

McLeod Meadows Residential Development

Traffic Impact Study
FINAL

March 21, 2023



Prepared for:
800460 Ontario Ltd.



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March 21, 2023

RVA 226547

800460 Ontario Ltd.
Eric Henry
1701 Thorold Townline Road
Niagara Falls, Ontario, L2E 6S5

Attention: Eric Henry

Dear Mr. Henry:

Re: McLeod Meadows Proposed Residential Development, Niagara Falls, Ontario

RVA is pleased to submit the following Final Traffic Impact Study for the proposed Residential development to be located at 9304 McLeod Road in the City of Niagara Falls.

If there is any query related to this report, please feel free to contact the undersigned at 905 685 5049 ext. 4237 or by email at MDiMaria@rvanderson.com.

Yours very truly,

R.V. ANDERSON ASSOCIATES LIMITED

Matthew Di Maria, C.E.T., RSP1, CAPM.
Transportation Planner

Encls.

McLeod Meadows Residential Development

Traffic Impact Study Final

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RVA 226547

March 21, 2023

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1.0 INTRODUCTION

1.1 Study Objective

R.V. Anderson Associates Limited (RVA) was retained by 800460 Ontario Ltd. to complete a Traffic Impact Study (TIS) for the proposed McLeod Meadows residential development, located at 9304 McLeod Road in the City of Niagara Falls.

The study includes the estimation of traffic generation from the proposed development, traffic analysis, and the completion of intersection capacity analyses for the study area intersections under the existing and future conditions scenarios.

1.2 Development Location

The proposed development will be located in an existing farm parcel in the southeast corner of the Beechwood Road and McLeod Road intersection. Access to the property will be provided by one street on McLeod Road and four (4) streets on Beechwood Road. Surrounding the site is mainly farmland, except for a BMX park and car lot to the west of the proposed development location.

McLeod Road provides a direct link to the Queen Elizabeth Way (QEW) located east of the development. The location of the proposed development is shown in **Figure 1-1**.

1.3 Study Area

Based on consultations with City staff, traffic analysis was completed for the following study intersections:

- McLeod Road at Street 1;
- Beechwood Road at Street 2;
- Beechwood Road at Street 3;
- Beechwood Road at Street 4;
- Beechwood Road at Street 5;
- Beechwood Road at McLeod Road;
- Garner Road at McLeod Road; and
- Kalar Road at McLeod Road.



Figure 1-1 – Development Location

2.0 EXISTING CONDITIONS

2.1 Existing Road Network

McLeod Road within the study area is an east-west arterial roadway under the jurisdiction of the City of Niagara Falls. The roadway has a two-lane rural cross section within the vicinity of the proposed development but transitions into a four-lane urban cross-section at the Kalar road intersection. The roadway has posted speeds of 50km/h and 80km/h to the east and west of Garner Road, respectively. Near the site, it has generally straight and level horizontal and vertical alignments, respectively. At its signalized intersection with Kalar Road, it has auxiliary left-turn lanes in the eastbound and westbound directions and a westbound right-turn auxiliary lane.

Beechwood Road is a north-south collector roadway under the jurisdiction of the City of Niagara Falls, with a two-lane rural cross-section. The posted speed limit is 80km/h and 60km/h to the north and south of McLeod Road. Near the site, it has a generally straight and level horizontal and vertical alignment, respectively.

Garner Road is a north-south collector roadway under the jurisdiction of the City of Niagara Falls and has a posted speed limit of 60km/h. The road has a two-lane rural cross-section north of McLeod Road and a two-lane urban cross section south of McLeod Road. Near the site, it has a generally straight and level horizontal and vertical alignments, respectively.

Kalar Road is a north-south arterial roadway under the jurisdiction of the City of Niagara Falls and has a posted speed limit of 50km/h. The road has four-lanes north of McLeod Road, and two-lanes south of McLeod Road. The horizontal alignment of Kalar is generally straight within the study area, and its vertical alignment is generally flat with a slight upgrade to the north of the study area. There are northbound and southbound left turn auxiliary lanes at the intersection with McLeod Road.

The study area existing intersection lane configurations and controls are shown in **Figure 2-1**.

2.2 Active Transportation Facilities

Sidewalks are currently provided along both sides of McLeod Road east of Garner Road. Sidewalks are also provided on both sides of Kalar Road and on the east side of Garner Road.

Dedicated Cycling facilities are currently located in the east/west direction along McLeod Road east of Kalar Road and in the north/south direction along Kalar Road north of McLeod Road.

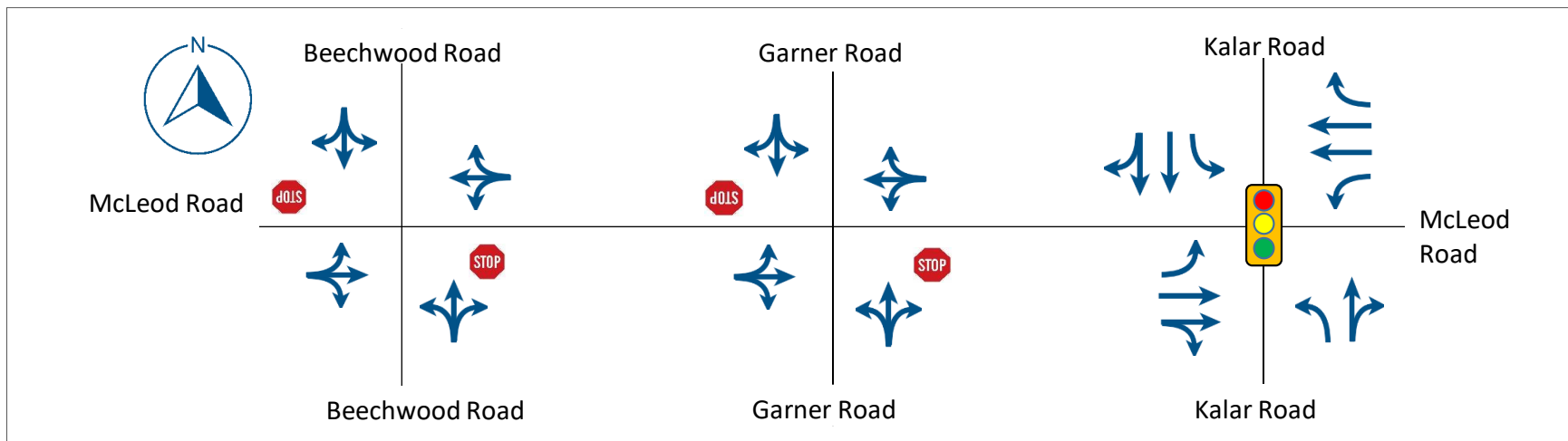


Figure 2-1 – Existing Intersection Lane Configurations and Controls

2.3 Transit Services

The nearest existing stops are located 900m and 1.1km west of the development along Garner and McLeod Road with transit routes described below. These routes connect users to the Canadian Drive Transit Hub.

Northbound stop on Garner Road, 900m west of proposed development

- Routes 113 and 213 – Operate Monday to Sunday travelling from the Canadian Drive Transit Hub to Mt. Carmel Plaza.

Westbound stop on McLeod Road 1.1km west of proposed development

- Routes 105 and 205 – Operate Monday to Sunday travelling from the Canadian Drive Transit Hub to Niagara Square.

2.4 Existing 2022 Traffic Data

Intersection turning movement count (TMC) data was collected in October 2022 and is provided in **Appendix A**.

An analysis of the data determined that the overall weekday peak hours for the study area road network generally occurred between 7:45 a.m. and 8:45 a.m. during the a.m. peak hour and between 4:30 p.m. and 5:30 p.m. during the p.m. peak hour.

The existing intersection volumes for the weekday a.m. and p.m. peak hours are presented in **Figure 2-2**.

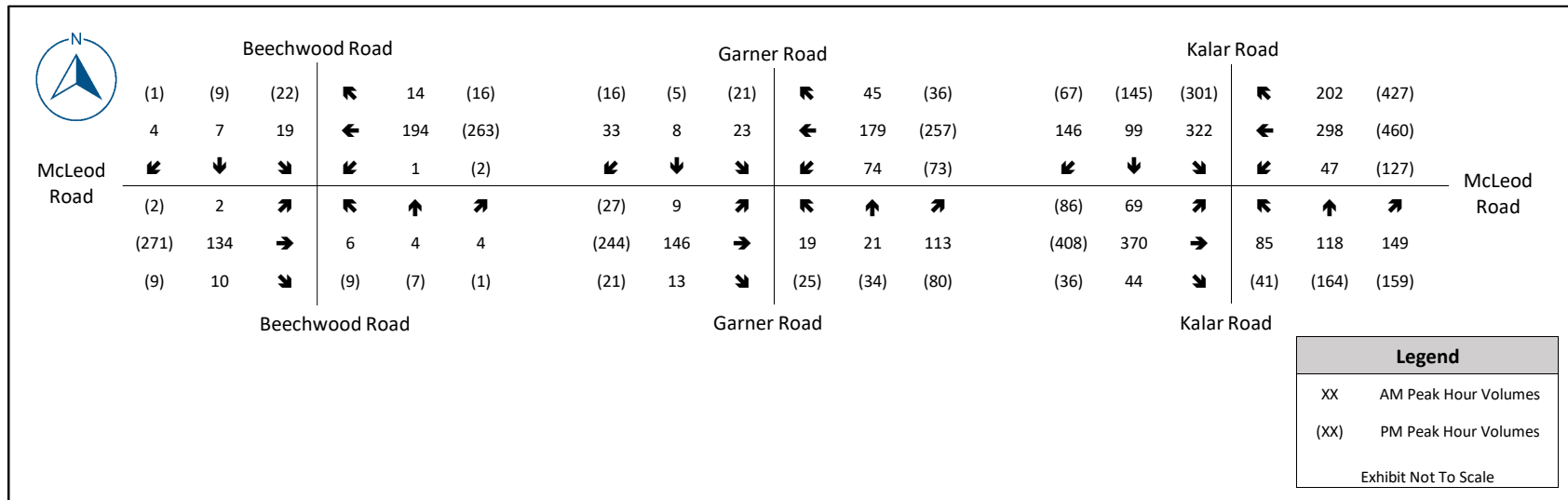


Figure 2-2 – Existing 2022 Traffic Volumes

3.0 FUTURE BACKGROUND TRAFFIC

3.1 Study Horizon Year

Based on requirements in the City of Niagara Falls Guidelines, the analysis adopted future planning horizons of 2027 representing the assumed opening year and 2032 representing five (5) years post opening year.

3.2 Study Area Transportation Network Improvements

3.2.1 McLeod Road West EA

An Environmental Assessment (EA) is planned to be completed for McLeod Road between Kalar Road and Thorold Townline Road and is expected to begin sometime in 2023. The EA study may result in recommendations for future geometric modifications based on a more comprehensive analysis of future traffic demands for the area and the resulting traffic operational conditions.

Additionally, the City noted that traffic signals are planned by the City for the McLeod Road and Garner Road intersection. This is consistent with the City's Development Charges Bylaw. This intersection has been modeled as a signalized intersection for all future horizon years, with 15m left turn lanes added at all approaches of the intersection assuming these will be provided to avoid the conflicts of the simultaneously left turn vehicles within the intersection under the permitted phases. The signal timing plan for this intersection has been assumed based on the existing traffic volumes.

3.3 Future Background Traffic Volumes

3.3.1 Planned Developments

Per the City's direction, the following background developments have been included in the projected future background volumes, with other approved developments expected to be captured within the assumed corridor growth. The background developments and general locations in the context of the surrounding road network are described below:

- Forestview Subdivision development, west of Garner Road;
- Splendor Subdivision development, west of Kalar Road to the south; and
- Panoramic Properties Residential Development, northeast corner of Kalar Road and McLeod Road.

The estimated weekday a.m. and p.m. peak hour generated traffic for each of the considered background developments are shown in **Appendix B**.

3.3.2 Future Background Traffic Volumes

Annual growth rates for the study area were provided through consultation with City Staff. An annual growth rate of 2% was applied to all intersection turning movements.

The resulting 2027 and 2032 future background volumes, excluding traffic generated from the considered background developments, are presented in **Figure 3-1** and **Figure 3-2**, respectively.

3.3.3 Future Total Background Traffic Volumes

The future total background intersection volumes for the 2027 and 2032 horizon years were estimated by adding future background traffic volumes and the estimated background development traffic for each horizon year. The resulting 2027 and 2032 future total background intersection volumes, for the weekday a.m. and p.m. peak hours, are presented in **Figure 3-3** and **Figure 3-4**, respectively

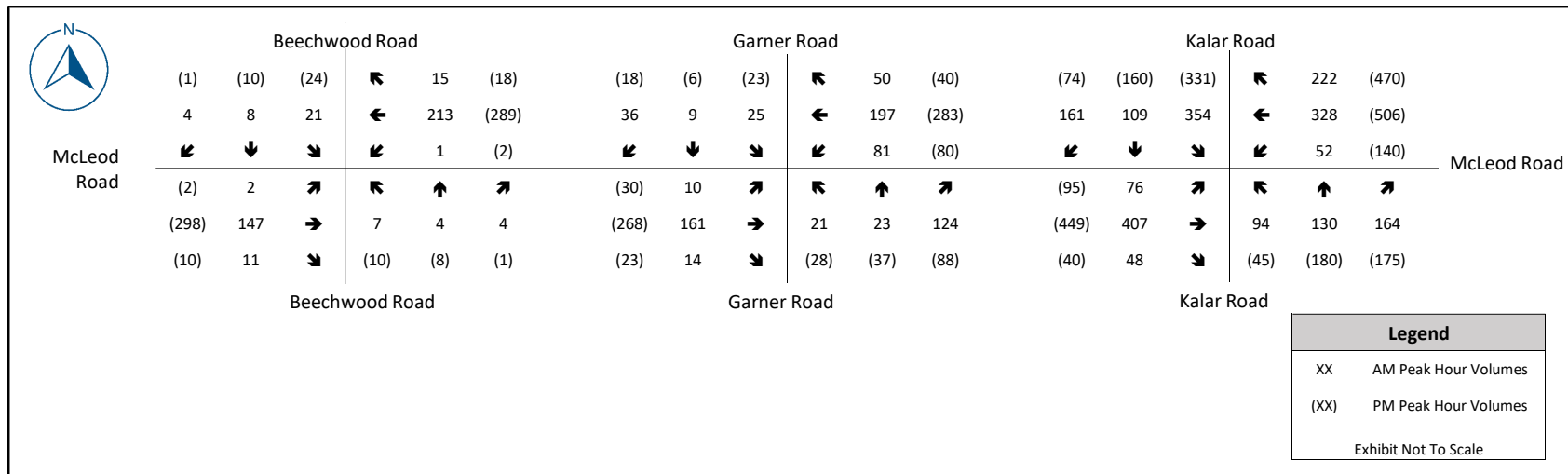


Figure 3-1 – 2027 Future Background Traffic Volumes

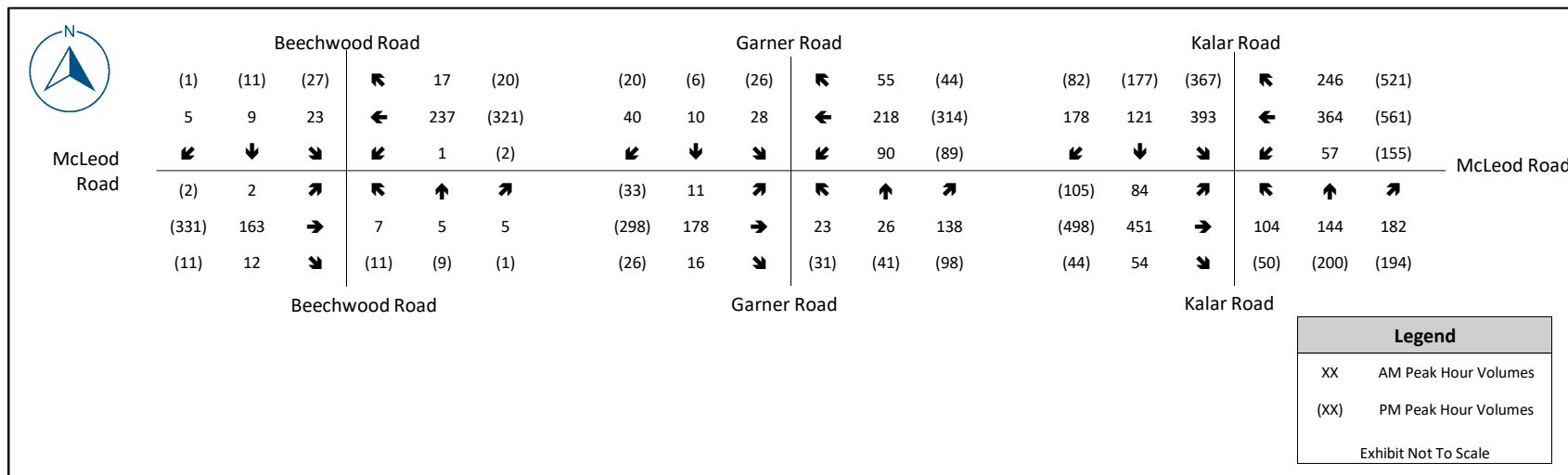



Figure 3-2 – 2032 Future Background Traffic Volumes



		Beechwood Road						Garner Road						Kalar Road				
McLeod Road	(1)	(10)	(24)	↖	15	(18)	(37)	(33)	(29)	↖	54	(44)	(103)	(182)	(376)	↖	222	(470)
	4	8	21	←	236	(304)	42	17	27	←	223	(329)	176	122	411	←	359	(609)
	↙	↓	↘	↙	1	(2)	↙	↓	↘	↙	88	(104)	↙	↓	↘	↙	61	(168)
	(2)	2	↗	↖	↑	↗	(41)	29	↗	↖	↑	↗	(116)	95	↗	↖	↑	↗
	(320)	155	→	7	4	4	(303)	200	→	21	50	147	(510)	510	→	95	145	194
(10)	11	↘	(10)	(8)	(1)	(23)	14	↘	(28)	(53)	(102)	(42)	53	↘	(50)	(197)	(193)	
		Beechwood Road						Garner Road						Kalar Road				


Legend

XX AM Peak Hour Volumes

(XX) PM Peak Hour Volumes

Exhibit Not To Scale

Figure 3-3 – 2027 Future Total Background Traffic Volumes



		Beechwood Road						Garner Road						Kalar Road				
McLeod Road	(1)	(11)	(27)	↖	17	(20)	(39)	(33)	(32)	↖	59	(48)	(111)	(199)	(412)	↖	246	(521)
	5	9	23	←	260	(336)	46	18	30	←	244	(360)	193	134	450	←	395	(664)
	↙	↓	↘	↙	1	(2)	↙	↓	↘	↙	97	(113)	↙	↓	↘	↙	66	(183)
	(2)	2	↗	↖	↑	↗	(44)	30	↗	↖	↑	↗	(126)	103	↗	↖	↑	↗
	(353)	171	→	7	5	5	(333)	217	→	23	53	161	(559)	554	→	105	159	212
(11)	12	↘	(11)	(9)	(1)	(26)	16	↘	(31)	(57)	(112)	(46)	59	↘	(55)	(217)	(212)	
		Beechwood Road						Garner Road						Kalar Road				

Legend

XX AM Peak Hour Volumes

(XX) PM Peak Hour Volumes

Exhibit Not To Scale

Figure 3-4 – 2032 Future Total Background Traffic Volume

4.0 SITE GENERATED TRAFFIC

4.1 Site Plan

The proposed site plan shown in **Figure 4-1** was prepared by Upper Canada Consultants. The plan shows a proposed subdivision including 217 single family homes, 206 townhomes and 72 multi-family residential units.

The proposed vehicular access configurations are as follows:

- Three-leg unsignalized intersection with McLeod Road and Street 1, approximately 385 metres east of the Beechwood Road and McLeod Road intersection, measured pavement edge to pavement edge.
- Three-leg unsignalized intersection on Beechwood Road and Street 2, approximately 90 metres south of the Beechwood Road and McLeod Road intersection, measured pavement edge to pavement edge.
- Three-leg unsignalized intersection with McLeod Road and Street 3, approximately 80 metres south of the Street 2 access measured pavement edge to pavement edge.
- Three-leg unsignalized intersection with McLeod Road and Street 4, approximately 40 metres south of the Street 3 access measured pavement edge to pavement edge.
- Three-leg unsignalized intersection with McLeod Road and Street 5, approximately 60 metres south of the Street 4 access measured pavement edge to pavement edge.

4.1.1 Access Review

4.1.1.1 McLeod Road Access

The site access proposed onto McLeod Road (Street 1) is planned to be a full movement unsignalized access, with a westbound auxiliary turn lane. The horizontal and vertical alignments are generally straight and flat; therefore, no sightline concerns exist.

Based on Transportation Association of Canada (TAC) guidelines, a frontage greater than 150 metres can have 4 driveways or more (TAC Figure 8.9.2). Since the frontage of the site along McLeod Road is approximately 615m, the proposed number of accesses meets TAC guidelines.

Per TAC guidelines, the minimum required spacing of a driveway from an unsignalized intersection along an arterial roadway is 35 metres (TAC Figure 8.8.2). Given the proposed access will be located approximately 385 metres east of the Beechwood Road intersection, the access meets TAC guidelines with respect to access spacing from an intersection.

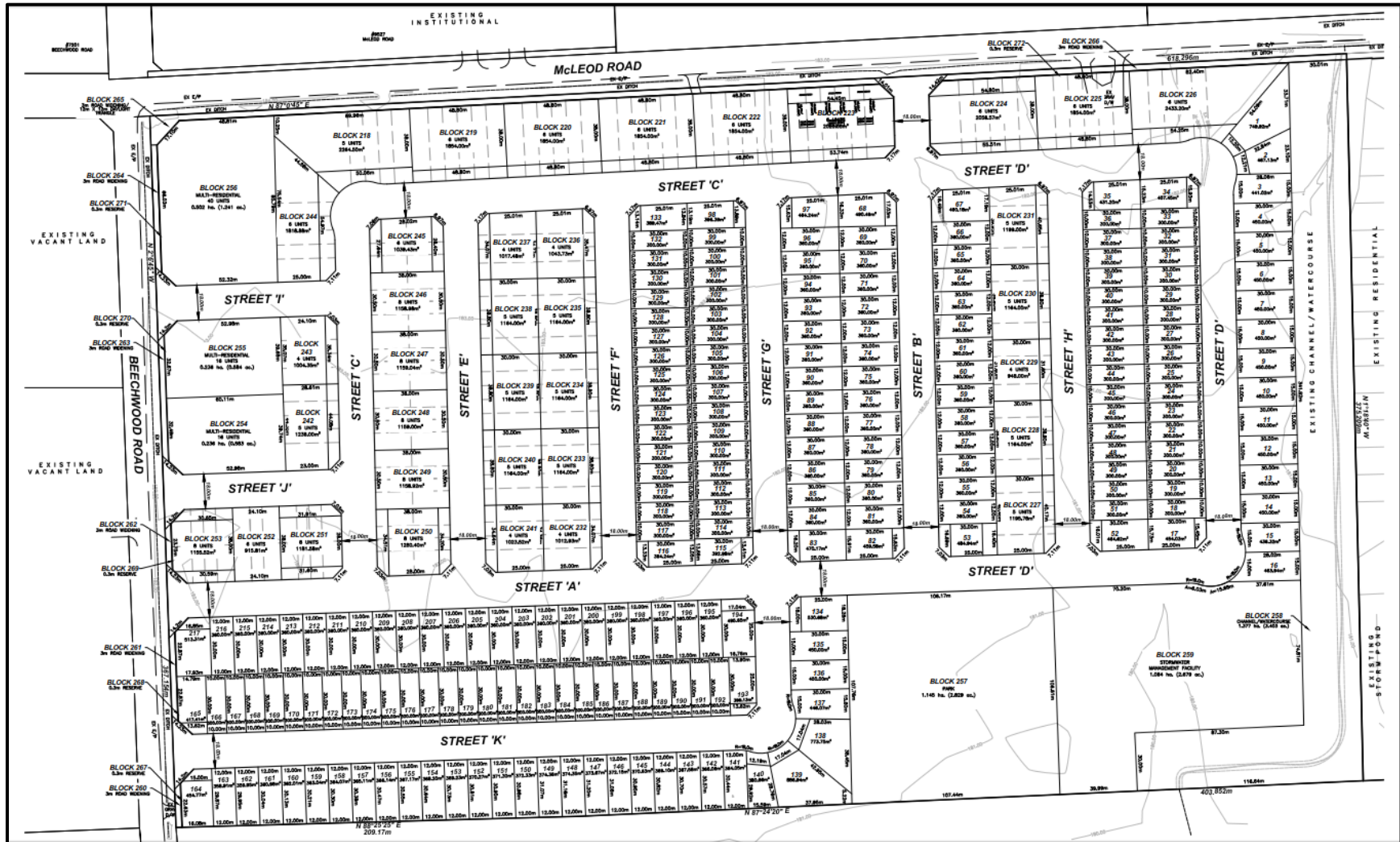


Figure 4-1 – Development Site Plan

4.1.1.2 Beechwood Road Accesses

The four (4) site accesses proposed for Beechwood Road are planned to be full-moves unsignalized accesses. The horizontal and vertical alignments along Beechwood Road are generally straight and flat; therefore, no sightline concerns are expected exist.

Based on TAC guidelines, a frontage greater than 150 metres can have 4 driveways or more (TAC Figure 8.9.2). Since the frontage of the site along Beechwood is approximately 350m, the number of accesses meets TAC guidelines.

Per TAC guidelines, the minimum required spacing of a driveway from an unsignalized intersection along an arterial roadway is 35 metres (TAC Figure 8.8.2). Given the Street 2 access will be located approximately 90 metres south of the Beechwood Road intersection, the access meets TAC guidelines with respect to access spacing from an intersection.

Per TAC guidelines, the minimum required driveway spacing from another unsignalized driveway intersection along an arterial roadway is 20 metres, not including the corner radii (TAC Figure 8.5.1). The site plan indicates a corner radius of approximately 6 metres for each of the driveways, resulting in a 32-metre required spacing between driveways. The spacing between Street 2 and Street 3 is 80 metres. The spacing between Street 3 and Street 4 is 40 metres. The spacing between Street 4 and Street 5 is 60 metres. These driveways proposed locations meet TAC guidelines with respect to driveway spacings.

4.2 Site Trip Generation

Automobile trip generation for the proposed development during peak periods of the adjacent street traffic was estimated by using the Institute of Transportation Engineers (ITE) Trip Generation Manual (11th edition) methodology for Single Family Detached (LUC 210), Single Family Attached (LUC 215) and Multifamily Housing Low-Rise (LUC 220).

As presented in **Table 4-1**, the proposed residential development is projected to generate approximately 297 total two-way trips during the weekday a.m. peak hour (74 inbound and 223 outbound), and 378 total two-way trips during the weekday p.m. peak hour (232 inbound and 146 outbound)

Table 4-1: Trip Generation

LUC	Building Use	Units	Peak Hours	Total Trip Generation (Baseline Vehicle/Person Trips)	Directional Distribution		Directional Site Trips	
					In	Out	In	Out
210	Single Family Home	217	AM	151	25%	75%	38	113
			PM	206	63%	37%	130	76
215	Street Town Homes	206	AM	101	25%	75%	25	76
			PM	120	59%	41%	70	50
220	Multi-Family Residential (Low-rise)	72	AM	45	24%	76%	11	34
			PM	52	63%	37%	32	20
Total						AM	74	223
						PM	232	146

4.3 Site Trip Distribution and Assignment

Given the majority of trips generated by the site during the weekday a.m. and p.m. peak hours will primarily be commuter trips, given the residential nature of the development, 2016 Transportation Tomorrow Survey (TTS) commuter data was reviewed to estimate the distribution of the site generated traffic to the surrounding road network. **Table 4-2** outlines the estimated trip distribution assumptions for the site generated trips, which is based on the analyzed TTS data provided in **Appendix C**.

Table 4-2: Trip Distribution

Direction	Distribution Percentages
McLeod Road (East) Includes traffic to QEW South, QEW North, and McLeod East	70%
McLeod Road (West)	5%
Beechwood Road (North)	20%
Beechwood Road (South)	5%
Total	100%

The site generated traffic has been assigned to individual turning movements at the study area intersections based on the trip generation estimates and the trip distribution assumptions. The estimated peak hour site generated traffic for the proposed residential development is shown in **Figure 4-2**.

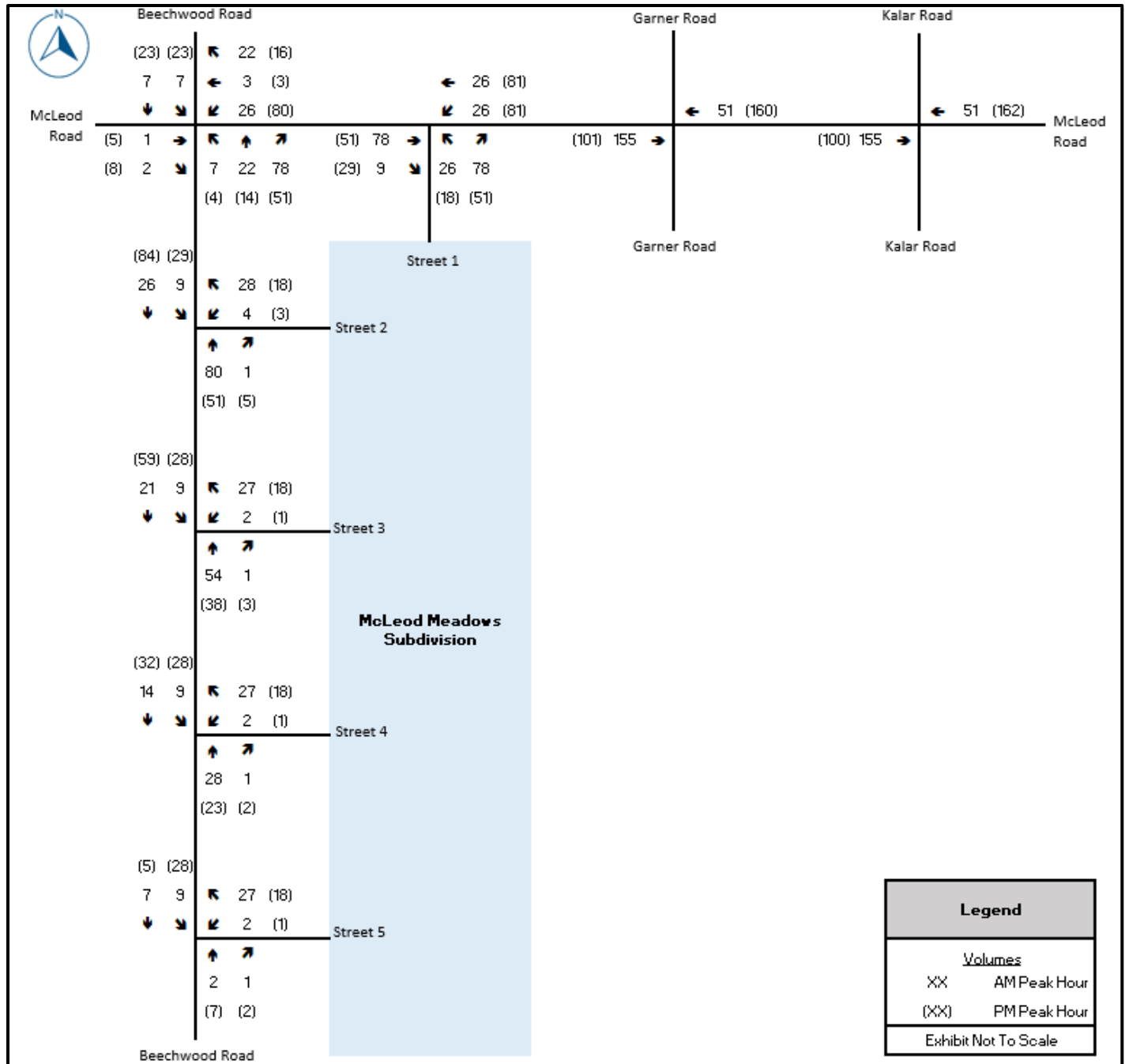


Figure 4-2 – Proposed Residential Development – Site Trips

5.0 FUTURE TOTAL TRAFFIC

5.1 Future Total Traffic Volumes

The future total intersection volumes for the 2027 and 2032 horizon years were developed by combining the estimated site generated traffic from the residential development with the future total background traffic at each horizon year. The resulting 2027 and 2032 future total intersection volumes, for weekday a.m. and p.m. peak hours, are presented in **Figure 5-1** and **Figure 5-2**, respectively.

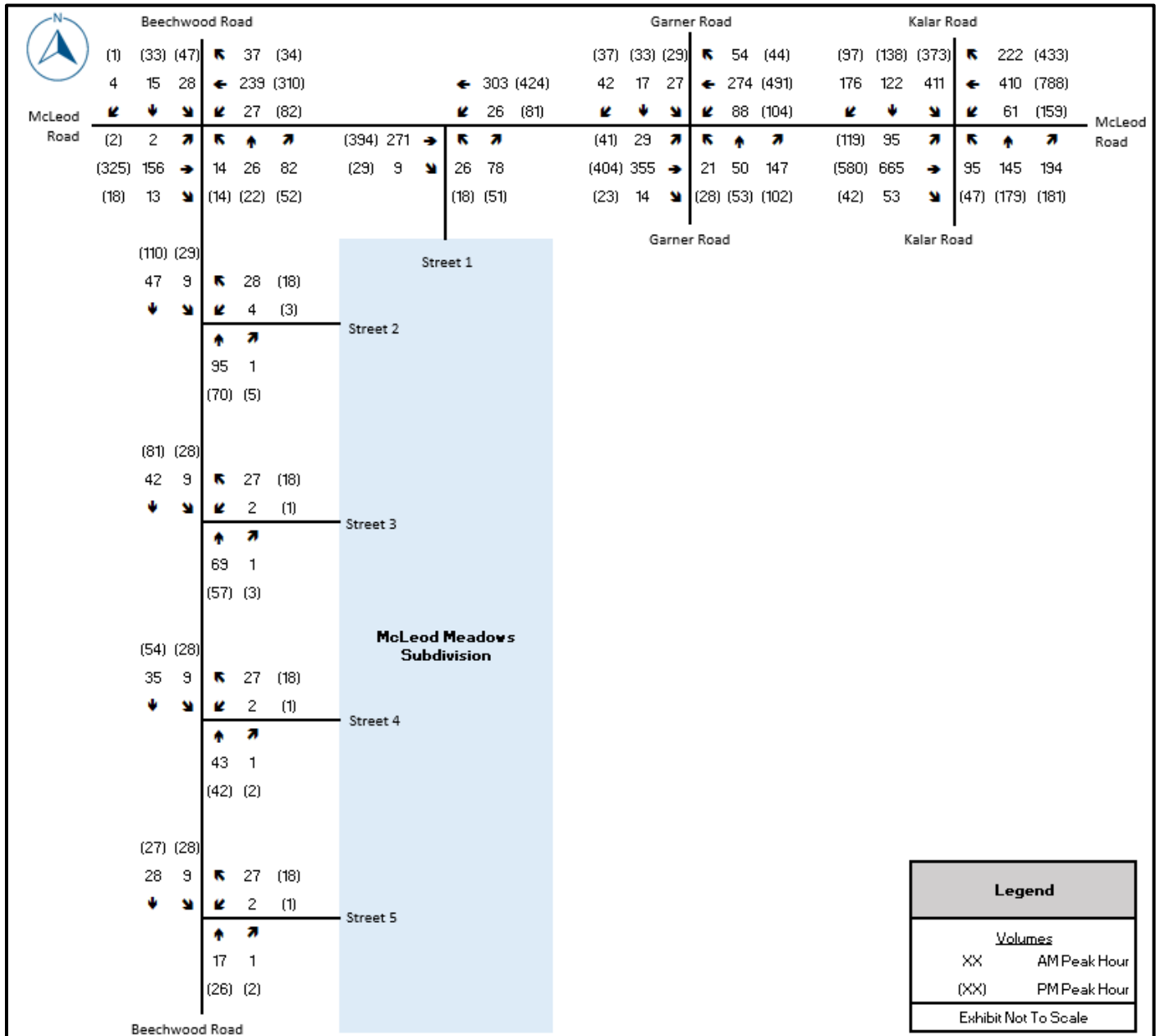


Figure 5-1 – 2027 Future Total Traffic Volumes

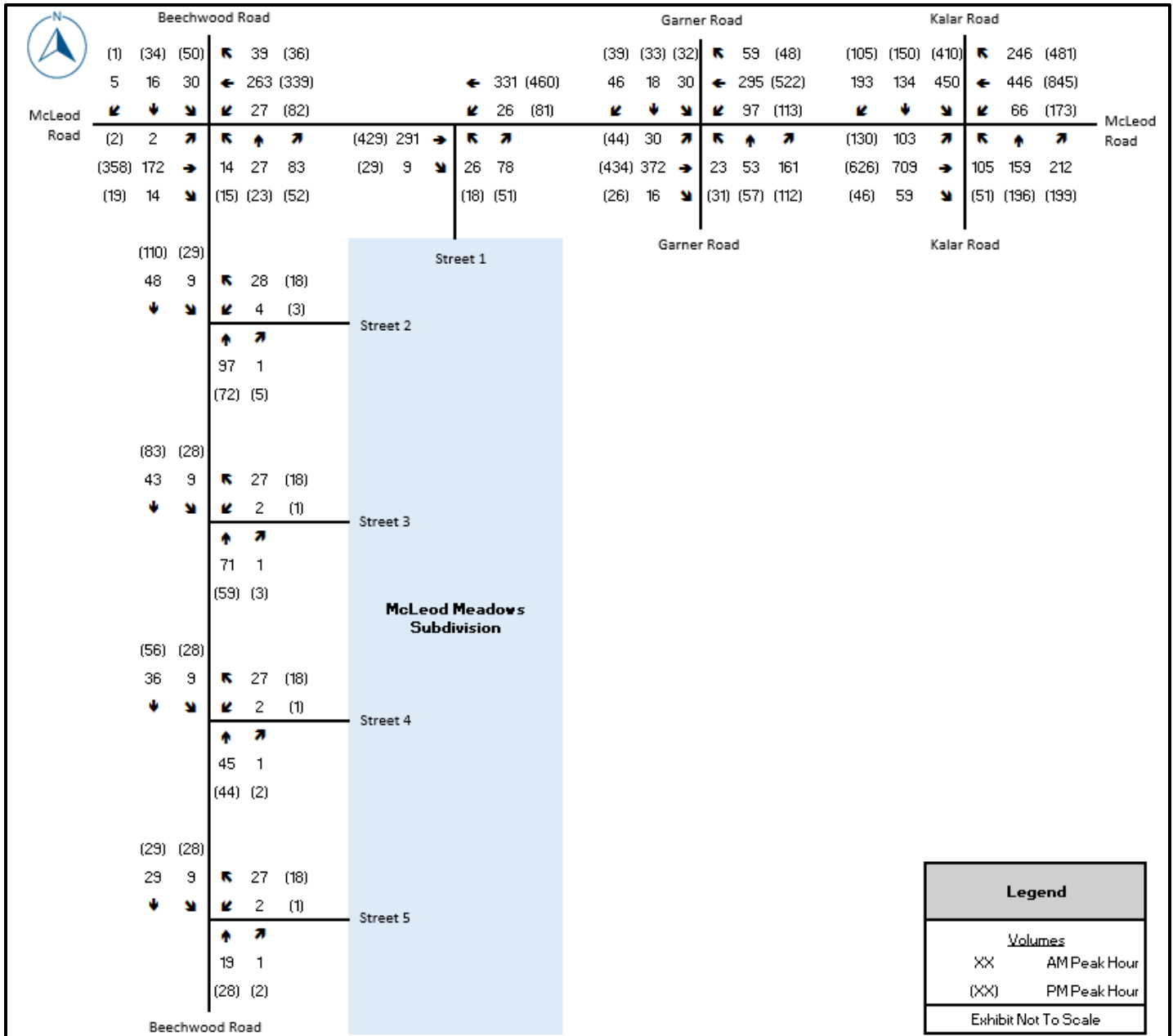


Figure 5-2 – 2032 Future Total Traffic Volumes

6.0 GEOMETRIC AND INTERSECTION CONTROL MODIFICATIONS

6.1 MTO Left-Turn Lane Warrant

A left-turn lane warrant was completed for the Beechwood Road and McLeod Road intersection, and the McLeod Road and Street 1 intersection. Warrants were completed with the future background total and future total volumes from the a.m. and p.m. peak hour volumes.

Per the results of the left turn lane warrants found in **Appendix D**, a westbound left turn lane is warranted at the intersection of Beechwood Road and McLeod Road as a result of the 2032 background traffic volumes. The westbound left movement at the intersection of McLeod Road and Street 1 warrants a left turn lane as a result of the site generated traffic.

To avoid operational and driver sightline concerns with the implementation of a westbound left turn lane at McLeod and Beechwood, it is recommended that an eastbound left turn lane also be implemented. This will provide geometric design uniformity through the intersection and eliminate any safety concerns with left turning vehicles.

The implementation of left turn auxiliary lanes should be considered when the City completes the Environmental Assessment in 2023.

6.2 Right-Turn Lane Consideration

A right-turn lane was considered for the McLeod Road and Street 1 intersection. The MTO Geometric Design Manual indicates that a right-turn lane should be considered where right-turning vehicles significantly impede the traffic flow of the through moving vehicles. The consideration for the right turn lane at the Street 1 access will be determined during the operational analysis.

6.3 MTO Signal Warrant

An MTO signal warrant was completed for the Beechwood Road and McLeod Road intersection. The warrant was completed with volumes from the 2032 horizon year. Per the results of the signal warrant found in **Appendix D**, no signalization is warranted at this intersection.

6.4 Intersection Modifications

Based on the geometric and intersection control warrants and considerations, the proposed lane configurations to be used in the operation analysis are shown in **Figure 6-1**.

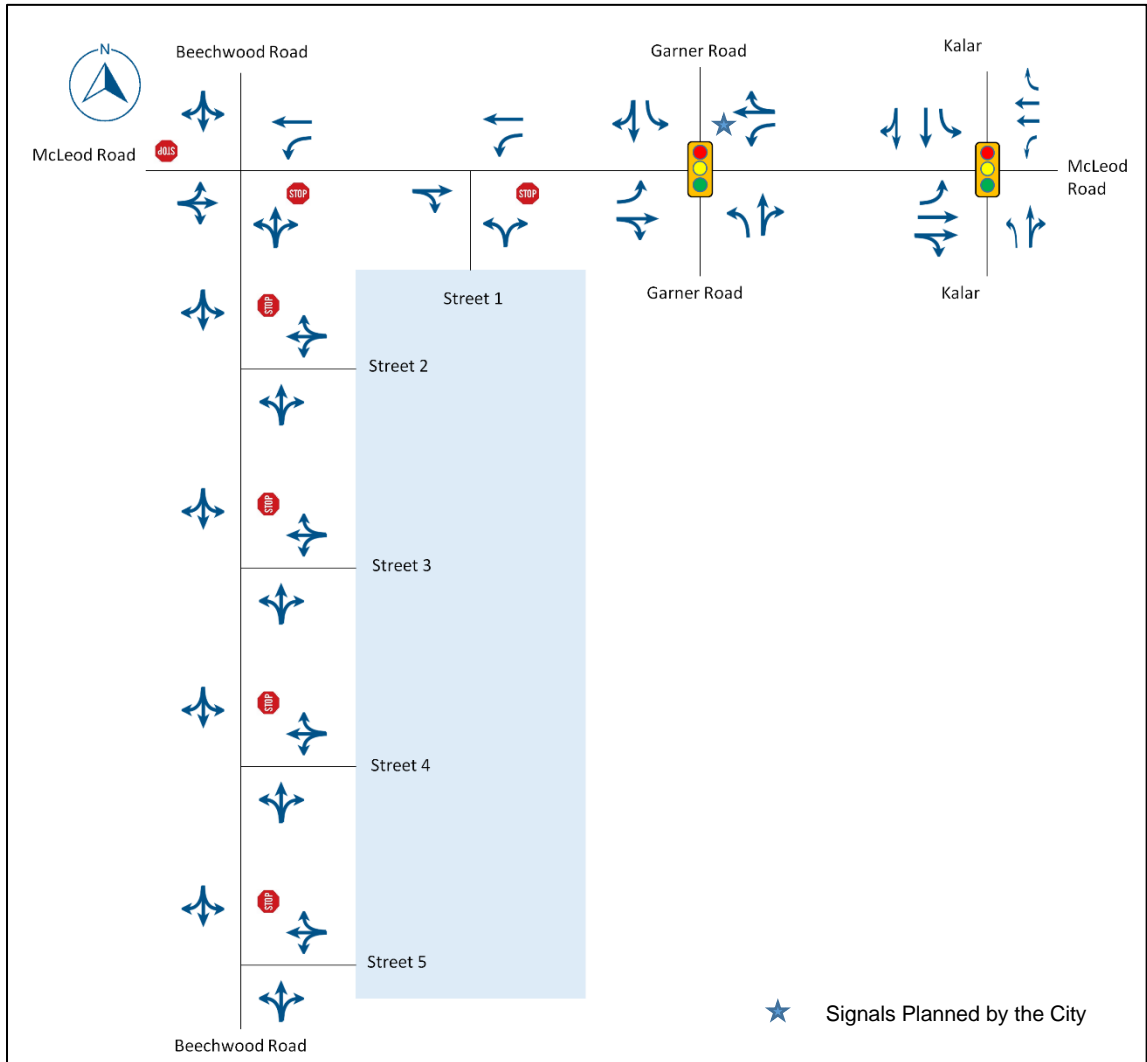


Figure 6-1 – Proposed Intersection Lane Configurations and Controls

7.0 OPERATION ANALYSIS

7.1 Intersection Operation Analysis

Synchro macroscopic traffic analysis software was utilized to analyse the intersections. Key performance measures such as Level of Service (LOS), volume-to-capacity ratio (v/c ratio), and 95th percentile queuing were reported, and are defined below:

- **Average vehicle control delay** is used to characterize LOS for the entire intersection, an approach, or movement. Delay quantifies the variations in travel time and is also a surrogate measure of driver discomfort and fuel consumption.
- **V/C ratio** quantifies the degree to which the capacity of each signal phase is utilized by a defined lane group. The City of Niagara Falls TIS guidelines indicate capacity concerns for through or shared through movements and exclusive turning movements at a v/c ratio of 0.85 and 0.95 respectively.
- **95th percentile queue** is the queue length which is expected to be exceeded only 5% of the time; it is common practice to identify preferred storage length requirements for auxiliary turn lanes at signalized intersections based on estimated peak hour 95th percentile queueing.

Table 7-1 identifies the control delay thresholds (seconds of delay per vehicle) for each LOS based on Highway Capacity Manual (HCM) 2000 methodology.

Table 7-1: Characteristics of Level of Service at Intersections

LEVEL OF SERVICE (LOS)	CONTROL DELAY (seconds / vehicle)	
	SIGNALIZED INTERSECTION	UNSIGNALIZED INTERSECTION
A	≤ 10	≤ 10
B	> 10 to 20	> 10 to 15
C	> 20 to 35	> 15 to 25
D	> 35 to 55	> 25 to 35
E	> 55 to 80	> 35 to 50
F	> 80	> 50

Existing signal timing plans for the signalized study area intersections were provided by the City for use in the analysis; and are provided in **Appendix A**. The signal timing plan for the McLeod Road and Garner Road was assumed. Signal timings have been adjusted for future background scenarios as required and are consistent with the respective future total scenarios.

Highway Capacity Manual (HCM) 2000 output reports from are provided in **Appendix E**.

7.2 Kalar Road at McLeod Road

Table 7-2: Signalized Capacity Analysis Results – Kalar Road at McLeod Road

SCENARIO	MOVE.	WEEKDAY A.M. PEAK HOUR			WEEKDAY P.M. PEAK HOUR			AVAILABLE STORAGE LENGTH (M)
		V/C	LOS	95TH % QUEUE (M)	V/C	LOS	95TH % QUEUE (M)	
2022 Existing	EBL	0.24	B	15	0.34	B	21	25
	EBTTR	0.34	B	35	0.31	B	39	-
	WBL	0.24	B	16	0.49	C	39	40
	WBTT	0.39	C	34	0.51	C	59	-
	WBR	0.22	B	22	0.59	C	69	15
	NBL	0.31	B	23	0.12	C	15	20
	NBTR	0.54	C	52	0.60	C	75	-
	SBL	0.79	C	65	0.82	C	90	130
	SBTTR	0.12	A	10	0.09	B	13	-
	HCM LOS	B			C			
2027 Future Total Background	EBL	0.50	C	26	0.66	C	34	25
	EBTTR	0.55	C	66	0.41	C	59	-
	WBL	0.38	C	24	0.69	D	58	40
	WBTT	0.49	C	48	0.64	C	84	-
	WBR	0.31	C	33	0.70	C	96	15
	NBL	0.35	C	30	0.17	C	19	20
	NBTR	0.69	C	85	0.79	D	130	-
	SBL	0.79	C	105	0.88	D	116	130
	SBTTR	0.13	A	11	0.12	B	15	-
	HCM LOS	C			C			
2027 Future Total	EBL	0.49	C	26	0.75	D	41	25
	EBTTR	0.65	C	86	0.47	C	72	-
	WBL	0.50	C	26	0.75	D	68	40
	WBTT	0.49	C	54	0.75	C	111	-
	WBR	0.32	C	36	0.72	C	106	15
	NBL	0.36	C	34	0.18	C	19	20
	NBTR	0.71	C	95	0.81	D	120	-
	SBL	0.83	C	126	0.90	D	116	130
	SBTTR	0.13	A	14	0.12	B	15	-
	HCM LOS	C			C			
2032 Future Background	EBL	0.59	C	29	0.85	E	49	25
	EBTTR	0.60	C	74	0.74	D	87	-
	WBL	0.49	C	27	0.69	C	45	40
	WBTT	0.53	C	54	0.70	C	96	-
	WBR	0.38	C	40	0.82	D	131	15
	NBL	0.40	C	36	0.18	C	20	20
	NBTR	0.75	C	102	0.84	D	132	-
	SBL	0.85	C	145	0.93	D	138	130
	SBTTR	0.14	A	14	0.13	B	16	-
	HCM LOS	C			D			
2032 Future Total	EBL	0.56	C	28	0.88	E	48	25
	EBTTR	0.69	C	96	0.83	D	115	-
	WBL	0.64	D	33	0.71	C	45	40
	WBTT	0.52	C	60	0.84	D	124	-
	WBR	0.38	C	44	0.84	D	143	15
	NBL	0.41	C	38	0.18	C	20	20
	NBTR	0.78	D	115	0.85	D	132	-
	SBL	0.90	D	157	0.95	E	139	130
	SBTTR	0.15	A	15	0.13	B	16	-
	HCM LOS	C			D			

As presented in **Table 7-2**, the intersection of McLeod Road and Kalar Road is currently operating well at LOS B and LOS C during the a.m. and p.m. peak hours, respectively. The intersection movements operate with reserve capacity and delays of LOS C or better. Almost all movements operate without queuing concerns except for the westbound-right movement during the p.m. peak hour, which has queues considerably longer than the existing storage lane.

With the addition of 2027 corridor growth and other development generated traffic, the intersection is still forecast to operate well at an LOS C during both peak hours. All movements during the a.m. peak hour are forecast to operate at an LOS C or better and with reserve capacity. All movements during the p.m. peak hour are forecast to operate at an LOS D or better and with reserve capacity. The eastbound and westbound left movements during the p.m. peak hour are forecast to have queues longer than their storage lengths. The northbound left movement is forecast have queuing concerns during the a.m. peak hour.

With the addition of site generated trips, the intersection is still forecast to operate well at an LOS C during both peak hours. All movements during the a.m. peak hour are forecast to continue operating at a LOS C or better with reserve capacity. All movements during the p.m. peak hour are forecast to continue operating at an LOS D or better with reserve capacity. No additional queuing concerns are forecast to occur with the addition of site generated traffic.

With the addition of 2032 corridor growth, the intersection is still forecast to operate well at an LOS C and LOS D during the a.m. and p.m. peak hours, respectively. All movements during the a.m. peak hour are forecast to continue operating LOS D or better with reserve capacity. All movements during the p.m. peak hour are forecast to operate at an LOS D or better, with the eastbound left movement operating at an LOS E. In addition to the previous queuing concerns noted, the southbound left movement is forecast to have queues longer than the storage length during both peak hours.

With the addition of site generated trips, the intersection is still forecast to operate well at an LOS C and LOS D during the a.m. and p.m. peak hours, respectively. All movements during the a.m. peak hour are forecast to continue operating LOS D or better with reserve capacity. All movements during the p.m. peak hour are forecast to continue operating at an LOS D or better, with the eastbound and southbound left movements operating at an LOS E. No additional queuing concerns are forecast to occur with the addition of site generated traffic.

Based on the results of the operation analysis, the site generated traffic does not result in any geometric improvements. Based on background traffic, multiple auxiliary lanes are anticipated to be increased in length.

7.3 Garner Road at McLeod Road

Table 7-3: Capacity Analysis Results – Garner Road at McLeod Road

SCENARIO	MOVE.	WEEKDAY A.M. PEAK HOUR			WEEKDAY P.M. PEAK HOUR		
		V/C	LOS	95TH % QUEUE (M)	V/C	LOS	95TH % QUEUE (M)
2022 Existing (unsignalized)	EBLTR	0.01	A	<1 vehicle	0.02	A	<1 vehicle
	WBLTR	0.06	A	<1 vehicle	0.06	A	<1 vehicle
	NBLTR	0.26	B	8	0.34	C	12
	SBLTR	0.16	B	<1 vehicle	0.16	C	<1 vehicle
2027 Future Background (Signalized)	EBL	0.06	A	<1 vehicle	0.09	A	<1 vehicle
	EBTR	0.25	A	14	0.36	A	22
	WBL	0.18	A	7	0.22	A	9
	WBTR	0.33	A	17	0.42	A	25
	NBL	0.08	A	<1 vehicle	0.11	A	<1 vehicle
	NBTR	0.25	A	9	0.24	B	11
	SBL	0.10	A	<1 vehicle	0.12	A	<1 vehicle
	SBTR	0.08	A	<1 vehicle	0.13	A	7
	HCM LOS	A			A		
2027 Future Total (Signalized)	EBL	0.06	A	<1 vehicle	0.11	A	<1 vehicle
	EBTR	0.41	A	27	0.43	A	33
	WBL	0.19	A	8	0.23	A	10
	WBTR	0.37	A	22	0.55	A	46
	NBL	0.08	A	<1 vehicle	0.13	B	7
	NBTR	0.26	B	12	0.26	B	15
	SBL	0.11	A	<1 vehicle	0.14	B	7
	SBTR	0.08	A	<1 vehicle	0.14	B	10
	HCM LOS	A			A		
2032 Future Background (Signalized)	EBL	0.07	A	<1 vehicle	0.10	A	<1 vehicle
	EBTR	0.29	A	16	0.39	A	26
	WBL	0.21	A	8	0.24	A	10
	WBTR	0.38	A	20	0.45	A	30
	NBL	0.07	A	<1 vehicle	0.13	B	<1 vehicle
	NBTR	0.25	A	11	0.26	B	13
	SBL	0.11	A	<1 vehicle	0.14	B	<1 vehicle
	SBTR	0.08	A	<1 vehicle	0.13	A	8
	HCM LOS	A			A		
2032 Future Total (Signalized)	EBL	0.07	A	<1 vehicle	0.12	A	<1 vehicle
	EBTR	0.46	A	29	0.46	A	37
	WBL	0.24	A	9	0.26	A	11
	WBTR	0.43	A	26	0.58	A	52
	NBL	0.08	A	<1 vehicle	0.14	B	8
	NBTR	0.25	A	13	0.28	B	17
	SBL	0.12	A	<1 vehicle	0.16	B	8
	SBTR	0.08	A	<1 vehicle	0.14	B	10
	HCM LOS	A			A		

As presented in **Table 7-3**, the unsignalized intersection of McLeod Road and Garner Road is currently operating well during both peak hours. The intersection movements operate with reserve capacity and delays at an LOS C or better. All movements operate without queuing concerns.

With the addition of 2027 corridor growth and other development generated traffic, the signalized intersection is still forecast to operate well with and without site generated

traffic, with an overall intersection LOS of A during both peak hours. All movements during the a.m. and p.m. peak hours are forecast to operate at an LOS B or better and with reserve capacity.

With the addition of 2032 corridor growth, with and without the site generated traffic, the intersection is still forecast to operate well at an LOS A for both peak hours. All movements during the a.m. and p.m. peak hours are forecast to operate at an LOS B or better and with reserve capacity.

Based on the results of the operation analysis, the site generated traffic does not result in any geometric improvements in addition to those planned by the City.

7.4 Beechwood Road at McLeod Road

Table 7-4: Unsignalized Capacity Analysis Results – Beechwood at McLeod Road

SCENARIO	MOVE.	WEEKDAY A.M. PEAK HOUR			WEEKDAY P.M. PEAK HOUR		
		V/C	LOS	95TH % QUEUE (M)	V/C	LOS	95TH % QUEUE (M)
2022 Existing	EBLTR	0.00	A	<1 vehicle	0.00	A	<1 vehicle
	WBLTR	0.00	A	<1 vehicle	0.00	A	<1 vehicle
	NBLTR	0.02	B	<1 vehicle	0.05	B	<1 vehicle
	SBLTR	0.06	B	<1 vehicle	0.09	B	<1 vehicle
2027 Future Background	EBLTR	0.00	A	<1 vehicle	0.00	A	<1 vehicle
	WBLTR	0.00	A	<1 vehicle	0.00	A	<1 vehicle
	NBLTR	0.03	B	<1 vehicle	0.06	C	<1 vehicle
	SBLTR	0.07	B	<1 vehicle	0.11	C	<1 vehicle
2027 Future Total	EBLTR	0.00	A	<1 vehicle	0.00	A	<1 vehicle
	WBLTR	0.02	A	<1 vehicle	0.07	A	<1 vehicle
	NBLTR	0.20	B	<1 vehicle	0.26	C	8
	SBLTR	0.13	C	<1 vehicle	0.42	D	16
2032 Future Background	EBLTR*	0.00	A	<1 vehicle	0.00	A	<1 vehicle
	WBL	0.00	A	<1 vehicle	0.00	A	<1 vehicle
	NBLTR	0.03	B	<1 vehicle	0.07	C	<1 vehicle
	SBLTR	0.08	B	<1 vehicle	0.13	C	<1 vehicle
2032 Future Total	EBLTR*	0.00	A	<1 vehicle	0.00	A	<1 vehicle
	WBL	0.02	A	<1 vehicle	0.08	A	<1 vehicle
	NBLTR	0.21	B	<1 vehicle	0.30	C	10
	SBLTR	0.15	C	<1 vehicle	0.50	E	20

*EBL to be added for safety and geometric considerations

As presented in **Table 7-4**, the intersection of McLeod Road and Beechwood Road is currently operating well. The intersection movements operate with reserve capacity and delays at an LOS B or better. All movements operate without queuing concerns.

With the addition of 2027 corridor growth and other development generated traffic, the intersection is forecast to operate well with and without site generated traffic. Most movements during the a.m. and p.m. peak hours are forecast to operate at an LOS C or better except for the southbound movement, which operates at an LOS D.

With the addition of 2032 corridor growth, the intersection is still forecast to operate well. All movements during the a.m. and p.m. peak hours are forecast to operate at an LOS C or better, with reserve capacity and with no queuing concerns. With the addition of site generated traffic, the intersection continues to operate well. The movements are forecast to operate with a considerable amount of capacity, and with minimal queuing. Most movements during the a.m. and p.m. peak hours are forecast to operate at an LOS C or better except for the southbound movement during the p.m. peak hour, which operates at an LOS E (less than 50s of delay).

Based on the results of the operation analysis, the site generated traffic does not result in any geometric improvements. Based on background traffic, a westbound left turn auxiliary

lane is warranted. As mentioned previously under section 6.1 it is recommended that an eastbound left turn lane also be implemented.

7.5 McLeod Road at Street 1

Table 7-5: Unsignalized Capacity Analysis Results – Street 1 at McLeod Road

SCENARIO	MOVE.	WEEKDAY A.M. PEAK HOUR			WEEKDAY P.M. PEAK HOUR		
		V/C	LOS	95TH % QUEUE (M)	V/C	LOS	95TH % QUEUE (M)
2027 Future Total	WBL	0.02	A	<1 vehicle	0.08	A	<1 vehicle
	NBLR	0.18	B	<1 vehicle	0.18	C	<1 vehicle
2032 Future Total	WBL	0.02	A	<1 vehicle	0.08	A	<1 vehicle
	NBLR	0.19	B	<1 vehicle	0.19	C	<1 vehicle

As presented in **Table 7-5**, the intersection of the McLeod Road and Street 1 is forecast to operate with no issues up to and including the 2032 horizon year.

In both peak hours during the ultimate horizon year, the outbound movement from the driveway is forecast to operate at an LOS C or better, while the inbound movement is forecast to operate at an LOS A. Each intersection movement is forecast to have abundant reserve capacity with 95th percentile queue forecast to not exceed 1 vehicle. The eastbound movement is free flow and not expected to have any capacity constraints with the through-right shared lane. As such, a right turn lane is not required at this intersection.

The westbound movement at the intersection of Beechwood Road and McLeod Road is forecast to not exceed 1 vehicle. Queues from this intersection are not expected to surpass the Street 1 Access.

7.6 Beechwood Road at Street 2

Table 7-6: Unsignalized Capacity Analysis Results – Street 2 at Beechwood Road

SCENARIO	MOVE.	WEEKDAY A.M. PEAK HOUR			WEEKDAY P.M. PEAK HOUR		
		V/C	LOS	95TH % QUEUE (M)	V/C	LOS	95TH % QUEUE (M)
2027 Future Total	WBLR	0.04	A	<1 vehicle	0.02	A	<1 vehicle
	SBLT	0.01	A	<1 vehicle	0.02	A	<1 vehicle
2032 Future Total	WBLR	0.04	A	<1 vehicle	0.02	A	<1 vehicle
	SBLT	0.01	A	<1 vehicle	0.02	A	<1 vehicle

As presented in **Table 7-6**, the intersection of the Beechwood Road and Street 2 is forecast to operate with no issues up to and including the 2032 horizon year.

In both peak hours during the ultimate horizon year, the both the inbound and outbound driveway movements are forecast to operate at an LOS A. Each intersection movement is forecast to have abundant reserve capacity with 95th percentile queue forecast to not exceed 1 vehicle.

The northbound movement at the intersection of Beechwood Road and McLeod Road is forecast to not exceed 1 vehicle. Queues from this intersection are not expected to surpass the Street 2 Access.

7.7 Beechwood Road at Street 3

Table 7-7: Unsignalized Capacity Analysis Results – Street 3 at Beechwood Road

SCENARIO	MOVE.	WEEKDAY A.M. PEAK HOUR			WEEKDAY P.M. PEAK HOUR		
		V/C	LOS	95TH % QUEUE (M)	V/C	LOS	95TH % QUEUE (M)
2027 Future Total	WBLR	0.03	A	<1 vehicle	0.02	A	<1 vehicle
	SBLT	0.01	A	<1 vehicle	0.02	A	<1 vehicle
2032 Future Total	WBLR	0.03	A	<1 vehicle	0.02	A	<1 vehicle
	SBLT	0.01	A	<1 vehicle	0.02	A	<1 vehicle

As presented in **Table 7-7**, the intersection of the Beechwood Road and Street 3 is forecast to operate with no issues up to and including the 2032 horizon year.

In both peak hours during the ultimate horizon year, the both the inbound and outbound driveway movements are forecast to operate at an LOS A. Each intersection movement is forecast to have abundant reserve capacity with 95th percentile queue forecast to not exceed 1 vehicle.

7.8 Beechwood Road at Street 4

Table 7-8: Unsignalized Capacity Analysis Results – Street 4 at Beechwood Road

SCENARIO	MOVE.	WEEKDAY A.M. PEAK HOUR			WEEKDAY P.M. PEAK HOUR		
		V/C	LOS	95TH % QUEUE (M)	V/C	LOS	95TH % QUEUE (M)
2027 Future Total	WBLR	0.03	A	<1 vehicle	0.02	A	<1 vehicle
	SBLT	0.01	A	<1 vehicle	0.02	A	<1 vehicle
2032 Future Total	WBLR	0.03	A	<1 vehicle	0.02	A	<1 vehicle
	SBLT	0.01	A	<1 vehicle	0.02	A	<1 vehicle

As presented in **Table 7-8**, the intersection of the Beechwood Road and Street 4 is forecast to operate with no issues up to and including the 2032 horizon year.

In both peak hours during the ultimate horizon year, the both the inbound and outbound driveway movements are forecast to operate at an LOS A. Each intersection movement is forecast to have abundant reserve capacity with 95th percentile queue forecast to not exceed 1 vehicle.

7.9 Beechwood Road at Street 5

Table 7-9: Unsignalized Capacity Analysis Results – Street 5 at Beechwood Road

SCENARIO	MOVE.	WEEKDAY A.M. PEAK HOUR			WEEKDAY P.M. PEAK HOUR		
		V/C	LOS	95TH % QUEUE (M)	V/C	LOS	95TH % QUEUE (M)
2027 Future Total	WBLR	0.03	A	<1 vehicle	0.02	A	<1 vehicle
	SBLT	0.01	A	<1 vehicle	0.02	A	<1 vehicle
2032 Future Total	WBLR	0.03	A	<1 vehicle	0.02	A	<1 vehicle
	SBLT	0.01	A	<1 vehicle	0.02	A	<1 vehicle

As presented in **Table 7-9**, the intersection of the Beechwood Road and Street 5 is forecast to operate with no issues up to and including the 2032 horizon year.

In both peak hours during the ultimate horizon year, the both the inbound and outbound driveway movements are forecast to operate at an LOS A. Each intersection movement is forecast to have abundant reserve capacity with 95th percentile queue forecast to not exceed 1 vehicle.

8.0 SUMMARY OF FINDINGS

The findings of the traffic impact study are summarized as follows:

- The proposed residential development is projected to generate approximately 297 total two-way trips during the weekday a.m. peak hour (74 inbound and 223 outbound), and 378 total two-way trips during the weekday p.m. peak hour (232 inbound and 146 outbound).
- At the intersection of McLeod Road and Kalar Road, the site generated traffic is not expected to result in any critical capacity, delay or queuing concerns upon build-out the development and up to the study’s ultimate 2032 horizon year. The queues for certain movements are forecast to extend beyond the existing storage lanes, but this occurs as a result of the corridor growth and background development traffic.
- At the intersection of McLeod Road and Garner Road, the site generated traffic is not expected to result in any critical capacity, delay or queuing concerns upon build-out the development and up to the study’s ultimate 2032 horizon year.
- At the intersection of McLeod Road and Beechwood Road, the site generated traffic is not expected to result in any critical capacity or queuing concerns upon build-out the development and up to the study’s ultimate 2032 horizon year. During the 2032 future horizon year, the delays are generally less than 25 seconds during both peak hours, except for the southbound movement in the p.m. peak hour, which has elevated delays.
- All proposed driveways are forecast to operate well into the 2032 horizon year with no delay, capacity, or queuing concerns.

- A westbound left turning auxiliary lane is warranted at the intersections Beechwood Road and McLeod Road as a result of the background traffic. It is recommended that an eastbound left turn lane also be implemented. A westbound left auxiliary lane is also warranted at the McLeod intersection with Street 1. The implementation of the left turning lanes should be considered during the City's planned EA to be completed in 2023.
- The proposed access locations and configurations are justified in accordance with TAC's access guidelines and no expected operational concerns per the results of the intersection analysis.
- Overall, the existing roadway system has sufficient capacity to accommodate the anticipated traffic generation from the subject development.

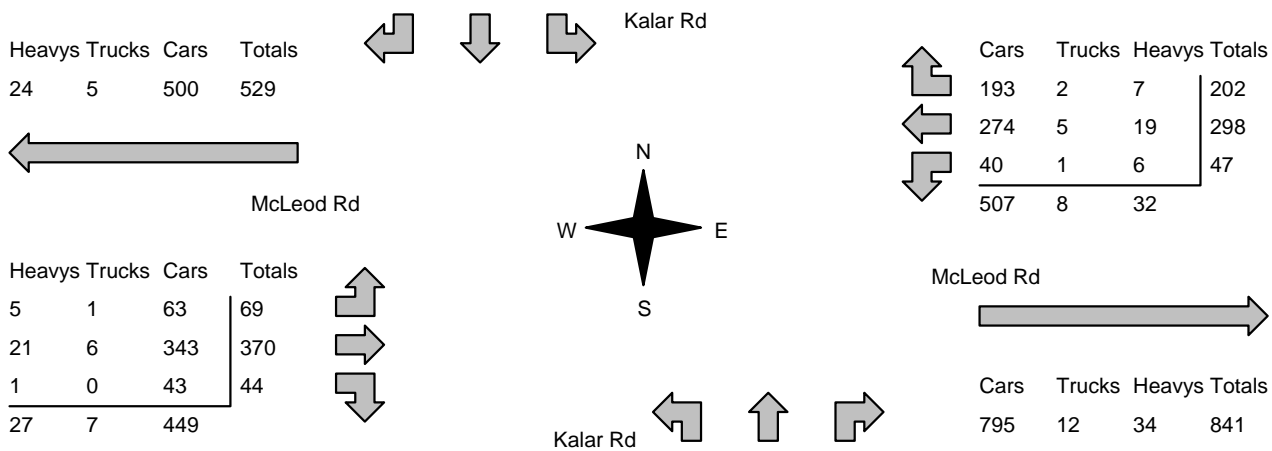
Overall, it is concluded that the McLeod Meadows site generated traffic can be accommodated with the geometric modifications noted in the above summary of findings.

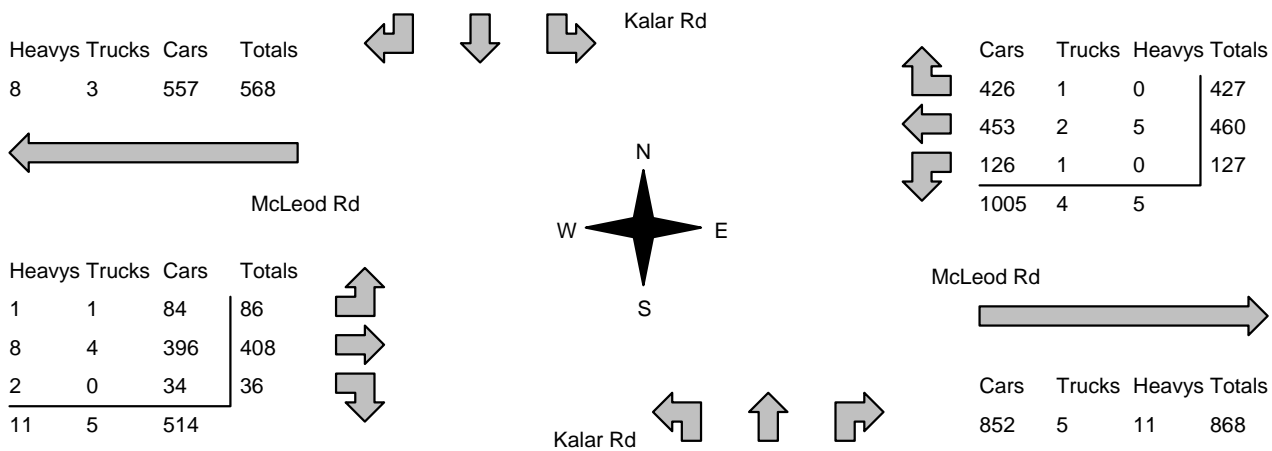
APPENDIX A

Existing Data

APPENDIX A.1

Turning Movement Count Data

Morning Peak Diagram		Specified Period From: 7:00:00 To: 9:00:00	One Hour Peak From: 7:45:00 To: 8:45:00																												
Municipality: Niagara Falls Site #: 2219400003 Intersection: McLeod Rd & Kalar Rd TFR File #: 1 Count date: 4-Oct-22		Weather conditions: Person counted: Person prepared: Person checked:																													
** Signalized Intersection **		Major Road: McLeod Rd runs W/E																													
North Leg Total: 956 North Entering: 567 North Peds: 18 Peds Cross: ∇	<table style="width:100%; border-collapse: collapse;"> <tr><td>Heavys</td><td>4</td><td>3</td><td>5</td><td>12</td></tr> <tr><td>Trucks</td><td>0</td><td>1</td><td>3</td><td>4</td></tr> <tr><td>Cars</td><td>142</td><td>95</td><td>314</td><td>551</td></tr> <tr><td>Totals</td><td>146</td><td>99</td><td>322</td><td></td></tr> </table>	Heavys	4	3	5	12	Trucks	0	1	3	4	Cars	142	95	314	551	Totals	146	99	322		<table style="width:100%; border-collapse: collapse;"> <tr><td>Heavys</td><td>25</td></tr> <tr><td>Trucks</td><td>6</td></tr> <tr><td>Cars</td><td>358</td></tr> <tr><td>Totals</td><td>389</td></tr> </table>	Heavys	25	Trucks	6	Cars	358	Totals	389	East Leg Total: 1388 East Entering: 547 East Peds: 5 Peds Cross: ∇
Heavys	4	3	5	12																											
Trucks	0	1	3	4																											
Cars	142	95	314	551																											
Totals	146	99	322																												
Heavys	25																														
Trucks	6																														
Cars	358																														
Totals	389																														
																															
<table style="width:100%; border-collapse: collapse;"> <tr><td>Heavys</td><td>Trucks</td><td>Cars</td><td>Totals</td></tr> <tr><td>24</td><td>5</td><td>500</td><td>529</td></tr> </table>	Heavys	Trucks	Cars	Totals	24	5	500	529		<table style="width:100%; border-collapse: collapse;"> <tr><td>Cars</td><td>Trucks</td><td>Heavys</td><td>Totals</td></tr> <tr><td>193</td><td>2</td><td>7</td><td>202</td></tr> <tr><td>274</td><td>5</td><td>19</td><td>298</td></tr> <tr><td>40</td><td>1</td><td>6</td><td>47</td></tr> <tr><td>507</td><td>8</td><td>32</td><td></td></tr> </table>	Cars	Trucks	Heavys	Totals	193	2	7	202	274	5	19	298	40	1	6	47	507	8	32		
Heavys	Trucks	Cars	Totals																												
24	5	500	529																												
Cars	Trucks	Heavys	Totals																												
193	2	7	202																												
274	5	19	298																												
40	1	6	47																												
507	8	32																													
<table style="width:100%; border-collapse: collapse;"> <tr><td>Heavys</td><td>Trucks</td><td>Cars</td><td>Totals</td></tr> <tr><td>5</td><td>1</td><td>63</td><td>69</td></tr> <tr><td>21</td><td>6</td><td>343</td><td>370</td></tr> <tr><td>1</td><td>0</td><td>43</td><td>44</td></tr> <tr><td>27</td><td>7</td><td>449</td><td></td></tr> </table>	Heavys	Trucks	Cars	Totals	5	1	63	69	21	6	343	370	1	0	43	44	27	7	449												
Heavys	Trucks	Cars	Totals																												
5	1	63	69																												
21	6	343	370																												
1	0	43	44																												
27	7	449																													
Peds Cross: ∇ West Peds: 13 West Entering: 483 West Leg Total: 1012	<table style="width:100%; border-collapse: collapse;"> <tr><td>Cars</td><td>178</td></tr> <tr><td>Trucks</td><td>2</td></tr> <tr><td>Heavys</td><td>10</td></tr> <tr><td>Totals</td><td>190</td></tr> </table>	Cars	178	Trucks	2	Heavys	10	Totals	190	<table style="width:100%; border-collapse: collapse;"> <tr><td>Cars</td><td>84</td><td>102</td><td>138</td><td>324</td></tr> <tr><td>Trucks</td><td>0</td><td>3</td><td>3</td><td>6</td></tr> <tr><td>Heavys</td><td>1</td><td>13</td><td>8</td><td>22</td></tr> <tr><td>Totals</td><td>85</td><td>118</td><td>149</td><td></td></tr> </table>	Cars	84	102	138	324	Trucks	0	3	3	6	Heavys	1	13	8	22	Totals	85	118	149		Peds Cross: ∇ South Peds: 0 South Entering: 352 South Leg Total: 542
Cars	178																														
Trucks	2																														
Heavys	10																														
Totals	190																														
Cars	84	102	138	324																											
Trucks	0	3	3	6																											
Heavys	1	13	8	22																											
Totals	85	118	149																												
Comments																															

Afternoon Peak Diagram		Specified Period From: 16:00:00 To: 18:00:00	One Hour Peak From: 16:30:00 To: 17:30:00																																								
Municipality: Niagara Falls Site #: 2219400003 Intersection: McLeod Rd & Kalar Rd TFR File #: 1 Count date: 4-Oct-22		Weather conditions: Person counted: Person prepared: Person checked:																																									
** Signalized Intersection **		Major Road: McLeod Rd runs W/E																																									
North Leg Total: 1190 North Entering: 513 North Peds: 6 Peds Cross: \boxtimes	<table style="border-collapse: collapse;"> <tr><td>Heavys</td><td>3</td><td>1</td><td>0</td><td>4</td></tr> <tr><td>Trucks</td><td>1</td><td>1</td><td>1</td><td>3</td></tr> <tr><td>Cars</td><td>63</td><td>143</td><td>300</td><td>506</td></tr> <tr><td>Totals</td><td>67</td><td>145</td><td>301</td><td></td></tr> </table>	Heavys	3	1	0	4	Trucks	1	1	1	3	Cars	63	143	300	506	Totals	67	145	301		<table style="border-collapse: collapse;"> <tr><td>Heavys</td><td>4</td></tr> <tr><td>Trucks</td><td>3</td></tr> <tr><td>Cars</td><td>670</td></tr> <tr><td>Totals</td><td>677</td></tr> </table>	Heavys	4	Trucks	3	Cars	670	Totals	677	East Leg Total: 1882 East Entering: 1014 East Peds: 7 Peds Cross: \boxtimes												
Heavys	3	1	0	4																																							
Trucks	1	1	1	3																																							
Cars	63	143	300	506																																							
Totals	67	145	301																																								
Heavys	4																																										
Trucks	3																																										
Cars	670																																										
Totals	677																																										
 <p style="text-align: center;">Kalar Rd</p> <p style="text-align: center;">McLeod Rd</p> <p style="text-align: center;">N W —+— E S</p> <p style="text-align: center;">Kalar Rd</p> <p style="text-align: center;">McLeod Rd</p>																																											
Heavys Trucks Cars Totals 8 3 557 568	<table style="border-collapse: collapse;"> <tr><td>Heavys</td><td>Trucks</td><td>Cars</td><td>Totals</td></tr> <tr><td>1</td><td>1</td><td>84</td><td>86</td></tr> <tr><td>8</td><td>4</td><td>396</td><td>408</td></tr> <tr><td>2</td><td>0</td><td>34</td><td>36</td></tr> <tr><td>11</td><td>5</td><td>514</td><td></td></tr> </table>	Heavys	Trucks	Cars	Totals	1	1	84	86	8	4	396	408	2	0	34	36	11	5	514		<table style="border-collapse: collapse;"> <tr><td>Cars</td><td>Trucks</td><td>Heavys</td><td>Totals</td></tr> <tr><td>426</td><td>1</td><td>0</td><td>427</td></tr> <tr><td>453</td><td>2</td><td>5</td><td>460</td></tr> <tr><td>126</td><td>1</td><td>0</td><td>127</td></tr> <tr><td>1005</td><td>4</td><td>5</td><td></td></tr> </table>	Cars	Trucks	Heavys	Totals	426	1	0	427	453	2	5	460	126	1	0	127	1005	4	5		Cars Trucks Heavys Totals 852 5 11 868
Heavys	Trucks	Cars	Totals																																								
1	1	84	86																																								
8	4	396	408																																								
2	0	34	36																																								
11	5	514																																									
Cars	Trucks	Heavys	Totals																																								
426	1	0	427																																								
453	2	5	460																																								
126	1	0	127																																								
1005	4	5																																									
Peds Cross: \boxtimes West Peds: 7 West Entering: 530 West Leg Total: 1098	<table style="border-collapse: collapse;"> <tr><td>Cars</td><td>303</td></tr> <tr><td>Trucks</td><td>2</td></tr> <tr><td>Heavys</td><td>3</td></tr> <tr><td>Totals</td><td>308</td></tr> </table>	Cars	303	Trucks	2	Heavys	3	Totals	308	<table style="border-collapse: collapse;"> <tr><td>Cars</td><td>41</td><td>160</td><td>156</td><td>357</td></tr> <tr><td>Trucks</td><td>0</td><td>1</td><td>0</td><td>1</td></tr> <tr><td>Heavys</td><td>0</td><td>3</td><td>3</td><td>6</td></tr> <tr><td>Totals</td><td>41</td><td>164</td><td>159</td><td></td></tr> </table>	Cars	41	160	156	357	Trucks	0	1	0	1	Heavys	0	3	3	6	Totals	41	164	159		Peds Cross: \boxtimes South Peds: 4 South Entering: 364 South Leg Total: 672												
Cars	303																																										
Trucks	2																																										
Heavys	3																																										
Totals	308																																										
Cars	41	160	156	357																																							
Trucks	0	1	0	1																																							
Heavys	0	3	3	6																																							
Totals	41	164	159																																								
Comments																																											

Total Count Diagram

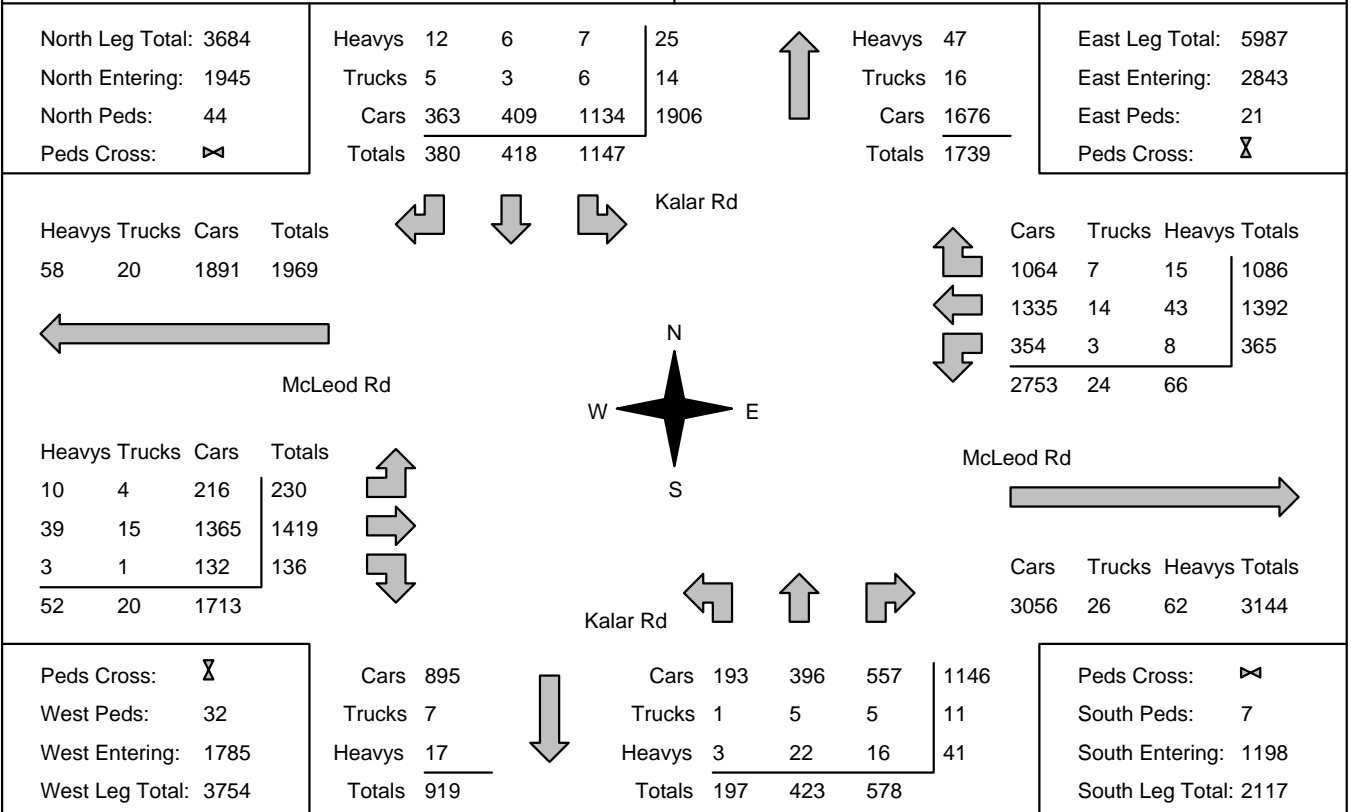
Municipality: Niagara Falls
Site #: 2219400003
Intersection: McLeod Rd & Kalar Rd
TFR File #: 1
Count date: 4-Oct-22

Weather conditions:

Person counted:
Person prepared:
Person checked:

**** Signalized Intersection ****

Major Road: McLeod Rd runs W/E

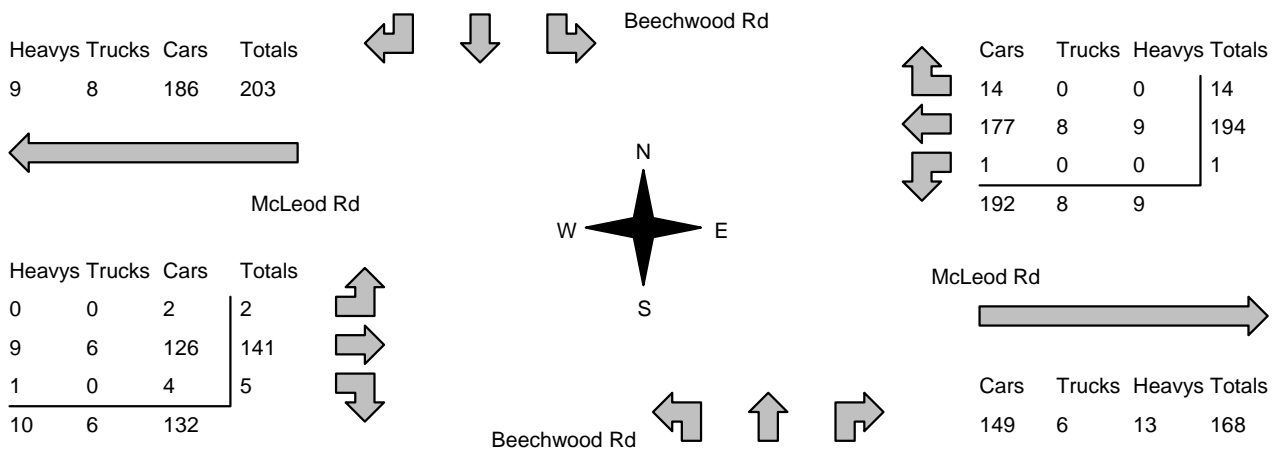


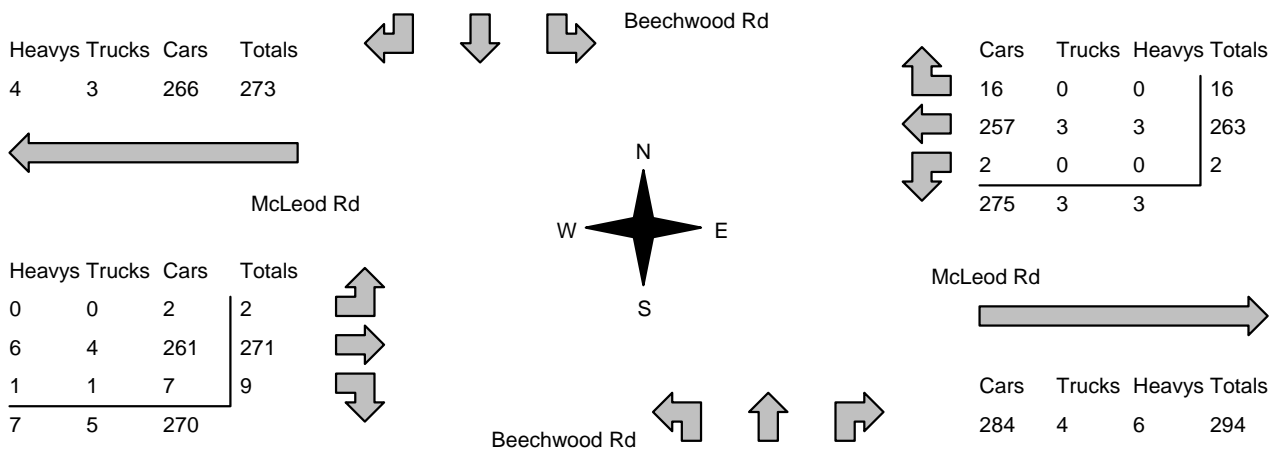
Comments

Traffic Count Summary

Intersection: McLeod Rd & Kalar Rd Count Date: 4-Oct-22 Municipality: Niagara Falls

North Approach Totals						North/South Total Approaches	South Approach Totals					
Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds		Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds
	Left	Thru	Right	Grand Total				Left	Thru	Right	Grand Total	
7:00:00	0	0	0	0	0	0	7:00:00	0	0	0	0	0
8:00:00	176	57	112	345	10	568	8:00:00	74	38	111	223	0
9:00:00	332	98	125	555	19	886	9:00:00	42	123	166	331	2
16:00:00	0	0	0	0	0	0	16:00:00	0	0	0	0	0
17:00:00	298	105	62	465	6	798	17:00:00	38	147	148	333	2
18:00:00	341	158	81	580	9	891	18:00:00	43	115	153	311	3
Totals:	1147	418	380	1945	44	3143	S Totals:	197	423	578	1198	7
East Approach Totals						East/West Total Approaches	West Approach Totals					
Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds		Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds
	Left	Thru	Right	Grand Total				Left	Thru	Right	Grand Total	
7:00:00	0	0	0	0	0	0	7:00:00	0	0	0	0	0
8:00:00	57	286	98	441	4	760	8:00:00	29	256	34	319	5
9:00:00	52	246	209	507	5	971	9:00:00	60	375	29	464	12
16:00:00	0	0	0	0	0	0	16:00:00	0	0	0	0	0
17:00:00	119	475	394	988	8	1493	17:00:00	89	380	36	505	4
18:00:00	137	385	385	907	4	1404	18:00:00	52	408	37	497	11
Totals:	365	1392	1086	2843	21	4628	W Totals:	230	1419	136	1785	32
Calculated Values for Traffic Crossing Major Street												
Hours Ending:	7:00	8:00	9:00	16:00			17:00	18:00	0:00	0:00		
Crossing Values:	0	316	514	0			495	557	0	0		

Morning Peak Diagram		Specified Period From: 7:00:00 To: 9:00:00	One Hour Peak From: 8:00:00 To: 9:00:00																																																								
Municipality: Niagara Falls Site #: 2219400001 Intersection: McLeod Rd & Beechwood Rd TFR File #: 1 Count date: 4-Oct-22		Weather conditions: Person counted: Person prepared: Person checked:																																																									
** Non-Signalized Intersection **		Major Road: McLeod Rd runs W/E																																																									
North Leg Total: 52 North Entering: 33 North Peds: 0 Peds Cross: ☒	<table style="border-collapse: collapse;"> <tr><td>Heavys</td><td>0</td><td>0</td><td>3</td><td style="border-left: 1px solid black;">3</td></tr> <tr><td>Trucks</td><td>0</td><td>0</td><td>0</td><td style="border-left: 1px solid black;">0</td></tr> <tr><td>Cars</td><td>4</td><td>6</td><td>20</td><td style="border-left: 1px solid black;">30</td></tr> <tr><td>Totals</td><td>4</td><td>6</td><td>23</td><td style="border-left: 1px solid black;"></td></tr> </table>	Heavys	0	0	3	3	Trucks	0	0	0	0	Cars	4	6	20	30	Totals	4	6	23		<table style="border-collapse: collapse;"> <tr><td>Heavys</td><td>0</td></tr> <tr><td>Trucks</td><td>0</td></tr> <tr><td>Cars</td><td>19</td></tr> <tr><td>Totals</td><td>19</td></tr> </table>	Heavys	0	Trucks	0	Cars	19	Totals	19	East Leg Total: 377 East Entering: 209 East Peds: 0 Peds Cross: ☒																												
Heavys	0	0	3	3																																																							
Trucks	0	0	0	0																																																							
Cars	4	6	20	30																																																							
Totals	4	6	23																																																								
Heavys	0																																																										
Trucks	0																																																										
Cars	19																																																										
Totals	19																																																										
																																																											
<table style="border-collapse: collapse;"> <tr><td>Heavys</td><td>Trucks</td><td>Cars</td><td>Totals</td></tr> <tr><td>9</td><td>8</td><td>186</td><td>203</td></tr> </table>	Heavys	Trucks	Cars	Totals	9	8	186	203	<table style="border-collapse: collapse;"> <tr><td>Cars</td><td>Trucks</td><td>Heavys</td><td>Totals</td></tr> <tr><td>14</td><td>0</td><td>0</td><td style="border-left: 1px solid black;">14</td></tr> <tr><td>177</td><td>8</td><td>9</td><td style="border-left: 1px solid black;">194</td></tr> <tr><td>1</td><td>0</td><td>0</td><td style="border-left: 1px solid black;">1</td></tr> <tr><td>192</td><td>8</td><td>9</td><td style="border-left: 1px solid black;"></td></tr> </table>	Cars	Trucks	Heavys	Totals	14	0	0	14	177	8	9	194	1	0	0	1	192	8	9		<table style="border-collapse: collapse;"> <tr><td>Heavys</td><td>Trucks</td><td>Cars</td><td>Totals</td></tr> <tr><td>0</td><td>0</td><td>2</td><td style="border-left: 1px solid black;">2</td></tr> <tr><td>9</td><td>6</td><td>126</td><td style="border-left: 1px solid black;">141</td></tr> <tr><td>1</td><td>0</td><td>4</td><td style="border-left: 1px solid black;">5</td></tr> <tr><td>10</td><td>6</td><td>132</td><td style="border-left: 1px solid black;"></td></tr> </table>	Heavys	Trucks	Cars	Totals	0	0	2	2	9	6	126	141	1	0	4	5	10	6	132		<table style="border-collapse: collapse;"> <tr><td>Cars</td><td>Trucks</td><td>Heavys</td><td>Totals</td></tr> <tr><td>149</td><td>6</td><td>13</td><td>168</td></tr> </table>	Cars	Trucks	Heavys	Totals	149	6	13	168
Heavys	Trucks	Cars	Totals																																																								
9	8	186	203																																																								
Cars	Trucks	Heavys	Totals																																																								
14	0	0	14																																																								
177	8	9	194																																																								
1	0	0	1																																																								
192	8	9																																																									
Heavys	Trucks	Cars	Totals																																																								
0	0	2	2																																																								
9	6	126	141																																																								
1	0	4	5																																																								
10	6	132																																																									
Cars	Trucks	Heavys	Totals																																																								
149	6	13	168																																																								
Peds Cross: ☒ West Peds: 0 West Entering: 148 West Leg Total: 351	<table style="border-collapse: collapse;"> <tr><td>Cars</td><td>11</td></tr> <tr><td>Trucks</td><td>0</td></tr> <tr><td>Heavys</td><td>1</td></tr> <tr><td>Totals</td><td>12</td></tr> </table>	Cars	11	Trucks	0	Heavys	1	Totals	12	<table style="border-collapse: collapse;"> <tr><td>Cars</td><td>5</td><td>3</td><td>3</td><td style="border-left: 1px solid black;">11</td></tr> <tr><td>Trucks</td><td>0</td><td>0</td><td>0</td><td style="border-left: 1px solid black;">0</td></tr> <tr><td>Heavys</td><td>0</td><td>0</td><td>1</td><td style="border-left: 1px solid black;">1</td></tr> <tr><td>Totals</td><td>5</td><td>3</td><td>4</td><td style="border-left: 1px solid black;"></td></tr> </table>	Cars	5	3	3	11	Trucks	0	0	0	0	Heavys	0	0	1	1	Totals	5	3	4		Peds Cross: ☒ South Peds: 0 South Entering: 12 South Leg Total: 24																												
Cars	11																																																										
Trucks	0																																																										
Heavys	1																																																										
Totals	12																																																										
Cars	5	3	3	11																																																							
Trucks	0	0	0	0																																																							
Heavys	0	0	1	1																																																							
Totals	5	3	4																																																								
Comments																																																											

Afternoon Peak Diagram		Specified Period From: 16:00:00 To: 18:00:00	One Hour Peak From: 16:30:00 To: 17:30:00																																																								
Municipality: Niagara Falls Site #: 2219400001 Intersection: McLeod Rd & Beechwood Rd TFR File #: 1 Count date: 4-Oct-22		Weather conditions: Person counted: Person prepared: Person checked:																																																									
** Non-Signalized Intersection **		Major Road: McLeod Rd runs W/E																																																									
North Leg Total: 57 North Entering: 32 North Peds: 0 Peds Cross: ☒	<table style="border-collapse: collapse;"> <tr><td>Heavys</td><td>0</td><td>1</td><td>0</td><td>1</td></tr> <tr><td>Trucks</td><td>0</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>Cars</td><td>1</td><td>8</td><td>22</td><td>31</td></tr> <tr><td>Totals</td><td>1</td><td>9</td><td>22</td><td></td></tr> </table>	Heavys	0	1	0	1	Trucks	0	0	0	0	Cars	1	8	22	31	Totals	1	9	22		<table style="border-collapse: collapse;"> <tr><td>Heavys</td><td>0</td></tr> <tr><td>Trucks</td><td>0</td></tr> <tr><td>Cars</td><td>25</td></tr> <tr><td>Totals</td><td>25</td></tr> </table>	Heavys	0	Trucks	0	Cars	25	Totals	25	East Leg Total: 575 East Entering: 281 East Peds: 0 Peds Cross: ☒																												
Heavys	0	1	0	1																																																							
Trucks	0	0	0	0																																																							
Cars	1	8	22	31																																																							
Totals	1	9	22																																																								
Heavys	0																																																										
Trucks	0																																																										
Cars	25																																																										
Totals	25																																																										
																																																											
<table style="border-collapse: collapse;"> <tr><td>Heavys</td><td>Trucks</td><td>Cars</td><td>Totals</td></tr> <tr><td>4</td><td>3</td><td>266</td><td>273</td></tr> </table>	Heavys	Trucks	Cars	Totals	4	3	266	273	<table style="border-collapse: collapse;"> <tr><td>Cars</td><td>Trucks</td><td>Heavys</td><td>Totals</td></tr> <tr><td>16</td><td>0</td><td>0</td><td>16</td></tr> <tr><td>257</td><td>3</td><td>3</td><td>263</td></tr> <tr><td>2</td><td>0</td><td>0</td><td>2</td></tr> <tr><td>275</td><td>3</td><td>3</td><td></td></tr> </table>	Cars	Trucks	Heavys	Totals	16	0	0	16	257	3	3	263	2	0	0	2	275	3	3		<table style="border-collapse: collapse;"> <tr><td>Heavys</td><td>Trucks</td><td>Cars</td><td>Totals</td></tr> <tr><td>0</td><td>0</td><td>2</td><td>2</td></tr> <tr><td>6</td><td>4</td><td>261</td><td>271</td></tr> <tr><td>1</td><td>1</td><td>7</td><td>9</td></tr> <tr><td>7</td><td>5</td><td>270</td><td></td></tr> </table>	Heavys	Trucks	Cars	Totals	0	0	2	2	6	4	261	271	1	1	7	9	7	5	270		<table style="border-collapse: collapse;"> <tr><td>Cars</td><td>Trucks</td><td>Heavys</td><td>Totals</td></tr> <tr><td>284</td><td>4</td><td>6</td><td>294</td></tr> </table>	Cars	Trucks	Heavys	Totals	284	4	6	294
Heavys	Trucks	Cars	Totals																																																								
4	3	266	273																																																								
Cars	Trucks	Heavys	Totals																																																								
16	0	0	16																																																								
257	3	3	263																																																								
2	0	0	2																																																								
275	3	3																																																									
Heavys	Trucks	Cars	Totals																																																								
0	0	2	2																																																								
6	4	261	271																																																								
1	1	7	9																																																								
7	5	270																																																									
Cars	Trucks	Heavys	Totals																																																								
284	4	6	294																																																								
Peds Cross: ☒ West Peds: 0 West Entering: 282 West Leg Total: 555	<table style="border-collapse: collapse;"> <tr><td>Cars</td><td>17</td></tr> <tr><td>Trucks</td><td>1</td></tr> <tr><td>Heavys</td><td>2</td></tr> <tr><td>Totals</td><td>20</td></tr> </table>	Cars	17	Trucks	1	Heavys	2	Totals	20	<table style="border-collapse: collapse;"> <tr><td>Cars</td><td>8</td><td>7</td><td>1</td><td>16</td></tr> <tr><td>Trucks</td><td>0</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>Heavys</td><td>1</td><td>0</td><td>0</td><td>1</td></tr> <tr><td>Totals</td><td>9</td><td>7</td><td>1</td><td></td></tr> </table>	Cars	8	7	1	16	Trucks	0	0	0	0	Heavys	1	0	0	1	Totals	9	7	1		Peds Cross: ☒ South Peds: 0 South Entering: 17 South Leg Total: 37																												
Cars	17																																																										
Trucks	1																																																										
Heavys	2																																																										
Totals	20																																																										
Cars	8	7	1	16																																																							
Trucks	0	0	0	0																																																							
Heavys	1	0	0	1																																																							
Totals	9	7	1																																																								
Comments																																																											

Total Count Diagram

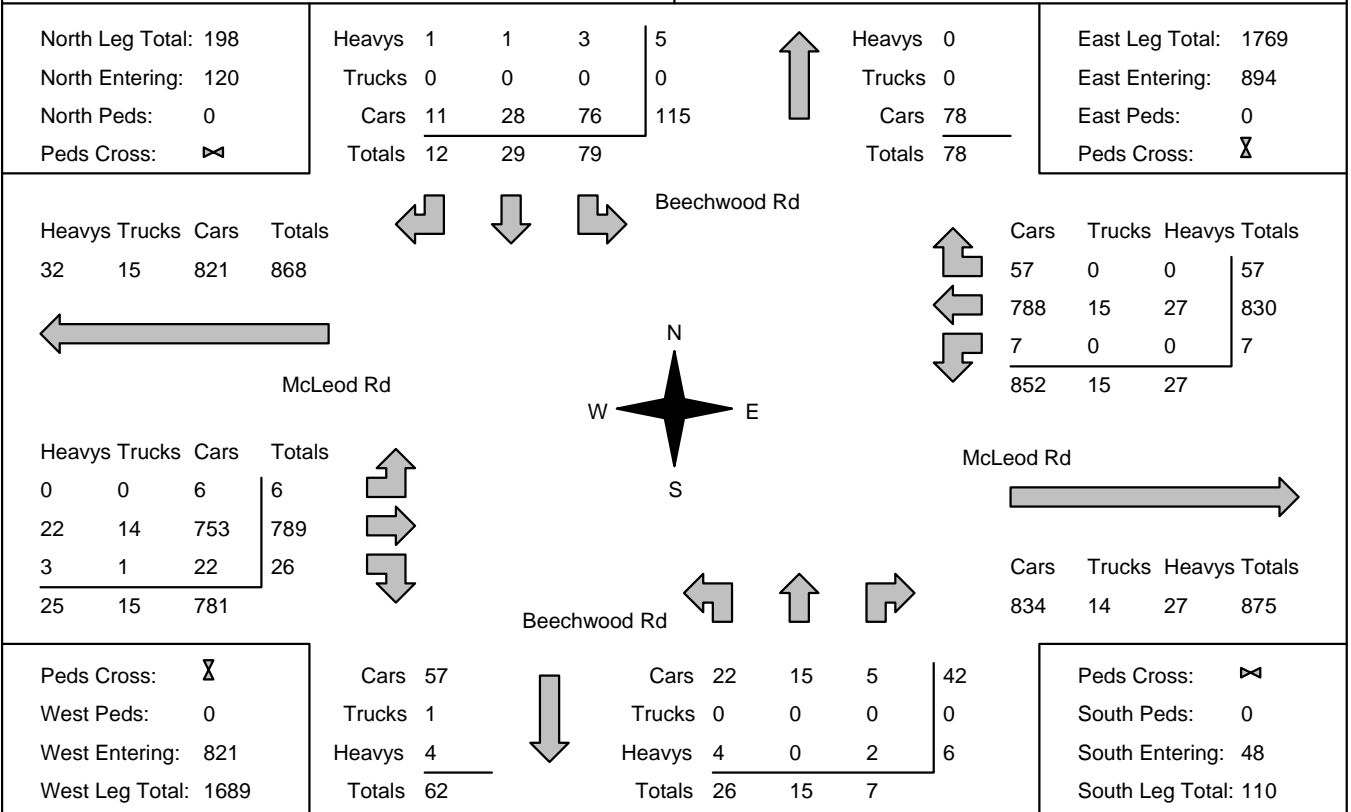
Municipality: Niagara Falls
Site #: 2219400001
Intersection: McLeod Rd & Beechwood Rd
TFR File #: 1
Count date: 4-Oct-22

Weather conditions:

Person counted:
Person prepared:
Person checked:

**** Non-Signalized Intersection ****

Major Road: McLeod Rd runs W/E

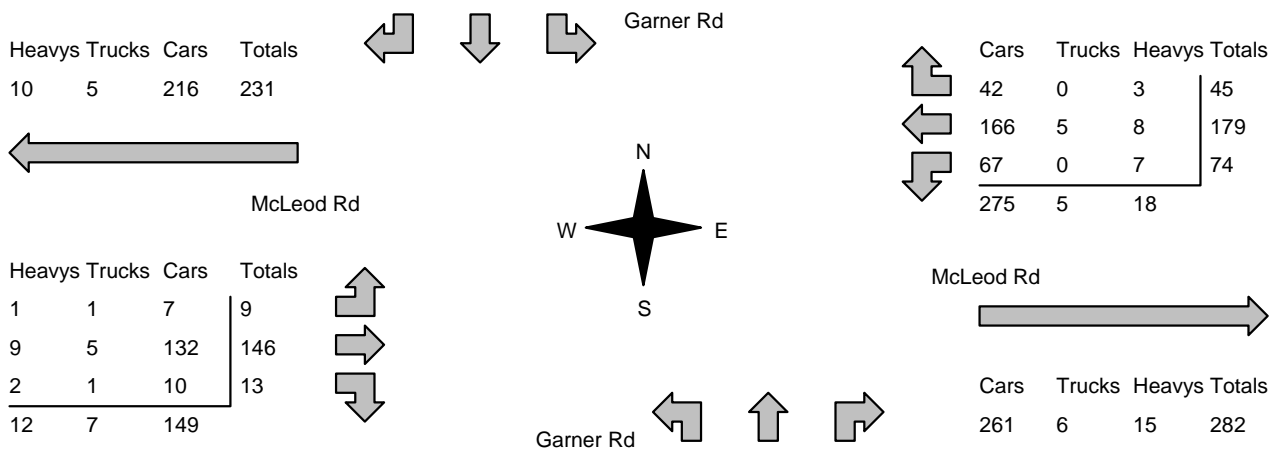



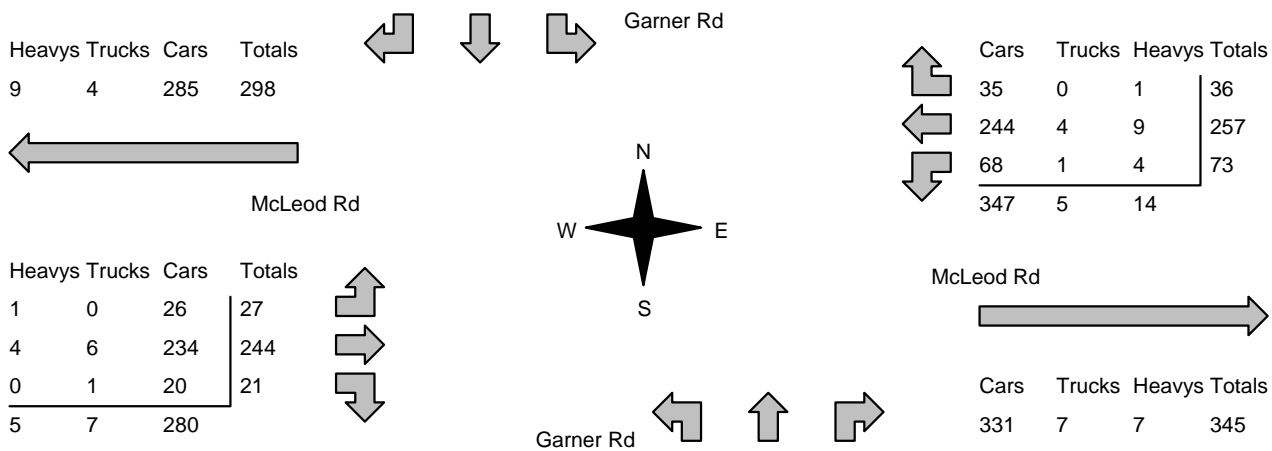

Comments

Traffic Count Summary

Intersection: McLeod Rd & Beechwood Rd Count Date: 4-Oct-22 Municipality: Niagara Falls

North Approach Totals						North/South Total Approaches	South Approach Totals					
Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds		Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds
	Left	Thru	Right	Grand Total				Left	Thru	Right	Grand Total	
7:00:00	0	0	0	0	0	0	7:00:00	0	0	0	0	0
8:00:00	12	8	6	26	0	33	8:00:00	4	3	0	7	0
9:00:00	23	6	4	33	0	45	9:00:00	5	3	4	12	0
16:00:00	0	0	0	0	0	0	16:00:00	0	0	0	0	0
17:00:00	21	6	0	27	0	40	17:00:00	7	3	3	13	0
18:00:00	23	9	2	34	0	50	18:00:00	10	6	0	16	0
Totals:	79	29	12	120	0	168	S Totals:	26	15	7	48	0
East Approach Totals						East/West Total Approaches	West Approach Totals					
Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds		Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds
	Left	Thru	Right	Grand Total				Left	Thru	Right	Grand Total	
7:00:00	0	0	0	0	0	0	7:00:00	0	0	0	0	0
8:00:00	1	143	8	152	0	302	8:00:00	0	140	10	150	0
9:00:00	1	194	14	209	0	357	9:00:00	2	141	5	148	0
16:00:00	0	0	0	0	0	0	16:00:00	0	0	0	0	0
17:00:00	2	267	14	283	0	543	17:00:00	1	249	10	260	0
18:00:00	3	226	21	250	0	513	18:00:00	3	259	1	263	0
Totals:	7	830	57	894	0	1715	W Totals:	6	789	26	821	0
Calculated Values for Traffic Crossing Major Street												
Hours Ending:	7:00	8:00	9:00	16:00				17:00	18:00	0:00	0:00	
Crossing Values:	0	24	34	0				34	42	0	0	

Morning Peak Diagram		Specified Period From: 7:00:00 To: 9:00:00	One Hour Peak From: 7:45:00 To: 8:45:00																												
Municipality: Niagara Falls Site #: 2219400002 Intersection: McLeod Rd & Garner Rd TFR File #: 1 Count date: 4-Oct-22		Weather conditions: Person counted: Person prepared: Person checked:																													
** Non-Signalized Intersection **		Major Road: McLeod Rd runs W/E																													
North Leg Total: 139 North Entering: 64 North Peds: 0 Peds Cross: ∇	<table style="width:100%; border-collapse: collapse;"> <tr><td>Heavys</td><td>2</td><td>1</td><td>1</td><td>4</td></tr> <tr><td>Trucks</td><td>0</td><td>0</td><td>1</td><td>1</td></tr> <tr><td>Cars</td><td>31</td><td>7</td><td>21</td><td>59</td></tr> <tr><td>Totals</td><td>33</td><td>8</td><td>23</td><td></td></tr> </table>	Heavys	2	1	1	4	Trucks	0	0	1	1	Cars	31	7	21	59	Totals	33	8	23		<table style="width:100%; border-collapse: collapse;"> <tr><td>Heavys</td><td>6</td></tr> <tr><td>Trucks</td><td>1</td></tr> <tr><td>Cars</td><td>68</td></tr> <tr><td>Totals</td><td>75</td></tr> </table>	Heavys	6	Trucks	1	Cars	68	Totals	75	East Leg Total: 580 East Entering: 298 East Peds: 10 Peds Cross: ∇
Heavys	2	1	1	4																											
Trucks	0	0	1	1																											
Cars	31	7	21	59																											
Totals	33	8	23																												
Heavys	6																														
Trucks	1																														
Cars	68																														
Totals	75																														
 <p style="text-align: center;">Garner Rd</p> <p style="text-align: center;">McLeod Rd</p> <p style="text-align: center;">N W — S — E</p> <p style="text-align: center;">Garner Rd</p> <p style="text-align: center;">McLeod Rd</p>																															
Peds Cross: ∇ West Peds: 0 West Entering: 168 West Leg Total: 399	<table style="width:100%; border-collapse: collapse;"> <tr><td>Cars</td><td>84</td></tr> <tr><td>Trucks</td><td>1</td></tr> <tr><td>Heavys</td><td>10</td></tr> <tr><td>Totals</td><td>95</td></tr> </table>	Cars	84	Trucks	1	Heavys	10	Totals	95	<table style="width:100%; border-collapse: collapse;"> <tr><td>Cars</td><td>19</td><td>19</td><td>108</td><td>146</td></tr> <tr><td>Trucks</td><td>0</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>Heavys</td><td>0</td><td>2</td><td>5</td><td>7</td></tr> <tr><td>Totals</td><td>19</td><td>21</td><td>113</td><td></td></tr> </table>	Cars	19	19	108	146	Trucks	0	0	0	0	Heavys	0	2	5	7	Totals	19	21	113		Peds Cross: ∇ South Peds: 0 South Entering: 153 South Leg Total: 248
Cars	84																														
Trucks	1																														
Heavys	10																														
Totals	95																														
Cars	19	19	108	146																											
Trucks	0	0	0	0																											
Heavys	0	2	5	7																											
Totals	19	21	113																												
Comments																															

Afternoon Peak Diagram		Specified Period From: 16:00:00 To: 18:00:00	One Hour Peak From: 16:00:00 To: 17:00:00																													
Municipality: Niagara Falls Site #: 2219400002 Intersection: McLeod Rd & Garner Rd TFR File #: 1 Count date: 4-Oct-22		Weather conditions: Person counted: Person prepared: Person checked:																														
** Non-Signalized Intersection **		Major Road: McLeod Rd runs W/E																														
North Leg Total: 139 North Entering: 42 North Peds: 0 Peds Cross: ☒	<table style="width:100%; border-collapse: collapse;"> <tr><td>Heavys</td><td>0</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>Trucks</td><td>0</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>Cars</td><td>16</td><td>5</td><td>21</td><td>42</td></tr> <tr><td>Totals</td><td>16</td><td>5</td><td>21</td><td></td></tr> </table>	Heavys	0	0	0	0	Trucks	0	0	0	0	Cars	16	5	21	42	Totals	16	5	21			<table style="width:100%; border-collapse: collapse;"> <tr><td>Heavys</td><td>2</td></tr> <tr><td>Trucks</td><td>0</td></tr> <tr><td>Cars</td><td>95</td></tr> <tr><td>Totals</td><td>97</td></tr> </table>	Heavys	2	Trucks	0	Cars	95	Totals	97	East Leg Total: 711 East Entering: 366 East Peds: 3 Peds Cross: ☒
Heavys	0	0	0	0																												
Trucks	0	0	0	0																												
Cars	16	5	21	42																												
Totals	16	5	21																													
Heavys	2																															
Trucks	0																															
Cars	95																															
Totals	97																															
																																
Heavys Trucks Cars Totals 9 4 285 298 ← McLeod Rd				<table style="width:100%; border-collapse: collapse;"> <tr><td>Cars</td><td>Trucks</td><td>Heavys</td><td>Totals</td></tr> <tr><td>35</td><td>0</td><td>1</td><td>36</td></tr> <tr><td>244</td><td>4</td><td>9</td><td>257</td></tr> <tr><td>68</td><td>1</td><td>4</td><td>73</td></tr> <tr><td>347</td><td>5</td><td>14</td><td></td></tr> </table>	Cars	Trucks	Heavys	Totals	35	0	1	36	244	4	9	257	68	1	4	73	347	5	14									
Cars	Trucks	Heavys	Totals																													
35	0	1	36																													
244	4	9	257																													
68	1	4	73																													
347	5	14																														
Heavys Trucks Cars Totals 1 0 26 27 4 6 234 244 0 1 20 21 5 7 280 ↑ McLeod Rd				<table style="width:100%; border-collapse: collapse;"> <tr><td>Cars</td><td>Trucks</td><td>Heavys</td><td>Totals</td></tr> <tr><td>331</td><td>7</td><td>7</td><td>345</td></tr> </table>	Cars	Trucks	Heavys	Totals	331	7	7	345																				
Cars	Trucks	Heavys	Totals																													
331	7	7	345																													
Peds Cross: ☒ West Peds: 0 West Entering: 292 West Leg Total: 590	<table style="width:100%; border-collapse: collapse;"> <tr><td>Cars</td><td>93</td></tr> <tr><td>Trucks</td><td>2</td></tr> <tr><td>Heavys</td><td>4</td></tr> <tr><td>Totals</td><td>99</td></tr> </table>	Cars	93	Trucks	2	Heavys	4	Totals	99		<table style="width:100%; border-collapse: collapse;"> <tr><td>Cars</td><td>25</td><td>34</td><td>76</td><td>135</td></tr> <tr><td>Trucks</td><td>0</td><td>0</td><td>1</td><td>1</td></tr> <tr><td>Heavys</td><td>0</td><td>0</td><td>3</td><td>3</td></tr> <tr><td>Totals</td><td>25</td><td>34</td><td>80</td><td></td></tr> </table>	Cars	25	34	76	135	Trucks	0	0	1	1	Heavys	0	0	3	3	Totals	25	34	80		Peds Cross: ☒ South Peds: 0 South Entering: 139 South Leg Total: 238
Cars	93																															
Trucks	2																															
Heavys	4																															
Totals	99																															
Cars	25	34	76	135																												
Trucks	0	0	1	1																												
Heavys	0	0	3	3																												
Totals	25	34	80																													
Comments																																

Total Count Diagram

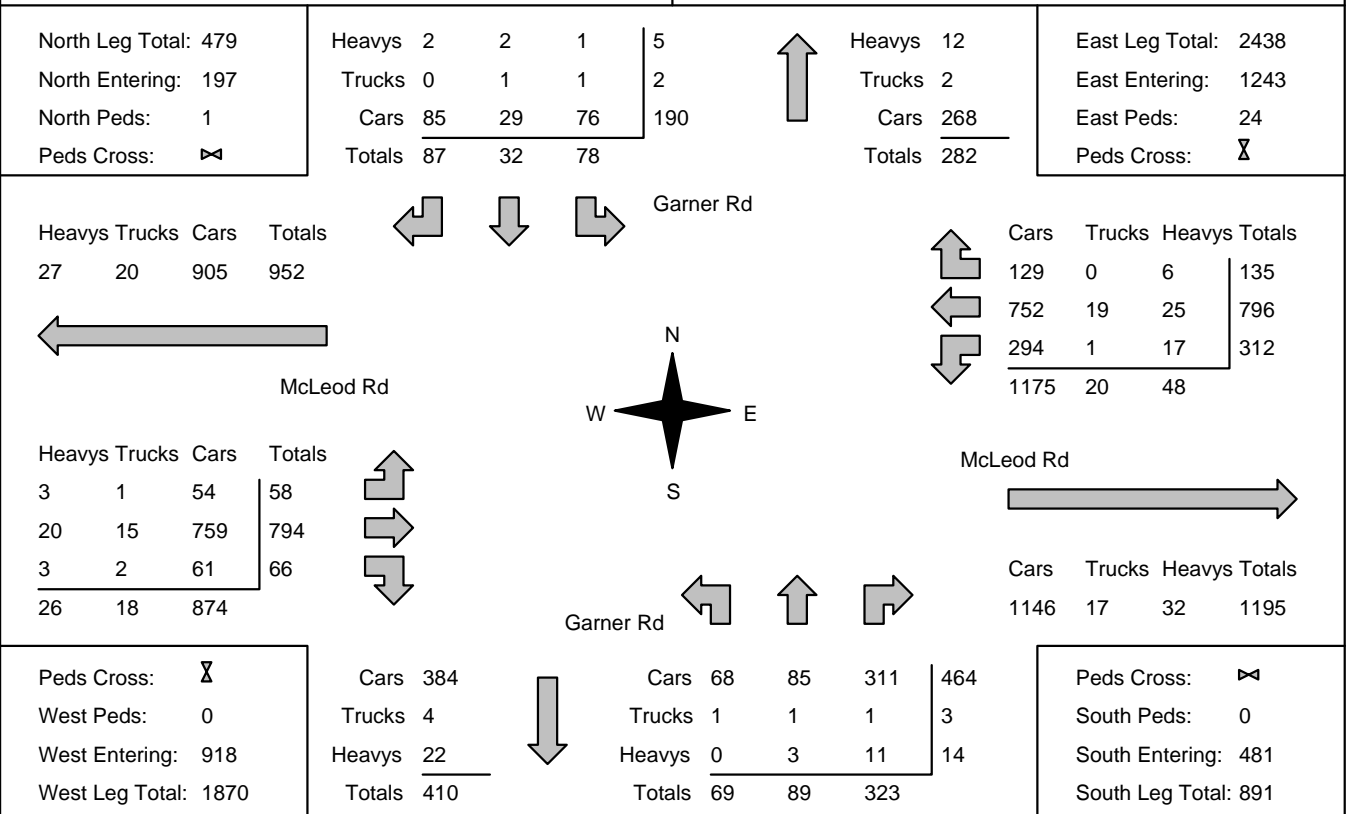
Municipality: Niagara Falls
Site #: 2219400002
Intersection: McLeod Rd & Garner Rd
TFR File #: 1
Count date: 4-Oct-22

Weather conditions:

Person counted:
Person prepared:
Person checked:

**** Non-Signalized Intersection ****

Major Road: McLeod Rd runs W/E



Comments

Traffic Count Summary

Intersection: McLeod Rd & Garner Rd					Count Date: 4-Oct-22		Municipality: Niagara Falls					
North Approach Totals						North/South Total Approaches	South Approach Totals					
Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds		Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds
	Left	Thru	Right	Grand Total				Left	Thru	Right	Grand Total	
7:00:00	0	0	0	0	0	0	7:00:00	0	0	0	0	0
8:00:00	16	11	23	50	0	127	8:00:00	10	8	59	77	0
9:00:00	26	9	30	65	0	217	9:00:00	21	23	108	152	0
16:00:00	0	0	0	0	0	0	16:00:00	0	0	0	0	0
17:00:00	21	5	16	42	0	181	17:00:00	25	34	80	139	0
18:00:00	15	7	18	40	1	153	18:00:00	13	24	76	113	0
Totals:	78	32	87	197	1	678	S Totals:	69	89	323	481	0
East Approach Totals						East/West Total Approaches	West Approach Totals					
Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds		Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds
	Left	Thru	Right	Grand Total				Left	Thru	Right	Grand Total	
7:00:00	0	0	0	0	0	0	7:00:00	0	0	0	0	0
8:00:00	70	141	22	233	6	388	8:00:00	4	140	11	155	0
9:00:00	71	176	38	285	10	462	9:00:00	16	147	14	177	0
16:00:00	0	0	0	0	0	0	16:00:00	0	0	0	0	0
17:00:00	73	257	36	366	3	658	17:00:00	27	244	21	292	0
18:00:00	98	222	39	359	5	653	18:00:00	11	263	20	294	0
Totals:	312	796	135	1243	24	2161	W Totals:	58	794	66	918	0
Calculated Values for Traffic Crossing Major Street												
Hours Ending:	7:00	8:00	9:00	16:00			17:00	18:00	0:00	0:00		
Crossing Values:	0	43	80	0			83	57	0	0		

APPENDIX A.2
Signal Timing Plans

Signal Code: KLRMCL**Intersection: MCLEOD RD. & KALAR RD.****Municipality: niagarafalls****Owner: city****Last Modified: 2011-10-19 11:42:12 AM**

Timing Parameters	EBD ADV. MCLEOD RD.	EBD/WBD THRU MCLEOD RD.	SBD ADV. KALAR RD.	NBD/SBD THRU KALAR RD.	n/a	n/a
Min Green	6	10	6	8	0	0
Walk	0	14	0	14	0	0
Ped Clearance	0	25	0	24	0	0
Vehicle Ext.	2.5	2.5	2.5	2.5	0	0
Max Green	11	30.7	12	34.7	0	0
Yellow	3	3.3	3	3.3	0	0
All Red	0	3.1	0	3	0	0

Offset

Minimum Cycle	30.7	0
Pedestrian Cycle	89.7	
Maximum Cycle	107.1	0
Operation	FA	

Installed On: 2008-11-18

Count Date: --/--/----

FA = Fully Actuated

SA = Semi Actuated

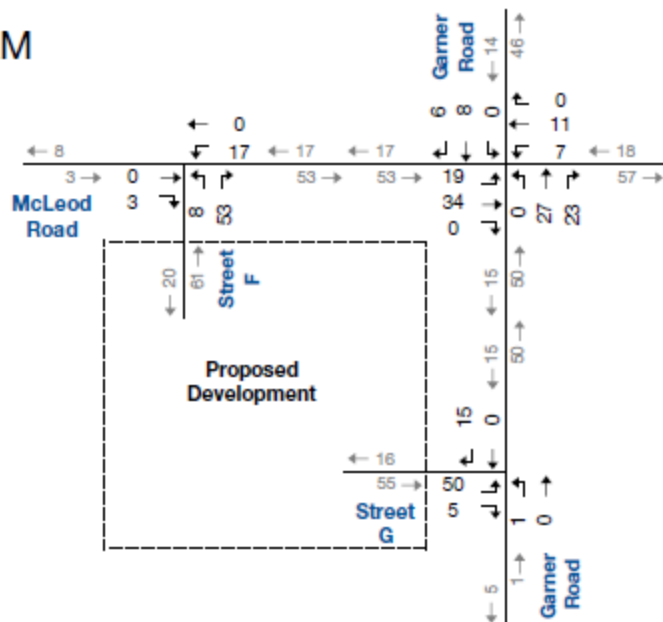
FT = Fixed Time

Copyright 2001 © Regional Niagara

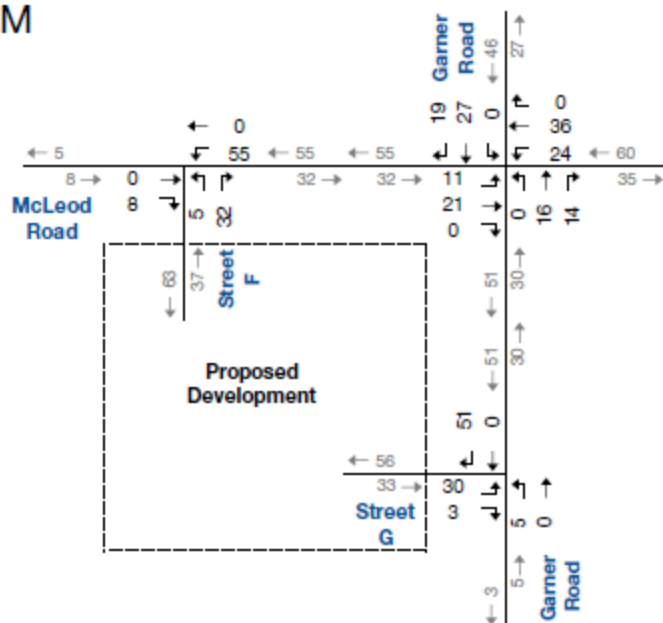
APPENDIX B

Background Developments

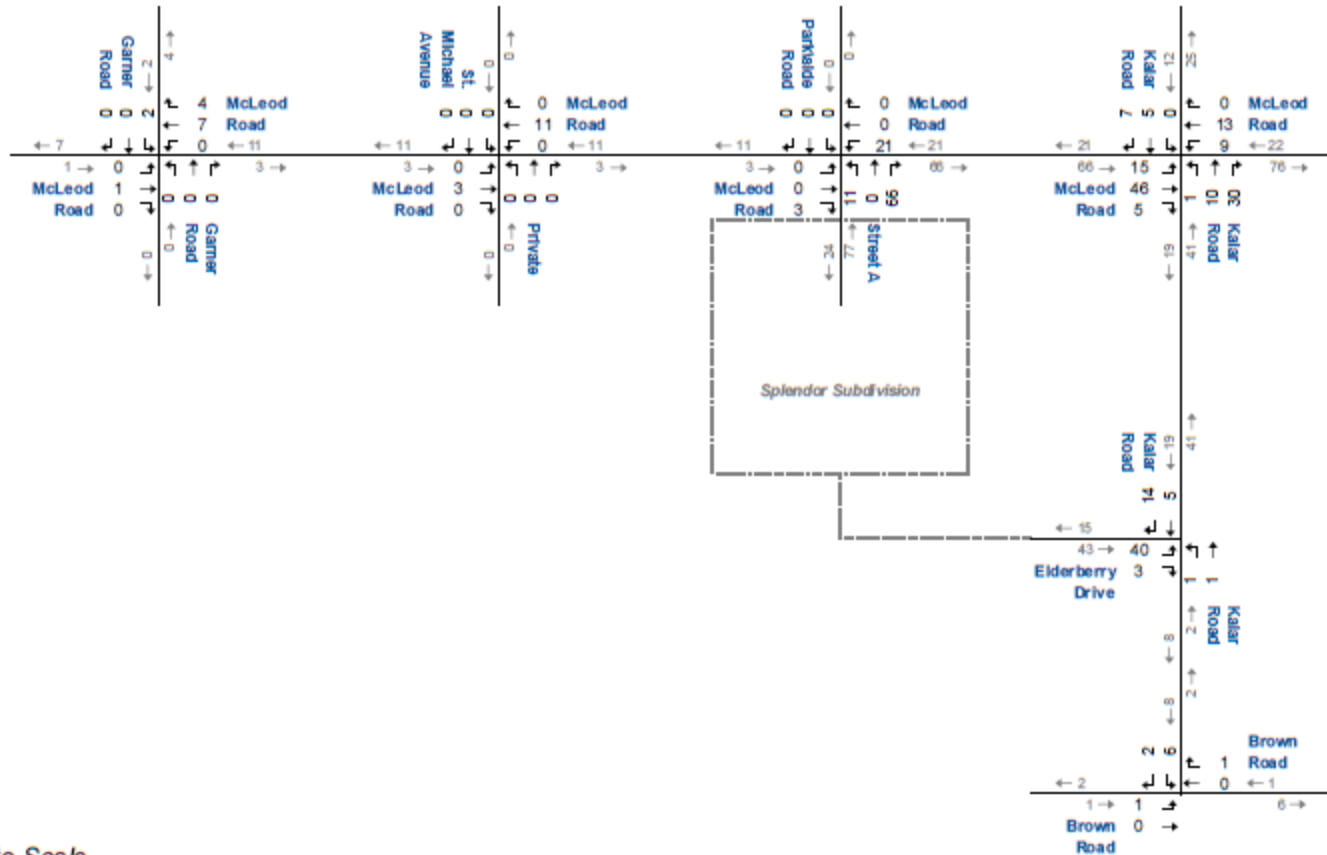
AM



PM



Site Generated Peak Hour Traffic Forecasts



Not to Scale



Forecast Site Generated Traffic AM Peak Hour

APPENDIX C

Transportation Tomorrow Survey

Thu Sep 29 2022 13:28:46 GMT-0400 (Eastern Daylight Time) - Run Time: 1828ms

Cross Tabulation Query Form - Trip - 2016 v1.1

Row: 2006 GTA zone of household - gta06_hhld

Column: 2006 GTA zone of employment - gta06_emp

RowG:(6244)

ColG:

TblG:

Filters:

No Filters

Trip 2016

Table:

Not Empl	5206	6110	6210	6212	6216	6232	6236	6243	6244	Total
136	39	39	40	295	269	179	114	206	101	1282
	3%	3%	3%	23%	21%	14%	9%	16%	8%	
A	B/A	A/C	A	A/C	C/A	A	A	A/D		

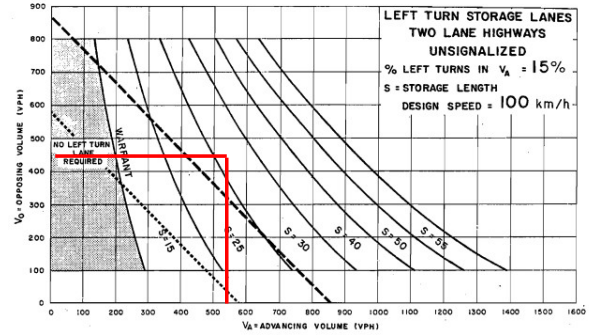
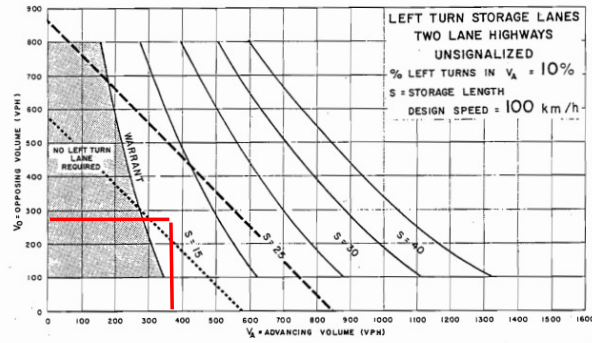
East Leg	A	69%	70%
West leg	B	3%	5%
N (Beechw	C	24%	20%
S (Beechw	D	4%	5%

APPENDIX D

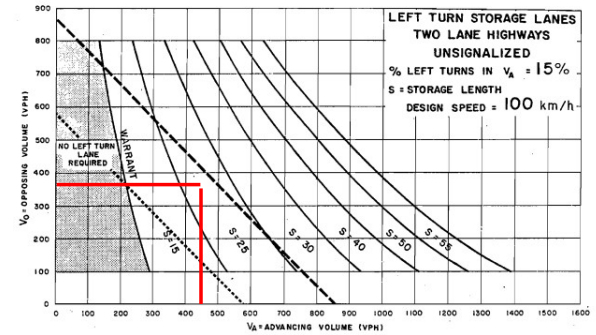
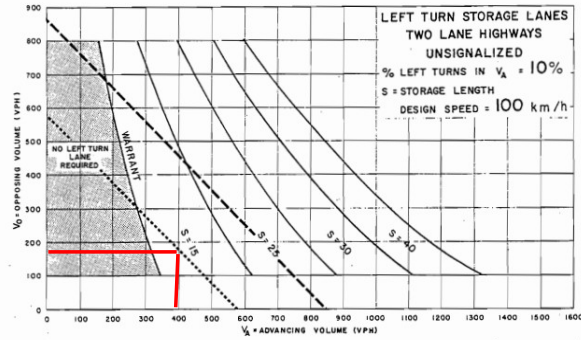
MTO Warrants

McLeod Access at Street 1	
WB Left	
AM	
Vo	300
Va	357
LT	26
%	7%
PM	
Vo	458
Va	541
LT	81
%	15%

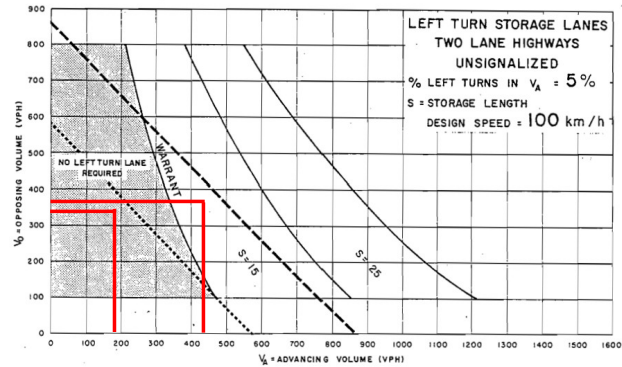
2032 FT



McLeod Road at Beechwood	
WB Left	
AM	
Vo	188
Va	329
LT	27
%	8%
PM	
Vo	379
Va	457
LT	82
%	18%

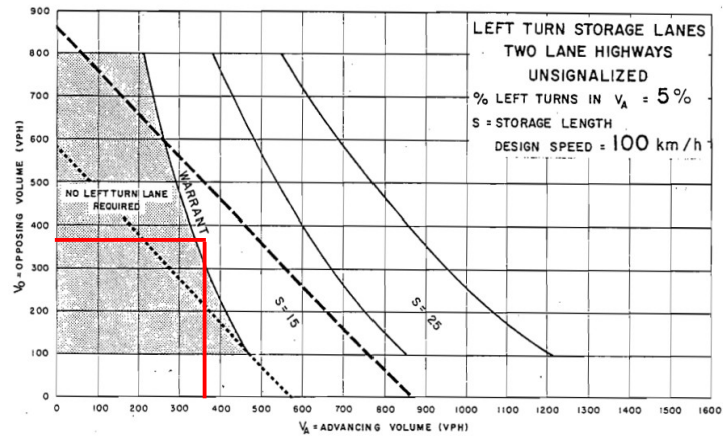


McLeod Road at Beechwood	
EB Left	
AM	
Vo	329
Va	188
LT	2
%	1%
PM	
Vo	457
Va	379
LT	2
%	1%

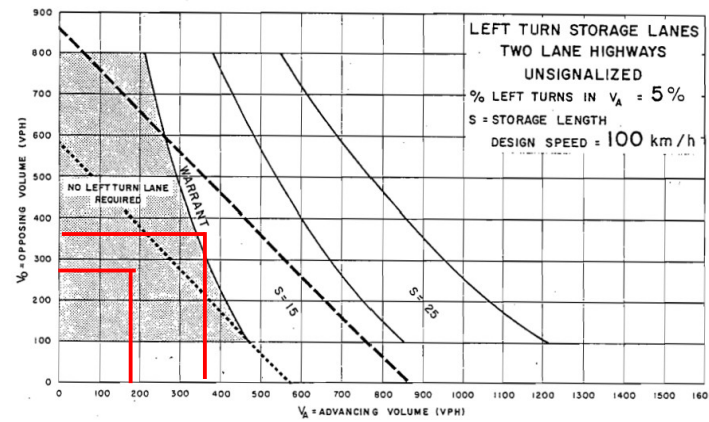


2032 FB

McLeod Road at Beechwood	
WB Left	
AM	
Vo	185
Va	278
LT	1
%	0%
PM	
Vo	366
Va	358
LT	2
%	1%



McLeod Road at Beechwood	
EB Left	
AM	
Vo	278
Va	185
LT	2
%	1%
PM	
Vo	358
Va	366
LT	2
%	1%



Summary Results

















Justification		Compliance		Signal Justified?		
				YES	NO	
1. Minimum Vehicular Volume	A	Total Volume	89	%	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	B	Crossing Volume	75	%	<input type="checkbox"/>	<input type="checkbox"/>
2. Delay to Cross Traffic	A	Main Road	77	%	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	B	Crossing Road	82	%	<input type="checkbox"/>	<input type="checkbox"/>
3. Combination	A	Justificaton 1	75	%	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	B	Justification 2	77	%	<input type="checkbox"/>	<input type="checkbox"/>
4. 4-Hr Volume			28	%	<input type="checkbox"/>	<input checked="" type="checkbox"/>

APPENDIX E

Synchro Software Output Reports

















2022 Existing AM Traffic Volumes
3: Beechwood Road & McLeod Road

McLeod Meadows TIS
Timing Plan: Default

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	2	134	10	1	194	14	6	4	4	19	7	4
Future Volume (Veh/h)	2	134	10	1	194	14	6	4	4	19	7	4
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2	146	11	1	211	15	7	4	4	21	8	4
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	226			157			384	384	152	382	382	218
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	226			157			384	384	152	382	382	218
tC, single (s)	4.1			4.1			7.2	6.5	6.2	7.1	6.6	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.6	4.0	3.3	3.5	4.1	3.3
p0 queue free %	100			100			99	99	100	96	99	100
cM capacity (veh/h)	1354			1435			548	552	900	573	536	826
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	159	227	15	33								
Volume Left	2	1	7	21								
Volume Right	11	15	4	4								
cSH	1354	1435	613	585								
Volume to Capacity	0.00	0.00	0.02	0.06								
Queue Length 95th (m)	0.0	0.0	0.6	1.4								
Control Delay (s)	0.1	0.0	11.0	11.5								
Lane LOS	A	A	B	B								
Approach Delay (s)	0.1	0.0	11.0	11.5								
Approach LOS			B	B								
Intersection Summary												
Average Delay			1.3									
Intersection Capacity Utilization			21.6%		ICU Level of Service				A			
Analysis Period (min)			15									

2022 Existing AM Traffic Volumes
8: Garner Road & McLeod Road

McLeod Meadows TIS
Timing Plan: Default

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	9	146	13	74	179	45	19	21	113	23	8	33
Future Volume (Veh/h)	9	146	13	74	179	45	19	21	113	23	8	33
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	10	159	14	80	195	49	21	23	123	25	9	36
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	244			173			606	590	166	700	572	220
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	244			173			606	590	166	700	572	220
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			94			94	94	86	91	98	96
cM capacity (veh/h)	1311			1386			368	395	873	278	405	825
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	183	324	167	70								
Volume Left	10	80	21	25								
Volume Right	14	49	123	36								
cSH	1311	1386	652	450								
Volume to Capacity	0.01	0.06	0.26	0.16								
Queue Length 95th (m)	0.2	1.5	8.1	4.4								
Control Delay (s)	0.5	2.3	12.4	14.5								
Lane LOS	A	A	B	B								
Approach Delay (s)	0.5	2.3	12.4	14.5								
Approach LOS			B	B								
Intersection Summary												
Average Delay			5.3									
Intersection Capacity Utilization			44.9%		ICU Level of Service				A			
Analysis Period (min)			15									

2022 Existing AM Traffic Volumes
11: Kalar Road & McLeod Road

McLeod Meadows TIS
Timing Plan: Default



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	75	450	51	324	220	92	290	350	267
v/c Ratio	0.20	0.35	0.23	0.39	0.43	0.32	0.59	0.74	0.16
Control Delay	15.0	14.8	25.8	23.6	9.6	23.3	21.6	22.8	4.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	15.0	14.8	25.8	23.6	9.6	23.3	21.6	22.8	4.5
Queue Length 50th (m)	5.7	18.9	5.2	17.8	3.9	9.0	23.2	24.5	3.3
Queue Length 95th (m)	15.3	34.6	16.2	34.3	22.4	23.0	51.8	#65.1	10.4
Internal Link Dist (m)		289.8		341.5			422.1		342.7
Turn Bay Length (m)	25.0		40.0		15.0	20.0		130.0	
Base Capacity (vph)	441	2695	525	2010	987	702	1099	500	2706
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.17	0.17	0.10	0.16	0.22	0.13	0.26	0.70	0.10

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

















2022 Existing AM Traffic Volumes
11: Kalar Road & McLeod Road

McLeod Meadows TIS
Timing Plan: Default

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	69	370	44	47	298	202	85	118	149	322	99	146	
Future Volume (vph)	69	370	44	47	298	202	85	118	149	322	99	146	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	3.9	3.9		4.0	3.9		
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00		1.00	0.95		
Frt	1.00	0.98		1.00	1.00	0.85	1.00	0.92		1.00	0.91		
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00		
Satd. Flow (prot)	1787	3468		1805	3574	1615	1805	1707		1805	3198		
Flt Permitted	0.37	1.00		0.49	1.00	1.00	0.59	1.00		0.28	1.00		
Satd. Flow (perm)	698	3468		935	3574	1615	1116	1707		526	3198		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	75	402	48	51	324	220	92	128	162	350	108	159	
RTOR Reduction (vph)	0	9	0	0	0	138	0	48	0	0	80	0	
Lane Group Flow (vph)	75	441	0	51	324	82	92	242	0	350	187	0	
Heavy Vehicles (%)	1%	2%	6%	0%	1%	0%	0%	2%	2%	0%	1%	4%	
Turn Type	pm+pt	NA		Perm	NA	Perm	Perm	NA		pm+pt	NA		
Protected Phases	7	4			8			2		1	6		
Permitted Phases	4			8		8	2			6			
Actuated Green, G (s)	20.8	20.8		11.9	11.9	11.9	13.8	13.8		28.1	28.1		
Effective Green, g (s)	19.8	23.2		14.3	14.3	14.3	16.2	16.2		27.1	30.5		
Actuated g/C Ratio	0.32	0.38		0.23	0.23	0.23	0.26	0.26		0.44	0.50		
Clearance Time (s)	3.0	6.4		6.4	6.4	6.4	6.3	6.3		3.0	6.3		
Vehicle Extension (s)	2.5	2.5		2.5	2.5	2.5	2.5	2.5		2.5	2.5		
Lane Grp Cap (vph)	310	1306		217	829	374	293	448		445	1583		
v/s Ratio Prot	0.02	c0.13			0.09			0.14		c0.13	0.06		
v/s Ratio Perm	0.06			0.05		0.05	0.08			c0.21			
v/c Ratio	0.24	0.34		0.24	0.39	0.22	0.31	0.54		0.79	0.12		
Uniform Delay, d1	15.0	13.7		19.2	20.0	19.1	18.2	19.5		12.9	8.3		
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00		
Incremental Delay, d2	0.3	0.1		0.4	0.2	0.2	0.4	1.1		8.6	0.0		
Delay (s)	15.3	13.8		19.6	20.2	19.3	18.7	20.6		21.5	8.4		
Level of Service	B	B		B	C	B	B	C		C	A		
Approach Delay (s)		14.0			19.8			20.1			15.8		
Approach LOS		B			B			C			B		
Intersection Summary													
HCM 2000 Control Delay			17.3		HCM 2000 Level of Service						B		
HCM 2000 Volume to Capacity ratio			0.62										
Actuated Cycle Length (s)			61.6		Sum of lost time (s)					15.9			
Intersection Capacity Utilization			66.5%		ICU Level of Service					C			
Analysis Period (min)			15										
c Critical Lane Group													

















2022 Existing PM Traffic Volumes
3: Beechwood Road & McLeod Road

McLeod Meadows TIS
Timing Plan: Default

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	2	271	9	2	263	16	9	7	1	22	9	1
Future Volume (Veh/h)	2	271	9	2	263	16	9	7	1	22	9	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2	295	10	2	286	17	10	8	1	24	10	1
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	303			305			608	611	300	608	608	294
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	303			305			608	611	300	608	608	294
tC, single (s)	4.1			4.1			7.2	6.5	6.5	7.1	6.5	6.3
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.6	4.0	3.6	3.5	4.0	3.4
p0 queue free %	100			100			97	98	100	94	98	100
cM capacity (veh/h)	1269			1267			381	410	680	398	408	731
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	307	305	19	35								
Volume Left	2	2	10	24								
Volume Right	10	17	1	1								
cSH	1269	1267	402	406								
Volume to Capacity	0.00	0.00	0.05	0.09								
Queue Length 95th (m)	0.0	0.0	1.2	2.3								
Control Delay (s)	0.1	0.1	14.4	14.7								
Lane LOS	A	A	B	B								
Approach Delay (s)	0.1	0.1	14.4	14.7								
Approach LOS			B	B								
Intersection Summary												
Average Delay			1.2									
Intersection Capacity Utilization			26.1%		ICU Level of Service				A			
Analysis Period (min)			15									

2022 Existing PM Traffic Volumes
8: Garner Road & McLeod Road

McLeod Meadows TIS
Timing Plan: Default

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	27	244	21	73	257	36	25	34	80	21	5	16
Future Volume (Veh/h)	27	244	21	73	257	36	25	34	80	21	5	16
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	29	265	23	79	279	39	27	37	87	23	5	17
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	318			288			810	810	276	896	802	298
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	318			288			810	810	276	896	802	298
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			94			90	87	89	88	98	98
cM capacity (veh/h)	1231			1257			271	289	758	197	292	746
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	317	397	151	45								
Volume Left	29	79	27	23								
Volume Right	23	39	87	17								
cSH	1231	1257	441	287								
Volume to Capacity	0.02	0.06	0.34	0.16								
Queue Length 95th (m)	0.6	1.6	12.0	4.4								
Control Delay (s)	0.9	2.1	17.4	19.9								
Lane LOS	A	A	C	C								
Approach Delay (s)	0.9	2.1	17.4	19.9								
Approach LOS			C	C								
Intersection Summary												
Average Delay			5.1									
Intersection Capacity Utilization			50.1%		ICU Level of Service				A			
Analysis Period (min)			15									

2022 Existing PM Traffic Volumes
11: Kalar Road & McLeod Road

McLeod Meadows TIS
Timing Plan: Default



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	97	452	129	516	428	41	321	324	181
v/c Ratio	0.29	0.32	0.49	0.51	0.69	0.13	0.64	0.78	0.11
Control Delay	16.3	14.9	32.1	25.3	19.1	24.4	28.0	31.4	8.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	16.3	14.9	32.1	25.3	19.1	24.4	28.0	31.4	8.9
Queue Length 50th (m)	8.2	21.1	15.8	33.5	25.9	4.5	34.0	28.6	4.4
Queue Length 95th (m)	20.7	39.3	38.9	59.1	69.4	14.5	74.9	#90.4	13.1
Internal Link Dist (m)		289.8		341.5			422.1		342.7
Turn Bay Length (m)	25.0		40.0		15.0	20.0		130.0	
Base Capacity (vph)	391	2366	458	1756	905	667	972	439	2452
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.25	0.19	0.28	0.29	0.47	0.06	0.33	0.74	0.07

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

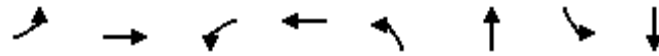
2022 Existing PM Traffic Volumes
11: Kalar Road & McLeod Road

McLeod Meadows TIS
Timing Plan: Default

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	89	380	36	119	475	394	38	147	148	298	105	62	
Future Volume (vph)	89	380	36	119	475	394	38	147	148	298	105	62	
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	3.9	3.9		4.0	3.9		
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00		1.00	0.95		
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.92		1.00	0.94		
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00		
Satd. Flow (prot)	1787	3482		1805	3574	1615	1805	1723		1805	3339		
Flt Permitted	0.26	1.00		0.49	1.00	1.00	0.64	1.00		0.25	1.00		
Satd. Flow (perm)	488	3482		933	3574	1615	1212	1723		467	3339		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	97	413	39	129	516	428	41	160	161	324	114	67	
RTOR Reduction (vph)	0	7	0	0	0	158	0	38	0	0	35	0	
Lane Group Flow (vph)	97	445	0	129	516	270	41	283	0	324	146	0	
Heavy Vehicles (%)	1%	2%	6%	0%	1%	0%	0%	2%	2%	0%	1%	4%	
Turn Type	pm+pt	NA		Perm	NA	Perm	Perm	NA		pm+pt	NA		
Protected Phases	7	4			8			2		1	6		
Permitted Phases	4			8		8	2			6			
Actuated Green, G (s)	28.0	28.0		18.2	18.2	18.2	17.5	17.5		32.2	32.2		
Effective Green, g (s)	27.0	30.4		20.6	20.6	20.6	19.9	19.9		31.2	34.6		
Actuated g/C Ratio	0.37	0.42		0.28	0.28	0.28	0.27	0.27		0.43	0.47		
Clearance Time (s)	3.0	6.4		6.4	6.4	6.4	6.3	6.3		3.0	6.3		
Vehicle Extension (s)	2.5	2.5		2.5	2.5	2.5	2.5	2.5		2.5	2.5		
Lane Grp Cap (vph)	284	1452		263	1009	456	330	470		396	1584		
v/s Ratio Prot	0.03	c0.13			0.14			0.16		c0.12	0.04		
v/s Ratio Perm	0.10			0.14		c0.17	0.03			c0.23			
v/c Ratio	0.34	0.31		0.49	0.51	0.59	0.12	0.60		0.82	0.09		
Uniform Delay, d1	15.9	14.2		21.8	21.9	22.5	19.9	23.1		15.9	10.5		
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00		
Incremental Delay, d2	0.5	0.1		1.0	0.3	1.7	0.1	1.8		12.1	0.0		
Delay (s)	16.5	14.3		22.8	22.3	24.3	20.1	24.9		27.9	10.5		
Level of Service	B	B		C	C	C	C	C		C	B		
Approach Delay (s)		14.7			23.1			24.4			21.7		
Approach LOS		B			C			C			C		
Intersection Summary													
HCM 2000 Control Delay			21.2		HCM 2000 Level of Service						C		
HCM 2000 Volume to Capacity ratio			0.68										
Actuated Cycle Length (s)			72.9		Sum of lost time (s)					15.9			
Intersection Capacity Utilization			66.6%		ICU Level of Service					C			
Analysis Period (min)			15										
c Critical Lane Group													

2027 Future Background AM Traffic Volumes
 8: Garner Road & McLeod Road

McLeod Meadows TIS
 Timing Plan: Default



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	32	232	96	301	23	214	29	64
v/c Ratio	0.06	0.24	0.16	0.32	0.06	0.39	0.08	0.13
Control Delay	5.3	5.7	6.1	5.9	7.5	5.1	7.6	4.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	5.3	5.7	6.1	5.9	7.5	5.1	7.6	4.5
Queue Length 50th (m)	0.6	4.7	2.0	5.8	0.6	1.3	0.7	0.4
Queue Length 95th (m)	3.1	13.7	7.2	17.0	3.2	9.3	3.7	4.5
Internal Link Dist (m)		652.6		705.2		278.8		326.3
Turn Bay Length (m)								
Base Capacity (vph)	1054	1846	1111	1777	1012	1262	994	1275
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.13	0.09	0.17	0.02	0.17	0.03	0.05
Intersection Summary								

















2027 Future Background AM Traffic Volumes
8: Garner Road & McLeod Road

McLeod Meadows TIS
Timing Plan: Default

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	29	200	14	88	223	54	21	50	147	27	17	42
Future Volume (vph)	29	200	14	88	223	54	21	50	147	27	17	42
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.97		1.00	0.89		1.00	0.89	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1736	1847		1719	1777		1805	1638		1805	1695	
Flt Permitted	0.58	1.00		0.61	1.00		0.72	1.00		0.70	1.00	
Satd. Flow (perm)	1053	1847		1111	1777		1359	1638		1333	1695	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	32	217	15	96	242	59	23	54	160	29	18	46
RTOR Reduction (vph)	0	5	0	0	17	0	0	126	0	0	36	0
Lane Group Flow (vph)	32	227	0	96	284	0	23	88	0	29	28	0
Heavy Vehicles (%)	4%	2%	0%	5%	4%	3%	0%	0%	4%	0%	0%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	12.8	12.8		12.8	12.8		5.7	5.7		5.7	5.7	
Effective Green, g (s)	12.8	12.8		12.8	12.8		5.7	5.7		5.7	5.7	
Actuated g/C Ratio	0.48	0.48		0.48	0.48		0.22	0.22		0.22	0.22	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	508	892		536	858		292	352		286	364	
v/s Ratio Prot		0.12			c0.16			c0.05			0.02	
v/s Ratio Perm	0.03			0.09			0.02			0.02		
v/c Ratio	0.06	0.25		0.18	0.33		0.08	0.25		0.10	0.08	
Uniform Delay, d1	3.7	4.0		3.9	4.2		8.3	8.6		8.3	8.3	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	0.2		0.2	0.2		0.1	0.4		0.2	0.1	
Delay (s)	3.7	4.2		4.0	4.4		8.4	9.0		8.5	8.4	
Level of Service	A	A		A	A		A	A		A	A	
Approach Delay (s)		4.1			4.3			8.9			8.4	
Approach LOS		A			A			A			A	
Intersection Summary												
HCM 2000 Control Delay			5.8		HCM 2000 Level of Service				A			
HCM 2000 Volume to Capacity ratio			0.31									
Actuated Cycle Length (s)			26.5		Sum of lost time (s)				8.0			
Intersection Capacity Utilization			48.4%		ICU Level of Service				A			
Analysis Period (min)			15									
c Critical Lane Group												

2027 Future Background AM Traffic Volumes
3: Beechwood Road & McLeod Road

McLeod Meadows TIS
Timing Plan: Default

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	2	155	11	1	236	15	7	4	4	21	8	4
Future Volume (Veh/h)	2	155	11	1	236	15	7	4	4	21	8	4
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2	168	12	1	257	16	8	4	4	23	9	4
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	273			180			454	453	174	451	451	265
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	273			180			454	453	174	451	451	265
tC, single (s)	4.1			4.1			7.2	6.5	6.2	7.1	6.6	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.6	4.0	3.3	3.5	4.1	3.3
p0 queue free %	100			100			98	99	100	96	98	99
cM capacity (veh/h)	1302			1408			491	504	875	516	490	779
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	182	274	16	36								
Volume Left	2	1	8	23								
Volume Right	12	16	4	4								
cSH	1302	1408	556	528								
Volume to Capacity	0.00	0.00	0.03	0.07								
Queue Length 95th (m)	0.0	0.0	0.7	1.7								
Control Delay (s)	0.1	0.0	11.7	12.3								
Lane LOS	A	A	B	B								
Approach Delay (s)	0.1	0.0	11.7	12.3								
Approach LOS			B	B								
Intersection Summary												
Average Delay			1.3									
Intersection Capacity Utilization			23.9%		ICU Level of Service				A			
Analysis Period (min)			15									

















2027 Future Background AM Traffic Volumes
 8: Garner Road & McLeod Road

McLeod Meadows TIS
 Timing Plan: Default

	→	←	↑	↓
Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	264	397	237	93
v/c Ratio	0.31	0.51	0.46	0.22
Control Delay	6.3	8.4	7.2	7.3
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	6.3	8.4	7.2	7.3
Queue Length 50th (m)	6.0	9.8	2.4	1.5
Queue Length 95th (m)	19.0	31.2	15.6	9.5
Internal Link Dist (m)	652.6	705.2	278.8	326.3
Turn Bay Length (m)				
Base Capacity (vph)	1637	1478	1076	1006
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.16	0.27	0.22	0.09
Intersection Summary				

2027 Future Background AM Traffic Volumes
8: Garner Road & McLeod Road

McLeod Meadows TIS
Timing Plan: Default

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	29	200	14	88	223	54	21	50	147	27	17	42
Future Volume (vph)	29	200	14	88	223	54	21	50	147	27	17	42
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frt		0.99			0.98			0.91			0.93	
Flt Protected		0.99			0.99			1.00			0.98	
Satd. Flow (prot)		1835			1767			1673			1746	
Flt Permitted		0.93			0.87			0.96			0.89	
Satd. Flow (perm)		1723			1555			1618			1575	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	32	217	15	96	242	59	23	54	160	29	18	46
RTOR Reduction (vph)	0	4	0	0	12	0	0	120	0	0	35	0
Lane Group Flow (vph)	0	260	0	0	385	0	0	117	0	0	58	0
Heavy Vehicles (%)	4%	2%	0%	5%	4%	3%	0%	0%	4%	0%	0%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		15.3			15.3			7.7			7.7	
Effective Green, g (s)		15.3			15.3			7.7			7.7	
Actuated g/C Ratio		0.49			0.49			0.25			0.25	
Clearance Time (s)		4.0			4.0			4.0			4.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		850			767			401			391	
v/s Ratio Prot												
v/s Ratio Perm		0.15			c0.25			c0.07			0.04	
v/c Ratio		0.31			0.50			0.29			0.15	
Uniform Delay, d1		4.7			5.3			9.4			9.1	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		0.2			0.5			0.4			0.2	
Delay (s)		4.9			5.8			9.8			9.3	
Level of Service		A			A			A			A	
Approach Delay (s)		4.9			5.8			9.8			9.3	
Approach LOS		A			A			A			A	
Intersection Summary												
HCM 2000 Control Delay			6.9		HCM 2000 Level of Service				A			
HCM 2000 Volume to Capacity ratio			0.43									
Actuated Cycle Length (s)			31.0		Sum of lost time (s)			8.0				
Intersection Capacity Utilization			55.5%		ICU Level of Service				B			
Analysis Period (min)			15									
c Critical Lane Group												

2027 Future Background AM Traffic Volumes
 11: Kalar Road & McLeod Road

McLeod Meadows TIS
 Timing Plan: Default

























Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	103	612	66	390	241	103	369	447	324
v/c Ratio	0.41	0.57	0.38	0.49	0.49	0.35	0.72	0.77	0.16
Control Delay	27.3	25.5	37.1	31.2	14.0	29.1	31.3	25.7	3.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	27.3	25.5	37.1	31.2	14.0	29.1	31.3	25.7	3.7
Queue Length 50th (m)	12.6	43.8	9.7	31.1	10.2	13.8	46.6	44.1	4.4
Queue Length 95th (m)	26.2	65.5	23.6	48.2	32.8	30.4	85.2	#104.6	11.4
Internal Link Dist (m)		289.8		341.5			422.1		342.7
Turn Bay Length (m)	25.0		40.0		15.0	20.0		130.0	
Base Capacity (vph)	250	2001	355	1632	829	388	665	642	2358
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.41	0.31	0.19	0.24	0.29	0.27	0.55	0.70	0.14

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

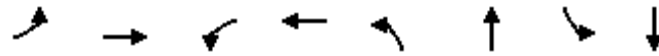
2027 Future Background AM Traffic Volumes
11: Kalar Road & McLeod Road

McLeod Meadows TIS
Timing Plan: Default

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	95	510	53	61	359	222	95	145	194	411	122	176
Future Volume (vph)	95	510	53	61	359	222	95	145	194	411	122	176
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	3.9	3.9		4.0	3.9	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00		1.00	0.95	
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.91		1.00	0.91	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1787	3476		1805	3574	1615	1805	1703		1805	3202	
Flt Permitted	0.29	1.00		0.41	1.00	1.00	0.56	1.00		0.18	1.00	
Satd. Flow (perm)	552	3476		779	3574	1615	1056	1703		349	3202	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	103	554	58	66	390	241	103	158	211	447	133	191
RTOR Reduction (vph)	0	9	0	0	0	132	0	44	0	0	79	0
Lane Group Flow (vph)	103	603	0	66	390	109	103	325	0	447	245	0
Heavy Vehicles (%)	1%	2%	6%	0%	1%	0%	0%	2%	2%	0%	1%	4%
Turn Type	pm+pt	NA		Perm	NA	Perm	Perm	NA		pm+pt	NA	
Protected Phases	7	4			8			2		1	6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	22.8	22.8		15.3	15.3	15.3	19.7	19.7		44.4	44.4	
Effective Green, g (s)	21.8	25.2		17.7	17.7	17.7	22.1	22.1		43.4	46.8	
Actuated g/C Ratio	0.27	0.32		0.22	0.22	0.22	0.28	0.28		0.54	0.59	
Clearance Time (s)	3.0	6.4		6.4	6.4	6.4	6.3	6.3		3.0	6.3	
Vehicle Extension (s)	2.5	2.5		2.5	2.5	2.5	2.5	2.5		2.5	2.5	
Lane Grp Cap (vph)	204	1096		172	791	357	292	471		566	1875	
v/s Ratio Prot	0.02	c0.17			0.11			0.19		c0.20	0.08	
v/s Ratio Perm	0.12			0.08		0.07	0.10			c0.22		
v/c Ratio	0.50	0.55		0.38	0.49	0.31	0.35	0.69		0.79	0.13	
Uniform Delay, d1	23.0	22.7		26.5	27.2	26.0	23.2	25.8		16.5	7.4	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.4	0.5		1.0	0.4	0.4	0.5	3.8		7.0	0.0	
Delay (s)	24.4	23.1		27.5	27.5	26.3	23.7	29.7		23.5	7.4	
Level of Service	C	C		C	C	C	C	C		C	A	
Approach Delay (s)		23.3			27.1			28.4			16.8	
Approach LOS		C			C			C			B	
Intersection Summary												
HCM 2000 Control Delay			23.3									C
HCM 2000 Volume to Capacity ratio			0.74									
Actuated Cycle Length (s)			79.9							15.9		
Intersection Capacity Utilization			79.7%									D
Analysis Period (min)			15									
c Critical Lane Group												

2027 Future Background PM Traffic Volumes
 8: Garner Road & McLeod Road





















McLeod Meadows TIS
 Timing Plan:



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	45	354	113	406	30	169	32	76
v/c Ratio	0.08	0.33	0.20	0.39	0.09	0.34	0.10	0.17
Control Delay	5.1	5.9	6.0	6.3	9.3	6.3	9.3	6.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	5.1	5.9	6.0	6.3	9.3	6.3	9.3	6.3
Queue Length 50th (m)	0.9	7.9	2.4	9.3	0.9	1.7	0.9	1.0
Queue Length 95th (m)	4.1	21.7	8.7	25.4	4.8	11.1	5.1	7.1
Internal Link Dist (m)		652.6		705.2		278.8		326.3
Turn Bay Length (m)								
Base Capacity (vph)	946	1824	982	1776	926	1183	919	1218
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.05	0.19	0.12	0.23	0.03	0.14	0.03	0.06
Intersection Summary								

















2027 Future Background PM Traffic Volumes
8: Garner Road & McLeod Road

McLeod Meadows TIS
Timing Plan:

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	41	303	23	104	329	44	28	53	102	29	33	37
Future Volume (vph)	41	303	23	104	329	44	28	53	102	29	33	37
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.98		1.00	0.90		1.00	0.92	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1736	1846		1719	1797		1805	1669		1805	1750	
Flt Permitted	0.52	1.00		0.55	1.00		0.71	1.00		0.70	1.00	
Satd. Flow (perm)	957	1846		994	1797		1344	1669		1333	1750	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	45	329	25	113	358	48	30	58	111	32	36	40
RTOR Reduction (vph)	0	5	0	0	9	0	0	89	0	0	32	0
Lane Group Flow (vph)	45	349	0	113	397	0	30	80	0	32	44	0
Heavy Vehicles (%)	4%	2%	0%	5%	4%	3%	0%	0%	4%	0%	0%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	15.1	15.1		15.1	15.1		5.7	5.7		5.7	5.7	
Effective Green, g (s)	15.1	15.1		15.1	15.1		5.7	5.7		5.7	5.7	
Actuated g/C Ratio	0.52	0.52		0.52	0.52		0.20	0.20		0.20	0.20	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	501	967		521	942		266	330		263	346	
v/s Ratio Prot		0.19			c0.22			c0.05			0.03	
v/s Ratio Perm	0.05			0.11			0.02			0.02		
v/c Ratio	0.09	0.36		0.22	0.42		0.11	0.24		0.12	0.13	
Uniform Delay, d1	3.4	4.0		3.7	4.2		9.5	9.7		9.5	9.5	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	0.2		0.2	0.3		0.2	0.4		0.2	0.2	
Delay (s)	3.5	4.3		3.9	4.5		9.7	10.1		9.7	9.7	
Level of Service	A	A		A	A		A	B		A	A	
Approach Delay (s)		4.2			4.4			10.0			9.7	
Approach LOS		A			A			B			A	
Intersection Summary												
HCM 2000 Control Delay			5.7								A	
HCM 2000 Volume to Capacity ratio			0.37									
Actuated Cycle Length (s)			28.8							8.0		
Intersection Capacity Utilization			50.7%								A	
Analysis Period (min)			15									
c Critical Lane Group												

2027 Future Background PM Traffic Volumes
3: Beechwood Road & McLeod Road

McLeod Meadows TIS
Timing Plan:

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	2	320	10	2	304	18	10	8	1	24	10	1
Future Volume (Veh/h)	2	320	10	2	304	18	10	8	1	24	10	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2	348	11	2	330	20	11	9	1	26	11	1
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	350			359			708	712	354	707	707	340
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	350			359			708	712	354	707	707	340
tC, single (s)	4.1			4.1			7.2	6.5	6.5	7.1	6.5	6.3
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.6	4.0	3.6	3.5	4.0	3.4
p0 queue free %	100			100			97	97	100	92	97	100
cM capacity (veh/h)	1220			1211			324	359	633	339	358	689
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	361	352	21	38								
Volume Left	2	2	11	26								
Volume Right	11	20	1	1								
cSH	1220	1211	347	349								
Volume to Capacity	0.00	0.00	0.06	0.11								
Queue Length 95th (m)	0.0	0.0	1.5	2.9								
Control Delay (s)	0.1	0.1	16.1	16.6								
Lane LOS	A	A	C	C								
Approach Delay (s)	0.1	0.1	16.1	16.6								
Approach LOS			C	C								
Intersection Summary												
Average Delay			1.3									
Intersection Capacity Utilization			28.8%		ICU Level of Service				A			
Analysis Period (min)			15									

2027 Future Background PM Traffic Volumes
 8: Garner Road & McLeod Road

















McLeod Meadows TIS
 Timing Plan:

	→	←	↑	↓
Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	399	519	199	108
v/c Ratio	0.38	0.55	0.43	0.26
Control Delay	6.2	8.4	9.7	10.4
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	6.2	8.4	9.7	10.4
Queue Length 50th (m)	10.4	15.7	3.5	2.7
Queue Length 95th (m)	31.4	48.6	19.9	14.7
Internal Link Dist (m)	652.6	705.2	278.8	326.3
Turn Bay Length (m)				
Base Capacity (vph)	1555	1401	984	960
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.26	0.37	0.20	0.11
Intersection Summary				

2027 Future Background PM Traffic Volumes
8: Garner Road & McLeod Road

McLeod Meadows TIS

Timing Plan:

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	41	303	23	104	329	44	28	53	102	29	33	37
Future Volume (vph)	41	303	23	104	329	44	28	53	102	29	33	37
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frt		0.99			0.99			0.92			0.95	
Flt Protected		0.99			0.99			0.99			0.99	
Satd. Flow (prot)		1835			1783			1706			1779	
Flt Permitted		0.92			0.85			0.93			0.89	
Satd. Flow (perm)		1700			1529			1599			1607	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	45	329	25	113	358	48	30	58	111	32	36	40
RTOR Reduction (vph)	0	4	0	0	6	0	0	90	0	0	32	0
Lane Group Flow (vph)	0	395	0	0	513	0	0	109	0	0	76	0
Heavy Vehicles (%)	4%	2%	0%	5%	4%	3%	0%	0%	4%	0%	0%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		20.1			20.1			6.7			6.7	
Effective Green, g (s)		20.1			20.1			6.7			6.7	
Actuated g/C Ratio		0.58			0.58			0.19			0.19	
Clearance Time (s)		4.0			4.0			4.0			4.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		981			883			307			309	
v/s Ratio Prot												
v/s Ratio Perm		0.23			c0.34			c0.07			0.05	
v/c Ratio		0.40			0.58			0.36			0.24	
Uniform Delay, d1		4.0			4.7			12.2			11.9	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		0.3			1.0			0.7			0.4	
Delay (s)		4.3			5.7			12.9			12.3	
Level of Service		A			A			B			B	
Approach Delay (s)		4.3			5.7			12.9			12.3	
Approach LOS		A			A			B			B	
Intersection Summary												
HCM 2000 Control Delay			7.0									A
HCM 2000 Volume to Capacity ratio			0.52									
Actuated Cycle Length (s)			34.8								8.0	
Intersection Capacity Utilization			63.1%									B
Analysis Period (min)			15									
c Critical Lane Group												

2027 Future Background PM Traffic Volumes
 11: Kalar Road & McLeod Road

McLeod Meadows TIS
 Timing Plan:




























Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	129	567	173	680	471	51	392	405	255
v/c Ratio	0.62	0.41	0.70	0.64	0.77	0.17	0.80	0.87	0.14
Control Delay	35.7	21.7	47.0	32.2	27.5	31.2	43.8	41.5	7.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	35.7	21.7	47.0	32.2	27.5	31.2	43.8	41.5	7.4
Queue Length 50th (m)	17.6	44.4	32.1	64.9	55.0	8.0	66.3	56.7	7.4
Queue Length 95th (m)	#34.1	59.2	58.0	84.4	95.5	19.2	#120.3	#115.8	15.2
Internal Link Dist (m)		289.8		341.5			422.1		342.7
Turn Bay Length (m)	25.0		40.0		15.0	20.0		130.0	
Base Capacity (vph)	207	1695	321	1377	739	350	566	535	2054
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.62	0.33	0.54	0.49	0.64	0.15	0.69	0.76	0.12

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

2027 Future Background PM Traffic Volumes
11: Kalar Road & McLeod Road

McLeod Meadows TIS
Timing Plan:

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		 			 			 			 		
Traffic Volume (vph)	119	479	42	159	626	433	47	179	181	373	138	97	
Future Volume (vph)	119	479	42	159	626	433	47	179	181	373	138	97	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	3.9	3.9		4.0	3.9		
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00		1.00	0.95		
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.92		1.00	0.94		
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00		
Satd. Flow (prot)	1787	3485		1805	3574	1615	1805	1722		1805	3313		
Flt Permitted	0.17	1.00		0.44	1.00	1.00	0.59	1.00		0.16	1.00		
Satd. Flow (perm)	318	3485		834	3574	1615	1128	1722		300	3313		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	129	521	46	173	680	471	51	195	197	405	150	105	
RTOR Reduction (vph)	0	6	0	0	0	132	0	34	0	0	51	0	
Lane Group Flow (vph)	129	561	0	173	680	339	51	358	0	405	204	0	
Heavy Vehicles (%)	1%	2%	6%	0%	1%	0%	0%	2%	2%	0%	1%	4%	
Turn Type	pm+pt	NA		Perm	NA	Perm	Perm	NA		pm+pt	NA		
Protected Phases	7	4			8			2		1	6		
Permitted Phases	4			8		8	2			6			
Actuated Green, G (s)	34.7	34.7		25.5	25.5	25.5	22.3	22.3		45.9	45.9		
Effective Green, g (s)	33.7	37.1		27.9	27.9	27.9	24.7	24.7		44.9	48.3		
Actuated g/C Ratio	0.36	0.40		0.30	0.30	0.30	0.26	0.26		0.48	0.52		
Clearance Time (s)	3.0	6.4		6.4	6.4	6.4	6.3	6.3		3.0	6.3		
Vehicle Extension (s)	2.5	2.5		2.5	2.5	2.5	2.5	2.5		2.5	2.5		
Lane Grp Cap (vph)	196	1385		249	1068	482	298	455		460	1715		
v/s Ratio Prot	c0.04	0.16			0.19			0.21		c0.18	0.06		
v/s Ratio Perm	0.20			0.21		c0.21	0.05			c0.24			
v/c Ratio	0.66	0.41		0.69	0.64	0.70	0.17	0.79		0.88	0.12		
Uniform Delay, d1	22.2	20.2		28.9	28.3	29.0	26.4	31.9		23.4	11.6		
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00		
Incremental Delay, d2	6.9	0.1		7.5	1.1	4.3	0.2	8.4		17.5	0.0		
Delay (s)	29.2	20.3		36.5	29.4	33.3	26.6	40.3		40.9	11.6		
Level of Service	C	C		D	C	C	C	D		D	B		
Approach Delay (s)		22.0			31.7			38.7			29.6		
Approach LOS		C			C			D			C		
Intersection Summary													
HCM 2000 Control Delay			30.1		HCM 2000 Level of Service						C		
HCM 2000 Volume to Capacity ratio			0.79										
Actuated Cycle Length (s)			93.3		Sum of lost time (s)					15.9			
Intersection Capacity Utilization			78.4%		ICU Level of Service					D			
Analysis Period (min)			15										
c	Critical Lane Group												

2027 Future Total Traffic Conditions
 11: Kalar Road & McLeod Road

McLeod Meadows TIS
 Timing Plan: AM Peak Hour



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	103	781	66	446	241	103	369	447	324
v/c Ratio	0.40	0.66	0.50	0.49	0.46	0.36	0.74	0.81	0.17
Control Delay	26.1	27.1	44.5	30.2	15.1	31.8	34.4	31.2	4.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	26.1	27.1	44.5	30.2	15.1	31.8	34.4	31.2	4.4
Queue Length 50th (m)	12.7	60.6	10.3	36.4	13.6	14.3	48.2	48.3	4.7
Queue Length 95th (m)	25.6	85.8	25.7	54.2	36.2	33.7	94.5	#125.7	13.8
Internal Link Dist (m)		289.8		341.5			422.1		342.7
Turn Bay Length (m)	25.0		40.0		15.0	20.0		130.0	
Base Capacity (vph)	255	1913	227	1555	786	370	636	608	2259
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.40	0.41	0.29	0.29	0.31	0.28	0.58	0.74	0.14

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

2027 Future Total Traffic Conditions
11: Kalar Road & McLeod Road

McLeod Meadows TIS
Timing Plan: AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	95	665	53	61	410	222	95	145	194	411	122	176	
Future Volume (vph)	95	665	53	61	410	222	95	145	194	411	122	176	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	3.9	3.9		4.0	3.9		
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00		1.00	0.95		
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.91		1.00	0.91		
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00		
Satd. Flow (prot)	1787	3490		1805	3574	1615	1805	1703		1805	3202		
Flt Permitted	0.28	1.00		0.27	1.00	1.00	0.56	1.00		0.17	1.00		
Satd. Flow (perm)	528	3490		522	3574	1615	1056	1703		329	3202		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	103	723	58	66	446	241	103	158	211	447	133	191	
RTOR Reduction (vph)	0	6	0	0	0	110	0	45	0	0	83	0	
Lane Group Flow (vph)	103	775	0	66	446	131	103	324	0	447	241	0	
Heavy Vehicles (%)	1%	2%	6%	0%	1%	0%	0%	2%	2%	0%	1%	4%	
Turn Type	pm+pt	NA		Perm	NA	Perm	Perm	NA		pm+pt	NA		
Protected Phases	7	4			8			2		1	6		
Permitted Phases	4			8		8	2			6			
Actuated Green, G (s)	26.3	26.3		18.8	18.8	18.8	20.1	20.1		44.9	44.9		
Effective Green, g (s)	25.3	28.7		21.2	21.2	21.2	22.5	22.5		43.9	47.3		
Actuated g/C Ratio	0.30	0.34		0.25	0.25	0.25	0.27	0.27		0.52	0.56		
Clearance Time (s)	3.0	6.4		6.4	6.4	6.4	6.3	6.3		3.0	6.3		
Vehicle Extension (s)	2.5	2.5		2.5	2.5	2.5	2.5	2.5		2.5	2.5		
Lane Grp Cap (vph)	211	1193		131	903	408	283	456		538	1805		
v/s Ratio Prot	0.02	c0.22			0.12			0.19		c0.21	0.08		
v/s Ratio Perm	0.13			0.13		0.08	0.10			c0.23			
v/c Ratio	0.49	0.65		0.50	0.49	0.32	0.36	0.71		0.83	0.13		
Uniform Delay, d1	22.5	23.3		26.8	26.8	25.5	24.9	27.8		19.1	8.6		
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00		
Incremental Delay, d2	1.3	1.1		2.2	0.3	0.3	0.6	4.8		10.3	0.0		
Delay (s)	23.8	24.4		29.1	27.1	25.8	25.5	32.6		29.4	8.7		
Level of Service	C	C		C	C	C	C	C		C	A		
Approach Delay (s)		24.4			26.9			31.0			20.7		
Approach LOS		C			C			C			C		
Intersection Summary													
HCM 2000 Control Delay			25.1		HCM 2000 Level of Service						C		
HCM 2000 Volume to Capacity ratio			0.80										
Actuated Cycle Length (s)			83.9		Sum of lost time (s)					15.9			
Intersection Capacity Utilization			84.0%		ICU Level of Service					E			
Analysis Period (min)			15										
c Critical Lane Group													

2027 Future Total Traffic Conditions
11: Kalar Road & McLeod Road

McLeod Meadows TIS
Timing Plan: PM Peak Hour



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	129	676	173	857	471	51	392	405	255
v/c Ratio	0.72	0.47	0.75	0.76	0.77	0.18	0.82	0.88	0.15
Control Delay	45.4	22.6	53.2	35.4	30.2	32.1	46.6	45.1	7.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	45.4	22.6	53.2	35.4	30.2	32.1	46.6	45.1	7.8
Queue Length 50th (m)	17.6	55.2	33.4	87.1	63.8	8.7	71.9	63.5	8.4
Queue Length 95th (m)	#41.1	72.2	#68.3	110.6	105.5	19.2	#120.3	#116.4	15.2
Internal Link Dist (m)		289.8		341.5			422.1		342.7
Turn Bay Length (m)	25.0		40.0		15.0	20.0		130.0	
Base Capacity (vph)	179	1622	267	1315	689	335	543	514	1967
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.72	0.42	0.65	0.65	0.68	0.15	0.72	0.79	0.13

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

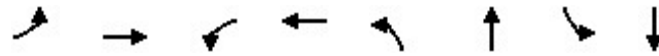
2027 Future Total Traffic Conditions
11: Kalar Road & McLeod Road

McLeod Meadows TIS
Timing Plan: PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	119	580	42	159	788	433	47	179	181	373	138	97	
Future Volume (vph)	119	580	42	159	788	433	47	179	181	373	138	97	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	3.9	3.9		4.0	3.9		
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00		1.00	0.95		
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.92		1.00	0.94		
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00		
Satd. Flow (prot)	1787	3494		1805	3574	1615	1805	1722		1805	3313		
Flt Permitted	0.13	1.00		0.38	1.00	1.00	0.59	1.00		0.16	1.00		
Satd. Flow (perm)	239	3494		728	3574	1615	1128	1722		297	3313		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	129	630	46	173	857	471	51	195	197	405	150	105	
RTOR Reduction (vph)	0	5	0	0	0	102	0	34	0	0	52	0	
Lane Group Flow (vph)	129	671	0	173	857	369	51	358	0	405	203	0	
Heavy Vehicles (%)	1%	2%	6%	0%	1%	0%	0%	2%	2%	0%	1%	4%	
Turn Type	pm+pt	NA		Perm	NA	Perm	Perm	NA		pm+pt	NA		
Protected Phases	7	4			8			2		1	6		
Permitted Phases	4			8		8	2			6			
Actuated Green, G (s)	37.6	37.6		28.5	28.5	28.5	22.6	22.6		46.6	46.6		
Effective Green, g (s)	36.6	40.0		30.9	30.9	30.9	25.0	25.0		45.6	49.0		
Actuated g/C Ratio	0.38	0.41		0.32	0.32	0.32	0.26	0.26		0.47	0.51		
Clearance Time (s)	3.0	6.4		6.4	6.4	6.4	6.3	6.3		3.0	6.3		
Vehicle Extension (s)	2.5	2.5		2.5	2.5	2.5	2.5	2.5		2.5	2.5		
Lane Grp Cap (vph)	171	1442		232	1139	515	291	444		451	1675		
v/s Ratio Prot	c0.04	0.19			c0.24			0.21		c0.19	0.06		
v/s Ratio Perm	0.24			0.24		0.23	0.05			c0.24			
v/c Ratio	0.75	0.47		0.75	0.75	0.72	0.18	0.81		0.90	0.12		
Uniform Delay, d1	23.2	20.7		29.5	29.6	29.1	27.9	33.7		25.1	12.6		
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00		
Incremental Delay, d2	16.3	0.2		11.6	2.7	4.4	0.2	10.0		20.1	0.0		
Delay (s)	39.6	20.9		41.1	32.3	33.5	28.1	43.7		45.2	12.6		
Level of Service	D	C		D	C	C	C	D		D	B		
Approach Delay (s)		23.9			33.7			41.9			32.6		
Approach LOS		C			C			D			C		
Intersection Summary													
HCM 2000 Control Delay			32.2		HCM 2000 Level of Service						C		
HCM 2000 Volume to Capacity ratio			0.83										
Actuated Cycle Length (s)			96.9		Sum of lost time (s)					15.9			
Intersection Capacity Utilization			82.9%		ICU Level of Service					E			
Analysis Period (min)			15										
c Critical Lane Group													

2027 Future Total Traffic Conditions
 8: Garner Road & McLeod Road

McLeod Meadows TIS
 Timing Plan: AM Peak Hour



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	32	401	96	357	23	214	29	64
v/c Ratio	0.06	0.38	0.18	0.35	0.07	0.40	0.09	0.14
Control Delay	5.1	6.5	6.1	6.0	8.9	5.9	9.1	5.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	5.1	6.5	6.1	6.0	8.9	5.9	9.1	5.4
Queue Length 50th (m)	0.6	9.5	2.0	7.6	0.7	1.5	0.8	0.5
Queue Length 95th (m)	3.3	26.7	8.1	22.4	4.0	11.9	4.7	5.7
Internal Link Dist (m)		652.6		705.2		278.8		326.3
Turn Bay Length (m)								
Base Capacity (vph)	987	1827	938	1759	937	1180	905	1184
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.22	0.10	0.20	0.02	0.18	0.03	0.05
Intersection Summary								

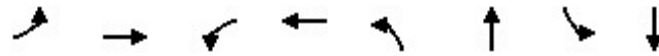
2027 Future Total Traffic Conditions
8: Garner Road & McLeod Road

McLeod Meadows TIS
Timing Plan: AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	29	355	14	88	274	54	21	50	147	27	17	42
Future Volume (vph)	29	355	14	88	274	54	21	50	147	27	17	42
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.98		1.00	0.89		1.00	0.89	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1736	1854		1719	1784		1805	1638		1805	1695	
Flt Permitted	0.55	1.00		0.53	1.00		0.72	1.00		0.69	1.00	
Satd. Flow (perm)	1001	1854		952	1784		1359	1638		1310	1695	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	32	386	15	96	298	59	23	54	160	29	18	46
RTOR Reduction (vph)	0	2	0	0	13	0	0	128	0	0	37	0
Lane Group Flow (vph)	32	399	0	96	344	0	23	86	0	29	27	0
Heavy Vehicles (%)	4%	2%	0%	5%	4%	3%	0%	0%	4%	0%	0%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	14.9	14.9		14.9	14.9		5.8	5.8		5.8	5.8	
Effective Green, g (s)	14.9	14.9		14.9	14.9		5.8	5.8		5.8	5.8	
Actuated g/C Ratio	0.52	0.52		0.52	0.52		0.20	0.20		0.20	0.20	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	519	962		494	926		274	331		264	342	
v/s Ratio Prot		c0.22			0.19			c0.05			0.02	
v/s Ratio Perm	0.03			0.10			0.02			0.02		
v/c Ratio	0.06	0.41		0.19	0.37		0.08	0.26		0.11	0.08	
Uniform Delay, d1	3.4	4.2		3.7	4.1		9.3	9.6		9.3	9.3	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	0.3		0.2	0.3		0.1	0.4		0.2	0.1	
Delay (s)	3.5	4.5		3.9	4.4		9.4	10.1		9.5	9.4	
Level of Service	A	A		A	A		A	B		A	A	
Approach Delay (s)		4.4			4.3			10.0			9.4	
Approach LOS		A			A			B			A	
Intersection Summary												
HCM 2000 Control Delay			5.8		HCM 2000 Level of Service				A			
HCM 2000 Volume to Capacity ratio			0.37									
Actuated Cycle Length (s)			28.7		Sum of lost time (s)				8.0			
Intersection Capacity Utilization			53.6%		ICU Level of Service				A			
Analysis Period (min)			15									
c Critical Lane Group												

2027 Future Total Traffic Conditions
8: Garner Road & McLeod Road





















McLeod Meadows TIS
Timing Plan: PM Peak Hour



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	45	464	113	582	30	169	32	76
v/c Ratio	0.10	0.40	0.21	0.51	0.10	0.37	0.11	0.18
Control Delay	5.0	5.9	5.8	7.1	12.3	8.1	12.5	8.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	5.0	5.9	5.8	7.1	12.3	8.1	12.5	8.3
Queue Length 50th (m)	0.9	11.6	2.5	15.9	1.1	2.2	1.2	1.4
Queue Length 95th (m)	4.7	32.9	10.0	45.7	6.6	15.0	6.9	9.7
Internal Link Dist (m)		652.6		705.2		278.8		326.3
Turn Bay Length (m)								
Base Capacity (vph)	662	1742	810	1701	808	1046	773	1067
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.07	0.27	0.14	0.34	0.04	0.16	0.04	0.07
Intersection Summary								

















2027 Future Total Traffic Conditions
8: Garner Road & McLeod Road

McLeod Meadows TIS
Timing Plan: PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	41	404	23	104	491	44	28	53	102	29	33	37
Future Volume (vph)	41	404	23	104	491	44	28	53	102	29	33	37
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.99		1.00	0.90		1.00	0.92	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1736	1850		1719	1806		1805	1669		1805	1750	
Flt Permitted	0.38	1.00		0.48	1.00		0.71	1.00		0.68	1.00	
Satd. Flow (perm)	703	1850		860	1806		1344	1669		1288	1750	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	45	439	25	113	534	48	30	58	111	32	36	40
RTOR Reduction (vph)	0	3	0	0	5	0	0	91	0	0	33	0
Lane Group Flow (vph)	45	461	0	113	577	0	30	78	0	32	43	0
Heavy Vehicles (%)	4%	2%	0%	5%	4%	3%	0%	0%	4%	0%	0%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	19.5	19.5		19.5	19.5		5.9	5.9		5.9	5.9	
Effective Green, g (s)	19.5	19.5		19.5	19.5		5.9	5.9		5.9	5.9	
Actuated g/C Ratio	0.58	0.58		0.58	0.58		0.18	0.18		0.18	0.18	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	410	1080		502	1054		237	294		227	309	
v/s Ratio Prot		0.25			c0.32			c0.05			0.02	
v/s Ratio Perm	0.06			0.13			0.02			0.02		
v/c Ratio	0.11	0.43		0.23	0.55		0.13	0.26		0.14	0.14	
Uniform Delay, d1	3.1	3.9		3.3	4.3		11.6	11.9		11.6	11.6	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	0.3		0.2	0.6		0.2	0.5		0.3	0.2	
Delay (s)	3.2	4.1		3.6	4.8		11.8	12.4		11.9	11.8	
Level of Service	A	A		A	A		B	B		B	B	
Approach Delay (s)		4.0			4.6			12.3			11.8	
Approach LOS		A			A			B			B	
Intersection Summary												
HCM 2000 Control Delay			6.0				HCM 2000 Level of Service			A		
HCM 2000 Volume to Capacity ratio			0.48									
Actuated Cycle Length (s)			33.4				Sum of lost time (s)			8.0		
Intersection Capacity Utilization			59.2%				ICU Level of Service			B		
Analysis Period (min)			15									
c Critical Lane Group												

















2027 Future Total Traffic Conditions
3: Beechwood Road & McLeod Road

McLeod Meadows TIS
Timing Plan: AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	2	156	13	27	239	37	14	26	82	28	15	4
Future Volume (Veh/h)	2	156	13	27	239	37	14	26	82	28	15	4
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2	170	14	29	260	40	15	28	89	30	16	4
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	300			184			531	539	177	622	526	280
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	300			184			531	539	177	622	526	280
tC, single (s)	4.1			4.1			7.2	6.5	6.2	7.1	6.6	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.6	4.0	3.3	3.5	4.1	3.3
p0 queue free %	100			98			96	94	90	91	96	99
cM capacity (veh/h)	1273			1403			423	442	871	338	435	764
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	186	329	132	50								
Volume Left	2	29	15	30								
Volume Right	14	40	89	4								
cSH	1273	1403	657	382								
Volume to Capacity	0.00	0.02	0.20	0.13								
Queue Length 95th (m)	0.0	0.5	6.0	3.6								
Control Delay (s)	0.1	0.8	11.9	15.8								
Lane LOS	A	A	B	C								
Approach Delay (s)	0.1	0.8	11.9	15.8								
Approach LOS			B	C								
Intersection Summary												
Average Delay			3.8									
Intersection Capacity Utilization			44.4%	ICU Level of Service						A		
Analysis Period (min)			15									











2027 Future Total Traffic Conditions
3: Beechwood Road & McLeod Road

McLeod Meadows TIS
Timing Plan: PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	2	325	18	82	310	34	14	22	52	47	33	1
Future Volume (Veh/h)	2	325	18	82	310	34	14	22	52	47	33	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2	353	20	89	337	37	15	24	57	51	36	1
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	374			373			920	919	363	970	910	356
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	374			373			920	919	363	970	910	356
tC, single (s)	4.1			4.1			7.2	6.5	6.5	7.1	6.5	6.3
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.6	4.0	3.6	3.5	4.0	3.4
p0 queue free %	100			93			93	90	91	72	86	100
cM capacity (veh/h)	1196			1197			200	253	625	183	253	675
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	375	463	96	88								
Volume Left	2	89	15	51								
Volume Right	20	37	57	1								
cSH	1196	1197	368	208								
Volume to Capacity	0.00	0.07	0.26	0.42								
Queue Length 95th (m)	0.0	1.9	8.2	15.5								
Control Delay (s)	0.1	2.2	18.2	34.3								
Lane LOS	A	A	C	D								
Approach Delay (s)	0.1	2.2	18.2	34.3								
Approach LOS			C	D								
Intersection Summary												
Average Delay			5.7									
Intersection Capacity Utilization			62.3%		ICU Level of Service				B			
Analysis Period (min)			15									











2027 Future Total Traffic Conditions
6: Street 1 & McLeod Road

McLeod Meadows TIS
Timing Plan: AM Peak Hour

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	271	9	26	303	26	78
Future Volume (Veh/h)	271	9	26	303	26	78
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	295	10	28	329	28	85
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			305		685	300
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			305		685	300
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			98		93	89
cM capacity (veh/h)			1267		408	744
Direction, Lane #	EB 1	WB 1	WB 2	NB 1		
Volume Total	305	28	329	113		
Volume Left	0	28	0	28		
Volume Right	10	0	0	85		
cSH	1700	1267	1700	618		
Volume to Capacity	0.18	0.02	0.19	0.18		
Queue Length 95th (m)	0.0	0.5	0.0	5.3		
Control Delay (s)	0.0	7.9	0.0	12.1		
Lane LOS		A		B		
Approach Delay (s)	0.0	0.6		12.1		
Approach LOS				B		
Intersection Summary						
Average Delay			2.1			
Intersection Capacity Utilization			34.4%		ICU Level of Service	A
Analysis Period (min)			15			










2027 Future Total Traffic Conditions
6: Street 1 & McLeod Road

McLeod Meadows TIS
Timing Plan: PM Peak Hour

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	394	29	81	424	18	51
Future Volume (Veh/h)	394	29	81	424	18	51
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	428	32	88	461	20	55
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			460	1081		444
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			460	1081		444
tC, single (s)			4.1	6.4		6.2
tC, 2 stage (s)						
tF (s)			2.2	3.5		3.3
p0 queue free %			92	91		91
cM capacity (veh/h)			1112	224		618
Direction, Lane #	EB 1	WB 1	WB 2	NB 1		
Volume Total	460	88	461	75		
Volume Left	0	88	0	20		
Volume Right	32	0	0	55		
cSH	1700	1112	1700	421		
Volume to Capacity	0.27	0.08	0.27	0.18		
Queue Length 95th (m)	0.0	2.1	0.0	5.1		
Control Delay (s)	0.0	8.5	0.0	15.4		
Lane LOS	A		C			
Approach Delay (s)	0.0	1.4	15.4			
Approach LOS	C					
Intersection Summary						
Average Delay			1.8			
Intersection Capacity Utilization			41.1%	ICU Level of Service		A
Analysis Period (min)			15			










2027 Future Total Traffic Conditions
 14: Beechwood Road & Street 2

McLeod Meadows TIS
 Timing Plan: AM Peak Hour

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	4	28	95	1	9	47
Future Volume (Veh/h)	4	28	95	1	9	47
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	4	30	103	1	10	51
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	174	104			104	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	174	104			104	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	97			99	
cM capacity (veh/h)	815	957			1500	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	34	104	61			
Volume Left	4	0	10			
Volume Right	30	1	0			
cSH	938	1700	1500			
Volume to Capacity	0.04	0.06	0.01			
Queue Length 95th (m)	0.9	0.0	0.2			
Control Delay (s)	9.0	0.0	1.3			
Lane LOS	A		A			
Approach Delay (s)	9.0	0.0	1.3			
Approach LOS	A					
Intersection Summary						
Average Delay			1.9			
Intersection Capacity Utilization		19.6%		ICU Level of Service		A
Analysis Period (min)			15			










2027 Future Total Traffic Conditions
 14: Beechwood Road & Street 2

McLeod Meadows TIS
 Timing Plan: PM Peak Hour

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	3	18	70	5	29	110
Future Volume (Veh/h)	3	18	70	5	29	110
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	3	20	76	5	32	120
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	262	78			81	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	262	78			81	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	98			98	
cM capacity (veh/h)	716	988			1529	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	23	81	152			
Volume Left	3	0	32			
Volume Right	20	5	0			
cSH	941	1700	1529			
Volume to Capacity	0.02	0.05	0.02			
Queue Length 95th (m)	0.6	0.0	0.5			
Control Delay (s)	8.9	0.0	1.7			
Lane LOS	A		A			
Approach Delay (s)	8.9	0.0	1.7			
Approach LOS	A					
Intersection Summary						
Average Delay			1.8			
Intersection Capacity Utilization			24.1%	ICU Level of Service		A
Analysis Period (min)			15			










2027 Future Total Traffic Conditions
17: Beechwood Road & Street 3

McLeod Meadows TIS
Timing Plan: AM Peak Hour

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	2	27	69	1	9	42
Future Volume (Veh/h)	2	27	69	1	9	42
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2	29	75	1	10	46
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	142	76			76	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	142	76			76	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	97			99	
cM capacity (veh/h)	851	991			1536	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	31	76	56			
Volume Left	2	0	10			
Volume Right	29	1	0			
cSH	981	1700	1536			
Volume to Capacity	0.03	0.04	0.01			
Queue Length 95th (m)	0.8	0.0	0.2			
Control Delay (s)	8.8	0.0	1.4			
Lane LOS	A		A			
Approach Delay (s)	8.8	0.0	1.4			
Approach LOS	A					
Intersection Summary						
Average Delay			2.1			
Intersection Capacity Utilization		19.4%		ICU Level of Service		A
Analysis Period (min)			15			










2027 Future Total Traffic Conditions
 17: Beechwood Road & Street 3

McLeod Meadows TIS
 Timing Plan: PM Peak Hour

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	1	18	57	3	28	81
Future Volume (Veh/h)	1	18	57	3	28	81
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1	20	62	3	30	88
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None	None		
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	212	64			65	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	212	64			65	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	98			98	
cM capacity (veh/h)	766	1007			1550	
Direction, Lane #						
	WB 1	NB 1	SB 1			
Volume Total	21	65	118			
Volume Left	1	0	30			
Volume Right	20	3	0			
cSH	992	1700	1550			
Volume to Capacity	0.02	0.04	0.02			
Queue Length 95th (m)	0.5	0.0	0.5			
Control Delay (s)	8.7	0.0	2.0			
Lane LOS	A		A			
Approach Delay (s)	8.7	0.0	2.0			
Approach LOS	A					
Intersection Summary						
Average Delay			2.0			
Intersection Capacity Utilization			22.5%	ICU Level of Service	A	
Analysis Period (min)			15			










2027 Future Total Traffic Conditions
 19: Beechwood Road & Street 4

McLeod Meadows TIS
 Timing Plan: AM Peak Hour

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	2	27	43	1	9	35
Future Volume (Veh/h)	2	27	43	1	9	35
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2	29	47	1	10	38
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	106	48			48	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	106	48			48	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	97			99	
cM capacity (veh/h)	891	1027			1572	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	31	48	48			
Volume Left	2	0	10			
Volume Right	29	1	0			
cSH	1017	1700	1572			
Volume to Capacity	0.03	0.03	0.01			
Queue Length 95th (m)	0.8	0.0	0.2			
Control Delay (s)	8.7	0.0	1.6			
Lane LOS	A		A			
Approach Delay (s)	8.7	0.0	1.6			
Approach LOS	A					
Intersection Summary						
Average Delay			2.7			
Intersection Capacity Utilization			19.0%	ICU Level of Service		A
Analysis Period (min)			15			










2027 Future Total Traffic Conditions
 19: Beechwood Road & Street 4

McLeod Meadows TIS
 Timing Plan: PM Peak Hour

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	1	18	42	2	28	54
Future Volume (Veh/h)	1	18	42	2	28	54
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1	20	46	2	30	59
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None	None		
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	166	47			48	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	166	47			48	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	98			98	
cM capacity (veh/h)	813	1028			1572	
Direction, Lane #						
	WB 1	NB 1	SB 1			
Volume Total	21	48	89			
Volume Left	1	0	30			
Volume Right	20	2	0			
cSH	1015	1700	1572			
Volume to Capacity	0.02	0.03	0.02			
Queue Length 95th (m)	0.5	0.0	0.5			
Control Delay (s)	8.6	0.0	2.6			
Lane LOS	A		A			
Approach Delay (s)	8.6	0.0	2.6			
Approach LOS	A					
Intersection Summary						
Average Delay			2.6			
Intersection Capacity Utilization			21.1%	ICU Level of Service	A	
Analysis Period (min)			15			










2027 Future Total Traffic Conditions
21: Beechwood Road & Street 5

McLeod Meadows TIS
Timing Plan: AM Peak Hour

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	2	27	17	1	9	28
Future Volume (Veh/h)	2	27	17	1	9	28
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2	29	18	1	10	30
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	68	18			19	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	68	18			19	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	97			99	
cM capacity (veh/h)	935	1066			1611	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	31	19	40			
Volume Left	2	0	10			
Volume Right	29	1	0			
cSH	1056	1700	1611			
Volume to Capacity	0.03	0.01	0.01			
Queue Length 95th (m)	0.7	0.0	0.1			
Control Delay (s)	8.5	0.0	1.8			
Lane LOS	A		A			
Approach Delay (s)	8.5	0.0	1.8			
Approach LOS	A					
Intersection Summary						
Average Delay			3.8			
Intersection Capacity Utilization		18.6%		ICU Level of Service		A
Analysis Period (min)			15			


















2027 Future Total Traffic Conditions
21: Beechwood Road & Street 5

McLeod Meadows TIS
Timing Plan: PM Peak Hour

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	1	18	26	2	28	27
Future Volume (Veh/h)	1	18	26	2	28	27
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1	20	28	2	30	29
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	118	29			30	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	118	29			30	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	98			98	
cM capacity (veh/h)	866	1052			1596	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	21	30	59			
Volume Left	1	0	30			
Volume Right	20	2	0			
cSH	1041	1700	1596			
Volume to Capacity	0.02	0.02	0.02			
Queue Length 95th (m)	0.5	0.0	0.5			
Control Delay (s)	8.5	0.0	3.8			
Lane LOS	A		A			
Approach Delay (s)	8.5	0.0	3.8			
Approach LOS	A					
Intersection Summary						
Average Delay			3.7			
Intersection Capacity Utilization		19.6%		ICU Level of Service		A
Analysis Period (min)			15			

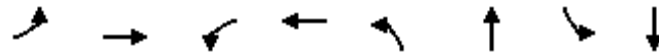
2032 FB AM Traffic Volumes
3: Beechwood Road & McLeod Road

McLeod Meadows TIS
Timing Plan: Default

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	2	171	12	1	260	17	7	5	5	23	9	5
Future Volume (Veh/h)	2	171	12	1	260	17	7	5	5	23	9	5
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2	186	13	1	283	18	8	5	5	25	10	5
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	301			199			492	500	192	498	497	292
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	301			199			492	500	192	498	497	292
tC, single (s)	4.1			4.1			7.2	6.5	6.2	7.1	6.6	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.6	4.0	3.3	3.5	4.1	3.3
p0 queue free %	100			100			98	99	99	95	98	99
cM capacity (veh/h)	1272			1385			461	475	854	478	461	752
Direction, Lane #	EB 1	WB 1	WB 2	NB 1	SB 1							
Volume Total	201	1	301	18	40							
Volume Left	2	1	0	8	25							
Volume Right	13	0	18	5	5							
cSH	1272	1385	1700	534	496							
Volume to Capacity	0.00	0.00	0.18	0.03	0.08							
Queue Length 95th (m)	0.0	0.0	0.0	0.8	2.1							
Control Delay (s)	0.1	7.6	0.0	12.0	12.9							
Lane LOS	A	A		B	B							
Approach Delay (s)	0.1	0.0		12.0	12.9							
Approach LOS				B	B							
Intersection Summary												
Average Delay			1.3									
Intersection Capacity Utilization			24.7%		ICU Level of Service				A			
Analysis Period (min)			15									

2032 FB AM Traffic Volumes
 8: Garner Road & McLeod Road

McLeod Meadows TIS
 Timing Plan: Default



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	33	253	105	329	25	233	33	70
v/c Ratio	0.07	0.30	0.21	0.40	0.07	0.43	0.11	0.15
Control Delay	5.4	6.2	6.5	6.7	8.1	5.6	8.6	4.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	5.4	6.2	6.5	6.7	8.1	5.6	8.6	4.9
Queue Length 50th (m)	0.6	5.2	2.2	6.7	0.6	1.5	0.9	0.5
Queue Length 95th (m)	3.4	15.7	8.3	20.0	3.8	11.3	4.7	5.4
Internal Link Dist (m)		652.6		705.2		278.8		326.3
Turn Bay Length (m)								
Base Capacity (vph)	1012	1821	1073	1752	935	1186	806	1189
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.14	0.10	0.19	0.03	0.20	0.04	0.06
Intersection Summary								

















2032 FB AM Traffic Volumes
8: Garner Road & McLeod Road

McLeod Meadows TIS
Timing Plan: Default

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	30	217	16	97	244	59	23	53	161	30	18	46
Future Volume (vph)	30	217	16	97	244	59	23	53	161	30	18	46
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.97		1.00	0.89		1.00	0.89	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1736	1846		1719	1777		1805	1637		1805	1696	
Flt Permitted	0.56	1.00		0.60	1.00		0.71	1.00		0.61	1.00	
Satd. Flow (perm)	1027	1846		1090	1777		1352	1637		1166	1696	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	33	236	17	105	265	64	25	58	175	33	20	50
RTOR Reduction (vph)	0	5	0	0	17	0	0	130	0	0	37	0
Lane Group Flow (vph)	33	248	0	105	312	0	25	103	0	33	33	0
Heavy Vehicles (%)	4%	2%	0%	5%	4%	3%	0%	0%	4%	0%	0%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	12.9	12.9		12.9	12.9		7.2	7.2		7.2	7.2	
Effective Green, g (s)	12.9	12.9		12.9	12.9		7.2	7.2		7.2	7.2	
Actuated g/C Ratio	0.46	0.46		0.46	0.46		0.26	0.26		0.26	0.26	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	471	847		500	815		346	419		298	434	
v/s Ratio Prot		0.13			c0.18			c0.06			0.02	
v/s Ratio Perm	0.03			0.10			0.02			0.03		
v/c Ratio	0.07	0.29		0.21	0.38		0.07	0.25		0.11	0.08	
Uniform Delay, d1	4.2	4.7		4.5	5.0		7.9	8.3		8.0	7.9	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	0.2		0.2	0.3		0.1	0.3		0.2	0.1	
Delay (s)	4.3	4.9		4.8	5.3		8.0	8.6		8.2	8.0	
Level of Service	A	A		A	A		A	A		A	A	
Approach Delay (s)		4.9			5.2			8.5			8.1	
Approach LOS		A			A			A			A	
Intersection Summary												
HCM 2000 Control Delay			6.2									A
HCM 2000 Volume to Capacity ratio			0.33									
Actuated Cycle Length (s)			28.1								8.0	
Intersection Capacity Utilization			50.8%									A
Analysis Period (min)			15									
c Critical Lane Group												

2032 FB AM Traffic Volumes
 3: Beechwood Road & McLeod Road

















McLeod Meadows TIS
 Timing Plan: Default

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	2	171	12	1	260	17	7	5	5	23	9	5
Future Volume (Veh/h)	2	171	12	1	260	17	7	5	5	23	9	5
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2	186	13	1	283	18	8	5	5	25	10	5
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	301			199			500	500	192	498	497	292
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	301			199			500	500	192	498	497	292
tC, single (s)	4.1			4.1			7.2	6.5	6.2	7.1	6.6	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.6	4.0	3.3	3.5	4.1	3.3
p0 queue free %	100			100			98	99	99	95	98	99
cM capacity (veh/h)	1272			1385			455	475	854	478	461	752
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	201	302	18	40								
Volume Left	2	1	8	25								
Volume Right	13	18	5	5								
cSH	1272	1385	530	496								
Volume to Capacity	0.00	0.00	0.03	0.08								
Queue Length 95th (m)	0.0	0.0	0.8	2.1								
Control Delay (s)	0.1	0.0	12.0	12.9								
Lane LOS	A	A	B	B								
Approach Delay (s)	0.1	0.0	12.0	12.9								
Approach LOS			B	B								
Intersection Summary												
Average Delay			1.4									
Intersection Capacity Utilization			25.3%		ICU Level of Service				A			
Analysis Period (min)			15									

	→	←	↑	↓
Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	286	434	258	103
v/c Ratio	0.33	0.55	0.49	0.25
Control Delay	6.4	9.0	7.8	7.9
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	6.4	9.0	7.8	7.9
Queue Length 50th (m)	6.7	11.4	2.8	1.8
Queue Length 95th (m)	21.6	37.1	18.0	11.1
Internal Link Dist (m)	652.6	705.2	278.8	326.3
Turn Bay Length (m)				
Base Capacity (vph)	1609	1442	1048	971
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.18	0.30	0.25	0.11
Intersection Summary				

2032 FB AM Traffic Volumes
8: Garner Road & McLeod Road

McLeod Meadows TIS
Timing Plan: Default

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	30	217	16	97	244	59	23	53	161	30	18	46
Future Volume (vph)	30	217	16	97	244	59	23	53	161	30	18	46
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frt		0.99			0.98			0.91			0.93	
Flt Protected		0.99			0.99			1.00			0.98	
Satd. Flow (prot)		1835			1768			1672			1747	
Flt Permitted		0.93			0.86			0.96			0.88	
Satd. Flow (perm)		1721			1541			1615			1570	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	33	236	17	105	265	64	25	58	175	33	20	50
RTOR Reduction (vph)	0	4	0	0	11	0	0	132	0	0	38	0
Lane Group Flow (vph)	0	282	0	0	423	0	0	126	0	0	65	0
Heavy Vehicles (%)	4%	2%	0%	5%	4%	3%	0%	0%	4%	0%	0%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		16.4			16.4			8.0			8.0	
Effective Green, g (s)		16.4			16.4			8.0			8.0	
Actuated g/C Ratio		0.51			0.51			0.25			0.25	
Clearance Time (s)		4.0			4.0			4.0			4.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		871			780			398			387	
v/s Ratio Prot												
v/s Ratio Perm		0.16			c0.27			c0.08			0.04	
v/c Ratio		0.32			0.54			0.32			0.17	
Uniform Delay, d1		4.7			5.4			10.0			9.6	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		0.2			0.8			0.5			0.2	
Delay (s)		4.9			6.2			10.4			9.8	
Level of Service		A			A			B			A	
Approach Delay (s)		4.9			6.2			10.4			9.8	
Approach LOS		A			A			B			A	
Intersection Summary												
HCM 2000 Control Delay			7.2									A
HCM 2000 Volume to Capacity ratio			0.47									
Actuated Cycle Length (s)			32.4								8.0	
Intersection Capacity Utilization			60.6%									B
Analysis Period (min)			15									
c Critical Lane Group												

2032 FB AM Traffic Volumes
11: Kalar Road & McLeod Road

McLeod Meadows TIS
Timing Plan: Default

























Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	112	666	72	429	267	114	403	489	356
v/c Ratio	0.49	0.62	0.49	0.53	0.54	0.40	0.77	0.83	0.18
Control Delay	30.6	28.0	43.7	32.8	16.7	31.3	35.8	34.0	3.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.6	28.0	43.7	32.8	16.7	31.3	35.8	34.0	3.9
Queue Length 50th (m)	14.4	51.3	11.4	36.1	15.3	16.0	54.5	59.9	5.1
Queue Length 95th (m)	28.6	73.5	27.0	53.7	40.3	35.7	101.6	#145.2	13.8
Internal Link Dist (m)		289.8		341.5			422.1		342.7
Turn Bay Length (m)	25.0		40.0		15.0	20.0		130.0	
Base Capacity (vph)	229	1729	252	1393	730	362	643	588	2223
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.49	0.39	0.29	0.31	0.37	0.31	0.63	0.83	0.16

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.


















2032 FB AM Traffic Volumes
11: Kalar Road & McLeod Road

McLeod Meadows TIS
Timing Plan: Default

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	103	554	59	66	395	246	105	159	212	450	134	193	
Future Volume (vph)	103	554	59	66	395	246	105	159	212	450	134	193	
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	3.9	3.9		4.0	3.9		
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00		1.00	0.95		
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.91		1.00	0.91		
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00		
Satd. Flow (prot)	1787	3475		1805	3574	1615	1805	1703		1805	3202		
Flt Permitted	0.26	1.00		0.34	1.00	1.00	0.54	1.00		0.16	1.00		
Satd. Flow (perm)	497	3475		648	3574	1615	1024	1703		304	3202		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	112	602	64	72	429	267	114	173	230	489	146	210	
RTOR Reduction (vph)	0	8	0	0	0	128	0	45	0	0	85	0	
Lane Group Flow (vph)	112	658	0	72	429	139	114	358	0	489	271	0	
Heavy Vehicles (%)	1%	2%	6%	0%	1%	0%	0%	2%	2%	0%	1%	4%	
Turn Type	pm+pt	NA		Perm	NA	Perm	Perm	NA		pm+pt	NA		
Protected Phases	7	4			8			2		1	6		
Permitted Phases	4			8		8	2			6			
Actuated Green, G (s)	25.0	25.0		17.4	17.4	17.4	22.0	22.0		49.5	49.5		
Effective Green, g (s)	24.0	27.4		19.8	19.8	19.8	24.4	24.4		48.5	51.9		
Actuated g/C Ratio	0.28	0.31		0.23	0.23	0.23	0.28	0.28		0.56	0.60		
Clearance Time (s)	3.0	6.4		6.4	6.4	6.4	6.3	6.3		3.0	6.3		
Vehicle Extension (s)	2.5	2.5		2.5	2.5	2.5	2.5	2.5		2.5	2.5		
Lane Grp Cap (vph)	190	1091		147	811	366	286	476		573	1905		
v/s Ratio Prot	0.02	c0.19			0.12			0.21		c0.23	0.08		
v/s Ratio Perm	0.14			0.11		0.09	0.11			c0.24			
v/c Ratio	0.59	0.60		0.49	0.53	0.38	0.40	0.75		0.85	0.14		
Uniform Delay, d1	26.3	25.3		29.3	29.6	28.5	25.5	28.6		20.7	7.8		
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00		
Incremental Delay, d2	3.8	0.8		1.9	0.5	0.5	0.7	6.3		11.7	0.0		
Delay (s)	30.1	26.1		31.2	30.1	29.0	26.1	35.0		32.4	7.8		
Level of Service	C	C		C	C	C	C	C		C	A		
Approach Delay (s)		26.7			29.8			33.0			22.0		
Approach LOS		C			C			C			C		
Intersection Summary													
HCM 2000 Control Delay			27.3		HCM 2000 Level of Service						C		
HCM 2000 Volume to Capacity ratio			0.80										
Actuated Cycle Length (s)			87.2		Sum of lost time (s)					15.9			
Intersection Capacity Utilization			85.1%		ICU Level of Service					E			
Analysis Period (min)			15										
c Critical Lane Group													

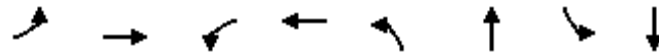
2032 FB PM Traffic Volumes
3: Beechwood Road & McLeod Road

McLeod Meadows TIS
Timing Plan: Default

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	2	353	11	2	336	20	11	9	1	27	11	1
Future Volume (Veh/h)	2	353	11	2	336	20	11	9	1	27	11	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2	384	12	2	365	22	12	10	1	29	12	1
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	387			396			770	785	390	780	780	376
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	387			396			770	785	390	780	780	376
tC, single (s)	4.1			4.1			7.2	6.5	6.5	7.1	6.5	6.3
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.6	4.0	3.6	3.5	4.0	3.4
p0 queue free %	100			100			96	97	100	90	96	100
cM capacity (veh/h)	1183			1174			292	326	603	302	324	657
Direction, Lane #	EB 1	WB 1	WB 2	NB 1	SB 1							
Volume Total	398	2	387	23	42							
Volume Left	2	2	0	12	29							
Volume Right	12	0	22	1	1							
cSH	1183	1174	1700	313	312							
Volume to Capacity	0.00	0.00	0.23	0.07	0.13							
Queue Length 95th (m)	0.0	0.0	0.0	1.9	3.7							
Control Delay (s)	0.1	8.1	0.0	17.4	18.3							
Lane LOS	A	A		C	C							
Approach Delay (s)	0.1	0.0		17.4	18.3							
Approach LOS				C	C							
Intersection Summary												
Average Delay			1.4									
Intersection Capacity Utilization			30.8%		ICU Level of Service				A			
Analysis Period (min)			15									

2032 FB PM Traffic Volumes
 8: Garner Road & McLeod Road

McLeod Meadows TIS
 Timing Plan: Default



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	48	390	123	443	34	184	35	78
v/c Ratio	0.09	0.36	0.22	0.42	0.10	0.37	0.11	0.17
Control Delay	5.2	6.1	6.2	6.6	10.0	6.6	10.0	6.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	5.2	6.1	6.2	6.6	10.0	6.6	10.0	6.7
Queue Length 50th (m)	1.0	9.1	2.7	10.5	1.0	1.9	1.0	1.1
Queue Length 95th (m)	4.5	25.5	10.1	29.9	5.7	12.6	5.8	7.7
Internal Link Dist (m)		652.6		705.2		278.8		326.3
Turn Bay Length (m)								
Base Capacity (vph)	875	1804	940	1757	900	1159	879	1185
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.05	0.22	0.13	0.25	0.04	0.16	0.04	0.07
Intersection Summary								

















2032 FB PM Traffic Volumes
8: Garner Road & McLeod Road

McLeod Meadows TIS
Timing Plan: Default

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	44	333	26	113	360	48	31	57	112	32	33	39
Future Volume (vph)	44	333	26	113	360	48	31	57	112	32	33	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.98		1.00	0.90		1.00	0.92	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1736	1845		1719	1797		1805	1667		1805	1747	
Flt Permitted	0.49	1.00		0.53	1.00		0.71	1.00		0.69	1.00	
Satd. Flow (perm)	895	1845		961	1797		1342	1667		1310	1747	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	48	362	28	123	391	52	34	62	122	35	36	42
RTOR Reduction (vph)	0	5	0	0	8	0	0	98	0	0	34	0
Lane Group Flow (vph)	48	385	0	123	435	0	34	86	0	35	44	0
Heavy Vehicles (%)	4%	2%	0%	5%	4%	3%	0%	0%	4%	0%	0%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	15.8	15.8		15.8	15.8		5.8	5.8		5.8	5.8	
Effective Green, g (s)	15.8	15.8		15.8	15.8		5.8	5.8		5.8	5.8	
Actuated g/C Ratio	0.53	0.53		0.53	0.53		0.20	0.20		0.20	0.20	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	477	984		512	959		262	326		256	342	
v/s Ratio Prot		0.21			c0.24			c0.05			0.03	
v/s Ratio Perm	0.05			0.13			0.03			0.03		
v/c Ratio	0.10	0.39		0.24	0.45		0.13	0.26		0.14	0.13	
Uniform Delay, d1	3.4	4.1		3.7	4.2		9.8	10.1		9.8	9.8	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	0.3		0.2	0.3		0.2	0.4		0.2	0.2	
Delay (s)	3.5	4.3		3.9	4.6		10.0	10.5		10.1	10.0	
Level of Service	A	A		A	A		B	B		B	A	
Approach Delay (s)		4.2			4.4			10.4			10.0	
Approach LOS		A			A			B			B	
Intersection Summary												
HCM 2000 Control Delay			5.8									A
HCM 2000 Volume to Capacity ratio			0.40									
Actuated Cycle Length (s)			29.6								8.0	
Intersection Capacity Utilization			53.4%									A
Analysis Period (min)			15									
c Critical Lane Group												

2032 FB PM Traffic Volumes
3: Beechwood Road & McLeod Road

McLeod Meadows TIS
Timing Plan: Default

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	2	353	11	2	336	20	11	9	1	27	11	1
Future Volume (Veh/h)	2	353	11	2	336	20	11	9	1	27	11	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2	384	12	2	365	22	12	10	1	29	12	1
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	387			396			781	785	390	780	780	376
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	387			396			781	785	390	780	780	376
tC, single (s)	4.1			4.1			7.2	6.5	6.5	7.1	6.5	6.3
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.6	4.0	3.6	3.5	4.0	3.4
p0 queue free %	100			100			96	97	100	90	96	100
cM capacity (veh/h)	1183			1174			287	326	603	302	324	657
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	398	389	23	42								
Volume Left	2	2	12	29								
Volume Right	12	22	1	1								
cSH	1183	1174	310	312								
Volume to Capacity	0.00	0.00	0.07	0.13								
Queue Length 95th (m)	0.0	0.0	1.9	3.7								
Control Delay (s)	0.1	0.1	17.5	18.3								
Lane LOS	A	A	C	C								
Approach Delay (s)	0.1	0.1	17.5	18.3								
Approach LOS			C	C								
Intersection Summary												
Average Delay			1.4									
Intersection Capacity Utilization			30.6%		ICU Level of Service				A			
Analysis Period (min)			15									

















2032 FB PM Traffic Volumes
 8: Garner Road & McLeod Road

McLeod Meadows TIS
 Timing Plan: Default

	→	←	↑	↓
Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	438	566	218	113
v/c Ratio	0.46	0.67	0.49	0.29
Control Delay	7.2	11.0	11.6	11.5
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	7.2	11.0	11.6	11.5
Queue Length 50th (m)	12.8	19.5	4.7	3.1
Queue Length 95th (m)	36.8	59.4	24.5	16.5
Internal Link Dist (m)	652.6	705.2	278.8	326.3
Turn Bay Length (m)				
Base Capacity (vph)	1447	1290	876	844
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.30	0.44	0.25	0.13
Intersection Summary				

2032 FB PM Traffic Volumes
8: Garner Road & McLeod Road

McLeod Meadows TIS
Timing Plan: Default

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	44	333	26	113	360	48	31	57	112	32	33	39
Future Volume (vph)	44	333	26	113	360	48	31	57	112	32	33	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frt		0.99			0.99			0.92			0.95	
Flt Protected		0.99			0.99			0.99			0.98	
Satd. Flow (prot)		1835			1783			1705			1777	
Flt Permitted		0.92			0.83			0.94			0.89	
Satd. Flow (perm)		1689			1503			1606			1610	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	48	362	28	123	391	52	34	62	122	35	36	42
RTOR Reduction (vph)	0	4	0	0	6	0	0	86	0	0	32	0
Lane Group Flow (vph)	0	434	0	0	560	0	0	132	0	0	81	0
Heavy Vehicles (%)	4%	2%	0%	5%	4%	3%	0%	0%	4%	0%	0%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		21.8			21.8			8.8			8.8	
Effective Green, g (s)		21.8			21.8			8.8			8.8	
Actuated g/C Ratio		0.56			0.56			0.23			0.23	
Clearance Time (s)		4.0			4.0			4.0			4.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		953			848			366			367	
v/s Ratio Prot												
v/s Ratio Perm		0.26			c0.37			c0.08			0.05	
v/c Ratio		0.46			0.66			0.36			0.22	
Uniform Delay, d1		4.9			5.8			12.5			12.1	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		0.3			1.9			0.6			0.3	
Delay (s)		5.3			7.8			13.1			12.4	
Level of Service		A			A			B			B	
Approach Delay (s)		5.3			7.8			13.1			12.4	
Approach LOS		A			A			B			B	
Intersection Summary												
HCM 2000 Control Delay			8.2		HCM 2000 Level of Service				A			
HCM 2000 Volume to Capacity ratio			0.57									
Actuated Cycle Length (s)			38.6		Sum of lost time (s)			8.0				
Intersection Capacity Utilization			68.5%		ICU Level of Service				C			
Analysis Period (min)			15									
c Critical Lane Group												

2032 FB PM Traffic Volumes
 11: Kalar Road & McLeod Road

McLeod Meadows TIS
 Timing Plan: Default



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	141	621	188	742	523	55	429	445	277
v/c Ratio	0.79	0.75	0.67	0.71	0.86	0.18	0.85	0.92	0.15
Control Delay	57.6	42.2	34.0	35.9	37.1	31.1	48.9	51.2	7.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	57.6	42.2	34.0	35.9	37.1	31.1	48.9	51.2	7.3
Queue Length 50th (m)	20.1	65.3	27.5	74.4	71.5	9.1	79.4	75.1	8.8
Queue Length 95th (m)	#49.0	87.3	44.7	95.9	#131.4	19.9	#132.3	#137.8	15.6
Internal Link Dist (m)		289.8		341.5			422.1		342.7
Turn Bay Length (m)	25.0		40.0		15.0	20.0		130.0	
Base Capacity (vph)	178	901	317	1201	667	337	558	503	1968
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.79	0.69	0.59	0.62	0.78	0.16	0.77	0.88	0.14

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

2032 FB PM Traffic Volumes
11: Kalar Road & McLeod Road

McLeod Meadows TIS
Timing Plan: Default

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	130	525	46	173	683	481	51	196	199	409	150	105	
Future Volume (vph)	130	525	46	173	683	481	51	196	199	409	150	105	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	3.9	3.9		4.0	3.9		
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00		1.00	0.95		
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.92		1.00	0.94		
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00		
Satd. Flow (prot)	1787	3485		1805	3574	1615	1805	1722		1805	3313		
Flt Permitted	0.20	1.00		0.16	1.00	1.00	0.58	1.00		0.14	1.00		
Satd. Flow (perm)	371	3485		313	3574	1615	1105	1722		273	3313		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	141	571	50	188	742	523	55	213	216	445	163	114	
RTOR Reduction (vph)	0	6	0	0	0	132	0	34	0	0	53	0	
Lane Group Flow (vph)	141	615	0	188	742	391	55	395	0	445	224	0	
Heavy Vehicles (%)	1%	2%	6%	0%	1%	0%	0%	2%	2%	0%	1%	4%	
Turn Type	pm+pt	NA		pm+pt	NA	Perm	Perm	NA		pm+pt	NA		
Protected Phases	7	4		3	8			2		1	6		
Permitted Phases	4			8		8	2			6			
Actuated Green, G (s)	27.4	21.3		36.1	27.0	27.0	24.8	24.8		50.9	50.9		
Effective Green, g (s)	25.4	23.7		35.1	29.4	29.4	27.2	27.2		49.9	53.3		
Actuated g/C Ratio	0.25	0.24		0.35	0.29	0.29	0.27	0.27		0.50	0.53		
Clearance Time (s)	3.0	6.4		3.0	6.4	6.4	6.3	6.3		3.0	6.3		
Vehicle Extension (s)	3.0	2.5		3.0	2.5	2.5	2.5	2.5		3.0	2.5		
Lane Grp Cap (vph)	166	828		271	1053	476	301	469		476	1771		
v/s Ratio Prot	0.04	0.18		c0.07	0.21			0.23		c0.21	0.07		
v/s Ratio Perm	0.17			0.17		c0.24	0.05			c0.26			
v/c Ratio	0.85	0.74		0.69	0.70	0.82	0.18	0.84		0.93	0.13		
Uniform Delay, d1	32.6	35.2		25.1	31.3	32.7	27.7	34.2		27.2	11.6		
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00		
Incremental Delay, d2	31.2	3.4		7.5	2.0	10.7	0.2	12.7		25.7	0.0		
Delay (s)	63.8	38.6		32.6	33.3	43.4	28.0	46.9		52.9	11.6		
Level of Service	E	D		C	C	D	C	D		D	B		
Approach Delay (s)		43.3			36.8			44.8			37.1		
Approach LOS		D			D			D			D		
Intersection Summary													
HCM 2000 Control Delay			39.4									HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio			0.89										
Actuated Cycle Length (s)			99.7									Sum of lost time (s)	15.9
Intersection Capacity Utilization			84.6%									ICU Level of Service	E
Analysis Period (min)			15										
c Critical Lane Group													

Future Total Traffic Conditions
11: Kalar Road & McLeod Road

McLeod Meadows TIS
Timing Plan: AM Peak Hour



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	112	835	72	485	267	114	403	489	356
v/c Ratio	0.47	0.71	0.64	0.52	0.50	0.41	0.80	0.87	0.18
Control Delay	28.9	29.6	59.2	31.7	17.1	34.0	39.7	40.6	4.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	28.9	29.6	59.2	31.7	17.1	34.0	39.7	40.6	4.6
Queue Length 50th (m)	14.7	70.3	12.4	42.3	18.7	17.1	58.4	66.7	5.8
Queue Length 95th (m)	28.2	95.7	#32.7	60.3	43.9	37.8	#114.8	#156.8	15.2
Internal Link Dist (m)		289.8		341.5			422.1		342.7
Turn Bay Length (m)	25.0		40.0		15.0	20.0		130.0	
Base Capacity (vph)	236	1653	160	1327	691	345	615	560	2127
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.47	0.51	0.45	0.37	0.39	0.33	0.66	0.87	0.17

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Future Total Traffic Conditions
11: Kalar Road & McLeod Road

McLeod Meadows TIS
Timing Plan: AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	103	709	59	66	446	246	105	159	212	450	134	193	
Future Volume (vph)	103	709	59	66	446	246	105	159	212	450	134	193	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	3.9	3.9		4.0	3.9		
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00		1.00	0.95		
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.91		1.00	0.91		
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00		
Satd. Flow (prot)	1787	3488		1805	3574	1615	1805	1703		1805	3202		
Flt Permitted	0.26	1.00		0.23	1.00	1.00	0.54	1.00		0.16	1.00		
Satd. Flow (perm)	484	3488		431	3574	1615	1024	1703		300	3202		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	112	771	64	72	485	267	114	173	230	489	146	210	
RTOR Reduction (vph)	0	6	0	0	0	108	0	45	0	0	90	0	
Lane Group Flow (vph)	112	829	0	72	485	159	114	358	0	489	266	0	
Heavy Vehicles (%)	1%	2%	6%	0%	1%	0%	0%	2%	2%	0%	1%	4%	
Turn Type	pm+pt	NA		Perm	NA	Perm	Perm	NA		pm+pt	NA		
Protected Phases	7	4			8			2		1	6		
Permitted Phases	4			8		8	2			6			
Actuated Green, G (s)	29.0	29.0		21.4	21.4	21.4	22.3	22.3		49.8	49.8		
Effective Green, g (s)	28.0	31.4		23.8	23.8	23.8	24.7	24.7		48.8	52.2		
Actuated g/C Ratio	0.31	0.34		0.26	0.26	0.26	0.27	0.27		0.53	0.57		
Clearance Time (s)	3.0	6.4		6.4	6.4	6.4	6.3	6.3		3.0	6.3		
Vehicle Extension (s)	2.5	2.5		2.5	2.5	2.5	2.5	2.5		2.5	2.5		
Lane Grp Cap (vph)	199	1196		112	929	420	276	459		546	1826		
v/s Ratio Prot	0.02	c0.24			0.14			0.21		c0.23	0.08		
v/s Ratio Perm	0.15			0.17		0.10	0.11			c0.25			
v/c Ratio	0.56	0.69		0.64	0.52	0.38	0.41	0.78		0.90	0.15		
Uniform Delay, d1	25.7	25.9		30.1	29.0	27.8	27.4	30.9		23.1	9.2		
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00		
Incremental Delay, d2	2.9	1.6		10.6	0.4	0.4	0.7	7.9		17.1	0.0		
Delay (s)	28.6	27.5		40.7	29.4	28.2	28.2	38.7		40.2	9.2		
Level of Service	C	C		D	C	C	C	D		D	A		
Approach Delay (s)		27.6			30.0			36.4			27.1		
Approach LOS		C			C			D			C		
Intersection Summary													
HCM 2000 Control Delay			29.6		HCM 2000 Level of Service						C		
HCM 2000 Volume to Capacity ratio			0.85										
Actuated Cycle Length (s)			91.5		Sum of lost time (s)					15.9			
Intersection Capacity Utilization			89.4%		ICU Level of Service					E			
Analysis Period (min)			15										
c Critical Lane Group													

Future Total Traffic Conditions
11: Kalar Road & McLeod Road

McLeod Meadows TIS
Timing Plan: PM Peak Hour



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	141	730	188	918	523	55	429	446	277
v/c Ratio	0.82	0.83	0.68	0.84	0.87	0.19	0.86	0.94	0.15
Control Delay	61.9	46.6	34.9	41.6	41.0	31.3	50.4	55.1	7.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	61.9	46.6	34.9	41.6	41.0	31.3	50.4	55.1	7.5
Queue Length 50th (m)	20.1	80.0	27.5	98.3	80.3	9.1	79.4	75.8	8.8
Queue Length 95th (m)	#48.3	#114.6	44.7	124.1	#143.2	19.9	#132.3	#138.9	15.6
Internal Link Dist (m)		289.8		341.5			422.1		342.7
Turn Bay Length (m)	25.0		40.0		15.0	20.0		130.0	
Base Capacity (vph)	172	893	309	1164	628	327	543	489	1912
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.82	0.82	0.61	0.79	0.83	0.17	0.79	0.91	0.14

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

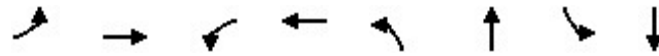
Future Total Traffic Conditions
11: Kalar Road & McLeod Road

McLeod Meadows TIS
Timing Plan: PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	130	626	46	173	845	481	51	196	199	410	150	105	
Future Volume (vph)	130	626	46	173	845	481	51	196	199	410	150	105	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	3.9	3.9		4.0	3.9		
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00		1.00	0.95		
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.92		1.00	0.94		
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00		
Satd. Flow (prot)	1787	3493		1805	3574	1615	1805	1722		1805	3313		
Flt Permitted	0.18	1.00		0.15	1.00	1.00	0.58	1.00		0.14	1.00		
Satd. Flow (perm)	340	3493		291	3574	1615	1105	1722		270	3313		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	141	680	50	188	918	523	55	213	216	446	163	114	
RTOR Reduction (vph)	0	5	0	0	0	105	0	34	0	0	54	0	
Lane Group Flow (vph)	141	725	0	188	918	418	55	395	0	446	223	0	
Heavy Vehicles (%)	1%	2%	6%	0%	1%	0%	0%	2%	2%	0%	1%	4%	
Turn Type	pm+pt	NA		pm+pt	NA	Perm	Perm	NA		pm+pt	NA		
Protected Phases	7	4		3	8			2		1	6		
Permitted Phases	4			8		8	2			6			
Actuated Green, G (s)	29.1	23.1		38.0	29.0	29.0	25.2	25.2		51.5	51.5		
Effective Green, g (s)	27.1	25.5		37.0	31.4	31.4	27.6	27.6		50.5	53.9		
Actuated g/C Ratio	0.27	0.25		0.36	0.31	0.31	0.27	0.27		0.49	0.53		
Clearance Time (s)	3.0	6.4		3.0	6.4	6.4	6.3	6.3		3.0	6.3		
Vehicle Extension (s)	3.0	2.5		3.0	2.5	2.5	2.5	2.5		3.0	2.5		
Lane Grp Cap (vph)	160	871		266	1098	496	298	465		468	1747		
v/s Ratio Prot	0.04	0.21		c0.08	0.26			0.23		c0.21	0.07		
v/s Ratio Perm	0.19			0.18		c0.26	0.05			c0.26			
v/c Ratio	0.88	0.83		0.71	0.84	0.84	0.18	0.85		0.95	0.13		
Uniform Delay, d1	34.4	36.3		25.7	33.0	33.1	28.7	35.3		28.6	12.2		
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00		
Incremental Delay, d2	39.0	6.7		8.3	5.6	12.2	0.2	13.3		29.8	0.0		
Delay (s)	73.4	43.0		33.9	38.6	45.3	28.9	48.6		58.3	12.3		
Level of Service	E	D		C	D	D	C	D		E	B		
Approach Delay (s)		48.0			40.2			46.4			40.7		
Approach LOS		D			D			D			D		
Intersection Summary													
HCM 2000 Control Delay			42.9		HCM 2000 Level of Service						D		
HCM 2000 Volume to Capacity ratio			0.91										
Actuated Cycle Length (s)			102.2		Sum of lost time (s)					15.9			
Intersection Capacity Utilization			89.1%		ICU Level of Service					E			
Analysis Period (min)			15										
c Critical Lane Group													

Future Total Traffic Conditions
8: Garner Road & McLeod Road

McLeod Meadows TIS
Timing Plan: AM Peak Hour



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	33	421	105	385	25	233	33	70
v/c Ratio	0.07	0.47	0.24	0.44	0.08	0.44	0.12	0.16
Control Delay	5.2	7.6	6.9	7.0	9.3	6.3	9.8	5.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	5.2	7.6	6.9	7.0	9.3	6.3	9.8	5.6
Queue Length 50th (m)	0.7	10.2	2.3	8.5	0.7	1.7	1.0	0.6
Queue Length 95th (m)	3.6	29.3	9.3	25.5	4.5	13.2	5.5	6.4
Internal Link Dist (m)		652.6		705.2		278.8		326.3
Turn Bay Length (m)								
Base Capacity (vph)	949	1822	877	1755	877	1124	756	1119
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.23	0.12	0.22	0.03	0.21	0.04	0.06
Intersection Summary								

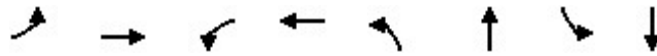
Future Total Traffic Conditions
8: Garner Road & McLeod Road

McLeod Meadows TIS
Timing Plan: AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	30	372	16	97	295	59	23	53	161	30	18	46
Future Volume (vph)	30	372	16	97	295	59	23	53	161	30	18	46
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.98		1.00	0.89		1.00	0.89	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1736	1853		1719	1784		1805	1637		1805	1696	
Flt Permitted	0.53	1.00		0.49	1.00		0.71	1.00		0.61	1.00	
Satd. Flow (perm)	964	1853		892	1784		1352	1637		1166	1696	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	33	404	17	105	321	64	25	58	175	33	20	50
RTOR Reduction (vph)	0	3	0	0	14	0	0	132	0	0	38	0
Lane Group Flow (vph)	33	418	0	105	371	0	25	101	0	33	32	0
Heavy Vehicles (%)	4%	2%	0%	5%	4%	3%	0%	0%	4%	0%	0%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	14.6	14.6		14.6	14.6		7.3	7.3		7.3	7.3	
Effective Green, g (s)	14.6	14.6		14.6	14.6		7.3	7.3		7.3	7.3	
Actuated g/C Ratio	0.49	0.49		0.49	0.49		0.24	0.24		0.24	0.24	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	470	904		435	871		330	399		284	414	
v/s Ratio Prot		c0.23			0.21			c0.06			0.02	
v/s Ratio Perm	0.03			0.12			0.02			0.03		
v/c Ratio	0.07	0.46		0.24	0.43		0.08	0.25		0.12	0.08	
Uniform Delay, d1	4.1	5.1		4.4	4.9		8.7	9.1		8.8	8.7	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	0.4		0.3	0.3		0.1	0.3		0.2	0.1	
Delay (s)	4.1	5.4		4.7	5.3		8.8	9.4		9.0	8.8	
Level of Service	A	A		A	A		A	A		A	A	
Approach Delay (s)		5.3			5.2			9.4			8.8	
Approach LOS		A			A			A			A	
Intersection Summary												
HCM 2000 Control Delay			6.3				HCM 2000 Level of Service			A		
HCM 2000 Volume to Capacity ratio			0.39									
Actuated Cycle Length (s)			29.9				Sum of lost time (s)			8.0		
Intersection Capacity Utilization			56.1%				ICU Level of Service			B		
Analysis Period (min)			15									
c Critical Lane Group												

Future Total Traffic Conditions
8: Garner Road & McLeod Road

McLeod Meadows TIS
Timing Plan: PM Peak Hour



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	48	500	123	619	34	184	35	78
v/c Ratio	0.12	0.43	0.24	0.54	0.11	0.39	0.13	0.18
Control Delay	5.1	6.2	6.1	7.5	13.1	8.4	13.3	8.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	5.1	6.2	6.1	7.5	13.1	8.4	13.3	8.7
Queue Length 50th (m)	1.0	13.1	2.9	17.9	1.4	2.5	1.4	1.5
Queue Length 95th (m)	5.1	37.1	11.4	51.5	7.6	16.6	7.8	10.2
Internal Link Dist (m)		652.6		705.2		278.8		326.3
Turn Bay Length (m)								
Base Capacity (vph)	604	1710	748	1669	788	1030	732	1043
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.08	0.29	0.16	0.37	0.04	0.18	0.05	0.07
Intersection Summary								

















Future Total Traffic Conditions
8: Garner Road & McLeod Road

McLeod Meadows TIS
Timing Plan: PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	44	434	26	113	522	48	31	57	112	32	33	39
Future Volume (vph)	44	434	26	113	522	48	31	57	112	32	33	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.99		1.00	0.90		1.00	0.92	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1736	1849		1719	1805		1805	1667		1805	1747	
Flt Permitted	0.36	1.00		0.45	1.00		0.71	1.00		0.66	1.00	
Satd. Flow (perm)	655	1849		808	1805		1342	1667		1246	1747	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	48	472	28	123	567	52	34	62	122	35	36	42
RTOR Reduction (vph)	0	3	0	0	5	0	0	100	0	0	35	0
Lane Group Flow (vph)	48	497	0	123	614	0	34	84	0	35	43	0
Heavy Vehicles (%)	4%	2%	0%	5%	4%	3%	0%	0%	4%	0%	0%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	20.3	20.3		20.3	20.3		6.1	6.1		6.1	6.1	
Effective Green, g (s)	20.3	20.3		20.3	20.3		6.1	6.1		6.1	6.1	
Actuated g/C Ratio	0.59	0.59		0.59	0.59		0.18	0.18		0.18	0.18	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	386	1091		476	1065		237	295		220	309	
v/s Ratio Prot		0.27			c0.34			c0.05			0.02	
v/s Ratio Perm	0.07			0.15			0.03			0.03		
v/c Ratio	0.12	0.46		0.26	0.58		0.14	0.28		0.16	0.14	
Uniform Delay, d1	3.1	4.0		3.4	4.4		11.9	12.3		12.0	11.9	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	0.3		0.3	0.8		0.3	0.5		0.3	0.2	
Delay (s)	3.3	4.3		3.7	5.1		12.2	12.8		12.3	12.1	
Level of Service	A	A		A	A		B	B		B	B	
Approach Delay (s)		4.2			4.9			12.7			12.2	
Approach LOS		A			A			B			B	
Intersection Summary												
HCM 2000 Control Delay			6.2				HCM 2000 Level of Service			A		
HCM 2000 Volume to Capacity ratio			0.51									
Actuated Cycle Length (s)			34.4				Sum of lost time (s)			8.0		
Intersection Capacity Utilization			61.9%				ICU Level of Service			B		
Analysis Period (min)			15									
c Critical Lane Group												

















Future Total Traffic Conditions
3: Beechwood Road & McLeod Road

McLeod Meadows TIS
Timing Plan: AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	2	172	14	27	263	39	14	27	83	30	16	5
Future Volume (Veh/h)	2	172	14	27	263	39	14	27	83	30	16	5
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2	187	15	29	286	42	15	29	90	33	17	5
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	328			202			577	584	194	668	571	307
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	328			202			577	584	194	668	571	307
tC, single (s)	4.1			4.1			7.2	6.5	6.2	7.1	6.6	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.6	4.0	3.3	3.5	4.1	3.3
p0 queue free %	100			98			96	93	89	89	96	99
cM capacity (veh/h)	1243			1382			392	416	852	312	409	738
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	204	357	134	55								
Volume Left	2	29	15	33								
Volume Right	15	42	90	5								
cSH	1243	1382	627	357								
Volume to Capacity	0.00	0.02	0.21	0.15								
Queue Length 95th (m)	0.0	0.5	6.4	4.3								
Control Delay (s)	0.1	0.8	12.3	16.9								
Lane LOS	A	A	B	C								
Approach Delay (s)	0.1	0.8	12.3	16.9								
Approach LOS			B	C								
Intersection Summary												
Average Delay			3.8									
Intersection Capacity Utilization			47.2%		ICU Level of Service				A			
Analysis Period (min)			15									











Future Total Traffic Conditions
3: Beechwood Road & McLeod Road

McLeod Meadows TIS
Timing Plan: PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	2	358	19	82	339	36	15	23	52	50	34	1
Future Volume (Veh/h)	2	358	19	82	339	36	15	23	52	50	34	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2	389	21	89	368	39	16	25	57	54	37	1
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	407			410			988	988	400	1038	980	388
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	407			410			988	988	400	1038	980	388
tC, single (s)	4.1			4.1			7.2	6.5	6.5	7.1	6.5	6.3
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.6	4.0	3.6	3.5	4.0	3.4
p0 queue free %	100			92			91	89	90	67	84	100
cM capacity (veh/h)	1163			1160			176	229	596	162	229	648
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	412	496	98	92								
Volume Left	2	89	16	54								
Volume Right	21	39	57	1								
cSH	1163	1160	332	185								
Volume to Capacity	0.00	0.08	0.30	0.50								
Queue Length 95th (m)	0.0	2.0	9.7	19.6								
Control Delay (s)	0.1	2.2	20.3	42.3								
Lane LOS	A	A	C	E								
Approach Delay (s)	0.1	2.2	20.3	42.3								
Approach LOS			C	E								
Intersection Summary												
Average Delay			6.4									
Intersection Capacity Utilization			65.9%		ICU Level of Service				C			
Analysis Period (min)			15									












Future Total Traffic Conditions
6: Street 1 & McLeod Road

McLeod Meadows TIS
Timing Plan: AM Peak Hour

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	291	9	26	331	26	78
Future Volume (Veh/h)	291	9	26	331	26	78
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	316	10	28	360	28	85
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			326		737	321
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			326		737	321
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			98		93	88
cM capacity (veh/h)			1245		380	724
Direction, Lane #	EB 1	WB 1	WB 2	NB 1		
Volume Total	326	28	360	113		
Volume Left	0	28	0	28		
Volume Right	10	0	0	85		
cSH	1700	1245	1700	592		
Volume to Capacity	0.19	0.02	0.21	0.19		
Queue Length 95th (m)	0.0	0.6	0.0	5.6		
Control Delay (s)	0.0	8.0	0.0	12.5		
Lane LOS	A		B			
Approach Delay (s)	0.0	0.6		12.5		
Approach LOS					B	
Intersection Summary						
Average Delay			2.0			
Intersection Capacity Utilization			34.5%	ICU Level of Service	A	
Analysis Period (min)			15			










Future Total Traffic Conditions
6: Street 1 & McLeod Road

McLeod Meadows TIS
Timing Plan: PM Peak Hour

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	429	29	81	460	18	51
Future Volume (Veh/h)	429	29	81	460	18	51
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	466	32	88	500	20	55
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			498			482
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			498			482
tC, single (s)			4.1			6.2
tC, 2 stage (s)						
tF (s)			2.2			3.3
p0 queue free %			92			91
cM capacity (veh/h)			1076			588
Direction, Lane #	EB 1	WB 1	WB 2	NB 1		
Volume Total	498	88	500	75		
Volume Left	0	88	0	20		
Volume Right	32	0	0	55		
cSH	1700	1076	1700	389		
Volume to Capacity	0.29	0.08	0.29	0.19		
Queue Length 95th (m)	0.0	2.1	0.0	5.6		
Control Delay (s)	0.0	8.6	0.0	16.5		
Lane LOS	A		C			
Approach Delay (s)	0.0	1.3	16.5			
Approach LOS					C	
Intersection Summary						
Average Delay			1.7			
Intersection Capacity Utilization			43.0%	ICU Level of Service		A
Analysis Period (min)			15			










Future Total Traffic Conditions
14: Beechwood Road & Street 2

McLeod Meadows TIS
Timing Plan: AM Peak Hour

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	4	28	97	1	9	48
Future Volume (Veh/h)	4	28	97	1	9	48
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	4	30	105	1	10	52
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type						
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	178	106			106	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	178	106			106	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	97			99	
cM capacity (veh/h)	811	954			1498	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	34	106	62			
Volume Left	4	0	10			
Volume Right	30	1	0			
cSH	935	1700	1498			
Volume to Capacity	0.04	0.06	0.01			
Queue Length 95th (m)	0.9	0.0	0.2			
Control Delay (s)	9.0	0.0	1.2			
Lane LOS	A		A			
Approach Delay (s)	9.0	0.0	1.2			
Approach LOS	A					
Intersection Summary						
Average Delay			1.9			
Intersection Capacity Utilization			19.7%		ICU Level of Service	A
Analysis Period (min)			15			










Future Total Traffic Conditions
14: Beechwood Road & Street 2

McLeod Meadows TIS
Timing Plan: PM Peak Hour

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	3	18	72	5	29	110
Future Volume (Veh/h)	3	18	72	5	29	110
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	3	20	78	5	32	120
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	264	80			83	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	264	80			83	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	98			98	
cM capacity (veh/h)	714	985			1527	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	23	83	152			
Volume Left	3	0	32			
Volume Right	20	5	0			
cSH	939	1700	1527			
Volume to Capacity	0.02	0.05	0.02			
Queue Length 95th (m)	0.6	0.0	0.5			
Control Delay (s)	8.9	0.0	1.7			
Lane LOS	A		A			
Approach Delay (s)	8.9	0.0	1.7			
Approach LOS	A					
Intersection Summary						
Average Delay			1.8			
Intersection Capacity Utilization			24.1%		ICU Level of Service	A
Analysis Period (min)			15			










Future Total Traffic Conditions
17: Beechwood Road & Street 3

McLeod Meadows TIS
Timing Plan: AM Peak Hour

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	2	27	71	1	9	43
Future Volume (Veh/h)	2	27	71	1	9	43
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2	29	77	1	10	47
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type						
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	144	78			78	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	144	78			78	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	97			99	
cM capacity (veh/h)	847	989			1533	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	31	78	57			
Volume Left	2	0	10			
Volume Right	29	1	0			
cSH	978	1700	1533			
Volume to Capacity	0.03	0.05	0.01			
Queue Length 95th (m)	0.8	0.0	0.2			
Control Delay (s)	8.8	0.0	1.3			
Lane LOS	A		A			
Approach Delay (s)	8.8	0.0	1.3			
Approach LOS	A					
Intersection Summary						
Average Delay			2.1			
Intersection Capacity Utilization		19.4%		ICU Level of Service		A
Analysis Period (min)			15			










Future Total Traffic Conditions
17: Beechwood Road & Street 3

McLeod Meadows TIS
Timing Plan: PM Peak Hour

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	1	18	59	3	28	83
Future Volume (Veh/h)	1	18	59	3	28	83
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1	20	64	3	30	90
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type						
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	216	66			67	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	216	66			67	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	98			98	
cM capacity (veh/h)	762	1004			1547	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	21	67	120			
Volume Left	1	0	30			
Volume Right	20	3	0			
cSH	989	1700	1547			
Volume to Capacity	0.02	0.04	0.02			
Queue Length 95th (m)	0.5	0.0	0.5			
Control Delay (s)	8.7	0.0	2.0			
Lane LOS	A		A			
Approach Delay (s)	8.7	0.0	2.0			
Approach LOS	A					
Intersection Summary						
Average Delay			2.0			
Intersection Capacity Utilization			22.6%		ICU Level of Service	A
Analysis Period (min)			15			










Future Total Traffic Conditions
19: Beechwood Road & Street 4

McLeod Meadows TIS
Timing Plan: AM Peak Hour

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	2	27	45	1	9	36
Future Volume (Veh/h)	2	27	45	1	9	36
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2	29	49	1	10	39
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None		None	
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	108	50			50	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	108	50			50	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	97			99	
cM capacity (veh/h)	888	1025			1570	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	31	50	49			
Volume Left	2	0	10			
Volume Right	29	1	0			
cSH	1015	1700	1570			
Volume to Capacity	0.03	0.03	0.01			
Queue Length 95th (m)	0.8	0.0	0.2			
Control Delay (s)	8.7	0.0	1.5			
Lane LOS	A		A			
Approach Delay (s)	8.7	0.0	1.5			
Approach LOS	A					
Intersection Summary						
Average Delay			2.6			
Intersection Capacity Utilization		19.1%		ICU Level of Service		A
Analysis Period (min)			15			










Future Total Traffic Conditions
19: Beechwood Road & Street 4

McLeod Meadows TIS
Timing Plan: PM Peak Hour

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	1	18	44	2	28	56
Future Volume (Veh/h)	1	18	44	2	28	56
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1	20	48	2	30	61
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	170	49			50	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	170	49			50	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	98			98	
cM capacity (veh/h)	809	1025			1570	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	21	50	91			
Volume Left	1	0	30			
Volume Right	20	2	0			
cSH	1012	1700	1570			
Volume to Capacity	0.02	0.03	0.02			
Queue Length 95th (m)	0.5	0.0	0.5			
Control Delay (s)	8.6	0.0	2.5			
Lane LOS	A		A			
Approach Delay (s)	8.6	0.0	2.5			
Approach LOS	A					
Intersection Summary						
Average Delay			2.5			
Intersection Capacity Utilization		21.2%		ICU Level of Service		A
Analysis Period (min)			15			










Future Total Traffic Conditions
21: Beechwood Road & Street 5

McLeod Meadows TIS
Timing Plan: AM Peak Hour

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	2	27	19	1	9	29
Future Volume (Veh/h)	2	27	19	1	9	29
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2	29	21	1	10	32
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type						
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	74	22			22	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	74	22			22	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	97			99	
cM capacity (veh/h)	929	1062			1607	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	31	22	42			
Volume Left	2	0	10			
Volume Right	29	1	0			
cSH	1052	1700	1607			
Volume to Capacity	0.03	0.01	0.01			
Queue Length 95th (m)	0.7	0.0	0.2			
Control Delay (s)	8.5	0.0	1.8			
Lane LOS	A		A			
Approach Delay (s)	8.5	0.0	1.8			
Approach LOS	A					
Intersection Summary						
Average Delay			3.6			
Intersection Capacity Utilization		18.7%		ICU Level of Service		A
Analysis Period (min)			15			

Future Total Traffic Conditions
21: Beechwood Road & Street 5

McLeod Meadows TIS
Timing Plan: PM Peak Hour

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	1	18	28	2	28	29
Future Volume (Veh/h)	1	18	28	2	28	29
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1	20	30	2	30	32
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type						
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	123	31			32	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	123	31			32	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	98			98	
cM capacity (veh/h)	860	1049			1593	
Direction, Lane #						
	WB 1	NB 1	SB 1			
Volume Total	21	32	62			
Volume Left	1	0	30			
Volume Right	20	2	0			
cSH	1038	1700	1593			
Volume to Capacity	0.02	0.02	0.02			
Queue Length 95th (m)	0.5	0.0	0.5			
Control Delay (s)	8.5	0.0	3.6			
Lane LOS	A		A			
Approach Delay (s)	8.5	0.0	3.6			
Approach LOS	A					
Intersection Summary						
Average Delay			3.5			
Intersection Capacity Utilization		19.7%		ICU Level of Service		A
Analysis Period (min)			15			