Source: Highway Capacity Manual, 6th Edition. Transportation Research Board, National Research Council



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	321	484	46	39	237	151	46	595	83	256	350	532
Future Volume (veh/h)	321	484	46	39	237	151	46	595	83	256	350	532
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.98	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	1844	1844	1844	1875	1875	1875	1969	1969	1969	1875	1875	1875
Adj Flow Rate, veh/h	353	532	51	44	269	172	48	626	87	269	368	560
Peak Hour Factor	0.91	0.91	0.91	0.88	0.88	0.88	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	10	10	10	8	8	8	2	2	2	8	8	8
Cap, veh/h	380	1249	119	57	720	590	64	686	95	304	1227	890
Arrive On Green	0.22	0.39	0.39	0.03	0.20	0.20	0.03	0.21	0.21	0.17	0.34	0.34
Sat Flow, veh/h	1756	3230	309	1786	3563	1582	1875	3291	457	1786	3563	1585
Grp Volume(v), veh/h	353	288	295	44	269	172	48	355	358	269	368	560
Grp Sat Flow(s),veh/h/ln	1756	1752	1788	1786	1781	1582	1875	1870	1877	1786	1781	1585
Q Serve(g_s), s	25.6	15.7	15.8	3.2	8.5	10.0	3.3	24.1	24.2	19.1	9.8	31.2
Cycle Q Clear(g_c), s	25.6	15.7	15.8	3.2	8.5	10.0	3.3	24.1	24.2	19.1	9.8	31.2
Prop In Lane	1.00		0.17	1.00		1.00	1.00		0.24	1.00		1.00
Lane Grp Cap(c), veh/h	380	677	691	57	720	590	64	390	391	304	1227	890
V/C Ratio(X)	0.93	0.42	0.43	0.77	0.37	0.29	0.75	0.91	0.91	0.89	0.30	0.63
Avail Cap(c_a), veh/h	440	677	691	118	720	590	176	406	407	415	1266	907
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	0.99	0.99	0.99	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	50.0	29.3	29.3	62.5	44.7	28.7	62.3	50.3	50.3	52.7	31.2	19.4
Incr Delay (d2), s/veh	24.3	1.9	1.9	19.5	1.5	1.2	25.9	23.9	24.4	18.8	0.1	1.4
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(50%),veh/ln	13.4	6.7	6.9	1.7	3.8	4.0	2.0	13.8	13.9	9.9	4.2	11.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	74.3	31.2	31.2	82.0	46.2	30.0	88.2	74.2	74.7	71.5	31.3	20.8
LnGrp LOS	E	C	C	F	D	C	F	E	E	E	C	C
Approach Vol, veh/h		936			485			761			1197	
Approach Delay, s/veh		47.4			43.7			75.3			35.4	
Approach LOS		D			D			E			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.5	56.7	11.2	51.6	34.5	32.7	28.9	33.9
Change Period (Y+Rc), s	* 6.4	* 6.4	6.8	6.8	* 6.4	* 6.4	6.8	6.8
Max Green Setting (Gmax), s	* 8.6	* 37	12.2	46.2	* 33	* 13	30.2	28.2
Max Q Clear Time (g_c+I1), s	5.2	17.8	5.3	33.2	27.6	12.0	21.1	26.2
Green Ext Time (p_c), s	0.0	2.9	0.1	3.6	0.5	0.2	1.0	0.9

Intersection Summary	
HCM 7th Control Delay, s/veh	48.9
HCM 7th LOS	D

Notes

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	75	734	14	64	372	31	10	0	73	11	0	45
Future Volume (veh/h)	75	734	14	64	372	31	10	0	73	11	0	45
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		0.98	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	1922	1922	1922	1875	1875	1875	1938	1938	1938	1828	1828	1828
Adj Flow Rate, veh/h	87	853	16	74	433	36	14	0	99	14	0	58
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.74	0.74	0.74	0.78	0.78	0.78
Percent Heavy Veh, %	5	5	5	8	8	8	4	4	4	11	11	11
Cap, veh/h	859	2054	897	663	1874	155	129	0	144	95	0	136
Arrive On Green	0.19	0.56	0.56	0.19	0.56	0.56	0.09	0.00	0.09	0.09	0.00	0.09
Sat Flow, veh/h	1830	3652	1595	1786	3331	276	1324	0	1642	1204	0	1549
Grp Volume(v), veh/h	87	853	16	74	231	238	14	0	99	14	0	58
Grp Sat Flow(s),veh/h/ln	1830	1826	1595	1786	1781	1826	1324	0	1642	1204	0	1549
Q Serve(g_s), s	0.0	16.0	0.5	0.0	7.8	7.9	1.2	0.0	7.0	1.4	0.0	4.3
Cycle Q Clear(g_c), s	0.0	16.0	0.5	0.0	7.8	7.9	5.5	0.0	7.0	8.4	0.0	4.3
Prop In Lane	1.00		1.00	1.00		0.15	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	859	2054	897	663	1002	1027	129	0	144	95	0	136
V/C Ratio(X)	0.10	0.42	0.02	0.11	0.23	0.23	0.11	0.00	0.69	0.15	0.00	0.43
Avail Cap(c_a), veh/h	859	2054	897	663	1002	1027	223	0	260	180	0	245
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)	0.79	0.79	0.79	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	6.4	15.0	11.6	9.8	13.2	13.2	54.5	0.0	53.2	57.2	0.0	51.9
Incr Delay (d2), s/veh	0.0	0.5	0.0	0.1	0.5	0.5	0.4	0.0	5.8	0.7	0.0	2.1
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(50%),veh/ln	0.6	6.1	0.2	0.8	3.0	3.1	0.4	0.0	3.2	0.4	0.0	1.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	6.5	15.5	11.6	9.9	13.7	13.7	54.9	0.0	58.9	57.9	0.0	54.0
LnGrp LOS	A	B	B	A	B	B	D		E	E		D
Approach Vol, veh/h		956			543			113			72	
Approach Delay, s/veh		14.6			13.2			58.4			54.8	
Approach LOS		B			B			E			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	29.5	74.0		16.5	29.5	74.0		16.5				
Change Period (Y+Rc), s	6.5	6.5		6.0	6.5	6.5		6.0				
Max Green Setting (Gmax), s	14.5	67.5		19.0	14.5	67.5		19.0				
Max Q Clear Time (g_c+I1), s	12.0	18.0		10.4	2.0	9.9		9.0				
Green Ext Time (p_c), s	0.1	6.3		0.1	0.1	2.6		0.4				

Intersection Summary	
HCM 7th Control Delay, s/veh	18.8
HCM 7th LOS	B

Notes

User approved pedestrian interval to be less than phase max green.

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	19	678	100	148	455	45	34	0	73	7	0	7
Future Vol, veh/h	19	678	100	148	455	45	34	0	73	7	0	7
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	1000	-	125	1000	-	-	800	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	86	86	86	92	92	92	89	89	89	70	70	70
Heavy Vehicles, %	5	5	5	6	6	6	5	5	5	0	0	0
Mvmt Flow	22	788	116	161	495	49	38	0	82	10	0	10

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	543	0	0	905	0	0	1402	1698	394	1279	1790	272
Stage 1	-	-	-	-	-	-	833	833	-	841	841	-
Stage 2	-	-	-	-	-	-	569	865	-	438	949	-
Critical Hdwy	4.2	-	-	4.22	-	-	7.6	6.6	7	7.5	6.5	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-	6.6	5.6	-	6.5	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.6	5.6	-	6.5	5.5	-
Follow-up Hdwy	2.25	-	-	2.26	-	-	3.55	4.05	3.35	3.5	4	3.3
Pot Cap-1 Maneuver	1170	-	-	869	-	-	202	131	*898	*276	114	*964
Stage 1	-	-	-	-	-	-	489	492	-	*431	455	-
Stage 2	-	-	-	-	-	-	640	432	-	*859	436	-
Platoon blocked, %	0	-	-	0	-	-	0	0	0	0	0	0
Mov Cap-1 Maneuver	1170	-	-	869	-	-	160	105	*898	*201	91	*964
Mov Cap-2 Maneuver	-	-	-	-	-	-	160	105	-	*201	91	-
Stage 1	-	-	-	-	-	-	479	483	-	*351	371	-
Stage 2	-	-	-	-	-	-	516	352	-	*766	428	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	0.19	2.3	17.36	16.53
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	160	898	1170	-	-	869	-	-	332
HCM Lane V/C Ratio	0.239	0.091	0.019	-	-	0.185	-	-	0.06
HCM Control Delay (s/veh)	34.4	9.4	8.1	-	-	10.1	-	-	16.5
HCM Lane LOS	D	A	A	-	-	B	-	-	C
HCM 95th %tile Q(veh)	0.9	0.3	0.1	-	-	0.7	-	-	0.2

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)	34	679	45	95	589	56	17	6	17	66	7	42
Future Volume (veh/h)	34	679	45	95	589	56	17	6	17	66	7	42
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		0.99	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	1906	1906	1906	1938	1938	1938	1953	1953	1953	1953	1953	1953
Adj Flow Rate, veh/h	38	754	50	102	633	60	24	8	24	76	8	48
Peak Hour Factor	0.90	0.90	0.90	0.93	0.93	0.93	0.71	0.71	0.71	0.87	0.87	0.87
Percent Heavy Veh, %	6	6	6	4	4	4	3	3	3	3	3	3
Cap, veh/h	885	1802	794	775	1691	160	141	40	119	162	22	133
Arrive On Green	0.26	0.50	0.50	0.51	1.00	1.00	0.09	0.09	0.09	0.09	0.09	0.09
Sat Flow, veh/h	1816	3622	1595	1845	3399	322	1337	430	1291	1366	242	1450
Grp Volume(v), veh/h	38	754	50	102	342	351	24	0	32	76	0	56
Grp Sat Flow(s),veh/h/ln	1816	1811	1595	1845	1841	1880	1337	0	1721	1366	0	1692
Q Serve(g_s), s	0.0	15.9	2.0	0.0	0.2	0.2	2.1	0.0	2.1	6.5	0.0	3.7
Cycle Q Clear(g_c), s	0.0	15.9	2.0	0.0	0.2	0.2	5.8	0.0	2.1	8.6	0.0	3.7
Prop In Lane	1.00		1.00	1.00		0.17	1.00		0.75	1.00		0.86
Lane Grp Cap(c), veh/h	885	1802	794	775	916	935	141	0	158	162	0	156
V/C Ratio(X)	0.04	0.42	0.06	0.13	0.37	0.37	0.17	0.00	0.20	0.47	0.00	0.36
Avail Cap(c_a), veh/h	885	1802	794	775	916	935	342	0	416	367	0	409
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	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	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	3.9	19.1	15.6	6.3	0.2	0.2	53.9	0.0	50.4	54.4	0.0	51.2
Incr Delay (d2), s/veh	0.0	0.7	0.2	0.1	1.2	1.1	0.6	0.0	0.6	2.1	0.0	1.4
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(50%),veh/ln	0.2	6.3	0.7	0.7	0.3	0.3	0.7	0.0	0.9	2.4	0.0	1.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	3.9	19.8	15.8	6.4	1.3	1.3	54.4	0.0	51.0	56.5	0.0	52.6
LnGrp LOS	A	B	B	A	A	A	D		D	E		D
Approach Vol, veh/h		842			795			56			132	
Approach Delay, s/veh		18.9			2.0			52.5			54.8	
Approach LOS		B			A			D			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	37.0	66.0		17.0	37.0	66.0		17.0				
Change Period (Y+Rc), s	* 6.3	* 6.3		6.0	* 6.3	* 6.3		6.0				
Max Green Setting (Gmax), s	* 13	* 60		29.0	* 13	* 60		29.0				
Max Q Clear Time (g_c+I1), s	2.0	17.9		10.6	2.0	2.2		7.8				
Green Ext Time (p_c), s	0.1	5.4		0.5	0.0	4.1		0.2				

Intersection Summary		
HCM 7th Control Delay, s/veh	15.1	
HCM 7th LOS	B	

Notes

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	312	419	66	58	294	208	91	726	98	279	637	399
Future Volume (veh/h)	312	419	66	58	294	208	91	726	98	279	637	399
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
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	1922	1922	1922	1875	1875	1875	1953	1953	1953	1922	1922	1922
Adj Flow Rate, veh/h	359	482	76	68	346	245	99	789	107	307	700	438
Peak Hour Factor	0.87	0.87	0.87	0.85	0.85	0.85	0.92	0.92	0.92	0.91	0.91	0.91
Percent Heavy Veh, %	5	5	5	8	8	8	3	3	3	5	5	5
Cap, veh/h	420	1083	170	87	973	600	125	901	122	370	1136	700
Arrive On Green	0.24	0.69	0.69	0.05	0.27	0.27	0.07	0.27	0.27	0.10	0.31	0.31
Sat Flow, veh/h	3551	3162	496	1786	3563	1589	1860	3283	445	3551	3652	1629
Grp Volume(v), veh/h	359	277	281	68	346	245	99	446	450	307	700	438
Grp Sat Flow(s),veh/h/ln	1776	1826	1833	1786	1781	1589	1860	1856	1873	1776	1826	1629
Q Serve(g_s), s	11.6	8.2	8.3	4.5	9.4	13.6	6.3	27.5	27.5	10.2	19.6	25.2
Cycle Q Clear(g_c), s	11.6	8.2	8.3	4.5	9.4	13.6	6.3	27.5	27.5	10.2	19.6	25.2
Prop In Lane	1.00		0.27	1.00		1.00	1.00		0.24	1.00		1.00
Lane Grp Cap(c), veh/h	420	625	628	87	973	600	125	509	514	370	1136	700
V/C Ratio(X)	0.85	0.44	0.45	0.78	0.36	0.41	0.79	0.88	0.88	0.83	0.62	0.63
Avail Cap(c_a), veh/h	562	625	628	164	973	600	236	591	596	450	1162	711
HCM Platoon Ratio	2.00	2.00	2.00	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	44.8	13.7	13.7	56.4	35.1	27.5	55.1	41.6	41.6	52.7	35.2	26.7
Incr Delay (d2), s/veh	9.5	2.3	2.3	13.7	1.0	2.1	10.5	12.5	12.5	10.5	1.0	1.7
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(50%),veh/ln	4.9	3.0	3.0	2.3	4.1	5.3	3.2	13.9	14.0	5.0	8.6	9.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	54.3	16.0	16.0	70.1	36.1	29.6	65.6	54.1	54.0	63.2	36.2	28.4
LnGrp LOS	D	B	B	E	D	C	E	D	D	E	D	C
Approach Vol, veh/h		917			659			995			1445	
Approach Delay, s/veh		31.0			37.2			55.2			39.6	
Approach LOS		C			D			E			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	12.9	48.1	14.9	44.1	21.2	39.8	19.3	39.7
Change Period (Y+Rc), s	7.0	7.0	6.8	6.8	7.0	7.0	6.8	6.8
Max Green Setting (Gmax), s	11.0	28.0	15.2	38.2	19.0	20.0	15.2	38.2
Max Q Clear Time (g_c+I1), s	6.5	10.3	8.3	27.2	13.6	15.6	12.2	29.5
Green Ext Time (p_c), s	0.0	2.7	0.1	4.6	0.6	1.2	0.3	3.4

Intersection Summary	
HCM 7th Control Delay, s/veh	41.1
HCM 7th LOS	D



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	37	1	33	14	1	53	99	840	19	5	639	33
Future Volume (veh/h)	37	1	33	14	1	53	99	840	19	5	639	33
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		0.99	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	1953	1953	1953	1906	1906	1906	1953	1953	1953	1875	1875	1875
Adj Flow Rate, veh/h	50	1	45	18	1	69	105	894	20	5	687	35
Peak Hour Factor	0.74	0.74	0.74	0.77	0.77	0.77	0.94	0.94	0.94	0.93	0.93	0.93
Percent Heavy Veh, %	3	3	3	6	6	6	3	3	3	8	8	8
Cap, veh/h	132	3	155	151	2	152	527	1463	1240	382	1354	1147
Arrive On Green	0.10	0.10	0.10	0.10	0.10	0.10	0.03	0.75	0.75	0.01	0.72	0.72
Sat Flow, veh/h	1315	36	1616	1311	23	1588	1860	1953	1655	1786	1875	1589
Grp Volume(v), veh/h	50	0	46	18	0	70	105	894	20	5	687	35
Grp Sat Flow(s),veh/h/ln	1315	0	1652	1311	0	1611	1860	1953	1655	1786	1875	1589
Q Serve(g_s), s	4.5	0.0	3.1	1.6	0.0	4.9	1.8	25.4	0.4	0.1	19.3	0.8
Cycle Q Clear(g_c), s	9.4	0.0	3.1	4.7	0.0	4.9	1.8	25.4	0.4	0.1	19.3	0.8
Prop In Lane	1.00		0.98	1.00		0.99	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	132	0	158	151	0	154	527	1463	1240	382	1354	1147
V/C Ratio(X)	0.38	0.00	0.29	0.12	0.00	0.45	0.20	0.61	0.02	0.01	0.51	0.03
Avail Cap(c_a), veh/h	170	0	207	190	0	201	545	1463	1240	432	1354	1147
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	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	55.7	0.0	50.5	52.6	0.0	51.3	5.7	7.0	3.8	6.5	7.3	4.7
Incr Delay (d2), s/veh	1.8	0.0	1.0	0.3	0.0	2.1	0.2	1.9	0.0	0.0	1.4	0.0
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(50%),veh/ln	1.6	0.0	1.3	0.5	0.0	2.1	0.5	8.7	0.1	0.0	6.7	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	57.5	0.0	51.5	53.0	0.0	53.4	5.8	8.9	3.8	6.6	8.7	4.8
LnGrp LOS	E		D	D		D	A	A	A	A	A	A
Approach Vol, veh/h		96			88			1019			727	
Approach Delay, s/veh		54.6			53.3			8.5			8.5	
Approach LOS		D			D			A			A	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	6.6	95.9		17.5	9.9	92.6		17.5
Change Period (Y+Rc), s	6.0	6.0		6.0	6.0	6.0		6.0
Max Green Setting (Gmax), s	4.6	83.0		15.0	5.0	82.0		15.0
Max Q Clear Time (g_c+I1), s	2.1	27.4		11.4	3.8	21.3		6.9
Green Ext Time (p_c), s	0.0	7.8		0.1	0.0	5.1		0.2

Intersection Summary	
HCM 7th Control Delay, s/veh	12.8
HCM 7th LOS	B

Notes

User approved pedestrian interval to be less than phase max green.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	576	558	87	116	557	383	91	469	73	176	561	577
Future Volume (veh/h)	576	558	87	116	557	383	91	469	73	176	561	577
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	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	1969	1969	1969	1969	1969	1969	1969	1969	1969
Adj Flow Rate, veh/h	647	627	98	129	619	426	99	510	79	185	591	607
Peak Hour Factor	0.89	0.89	0.89	0.90	0.90	0.90	0.92	0.92	0.92	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	664	1445	226	154	650	477	123	554	85	211	815	954
Arrive On Green	0.35	0.45	0.45	0.08	0.17	0.17	0.07	0.17	0.17	0.11	0.22	0.22
Sat Flow, veh/h	1875	3242	506	1875	3741	1668	1875	3241	500	1875	3741	1668
Grp Volume(v), veh/h	647	361	364	129	619	426	99	293	296	185	591	607
Grp Sat Flow(s),veh/h/ln	1875	1870	1878	1875	1870	1668	1875	1870	1871	1875	1870	1668
Q Serve(g_s), s	47.6	18.6	18.6	9.5	22.9	24.3	7.3	21.6	21.8	13.6	20.5	30.5
Cycle Q Clear(g_c), s	47.6	18.6	18.6	9.5	22.9	24.3	7.3	21.6	21.8	13.6	20.5	30.5
Prop In Lane	1.00		0.27	1.00		1.00	1.00		0.27	1.00		1.00
Lane Grp Cap(c), veh/h	664	834	837	154	650	477	123	320	320	211	815	954
V/C Ratio(X)	0.97	0.43	0.43	0.84	0.95	0.89	0.80	0.92	0.92	0.88	0.73	0.64
Avail Cap(c_a), veh/h	664	834	837	209	650	477	163	323	323	230	815	954
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	0.92	0.92	0.92	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	44.6	26.6	26.7	63.3	57.3	47.9	64.5	57.0	57.1	61.2	50.9	20.2
Incr Delay (d2), s/veh	28.4	1.6	1.6	17.7	24.0	20.3	23.9	29.6	31.0	30.0	3.2	1.4
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(50%),veh/ln	26.3	8.3	8.4	5.2	12.7	16.8	4.3	12.8	13.0	8.1	9.8	13.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	73.0	28.3	28.3	81.0	81.3	68.2	88.4	86.7	88.2	91.2	54.1	21.6
LnGrp LOS	E	C	C	F	F	E	F	F	F	F	D	C
Approach Vol, veh/h		1372			1174			688			1383	
Approach Delay, s/veh		49.4			76.5			87.6			44.8	
Approach LOS		D			E			F			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	17.9	68.8	16.0	37.3	56.0	30.7	22.5	30.7
Change Period (Y+Rc), s	* 6.4	* 6.4	6.8	6.8	* 6.4	* 6.4	6.8	6.8
Max Green Setting (Gmax), s	* 16	* 57	12.2	29.2	* 50	* 23	17.2	24.2
Max Q Clear Time (g_c+I1), s	11.5	20.6	9.3	32.5	49.6	26.3	15.6	23.8
Green Ext Time (p_c), s	0.1	4.3	0.1	0.0	0.0	0.0	0.1	0.2

Intersection Summary	
HCM 7th Control Delay, s/veh	60.6
HCM 7th LOS	E

Notes

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	43	709	55	157	894	33	72	2	136	26	9	90
Future Volume (veh/h)	43	709	55	157	894	33	72	2	136	26	9	90
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
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	2000	2000	2000	1953	1953	1953
Adj Flow Rate, veh/h	46	754	59	171	972	36	77	2	145	38	13	130
Peak Hour Factor	0.94	0.94	0.94	0.92	0.92	0.92	0.94	0.94	0.94	0.69	0.69	0.69
Percent Heavy Veh, %	1	1	1	1	1	1	0	0	0	3	3	3
Cap, veh/h	617	1775	792	687	1746	65	164	4	269	160	25	245
Arrive On Green	0.21	0.47	0.47	0.21	0.47	0.47	0.16	0.16	0.16	0.16	0.16	0.16
Sat Flow, veh/h	1890	3770	1682	1890	3708	137	1265	23	1675	1231	153	1526
Grp Volume(v), veh/h	46	754	59	171	494	514	77	0	147	38	0	143
Grp Sat Flow(s),veh/h/ln	1890	1885	1682	1890	1885	1960	1265	0	1698	1231	0	1679
Q Serve(g_s), s	0.0	15.9	2.3	0.0	22.6	22.6	7.1	0.0	9.5	3.5	0.0	9.4
Cycle Q Clear(g_c), s	0.0	15.9	2.3	0.0	22.6	22.6	16.5	0.0	9.5	13.1	0.0	9.4
Prop In Lane	1.00		1.00	1.00		0.07	1.00		0.99	1.00		0.91
Lane Grp Cap(c), veh/h	617	1775	792	687	888	923	164	0	273	160	0	270
V/C Ratio(X)	0.07	0.42	0.07	0.25	0.56	0.56	0.47	0.00	0.54	0.24	0.00	0.53
Avail Cap(c_a), veh/h	617	1775	792	687	888	923	256	0	396	249	0	392
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)	0.82	0.82	0.82	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	16.8	21.0	17.4	16.3	22.8	22.8	53.8	0.0	46.3	52.3	0.0	46.2
Incr Delay (d2), s/veh	0.0	0.6	0.2	0.2	2.5	2.4	2.1	0.0	1.7	0.8	0.0	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(50%),veh/ln	0.7	6.7	0.9	2.6	9.9	10.3	2.4	0.0	4.2	1.1	0.0	3.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	16.8	21.6	17.6	16.5	25.3	25.2	55.9	0.0	47.9	53.0	0.0	47.8
LnGrp LOS	B	C	B	B	C	C	E		D	D		D
Approach Vol, veh/h		859			1179			224			181	
Approach Delay, s/veh		21.1			24.0			50.7			48.9	
Approach LOS		C			C			D			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	11.7	63.0		25.3	31.7	63.0		25.3				
Change Period (Y+Rc), s	6.5	6.5		6.0	6.5	6.5		6.0				
Max Green Setting (Gmax), s	16.5	56.5		28.0	16.5	56.5		28.0				
Max Q Clear Time (g_c+I1), s	2.0	17.9		15.1	2.0	24.6		18.5				
Green Ext Time (p_c), s	0.3	5.4		0.6	0.1	6.4		0.7				

Intersection Summary	
HCM 7th Control Delay, s/veh	27.3
HCM 7th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.

Intersection	
Int Delay, s/veh	5.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	802	30	50	984	0	100	0	168	20	0	19
Future Vol, veh/h	0	802	30	50	984	0	100	0	168	20	0	19
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	1000	-	125	1000	-	-	800	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	92	92	92	85	85	85	60	60	60
Heavy Vehicles, %	1	1	1	2	2	2	1	1	1	0	0	0
Mvmt Flow	0	901	34	54	1070	0	118	0	198	33	0	32

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1070	0	0	935	0	0	1545	2079	451	1629	2113	535
Stage 1	-	-	-	-	-	-	901	901	-	1178	1178	-
Stage 2	-	-	-	-	-	-	643	1178	-	451	935	-
Critical Hdwy	4.12	-	-	4.14	-	-	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	-	-	2.22	-	-	3.51	4.01	3.31	3.5	4	3.3
Pot Cap-1 Maneuver	847	-	-	905	-	-	*169	67	*873	*139	63	*823
Stage 1	-	-	-	-	-	-	*491	491	-	*354	378	-
Stage 2	-	-	-	-	-	-	*774	376	-	*826	472	-
Platoon blocked, %	0	-	-	0	-	-	0	0	0	0	0	0
Mov Cap-1 Maneuver	847	-	-	905	-	-	*153	63	*873	*101	60	*823
Mov Cap-2 Maneuver	-	-	-	-	-	-	*153	63	-	*101	60	-
Stage 1	-	-	-	-	-	-	*491	491	-	*332	355	-
Stage 2	-	-	-	-	-	-	*699	353	-	*639	472	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	0	0.45	36.56	36.91
HCM LOS			E	E

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	153	873	847	-	-	905	-	-	176
HCM Lane V/C Ratio	0.769	0.226	-	-	-	0.06	-	-	0.369
HCM Control Delay (s/veh)	80.6	10.3	0	-	-	9.2	-	-	36.9
HCM Lane LOS	F	B	A	-	-	A	-	-	E
HCM 95th %tile Q(veh)	4.8	0.9	0	-	-	0.2	-	-	1.6

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)	66	914	10	25	855	81	56	10	26	159	5	123
Future Volume (veh/h)	66	914	10	25	855	81	56	10	26	159	5	123
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
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	2000	2000	2000	2000	2000	2000
Adj Flow Rate, veh/h	71	983	11	29	994	94	93	17	43	183	6	141
Peak Hour Factor	0.93	0.93	0.93	0.86	0.86	0.86	0.60	0.60	0.60	0.87	0.87	0.87
Percent Heavy Veh, %	1	1	1	1	1	1	0	0	0	0	0	0
Cap, veh/h	593	1970	879	522	1819	172	196	93	235	274	13	303
Arrive On Green	0.14	0.52	0.52	0.27	1.00	1.00	0.19	0.19	0.19	0.19	0.19	0.19
Sat Flow, veh/h	1890	3770	1682	1890	3481	329	1260	502	1270	1364	70	1636
Grp Volume(v), veh/h	71	983	11	29	538	550	93	0	60	183	0	147
Grp Sat Flow(s),veh/h/ln	1890	1885	1682	1890	1885	1925	1260	0	1771	1364	0	1706
Q Serve(g_s), s	0.0	20.2	0.4	0.0	0.0	0.0	8.5	0.0	3.4	15.7	0.0	9.2
Cycle Q Clear(g_c), s	0.0	20.2	0.4	0.0	0.0	0.0	17.7	0.0	3.4	19.1	0.0	9.2
Prop In Lane	1.00		1.00	1.00		0.17	1.00		0.72	1.00		0.96
Lane Grp Cap(c), veh/h	593	1970	879	522	985	1006	196	0	328	274	0	316
V/C Ratio(X)	0.12	0.50	0.01	0.06	0.55	0.55	0.47	0.00	0.18	0.67	0.00	0.47
Avail Cap(c_a), veh/h	593	1970	879	522	985	1006	299	0	472	385	0	455
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	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	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	8.0	18.5	13.8	13.6	0.0	0.0	51.5	0.0	41.2	49.3	0.0	43.6
Incr Delay (d2), s/veh	0.1	0.9	0.0	0.0	2.2	2.1	1.8	0.0	0.3	2.8	0.0	1.1
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(50%),veh/ln	0.6	8.3	0.1	0.3	0.6	0.6	2.8	0.0	1.5	5.6	0.0	4.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	8.1	19.4	13.8	13.7	2.2	2.1	53.3	0.0	41.5	52.1	0.0	44.7
LnGrp LOS	A	B	B	B	A	A	D		D	D		D
Approach Vol, veh/h		1065			1117			153			330	
Approach Delay, s/veh		18.6			2.5			48.7			48.8	
Approach LOS		B			A			D			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	22.8	69.0		28.2	22.8	69.0		28.2				
Change Period (Y+Rc), s	* 6.3	* 6.3		6.0	* 6.3	* 6.3		6.0				
Max Green Setting (Gmax), s	* 6.7	* 63		32.0	* 6.7	* 63		32.0				
Max Q Clear Time (g_c+I1), s	2.0	22.2		21.1	2.0	2.0		19.7				
Green Ext Time (p_c), s	0.0	7.4		1.1	0.0	7.7		0.4				

Intersection Summary	
HCM 7th Control Delay, s/veh	17.3
HCM 7th LOS	B

Notes

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	562	556	138	115	584	507	97	645	65	225	733	299
Future Volume (veh/h)	562	556	138	115	584	507	97	645	65	225	733	299
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
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	1953	1953	1953	1969	1969	1969
Adj Flow Rate, veh/h	592	585	145	125	635	551	104	694	70	239	780	318
Peak Hour Factor	0.95	0.95	0.95	0.92	0.92	0.92	0.93	0.93	0.93	0.94	0.94	0.94
Percent Heavy Veh, %	1	1	1	1	1	1	3	3	3	2	2	2
Cap, veh/h	644	1103	273	153	1031	602	129	804	81	308	941	713
Arrive On Green	0.29	0.62	0.62	0.08	0.27	0.27	0.09	0.31	0.31	0.08	0.25	0.25
Sat Flow, veh/h	3666	2995	740	1890	3770	1680	1860	3404	343	3638	3741	1668
Grp Volume(v), veh/h	592	368	362	125	635	551	104	378	386	239	780	318
Grp Sat Flow(s),veh/h/ln	1833	1885	1850	1890	1885	1680	1860	1856	1891	1819	1870	1668
Q Serve(g_s), s	18.7	13.4	13.4	7.8	17.7	32.8	6.6	23.0	23.1	7.7	23.7	16.2
Cycle Q Clear(g_c), s	18.7	13.4	13.4	7.8	17.7	32.8	6.6	23.0	23.1	7.7	23.7	16.2
Prop In Lane	1.00		0.40	1.00		1.00	1.00		0.18	1.00		1.00
Lane Grp Cap(c), veh/h	644	694	682	153	1031	602	129	438	447	308	941	713
V/C Ratio(X)	0.92	0.53	0.53	0.82	0.62	0.92	0.81	0.86	0.86	0.78	0.83	0.45
Avail Cap(c_a), veh/h	672	694	682	173	1031	602	143	438	447	521	1128	796
HCM Platoon Ratio	1.67	1.67	1.67	1.00	1.00	1.00	1.33	1.33	1.33	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	41.6	17.2	17.2	54.3	38.1	36.8	53.7	39.3	39.3	53.8	42.5	24.3
Incr Delay (d2), s/veh	17.5	2.9	3.0	23.4	2.8	20.9	25.8	16.1	16.0	4.2	4.5	0.4
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(50%),veh/ln	8.5	4.9	4.9	4.6	8.2	18.1	3.9	11.4	11.6	3.7	11.3	6.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	59.0	20.0	20.1	77.7	40.8	57.7	79.4	55.4	55.3	58.0	47.0	24.8
LnGrp LOS	E	C	C	E	D	E	E	E	E	E	D	C
Approach Vol, veh/h		1322			1311			868			1337	
Approach Delay, s/veh		37.5			51.4			58.3			43.7	
Approach LOS		D			D			E			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	16.7	51.2	15.1	37.0	28.1	39.8	17.0	35.1
Change Period (Y+Rc), s	7.0	7.0	6.8	6.8	7.0	7.0	6.8	6.8
Max Green Setting (Gmax), s	11.0	36.0	9.2	36.2	22.0	25.0	17.2	28.2
Max Q Clear Time (g_c+I1), s	9.8	15.4	8.6	25.7	20.7	34.8	9.7	25.1
Green Ext Time (p_c), s	0.0	3.9	0.0	4.5	0.3	0.0	0.4	1.3

Intersection Summary	
HCM 7th Control Delay, s/veh	46.7
HCM 7th LOS	D



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	97	4	69	5	0	26	22	718	20	51	919	30
Future Volume (veh/h)	97	4	69	5	0	26	22	718	20	51	919	30
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
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	1938	1938	1938	2000	2000	2000	1969	1969	1969	1984	1984	1984
Adj Flow Rate, veh/h	152	6	108	6	0	33	23	756	21	56	1010	33
Peak Hour Factor	0.64	0.64	0.64	0.78	0.78	0.78	0.95	0.95	0.95	0.91	0.91	0.91
Percent Heavy Veh, %	4	4	4	0	0	0	2	2	2	1	1	1
Cap, veh/h	237	13	231	170	0	250	287	1328	1125	443	1359	1151
Arrive On Green	0.15	0.15	0.15	0.15	0.00	0.15	0.02	0.67	0.67	0.03	0.68	0.68
Sat Flow, veh/h	1354	87	1568	1299	0	1695	1875	1969	1668	1890	1984	1682
Grp Volume(v), veh/h	152	0	114	6	0	33	23	756	21	56	1010	33
Grp Sat Flow(s),veh/h/ln	1354	0	1655	1299	0	1695	1875	1969	1668	1890	1984	1682
Q Serve(g_s), s	13.2	0.0	7.6	0.5	0.0	2.0	0.5	24.4	0.5	1.1	39.2	0.8
Cycle Q Clear(g_c), s	15.2	0.0	7.6	8.1	0.0	2.0	0.5	24.4	0.5	1.1	39.2	0.8
Prop In Lane	1.00		0.95	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	237	0	244	170	0	250	287	1328	1125	443	1359	1151
V/C Ratio(X)	0.64	0.00	0.47	0.04	0.00	0.13	0.08	0.57	0.02	0.13	0.74	0.03
Avail Cap(c_a), veh/h	285	0	303	216	0	311	316	1328	1125	453	1359	1151
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	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	51.1	0.0	46.8	50.5	0.0	44.5	12.0	10.3	6.4	8.2	12.2	6.1
Incr Delay (d2), s/veh	3.6	0.0	1.4	0.1	0.0	0.2	0.1	1.8	0.0	0.1	3.7	0.0
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(50%),veh/ln	4.7	0.0	3.2	0.2	0.0	0.9	0.2	9.6	0.2	0.4	15.7	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	54.6	0.0	48.2	50.6	0.0	44.7	12.2	12.1	6.5	8.3	15.9	6.1
LnGrp LOS	D		D	D		D	B	B	A	A	B	A
Approach Vol, veh/h		266			39			800			1099	
Approach Delay, s/veh		51.9			45.6			12.0			15.2	
Approach LOS		D			D			B			B	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	9.4	86.9		23.7	8.1	88.2		23.7
Change Period (Y+Rc), s	6.0	6.0		6.0	6.0	6.0		6.0
Max Green Setting (Gmax), s	4.0	76.0		22.0	4.0	76.0		22.0
Max Q Clear Time (g_c+I1), s	3.1	26.4		17.2	2.5	41.2		10.1
Green Ext Time (p_c), s	0.0	5.8		0.5	0.0	9.3		0.1

Intersection Summary	
HCM 7th Control Delay, s/veh	19.0
HCM 7th LOS	B

Notes

User approved pedestrian interval to be less than phase max green.

Intersection: 1: Wixom Road & Grand River Avenue

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	T	R	L	T	TR	L	T
Maximum Queue (ft)	492	257	259	84	151	169	109	78	483	459	343	191
Average Queue (ft)	251	138	127	27	75	74	30	29	315	289	192	102
95th Queue (ft)	423	229	216	64	135	138	81	67	474	447	302	175
Link Distance (ft)		1222	1222		799	799			1170			1412
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	1000			775			200	1000		950	400	
Storage Blk Time (%)						0					0	
Queuing Penalty (veh)						0					0	

Intersection: 1: Wixom Road & Grand River Avenue

Movement	SB	SB
Directions Served	T	R
Maximum Queue (ft)	209	221
Average Queue (ft)	87	99
95th Queue (ft)	171	182
Link Distance (ft)	1412	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		600
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 2: 12-Mile Road & Grand River Avenue

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	T	R	L	T	TR	L	TR	L	TR
Maximum Queue (ft)	77	171	176	16	92	55	92	42	75	58	59
Average Queue (ft)	28	30	31	1	36	10	20	8	30	11	25
95th Queue (ft)	65	96	100	11	76	38	62	29	62	37	51
Link Distance (ft)		799	799			701	701		358		575
Upstream Blk Time (%)											
Queuing Penalty (veh)											
Storage Bay Dist (ft)	775			100	1000			100		250	
Storage Blk Time (%)			1						0		
Queuing Penalty (veh)			0						0		

Intersection: 3: Providence Parkway & Grand River Avenue

Movement	EB	EB	EB	WB	WB	NB	NB	SB
Directions Served	L	T	R	L	TR	L	TR	LTR
Maximum Queue (ft)	38	4	17	132	16	83	64	32
Average Queue (ft)	6	0	1	49	1	23	25	11
95th Queue (ft)	24	3	7	99	9	60	50	35
Link Distance (ft)		1345			1117		856	272
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	1000		125	1000		800		
Storage Blk Time (%)								
Queuing Penalty (veh)								

Intersection: 4: W. Market Square & Grand River Avenue

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	T	R	L	T	TR	L	TR	L	TR
Maximum Queue (ft)	56	107	104	37	109	133	148	69	41	114	66
Average Queue (ft)	13	25	26	4	47	49	53	15	12	53	28
95th Queue (ft)	40	73	71	21	94	109	114	46	35	97	59
Link Distance (ft)		1117	1117			571	571	445	445		356
Upstream Blk Time (%)											
Queuing Penalty (veh)											
Storage Bay Dist (ft)	1000			50	500					150	
Storage Blk Time (%)			2	0						0	
Queuing Penalty (veh)			1	0						0	

Intersection: 5: Beck Road & Grand River Avenue

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB
Directions Served	L	L	T	TR	L	T	T	R	L	T	TR	L
Maximum Queue (ft)	184	183	221	217	103	211	175	206	137	345	341	227
Average Queue (ft)	93	98	95	112	35	98	61	44	69	214	213	138
95th Queue (ft)	168	167	173	187	85	178	144	122	123	315	317	227
Link Distance (ft)		527	527	527		1234	1234			967		
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	500				1000			400	300		275	125
Storage Blk Time (%)										3	3	12
Queuing Penalty (veh)										19	13	39

Intersection: 5: Beck Road & Grand River Avenue

Movement	SB	SB	SB	SB
Directions Served	L	T	T	R
Maximum Queue (ft)	330	409	334	207
Average Queue (ft)	185	222	177	84
95th Queue (ft)	280	334	283	159
Link Distance (ft)		944	944	
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)	125			350
Storage Blk Time (%)	43	35	0	
Queuing Penalty (veh)	139	98	0	

Intersection: 6: Beck Road & Providence South Drive/Central Park Boulevard

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	TR	L	T	R	L	T	R
Maximum Queue (ft)	98	63	39	79	112	214	64	37	163	33
Average Queue (ft)	29	17	10	24	43	69	4	3	32	2
95th Queue (ft)	69	45	30	58	88	169	29	18	102	15
Link Distance (ft)	480	480	450	450		592			491	491
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)					1000		50	850		
Storage Blk Time (%)						6	0			
Queuing Penalty (veh)						7	0			

Intersection: 7: Providence Parkway & Site Drive

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Intersection: 9000: Dummy Node & Grand River Avenue

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Intersection: 9001: Dummy Node & Grand River Avenue

Movement	NB
Directions Served	LTR
Maximum Queue (ft)	58
Average Queue (ft)	22
95th Queue (ft)	48
Link Distance (ft)	157
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 9002: Beck Road & Dummy Node

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Network Summary

Network wide Queuing Penalty: 318

Intersection: 1: Wixom Road & Grand River Avenue

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	T	R	L	T	TR	L	T
Maximum Queue (ft)	769	517	492	420	652	713	275	166	388	350	254	341
Average Queue (ft)	492	227	220	108	403	432	214	68	254	225	146	203
95th Queue (ft)	895	699	651	295	768	828	362	133	356	323	238	297
Link Distance (ft)		1222	1222		799	799			1170			1412
Upstream Blk Time (%)	0	1	0	0	2	4						
Queuing Penalty (veh)	0	0	0	0	10	20						
Storage Bay Dist (ft)	1000			775			200	1000		950	400	
Storage Blk Time (%)	5	4			3	46	4					0
Queuing Penalty (veh)	13	21			3	177	12					0

Intersection: 1: Wixom Road & Grand River Avenue

Movement	SB	SB
Directions Served	T	R
Maximum Queue (ft)	317	314
Average Queue (ft)	187	151
95th Queue (ft)	281	258
Link Distance (ft)	1412	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		600
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 2: 12-Mile Road & Grand River Avenue

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	T	R	L	T	TR	L	TR	L	TR
Maximum Queue (ft)	86	188	201	69	160	196	250	116	139	72	126
Average Queue (ft)	27	55	56	10	71	59	90	49	47	25	50
95th Queue (ft)	65	138	140	45	131	203	257	97	97	62	105
Link Distance (ft)		799	799			701	701		358		575
Upstream Blk Time (%)											
Queuing Penalty (veh)											
Storage Bay Dist (ft)	775			100	1000			100		250	
Storage Blk Time (%)			2					3	0		
Queuing Penalty (veh)			1					4	0		

Intersection: 3: Providence Parkway & Grand River Avenue

Movement	EB	WB	WB	NB	NB	SB
Directions Served	R	L	TR	L	TR	LTR
Maximum Queue (ft)	4	63	4	255	104	57
Average Queue (ft)	0	21	0	96	39	27
95th Queue (ft)	3	48	3	231	75	57
Link Distance (ft)			1117		856	272
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)	125	1000		800		
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 4: W. Market Square & Grand River Avenue

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	T	R	L	T	TR	L	TR	L	TR
Maximum Queue (ft)	82	199	175	66	53	190	210	119	66	191	246
Average Queue (ft)	26	78	65	5	15	81	100	42	21	102	71
95th Queue (ft)	60	166	137	40	42	153	178	100	54	175	169
Link Distance (ft)		1117	1117			571	571	445	445		356
Upstream Blk Time (%)											
Queuing Penalty (veh)											
Storage Bay Dist (ft)	1000			50	500					150	
Storage Blk Time (%)			10							4	0
Queuing Penalty (veh)			1							6	0

Intersection: 5: Beck Road & Grand River Avenue

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB
Directions Served	L	L	T	TR	L	T	T	R	L	T	TR	L
Maximum Queue (ft)	469	509	375	320	165	340	320	340	189	350	360	159
Average Queue (ft)	348	370	174	175	73	184	168	177	76	219	218	62
95th Queue (ft)	585	635	370	297	144	278	264	303	148	327	325	149
Link Distance (ft)		527	527	527		1234	1234			967		
Upstream Blk Time (%)	1	16	1									
Queuing Penalty (veh)	0	67	2									
Storage Bay Dist (ft)	500				1000			400	300		275	125
Storage Blk Time (%)	5	18					0			4	4	1
Queuing Penalty (veh)	15	51					1			21	16	3

Intersection: 5: Beck Road & Grand River Avenue

Movement	SB	SB	SB	SB
Directions Served	L	T	T	R
Maximum Queue (ft)	349	437	358	188
Average Queue (ft)	143	272	223	71
95th Queue (ft)	272	389	336	138
Link Distance (ft)		944	944	
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)	125			350
Storage Blk Time (%)	10	48	0	
Queuing Penalty (veh)	38	109	0	

Intersection: 6: Beck Road & Providence South Drive/Central Park Boulevard

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	TR	L	T	R	L	T	R
Maximum Queue (ft)	191	129	25	48	56	266	54	64	302	30
Average Queue (ft)	73	37	3	12	13	101	4	26	135	4
95th Queue (ft)	144	88	16	33	40	206	25	59	282	19
Link Distance (ft)	480	480	450	450		592			491	491
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)					1000		50	850		
Storage Blk Time (%)						12				
Queuing Penalty (veh)						5				

Intersection: 7: Providence Parkway & Site Drive

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Intersection: 9000: Dummy Node & Grand River Avenue

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Intersection: 9001: Dummy Node & Grand River Avenue

Movement	EB	EB	EB	NB
Directions Served	T	T	TR	LTR
Maximum Queue (ft)	158	96	61	130
Average Queue (ft)	65	28	12	71
95th Queue (ft)	276	167	99	139
Link Distance (ft)		571	571	157
Upstream Blk Time (%)				15
Queuing Penalty (veh)				0
Storage Bay Dist (ft)	500			
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 9002: Beck Road & Dummy Node

Movement	EB	SB
Directions Served	LTR	T
Maximum Queue (ft)	43	14
Average Queue (ft)	13	1
95th Queue (ft)	39	12
Link Distance (ft)	187	967
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 599



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	334	513	48	42	254	161	48	619	87	270	364	554
Future Volume (veh/h)	334	513	48	42	254	161	48	619	87	270	364	554
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		0.98	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	1844	1844	1844	1875	1875	1875	1969	1969	1969	1875	1875	1875
Adj Flow Rate, veh/h	367	564	53	48	289	183	51	652	92	284	383	583
Peak Hour Factor	0.91	0.91	0.91	0.88	0.88	0.88	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	10	10	10	8	8	8	2	2	2	8	8	8
Cap, veh/h	394	1191	112	62	636	564	68	711	100	317	1276	924
Arrive On Green	0.22	0.37	0.37	0.03	0.18	0.18	0.04	0.22	0.22	0.18	0.36	0.36
Sat Flow, veh/h	1756	3237	304	1786	3563	1581	1875	3284	463	1786	3563	1585
Grp Volume(v), veh/h	367	305	312	48	289	183	51	371	373	284	383	583
Grp Sat Flow(s),veh/h/ln	1756	1752	1788	1786	1781	1581	1875	1870	1876	1786	1781	1585
Q Serve(g_s), s	26.6	17.3	17.4	3.5	9.4	11.0	3.5	25.2	25.3	20.2	10.1	31.6
Cycle Q Clear(g_c), s	26.6	17.3	17.4	3.5	9.4	11.0	3.5	25.2	25.3	20.2	10.1	31.6
Prop In Lane	1.00		0.17	1.00		1.00	1.00		0.25	1.00		1.00
Lane Grp Cap(c), veh/h	394	645	658	62	636	564	68	405	406	317	1276	924
V/C Ratio(X)	0.93	0.47	0.47	0.77	0.45	0.32	0.75	0.92	0.92	0.90	0.30	0.63
Avail Cap(c_a), veh/h	454	645	658	118	636	564	176	420	421	401	1276	924
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	0.99	0.99	0.99	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	49.4	31.4	31.5	62.2	47.7	30.5	62.1	49.8	49.8	52.3	30.0	17.9
Incr Delay (d2), s/veh	24.3	2.5	2.4	18.1	2.3	1.5	24.7	24.1	24.5	21.2	0.1	1.4
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(50%),veh/ln	13.9	7.5	7.7	1.8	4.3	4.4	2.1	14.4	14.5	10.7	4.2	11.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	73.8	33.9	33.9	80.3	50.1	32.0	86.8	73.9	74.3	73.5	30.1	19.3
LnGrp LOS	E	C	C	F	D	C	F	E	E	E	C	B
Approach Vol, veh/h		984			520			795			1250	
Approach Delay, s/veh		48.8			46.5			74.9			34.9	
Approach LOS		D			D			E			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.9	54.2	11.5	53.4	35.6	29.6	29.9	35.0
Change Period (Y+Rc), s	* 6.4	* 6.4	6.8	6.8	* 6.4	* 6.4	6.8	6.8
Max Green Setting (Gmax), s	* 8.6	* 37	12.2	46.2	* 34	* 12	29.2	29.2
Max Q Clear Time (g_c+I1), s	5.5	19.4	5.5	33.6	28.6	13.0	22.2	27.3
Green Ext Time (p_c), s	0.0	3.0	0.1	3.8	0.5	0.0	0.9	0.9

Intersection Summary	
HCM 7th Control Delay, s/veh	49.4
HCM 7th LOS	D

Notes

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	78	777	15	67	400	32	10	0	76	11	0	47
Future Volume (veh/h)	78	777	15	67	400	32	10	0	76	11	0	47
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		0.98	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	1922	1922	1922	1875	1875	1875	1938	1938	1938	1828	1828	1828
Adj Flow Rate, veh/h	91	903	17	78	465	37	14	0	103	14	0	60
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.74	0.74	0.74	0.78	0.78	0.78
Percent Heavy Veh, %	5	5	5	8	8	8	4	4	4	11	11	11
Cap, veh/h	843	2024	884	648	1853	147	131	0	148	95	0	140
Arrive On Green	0.20	0.55	0.55	0.20	0.55	0.55	0.09	0.00	0.09	0.09	0.00	0.09
Sat Flow, veh/h	1830	3652	1595	1786	3344	265	1321	0	1642	1199	0	1549
Grp Volume(v), veh/h	91	903	17	78	247	255	14	0	103	14	0	60
Grp Sat Flow(s),veh/h/ln	1830	1826	1595	1786	1781	1827	1321	0	1642	1199	0	1549
Q Serve(g_s), s	0.0	17.6	0.6	0.0	8.6	8.7	1.2	0.0	7.3	1.4	0.0	4.4
Cycle Q Clear(g_c), s	0.0	17.6	0.6	0.0	8.6	8.7	5.6	0.0	7.3	8.7	0.0	4.4
Prop In Lane	1.00		1.00	1.00		0.15	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	843	2024	884	648	987	1013	131	0	148	95	0	140
V/C Ratio(X)	0.11	0.45	0.02	0.12	0.25	0.25	0.11	0.00	0.70	0.15	0.00	0.43
Avail Cap(c_a), veh/h	843	2024	884	648	987	1013	243	0	287	197	0	271
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)	0.74	0.74	0.74	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	6.9	15.8	12.1	10.8	13.8	13.9	54.3	0.0	53.0	57.2	0.0	51.7
Incr Delay (d2), s/veh	0.0	0.5	0.0	0.1	0.6	0.6	0.4	0.0	5.8	0.7	0.0	2.1
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(50%),veh/ln	0.7	6.8	0.2	0.9	3.3	3.4	0.4	0.0	3.3	0.4	0.0	1.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	6.9	16.4	12.1	10.9	14.5	14.5	54.7	0.0	58.8	57.9	0.0	53.7
LnGrp LOS	A	B	B	B	B	B	D		E	E		D
Approach Vol, veh/h		1011			580			117			74	
Approach Delay, s/veh		15.5			14.0			58.3			54.5	
Approach LOS		B			B			E			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	30.2	73.0		16.8	30.2	73.0		16.8				
Change Period (Y+Rc), s	6.5	6.5		6.0	6.5	6.5		6.0				
Max Green Setting (Gmax), s	13.5	66.5		21.0	13.5	66.5		21.0				
Max Q Clear Time (g_c+I1), s	12.0	19.6		10.7	2.0	10.7		9.3				
Green Ext Time (p_c), s	0.1	6.7		0.2	0.1	2.8		0.4				

Intersection Summary	
HCM 7th Control Delay, s/veh	19.4
HCM 7th LOS	B

Notes

User approved pedestrian interval to be less than phase max green.

Intersection	
Int Delay, s/veh	2.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	20	714	104	154	483	47	35	0	76	7	0	7
Future Vol, veh/h	20	714	104	154	483	47	35	0	76	7	0	7
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	1000	-	125	1000	-	-	800	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	86	86	86	92	92	92	89	89	89	70	70	70
Heavy Vehicles, %	5	5	5	6	6	6	5	5	5	0	0	0
Mvmt Flow	23	830	121	167	525	51	39	0	85	10	0	10

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	576	0	0	951	0	0	1474	1788	415	1347	1883	288
Stage 1	-	-	-	-	-	-	877	877	-	885	885	-
Stage 2	-	-	-	-	-	-	597	911	-	462	998	-
Critical Hdwy	4.2	-	-	4.22	-	-	7.6	6.6	7	7.5	6.5	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-	6.6	5.6	-	6.5	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.6	5.6	-	6.5	5.5	-
Follow-up Hdwy	2.25	-	-	2.26	-	-	3.55	4.05	3.35	3.5	4	3.3
Pot Cap-1 Maneuver	1134	-	-	847	-	-	181	114	*880	*252	98	*964
Stage 1	-	-	-	-	-	-	477	481	-	*402	432	-
Stage 2	-	-	-	-	-	-	612	409	-	*843	423	-
Platoon blocked, %	0	-	-	0	-	-	0	0	0	0	0	0
Mov Cap-1 Maneuver	1134	-	-	847	-	-	141	89	*880	*179	77	*964
Mov Cap-2 Maneuver	-	-	-	-	-	-	141	89	-	*179	77	-
Stage 1	-	-	-	-	-	-	468	471	-	*322	347	-
Stage 2	-	-	-	-	-	-	486	328	-	*745	414	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	0.2	2.32	19.19	17.77
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	141	880	1134	-	-	847	-	-	302
HCM Lane V/C Ratio	0.279	0.097	0.021	-	-	0.198	-	-	0.066
HCM Control Delay (s/veh)	40.2	9.5	8.2	-	-	10.3	-	-	17.8
HCM Lane LOS	E	A	A	-	-	B	-	-	C
HCM 95th %tile Q(veh)	1.1	0.3	0.1	-	-	0.7	-	-	0.2

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)	35	715	47	99	622	58	18	6	18	69	7	44
Future Volume (veh/h)	35	715	47	99	622	58	18	6	18	69	7	44
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		0.99	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	1906	1906	1906	1938	1938	1938	1953	1953	1953	1953	1953	1953
Adj Flow Rate, veh/h	39	794	52	106	669	62	25	8	25	79	8	51
Peak Hour Factor	0.90	0.90	0.90	0.93	0.93	0.93	0.71	0.71	0.71	0.87	0.87	0.87
Percent Heavy Veh, %	6	6	6	4	4	4	3	3	3	3	3	3
Cap, veh/h	877	1742	767	771	1638	152	143	40	124	166	22	139
Arrive On Green	0.27	0.48	0.48	0.54	0.96	0.96	0.10	0.10	0.10	0.10	0.10	0.10
Sat Flow, veh/h	1816	3622	1595	1845	3406	315	1333	417	1302	1365	229	1461
Grp Volume(v), veh/h	39	794	52	106	361	370	25	0	33	79	0	59
Grp Sat Flow(s),veh/h/ln	1816	1811	1595	1845	1841	1881	1333	0	1719	1365	0	1690
Q Serve(g_s), s	0.0	17.5	2.1	0.0	1.5	1.5	2.2	0.0	2.1	6.8	0.0	3.9
Cycle Q Clear(g_c), s	0.0	17.5	2.1	0.0	1.5	1.5	6.1	0.0	2.1	8.9	0.0	3.9
Prop In Lane	1.00		1.00	1.00		0.17	1.00		0.76	1.00		0.86
Lane Grp Cap(c), veh/h	877	1742	767	771	885	904	143	0	163	166	0	161
V/C Ratio(X)	0.04	0.46	0.07	0.14	0.41	0.41	0.17	0.00	0.20	0.48	0.00	0.37
Avail Cap(c_a), veh/h	877	1742	767	771	885	904	361	0	444	388	0	437
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	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	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	4.4	20.7	16.7	6.6	1.2	1.2	53.8	0.0	50.1	54.2	0.0	50.9
Incr Delay (d2), s/veh	0.0	0.9	0.2	0.1	1.4	1.4	0.6	0.0	0.6	2.1	0.0	1.4
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(50%),veh/ln	0.2	7.1	0.8	0.7	0.7	0.7	0.8	0.0	1.0	2.5	0.0	1.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	4.4	21.6	16.9	6.7	2.6	2.6	54.3	0.0	50.7	56.3	0.0	52.3
LnGrp LOS	A	C	B	A	A	A	D		D	E		D
Approach Vol, veh/h		885			837			58			138	
Approach Delay, s/veh		20.5			3.1			52.3			54.6	
Approach LOS		C			A			D			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	38.6	64.0		17.4	38.6	64.0		17.4				
Change Period (Y+Rc), s	* 6.3	* 6.3		6.0	* 6.3	* 6.3		6.0				
Max Green Setting (Gmax), s	* 13	* 58		31.0	* 13	* 58		31.0				
Max Q Clear Time (g_c+I1), s	2.0	19.5		10.9	2.0	3.5		8.1				
Green Ext Time (p_c), s	0.2	5.7		0.5	0.0	4.4		0.2				

Intersection Summary		
HCM 7th Control Delay, s/veh	16.4	
HCM 7th LOS	B	

Notes

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	328	440	70	60	310	216	96	756	102	290	663	419
Future Volume (veh/h)	328	440	70	60	310	216	96	756	102	290	663	419
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
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	1922	1922	1922	1875	1875	1875	1953	1953	1953	1922	1922	1922
Adj Flow Rate, veh/h	377	506	80	71	365	254	104	822	111	319	729	460
Peak Hour Factor	0.87	0.87	0.87	0.85	0.85	0.85	0.92	0.92	0.92	0.91	0.91	0.91
Percent Heavy Veh, %	5	5	5	8	8	8	3	3	3	5	5	5
Cap, veh/h	439	1040	164	91	913	578	131	929	125	381	1167	722
Arrive On Green	0.25	0.66	0.66	0.05	0.26	0.26	0.07	0.28	0.28	0.11	0.32	0.32
Sat Flow, veh/h	3551	3161	498	1786	3563	1589	1860	3285	444	3551	3652	1629
Grp Volume(v), veh/h	377	291	295	71	365	254	104	464	469	319	729	460
Grp Sat Flow(s),veh/h/ln	1776	1826	1832	1786	1781	1589	1860	1856	1873	1776	1826	1629
Q Serve(g_s), s	12.2	9.6	9.7	4.7	10.2	14.5	6.6	28.7	28.7	10.6	20.4	26.3
Cycle Q Clear(g_c), s	12.2	9.6	9.7	4.7	10.2	14.5	6.6	28.7	28.7	10.6	20.4	26.3
Prop In Lane	1.00		0.27	1.00		1.00	1.00		0.24	1.00		1.00
Lane Grp Cap(c), veh/h	439	601	603	91	913	578	131	524	530	381	1167	722
V/C Ratio(X)	0.86	0.49	0.49	0.78	0.40	0.44	0.79	0.89	0.89	0.84	0.62	0.64
Avail Cap(c_a), veh/h	592	601	603	179	913	578	236	591	596	450	1167	722
HCM Platoon Ratio	2.00	2.00	2.00	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	44.2	15.4	15.4	56.3	37.0	28.9	54.9	41.2	41.2	52.5	34.7	25.9
Incr Delay (d2), s/veh	9.3	2.8	2.8	13.2	1.3	2.4	10.4	13.9	13.8	11.5	1.0	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(50%),veh/ln	5.1	3.5	3.5	2.4	4.4	5.7	3.4	14.6	14.7	5.2	9.0	10.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	53.5	18.2	18.2	69.5	38.3	31.3	65.3	55.0	54.9	64.0	35.8	27.8
LnGrp LOS	D	B	B	E	D	C	E	E	D	E	D	C
Approach Vol, veh/h		963			690			1037			1508	
Approach Delay, s/veh		32.0			38.9			56.0			39.3	
Approach LOS		C			D			E			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	13.1	46.5	15.2	45.1	21.8	37.8	19.7	40.7
Change Period (Y+Rc), s	7.0	7.0	6.8	6.8	7.0	7.0	6.8	6.8
Max Green Setting (Gmax), s	12.0	27.0	15.2	38.2	20.0	19.0	15.2	38.2
Max Q Clear Time (g_c+I1), s	16.7	11.7	8.6	28.3	14.2	16.5	12.6	30.7
Green Ext Time (p_c), s	0.0	2.7	0.1	4.5	0.7	0.8	0.3	3.2

Intersection Summary	
HCM 7th Control Delay, s/veh	41.7
HCM 7th LOS	D



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	39	1	34	15	1	55	103	876	20	5	667	34
Future Volume (veh/h)	39	1	34	15	1	55	103	876	20	5	667	34
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		0.99	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	1953	1953	1953	1906	1906	1906	1953	1953	1953	1875	1875	1875
Adj Flow Rate, veh/h	53	1	46	19	1	71	110	932	21	5	717	37
Peak Hour Factor	0.74	0.74	0.74	0.77	0.77	0.77	0.94	0.94	0.94	0.93	0.93	0.93
Percent Heavy Veh, %	3	3	3	6	6	6	3	3	3	8	8	8
Cap, veh/h	135	3	160	155	2	158	503	1456	1234	357	1347	1141
Arrive On Green	0.10	0.10	0.10	0.10	0.10	0.10	0.03	0.75	0.75	0.01	0.72	0.72
Sat Flow, veh/h	1313	35	1617	1310	22	1589	1860	1953	1655	1786	1875	1589
Grp Volume(v), veh/h	53	0	47	19	0	72	110	932	21	5	717	37
Grp Sat Flow(s),veh/h/ln	1313	0	1652	1310	0	1611	1860	1953	1655	1786	1875	1589
Q Serve(g_s), s	4.8	0.0	3.2	1.6	0.0	5.1	1.9	27.9	0.4	0.1	20.9	0.8
Cycle Q Clear(g_c), s	9.8	0.0	3.2	4.8	0.0	5.1	1.9	27.9	0.4	0.1	20.9	0.8
Prop In Lane	1.00		0.98	1.00		0.99	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	135	0	164	155	0	160	503	1456	1234	357	1347	1141
V/C Ratio(X)	0.39	0.00	0.29	0.12	0.00	0.45	0.22	0.64	0.02	0.01	0.53	0.03
Avail Cap(c_a), veh/h	180	0	220	200	0	215	520	1456	1234	408	1347	1141
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	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	55.6	0.0	50.1	52.3	0.0	51.0	6.1	7.4	3.9	7.1	7.7	4.9
Incr Delay (d2), s/veh	1.9	0.0	0.9	0.3	0.0	2.0	0.2	2.2	0.0	0.0	1.5	0.1
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(50%),veh/ln	1.7	0.0	1.4	0.6	0.0	2.1	0.6	9.7	0.1	0.0	7.3	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	57.4	0.0	51.1	52.7	0.0	52.9	6.3	9.6	4.0	7.2	9.2	4.9
LnGrp LOS	E		D	D		D	A	A	A	A	A	A
Approach Vol, veh/h		100			91			1063			759	
Approach Delay, s/veh		54.4			52.9			9.1			9.0	
Approach LOS		D			D			A			A	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	6.6	95.5		17.9	9.9	92.2		17.9
Change Period (Y+Rc), s	6.0	6.0		6.0	6.0	6.0		6.0
Max Green Setting (Gmax), s	4.6	82.0		16.0	5.0	81.0		16.0
Max Q Clear Time (g_c+I1), s	2.1	29.9		11.8	3.9	22.9		7.1
Green Ext Time (p_c), s	0.0	8.4		0.1	0.0	5.5		0.2

Intersection Summary	
HCM 7th Control Delay, s/veh	13.3
HCM 7th LOS	B

Notes

User approved pedestrian interval to be less than phase max green.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	599	588	91	122	585	402	95	488	77	185	584	600
Future Volume (veh/h)	599	588	91	122	585	402	95	488	77	185	584	600
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	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	1969	1969	1969	1969	1969	1969	1969	1969	1969
Adj Flow Rate, veh/h	673	661	102	136	650	447	103	530	84	195	615	632
Peak Hour Factor	0.89	0.89	0.89	0.90	0.90	0.90	0.92	0.92	0.92	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	651	1413	218	162	652	486	128	558	88	220	829	949
Arrive On Green	0.35	0.44	0.44	0.09	0.17	0.17	0.07	0.17	0.17	0.12	0.22	0.22
Sat Flow, veh/h	1875	3248	501	1875	3741	1668	1875	3229	510	1875	3741	1668
Grp Volume(v), veh/h	673	380	383	136	650	447	103	306	308	195	615	632
Grp Sat Flow(s),veh/h/ln	1875	1870	1879	1875	1870	1668	1875	1870	1869	1875	1870	1668
Q Serve(g_s), s	48.6	20.2	20.2	10.0	24.3	24.4	7.6	22.7	22.8	14.3	21.4	31.0
Cycle Q Clear(g_c), s	48.6	20.2	20.2	10.0	24.3	24.4	7.6	22.7	22.8	14.3	21.4	31.0
Prop In Lane	1.00		0.27	1.00		1.00	1.00		0.27	1.00		1.00
Lane Grp Cap(c), veh/h	651	814	817	162	652	486	128	323	323	220	829	949
V/C Ratio(X)	1.03	0.47	0.47	0.84	1.00	0.92	0.80	0.95	0.95	0.89	0.74	0.67
Avail Cap(c_a), veh/h	651	814	817	236	652	486	204	323	323	230	829	949
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	0.91	0.91	0.91	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	45.7	28.0	28.1	63.0	57.8	48.0	64.3	57.3	57.3	60.9	50.8	21.0
Incr Delay (d2), s/veh	44.3	1.9	1.9	14.9	33.1	23.4	17.9	36.1	37.7	31.8	3.6	1.8
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(50%),veh/ln	29.5	9.1	9.2	5.3	14.1	18.1	4.2	13.9	14.1	8.6	10.2	14.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	90.0	30.0	30.0	77.9	90.9	71.4	82.2	93.4	95.0	92.7	54.3	22.7
LnGrp LOS	F	C	C	E	F	E	F	F	F	F	D	C
Approach Vol, veh/h		1436			1233			717			1442	
Approach Delay, s/veh		58.1			82.4			92.5			45.7	
Approach LOS		E			F			F			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	18.5	67.3	16.4	37.8	55.0	30.8	23.2	31.0
Change Period (Y+Rc), s	* 6.4	* 6.4	6.8	6.8	* 6.4	* 6.4	6.8	6.8
Max Green Setting (Gmax), s	* 18	* 55	15.2	26.2	* 49	* 24	17.2	24.2
Max Q Clear Time (g_c+I1), s	12.0	22.2	9.6	33.0	50.6	26.4	16.3	24.8
Green Ext Time (p_c), s	0.1	4.5	0.2	0.0	0.0	0.0	0.1	0.0

Intersection Summary	
HCM 7th Control Delay, s/veh	65.7
HCM 7th LOS	E

Notes

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	45	748	57	163	940	34	75	2	142	27	9	94
Future Volume (veh/h)	45	748	57	163	940	34	75	2	142	27	9	94
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
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	2000	2000	2000	1953	1953	1953
Adj Flow Rate, veh/h	48	796	61	177	1022	37	80	2	151	39	13	136
Peak Hour Factor	0.94	0.94	0.94	0.92	0.92	0.92	0.94	0.94	0.94	0.69	0.69	0.69
Percent Heavy Veh, %	1	1	1	1	1	1	0	0	0	3	3	3
Cap, veh/h	600	1744	778	668	1716	62	168	4	280	164	24	256
Arrive On Green	0.21	0.46	0.46	0.21	0.46	0.46	0.17	0.17	0.17	0.17	0.17	0.17
Sat Flow, veh/h	1890	3770	1682	1890	3711	134	1258	22	1676	1224	146	1531
Grp Volume(v), veh/h	48	796	61	177	519	540	80	0	153	39	0	149
Grp Sat Flow(s),veh/h/ln	1890	1885	1682	1890	1885	1960	1258	0	1698	1224	0	1678
Q Serve(g_s), s	0.0	17.3	2.4	0.0	24.5	24.5	7.4	0.0	9.9	3.6	0.0	9.7
Cycle Q Clear(g_c), s	0.0	17.3	2.4	0.0	24.5	24.5	17.2	0.0	9.9	13.5	0.0	9.7
Prop In Lane	1.00		1.00	1.00		0.07	1.00		0.99	1.00		0.91
Lane Grp Cap(c), veh/h	600	1744	778	668	872	907	168	0	284	164	0	280
V/C Ratio(X)	0.08	0.46	0.08	0.27	0.60	0.60	0.48	0.00	0.54	0.24	0.00	0.53
Avail Cap(c_a), veh/h	600	1744	778	668	872	907	272	0	425	265	0	419
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)	0.79	0.79	0.79	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	18.5	22.0	18.0	18.2	23.9	23.9	53.5	0.0	45.7	51.9	0.0	45.7
Incr Delay (d2), s/veh	0.0	0.7	0.2	0.2	3.0	2.9	2.1	0.0	1.6	0.7	0.0	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(50%),veh/ln	0.7	7.3	0.9	2.9	10.8	11.2	2.5	0.0	4.3	1.1	0.0	4.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	18.5	22.7	18.1	18.4	26.9	26.8	55.6	0.0	47.3	52.7	0.0	47.2
LnGrp LOS	B	C	B	B	C	C	E		D	D		D
Approach Vol, veh/h		905			1236			233			188	
Approach Delay, s/veh		22.1			25.6			50.2			48.4	
Approach LOS		C			C			D			D	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	32.0	62.0		26.0	32.0	62.0		26.0
Change Period (Y+Rc), s	6.5	6.5		6.0	6.5	6.5		6.0
Max Green Setting (Gmax), s	15.5	55.5		30.0	15.5	55.5		30.0
Max Q Clear Time (g_c+I1), s	12.0	19.3		15.5	2.0	26.5		19.2
Green Ext Time (p_c), s	0.4	5.7		0.7	0.1	6.8		0.9

Intersection Summary	
HCM 7th Control Delay, s/veh	28.3
HCM 7th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.

Intersection	
Int Delay, s/veh	8.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	847	31	52	1035	0	104	0	175	21	0	20
Future Vol, veh/h	0	847	31	52	1035	0	104	0	175	21	0	20
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	1000	-	125	1000	-	-	800	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	92	92	92	85	85	85	60	60	60
Heavy Vehicles, %	1	1	1	2	2	2	1	1	1	0	0	0
Mvmt Flow	0	952	35	57	1125	0	122	0	206	35	0	33

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1125	0	0	987	0	0	1627	2190	476	1714	2225	563
Stage 1	-	-	-	-	-	-	952	952	-	1238	1238	-
Stage 2	-	-	-	-	-	-	676	1238	-	476	987	-
Critical Hdwy	4.12	-	-	4.14	-	-	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	-	-	2.22	-	-	3.51	4.01	3.31	3.5	4	3.3
Pot Cap-1 Maneuver	815	-	-	877	-	-	*146	54	*856	*119	51	*805
Stage 1	-	-	-	-	-	-	*474	476	-	*333	359	-
Stage 2	-	-	-	-	-	-	*757	357	-	*809	457	-
Platoon blocked, %	0	-	-	0	-	-	0	0	0	0	0	0
Mov Cap-1 Maneuver	815	-	-	877	-	-	*131	51	*856	*84	48	*805
Mov Cap-2 Maneuver	-	-	-	-	-	-	*131	51	-	*84	48	-
Stage 1	-	-	-	-	-	-	*474	476	-	*312	336	-
Stage 2	-	-	-	-	-	-	*679	334	-	*615	457	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	0	0.45	53.28	47.82
HCM LOS			F	E

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	131	856	815	-	-	877	-	-	150
HCM Lane V/C Ratio	0.931	0.241	-	-	-	0.064	-	-	0.457
HCM Control Delay (s/veh)	125.2	10.5	0	-	-	9.4	-	-	47.8
HCM Lane LOS	F	B	A	-	-	A	-	-	E
HCM 95th %tile Q(veh)	6.2	0.9	0	-	-	0.2	-	-	2.1

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)	69	964	10	26	901	84	58	10	27	165	5	128
Future Volume (veh/h)	69	964	10	26	901	84	58	10	27	165	5	128
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
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	2000	2000	2000	2000	2000	2000
Adj Flow Rate, veh/h	74	1037	11	30	1048	98	97	17	45	190	6	147
Peak Hour Factor	0.93	0.93	0.93	0.86	0.86	0.86	0.60	0.60	0.60	0.87	0.87	0.87
Percent Heavy Veh, %	1	1	1	1	1	1	0	0	0	0	0	0
Cap, veh/h	566	1970	879	493	1821	170	200	93	246	280	13	313
Arrive On Green	0.13	0.52	0.52	0.26	1.00	1.00	0.19	0.19	0.19	0.19	0.19	0.19
Sat Flow, veh/h	1890	3770	1682	1890	3485	326	1254	485	1284	1362	67	1638
Grp Volume(v), veh/h	74	1037	11	30	567	579	97	0	62	190	0	153
Grp Sat Flow(s),veh/h/ln	1890	1885	1682	1890	1885	1926	1254	0	1769	1362	0	1705
Q Serve(g_s), s	0.0	21.7	0.4	0.0	0.0	0.0	8.9	0.0	3.5	16.3	0.0	9.6
Cycle Q Clear(g_c), s	0.0	21.7	0.4	0.0	0.0	0.0	18.5	0.0	3.5	19.8	0.0	9.6
Prop In Lane	1.00		1.00	1.00		0.17	1.00		0.73	1.00		0.96
Lane Grp Cap(c), veh/h	566	1970	879	493	985	1006	200	0	338	280	0	326
V/C Ratio(X)	0.13	0.53	0.01	0.06	0.58	0.58	0.49	0.00	0.18	0.68	0.00	0.47
Avail Cap(c_a), veh/h	566	1970	879	493	985	1006	294	0	472	383	0	455
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	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	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	8.5	18.9	13.8	14.9	0.0	0.0	51.3	0.0	40.7	49.0	0.0	43.1
Incr Delay (d2), s/veh	0.1	1.0	0.0	0.1	2.4	2.4	1.8	0.0	0.3	2.9	0.0	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(50%),veh/ln	0.7	8.9	0.1	0.4	0.7	0.7	2.9	0.0	1.6	5.8	0.0	4.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	8.6	19.9	13.8	14.9	2.4	2.4	53.2	0.0	40.9	51.8	0.0	44.2
LnGrp LOS	A	B	B	B	A	A	D		D	D		D
Approach Vol, veh/h		1122			1176			159			343	
Approach Delay, s/veh		19.1			2.7			48.4			48.4	
Approach LOS		B			A			D			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	22.0	69.0		29.0	22.0	69.0		29.0				
Change Period (Y+Rc), s	* 6.3	* 6.3		6.0	* 6.3	* 6.3		6.0				
Max Green Setting (Gmax), s	* 6.7	* 63		32.0	* 6.7	* 63		32.0				
Max Q Clear Time (g_c+I1), s	2.0	23.7		21.8	2.0	2.0		20.5				
Green Ext Time (p_c), s	0.0	7.9		1.1	0.0	8.4		0.5				

Intersection Summary		
HCM 7th Control Delay, s/veh	17.5	
HCM 7th LOS	B	

Notes

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	590	584	145	120	615	528	102	671	68	234	763	314
Future Volume (veh/h)	590	584	145	120	615	528	102	671	68	234	763	314
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
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	1953	1953	1953	1969	1969	1969
Adj Flow Rate, veh/h	621	615	153	130	668	574	110	722	73	249	812	334
Peak Hour Factor	0.95	0.95	0.95	0.92	0.92	0.92	0.93	0.93	0.93	0.94	0.94	0.94
Percent Heavy Veh, %	1	1	1	1	1	1	3	3	3	2	2	2
Cap, veh/h	667	1062	264	158	967	578	135	831	84	318	969	735
Arrive On Green	0.30	0.59	0.59	0.08	0.26	0.26	0.10	0.32	0.32	0.09	0.26	0.26
Sat Flow, veh/h	3666	2992	743	1890	3770	1680	1860	3403	344	3638	3741	1668
Grp Volume(v), veh/h	621	387	381	130	668	574	110	393	402	249	812	334
Grp Sat Flow(s),veh/h/ln	1833	1885	1850	1890	1885	1680	1860	1856	1891	1819	1870	1668
Q Serve(g_s), s	19.7	15.3	15.3	8.1	19.2	30.8	7.0	23.9	24.0	8.0	24.7	16.8
Cycle Q Clear(g_c), s	19.7	15.3	15.3	8.1	19.2	30.8	7.0	23.9	24.0	8.0	24.7	16.8
Prop In Lane	1.00		0.40	1.00		1.00	1.00		0.18	1.00		1.00
Lane Grp Cap(c), veh/h	667	669	656	158	967	578	135	453	462	318	969	735
V/C Ratio(X)	0.93	0.58	0.58	0.82	0.69	0.99	0.81	0.87	0.87	0.78	0.84	0.45
Avail Cap(c_a), veh/h	672	669	656	173	967	578	143	453	462	521	1128	807
HCM Platoon Ratio	1.67	1.67	1.67	1.00	1.00	1.00	1.33	1.33	1.33	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	41.1	18.9	18.9	54.1	40.3	39.2	53.4	38.7	38.7	53.6	42.1	23.5
Incr Delay (d2), s/veh	19.7	3.6	3.7	24.8	4.0	35.8	27.8	16.3	16.2	4.2	5.0	0.4
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(50%),veh/ln	9.1	5.7	5.6	4.8	9.1	21.7	4.2	11.8	12.0	3.8	11.8	6.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	60.8	22.5	22.6	78.9	44.4	75.0	81.2	55.0	54.9	57.8	47.1	23.9
LnGrp LOS	E	C	C	E	D	E	F	D	D	E	D	C
Approach Vol, veh/h		1389			1372			905			1395	
Approach Delay, s/veh		39.7			60.5			58.1			43.5	
Approach LOS		D			E			E			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	17.0	49.6	15.5	37.9	28.8	37.8	17.3	36.1
Change Period (Y+Rc), s	7.0	7.0	6.8	6.8	7.0	7.0	6.8	6.8
Max Green Setting (Gmax), s	10.0	36.0	9.2	36.2	22.0	25.0	17.2	28.2
Max Q Clear Time (g_c+I1), s	10.1	17.3	9.0	26.7	21.7	32.8	10.0	26.0
Green Ext Time (p_c), s	0.0	4.1	0.0	4.4	0.1	0.0	0.5	1.0

Intersection Summary	
HCM 7th Control Delay, s/veh	49.7
HCM 7th LOS	D



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	101	4	72	5	0	27	23	748	21	53	959	31
Future Volume (veh/h)	101	4	72	5	0	27	23	748	21	53	959	31
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
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	1938	1938	1938	2000	2000	2000	1969	1969	1969	1984	1984	1984
Adj Flow Rate, veh/h	158	6	112	6	0	35	24	787	22	58	1054	34
Peak Hour Factor	0.64	0.64	0.64	0.78	0.78	0.78	0.95	0.95	0.95	0.91	0.91	0.91
Percent Heavy Veh, %	4	4	4	0	0	0	2	2	2	1	1	1
Cap, veh/h	242	13	240	174	0	259	258	1317	1116	418	1347	1142
Arrive On Green	0.15	0.15	0.15	0.15	0.00	0.15	0.02	0.67	0.67	0.03	0.68	0.68
Sat Flow, veh/h	1352	84	1571	1294	0	1695	1875	1969	1668	1890	1984	1682
Grp Volume(v), veh/h	158	0	118	6	0	35	24	787	22	58	1054	34
Grp Sat Flow(s),veh/h/ln	1352	0	1655	1294	0	1695	1875	1969	1668	1890	1984	1682
Q Serve(g_s), s	13.7	0.0	7.8	0.5	0.0	2.1	0.5	26.5	0.5	1.2	43.7	0.8
Cycle Q Clear(g_c), s	15.9	0.0	7.8	8.3	0.0	2.1	0.5	26.5	0.5	1.2	43.7	0.8
Prop In Lane	1.00		0.95	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	242	0	253	174	0	259	258	1317	1116	418	1347	1142
V/C Ratio(X)	0.65	0.00	0.47	0.03	0.00	0.14	0.09	0.60	0.02	0.14	0.78	0.03
Avail Cap(c_a), veh/h	284	0	303	213	0	311	286	1317	1116	427	1347	1142
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	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	50.8	0.0	46.4	50.2	0.0	44.0	13.8	11.0	6.7	8.9	13.2	6.3
Incr Delay (d2), s/veh	4.1	0.0	1.3	0.1	0.0	0.2	0.2	2.0	0.0	0.1	4.6	0.0
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(50%),veh/ln	5.0	0.0	3.3	0.2	0.0	0.9	0.2	10.6	0.2	0.4	17.8	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	55.0	0.0	47.7	50.2	0.0	44.2	14.0	13.0	6.7	9.0	17.8	6.4
LnGrp LOS	D		D	D		D	B	B	A	A	B	A
Approach Vol, veh/h		276			41			833			1146	
Approach Delay, s/veh		51.9			45.1			12.8			17.0	
Approach LOS		D			D			B			B	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	9.4	86.2		24.3	8.2	87.5		24.3
Change Period (Y+Rc), s	6.0	6.0		6.0	6.0	6.0		6.0
Max Green Setting (Gmax), s	4.0	76.0		22.0	4.0	76.0		22.0
Max Q Clear Time (g_c+I1), s	3.2	28.5		17.9	2.5	45.7		10.3
Green Ext Time (p_c), s	0.0	6.2		0.5	0.0	9.7		0.1

Intersection Summary	
HCM 7th Control Delay, s/veh	20.2
HCM 7th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.

Intersection: 1: Wixom Road & Grand River Avenue

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	T	R	L	T	TR	L	T
Maximum Queue (ft)	409	268	269	78	172	186	116	91	439	421	366	241
Average Queue (ft)	244	142	136	26	87	88	30	33	288	257	199	107
95th Queue (ft)	381	232	234	68	151	155	81	76	406	378	327	198
Link Distance (ft)		1222	1222		799	799			1170			1412
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	1000			775			200	1000		950	400	
Storage Blk Time (%)						0					0	0
Queuing Penalty (veh)						0					0	0

Intersection: 1: Wixom Road & Grand River Avenue

Movement	SB	SB
Directions Served	T	R
Maximum Queue (ft)	166	216
Average Queue (ft)	86	100
95th Queue (ft)	155	175
Link Distance (ft)	1412	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		600
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 2: 12-Mile Road & Grand River Avenue

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	T	R	L	T	TR	L	TR	L	TR
Maximum Queue (ft)	90	137	145	17	109	67	78	43	88	44	66
Average Queue (ft)	32	27	28	1	34	14	20	9	31	8	26
95th Queue (ft)	71	90	88	11	78	47	57	32	65	31	56
Link Distance (ft)		799	799			701	701		358		575
Upstream Blk Time (%)											
Queuing Penalty (veh)											
Storage Bay Dist (ft)	775			100	1000			100		250	
Storage Blk Time (%)			1						0		
Queuing Penalty (veh)			0						0		

Intersection: 3: Providence Parkway & Grand River Avenue

Movement	EB	EB	EB	EB	WB	WB	NB	NB	SB
Directions Served	L	T	T	R	L	TR	L	TR	LTR
Maximum Queue (ft)	33	8	4	13	138	4	87	78	44
Average Queue (ft)	3	0	0	1	52	0	23	26	12
95th Queue (ft)	17	4	3	6	105	3	59	55	39
Link Distance (ft)		1345	1345			1117		856	272
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	1000			125	1000		800		
Storage Blk Time (%)									
Queuing Penalty (veh)									

Intersection: 4: W. Market Square & Grand River Avenue

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	T	R	L	T	TR	L	TR	L	TR
Maximum Queue (ft)	59	134	106	54	110	171	151	64	53	133	87
Average Queue (ft)	15	34	29	5	43	64	70	20	14	59	30
95th Queue (ft)	42	94	80	28	86	136	133	53	38	108	68
Link Distance (ft)		1117	1117			571	571	445	445		356
Upstream Blk Time (%)											
Queuing Penalty (veh)											
Storage Bay Dist (ft)	1000			50	500					150	
Storage Blk Time (%)			2	0						0	0
Queuing Penalty (veh)			1	0						0	0

Intersection: 5: Beck Road & Grand River Avenue

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB
Directions Served	L	L	T	TR	L	T	T	R	L	T	TR	L
Maximum Queue (ft)	197	190	213	214	130	205	173	134	149	383	378	237
Average Queue (ft)	99	103	102	119	43	104	73	39	71	242	243	153
95th Queue (ft)	167	165	183	198	99	180	153	99	131	345	342	243
Link Distance (ft)		527	527	527		1234	1234			967		
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	500				1000			400	300		275	125
Storage Blk Time (%)										6	5	20
Queuing Penalty (veh)										35	25	68

Intersection: 5: Beck Road & Grand River Avenue

Movement	SB	SB	SB	SB
Directions Served	L	T	T	R
Maximum Queue (ft)	339	463	431	203
Average Queue (ft)	203	239	196	85
95th Queue (ft)	317	384	338	154
Link Distance (ft)		944	944	
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)	125			350
Storage Blk Time (%)	49	41	1	
Queuing Penalty (veh)	164	118	4	

Intersection: 6: Beck Road & Providence South Drive/Central Park Boulevard

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	TR	L	T	R	L	T	R
Maximum Queue (ft)	125	56	55	87	96	272	63	21	153	43
Average Queue (ft)	33	17	13	23	41	90	4	2	37	3
95th Queue (ft)	79	44	38	52	81	203	32	15	106	17
Link Distance (ft)	480	480	450	450		592			491	491
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)					1000		50	850		
Storage Blk Time (%)						8	0			
Queuing Penalty (veh)						10	0			

Intersection: 7: Providence Parkway & Site Drive

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Intersection: 9000: Dummy Node & Grand River Avenue

Movement	NB	SB
Directions Served	LTR	LTR
Maximum Queue (ft)	36	36
Average Queue (ft)	14	11
95th Queue (ft)	40	36
Link Distance (ft)	194	247
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 9001: Dummy Node & Grand River Avenue

Movement	NB
Directions Served	LTR
Maximum Queue (ft)	60
Average Queue (ft)	21
95th Queue (ft)	49
Link Distance (ft)	157
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 9002: Beck Road & Dummy Node

Movement	SB	SB
Directions Served	T	TR
Maximum Queue (ft)	32	18
Average Queue (ft)	1	1
95th Queue (ft)	16	13
Link Distance (ft)	967	967
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 426

Intersection: 1: Wixom Road & Grand River Avenue

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	T	R	L	T	TR	L	T
Maximum Queue (ft)	950	766	729	305	583	646	275	182	547	521	298	329
Average Queue (ft)	614	360	320	104	349	372	214	70	359	329	179	223
95th Queue (ft)	1094	956	848	248	643	690	357	135	606	568	287	309
Link Distance (ft)		1222	1222		799	799			1170			1412
Upstream Blk Time (%)	1	3	0	0	1	2						
Queuing Penalty (veh)	0	0	0	0	4	11						
Storage Bay Dist (ft)	1000			775			200	1000		950	400	
Storage Blk Time (%)	9	5			1	43	3					
Queuing Penalty (veh)	25	30			2	173	10					

Intersection: 1: Wixom Road & Grand River Avenue

Movement	SB	SB
Directions Served	T	R
Maximum Queue (ft)	322	280
Average Queue (ft)	207	154
95th Queue (ft)	295	261
Link Distance (ft)	1412	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		600
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 2: 12-Mile Road & Grand River Avenue

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	T	R	L	T	TR	L	TR	L	TR
Maximum Queue (ft)	84	170	185	72	154	232	292	110	137	81	146
Average Queue (ft)	32	60	58	12	72	56	90	53	50	19	50
95th Queue (ft)	67	141	142	47	133	192	251	101	101	55	108
Link Distance (ft)		799	799			701	701		358		575
Upstream Blk Time (%)											
Queuing Penalty (veh)											
Storage Bay Dist (ft)	775			100	1000			100		250	
Storage Blk Time (%)			2					1	1		
Queuing Penalty (veh)			1					2	1		

Intersection: 3: Providence Parkway & Grand River Avenue

Movement	EB	WB	NB	NB	SB
Directions Served	T	L	L	TR	LTR
Maximum Queue (ft)	4	61	253	136	69
Average Queue (ft)	0	21	98	40	27
95th Queue (ft)	0	48	217	83	62
Link Distance (ft)	1345			856	272
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)		1000	800		
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 4: W. Market Square & Grand River Avenue

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	T	R	L	T	TR	L	TR	L	TR
Maximum Queue (ft)	68	211	177	16	44	210	245	111	74	196	288
Average Queue (ft)	27	86	66	2	14	97	114	39	20	112	63
95th Queue (ft)	59	175	136	11	37	176	202	88	50	181	151
Link Distance (ft)		1117	1117			571	571	445	445		356
Upstream Blk Time (%)											0
Queuing Penalty (veh)											0
Storage Bay Dist (ft)	1000			50	500					150	
Storage Blk Time (%)			10							5	0
Queuing Penalty (veh)			1							7	0

Intersection: 5: Beck Road & Grand River Avenue

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB
Directions Served	L	L	T	TR	L	T	T	R	L	T	TR	L
Maximum Queue (ft)	525	584	543	480	212	313	285	348	374	624	419	189
Average Queue (ft)	448	484	243	206	96	184	172	189	136	342	280	74
95th Queue (ft)	628	693	507	393	191	276	259	305	346	724	443	169
Link Distance (ft)		527	527	527		1234	1234			967		
Upstream Blk Time (%)	4	33	2	0						4		
Queuing Penalty (veh)	0	143	8	1						30		
Storage Bay Dist (ft)	500				1000			400	300		275	125
Storage Blk Time (%)	13	38							0	21	19	1
Queuing Penalty (veh)	38	113							0	104	84	6

Intersection: 5: Beck Road & Grand River Avenue

Movement	SB	SB	SB	SB
Directions Served	L	T	T	R
Maximum Queue (ft)	350	597	540	202
Average Queue (ft)	180	310	261	81
95th Queue (ft)	341	486	430	153
Link Distance (ft)		944	944	
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)	125			350
Storage Blk Time (%)	15	52	2	
Queuing Penalty (veh)	58	121	5	

Intersection: 6: Beck Road & Providence South Drive/Central Park Boulevard

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	TR	L	T	R	L	T	R
Maximum Queue (ft)	250	104	33	48	122	384	84	86	313	25
Average Queue (ft)	95	33	4	13	19	133	8	31	156	3
95th Queue (ft)	220	72	19	34	75	308	48	68	291	17
Link Distance (ft)	480	480	450	450		592			491	491
Upstream Blk Time (%)						0				
Queuing Penalty (veh)						0				
Storage Bay Dist (ft)					1000		50	850		
Storage Blk Time (%)						16				
Queuing Penalty (veh)						7				

Intersection: 7: Providence Parkway & Site Drive

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Intersection: 9000: Dummy Node & Grand River Avenue

Movement	NB	SB
Directions Served	LTR	LTR
Maximum Queue (ft)	40	35
Average Queue (ft)	14	15
95th Queue (ft)	40	40
Link Distance (ft)	194	247
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 9001: Dummy Node & Grand River Avenue

Movement	EB	EB	EB	NB
Directions Served	T	T	TR	LTR
Maximum Queue (ft)	296	168	114	173
Average Queue (ft)	109	29	8	104
95th Queue (ft)	323	144	77	196
Link Distance (ft)		571	571	157
Upstream Blk Time (%)				42
Queuing Penalty (veh)				0
Storage Bay Dist (ft)	500			
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 9002: Beck Road & Dummy Node

Movement	EB	NB	SB
Directions Served	LTR	TR	T
Maximum Queue (ft)	44	101	86
Average Queue (ft)	13	30	2
95th Queue (ft)	39	217	20
Link Distance (ft)	187	491	967
Upstream Blk Time (%)		0	
Queuing Penalty (veh)		1	
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Network Summary

Network wide Queuing Penalty: 986



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	334	516	48	47	264	173	48	619	89	274	364	554
Future Volume (veh/h)	334	516	48	47	264	173	48	619	89	274	364	554
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		0.98	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	1844	1844	1844	1875	1875	1875	1969	1969	1969	1875	1875	1875
Adj Flow Rate, veh/h	367	567	53	53	300	197	51	652	94	288	383	583
Peak Hour Factor	0.91	0.91	0.91	0.88	0.88	0.88	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	10	10	10	8	8	8	2	2	2	8	8	8
Cap, veh/h	393	1172	109	68	629	565	68	710	102	321	1285	927
Arrive On Green	0.22	0.36	0.36	0.04	0.18	0.18	0.04	0.22	0.22	0.18	0.36	0.36
Sat Flow, veh/h	1756	3238	302	1786	3563	1581	1875	3273	471	1786	3563	1585
Grp Volume(v), veh/h	367	306	314	53	300	197	51	372	374	288	383	583
Grp Sat Flow(s),veh/h/ln	1756	1752	1789	1786	1781	1581	1875	1870	1874	1786	1781	1585
Q Serve(g_s), s	26.7	17.6	17.7	3.8	9.8	11.9	3.5	25.3	25.4	20.5	10.0	31.4
Cycle Q Clear(g_c), s	26.7	17.6	17.7	3.8	9.8	11.9	3.5	25.3	25.4	20.5	10.0	31.4
Prop In Lane	1.00		0.17	1.00		1.00	1.00		0.25	1.00		1.00
Lane Grp Cap(c), veh/h	393	634	647	68	629	565	68	406	407	321	1285	927
V/C Ratio(X)	0.93	0.48	0.48	0.77	0.48	0.35	0.75	0.92	0.92	0.90	0.30	0.63
Avail Cap(c_a), veh/h	440	634	647	118	629	565	176	420	421	401	1285	927
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	0.99	0.99	0.99	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	49.5	32.1	32.1	62.0	48.1	30.8	62.1	49.8	49.8	52.1	29.8	17.8
Incr Delay (d2), s/veh	25.6	2.6	2.6	16.6	2.6	1.7	24.7	24.3	24.7	21.5	0.1	1.4
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(50%),veh/ln	14.1	7.6	7.8	2.0	4.5	4.8	2.1	14.4	14.5	10.9	4.2	11.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	75.2	34.7	34.7	78.6	50.7	32.5	86.8	74.1	74.5	73.7	29.9	19.1
LnGrp LOS	E	C	C	E	D	C	F	E	E	E	C	B
Approach Vol, veh/h		987			550			797			1254	
Approach Delay, s/veh		49.7			46.9			75.1			34.9	
Approach LOS		D			D			E			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.4	53.4	11.5	53.7	35.5	29.3	30.2	35.0
Change Period (Y+Rc), s	* 6.4	* 6.4	6.8	6.8	* 6.4	* 6.4	6.8	6.8
Max Green Setting (Gmax), s	* 8.6	* 37	12.2	46.2	* 33	* 13	29.2	29.2
Max Q Clear Time (g_c+I1), s	5.8	19.7	5.5	33.4	28.7	13.9	22.5	27.4
Green Ext Time (p_c), s	0.0	3.0	0.1	3.8	0.4	0.0	0.9	0.8

Intersection Summary	
HCM 7th Control Delay, s/veh	49.8
HCM 7th LOS	D

Notes

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	78	786	15	67	427	32	10	0	76	11	0	47
Future Volume (veh/h)	78	786	15	67	427	32	10	0	76	11	0	47
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		0.98	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	1922	1922	1922	1875	1875	1875	1938	1938	1938	1828	1828	1828
Adj Flow Rate, veh/h	91	914	17	78	497	37	14	0	103	14	0	60
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.74	0.74	0.74	0.78	0.78	0.78
Percent Heavy Veh, %	5	5	5	8	8	8	4	4	4	11	11	11
Cap, veh/h	826	2024	884	644	1863	138	131	0	148	95	0	140
Arrive On Green	0.20	0.55	0.55	0.20	0.55	0.55	0.09	0.00	0.09	0.09	0.00	0.09
Sat Flow, veh/h	1830	3652	1595	1786	3362	250	1321	0	1642	1199	0	1549
Grp Volume(v), veh/h	91	914	17	78	263	271	14	0	103	14	0	60
Grp Sat Flow(s),veh/h/ln	1830	1826	1595	1786	1781	1830	1321	0	1642	1199	0	1549
Q Serve(g_s), s	0.0	17.9	0.6	0.0	9.3	9.3	1.2	0.0	7.3	1.4	0.0	4.4
Cycle Q Clear(g_c), s	0.0	17.9	0.6	0.0	9.3	9.3	5.6	0.0	7.3	8.7	0.0	4.4
Prop In Lane	1.00		1.00	1.00		0.14	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	826	2024	884	644	987	1014	131	0	148	95	0	140
V/C Ratio(X)	0.11	0.45	0.02	0.12	0.27	0.27	0.11	0.00	0.70	0.15	0.00	0.43
Avail Cap(c_a), veh/h	826	2024	884	644	987	1014	243	0	287	197	0	271
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)	0.74	0.74	0.74	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	7.1	15.9	12.1	11.0	14.0	14.0	54.3	0.0	53.0	57.2	0.0	51.7
Incr Delay (d2), s/veh	0.0	0.5	0.0	0.1	0.7	0.6	0.4	0.0	5.8	0.7	0.0	2.1
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(50%),veh/ln	0.7	6.9	0.2	0.9	3.6	3.7	0.4	0.0	3.3	0.4	0.0	1.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	7.2	16.4	12.1	11.0	14.6	14.6	54.7	0.0	58.8	57.9	0.0	53.7
LnGrp LOS	A	B	B	B	B	B	D		E	E		D
Approach Vol, veh/h		1022			612			117			74	
Approach Delay, s/veh		15.6			14.2			58.3			54.5	
Approach LOS		B			B			E			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	30.2	73.0		16.8	30.2	73.0		16.8				
Change Period (Y+Rc), s	6.5	6.5		6.0	6.5	6.5		6.0				
Max Green Setting (Gmax), s	13.5	66.5		21.0	13.5	66.5		21.0				
Max Q Clear Time (g_c+I1), s	2.0	19.9		10.7	2.0	11.3		9.3				
Green Ext Time (p_c), s	0.1	6.9		0.2	0.1	3.0		0.4				

Intersection Summary	
HCM 7th Control Delay, s/veh	19.4
HCM 7th LOS	B

Notes

User approved pedestrian interval to be less than phase max green.

Intersection	
Int Delay, s/veh	3.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	20	714	113	162	483	47	62	0	100	7	0	7
Future Vol, veh/h	20	714	113	162	483	47	62	0	100	7	0	7
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	1000	-	125	1000	-	-	800	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	86	86	86	92	92	92	89	89	89	70	70	70
Heavy Vehicles, %	5	5	5	6	6	6	5	5	5	0	0	0
Mvmt Flow	23	830	131	176	525	51	70	0	112	10	0	10

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	576	0	0	962	0	0	1491	1805	415	1364	1911	288
Stage 1	-	-	-	-	-	-	877	877	-	903	903	-
Stage 2	-	-	-	-	-	-	615	928	-	462	1008	-
Critical Hdwy	4.2	-	-	4.22	-	-	7.6	6.6	7	7.5	6.5	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-	6.6	5.6	-	6.5	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.6	5.6	-	6.5	5.5	-
Follow-up Hdwy	2.25	-	-	2.26	-	-	3.55	4.05	3.35	3.5	4	3.3
Pot Cap-1 Maneuver	1134	-	-	837	-	-	174	110	*880	*242	93	*964
Stage 1	-	-	-	-	-	-	477	481	-	*391	424	-
Stage 2	-	-	-	-	-	-	596	400	-	*843	417	-
Platoon blocked, %	0	-	-	0	-	-	0	0	0	0	0	0
Mov Cap-1 Maneuver	1134	-	-	837	-	-	133	85	*880	*163	72	*964
Mov Cap-2 Maneuver	-	-	-	-	-	-	133	85	-	*163	72	-
Stage 1	-	-	-	-	-	-	468	471	-	*309	335	-
Stage 2	-	-	-	-	-	-	466	316	-	*720	409	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	0.19	2.44	28.4	18.87
HCM LOS			D	C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	133	880	1134	-	-	837	-	-	279
HCM Lane V/C Ratio	0.524	0.128	0.021	-	-	0.21	-	-	0.072
HCM Control Delay (s/veh)	58.6	9.7	8.2	-	-	10.4	-	-	18.9
HCM Lane LOS	F	A	A	-	-	B	-	-	C
HCM 95th %tile Q(veh)	2.5	0.4	0.1	-	-	0.8	-	-	0.2

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)	35	739	47	99	630	58	18	6	18	69	7	44
Future Volume (veh/h)	35	739	47	99	630	58	18	6	18	69	7	44
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		0.99	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	1906	1906	1906	1938	1938	1938	1953	1953	1953	1953	1953	1953
Adj Flow Rate, veh/h	39	821	52	106	677	62	25	8	25	79	8	51
Peak Hour Factor	0.90	0.90	0.90	0.93	0.93	0.93	0.71	0.71	0.71	0.87	0.87	0.87
Percent Heavy Veh, %	6	6	6	4	4	4	3	3	3	3	3	3
Cap, veh/h	869	1772	780	753	1668	153	143	40	124	166	22	139
Arrive On Green	0.26	0.49	0.49	0.52	0.98	0.98	0.10	0.10	0.10	0.10	0.10	0.10
Sat Flow, veh/h	1816	3622	1595	1845	3410	312	1333	417	1302	1365	229	1461
Grp Volume(v), veh/h	39	821	52	106	365	374	25	0	33	79	0	59
Grp Sat Flow(s),veh/h/ln	1816	1811	1595	1845	1841	1881	1333	0	1719	1365	0	1690
Q Serve(g_s), s	0.0	18.0	2.1	0.0	0.9	0.9	2.2	0.0	2.1	6.8	0.0	3.9
Cycle Q Clear(g_c), s	0.0	18.0	2.1	0.0	0.9	0.9	6.1	0.0	2.1	8.9	0.0	3.9
Prop In Lane	1.00		1.00	1.00		0.17	1.00		0.76	1.00		0.86
Lane Grp Cap(c), veh/h	869	1772	780	753	900	920	143	0	163	166	0	161
V/C Ratio(X)	0.04	0.46	0.07	0.14	0.41	0.41	0.17	0.00	0.20	0.48	0.00	0.37
Avail Cap(c_a), veh/h	869	1772	780	753	900	920	361	0	444	388	0	437
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	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	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	4.2	20.2	16.2	7.0	0.7	0.7	53.8	0.0	50.1	54.2	0.0	50.9
Incr Delay (d2), s/veh	0.0	0.9	0.2	0.1	1.4	1.3	0.6	0.0	0.6	2.1	0.0	1.4
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(50%),veh/ln	0.2	7.2	0.7	0.8	0.5	0.6	0.8	0.0	1.0	2.5	0.0	1.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	4.2	21.1	16.3	7.1	2.0	2.0	54.3	0.0	50.7	56.3	0.0	52.3
LnGrp LOS	A	C	B	A	A	A	D		D	E		D
Approach Vol, veh/h		912			845			58			138	
Approach Delay, s/veh		20.1			2.6			52.3			54.6	
Approach LOS		C			A			D			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	37.6	65.0		17.4	37.6	65.0		17.4				
Change Period (Y+Rc), s	* 6.3	* 6.3		6.0	* 6.3	* 6.3		6.0				
Max Green Setting (Gmax), s	* 12	* 59		31.0	* 12	* 59		31.0				
Max Q Clear Time (g_c+I1), s	2.0	20.0		10.9	2.0	2.9		8.1				
Green Ext Time (p_c), s	0.1	6.0		0.5	0.0	4.5		0.2				

Intersection Summary	
HCM 7th Control Delay, s/veh	16.0
HCM 7th LOS	B

Notes

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	343	449	70	60	313	216	96	756	102	290	663	424
Future Volume (veh/h)	343	449	70	60	313	216	96	756	102	290	663	424
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
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	1922	1922	1922	1875	1875	1875	1953	1953	1953	1922	1922	1922
Adj Flow Rate, veh/h	394	516	80	71	368	254	104	822	111	319	729	466
Peak Hour Factor	0.87	0.87	0.87	0.85	0.85	0.85	0.92	0.92	0.92	0.91	0.91	0.91
Percent Heavy Veh, %	5	5	5	8	8	8	3	3	3	5	5	5
Cap, veh/h	457	1043	161	91	895	570	131	929	125	381	1167	730
Arrive On Green	0.26	0.66	0.66	0.05	0.25	0.25	0.07	0.28	0.28	0.11	0.32	0.32
Sat Flow, veh/h	3551	3170	490	1786	3563	1589	1860	3285	444	3551	3652	1629
Grp Volume(v), veh/h	394	296	300	71	368	254	104	464	469	319	729	466
Grp Sat Flow(s),veh/h/ln	1776	1826	1834	1786	1781	1589	1860	1856	1873	1776	1826	1629
Q Serve(g_s), s	12.7	9.9	10.0	4.7	10.3	14.6	6.6	28.7	28.7	10.6	20.4	26.5
Cycle Q Clear(g_c), s	12.7	9.9	10.0	4.7	10.3	14.6	6.6	28.7	28.7	10.6	20.4	26.5
Prop In Lane	1.00		0.27	1.00		1.00	1.00		0.24	1.00		1.00
Lane Grp Cap(c), veh/h	457	601	603	91	895	570	131	524	530	381	1167	730
V/C Ratio(X)	0.86	0.49	0.50	0.78	0.41	0.45	0.79	0.89	0.89	0.84	0.62	0.64
Avail Cap(c_a), veh/h	621	601	603	193	895	570	236	591	596	450	1167	730
HCM Platoon Ratio	2.00	2.00	2.00	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	43.5	15.5	15.5	56.3	37.5	29.4	54.9	41.2	41.2	52.5	34.7	25.6
Incr Delay (d2), s/veh	9.1	2.9	2.9	13.2	1.4	2.5	10.4	13.9	13.8	11.5	1.0	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(50%),veh/ln	5.3	3.5	3.6	2.4	4.5	5.8	3.4	14.6	14.7	5.2	9.0	10.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	52.6	18.3	18.4	69.4	38.9	31.9	65.3	55.0	54.9	64.0	35.8	27.4
LnGrp LOS	D	B	B	E	D	C	E	E	D	E	D	C
Approach Vol, veh/h		990			693			1037			1514	
Approach Delay, s/veh		32.0			39.5			56.0			39.1	
Approach LOS		C			D			E			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	13.1	46.5	15.2	45.1	22.5	37.2	19.7	40.7
Change Period (Y+Rc), s	7.0	7.0	6.8	6.8	7.0	7.0	6.8	6.8
Max Green Setting (Gmax), s	13.0	26.0	15.2	38.2	21.0	18.0	15.2	38.2
Max Q Clear Time (g_c+I1), s	16.7	12.0	8.6	28.5	14.7	16.6	12.6	30.7
Green Ext Time (p_c), s	0.1	2.7	0.1	4.5	0.7	0.5	0.3	3.2

Intersection Summary	
HCM 7th Control Delay, s/veh	41.7
HCM 7th LOS	D



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	39	1	42	15	1	55	106	876	20	5	667	34
Future Volume (veh/h)	39	1	42	15	1	55	106	876	20	5	667	34
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		0.99	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	1953	1953	1953	1906	1906	1906	1953	1953	1953	1875	1875	1875
Adj Flow Rate, veh/h	53	1	57	19	1	71	113	932	21	5	717	37
Peak Hour Factor	0.74	0.74	0.74	0.77	0.77	0.77	0.94	0.94	0.94	0.93	0.93	0.93
Percent Heavy Veh, %	3	3	3	6	6	6	3	3	3	8	8	8
Cap, veh/h	135	3	161	146	2	158	503	1456	1234	357	1347	1141
Arrive On Green	0.10	0.10	0.10	0.10	0.10	0.10	0.03	0.75	0.75	0.01	0.72	0.72
Sat Flow, veh/h	1313	28	1623	1297	22	1589	1860	1953	1655	1786	1875	1589
Grp Volume(v), veh/h	53	0	58	19	0	72	113	932	21	5	717	37
Grp Sat Flow(s),veh/h/ln	1313	0	1651	1297	0	1611	1860	1953	1655	1786	1875	1589
Q Serve(g_s), s	4.8	0.0	3.9	1.7	0.0	5.1	1.9	27.9	0.4	0.1	20.9	0.8
Cycle Q Clear(g_c), s	9.8	0.0	3.9	5.6	0.0	5.1	1.9	27.9	0.4	0.1	20.9	0.8
Prop In Lane	1.00		0.98	1.00		0.99	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	135	0	164	146	0	160	503	1456	1234	357	1347	1141
V/C Ratio(X)	0.39	0.00	0.35	0.13	0.00	0.45	0.22	0.64	0.02	0.01	0.53	0.03
Avail Cap(c_a), veh/h	169	0	206	180	0	201	520	1456	1234	408	1347	1141
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	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	55.6	0.0	50.5	53.1	0.0	51.0	6.1	7.4	3.9	7.1	7.7	4.9
Incr Delay (d2), s/veh	1.9	0.0	1.3	0.4	0.0	2.0	0.2	2.2	0.0	0.0	1.5	0.1
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(50%),veh/ln	1.7	0.0	1.7	0.6	0.0	2.1	0.6	9.7	0.1	0.0	7.3	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	57.4	0.0	51.7	53.5	0.0	52.9	6.4	9.6	4.0	7.2	9.2	4.9
LnGrp LOS	E		D	D		D	A	A	A	A	A	A
Approach Vol, veh/h		111			91			1066			759	
Approach Delay, s/veh		54.5			53.0			9.1			9.0	
Approach LOS		D			D			A			A	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.6	95.5		17.9	9.9	92.2		17.9				
Change Period (Y+Rc), s	6.0	6.0		6.0	6.0	6.0		6.0				
Max Green Setting (Gmax), s	4.6	83.0		15.0	5.0	82.0		15.0				
Max Q Clear Time (g_c+I1), s	2.1	29.9		11.8	3.9	22.9		7.6				
Green Ext Time (p_c), s	0.0	8.5		0.1	0.0	5.5		0.2				

Intersection Summary	
HCM 7th Control Delay, s/veh	13.5
HCM 7th LOS	B

Notes

User approved pedestrian interval to be less than phase max green.

Intersection	
Int Delay, s/veh	1.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	51	8	3	111	258	17
Future Vol, veh/h	51	8	3	111	258	17
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	500	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	89	89	92	92
Heavy Vehicles, %	2	2	5	5	2	2
Mvmt Flow	55	9	3	125	280	18

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	421	290	299	0	-	0
Stage 1	290	-	-	-	-	-
Stage 2	131	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.15	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.245	-	-	-
Pot Cap-1 Maneuver	589	749	1245	-	-	-
Stage 1	760	-	-	-	-	-
Stage 2	895	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	587	749	1245	-	-	-
Mov Cap-2 Maneuver	636	-	-	-	-	-
Stage 1	758	-	-	-	-	-
Stage 2	895	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	11.15	0.21	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1245	-	649	-	-
HCM Lane V/C Ratio	0.003	-	0.099	-	-
HCM Control Delay (s/veh)	7.9	-	11.1	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0	-	0.3	-	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	599	599	91	126	592	410	95	488	82	196	584	600
Future Volume (veh/h)	599	599	91	126	592	410	95	488	82	196	584	600
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	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	1969	1969	1969	1969	1969	1969	1969	1969	1969
Adj Flow Rate, veh/h	673	673	102	140	658	456	103	530	89	206	615	632
Peak Hour Factor	0.89	0.89	0.89	0.90	0.90	0.90	0.92	0.92	0.92	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	638	1394	211	165	658	498	127	553	92	230	851	947
Arrive On Green	0.34	0.43	0.43	0.09	0.18	0.18	0.07	0.17	0.17	0.12	0.23	0.23
Sat Flow, veh/h	1875	3257	493	1875	3741	1668	1875	3199	535	1875	3741	1668
Grp Volume(v), veh/h	673	386	389	140	658	456	103	309	310	206	615	632
Grp Sat Flow(s),veh/h/ln	1875	1870	1880	1875	1870	1668	1875	1870	1864	1875	1870	1668
Q Serve(g_s), s	47.6	20.8	20.9	10.3	24.6	24.6	7.6	22.9	23.1	15.2	21.3	31.9
Cycle Q Clear(g_c), s	47.6	20.8	20.9	10.3	24.6	24.6	7.6	22.9	23.1	15.2	21.3	31.9
Prop In Lane	1.00		0.26	1.00		1.00	1.00		0.29	1.00		1.00
Lane Grp Cap(c), veh/h	638	800	804	165	658	498	127	323	322	230	851	947
V/C Ratio(X)	1.06	0.48	0.48	0.85	1.00	0.92	0.81	0.96	0.96	0.90	0.72	0.67
Avail Cap(c_a), veh/h	638	800	804	209	658	498	163	323	322	230	851	947
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	0.90	0.90	0.90	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	46.2	28.9	28.9	62.9	57.7	47.4	64.4	57.4	57.4	60.5	50.0	21.1
Incr Delay (d2), s/veh	51.2	2.1	2.1	20.3	33.1	22.2	24.9	38.2	40.0	34.0	3.0	1.8
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(50%),veh/ln	30.2	9.4	9.5	5.7	14.3	18.2	4.5	14.2	14.4	9.2	10.1	14.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	97.4	31.0	31.0	83.2	90.8	69.6	89.3	95.6	97.4	94.5	53.0	22.9
LnGrp LOS	F	C	C	F	F	E	F	F	F	F	D	C
Approach Vol, veh/h		1448			1254			722			1453	
Approach Delay, s/veh		61.9			82.2			95.5			45.8	
Approach LOS		E			F			F			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	18.7	66.3	16.3	38.7	54.0	31.0	24.0	31.0
Change Period (Y+Rc), s	* 6.4	* 6.4	6.8	6.8	* 6.4	* 6.4	6.8	6.8
Max Green Setting (Gmax), s	* 16	* 57	12.2	29.2	* 48	* 25	17.2	24.2
Max Q Clear Time (g_c+I1), s	12.3	22.9	9.6	33.9	49.6	26.6	17.2	25.1
Green Ext Time (p_c), s	0.1	4.6	0.1	0.0	0.0	0.0	0.0	0.0

Intersection Summary	
HCM 7th Control Delay, s/veh	67.3
HCM 7th LOS	E

Notes

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	45	775	57	163	959	34	75	2	142	27	9	94
Future Volume (veh/h)	45	775	57	163	959	34	75	2	142	27	9	94
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
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	2000	2000	2000	1953	1953	1953
Adj Flow Rate, veh/h	48	824	61	177	1042	37	80	2	151	39	13	136
Peak Hour Factor	0.94	0.94	0.94	0.92	0.92	0.92	0.94	0.94	0.94	0.69	0.69	0.69
Percent Heavy Veh, %	1	1	1	1	1	1	0	0	0	3	3	3
Cap, veh/h	594	1744	778	658	1718	61	168	4	280	164	24	256
Arrive On Green	0.21	0.46	0.46	0.21	0.46	0.46	0.17	0.17	0.17	0.17	0.17	0.17
Sat Flow, veh/h	1890	3770	1682	1890	3714	132	1258	22	1676	1224	146	1531
Grp Volume(v), veh/h	48	824	61	177	529	550	80	0	153	39	0	149
Grp Sat Flow(s),veh/h/ln	1890	1885	1682	1890	1885	1961	1258	0	1698	1224	0	1678
Q Serve(g_s), s	0.0	18.0	2.4	0.0	25.2	25.2	7.4	0.0	9.9	3.6	0.0	9.7
Cycle Q Clear(g_c), s	0.0	18.0	2.4	0.0	25.2	25.2	17.2	0.0	9.9	13.5	0.0	9.7
Prop In Lane	1.00		1.00	1.00		0.07	1.00		0.99	1.00		0.91
Lane Grp Cap(c), veh/h	594	1744	778	658	872	907	168	0	284	164	0	280
V/C Ratio(X)	0.08	0.47	0.08	0.27	0.61	0.61	0.48	0.00	0.54	0.24	0.00	0.53
Avail Cap(c_a), veh/h	594	1744	778	658	872	907	272	0	425	265	0	419
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)	0.78	0.78	0.78	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	18.9	22.2	18.0	18.9	24.1	24.1	53.5	0.0	45.7	51.9	0.0	45.7
Incr Delay (d2), s/veh	0.0	0.7	0.2	0.2	3.1	3.0	2.1	0.0	1.6	0.7	0.0	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(50%),veh/ln	0.8	7.6	0.9	3.0	11.1	11.6	2.5	0.0	4.3	1.1	0.0	4.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	18.9	22.9	18.1	19.1	27.2	27.1	55.6	0.0	47.3	52.7	0.0	47.2
LnGrp LOS	B	C	B	B	C	C	E		D	D		D
Approach Vol, veh/h		933			1256			233			188	
Approach Delay, s/veh		22.4			26.0			50.2			48.4	
Approach LOS		C			C			D			D	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	32.0	62.0		26.0	32.0	62.0		26.0
Change Period (Y+Rc), s	6.5	6.5		6.0	6.5	6.5		6.0
Max Green Setting (Gmax), s	15.5	55.5		30.0	15.5	55.5		30.0
Max Q Clear Time (g_c+I1), s	12.0	20.0		15.5	2.0	27.2		19.2
Green Ext Time (p_c), s	0.4	5.9		0.7	0.1	6.9		0.9

Intersection Summary	
HCM 7th Control Delay, s/veh	28.5
HCM 7th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.

Intersection	
Int Delay, s/veh	16.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	847	58	73	1035	0	123	0	190	21	0	20
Future Vol, veh/h	0	847	58	73	1035	0	123	0	190	21	0	20
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	1000	-	125	1000	-	-	800	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	92	92	92	85	85	85	60	60	60
Heavy Vehicles, %	1	1	1	2	2	2	1	1	1	0	0	0
Mvmt Flow	0	952	65	79	1125	0	145	0	224	35	0	33

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1125	0	0	1017	0	0	1673	2235	476	1760	2301	563
Stage 1	-	-	-	-	-	-	952	952	-	1284	1284	-
Stage 2	-	-	-	-	-	-	721	1284	-	476	1017	-
Critical Hdwy	4.12	-	-	4.14	-	-	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	-	-	2.22	-	-	3.51	4.01	3.31	3.5	4	3.3
Pot Cap-1 Maneuver	815	-	-	849	-	-	*~ 131	49	*856	*106	43	*805
Stage 1	-	-	-	-	-	-	*474	476	-	*306	337	-
Stage 2	-	-	-	-	-	-	*757	335	-	*809	439	-
Platoon blocked, %	0	-	-	0	-	-	0	0	0	0	0	0
Mov Cap-1 Maneuver	815	-	-	849	-	-	*~ 113	45	*856	*71	39	*805
Mov Cap-2 Maneuver	-	-	-	-	-	-	*~ 113	45	-	*71	39	-
Stage 1	-	-	-	-	-	-	*474	476	-	*277	305	-
Stage 2	-	-	-	-	-	-	*658	304	-	*598	439	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	0	0.64	103.57	61.85
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	113	856	815	-	-	849	-	-	128
HCM Lane V/C Ratio	1.275	0.261	-	-	-	0.093	-	-	0.536
HCM Control Delay (s/veh)	247.1	10.7	0	-	-	9.7	-	-	61.8
HCM Lane LOS	F	B	A	-	-	A	-	-	F
HCM 95th %tile Q(veh)	9.6	1	0	-	-	0.3	-	-	2.6

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)	69	979	10	26	922	84	58	10	27	165	5	128
Future Volume (veh/h)	69	979	10	26	922	84	58	10	27	165	5	128
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
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	2000	2000	2000	2000	2000	2000
Adj Flow Rate, veh/h	74	1053	11	30	1072	98	97	17	45	190	6	147
Peak Hour Factor	0.93	0.93	0.93	0.86	0.86	0.86	0.60	0.60	0.60	0.87	0.87	0.87
Percent Heavy Veh, %	1	1	1	1	1	1	0	0	0	0	0	0
Cap, veh/h	561	1970	879	488	1825	167	200	93	246	280	13	313
Arrive On Green	0.13	0.52	0.52	0.26	1.00	1.00	0.19	0.19	0.19	0.19	0.19	0.19
Sat Flow, veh/h	1890	3770	1682	1890	3493	319	1254	485	1284	1362	67	1638
Grp Volume(v), veh/h	74	1053	11	30	578	592	97	0	62	190	0	153
Grp Sat Flow(s),veh/h/ln	1890	1885	1682	1890	1885	1927	1254	0	1769	1362	0	1705
Q Serve(g_s), s	0.0	22.2	0.4	0.0	0.0	0.0	8.9	0.0	3.5	16.3	0.0	9.6
Cycle Q Clear(g_c), s	0.0	22.2	0.4	0.0	0.0	0.0	18.5	0.0	3.5	19.8	0.0	9.6
Prop In Lane	1.00		1.00	1.00		0.17	1.00		0.73	1.00		0.96
Lane Grp Cap(c), veh/h	561	1970	879	488	985	1007	200	0	338	280	0	326
V/C Ratio(X)	0.13	0.53	0.01	0.06	0.59	0.59	0.49	0.00	0.18	0.68	0.00	0.47
Avail Cap(c_a), veh/h	561	1970	879	488	985	1007	294	0	472	383	0	455
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	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	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	8.5	19.0	13.8	15.1	0.0	0.0	51.3	0.0	40.7	49.0	0.0	43.1
Incr Delay (d2), s/veh	0.1	1.0	0.0	0.1	2.6	2.5	1.8	0.0	0.3	2.9	0.0	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(50%),veh/ln	0.7	9.1	0.1	0.4	0.7	0.7	2.9	0.0	1.6	5.8	0.0	4.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	8.6	20.0	13.8	15.2	2.6	2.5	53.2	0.0	40.9	51.8	0.0	44.2
LnGrp LOS	A	C	B	B	A	A	D		D	D		D
Approach Vol, veh/h		1138			1200			159			343	
Approach Delay, s/veh		19.2			2.9			48.4			48.4	
Approach LOS		B			A			D			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	22.0	69.0		29.0	22.0	69.0		29.0				
Change Period (Y+Rc), s	* 6.3	* 6.3		6.0	* 6.3	* 6.3		6.0				
Max Green Setting (Gmax), s	* 6.7	* 63		32.0	* 6.7	* 63		32.0				
Max Q Clear Time (g_c+I1), s	2.0	24.2		21.8	2.0	2.0		20.5				
Green Ext Time (p_c), s	0.0	8.1		1.1	0.0	8.7		0.5				

Intersection Summary		
HCM 7th Control Delay, s/veh	17.5	
HCM 7th LOS	B	

Notes

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	598	591	145	120	625	528	102	671	68	234	763	325
Future Volume (veh/h)	598	591	145	120	625	528	102	671	68	234	763	325
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
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	1953	1953	1953	1969	1969	1969
Adj Flow Rate, veh/h	629	622	153	130	679	574	110	722	73	249	812	346
Peak Hour Factor	0.95	0.95	0.95	0.92	0.92	0.92	0.93	0.93	0.93	0.94	0.94	0.94
Percent Heavy Veh, %	1	1	1	1	1	1	3	3	3	2	2	2
Cap, veh/h	679	1063	261	158	952	572	136	832	84	320	970	742
Arrive On Green	0.31	0.59	0.59	0.08	0.25	0.25	0.07	0.24	0.24	0.09	0.26	0.26
Sat Flow, veh/h	3666	3000	737	1890	3770	1680	1860	3403	344	3638	3741	1668
Grp Volume(v), veh/h	629	390	385	130	679	574	110	393	402	249	812	346
Grp Sat Flow(s),veh/h/ln	1833	1885	1851	1890	1885	1680	1860	1856	1891	1819	1870	1668
Q Serve(g_s), s	19.9	15.5	15.6	8.1	19.7	30.3	7.0	24.4	24.4	8.0	24.6	17.4
Cycle Q Clear(g_c), s	19.9	15.5	15.6	8.1	19.7	30.3	7.0	24.4	24.4	8.0	24.6	17.4
Prop In Lane	1.00		0.40	1.00		1.00	1.00		0.18	1.00		1.00
Lane Grp Cap(c), veh/h	679	668	656	158	952	572	136	453	462	320	970	742
V/C Ratio(X)	0.93	0.58	0.59	0.82	0.71	1.00	0.81	0.87	0.87	0.78	0.84	0.47
Avail Cap(c_a), veh/h	703	668	656	173	952	572	143	453	462	552	1128	812
HCM Platoon Ratio	1.67	1.67	1.67	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	40.6	19.0	19.0	54.1	40.9	39.6	54.8	43.5	43.5	53.6	42.1	23.4
Incr Delay (d2), s/veh	18.0	3.7	3.8	24.8	4.5	38.6	27.4	16.2	16.1	4.1	5.0	0.5
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(50%),veh/ln	9.0	5.7	5.7	4.8	9.4	22.1	4.2	12.8	13.1	3.8	11.8	6.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	58.6	22.7	22.8	78.9	45.4	78.2	82.2	59.7	59.6	57.7	47.1	23.8
LnGrp LOS	E	C	C	E	D	F	F	E	E	E	D	C
Approach Vol, veh/h		1404			1383			905			1407	
Approach Delay, s/veh		38.8			62.2			62.4			43.2	
Approach LOS		D			E			E			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	17.0	49.5	15.6	37.9	29.2	37.3	17.3	36.1
Change Period (Y+Rc), s	7.0	7.0	6.8	6.8	7.0	7.0	6.8	6.8
Max Green Setting (Gmax), s	10.0	36.0	9.2	36.2	23.0	24.0	18.2	27.2
Max Q Clear Time (g_c+I1), s	10.1	17.6	9.0	26.6	21.9	32.3	10.0	26.4
Green Ext Time (p_c), s	0.0	4.1	0.0	4.5	0.3	0.0	0.5	0.4

Intersection Summary	
HCM 7th Control Delay, s/veh	50.6
HCM 7th LOS	D



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	101	4	77	5	0	27	30	748	21	53	959	31
Future Volume (veh/h)	101	4	77	5	0	27	30	748	21	53	959	31
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
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	1938	1938	1938	2000	2000	2000	1969	1969	1969	1984	1984	1984
Adj Flow Rate, veh/h	158	6	120	6	0	35	32	787	22	58	1054	34
Peak Hour Factor	0.64	0.64	0.64	0.78	0.78	0.78	0.95	0.95	0.95	0.91	0.91	0.91
Percent Heavy Veh, %	4	4	4	0	0	0	2	2	2	1	1	1
Cap, veh/h	243	12	241	167	0	259	260	1316	1115	418	1340	1135
Arrive On Green	0.15	0.15	0.15	0.15	0.00	0.15	0.02	0.67	0.67	0.03	0.68	0.68
Sat Flow, veh/h	1352	79	1575	1285	0	1695	1875	1969	1668	1890	1984	1682
Grp Volume(v), veh/h	158	0	126	6	0	35	32	787	22	58	1054	34
Grp Sat Flow(s),veh/h/ln	1352	0	1654	1285	0	1695	1875	1969	1668	1890	1984	1682
Q Serve(g_s), s	13.7	0.0	8.4	0.5	0.0	2.1	0.6	26.5	0.5	1.2	44.2	0.8
Cycle Q Clear(g_c), s	15.9	0.0	8.4	8.9	0.0	2.1	0.6	26.5	0.5	1.2	44.2	0.8
Prop In Lane	1.00		0.95	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	243	0	253	167	0	259	260	1316	1115	418	1340	1135
V/C Ratio(X)	0.65	0.00	0.50	0.04	0.00	0.14	0.12	0.60	0.02	0.14	0.79	0.03
Avail Cap(c_a), veh/h	284	0	303	206	0	311	282	1316	1115	427	1340	1135
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	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	50.8	0.0	46.6	50.7	0.0	44.0	14.2	11.0	6.7	8.9	13.5	6.5
Incr Delay (d2), s/veh	4.1	0.0	1.5	0.1	0.0	0.2	0.2	2.0	0.0	0.1	4.7	0.0
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(50%),veh/ln	5.0	0.0	3.6	0.2	0.0	0.9	0.3	10.6	0.2	0.4	18.1	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	54.9	0.0	48.1	50.8	0.0	44.2	14.4	13.0	6.7	9.0	18.2	6.5
LnGrp LOS	D		D	D		D	B	B	A	A	B	A
Approach Vol, veh/h		284			41			841			1146	
Approach Delay, s/veh		51.9			45.2			12.9			17.4	
Approach LOS		D			D			B			B	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	9.4	86.2		24.4	8.6	87.0		24.4
Change Period (Y+Rc), s	6.0	6.0		6.0	6.0	6.0		6.0
Max Green Setting (Gmax), s	4.0	76.0		22.0	4.0	76.0		22.0
Max Q Clear Time (g_c+I1), s	3.2	28.5		17.9	2.6	46.2		10.9
Green Ext Time (p_c), s	0.0	6.2		0.5	0.0	9.7		0.1

Intersection Summary	
HCM 7th Control Delay, s/veh	20.5
HCM 7th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	34	5	7	279	83	48
Future Vol, veh/h	34	5	7	279	83	48
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	500	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	85	85	92	92
Heavy Vehicles, %	2	2	1	1	2	2
Mvmt Flow	37	5	8	328	90	52

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	461	116	142	0	-	0
Stage 1	116	-	-	-	-	-
Stage 2	345	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.11	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.209	-	-	-
Pot Cap-1 Maneuver	559	936	1447	-	-	-
Stage 1	909	-	-	-	-	-
Stage 2	717	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	555	936	1447	-	-	-
Mov Cap-2 Maneuver	608	-	-	-	-	-
Stage 1	903	-	-	-	-	-
Stage 2	717	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	11.06	0.18	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1447	-	636	-	-
HCM Lane V/C Ratio	0.006	-	0.067	-	-
HCM Control Delay (s/veh)	7.5	-	11.1	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0	-	0.2	-	-

Intersection: 1: Wixom Road & Grand River Avenue

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	T	R	L	T	TR	L	T
Maximum Queue (ft)	386	257	251	111	156	165	160	93	521	456	347	177
Average Queue (ft)	237	148	137	34	83	80	46	35	324	291	199	96
95th Queue (ft)	346	229	232	86	143	143	111	79	472	428	325	163
Link Distance (ft)		1222	1222		799	799			1170			1412
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	1000			775			200	1000		950	400	
Storage Blk Time (%)						0	0				0	
Queuing Penalty (veh)						0	0				0	

Intersection: 1: Wixom Road & Grand River Avenue

Movement	SB	SB
Directions Served	T	R
Maximum Queue (ft)	178	208
Average Queue (ft)	86	97
95th Queue (ft)	159	178
Link Distance (ft)	1412	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		600
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 2: 12-Mile Road & Grand River Avenue

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	T	R	L	T	TR	L	TR	L	TR
Maximum Queue (ft)	89	115	133	19	84	81	108	38	80	54	65
Average Queue (ft)	33	25	31	2	32	13	24	7	26	9	23
95th Queue (ft)	73	79	88	13	69	48	73	28	56	33	52
Link Distance (ft)		799	799			701	701		358		575
Upstream Blk Time (%)											
Queuing Penalty (veh)											
Storage Bay Dist (ft)	775			100	1000			100		250	
Storage Blk Time (%)			0						0		
Queuing Penalty (veh)			0						0		

Intersection: 3: Providence Parkway & Grand River Avenue

Movement	EB	EB	EB	WB	WB	NB	NB	SB
Directions Served	L	T	R	L	TR	L	TR	LTR
Maximum Queue (ft)	46	8	9	164	5	109	66	54
Average Queue (ft)	8	0	0	59	0	43	28	13
95th Queue (ft)	32	6	6	120	3	88	54	39
Link Distance (ft)		1345			1117		856	272
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	1000		125	1000		800		
Storage Blk Time (%)								
Queuing Penalty (veh)								

Intersection: 4: W. Market Square & Grand River Avenue

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	T	R	L	T	TR	L	TR	L	TR
Maximum Queue (ft)	64	118	109	66	134	150	140	59	44	125	126
Average Queue (ft)	13	33	31	5	50	61	67	16	14	57	35
95th Queue (ft)	43	86	81	31	104	129	133	47	37	104	81
Link Distance (ft)		1117	1117			571	571	445	445		356
Upstream Blk Time (%)											
Queuing Penalty (veh)											
Storage Bay Dist (ft)	1000			50	500					150	
Storage Blk Time (%)			2	0						0	0
Queuing Penalty (veh)			1	0						0	0

Intersection: 5: Beck Road & Grand River Avenue

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB
Directions Served	L	L	T	TR	L	T	T	R	L	T	TR	L
Maximum Queue (ft)	212	201	185	216	108	228	209	156	166	372	368	231
Average Queue (ft)	103	106	99	120	36	104	72	46	74	237	236	139
95th Queue (ft)	176	174	166	191	87	193	163	110	137	340	344	233
Link Distance (ft)		527	527	527		1234	1234			967		
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	500				1000			400	300		275	125
Storage Blk Time (%)										6	5	14
Queuing Penalty (veh)										33	25	46

Intersection: 5: Beck Road & Grand River Avenue

Movement	SB	SB	SB	SB
Directions Served	L	T	T	R
Maximum Queue (ft)	346	537	484	297
Average Queue (ft)	199	265	213	94
95th Queue (ft)	315	444	389	211
Link Distance (ft)		944	944	
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)	125			350
Storage Blk Time (%)	42	43	1	
Queuing Penalty (veh)	138	125	5	

Intersection: 6: Beck Road & Providence South Drive/Central Park Boulevard

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	TR	L	T	R	L	T	R
Maximum Queue (ft)	99	75	47	78	124	249	69	32	154	24
Average Queue (ft)	34	21	12	24	51	76	5	5	38	2
95th Queue (ft)	79	50	36	56	107	178	33	23	110	14
Link Distance (ft)	480	480	450	450		592			491	491
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)					1000		50	850		
Storage Blk Time (%)						7				
Queuing Penalty (veh)						9				

Intersection: 7: Providence Parkway & Site Drive

Movement	EB	NB	SB
Directions Served	LR	L	TR
Maximum Queue (ft)	66	19	8
Average Queue (ft)	27	1	0
95th Queue (ft)	51	10	6
Link Distance (ft)	646		856
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)		500	
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 9000: Dummy Node & Grand River Avenue

Movement	NB	SB
Directions Served	LTR	LTR
Maximum Queue (ft)	40	40
Average Queue (ft)	13	15
95th Queue (ft)	39	41
Link Distance (ft)	194	247
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 9001: Dummy Node & Grand River Avenue

Movement	NB
Directions Served	LTR
Maximum Queue (ft)	67
Average Queue (ft)	24
95th Queue (ft)	55
Link Distance (ft)	157
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 9002: Beck Road & Dummy Node

Movement	SB	SB
Directions Served	T	TR
Maximum Queue (ft)	57	12
Average Queue (ft)	2	0
95th Queue (ft)	29	9
Link Distance (ft)	967	967
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 382

Intersection: 1: Wixom Road & Grand River Avenue

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	T	R	L	T	TR	L	T
Maximum Queue (ft)	1037	913	859	197	516	611	275	185	509	469	367	336
Average Queue (ft)	704	420	374	95	294	315	198	79	308	279	202	208
95th Queue (ft)	1110	997	891	175	519	590	351	153	505	465	333	299
Link Distance (ft)		1222	1222		799	799			1170			1412
Upstream Blk Time (%)		0				0						
Queuing Penalty (veh)		0				1						
Storage Bay Dist (ft)	1000			775			200	1000		950	400	
Storage Blk Time (%)	5	1				32	6				0	
Queuing Penalty (veh)	13	8				134	17				1	

Intersection: 1: Wixom Road & Grand River Avenue

Movement	SB	SB
Directions Served	T	R
Maximum Queue (ft)	299	293
Average Queue (ft)	194	154
95th Queue (ft)	280	255
Link Distance (ft)	1412	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		600
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 2: 12-Mile Road & Grand River Avenue

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	T	R	L	T	TR	L	TR	L	TR
Maximum Queue (ft)	72	172	166	44	168	151	195	103	121	75	130
Average Queue (ft)	30	54	55	11	75	37	66	49	46	23	48
95th Queue (ft)	68	138	136	37	135	99	147	93	91	61	93
Link Distance (ft)		799	799			701	701		358		575
Upstream Blk Time (%)											
Queuing Penalty (veh)											
Storage Bay Dist (ft)	775			100	1000			100		250	
Storage Blk Time (%)			2					1	0		
Queuing Penalty (veh)			1					1	0		

Intersection: 3: Providence Parkway & Grand River Avenue

Movement	EB	WB	NB	NB	SB
Directions Served	R	L	L	TR	LTR
Maximum Queue (ft)	4	73	422	98	79
Average Queue (ft)	0	28	195	42	28
95th Queue (ft)	3	61	436	77	65
Link Distance (ft)				856	272
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)	125	1000	800		
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 4: W. Market Square & Grand River Avenue

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	T	R	L	T	TR	L	TR	L	TR
Maximum Queue (ft)	98	253	202	23	58	213	222	104	79	197	232
Average Queue (ft)	29	88	73	2	15	106	118	39	22	113	66
95th Queue (ft)	76	184	153	13	41	193	204	90	56	185	158
Link Distance (ft)		1117	1117			571	571	445	445		356
Upstream Blk Time (%)											
Queuing Penalty (veh)											
Storage Bay Dist (ft)	1000			50	500					150	
Storage Blk Time (%)			11							6	0
Queuing Penalty (veh)			1							9	1

Intersection: 5: Beck Road & Grand River Avenue

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB
Directions Served	L	L	T	TR	L	T	T	R	L	T	TR	L
Maximum Queue (ft)	494	545	505	486	190	313	371	408	326	559	410	162
Average Queue (ft)	416	447	247	225	91	196	183	191	112	307	280	70
95th Queue (ft)	625	683	530	441	181	287	296	334	289	568	427	159
Link Distance (ft)		527	527	527		1234	1234			967		
Upstream Blk Time (%)	3	24	4	1						0		
Queuing Penalty (veh)	0	105	19	3						3		
Storage Bay Dist (ft)	500				1000			400	300		275	125
Storage Blk Time (%)	11	28					0	0		21	18	1
Queuing Penalty (veh)	32	84					0	2		107	79	5

Intersection: 5: Beck Road & Grand River Avenue

Movement	SB	SB	SB	SB
Directions Served	L	T	T	R
Maximum Queue (ft)	350	569	529	189
Average Queue (ft)	187	324	272	81
95th Queue (ft)	364	489	431	152
Link Distance (ft)		944	944	
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)	125			350
Storage Blk Time (%)	13	58	1	
Queuing Penalty (veh)	48	135	4	

Intersection: 6: Beck Road & Providence South Drive/Central Park Boulevard

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	TR	L	T	R	L	T	R
Maximum Queue (ft)	153	139	26	39	68	279	72	78	354	26
Average Queue (ft)	67	41	4	10	20	112	6	25	155	2
95th Queue (ft)	130	94	17	30	51	222	36	59	301	15
Link Distance (ft)	480	480	450	450		592			491	491
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)					1000		50	850		
Storage Blk Time (%)						12				
Queuing Penalty (veh)						6				

Intersection: 7: Providence Parkway & Site Drive

Movement	EB	NB
Directions Served	LR	L
Maximum Queue (ft)	54	6
Average Queue (ft)	23	0
95th Queue (ft)	46	5
Link Distance (ft)	646	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		500
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 9000: Dummy Node & Grand River Avenue

Movement	NB	SB
Directions Served	LTR	LTR
Maximum Queue (ft)	51	40
Average Queue (ft)	14	19
95th Queue (ft)	41	45
Link Distance (ft)	194	247
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 9001: Dummy Node & Grand River Avenue

Movement	EB	EB	EB	NB
Directions Served	T	T	TR	LTR
Maximum Queue (ft)	188	101	69	174
Average Queue (ft)	63	10	3	89
95th Queue (ft)	222	76	43	172
Link Distance (ft)		571	571	157
Upstream Blk Time (%)				19
Queuing Penalty (veh)				0
Storage Bay Dist (ft)	500			
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 9002: Beck Road & Dummy Node

Movement	EB	NB	SB	SB
Directions Served	LTR	TR	T	TR
Maximum Queue (ft)	47	10	80	9
Average Queue (ft)	12	1	4	0
95th Queue (ft)	40	8	42	6
Link Distance (ft)	187	491	967	967
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Network Summary

Network wide Queuing Penalty: 818



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	20	714	113	162	483	47	62	0	100	7	0	7
Future Volume (veh/h)	20	714	113	162	483	47	62	0	100	7	0	7
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		0.98	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	1922	1922	1922	1906	1906	1906	1922	1922	1922	2000	2000	2000
Adj Flow Rate, veh/h	23	830	131	176	525	51	70	0	112	10	0	10
Peak Hour Factor	0.86	0.86	0.86	0.92	0.92	0.92	0.89	0.89	0.89	0.70	0.70	0.70
Percent Heavy Veh, %	5	5	5	6	6	6	5	5	5	0	0	0
Cap, veh/h	722	2957	1292	518	2702	262	185	0	143	76	15	46
Arrive On Green	1.00	1.00	1.00	1.00	1.00	1.00	0.09	0.00	0.09	0.09	0.00	0.09
Sat Flow, veh/h	817	3652	1595	566	3336	323	1424	0	1629	354	170	524
Grp Volume(v), veh/h	23	830	131	176	284	292	70	0	112	20	0	0
Grp Sat Flow(s),veh/h/ln	817	1826	1595	566	1811	1848	1424	0	1629	1048	0	0
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.1	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.0	0.0	0.0	5.5	0.0	8.1	5.5	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.17	1.00		1.00	0.50		0.50
Lane Grp Cap(c), veh/h	722	2957	1292	518	1467	1497	185	0	143	137	0	0
V/C Ratio(X)	0.03	0.28	0.10	0.34	0.19	0.19	0.38	0.00	0.78	0.15	0.00	0.00
Avail Cap(c_a), veh/h	722	2957	1292	518	1467	1497	282	0	258	241	0	0
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.97	0.97	0.97	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	52.4	0.0	53.6	50.5	0.0	0.0
Incr Delay (d2), s/veh	0.1	0.2	0.2	1.7	0.3	0.3	1.3	0.0	9.1	0.5	0.0	0.0
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(50%),veh/ln	0.0	0.1	0.1	0.2	0.1	0.1	2.1	0.0	3.7	0.6	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.1	0.2	0.2	1.7	0.3	0.3	53.7	0.0	62.7	51.0	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	D		E	D		
Approach Vol, veh/h		984			752			182			20	
Approach Delay, s/veh		0.2			0.6			59.3			51.0	
Approach LOS		A			A			E			D	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		103.5		16.5		103.5		16.5				
Change Period (Y+Rc), s		* 6.3		6.0		* 6.3		6.0				
Max Green Setting (Gmax), s		* 89		19.0		* 89		19.0				
Max Q Clear Time (g_c+I1), s		2.0		7.5		2.0		10.1				
Green Ext Time (p_c), s		6.8		0.0		5.8		0.4				

Intersection Summary	
HCM 7th Control Delay, s/veh	6.4
HCM 7th LOS	A

Notes

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	847	58	73	1035	0	123	0	190	21	0	20
Future Volume (veh/h)	0	847	58	73	1035	0	123	0	190	21	0	20
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
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	1969	1969	1969	1984	1984	1984	2000	2000	2000
Adj Flow Rate, veh/h	0	952	65	79	1125	0	145	0	224	35	0	33
Peak Hour Factor	0.89	0.89	0.89	0.92	0.92	0.92	0.85	0.85	0.85	0.60	0.60	0.60
Percent Heavy Veh, %	1	1	1	2	2	2	1	1	1	0	0	0
Cap, veh/h	60	2711	1209	459	2690	0	253	0	300	78	15	45
Arrive On Green	0.00	1.00	1.00	1.00	1.00	0.00	0.18	0.00	0.18	0.18	0.00	0.18
Sat Flow, veh/h	505	3770	1682	554	3839	0	1079	0	1682	183	83	251
Grp Volume(v), veh/h	0	952	65	79	1125	0	145	0	224	68	0	0
Grp Sat Flow(s),veh/h/ln	505	1885	1682	554	1870	0	1079	0	1682	517	0	0
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	15.1	3.3	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.0	0.0	0.0	15.9	0.0	15.1	19.2	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.00	1.00		1.00	0.51		0.49
Lane Grp Cap(c), veh/h	60	2711	1209	459	2690	0	253	0	300	138	0	0
V/C Ratio(X)	0.00	0.35	0.05	0.17	0.42	0.00	0.57	0.00	0.75	0.49	0.00	0.00
Avail Cap(c_a), veh/h	60	2711	1209	459	2690	0	386	0	462	271	0	0
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.86	0.86	0.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	47.0	0.0	46.7	49.1	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.4	0.1	0.7	0.4	0.0	2.1	0.0	3.7	2.7	0.0	0.0
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(50%),veh/ln	0.0	0.1	0.0	0.1	0.2	0.0	4.3	0.0	6.7	2.1	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	0.4	0.1	0.7	0.4	0.0	49.1	0.0	50.4	51.9	0.0	0.0
LnGrp LOS		A	A	A	A		D		D	D		
Approach Vol, veh/h		1017			1204			369			68	
Approach Delay, s/veh		0.3			0.4			49.9			51.9	
Approach LOS		A			A			D			D	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		92.6		27.4		92.6		27.4				
Change Period (Y+Rc), s		* 6.3		6.0		* 6.3		6.0				
Max Green Setting (Gmax), s		* 75		33.0		* 75		33.0				
Max Q Clear Time (g_c+I1), s		2.0		21.2		2.0		17.9				
Green Ext Time (p_c), s		7.5		0.2		11.0		1.4				

Intersection Summary	
HCM 7th Control Delay, s/veh	8.6
HCM 7th LOS	A

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection: 1: Wixom Road & Grand River Avenue

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	T	R	L	T	TR	L	T
Maximum Queue (ft)	448	261	268	121	161	178	130	85	489	445	336	187
Average Queue (ft)	256	145	135	40	80	80	33	26	328	289	197	102
95th Queue (ft)	404	230	232	100	142	147	87	65	494	449	304	172
Link Distance (ft)		1222	1222		799	799			1170			1412
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	1000			775			200	1000		950	400	
Storage Blk Time (%)						0						
Queuing Penalty (veh)						0						

Intersection: 1: Wixom Road & Grand River Avenue

Movement	SB	SB
Directions Served	T	R
Maximum Queue (ft)	173	274
Average Queue (ft)	88	106
95th Queue (ft)	156	210
Link Distance (ft)	1412	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		600
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 2: 12-Mile Road & Grand River Avenue

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	T	R	L	T	TR	L	TR	L	TR
Maximum Queue (ft)	98	119	129	29	106	74	98	45	77	67	55
Average Queue (ft)	33	26	31	2	35	8	19	7	29	8	21
95th Queue (ft)	74	82	94	14	80	37	62	29	57	37	48
Link Distance (ft)		799	799			701	701		358		575
Upstream Blk Time (%)											
Queuing Penalty (veh)											
Storage Bay Dist (ft)	775			100	1000			100		250	
Storage Blk Time (%)			1						0		
Queuing Penalty (veh)			0						0		

Intersection: 3: Providence Parkway & Grand River Avenue

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB	SB
Directions Served	L	T	T	R	L	T	TR	LT	R	LTR
Maximum Queue (ft)	29	120	108	68	153	60	91	117	75	44
Average Queue (ft)	7	33	30	12	60	8	18	46	30	12
95th Queue (ft)	25	92	81	43	120	34	60	97	59	39
Link Distance (ft)		1319	1319			1092	1092	857	857	247
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)	1000			125	1000					
Storage Blk Time (%)			0							
Queuing Penalty (veh)			0							

Intersection: 4: W. Market Square & Grand River Avenue

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	T	R	L	T	TR	L	TR	L	TR
Maximum Queue (ft)	62	185	140	63	117	150	155	61	53	110	83
Average Queue (ft)	11	53	44	10	52	56	58	15	14	61	28
95th Queue (ft)	35	128	104	41	102	125	123	43	39	112	62
Link Distance (ft)		1092	1092			571	571	445	445		356
Upstream Blk Time (%)											
Queuing Penalty (veh)											
Storage Bay Dist (ft)	1000			50	500					150	
Storage Blk Time (%)			4	0						0	
Queuing Penalty (veh)			2	0						0	

Intersection: 5: Beck Road & Grand River Avenue

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB
Directions Served	L	L	T	TR	L	T	T	R	L	T	TR	L
Maximum Queue (ft)	194	194	239	245	122	217	181	158	251	396	382	236
Average Queue (ft)	98	102	109	126	41	106	73	48	82	237	235	144
95th Queue (ft)	169	167	203	217	100	184	153	116	180	347	343	244
Link Distance (ft)		527	527	527		1234	1234			967		
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	500				1000			400	300		275	125
Storage Blk Time (%)									0	6	5	15
Queuing Penalty (veh)									0	32	22	49

Intersection: 5: Beck Road & Grand River Avenue

Movement	SB	SB	SB	SB
Directions Served	L	T	T	R
Maximum Queue (ft)	344	508	464	213
Average Queue (ft)	203	260	208	93
95th Queue (ft)	321	421	365	166
Link Distance (ft)		944	944	
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)	125			350
Storage Blk Time (%)	45	39	0	
Queuing Penalty (veh)	151	111	1	

Intersection: 6: Beck Road & Providence South Drive/Central Park Boulevard

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	TR	L	T	R	L	T	R
Maximum Queue (ft)	109	68	54	81	107	258	68	28	177	31
Average Queue (ft)	36	20	14	25	45	84	4	3	34	3
95th Queue (ft)	83	47	39	58	89	201	28	17	104	16
Link Distance (ft)	480	480	450	450		592			491	491
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)					1000		50	850		
Storage Blk Time (%)						7	0			
Queuing Penalty (veh)						9	0			

Intersection: 7: Providence Parkway & Site Drive

Movement	EB	NB
Directions Served	LR	L
Maximum Queue (ft)	52	12
Average Queue (ft)	26	1
95th Queue (ft)	46	8
Link Distance (ft)	646	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		500
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 9000: Dummy Node & Grand River Avenue

Movement	NB	SB
Directions Served	LTR	LTR
Maximum Queue (ft)	44	35
Average Queue (ft)	15	14
95th Queue (ft)	41	39
Link Distance (ft)	194	247
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 9001: Dummy Node & Grand River Avenue

Movement	NB
Directions Served	LTR
Maximum Queue (ft)	64
Average Queue (ft)	24
95th Queue (ft)	52
Link Distance (ft)	157
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 9002: Beck Road & Dummy Node

Movement	SB	SB
Directions Served	T	TR
Maximum Queue (ft)	40	14
Average Queue (ft)	1	0
95th Queue (ft)	23	10
Link Distance (ft)	967	967
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 379

Intersection: 1: Wixom Road & Grand River Avenue

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	T	R	L	T	TR	L	T
Maximum Queue (ft)	1141	1058	1002	191	577	665	275	149	508	490	333	353
Average Queue (ft)	838	649	565	96	307	333	189	67	322	299	179	208
95th Queue (ft)	1356	1413	1268	168	568	633	345	124	509	479	323	309
Link Distance (ft)		1222	1222		799	799			1170			1412
Upstream Blk Time (%)	5	10	1		0	0						
Queuing Penalty (veh)	0	0	0		0	2						
Storage Bay Dist (ft)	1000			775			200	1000		950	400	
Storage Blk Time (%)	24	18			0	36	4				1	0
Queuing Penalty (veh)	69	103			0	145	13				2	0

Intersection: 1: Wixom Road & Grand River Avenue

Movement	SB	SB
Directions Served	T	R
Maximum Queue (ft)	289	313
Average Queue (ft)	185	158
95th Queue (ft)	268	265
Link Distance (ft)	1412	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		600
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 2: 12-Mile Road & Grand River Avenue

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	T	R	L	T	TR	L	TR	L	TR
Maximum Queue (ft)	82	204	198	103	135	128	169	128	156	63	144
Average Queue (ft)	29	59	60	12	65	39	65	57	48	20	47
95th Queue (ft)	70	148	151	63	113	103	146	100	107	52	102
Link Distance (ft)		799	799			701	701		358		575
Upstream Blk Time (%)											
Queuing Penalty (veh)											
Storage Bay Dist (ft)	775			100	1000			100		250	
Storage Blk Time (%)			3					1	1		
Queuing Penalty (veh)			2					2	1		

Intersection: 3: Providence Parkway & Grand River Avenue

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB
Directions Served	T	T	R	L	T	TR	LT	R	LTR
Maximum Queue (ft)	156	124	42	82	147	139	169	110	116
Average Queue (ft)	50	40	8	31	71	82	82	45	33
95th Queue (ft)	118	90	31	63	125	133	147	85	84
Link Distance (ft)	1319	1319			1092	1092		857	247
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)			125	1000			800		
Storage Blk Time (%)		0							
Queuing Penalty (veh)		0							

Intersection: 4: W. Market Square & Grand River Avenue

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	T	R	L	T	TR	L	TR	L	TR
Maximum Queue (ft)	67	181	152	28	57	193	204	142	82	189	210
Average Queue (ft)	23	72	55	2	17	99	115	42	20	108	56
95th Queue (ft)	55	153	121	14	43	170	188	102	52	176	130
Link Distance (ft)		1092	1092			571	571	445	445		356
Upstream Blk Time (%)											
Queuing Penalty (veh)											
Storage Bay Dist (ft)	1000			50	500					150	
Storage Blk Time (%)			9							4	0
Queuing Penalty (veh)			1							5	0

Intersection: 5: Beck Road & Grand River Avenue

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB
Directions Served	L	L	T	TR	L	T	T	R	L	T	TR	L
Maximum Queue (ft)	479	528	407	398	190	331	316	374	333	555	428	173
Average Queue (ft)	352	376	194	193	93	212	195	207	125	349	286	67
95th Queue (ft)	575	625	419	354	169	316	302	343	312	733	440	157
Link Distance (ft)		527	527	527		1234	1234			967		
Upstream Blk Time (%)	1	14	1	0						4		
Queuing Penalty (veh)	0	62	5	0						31		
Storage Bay Dist (ft)	500				1000			400	300		275	125
Storage Blk Time (%)	4	16					0	0	0	22	20	1
Queuing Penalty (veh)	13	48					1	0	0	113	87	4

Intersection: 5: Beck Road & Grand River Avenue

Movement	SB	SB	SB	SB
Directions Served	L	T	T	R
Maximum Queue (ft)	349	545	491	239
Average Queue (ft)	153	296	246	77
95th Queue (ft)	305	471	406	164
Link Distance (ft)		944	944	
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)	125			350
Storage Blk Time (%)	11	51	1	
Queuing Penalty (veh)	43	119	4	

Intersection: 6: Beck Road & Providence South Drive/Central Park Boulevard

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	TR	L	T	R	L	T	R
Maximum Queue (ft)	196	112	21	49	58	307	82	74	407	57
Average Queue (ft)	77	40	3	13	21	108	5	29	142	4
95th Queue (ft)	148	84	14	34	48	222	35	59	315	29
Link Distance (ft)	480	480	450	450		592			491	491
Upstream Blk Time (%)									0	
Queuing Penalty (veh)									3	
Storage Bay Dist (ft)					1000		50	850		
Storage Blk Time (%)						12			0	
Queuing Penalty (veh)						6			0	

Intersection: 7: Providence Parkway & Site Drive

Movement	EB	NB
Directions Served	LR	L
Maximum Queue (ft)	51	19
Average Queue (ft)	23	1
95th Queue (ft)	47	9
Link Distance (ft)	646	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		500
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 9000: Dummy Node & Grand River Avenue

Movement	WB	NB	SB
Directions Served	TR	LTR	LTR
Maximum Queue (ft)	10	35	40
Average Queue (ft)	1	14	17
95th Queue (ft)	10	39	42
Link Distance (ft)	1319	194	247
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 9001: Dummy Node & Grand River Avenue

Movement	EB	EB	EB	NB
Directions Served	T	T	TR	LTR
Maximum Queue (ft)	163	41	26	138
Average Queue (ft)	48	8	1	77
95th Queue (ft)	210	64	16	159
Link Distance (ft)		571	571	157
Upstream Blk Time (%)				17
Queuing Penalty (veh)				0
Storage Bay Dist (ft)	500			
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 9002: Beck Road & Dummy Node

Movement	EB	NB	SB	SB
Directions Served	LTR	TR	T	TR
Maximum Queue (ft)	38	100	83	37
Average Queue (ft)	11	26	4	1
95th Queue (ft)	36	183	49	27
Link Distance (ft)	187	491	967	967
Upstream Blk Time (%)		0		
Queuing Penalty (veh)		0		
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Network Summary

Network wide Queuing Penalty: 886

Summary of Warrants

Spot Number:	Existing Conditions		
Major Street:	Grand River Avenue	Minor Street:	Providence Parkway
Intersection:	Grand River Avenue at Providence Parkway		
City/Twp:	Novi		
Date Performed:	7/10/2025	Performed By:	F&V
Date Volumes Collected:	6/24/2025		

Warrant	Condition	Is Warrant Met
Data Validation Error		**NO**
WARRANT 1: Eight-Hour Vehicular Volume		**YES**
	Condition A	NO
	Condition B	YES
	Condition A&B	N/A
WARRANT 2: Four-Hour Vehicular Volume	(70%)	**YES**
WARRANT 3: Peak-Hour Vehicular Volume	(70%)	**YES**
	Condition A	**N/A**
	Condition B	**YES**
WARRANT 4: Pedestrian Volume	(70%)	**NO**
	Four Hour	NO
	Peak Hour	NO
(Threshold)	HAWK	NO
(Threshold)	RRFB	NO
WARRANT 5: School Crossing		**NO**
WARRANT 6: Coordinated Signal System		**NO**
WARRANT 7: Crash Experience		**NO**
	Condition A	NO
	Condition B	NO
WARRANT 8: Roadway Network		**NO**
WARRANT 9: Intersection Near a Grade Crossing		**#N/A**

Issue to Be Addressed by Signalization:

Delay on Providence Parkway

Michigan Manual of Uniform Traffic Control Devices
Worksheet for Signal Warrants (Section 4C)
WARRANT 1: Eight-Hour Vehicular Volume

Intersection:	Grand River Avenue @ Providence Parkway		
Date	7/10/2025	by	F&V

4	**: No. of Lanes on Major St?**
2	**: No. of Lanes on Minor St?**
50	**: Speed limit or 85th Percentile? (MPH)**
NO	**: Is the intersection within an Isolated community?**
0	**: if answer 4 is Yes, then what is the of the population isolated community?**
NO	**: Have other remedial measures been tried?**

USE 70% WARRANTS 1A AND 1B. DO NOT USE COMBINATION OF A & B

	Major Volume (Both Apr.)	Minor Volume (One Apr.)	Condition A Major Volume	Condition A Minor Volume	Warrant Condition A Met?	Condition B Major Volume	Condition B Minor Volume	Warrant Condition B Met?	Combination Major A	Combination Minor A	Combination Major B	Combination Minor B	Warrant Condition A&B met?
Time	**E-W**	N-S											
00:01 - 01:00	0	0	420	140	**NO**	630	70	**NO**	N/A	N/A	N/A	N/A	**N/A**
01:00 - 02:00	0	0	420	140	**NO**	630	70	**NO**	N/A	N/A	N/A	N/A	**N/A**
02:00 - 03:00	0	0	420	140	**NO**	630	70	**NO**	N/A	N/A	N/A	N/A	**N/A**
03:00 - 04:00	0	0	420	140	**NO**	630	70	**NO**	N/A	N/A	N/A	N/A	**N/A**
04:00 - 05:00	0	0	420	140	**NO**	630	70	**NO**	N/A	N/A	N/A	N/A	**N/A**
05:00 - 06:00	0	0	420	140	**NO**	630	70	**NO**	N/A	N/A	N/A	N/A	**N/A**
06:00 - 07:00	0	0	420	140	**NO**	630	70	**NO**	N/A	N/A	N/A	N/A	**N/A**
07:00 - 08:00	1128	36	420	140	**NO**	630	70	**NO**	N/A	N/A	N/A	N/A	**N/A**
08:00 - 09:00	1445	56	420	140	**NO**	630	70	**NO**	N/A	N/A	N/A	N/A	**N/A**
09:00 - 10:00	1425	101	420	140	**NO**	630	70	**YES**	N/A	N/A	N/A	N/A	**N/A**
10:00 - 11:00	1309	115	420	140	**NO**	630	70	**YES**	N/A	N/A	N/A	N/A	**N/A**
11:00 - 12:00	1525	122	420	140	**NO**	630	70	**YES**	N/A	N/A	N/A	N/A	**N/A**
12:00 - 13:00	1853	114	420	140	**NO**	630	70	**YES**	N/A	N/A	N/A	N/A	**N/A**
13:00 - 14:00	1575	93	420	140	**NO**	630	70	**YES**	N/A	N/A	N/A	N/A	**N/A**
14:00 - 15:00	1624	104	420	140	**NO**	630	70	**YES**	N/A	N/A	N/A	N/A	**N/A**
15:00 - 16:00	1624	120	420	140	**NO**	630	70	**YES**	N/A	N/A	N/A	N/A	**N/A**
16:00 - 17:00	1783	153	420	140	**YES**	630	70	**YES**	N/A	N/A	N/A	N/A	**N/A**
17:00 - 18:00	1628	80	420	140	**NO**	630	70	**YES**	N/A	N/A	N/A	N/A	**N/A**
18:00 - 19:00	1215	36	420	140	**NO**	630	70	**NO**	N/A	N/A	N/A	N/A	**N/A**
19:00 - 20:00	0	0	420	140	**NO**	630	70	**NO**	N/A	N/A	N/A	N/A	**N/A**
20:00 - 21:00	0	0	420	140	**NO**	630	70	**NO**	N/A	N/A	N/A	N/A	**N/A**
21:00 - 22:00	0	0	420	140	**NO**	630	70	**NO**	N/A	N/A	N/A	N/A	**N/A**
22:00 - 23:00	0	0	420	140	**NO**	630	70	**NO**	N/A	N/A	N/A	N/A	**N/A**
23:00 - 00:00	0	0	420	140	**NO**	630	70	**NO**	N/A	N/A	N/A	N/A	**N/A**

Number of Hours that met the warrant 1A =	**1**
Number of Hours that met the warrant 1B =	**9**
Number of Hours that met the warrant 1 A & B =	**0**

A. Is the Minimum Vehicular Volume Warrant Met? (Condition A)	**NO**
B. Is the Interruption of Continuous Traffic Met? (Condition B)	**YES**
C. Combination of Warrants A and B Criteria Met?	**N/A**

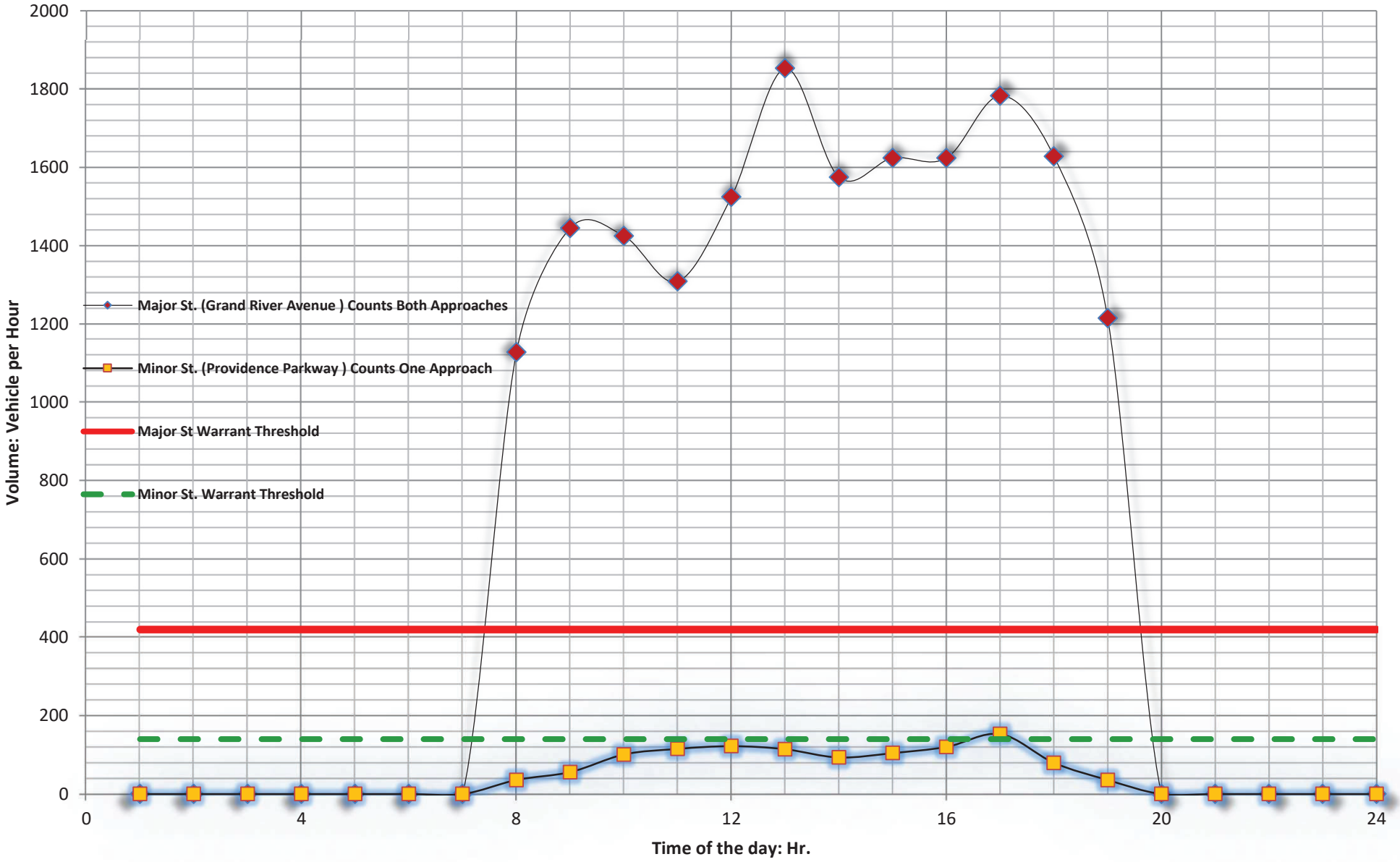


FIGURE 1: WARRANT **1A**

IS THERE A REDUCTION IN THE WARRANT THRESHOLDS TO 70% ...

1- DUE TO SPEED? YE

2- DUE TO ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000? NO

Spot Number: Existing Conditions

Grand River Avenue @ Providence Parkway

NO. OF LANES ON MAJOR ST.? 4

NO. OF LANES ON MINOR ST.? 2

Number of Hours that met the Warrant: 1

Does this intersection meet Warrant 1A for signal installation? NO

Data Collection Date:

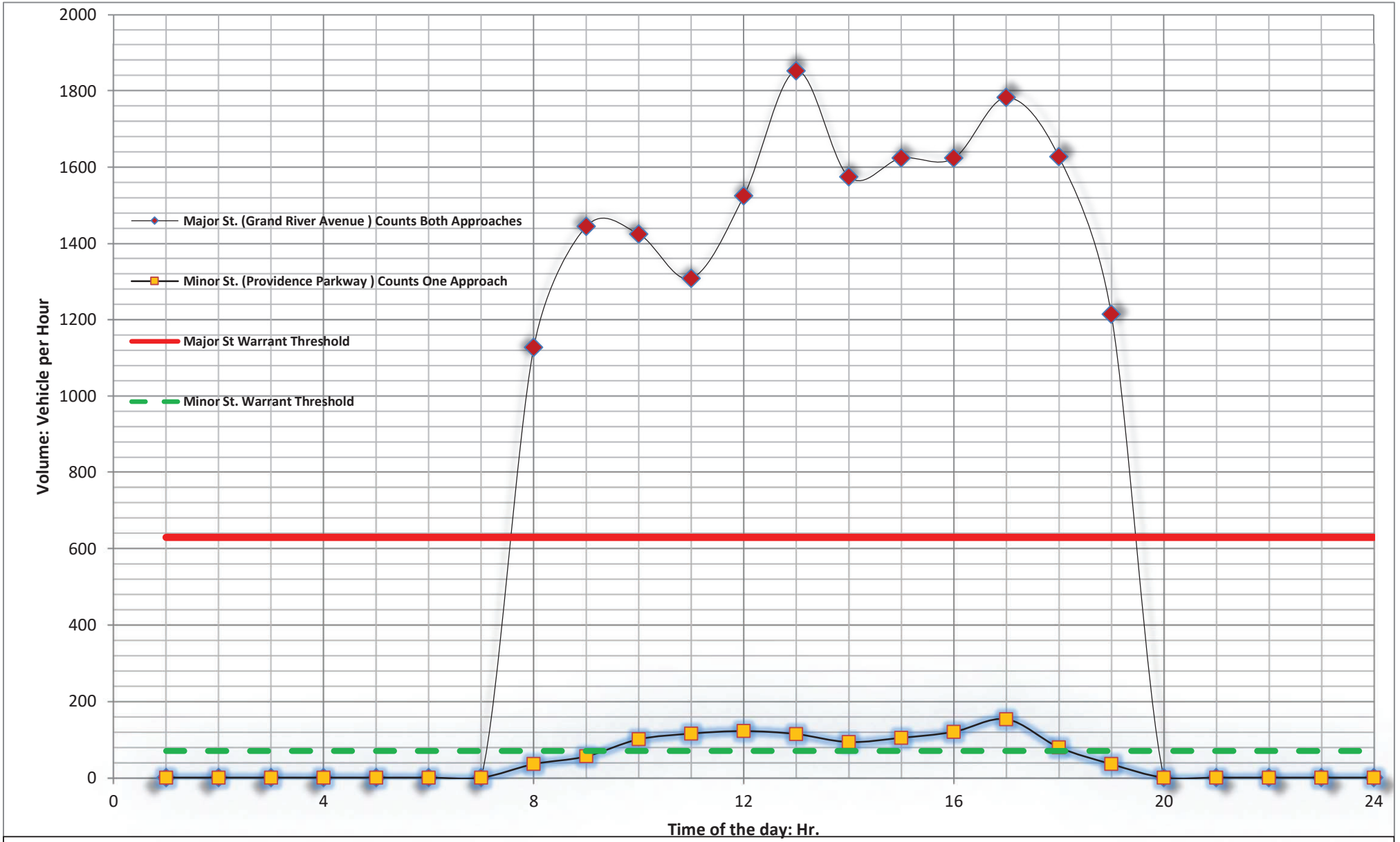


FIGURE 1: WARRANT **1B**

IS THERE A REDUCTION IN THE WARRANT THRESHOLDS TO 70% ...

1- DUE TO SPEED? YES

2- DUE TO ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000? NO

Spot Number: Existing Conditions

Grand River Avenue @ Providence Parkway

NO. OF LANES ON MAJOR ST.? 4

NO. OF LANES ON MINOR ST.? 2

Number of Hours that met the Warrant: 9

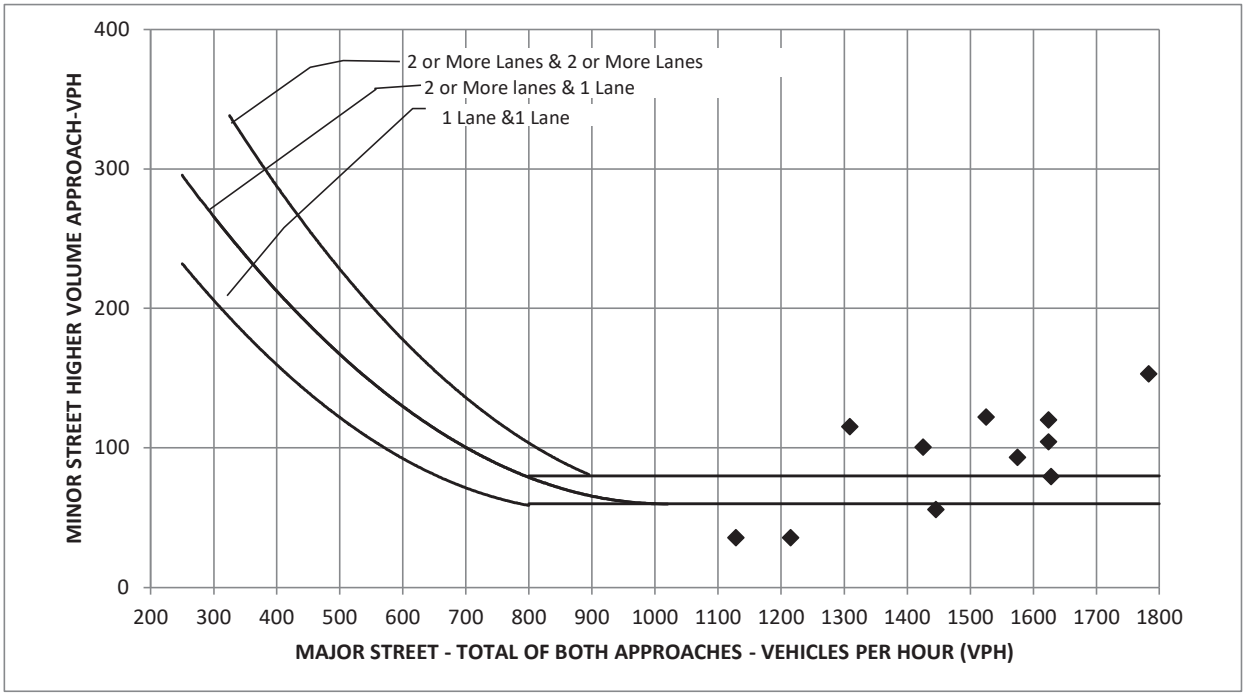
Does this intersection meet Warrant 1B for signal installation? YES

Data Collection Date: 6/24/2025

Michigan Manual of Uniform Traffic Control Devices
Worksheet for Signal Warrants (Section 4C)
WARRANT 2: Four-Hour Vehicular Volume

Spot Number:	Existing Conditions		
Intersection:	Grand River Avenue @ Providence Parkway		
Date	7/10/2025	by	F&V

4	**: No. of Lanes on Major St.**
2	**: No. of Lanes on Minor St.**
50	**: Speed limit or 85th Percentile? (MPH)**
NO	**: Is the intersection within an Isolated community?**
0	**: What is the of the population isolated community?**

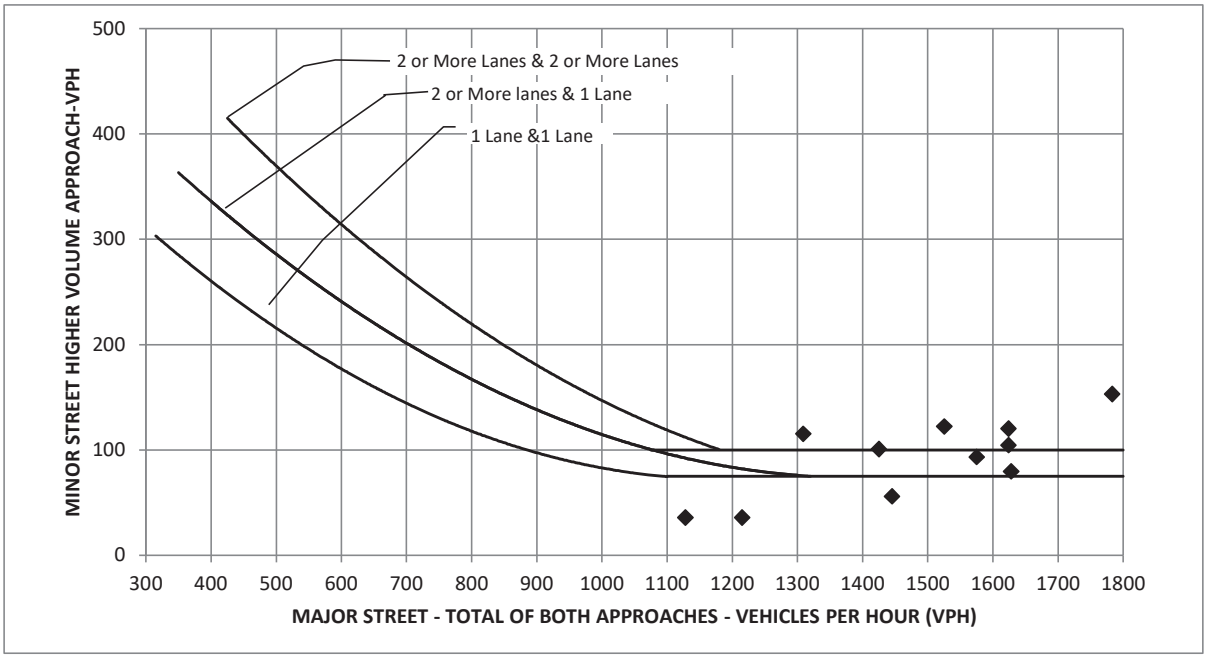


How Many Hours Are Met	**8**
Is Warrant (70%) Met?	**YES**

Michigan Manual of Uniform Traffic Control Devices
Worksheet for Signal Warrants (Section 4C)
WARRANT 3 B(70%): Peak-Hour Vehicular Volume

Spot Number:	Existing Conditions		
Intersection:	Grand River Avenue @ Providence Parkway		
Date	7/10/2025	by	F&V

4	**: No. of Lanes on Major St.**
2	**: No. of Lanes on Minor St.**
50	**: Speed limit or 85th Percentile? (MPH)**
NO	**: Is the intersection within an Isolated community?**
0	**: What is the of the population isolated community?**



How Many Hours Are Met	**7**
Is Warrant (70%) Met?	**YES**

Summary of Warrants

Spot Number:	Background Conditions		
Major Street:	Grand River Avenue	Minor Street:	Providence Parkway
Intersection:	Grand River Avenue at Providence Parkway		
City/Twp:	Novi		
Date Performed:	7/10/2025	Performed By:	F&V
Date Volumes Collected:	6/24/2025		

Warrant	Condition	Is Warrant Met
Data Validation Error		**NO**
WARRANT 1: Eight-Hour Vehicular Volume		**YES**
	Condition A	NO
	Condition B	YES
	Condition A&B	N/A
WARRANT 2: Four-Hour Vehicular Volume	(70%)	**YES**
WARRANT 3: Peak-Hour Vehicular Volume	(70%)	**YES**
	Condition A	**N/A**
	Condition B	**YES**
WARRANT 4: Pedestrian Volume	(70%)	**NO**
	Four Hour	NO
	Peak Hour	NO
(Threshold)	HAWK	NO
(Threshold)	RRFB	NO
WARRANT 5: School Crossing		**NO**
WARRANT 6: Coordinated Signal System		**NO**
WARRANT 7: Crash Experience		**NO**
	Condition A	NO
	Condition B	NO
WARRANT 8: Roadway Network		**NO**
WARRANT 9: Intersection Near a Grade Crossing		**#N/A**

Issue to Be Addressed by Signalization:

Delay on Providence Parkway

Michigan Manual of Uniform Traffic Control Devices
Worksheet for Signal Warrants (Section 4C)
WARRANT 1: Eight-Hour Vehicular Volume

Intersection:	Grand River Avenue @ Providence Parkway		
Date	7/10/2025	by	F&V

4	**: No. of Lanes on Major St?**
2	**: No. of Lanes on Minor St?**
50	**: Speed limit or 85th Percentile? (MPH)**
NO	**: Is the intersection within an Isolated community?**
0	**: if answer 4 is Yes, then what is the of the population isolated community?**
NO	**: Have other remedial measures been tried?**

USE 70% WARRANTS 1A AND 1B. DO NOT USE COMBINATION OF A & B

	Major Volume (Both Apr.)	Minor Volume (One Apr.)	Condition A Major Volume	Condition A Minor Volume	Warrant Condition A Met?	Condition B Major Volume	Condition B Minor Volume	Warrant Condition B Met?	Combination Major A	Combination Minor A	Combination Major B	Combination Minor B	Warrant Condition A&B met?
Time	**E-W**	N-S											
00:01 - 01:00	0	0	420	140	**NO**	630	70	**NO**	N/A	N/A	N/A	N/A	**N/A**
01:00 - 02:00	0	0	420	140	**NO**	630	70	**NO**	N/A	N/A	N/A	N/A	**N/A**
02:00 - 03:00	0	0	420	140	**NO**	630	70	**NO**	N/A	N/A	N/A	N/A	**N/A**
03:00 - 04:00	0	0	420	140	**NO**	630	70	**NO**	N/A	N/A	N/A	N/A	**N/A**
04:00 - 05:00	0	0	420	140	**NO**	630	70	**NO**	N/A	N/A	N/A	N/A	**N/A**
05:00 - 06:00	0	0	420	140	**NO**	630	70	**NO**	N/A	N/A	N/A	N/A	**N/A**
06:00 - 07:00	0	0	420	140	**NO**	630	70	**NO**	N/A	N/A	N/A	N/A	**N/A**
07:00 - 08:00	1182	37	420	140	**NO**	630	70	**NO**	N/A	N/A	N/A	N/A	**N/A**
08:00 - 09:00	1521	58	420	140	**NO**	630	70	**NO**	N/A	N/A	N/A	N/A	**N/A**
09:00 - 10:00	1505	105	420	140	**NO**	630	70	**YES**	N/A	N/A	N/A	N/A	**N/A**
10:00 - 11:00	1385	120	420	140	**NO**	630	70	**YES**	N/A	N/A	N/A	N/A	**N/A**
11:00 - 12:00	1616	127	420	140	**NO**	630	70	**YES**	N/A	N/A	N/A	N/A	**N/A**
12:00 - 13:00	1953	119	420	140	**NO**	630	70	**YES**	N/A	N/A	N/A	N/A	**N/A**
13:00 - 14:00	1660	97	420	140	**NO**	630	70	**YES**	N/A	N/A	N/A	N/A	**N/A**
14:00 - 15:00	1715	109	420	140	**NO**	630	70	**YES**	N/A	N/A	N/A	N/A	**N/A**
15:00 - 16:00	1715	125	420	140	**NO**	630	70	**YES**	N/A	N/A	N/A	N/A	**N/A**
16:00 - 17:00	1877	159	420	140	**YES**	630	70	**YES**	N/A	N/A	N/A	N/A	**N/A**
17:00 - 18:00	1712	83	420	140	**NO**	630	70	**YES**	N/A	N/A	N/A	N/A	**N/A**
18:00 - 19:00	1285	37	420	140	**NO**	630	70	**NO**	N/A	N/A	N/A	N/A	**N/A**
19:00 - 20:00	0	0	420	140	**NO**	630	70	**NO**	N/A	N/A	N/A	N/A	**N/A**
20:00 - 21:00	0	0	420	140	**NO**	630	70	**NO**	N/A	N/A	N/A	N/A	**N/A**
21:00 - 22:00	0	0	420	140	**NO**	630	70	**NO**	N/A	N/A	N/A	N/A	**N/A**
22:00 - 23:00	0	0	420	140	**NO**	630	70	**NO**	N/A	N/A	N/A	N/A	**N/A**
23:00 - 00:00	0	0	420	140	**NO**	630	70	**NO**	N/A	N/A	N/A	N/A	**N/A**

Number of Hours that met the warrant 1A =	**1**
Number of Hours that met the warrant 1B =	**9**
Number of Hours that met the warrant 1 A & B =	**0**

A. Is the Minimum Vehicular Volume Warrant Met? (Condition A)	**NO**
B. Is the Interruption of Continuous Traffic Met? (Condition B)	**YES**
C. Combination of Warrants A and B Criteria Met?	**N/A**

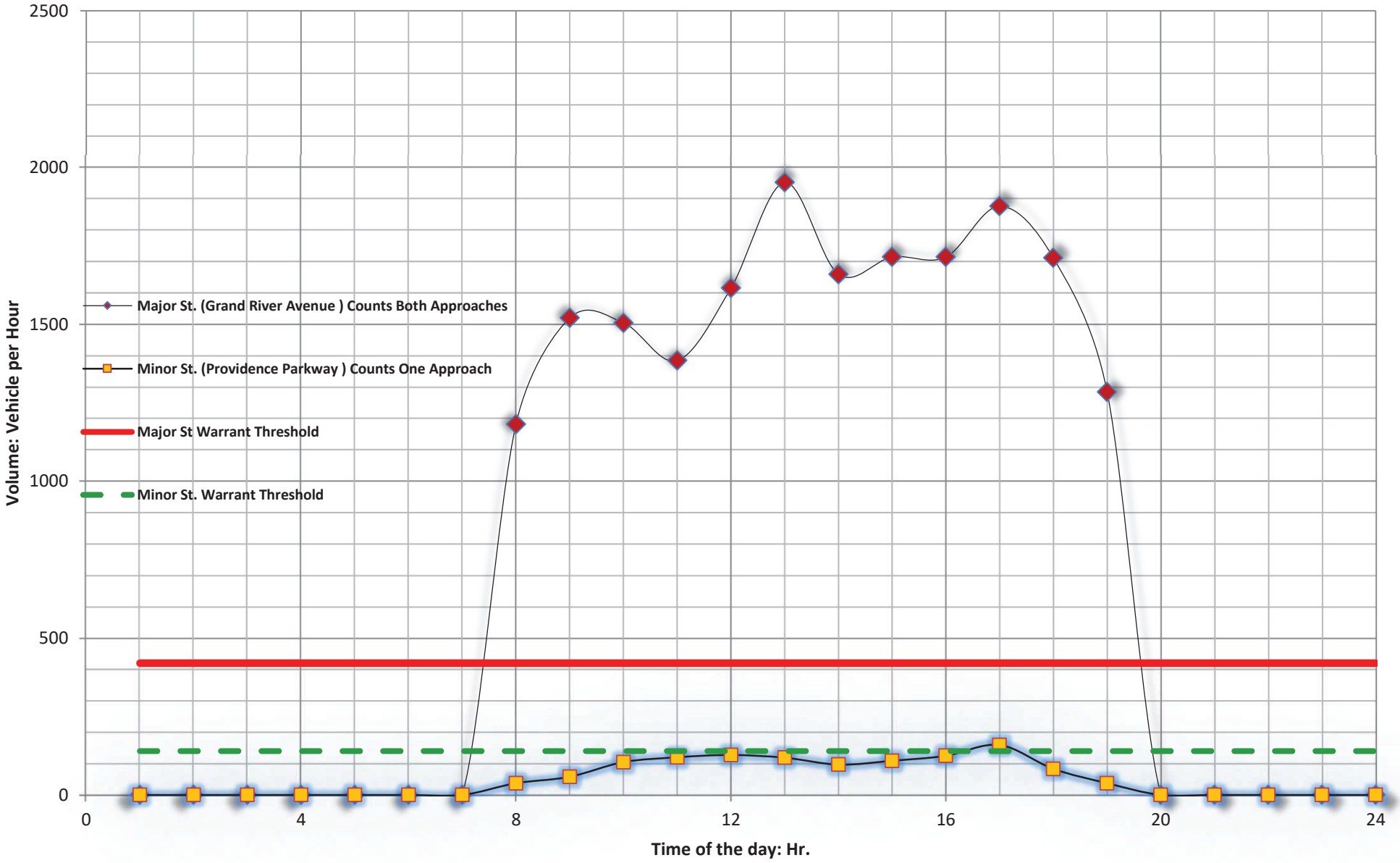


FIGURE 1: WARRANT **1A**

IS THERE A REDUCTION IN THE WARRANT THRESHOLDS TO 70% ...

1- DUE TO SPEED? YE

2- DUE TO ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000? NO

Spot Number: Background Conditions

Grand River Avenue @ Providence Parkway

NO. OF LANES ON MAJOR ST.? 4

NO. OF LANES ON MINOR ST.? 2

Number of Hours that met the Warrant: 1

Does this intersection meet Warrant 1A for signal installation? NO

Data Collection Date:

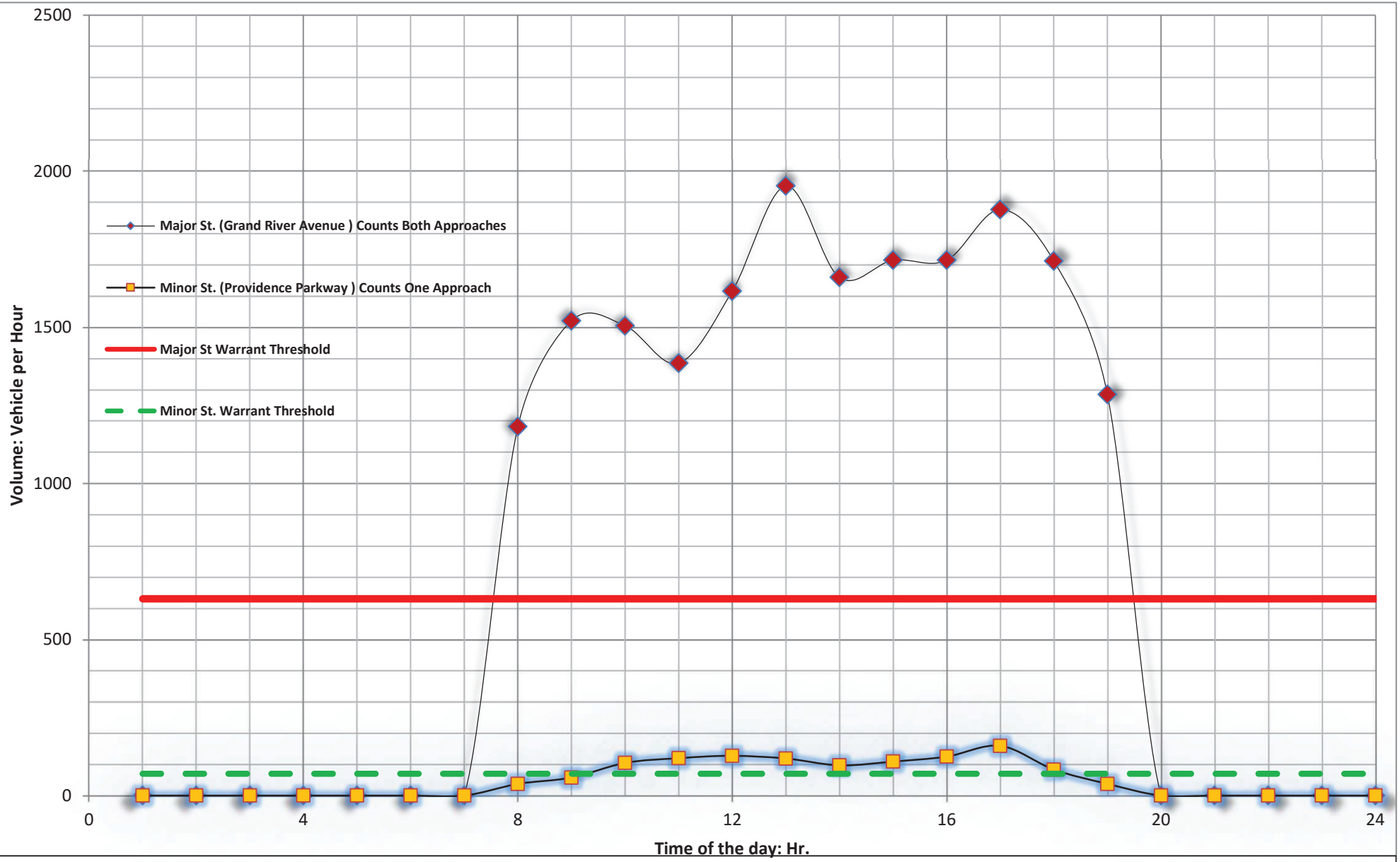


FIGURE 1: WARRANT **1B**

IS THERE A REDUCTION IN THE WARRANT THRESHOLDS TO 70% ...

1- DUE TO SPEED? YES

2- DUE TO ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000? NO

Spot Number: Background Conditions

Grand River Avenue @ Providence Parkway

NO. OF LANES ON MAJOR ST.? 4

NO. OF LANES ON MINOR ST.? 2

Number of Hours that met the Warrant: 9

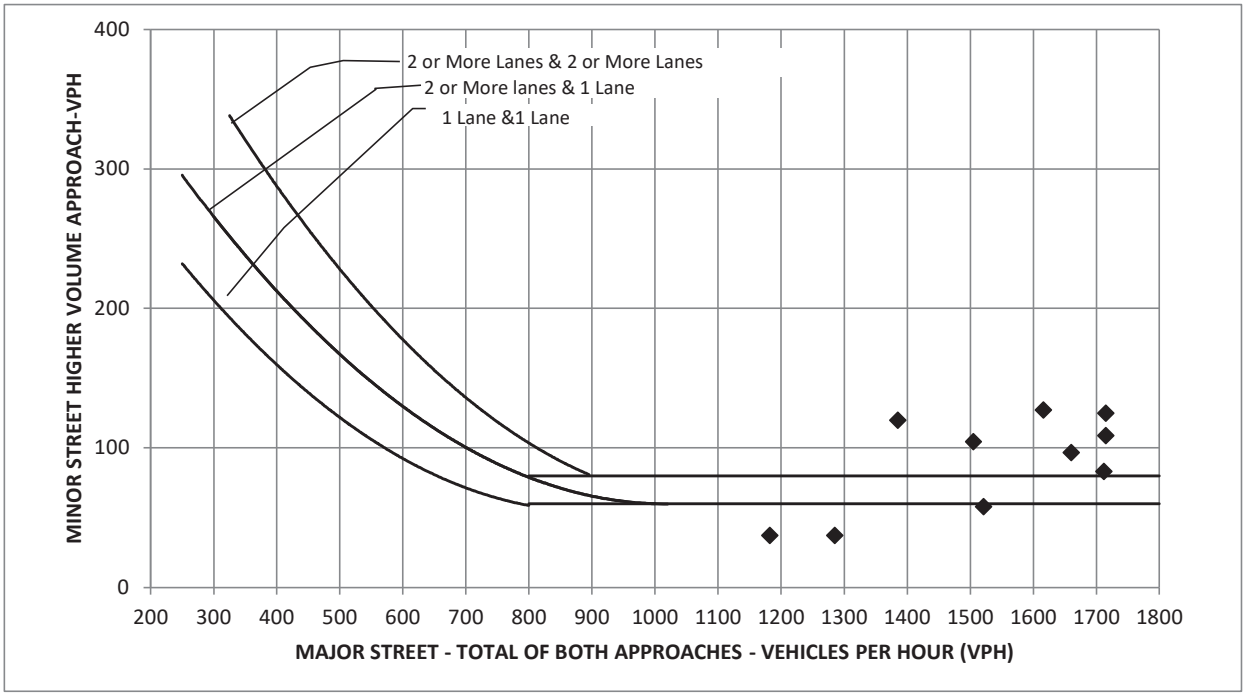
Does this intersection meet Warrant 1B for signal installation? YES

Data Collection Date: 6/24/2025

Michigan Manual of Uniform Traffic Control Devices
Worksheet for Signal Warrants (Section 4C)
WARRANT 2: Four-Hour Vehicular Volume

Spot Number:	Background Conditions		
Intersection:	Grand River Avenue @ Providence Parkway		
Date	7/10/2025	by	F&V

4	**: No. of Lanes on Major St.**
2	**: No. of Lanes on Minor St.**
50	**: Speed limit or 85th Percentile? (MPH)**
NO	**: Is the intersection within an Isolated community?**
0	**: What is the of the population isolated community?**

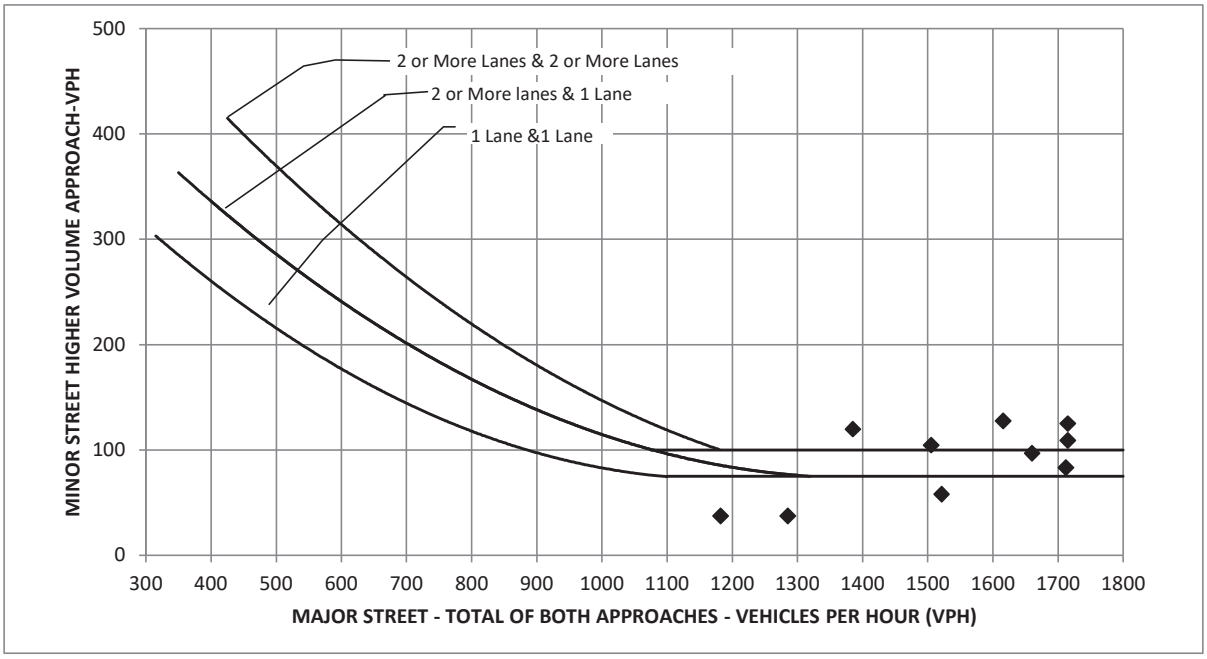


How Many Hours Are Met	**9**
Is Warrant (70%) Met?	**YES**

Michigan Manual of Uniform Traffic Control Devices
Worksheet for Signal Warrants (Section 4C)
WARRANT 3 B(70%): Peak-Hour Vehicular Volume

Spot Number:	Background Conditions		
Intersection:	Grand River Avenue @ Providence Parkway		
Date	7/10/2025	by	F&V

4	**: No. of Lanes on Major St.**
2	**: No. of Lanes on Minor St.**
50	**: Speed limit or 85th Percentile? (MPH)**
NO	**: Is the intersection within an Isolated community?**
0	**: What is the of the population isolated community?**



How Many Hours Are Met	**7**
Is Warrant (70%) Met?	**YES**

Summary of Warrants

Spot Number:	Future Conditions		
Major Street:	Grand River Avenue	Minor Street:	Providence Parkway
Intersection:	Grand River Avenue at Providence Parkway		
City/Twp:	Novi		
Date Performed:	7/10/2025	Performed By:	F&V
Date Volumes Collected:	6/24/2025		

Warrant	Condition	Is Warrant Met
Data Validation Error		**NO**
WARRANT 1: Eight-Hour Vehicular Volume		**YES**
	Condition A	NO
	Condition B	YES
	Condition A&B	N/A
WARRANT 2: Four-Hour Vehicular Volume	(70%)	**YES**
WARRANT 3: Peak-Hour Vehicular Volume	(70%)	**YES**
	Condition A	**N/A**
	Condition B	**YES**
WARRANT 4: Pedestrian Volume	(70%)	**NO**
	Four Hour	NO
	Peak Hour	NO
(Threshold)	HAWK	NO
(Threshold)	RRFB	NO
WARRANT 5: School Crossing		**NO**
WARRANT 6: Coordinated Signal System		**NO**
WARRANT 7: Crash Experience		**NO**
	Condition A	NO
	Condition B	NO
WARRANT 8: Roadway Network		**NO**
WARRANT 9: Intersection Near a Grade Crossing		**#N/A**

Issue to Be Addressed by Signalization:

0

Michigan Manual of Uniform Traffic Control Devices
Worksheet for Signal Warrants (Section 4C)
WARRANT 1: Eight-Hour Vehicular Volume

Intersection:	Grand River Avenue @ Providence Parkway		
Date	7/10/2025	by	F&V

4	**: No. of Lanes on Major St?**
2	**: No. of Lanes on Minor St?**
50	**: Speed limit or 85th Percentile? (MPH)**
NO	**: Is the intersection within an Isolated community?**
0	**: if answer 4 is Yes, then what is the of the population isolated community?**
NO	**: Have other remedial measures been tried?**

USE 70% WARRANTS 1A AND 1B. DO NOT USE COMBINATION OF A & B

	Major Volume (Both Apr.)	Minor Volume (One Apr.)	Condition A Major Volume	Condition A Minor Volume	Warrant Condition A Met?	Condition B Major Volume	Condition B Minor Volume	Warrant Condition B Met?	Combination Major A	Combination Minor A	Combination Major B	Combination Minor B	Warrant Condition A&B met?
Time	**E-W**	N-S											
00:01 - 01:00	0	0	420	140	**NO**	630	70	**NO**	N/A	N/A	N/A	N/A	**N/A**
01:00 - 02:00	0	0	420	140	**NO**	630	70	**NO**	N/A	N/A	N/A	N/A	**N/A**
02:00 - 03:00	0	0	420	140	**NO**	630	70	**NO**	N/A	N/A	N/A	N/A	**N/A**
03:00 - 04:00	0	0	420	140	**NO**	630	70	**NO**	N/A	N/A	N/A	N/A	**N/A**
04:00 - 05:00	0	0	420	140	**NO**	630	70	**NO**	N/A	N/A	N/A	N/A	**N/A**
05:00 - 06:00	0	0	420	140	**NO**	630	70	**NO**	N/A	N/A	N/A	N/A	**N/A**
06:00 - 07:00	0	0	420	140	**NO**	630	70	**NO**	N/A	N/A	N/A	N/A	**N/A**
07:00 - 08:00	1199	72	420	140	**NO**	630	70	**YES**	N/A	N/A	N/A	N/A	**N/A**
08:00 - 09:00	1535	86	420	140	**NO**	630	70	**YES**	N/A	N/A	N/A	N/A	**N/A**
09:00 - 10:00	1516	127	420	140	**NO**	630	70	**YES**	N/A	N/A	N/A	N/A	**N/A**
10:00 - 11:00	1394	138	420	140	**NO**	630	70	**YES**	N/A	N/A	N/A	N/A	**N/A**
11:00 - 12:00	1627	150	420	140	**YES**	630	70	**YES**	N/A	N/A	N/A	N/A	**N/A**
12:00 - 13:00	1980	132	420	140	**NO**	630	70	**YES**	N/A	N/A	N/A	N/A	**N/A**
13:00 - 14:00	1683	108	420	140	**NO**	630	70	**YES**	N/A	N/A	N/A	N/A	**N/A**
14:00 - 15:00	1745	124	420	140	**NO**	630	70	**YES**	N/A	N/A	N/A	N/A	**N/A**
15:00 - 16:00	1748	141	420	140	**YES**	630	70	**YES**	N/A	N/A	N/A	N/A	**N/A**
16:00 - 17:00	1915	178	420	140	**YES**	630	70	**YES**	N/A	N/A	N/A	N/A	**N/A**
17:00 - 18:00	1760	107	420	140	**NO**	630	70	**YES**	N/A	N/A	N/A	N/A	**N/A**
18:00 - 19:00	1326	57	420	140	**NO**	630	70	**NO**	N/A	N/A	N/A	N/A	**N/A**
19:00 - 20:00	0	0	420	140	**NO**	630	70	**NO**	N/A	N/A	N/A	N/A	**N/A**
20:00 - 21:00	0	0	420	140	**NO**	630	70	**NO**	N/A	N/A	N/A	N/A	**N/A**
21:00 - 22:00	0	0	420	140	**NO**	630	70	**NO**	N/A	N/A	N/A	N/A	**N/A**
22:00 - 23:00	0	0	420	140	**NO**	630	70	**NO**	N/A	N/A	N/A	N/A	**N/A**
23:00 - 00:00	0	0	420	140	**NO**	630	70	**NO**	N/A	N/A	N/A	N/A	**N/A**

Number of Hours that met the warrant 1A =	**3**
Number of Hours that met the warrant 1B =	**11**
Number of Hours that met the warrant 1 A & B =	**0**

A. Is the Minimum Vehicular Volume Warrant Met? (Condition A)	**NO**
B. Is the Interruption of Continuous Traffic Met? (Condition B)	**YES**
C. Combination of Warrants A and B Criteria Met?	**N/A**

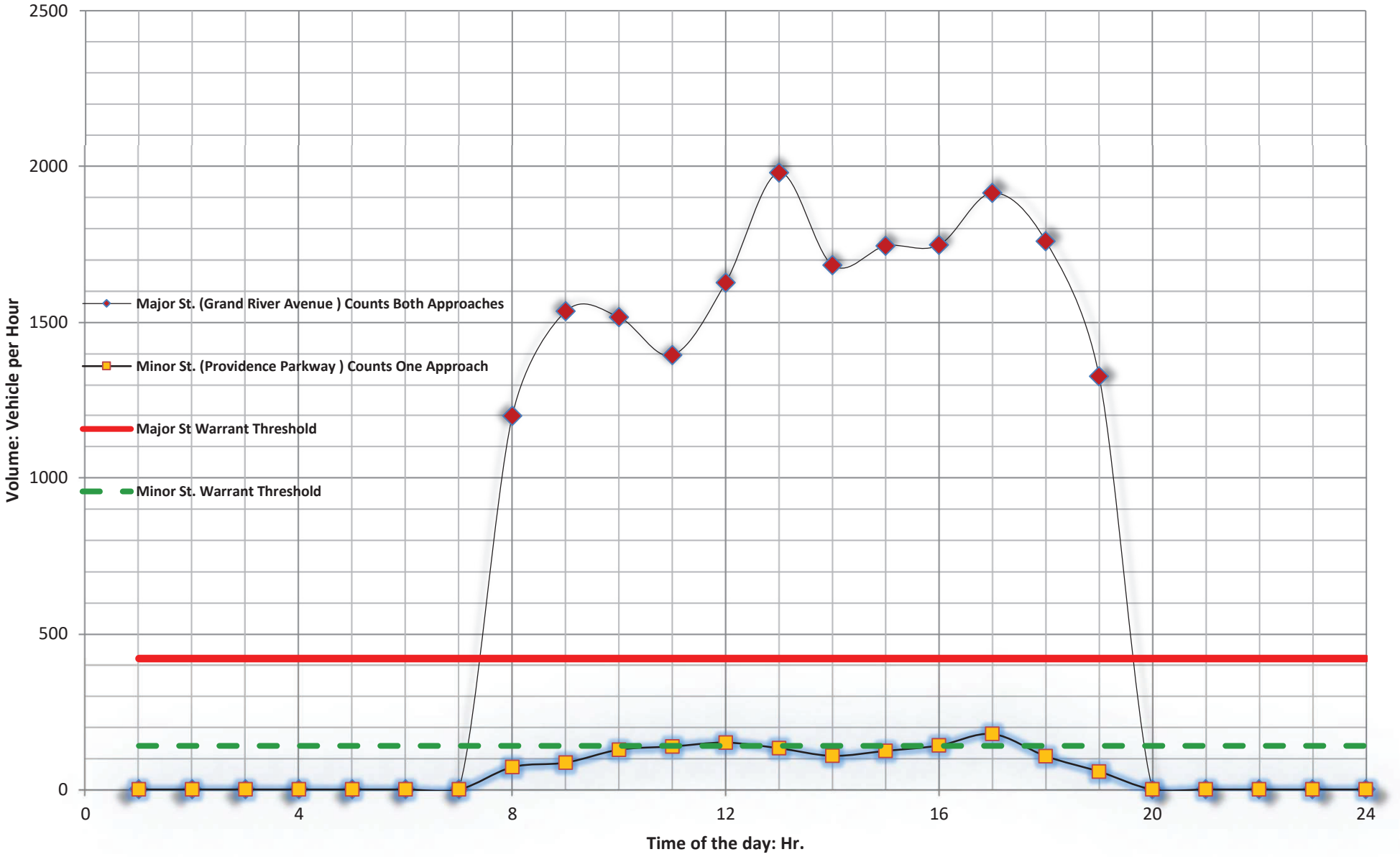


FIGURE 1: WARRANT **1A**

IS THERE A REDUCTION IN THE WARRANT THRESHOLDS TO 70% ...

1- DUE TO SPEED? YE

2- DUE TO ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000? NO

Spot Number: Future Conditions

Grand River Avenue @ Providence Parkway

NO. OF LANES ON MAJOR ST.? 4

NO. OF LANES ON MINOR ST.? 2

Number of Hours that met the Warrant: 3

Does this intersection meet Warrant 1A for signal installation? NO

Data Collection Date:

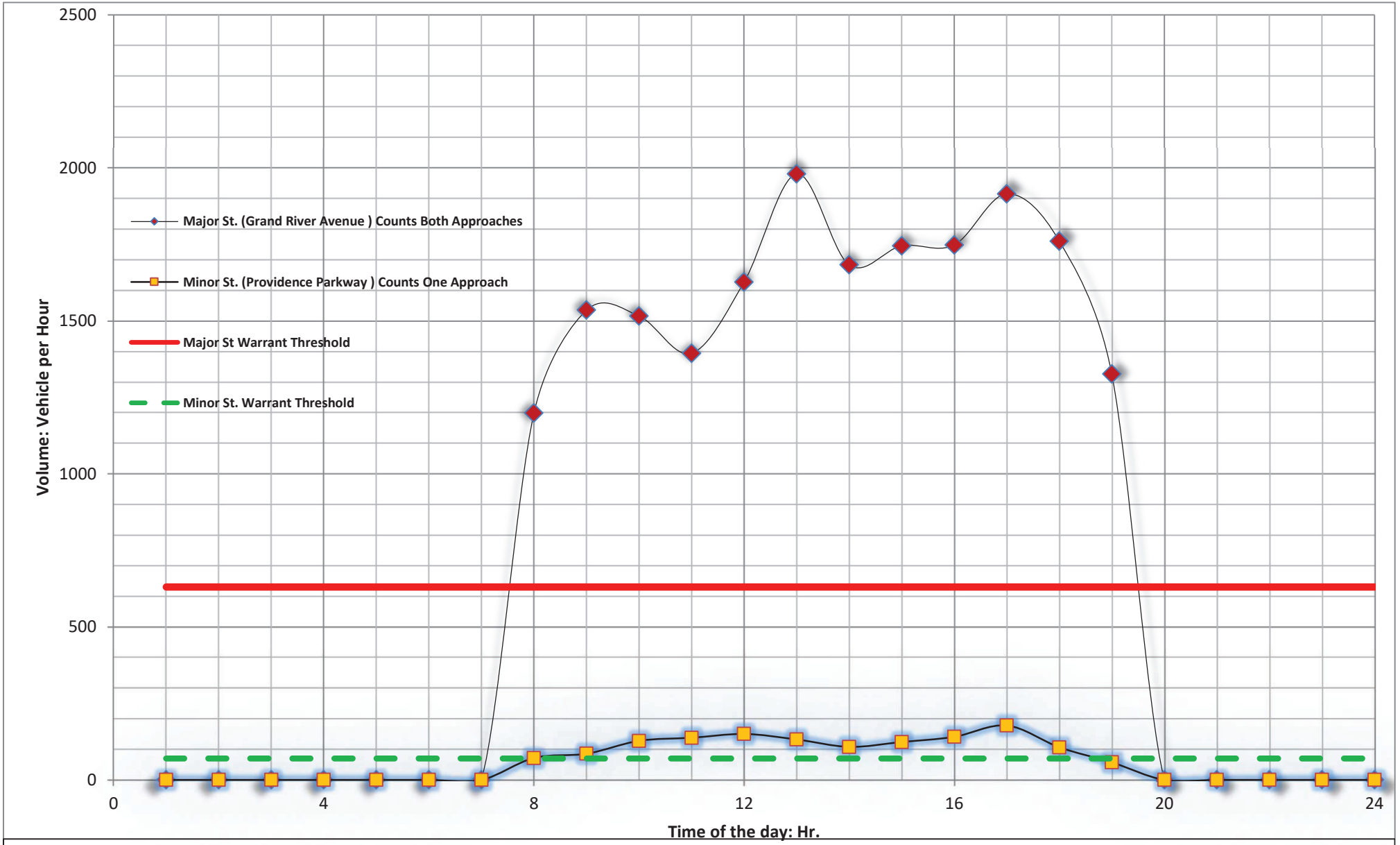


FIGURE 1: WARRANT **1B**

IS THERE A REDUCTION IN THE WARRANT THRESHOLDS TO 70% ...

1- DUE TO SPEED? YES

2- DUE TO ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000? NO

Spot Number: Future Conditions

Grand River Avenue @ Providence Parkway

NO. OF LANES ON MAJOR ST.? 4

NO. OF LANES ON MINOR ST.? 2

Number of Hours that met the Warrant: 11

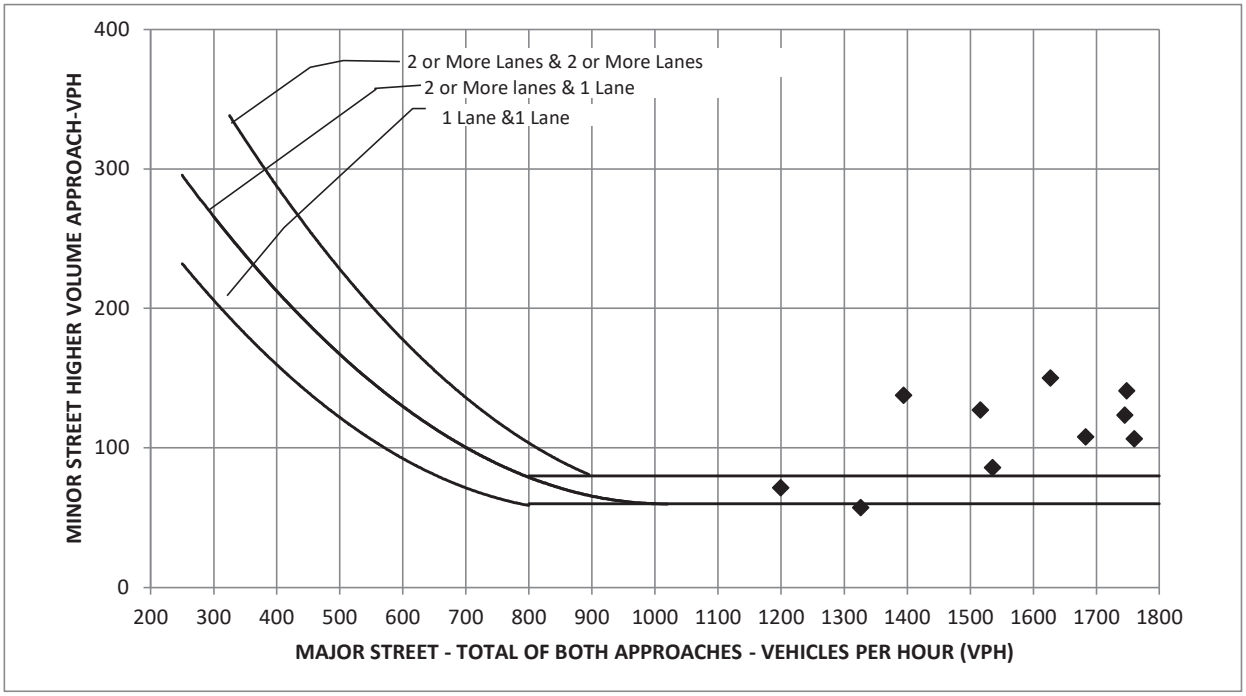
Does this intersection meet Warrant 1B for signal installation? YES

Data Collection Date: 6/24/2025

Michigan Manual of Uniform Traffic Control Devices
Worksheet for Signal Warrants (Section 4C)
WARRANT 2: Four-Hour Vehicular Volume

Spot Number:	Future Conditions		
Intersection:	Grand River Avenue @ Providence Parkway		
Date	7/10/2025	by	F&V

4	**: No. of Lanes on Major St.**
2	**: No. of Lanes on Minor St.**
50	**: Speed limit or 85th Percentile? (MPH)**
NO	**: Is the intersection within an Isolated community?**
0	**: What is the of the population isolated community?**

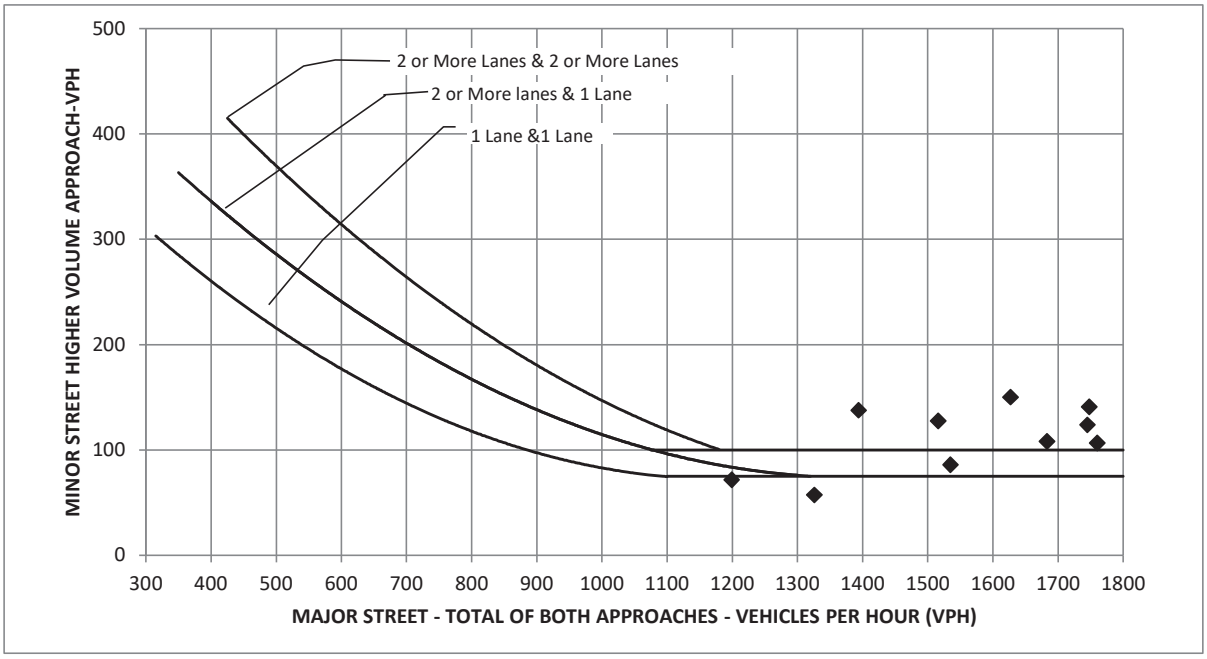


How Many Hours Are Met	**10**
Is Warrant (70%) Met?	**YES**

Michigan Manual of Uniform Traffic Control Devices
Worksheet for Signal Warrants (Section 4C)
WARRANT 3 B(70%): Peak-Hour Vehicular Volume

Spot Number:	Future Conditions		
Intersection:	Grand River Avenue @ Providence Parkway		
Date	7/10/2025	by	F&V

4	**: No. of Lanes on Major St.**
2	**: No. of Lanes on Minor St.**
50	**: Speed limit or 85th Percentile? (MPH)**
NO	**: Is the intersection within an Isolated community?**
0	**: What is the of the population isolated community?**



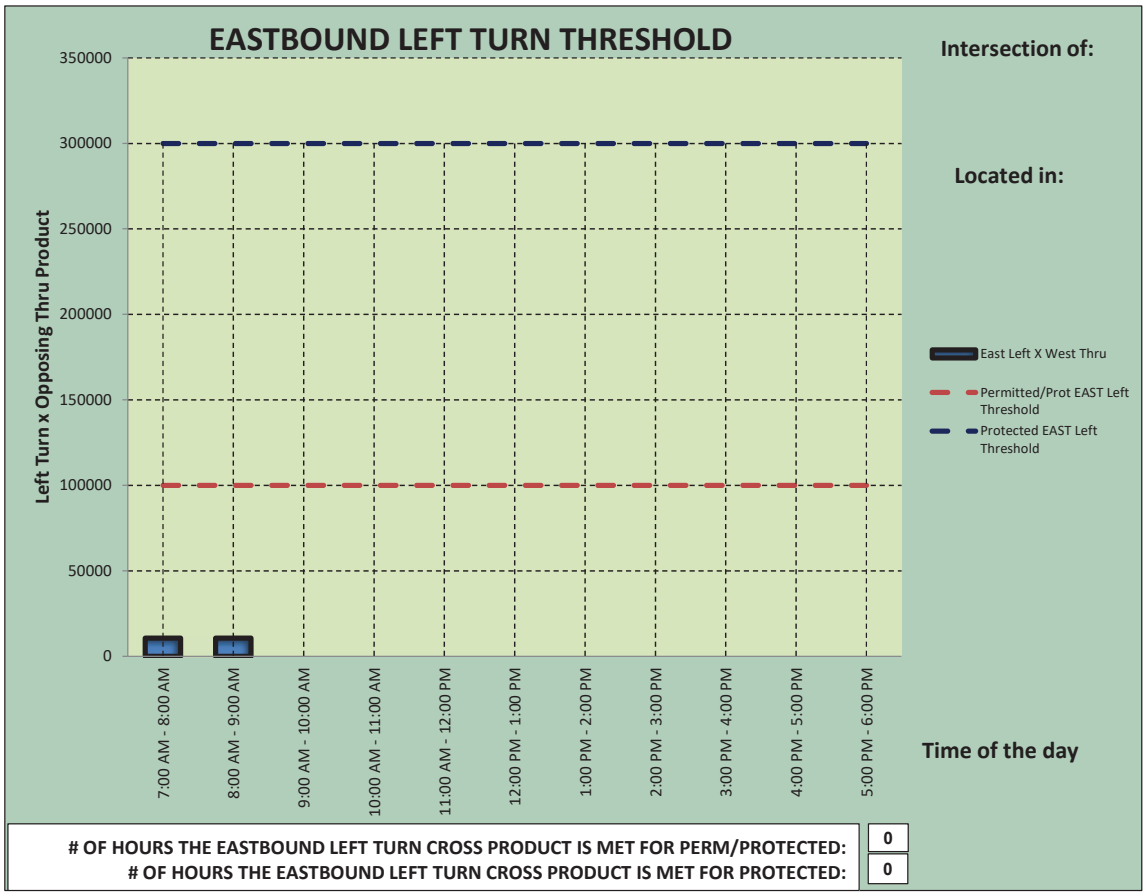
How Many Hours Are Met	**9**
Is Warrant (70%) Met?	**YES**

EASTBOUND AND WESTBOUND LEFT TURN PHASE THRESHOLDS

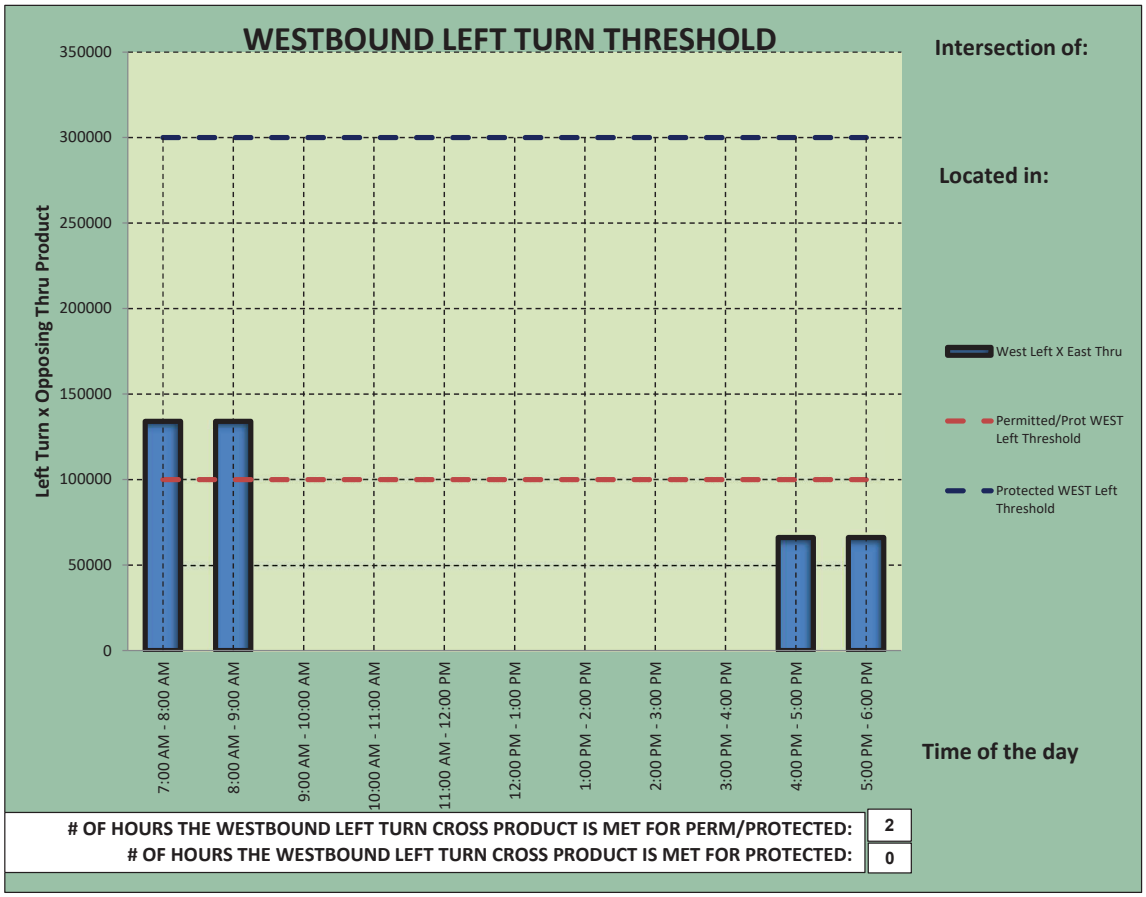
Please enter Data in Yellow Boxes ONLY

CONDITIONS		Items to Consider for Protected Only	Items to Consider for Permissive/Protected
EASTBOUND LEFT TURN GEOMETRY			
No. of Opposing WESTbound Thru Lanes (include combination thru lanes)	2	NO	YES
No. of Opposing WESTbound Right Turn Only Lanes	0	N/A	
What is the Opposing WESTbound speed limit or 85%ile? (mph)	50	YES	N / A
No. of EASTbound Left Turning Lanes	1	NO	N / A
What is the EASTbound sight distance in the field? (ft)	1000	NO	YES
Minimum Required Sight Distance (ft)	**441**		
WESTBOUND LEFT TURN GEOMETRY			
No. of Opposing EASTbound Thru Lanes (include combination thru lanes)	2	NO	YES
No. of Opposing EASTbound Right Turn Only Lanes	1	N/A	
What is the Opposing EASTbound speed limit or 85%ile? (mph)	50	YES	N / A
No. of WESTbound Left Turning Lanes	1	NO	N / A
What is the WESTbound sight distance in the field? (ft)	1000	NO	YES
Minimum Required Sight Distance (ft)	**478**		
TRAFFIC CHARACTERISTICS			
EASTbound Left Turn Vol (vph)	**20**	NO	
WESTbound Left Turn Vol (vph)	**162**	YES	
Cross Product of LEFT TURN EAST (See Chart Below)	**10600**	NO	NO
Cross Product of LEFT TURN WEST (See Chart Below)	**133974**	NO	YES
CRASH HISTORY			
Is there an existing permissive/protected or protected/permissive LT phase?	NO		
"One Left Turn Movement" refers to	Eastbound		
ONE LEFT TURN MOVEMENT: Crash History for 12 Month Period			
ONE LEFT TURN MOVEMENT: Number of Correctable crashes (Left-Turn Head-On)	**0**	NO	NO
ONE LEFT TURN MOVEMENT: Crash History for 24 Month Period			
ONE LEFT TURN MOVEMENT: Number of Correctable crashes (Left-Turn Head-On)	**0**	NO	NO
TWO LEFT TURN MOVEMENTS: Crash History for 12 Month Period			
TWO LEFT TURN MOVEMENTS: Number of Correctable crashes (Left-Turn Head-On)	**0**	NO	NO
TWO LEFT TURN MOVEMENTS: Crash History for 24 Month Period			
TWO LEFT TURN MOVEMENTS: Number of Correctable crashes (Left-Turn Head-On)	**0**	NO	NO
EASTbound Left Turn DELAY per vehicle? Sec. / Veh. (from Synchro)		NO	
EASTbound TOTAL Left Turn DELAY? Veh-Hr	0.00		
WESTbound Left Turn DELAY per vehicle? Sec. / Veh. (from Synchro)		**NO**	
WESTbound TOTAL Left Turn DELAY? Veh-Hr	0.00		

Left-turn phasing should only be approved and installed after a comprehensive engineering study indicates such an operation is necessary for the safe and efficient operation of an intersection. The type of left-turn phasing will be determined based on data from the engineering study which includes the amount of delay experienced by left-turning traffic, crash patterns that may be occurring and available capacity of the intersection.



# OF HOURS THE EASTBOUND LEFT TURN CROSS PRODUCT IS MET FOR PERM/PROTECTED:	0
# OF HOURS THE EASTBOUND LEFT TURN CROSS PRODUCT IS MET FOR PROTECTED:	0



# OF HOURS THE WESTBOUND LEFT TURN CROSS PRODUCT IS MET FOR PERM/PROTECTED:	2
# OF HOURS THE WESTBOUND LEFT TURN CROSS PRODUCT IS MET FOR PROTECTED:	0

CORRESPONDENCE

CITY OF NOVI

RESPONSE FORM

RECEIVED

DEC 29 2025

CITY OF NOVI
COMMUNITY DEVELOPMENT

JZ25-24 PROVIDENCE MEADOWS FOR INITIAL CONSIDERATION OF ELIGIBILITY FOR A PLANNED REZONING OVERLAY (PRO) CONCEPT PLAN ASSOCIATED WITH ZONING MAP AMENDMENT 18.752, TO REZONE FROM I-1 LIGHT INDUSTRIAL TO RM-2 HIGH DENSITY MULTIPLE-FAMILY.

You are invited to attend the public hearing on January 14, 2026 and voice your support or objection.

Participants may also choose to submit comments that can be read into the record if they are unable to attend. To submit a written reply, you may use this form to reply by mail, email, or fax. Returning this form by mail, email, or fax has as much validity as verbal comments. Signed comments will be added to the record of the meeting. Unsigned or anonymous comments **WILL NOT** be considered. Written comments must be received by 4:00 PM on the day of the meeting.

Return via email: schoi@cityofnovi.org

Return via mail or fax: Community Development Department
45175 Ten Mile Road, Novi, Michigan 48375
248-347-0475 (Main) 248-735-5633 (Fax)

Information regarding the project will be available the Saturday prior to the meeting date at: https://www.cityofnovi.org/agendas-minutes/planning-commission/2026/.

Plans are available for viewing during the City's regular business hours, Monday thru Friday, 8:00 AM to 5:00 PM, at the Community Development Department, or by contacting bmcbeth@cityofnovi.org.

☐ I SUPPORT ☒ I OBJECT

TO THE ABOVE REQUEST FOR THE FOLLOWING REASONS:

I live in the Villas at Stonebrook Condominiums. Those of us that live along the woods paid a substantial premium for our lots.the city is now proposing allowing the construction of 161 townhouses to the north and a number of apartments to the south along our wooded border. In addition to losing our privacy it now would create additional traffic and noise that we paid a premium to avoid. If these projects are allowed to proceed the city should at least refund all of us the premiums we paid.

SIGNATURE: James Moran

PRINT NAME: JAMES MORAN

ADDRESS: 48718 WINDFALL RD, NOVI 48374 LOT 16

*** IN ACCORDANCE WITH MCL 125.3103:

- NOTICE SHALL BE GIVEN TO ALL PERSONS TO WHOM REAL PROPERTY IS ASSESSED WITHIN 300 FEET OF THE SUBJECT PROPERTY.
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CITY OF NOVI

RESPONSE FORM

RECEIVED
JAN 02 2026
CITY OF NOVI
COMMUNITY DEVELOPMENT

JZ25-24 PROVIDENCE MEADOWS FOR INITIAL CONSIDERATION OF ELIGIBILITY FOR A PLANNED REZONING OVERLAY (PRO) CONCEPT PLAN ASSOCIATED WITH ZONING MAP AMENDMENT 18.752, TO REZONE FROM I-1 LIGHT INDUSTRIAL TO RM-2 HIGH DENSITY MULTIPLE-FAMILY.

You are invited to attend the public hearing on January 14, 2026 and voice your support or objection.

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Return via email: schoi@cityofnovi.org

Return via mail or fax: Community Development Department
45175 Ten Mile Road, Novi, Michigan 48375
248-347-0475 (Main) 248-735-5633 (Fax)

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☐ I SUPPORT ☒ I OBJECT

TO THE ABOVE REQUEST FOR THE FOLLOWING REASONS:

(X) OUR HOME IS 3RD ONE FROM THE RIGHT, HAS CLOSER PROXIMITY TO THE DEVELOPMENT PROPOSED.

(X) TRAFFIC CONGESTION, INCREASED FLOW NEAR HOSPITAL ROADS, LACK OF NECESSARY TRAFFIC LIGHTS AND OTHER ROAD INFRASTRUCTURE TO SUPPORT THE TRAFFIC EXPECTED.

(X) WILDLIFE HABITATS, PROTECTED TREES WILL BE REMOVED.

SIGNATURE: [signature]

PRINT NAME: ARUL JAGANATHAN

ADDRESS: 48668 WINDFALL RD, NOVI, MI.

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☐ **I SUPPORT** ☒ **I OBJECT**

TO THE ABOVE REQUEST FOR THE FOLLOWING REASONS:

SIGNATURE: Sharmil Kurian

PRINT NAME: SHARMIL KURIAN

ADDRESS: 48590 WINDFALL ROAD, NOVI 48374

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Choi, Stacey

From: McBeth, Barbara
Sent: Monday, January 5, 2026 8:31 AM
To: Bell, Lindsay; Choi, Stacey
Subject: FW: The Form 'Contact Board/Commission' was submitted

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JAN 05 2026
CITY OF NOVI
COMMUNITY DEVELOPMENT

FYI.

Barbara McBeth, AICP | City Planner
Community Development | Planning Division
City of Novi | 45175 Ten Mile Rd | Novi, MI 48375
t: 248.347.0587 | c: 248.343.1237 | cityofnovi.org

To receive monthly e-news and more social media options, click here.

From: postmaster@muniweb.com <postmaster@muniweb.com>
Sent: Wednesday, December 31, 2025 1:32 PM
To: McBeth, Barbara <bmcbeth@cityofnovi.org>
Subject: The Form 'Contact Board/Commission' was submitted

Name (*)
Linda Cousino

Email (*)
[redacted]

Address (*)
48848 Windfall Rd Novi

My Feedback (*)
I OPPOSE the development of Providence Meadows for the following reasons: over 500 mature trees will be cut down, almost seven acres of wetlands will be destroyed, traffic, traffic and more traffic. The need in Novi is not for three story townhomes, the need is for one floor, single family homes. I Implore the Planning Commission to follow the guidelines of the city's Master Plan. Thank you for your consideration.

Send my comments to
Planning Commission

CITY OF NOVI RESPONSE FORM

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☐ **I SUPPORT** ☒ **I OBJECT**

TO THE ABOVE REQUEST FOR THE FOLLOWING REASONS:

They want to cut down trees, some very tall trees. and replace them with 15/20 foot trees.
The buildings are too tall. They are unattractive.

SIGNATURE: Martha Keyse

PRINT NAME: MARTHA KEYSE

ADDRESS: 48640 WINDFALL ROAD, NOVI 48374

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☐ I SUPPORT ☑ I OBJECT

TO THE ABOVE REQUEST FOR THE FOLLOWING REASONS:

Tree loss, Too many deviations (18)
Not a good fit with existing residences.
Destruction of wetlands and wood ponds
Not enough green space remaining in Novi.

SIGNATURE: Holly Volk

PRINT NAME: Holly Volk

ADDRESS: 48646 Windfall Rd. 48374

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☐ **I SUPPORT** ☒ **I OBJECT**

TO THE ABOVE REQUEST FOR THE FOLLOWING REASONS:

1) TOO MANY DEVIATIONS - 18 LIKE TRYING TO PUT A SQUARE PEG IN A ROUND HOLE
2) REMOVAL OF 537 "GOOD" CONDITION TREES - 62% - NOVI IS A TREE CITY & HAS RECEIVED A GROWTH AWARD FOR PREVIOUS 12 - MASTER PLAN
3) PG 128 MASTER PLAN - DOES NOT MEET LOW-IMPACT DEVELOPMENT TECHNIQUES
4) 6.71 ACRES WETLANDS - PG. 26 MASTER PLAN - UNIQUE + FRAGILE ECOSYSTEMS - DO NOT RETROFIT EXISTING SPACE - MAINTAIN A GREEN INFRASTRUCTURE FOR A HEALTHY, VIBRANT COMMUNITY

SIGNATURE: Ann Nelke

PRINT NAME: ANN NELKE

ADDRESS: 48646 WINDFALL ROAD 48374

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JZ25-24 PROVIDENCE MEADOWS OBJECTION FORM CONTINUED:

6) Any major zoning change (per the Master Plan), as in this case Light Industrial to Multi-Family High-Density, should be compatible with neighboring properties. This is not compatible at all.

7) Any major zoning change should not negatively impact neighboring properties. This does.

8) The rendering shows the units as they might appear 60-70 years from now, not how it will look once 537 trees are removed.

9) too many rooms (106 over). Allow the buildings closest to Grand River to be built where there would be the least number of trees cut down.

10) The buildings do not meet the needs of the residents (Master Plan), 82% of whom favor smaller footprint, single-family, one level condos. Novi already has an overabundance of townhouses. 1% of new development from 2020-2025 met the needs of 40% of the residents. (Master Plan page 35)

11) These will turn into rental properties and Novi already has over 50% vacancy rate. Master Plan page 35

12) too close to neighboring residents

Please do not approve this plan as it is currently being proposed.

Ann Nelke

ANN NELKE
48646 WINDFALL RD 48374

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☒ **I SUPPORT** ☐ **I OBJECT**

TO THE ABOVE REQUEST FOR THE FOLLOWING REASONS:

SIGNATURE: [signature]

PRINT NAME: Derick Doe

ADDRESS: 48600 Grand River Avenue, Novi, MI 48374

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